



Organised By:



Supported By:



19th Asian Oceanian Congress of Radiology

incorporating
Malaysian Congress of Radiology (MCOR) 2021

Theme : From Pixel To Clarity

1st - 4th July 2021

Kuala Lumpur, Malaysia

aocr2021.com



#FreeDAA

Abstract Book

Diamond Sponsor:



Platinum Sponsor:



Gold Sponsor:



Silver Sponsor:



TOP FREE PAPER ORAL PRESENTATIONS

ID		Title
IN1282N	INFORMATICS	BACTERIOLOGICAL EXAMINATION OF COMPUTER KEYBOARDS USED FOR DIAGNOSTIC IMAGING IN A TERTIARY HOSPITAL IN THE PHILIPPINES SHEEN C. URQUIZA, MARVIN M. MASALUNGA, LEIZL B. VALERIO
CH202N	CHEST IMAGING	A COMPARATIVE STUDY TO EVALUATE CT-BASED SEMANTIC AND RADIOMIC FEATURES IN PREOPERATIVE DIAGNOSIS OF INVASIVE PULMONARY ADENOCARCINOMAS MANIFESTING AS SUBSOLID NODULES FU-ZONG WU
PD1000N	PAEDIATRICS RADIOLOGY	PREDICTIVE PERFORMANCE OF QUANTITATIVE CT TEXTURE FEATURES FOR MYCN GENE AMPLIFICATION STATUS IN NEUROBLASTOMA EELIN TAN, KHURSHID MERCHANT, SEYED EHSAN SAFFARI, JOSEPH ZHAO, EDNA AW, KENNETH CHANG, TANG PHUA HWEE
MK871	MUSCULOSKELETAL	ROLE OF MAGNETIC RESONANCE IMAGING IN THE EVALUATION OF SPINAL TUBERCULOSIS MANIK MAHAJAN
NR1010N	NEURORADIOLOGY	RESTING-STATE DEFAULT MODE NETWORK FUNCTIONAL CONNECTIVITY AND EXECUTIVE DYSFUNCTION IN SPINOCEREBELLAR ATAXIA TYPE 3: A PRELIMINARY STUDY YAP KAH HUI, SHAHRUL AZMIN, HANANI ABDUL MANAN, NOORAZRUL YAHYA, SITI HAJAR MAT DESA, SHAHIZON AZURA, HAMDI NAJMAN ACHOK, BART VAN DE WARRENBURG, NORLINAH MOHAMED IBRAHIM
PD1114N	PAEDIATRICS RADIOLOGY	CONCORDANCE OF CHEST ULTRASONOGRAPHY (US) WITH CONTRAST-ENHANCED CHEST CT SCAN IN THE DETECTION OF MEDIASTINAL LYMPHADENOPATHY AMONG PEDIATRIC PATIENTS AGES 5-17 CLINICALLY DIAGNOSED WITH TUBERCULOSIS (TB) DISEASE: A PILOT STUDY JERALD GARVIN S. LIM, BERNARD F. LAYA, MARIAEM M. ANDRES, MARION O. SANCHEZ, AGNES R. MENDOZA, LADY ANAROSE I. REGALA
AB226	ABDOMEN IMAGING	COMPARATIVE STUDY OF IMAGE QUALITY AND RADIATION DOSE BETWEEN 120KVP FILTERED BACK PROJECTION AND 80KVP ITERATIVE RECONSTRUCTED COMPUTED TOMOGRAPHY IMAGES SWETA JOSHI
MP1011N	MEDICAL PHYSICS	DETERMINING OPTIMUM POST-PROCESSING PARAMETERS OF ¹⁷⁷LU-DOTATATE XQUANT IMAGES IN PEPTIDE RECEPTOR RADIONUCLIDE THERAPY (PRRT) IMAGING HANIFF SHAZWAN MUHD SAFWAN SELVAM, TAN TEIK HIN, MOHD SHAZWAN HAFIZ SHUKRI
AB1120N	ABDOMEN IMAGING	AUDIT ON CONTRAST CT ADRENAL PROTOCOL: OUR INSTITUTIONAL EXPERIENCE. CHEUNG KIN ON, WONG KIN HOI
PD038	PAEDIATRICS RADIOLOGY	MRI-BASED RADIOMICS OF WHOLE TUMOR TO CLASSIFY THE TYPES OF PEDIATRIC POSTERIOR FOSSA BRAIN TUMORS SHUJIE WANG, MING YANG

TOP FREE PAPER ORAL PRESENTATIONS

ID		Title
AB641	ABDOMEN IMAGING	REDUCED CONTRAST VOLUME AND RADIATION DOSE FOR CT CHEST ABDOMEN AND PELVIS EXAMINATION: PROTOCOL DESIGN AND OPTIMISATION LILIAN POH POH YAP, JEANNIE HSIU DING WONG, RAVI CHANTHRIGA ETHURAJULU, NADIA FAREEDA MUHAMAMD GOWDH, ERIC CHUNG, FADHLI MOHAMED SANI, ANUSHYA VIJAYANANTHAN, SUE ANNE MANUSHYA FOO, WEI LIN NG
IR1245N	INTERVENTIONAL RADIOLOGY	ENDOVASCULAR MANAGEMENT OF HEPATIC ARTERY ANEURYSM AND PSEUDOANEURYSM - A RARE CAUSE FOR GASTROINTESTINAL BLEED AMIN DHANUSH JAYANANDA, S RAMMURTI, M PHANI CHAKRAVARTY, N BHEERAPPA
BR980	BREAST IMAGING	USE OF ARTIFICIAL INTELLIGENCE IN BREAST CANCER DETECTION USING DEEP LEARNING SUDHANSHU TONPE
NR1078N	NEURORADIOLOGY	INTRACRANIAL HEMORRHAGE DETECTION AND CLASSIFICATION USING SEQUENCED DEEP LEARNING MODEL TRAN DUY QUOC KHANH, MASAHIRO HASHIMOTO, HASNINE HAQUE, MASAHIRO JINZAKI
HN1032N	HEAD & NECK	COMPUTER-ASSISTED SUBJECTIVE ANALYSIS OF THYROID NODULES MAY LIMIT NODULE NON-SPECIFICATION THAN COMPUTER-AIDED DIAGNOSIS NONHLANHLA CHAMBARA, MICHAEL YING, SHIRLEY YW LIU, XINA LO
MP120	MEDICAL PHYSICS	BLOOD IRRADIATION KIT: AN UPDATE ON LOCAL BLOOD IRRADIATION TECHNIQUE USING MEDICAL LINAC JANATUL MADINAH WAHABI, NOOR ZATI HANI, MANSHAHRUDDIN SAWAL, MD FAZIALI SULAIMAN, MUSA MOHD SALEHUDDIN
EM089	EMERGENCY	RADIOLOGICAL FEATURES OF PULMONARY FAT EMBOLISM IN TRAUMA PATIENTS: A CASE SERIES SHOURYE DWIVEDI, LARA KIMMEL, ASHER KIRK, DINESH VARMA
MK1375N	MUSCULOSKELETAL	SUB-REGIONAL BIOCHEMICAL ASSESSMENT OF KNEE ARTICULAR CARTILAGE ON 3T MRI. RACHIT KHANDELWAL, AMIT KHARAT, DILEEP KUMAR
AB783	ABDOMEN IMAGING	IMAGING FINDINGS AND CLINICOPATHOLOGICAL CORRELATION OF HEPATOCELLULAR CARCINOMA RECURRENCE AFTER LIVER TRANSPLANTATION LUANA MARTINS SILVA, LARISSA DE ANDRADE DEFENDI, MARCELO ORANGES FILHO, RONALDO HUEB BARONI
MP621	MEDICAL PHYSICS	BONE MARROW FAT IN B-THALASSAEMIA MAJOR PATIENTS: 1H-MR SPECTROSCOPY STUDY UMI NABILAH ISMAIL, CHE AHMAD AZLAN, SHASHA KHAIRULLAH, RAJA RIZAL AZMAN RAJA AMAN, NUR FARHAYU OMAR, CHAI HONG YEONG, MOHAMMAD NAZRI MD SHAH, NICHOLAS JACKSON, KWAN HOONG NG
PD584	PAEDIATRICS RADIOLOGY	ULTRASOUND-GUIDED CORE NEEDLE BIOPSY IN THE DIAGNOSIS OF RETROPERITONEAL TUMORS IN CHILDREN: A RETROSPECTIVE STUDY ON 52 CASES NGUYEN THI THANH HUONG, LE DINH CONG, HOANG NGOC THACH, PHO HONG DIEP

TOP FREE PAPER ORAL PRESENTATIONS

ID		Title
IN551	INFORMATICS	APPLICATION OF TEXT MINING IN NARRATIVE BREAST RADIOLOGY REPORTING FOR AUDIT AND RESEARCH IN UNIVERSITY MALAYA MEDICAL CENTER TAN WEE MING, NG WEI LIN, MOGANA DARSHINI, NUR AISHAH TAIB, KARTINI RAHMAT, SARINDER KAUR DHILLON
MI902	MOLECULAR IMAGING/NUCLEAR MEDICINE	RADIATION SHIELDING EFFICIENCY STUDIES OF TUNGSTEN CARBIDE/EPOXY COMPOSITE AT 140 KEV AND 356 KEV IN NUCLEAR MEDICINE NADIN JAMAL ABUALROOS, NOORFATIN AIDA BAHARUL AMIN, RAFIDAH ZAINON
BR736	BREAST IMAGING	OVERVIEW OF EARLY CLINICAL IMPLEMENTATION OF DIGITAL BREAST TOMOSYNTHESIS: A SINGLE CENTRE EXPERIENCE SOO SUET WOON, KARTINI RAHMAT, MARLINA TANTY RAMLI HAMID, SHAMSI AH ABDUL HAMID, YEONG CHAI HONG
NR540	NEURORADIOLOGY	A NOVEL APPLICATION OF NEURITE ORIENTATION DISPERSION AND DENSITY IMAGING (NODDI) TO DIFFERENTIATE COGNITIVELY RECOVERED VERSUS NON-RECOVERED IN MILD TRAUMATIC BRAIN INJURY (MTBI) PRASATH SWAMINATHAN, NORLISAH MOHD RAMLI, NORHAMIZAN HAMZAH, KARTINI RAHMAT, TAN LI KUO, VAIRAVAN NARAYANAN
CD636	CARDIAC IMAGING	FUNCTIONAL ASSESSMENT OF THE HEART IN PATIENTS IN THE EARLY AND DELAYED PERIODS AFTER SURGICAL CORRECTION IN PATIENTS WITH TETRALOGY OF FALLOT AZHAR ZHAMPIISSOVA, RAKHIMZHANOVA RAUSHAN, DAUTOV TAIRKHAN
CH190	CHEST IMAGING	DIFFERENTIAL DIAGNOSIS OF MEDIASTINAL MASSES USING CHEMICAL EXCHANGE SATURATION TRANSFER (CEST) MR IMAGING: PHANTOM & CLINICAL STUDIES MASAHIRO YANAGAWA, HIROYUKI TAREWAKI, AKINORI HATA, YURIKO YOSHIDA, TOMO MIYATA, NORIKO KIKUCHI, YUKIHISA SATOH, NORIYUKI TOMIYAMA

ORAL PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB004	PICKING THE BLACK HAT IN THE OVARINOMA'S' - IMAGING DIFFERENTIATION OF THE MALIGNANT AND BENIGN OVARIAN LESIONS. AVNI SKANDHAN
AB342	ROLE OF MULTIDETECTOR CT IN THE ASSESSMENT OF ACUTE PANCREATITIS AND SEVERITY GRADING BASED ON MODIFIED CT SEVERITY INDEX AND ITS CORRELATION WITH SEVERITY GRADING AS PER REVISED ATLANTA CLASSIFICATION 2012 AND CLINICAL OUTCOME. SANEESH P S, U C GARGA, YASHVANT SINGH
AB410	MAIN PANCREATIC DUCT (MPD) DIAMETER: CECT MEASUREMENT IN NORMAL SUBJECTS IN SRI LANKA. MUDUNKOTUWA HITIWEDI WIDANELAGE MADHAVI NADEESHA WIJAYAPALA, D.D.RANASINGHE
AB424	ULTRASOUND GUIDED PIGTAIL CATHETER DRAINAGE: AN EFFECTIVE ALTERNATIVE TO EXPLORATORY LAPAROTOMY VIKAS JADHAV, CHIRAG PATEL, RAJESH KUBER
AB445	CT BASED RADIOMICS TO PREDICT THE PATHOLOGICAL GRADE OF BLADDER CANCER: A PRELIMINARY STUDY LILI XU, GUMUYANG ZHANG, LUN ZHAO, LI MAO, XIULI LI, ZHENGYU JIN, HAO SUN
AB451	ASSESSMENT OF EFFECTS AND SIDE EFFECTS IN USING MAGNETIC RESONANCE IMAGING-GUIDED HIGH INTENSITY FOCUSED ULTRASOUND THERAPY FOR SYMPTOMATIC UTERINE FIBROID AISHAH SAIZAN, MOHD SHAFIE ABDULLAH, WAN AIREENE WAN AHMED
AB462	PERCUTANEOUS INTRADUCTAL BILIARY BIOPSY: AN INITIAL EXPERIENCE IN NEPAL AJIT THAPA, SUNDAR SUWAL, DINESH CHATAUT, PRAKASH KAYASTHA, SHARMA PAUDEL
AB464	RADIOMICS BASED ON MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING TO PREDICT EXTRAPROSTATIC EXTENSION OF PROSTATE CANCER LILI XU, GUMUYANG ZHANG, LUN ZHAO, LI MAO, XIULI LI, WEIGANG YAN, YU XIAO, JING LEI, ZHENGYU JIN, HAO SUN
AB473	MAGNETIC RESONANCE (MR) GUIDED HIGH INTENSITY FOCUSED ULTRASOUND (HIFU) IN THE TREATMENT OF UTERINE FIBROID AND ADENOMYOSIS - OUR EXPERIENCE IN UNIVERSITY MALAYA MEDICAL CENTRE WEI LIN NG, ERIC CHUNG, ANUSHYA VIJAYANANTHAN
AB611N	CORRELATION OF MAGNETIC RESONANCE PANCRETOGRAPHY(MRCP) AND SURGICAL FINDINGS IN PATIENTS WITH OBSTRUCTIVE JAUNDICE AT MUHIMBILI NATIONAL HOSPITAL(MNH) TANZANIA. LATIFA RAJAB ABDULLAH
AB670	ESTIMATION OF RENAL FUNCTION USING KIDNEY PERFUSION CT SUNG BIN PARK, HYUN JEONG PARK, EUN SUN LEE, BYUNG IHN CHOI
AB723N	MULTIPARAMETRIC MRI OF THE PROSTATE - ITS IMPACT ON PSA TESTING, PROSTATE BIOPSIES & PROSTATE CANCER IN AUSTRALIA DIANE LIM, REBECCA KIPPEN, SARAH SKINNER, JANELLE BRENNAN
AB725N	DIAGNOSTIC VALUE OF VESICAL IMAGING-REPORTING AND DATA SYSTEM (VI-RADS) IN DIFFERENTIATING T STAGING OF BLADDER CANCER - A SYSTEMATIC REVIEW DIANE LIM, MICHAEL MCCLATCHEY, NEETU TEJANI, SARAH SKINNER, JANELLE BRENNAN
AB750	MULTIPHASIC COMPUTED TOMOGRAPHY PERFORMANCES AND P53 EXPRESSION IN HEPATOCELLULAR CARCINOMA. CORRELATION ANALYSIS BEKZHAN ISSAMATOV, BOLATBEK BAIMAKHANOV, ULUGBEK MEDEUBEKOV, ZHAMILYA ZHOLDYBAY, EVGENY YENIN

ORAL PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB816	EVALUATING THE ROLE OF SONOURETHROGRAPHY (SUG) IN MALE ANTERIOR URETHRAL STRICTURES RAJUL RASTOGI, NEHA, SATISH PATHAK, VIJAI PRATAP
AB891	MR ACCURACY IN DETECTING ABNORMAL PLACENTATION WITH STRONG ULTRASOUND CONCERN FOR MYOMETRIAL INVASION AND ITS CORRELATION WITH CLINICAL OUTCOME. UMMARA SIDDIQUE, SHAHJEHAN ALAM, SYED GHULAM GHAUS, AMAN NAWAZ KHAN, ARUBA NAWAZ
AB916N	MRI AND LAPAROSCOPY IN FEMALE SUBFERTILITY - A FAIR COMPARISON RAJUL RASTOGI, NEHA, VIJAI PRATAP
AB951	EFFICACY OF DATE SYRUP IN SUPPRESSION OF UPPER GASTROINTESTINAL FLUID SIGNALS IN MRCP IRSA SHUAIB, KALSOOM NAWAB
AB956	TO DETERMINE THE SENSITIVITY OF DIFFUSION WEIGHTED IMAGING FOR DIAGNOSIS OF HEPATOCELLULAR CARCINOMA, KEEPING THE DYNAMIC POST CONTRAST MRI AS GOLD STANDARD. RAANA KANWAL, BELQEES YAWAR FAIZ, FATIMA MOIN, KHALOOD JANJUA, MAAZ AHMED MAGHAZI
AB1093N	ROLE OF CONTRAST ENHANCED ULTRASONOGRAPHY IN GRADING THE SEVERITY OF ACUTE PANCREATITIS SWATHIKIRAN RAJKUMAR, RAMESH A, SREENATH G.S
AB1101N	ASSESSMENT OF LOCOREGIONAL SPREAD OF CARCINOMA CERVIX BY PELVIC MRI SUPRIYA DAS, SOHINI SENGUPTA, ARCHANA SINGH, SHUBHAM SAHA, PARTHA SARATHI CHAKRAVORTY
AB1113N	LIVER AND LIVER TUMOR SEGMENTATION FROM ABDOMINAL CT IMAGES USING DEEP LEARNING AND K-MEANS ALGORITHM P VAIDEHI NAYANTARA, SUREKHA KAMATH, MANJUNATH K N, RAJAGOPAL K V
AB1138N	LIVER FAT QUANTIFICATION BY IMAGING MARKERS: HOW WE DO IT VAN TRUNG HOANG, THE HUAN HOANG, HOANG ANH THI VAN, VICHIT CHANSOMPHOU, THANH NHI THI NGUYEN, CONG THAO TRINH, HONG VU THI LE
AB1229N	MUCINOUS COLORECTAL ADENOCARCINOMA: IS CT GOOD ENOUGH FOR PREOPERATIVE PREDICTION? PIYAPORN APISARNTHANARAK, SIRUDCHA POLSAK, VORAPAREE SUVANNARERG, VILASINEE RERKPICHAISUTH, KOBKUN MUANGSOMBOON, WANWARANG TEERASAMIT, SOPA PONGPORNUP, ANUCHA APISARNTHANARAK
AB1259N	EXTRAOSSEOUS MYELOMA OF LIVER MIMICKING HEPATOCELLULAR CARCINOMA WHERE A DISTINCTION HAS TO BE MADE: A CASE REPORT HOI MING KWOK, EUGENE SEAN LO, HEATHER HOI CHING LEE, WING HANG LUK, KA FAI MA
AB1291N	USE OF POINT-SHEAR WAVE ELASTOGRAPHY IN IDENTIFYING LIVER FIBROSIS IN VIRAL HEPATITIS & ALCOHOLIC LIVER DISEASE PATIENTS IN COMPARISON WITH SERUM BIOMARKERS ANNAMALAI VAIRAVAN
AB1333N	THE CLINICAL VALUE OF CONTRAST-ENHANCED ULTRASOUND (CEUS) FOR ASSESSING DIAGNOSIS OF VIABLE HEPATOCELLULAR CARCINOMA AFTER TACE IN COMPARISON WITH CONTRAST- ENHANCED MRI AND CT VUTHY THAN
AB1340N	METEOR SHOWER IN THE ABDOMEN: A LETHAL SPONTANEOUS EXTRAPERITONEAL HEMATOMA WITH CONCURRENT COVID-19 PNEUMONIA NUR LIYANA MOHAMED MUSTAFA, AMIRAH ABDUL WAHID, FATIMAH HARTINA HUSSIN, NASIBAH MOHAMAD
AB1410N	ACCURACY OF CT SCAN STAGING AND CORRELATION OF HISTOPATHOLOGICAL FINDINGS IN PATIENT WITH COLORECTAL CARCINOMA AKSHAT AGRAWAL, KAMAL KUMAR SEN, SUBRAT MOHANTY, SWATI DAS, AJAY SHARAWAT


ORAL PRESENTATION

ID	Title
BREAST IMAGING	
BR015	PATIENT REPORTED COSMETIC OUTCOME AFTER VACUUM ASSISTED EXCISION OF BENIGN BREAST LESIONS: A CROSS-SECTIONAL STUDY ELLES VAN DE VOORT
BR246	ASSOCIATION BETWEEN ONCOTYPE DX RECURRENCE SCORE AND DCE-MRI FEATURES IN PATIENTS WITH ER-POSITIVE HER2-NEGATIVE INVASIVE BREAST CANCER HEE JEONG KIM, WOO JUNG CHOI, HAK HEE KIM, JOO HEE CHA, HEE JUNG SHIN, EUN YOUNG CHAE
BR651	CORRELATION BETWEEN MAMMOGRAPHYC FEATURES AND EXPRESSION OF ER, PR AND HER2 RECEPTORS MIRNA MUIS, LINA CHORIDAH, SARININGSIH HIKMAWATI
BR726	THE ROLE OF CT SIMULATOR FINDINGS AS A GUIDANCE IN PRETREATMENT AND REPLANNING RADIOTHERAPY BREAST CANCER STAGE III AND IV LYDIA KUNTJORO, LINA CHORRIDAH, TRIWULAN HANDARINI, ASTIKA UTOMO, ALBERTUS ARI, EKO KUNTJORO, ELIA KUNCORO, WILLIAM PANDEIROT, SUBIYANTO
BR809	THE ROLE OF PRE-OPERATIVE MRI AS ADJUNCT TO CONVENTIONAL IMAGING IN THE MANAGEMENT OF EARLY BREAST CANCER PATIENTS SELECTED FOR INTRAOPERATIVE RADIOTHERAPY (IORT) WAI KEONG CHEAH, KARTINI RAHMAT, WAI YEE CHAN, MARLINA TANTY RAMLI HAMID, MEE HOONG SEE, NUR AISHAH MD TAIB
BR890	SONOGRAPHIC FEATURES TO DIFFERENTIATE PHYLLODES TUMORS AND FIBROADENOMAS NAELA HIMAYATI AFIFAH, LINA CHORIDAH, DIDIK SETYO HERIYANTO
BR963	MRI FEATURES OF PAPILLARY LESIONS OF THE BREAST: IMAGING AND HISTOPATHOLOGIC CORRELATION SYARIFAH MUNA-IZZATI SAYED ABUL KHAIK, MARLINA TANTY RAMLI HAMID, FARHANA FADZLI, OUZREIAH NAWAWI, NORLISAH RAMLI, FAIZATUL IZZA ROZALLI, SEE MEE HOONG, NUR AISHAH MOHD TAIB, TEOH KEAN HOOI, KARTINI RAHMAT
BR964	RADIOLOGICAL FINDINGS AND CLINICO-PATHOLOGICAL CORRELATION OF DUCTAL CARCINOMA IN-SITU(DCIS):10-YEAR REVIEW FROM OPPORTUNISTIC SCREENING AND DIAGNOSTIC ASSESSMENT AYE NYEIN THINZAR, WAI YEE CHAN, MARLINA TANTY, NAZIMAH AB MUMIN, MEE HOONG SEE, MEI SZE TEH, NUR AISHAH TAIB, KARTINI RAHMAT
BR966	PREOPERATIVE EVALUATION OF AXILLARY LYMPH NODE STATUS IN BREAST CANCER PATIENTS USING ULTRASOUND SHEARWAVE ELASTOGRAPHY NORLIA OMAR, NG WEI LIN, KARTINI RAHMAT, ANUSHYA VIJAYANANTHAN
BR1036N	MRI BREAST - INITIAL FIVE-YEAR EXPERIENCE AT TERTIARY CARE HOSPITAL AASMA NUDRAT ZAFAR
BR1185N	PERICARDIAL PERIL - A CURIOUS CASE OF INVASIVE LOBULAR CARCINOMA WITH PERICARDIAL INVASION RENATA MAK, KM CHU, LF CHIU
BR1296N	CORRELATION OF THE HISTOPATHOLOGY OF FOCAL BREAST LESIONS FOUND ON MAMMOGRAPHY WITH STRAIN ELASTOGRAPHY. SANA SAYEED, LAIBA MASOOD, SAMREEN ASLAM, RASHID NAZIR
BR1381N	STRAIN ELASTOGRAPHY OF BREAST LESIONS: ELASTICITY CONTRAST INDEX AND ITS COMPARISON WITH TSUKUBA SCORE ANAMIKA JHA, AMLENDU KUMAR, GHANSHYAM GURUNG

ORAL PRESENTATION

ID	Title
CARDIAC IMAGING	
CD148	OPTIMIZATION OF COMPUTED TOMOGRAPHY PULMONARY ANGIOGRAPHY PROTOCOLS USING 3D PRINTED MODEL WITH SIMULATION OF PULMONARY EMBOLISM SULTAN AL DOSARI, ZHONGHUA SUN, SHIRLEY JANSEN
CD156	USEFULNESS OF PATIENT-SPECIFIC 3D PRINTED CORONARY MODELS IN CORONARY STENTING ZHONGHUA SUN
CD185N	A LASSO-DERIVED RISK MODEL FOR SUBCLINICAL CAC PROGRESSION IN ASIAN POPULATION WITH AN INITIAL SCORE OF ZERO FU-ZONG WU
CD296	SEVERITY OF CORONARY ATHEROSCLEROSIS ON CT CORONARY ANGIOGRAPHY IN PATIENTS WITH ZERO CALCIUM SCORE UMMARA SIDDIQUE, SHAHJEHAN ALAM, SANA IQBAL, SEEMA GUL, SYED GHULAM GHAUS, MUHAMMAD ASIF, HADIA ABID, MUHAMMAD ABDULLAH
CD299	CT RADIATION DOSE REDUCTION IN PEDIATRIC CARDIAC CT FOR CARDIOVASCULAR ANOMALIES - CLINICAL AUDIT IN A SINGLE CENTRE UMMARA SIDDIQUE, SHAHJEHAN ALAM, SYED GHULAM GHAUS, ARUBA NAWAZ, AMAN NAWAZ KHAN, HADIA ABID, ALI ASGHAR SAHIB
CD397	STATE OF THE ART OF CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY CHARBEL SAADE
CD646	SURVEY OF CT PRACTICE IN MALAYSIA: LOCAL DIAGNOSTIC REFERENCE LEVEL (LDRL) WITH THE ADVANCEMENT OF NOISE MAGNITUDE PERFORMANCES IN ADULT COMPUTED TOMOGRAPHY PULMONARY ANGIOGRAPHY (CTPA) EXAMINATION. HANIF HASPI HARUN, MUHAMMAD KHALIS ABDUL KARIM, ZULKIFLY ABBAS, AKMAL SABARUDIN, SARAWANA CHELWAN MUNIANDY, NG KWAN HOONG, FAEZAH HARUN
CD720	LEFT VENTRICULAR ABNORMALITIES DETECTION THROUGH AUTOMATIC EDGE CONTOURING METHOD MD. AL NOMAN, MD. ASADUR RAHMAN
CHEST IMAGING	
CH164	BRONCHIAL ARTERY EMBOLIZATION; RETROSPECTIVE SURVEY FROM A TERTIARY CARE HOSPITAL IN A DEVELOPING SOUTH-ASIAN COUNTRY MUHAMMAD SAMI ALAM, MUHAMMAD AZEEMUDDIN
CH169N	IMAGE DETECTION OF LUNG CANCER USING YOLOV4 TOSHIHIRO OJIMA, NAOYA KITAMURA, YUSHI AKEMOTO
CH249	A NEW PROTOCOL UTILIZING DUAL ENERGY DUAL SOURCE CT VENOGRAPHY (DECTV) FOR THE DIAGNOSIS OF CENTRAL VEIN STENOSIS/OCLUSION IN PATIENTS WITH END STAGE RENAL DISEASE (ESRD) MOHAMAD SYAFEEQ FAEZ MD NOH, HASYMA ABU HASSAN, SHAHRIN MD SIDEK, SHARIFAH MASTURA SYED ABU BAKAR, EZAMIN ABDUL RAHIM
CH395	PATIENT LUNG VOLUME IS DIRECTLY RELATED TO CONTRAST MEDIA VOLUME DURING CT PULMONARY ANGIOGRAPHY WHEN EMPLOYING A PATIENT SPECIFIC CONTRAST PROTOCOL CHARBEL SAADE
CH1021N	THE ACCURACY AND PRECISION OF HRCT CHEST FOR DIAGNOSIS OF ANAEMIA. MAHNOOR HAFEEZ, AMJAD SATTAR

ORAL PRESENTATION

ID	Title
CHEST IMAGING	
CH1030N	DIAGNOSTIC ACCURACY OF NON-ECG GATED CHEST CT (NEGCT) FOR CARDIAC CHAMBERS' DIMENSIONS, IN COMPARISON WITH ECHOCARDIOGRAPHY. MAHNOOR HAFEEZ, AMJAD SATTAR
CH1073N	COMPUTER AIDED READING OF CHEST X-RAY IN SCREENING OF PULMONARY TUBERCULOSIS IN A HIGH-VOLUME TERTIARY CARE PUBLIC SECTOR HOSPITAL, PESHAWAR, KHYBER-PAKHTUNKHWA PROVINCE, PAKISTAN TAHIRA NISHTAR, SHAMSULLAH BURKI, TABISH AHMAD, SYED MUHAMMAD HAMID, AMIR ALI
CH1081N	EFFECT OF AGE ON CT FINDINGS : SPECIFICITY AND SENSITIVITY IN COVID-19 INFECTION ERDAL KARAVAS, EDHEM UNVER, SONAY AYDIN, UFUK KUYRUKLUYILDIZ, GONUL SEVEN YALCIN, MUSTAFA YAZICI, Y. ARSLAN
CH1241N	CHEST COMPUTER TOMOGRAPHY FINDINGS OF PATIENTS WITH COVID-19 DISEASE WHO ARE IN THE FIRST DAY OF THEIR SYMPTOMS MUSTAFA EMRE AKIN
CH1301N	INTEROBSERVER VARIABILITY AND CORRELATION WITH CLINICAL OUTCOMES IN ASSESSING COVID-19 RELATED CHEST X-RAY FINDINGS USING THE BRIXIA SCORING SYSTEM MICHELLE CASTILLO, JORREL VALDEZ, ROVI NINO SAMEDRA
CH1388N	LOCAL ADAPTATION IMPROVES ACCURACY OF DEEP LEARNING MODEL FOR AUTOMATED X-RAY THORACIC DISEASE DETECTION : A THAI STUDY ISARUN CHAMVEHA, TRONGTUM TONGDEE, PAIRASH SAIVIROONPORN, WARASINEE CHAISANGMONGKON
EMERGENCY	
EM069	DIAGNOSTIC YIELD OF CT ANGIOGRAPHY IN PENETRATING LOWER EXTREMITY TRAUMA ALWYN LE ROUX, ANNE-MARIE DU PLESSIS, RICHARD PITCHER
EM812	DIRECT CT VENOGRAPHY FOR UPPER LIMB DEEP VEIN THROMBOSIS DOROTHY KHAI CHIN KUEK, DINUKE WARAKAULLE, TOM MEAGHER, CLARE MCLOUGHLIN, ALISON REID, WEI CHUEN LIONG
EM823	HIGH RESOLUTION ULTRASONOGRAPHIC (HRUS) IN EVALUATION OF SUBGLOTTIC DIAMETER FOR PREANESTHETIC ESTIMATION OF ENDOTRACHEAL TUBE DIAMETER RAJUL RASTOGI, NEHA, SATISH PATHAK, VIJAI PRATAP
FORENSIC	
FR588	COLD BLOODED MURDER MASKED BY SAVAGE CROCODILE ATTACK: BIOLOGICAL PROFILING WITH RADIOGRAPHS WONG YI LI, KUNASILAN SUBRAMANIAM, NORZILA IBRAHIM, MOHAMAD HELMEE MOHAMAD NOOR

ORAL PRESENTATION

ID	Title
HEAD & NECK	
HN341	ROLE OF ULTRASOUND ELASTOGRAPHY : DIFFERENTIATING TUBERCULOSIS FROM MALIGNANT LYMPH NODES ANDRE YEE YUE MENG, NORLISAH RAMLI, CH'NG LI SHYAN
HN454	SERIAL MULTIMODAL ASSESSMENT OF OSTEO-ODONTO-KERATOPROTHESIS (OOKP) RESORPTION ON ORBITAL COMPUTED TOMOGRAPHY (CT) AND CLINICAL IMPACT REBEKAH LEE
HN794	EVALUATION OF ULTRASOUND AND CYTOLOGY OF THYROID NODULES USING THE TI-RADS AND BETHESDA CLASSIFICATIONS: A RETROSPECTIVE STUDY. SITI SORAYA AB RAHMAN, NORHASLINDA KAMISO, ASSYIFAA NIK MAZIAN, NADEEYA MOHAMAD NOR
INFORMATICS	
IN362	RADIOMICS STUDY OF HEPATOCELLULAR CARCINOMA (HCC) BASED ON MR IMAGES WITH SUPPORT VECTOR MACHINE (SVM) AS CLASSIFIER MUHAMMAD KHALIS ABDUL KARIM, NORAINI ABDUL RAHIM, SARAH MUHAMMAD SAID, NG KWAN HOONG, NURIN SYAZWINA
IN971	INTERACTIVE EXPLORATION OF DEEP LEARNING RELATED TO RADIOLOGY IN A WEB BROWSER KIM ANN-GIT
IN979	ARTIFICIAL INTELLIGENCE IN THE EVALUATION OF PROPTOSIS ON COMPUTED TOMOGRAPHY. SUDHANSU TONPE
IN1096N	WHICH SIDE IS WHICH? AUDIT TO ASSESS RADIOGRAPHIC IMAGE LABELLING UMMARA SIDDIQUE UMER, ARUBA NAWAZ KHATTAK, FARIA MAQSOOD, AMAN NAWAZ KHAN
IN1413N	ARTIFICIAL INTELLIGENCE- A FRIEND OR FOE IN CT PNEUMONIA ANALYSIS FOR TYPICAL COVID-19 KAMAL KUMAR SEN, SUDHANSU MOHANTY, SANGRAM PANDA, MANOJ KUMAR, AKSHAT AGRAWAL
INTERVENTIONAL RADIOLOGY	
IR863	EFFICACY OF MRI CORRELATED CT GUIDED BONE BIOPSIES IN SUSPECTED TB SPINE ANNAMALAI VAIRAVAN, AMAN KUMAR, RAJESH MALIK, RADHA S GUPTA
IR1046N	TRANSRADIAL ACCESS IN NEUROINTERVENTION - A SINGLE TEAM EXPERIENCE. NG YUN HUI, ARVIN RAJADURAI, DHAYAL BALAKRISHNAN, ZULKIFLI ZAKI ABD GHANI
IR1055N	TUNNELED ADULT PERIPHERALLY INSERTED CENTRAL CATHETER (PICC) FOR CENTRAL VENOUS ACCESS IN PEDIATRICS: A SINGLE CENTRE EXPERIENCE NURUL NABILA MORTADZA, ARVIN RAJADURAI, ZULKIFLI ZAKI ABDUL GHANI
IR1232N	PIONEERING EXPERIENCE OF REAL TIME MRI-GUIDED MICROWAVE ABLATION OF HEPATOCELLULAR CARCINOMA IN A SINGLE CENTRE IN HONG KONG BORIS CHOW CHUN KEI, JEANIE BETSY CHIANG, WAI LUN POON
IR1270N	SALINE: A COST EFFECTIVE BIOPSY TRACT SEALANT IN LUNG BIOPSY POOJA KULKARNI
IR1307N	DEMOGRAPHICS, CLINICAL PROFILES, IMAGING FINDINGS, AND MANAGEMENT OUTCOMES OF PATIENTS WITH CAROTID CAVERNOUS SINUS FISTULA IN SOUTHERN PHILIPPINES MEDICAL CENTER FROM 2015 TO 2019 CAROLINE CALUMBA FABIAN-VENICA, SAMUEL B. BANGOY, MARIA THERESA SANCHEZ
IR1325N	EMERGENCY CAROTID STENTING IN ACUTE ISCHEMIC STROKE: CASE SERIES OF EARLY HPUPM NEUROINTERVENTIONAL CENTER EXPERIENCE MOHD NAIM MOHD YAAKOB, MOHD FANDI AL KHAFIZ KAMIS, AHMAD SOBRI MUDA, EZAMIN ABDUL RAHIM

ORAL PRESENTATION

ID	Title
MOLECULAR IMAGING/NUCLEAR MEDICINE	
MI086	INSTITUTIONAL EXPERIENCE AND REVIEW OF KIDNEY SCARRING DEPICTED ON RENAL DMSA SCINTIGRAPHY AMONG CHILDREN WITH PRIOR URINARY TRACT INFECTION AHMAD ZAID ZANIAL, HAZIMAH HUSAIN MOHAMED, SITI ZARINA AMIR HASSAN
MI526	SAMARIUM-153 POLYHYDROXYBUTYRATE MICROSPHERES FOR TRANSARTERIAL RADIOEMBOLIZATION OF HEPATIC MALIGNANCIES YIN HOW WONG, HUN YEE TAN, AZAHARI KASBOLLAH, BASRI JOHAN JEET ABDULLAH, CHAI HONG YEONG
MI678N	COMPARISON OF NECK-THIGH RATIO OF PLANAR THYROID SCINTIGRAPHY WITH QUANTITATIVE SPECT/CT STANDARDISED UPTAKE VALUE (SUV) & TECHNETIUM THYROID UPTAKE (TCTU) IN ASSESSING HYPERFUNCTIONING THYROID GLAND. MUHAMMAD ADIB ABDUL ONNY, MUHAMMAD YUSRI UDIN, SYED EJAZ SHAMIM, MOHD SYAHIR MANSOR, HAZLIN HASHIM
MI941	HYBRID GAMMA CAMERA FOR INTRAOPERATIVE IMAGING: LOOKING WITH NEW EYES AIK HAO NG, SARAH L BUGBY, JOHN E LEES, ALAN C PERKINS
MI982	TO EVALUATE THE USE OF FDG PET-CT IN ASSESSING DISEASE ACTIVITY IN LARGE VESSEL VASCULITIS SUDHANSHU TONPE
MI983	EVALUATE THE EFFICACY OF 68GA-DOTA-TOC AND 18F-FDG PET-CT IN THE FOLLOW- UP OF PATIENTS WITH NEUROENDOCRINE TUMOR TREATED WITH THE FIRST FULL PEPTIDE RECEPTOR RADIONUCLIDE THERAPY CYCLE SUDHANSHU TONPE
MI1194N	USE OF GALLIUM-67 SCAN WITH SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT) WITH CONTRAST CT IN EVALUATION & MONITORING OF MYCOTIC ABDOMINAL AORTIC ANEURYSM WITH ENDOVASCULAR AORTIC REPAIR (EVAR): A CASE SERIES OF OUR INITIAL EXPERIENCE HOI MING KWOK, WING HANG LUK, LIK FAI CHENG, NIN YUEN PAN, HO FUNG CHAN, KA FAI MA
MUSCULOSKELETAL	
MK405	FUNCTIONAL IMAGING OF BONE TUMORS : WHAT MORE IT CAN OFFER GARIMA SHARMA, SUDHIR SAXENA
MK574	MRI EVALUATION OF ANTEROLATERAL LIGAMENT OF THE KNEE: A CROSS-SECTIONAL STUDY IN MALAYSIA CHOOI LENG LOW, KOW REN YI, SITI NOR BADRIATI SHEIK SAID
MK773N	AUTOMATED IDENTIFICATION OF ORTHOPEDIC IMPLANTS IN RADIOGRAPHS USING DEEP LEARNING RAVI PATEL, ELIZABETH GRACE HUI EN THONG, VINEET BATTI, ANIL BHARATH, DARREL FRANCIS, JAMES HOWARD
MK993N	CORRELATION BETWEEN HOUNSFIELD UNIT DERIVED FROM HEAD, THORAX, ABDOMEN, SPINE AND PELVIS CT AND T-SCORES FROM DUAL ENERGY X-RAY ABSORPTIOMETRY(DXA) MOHAMAD FARHAN MOHAMAD AMIN, WAN MEZLINA WAN ZAKARIA, NOORAZRUL YAHYA
MK1003N	RELIABILITY OF SUPRASPINATUS PENNATION ANGLE MEASUREMENT USING DIFFUSION TENSOR FIBER TRACTOGRAPHY AT 3-TESLA MRI MOHD HAFIZUDDIN HUSIN, MOHD EZANE AZIZ
MK1211N	MODIFIED CT SKELETAL MUSCLE INDEX NOMOGRAM RAJESHWAR BALAJI VENKATASUBRAMANIAN, ARUNAN MURALI, VENKATA SAI
MK1374N	PREDICT THE SEVERITY OF OSTEOARTHRITIS OF KNEE ON AP RADIOGRAPHS USING DEEP LEARNING. AMIT KHARAT, RACHIT KHANDELWAL, PRANAV AJMERA, SUDEEP KONDAL, VIRAJ KULKARNI, ANIRUDDHA PANT

ORAL PRESENTATION

ID	Title
MUSCULOSKELETAL	
MK1403N	EFFECTIVENESS OF HYDRODILATATION IN ADHESIVE CAPSULITIS OF SHOULDER: DOES IT OFFER ADDED ADVANTAGE OVER INTRA-ARTICULAR STEROID? MEHTAB AHMAD, RIDA FATIMA, MJ KHAN, IBNE AHMAD, AMIR SABIR
MEDICAL PHYSICS	
MP059	ARTIFACTS IN ABDOMINAL CT: THEY ALL LOOK THE SAME TO ME! LET'S RECOGNIZE IT AND ELIMINATE IT! BINIT SUREKA, NEELMANI SHARMA, PAWAN KUMAR GARG, TARUNA YADAV, SARBESH TIWARI, PUSHPIINDER SINGH KHERA, ALEX FERNANDUS
MP170	DEVELOPMENT OF PATIENT-SPECIFIC 3D-PRINTED BREAST PHANTOM USING SILICONE AND PEANUT OILS FOR MAGNETIC RESONANCE IMAGING ROOA SINDI, YIN HOW WONG, CHAI HONG YEONG, ZHONGHUA SUN
MP511N	AUTOMATIC EVALUATION TO IMAGE QUALITY FOR ACR MAMMOGRAPHY PHANTOM USING MACHINE LEARNING PEI-SHAN HO, YI-SHUAN HWANG, HUI-YU TSAI
MP514	CORRECTION FOR CT NUMBER CHANGES CAUSED BY OFF-CENTRE PATIENT POSITIONING: A PHANTOM STUDY XIAOMING ZHENG, YAZAN AL HAYEK, CHRIS CUMMINS
MP545	COMMUNICATING RADIATION RISK TO PUBLIC KWAN HOONG NG, JEANNIE HSIU DING WONG
MP558N	ANALYSIS OF GRAY MATTER VOLUME IN ISCHEMIC STROKE PATIENTS WITH DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING DIAN YULIANI ALAM, JOHAN AE NOOR, YUYUN YUENIWATI
MP1063N	DEVELOPMENT OF COMPLEX SHIELDING SHEET FOR MAMMOGRAPHY USING MONTE CARLO SIMULATION CHEOL-HA BAEK, DONG-HEE HAN, SEUNG-JAE LEE
MP1218N	EVALUATION OF PAEDIATRIC PATIENT'S SIZE FOR SIZE-SPECIFIC DOSE ESTIMATE (SSDE) NOOR DIYANA OSMAN, MUHAMMAD KABIR ABDULKADIR, IBRAHIM LUFTI SHUAIB, ANUSHA ACHUTHAN
MP1233N	CORRELATION BETWEEN SCATTERED RADIATION DOSE AND HEIGHT OF THE STAFF'S EYES AT DIFFERENT POSITIONS IN AN ANGIOGRAPHY ROOM HALIMATUSSA'DIAH AHMAD RADZI, NORHANNA SOHAIMI, AHMAD RAZALI MD RALIB
MP1263N	GERMANIUM-DOPED OPTICAL FIBRES: A NEW RADIO PHOTOLUMINESCENCE (RPL) DOSIMETER IN CLINICAL COMPUTED TOMOGRAPHY H.G SARHAN, N.M NOOR, S.M SAINI, N.M BAHRI, D.A BRADLEY, H.T ZUBAIR, H.A ABDUL RASHID
MP1277N	DEVELOPMENT OF MULTI-MODALITY RENAL PHANTOM HAIRIL RASHMIZAL, KHALIS ABDUL KARIM, SYAMSIAH MASHOHOR, ATHIRAH SYIMA, IZDIHAR KAMAL
MP1349N	ASSESSMENT OF 3D PRINTED PHANTOM MATERIAL FOR QUANTIFICATION ACCURACY, REPEATABILITY, AND VARIATION OF MATERIAL DECOMPOSITION WITH PRE-CLINICAL PHOTON-COUNTING SPECTRAL CT WING YAN IP, DAVID FK YEUNG, SHANG PENG FELIX YUNG, VARUT VARDHANABHUTI
MP1427N	DUAL ENERGY CT: PRINCIPLES AND APPLICATIONS SMILY SHARMA, VENKATA SUBBAIH ARUNACHALAM, RAKESH CHAUHAN, BIKRAM RAJA SHARMA, POONAM SHERWANI

ORAL PRESENTATION

ID	Title
NEURORADIOLOGY	
NR001	LANDSCAPE: AN MRI-BASED PROJECT FOR COMPUTATIONAL NEUROMODULATION HANNA LU, LINDA LAM, LI ZHANG
NR121	DETERMINATION OF CUT- OFF VALUES FOR HIPPOCAMPAL VOLUME VIA AUTOMATED SEGMENTATION ON MRI BRAIN FOR IDENTIFICATION OF HIPPOCAMPAL ATROPHY IN HIPPOCAMPAL SCLEROSIS LIEW XIAO CHING, KARTINI RAHMAT, FARHANA FADZLI, NORLISAH RAMLI, LIM KHENG SEANG, VAIRAVAN NARAYANAN, ERIC TATT WEI HO
NR135	MOLECULAR AND RADIOLOGICAL CHARACTERIZATION OF GLIOBLASTOMA MULTIFORME USING MRI FATIMA MUBARAK
NR138	UTILITY OF APPARENT DIFFUSION COEFFICIENT, CHEMICAL SHIFT IMAGING AND DIFFUSION TENSOR IMAGING OF TUMOR CENTRE AND PERITUMORAL ZONE IN DIFFERENTIATING GLIOBLASTOMA MULTIFORME AND PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA FROM METASTASIS PREOPERATIVELY. FATIMA MUBARAK
NR197	POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME IN CHILDREN: THE ASSOCIATION OF BLOOD PRESSURE WITH IMAGING SEVERITY. KUMAIL KHANDWALA, KIRAN HILAL, NIDA SAJJAD
NR416	IMAGING DEMENTIA: COMPUTER-AIDED AUTOMATED HIPPOCAMPAL VOLUME CALCULATION AND ITS CORRELATION WITH CLINICAL COGNITIVE PERFORMANCE NURHUDA HENDRA SETYAWAN, LINA CHORIDAH, ASTUTI, WHISNU NALENDRA TAMA
NR446N	ROLE OF DIFFUSOR TENSOR IMAGING(DTI) IN SEIZURE PATIENTS RAJUL RASTOGI, VISHAKHA MITTAL, NEHA, VIJAI PRATAP
NR510	A WORKING MEMORY STUDY ON SMARTPHONE ADDICTION USING FMRI NADIA SALWA JALALDIN, AZLAN CHE AHMAD, AINI ISMAFAIRUS ABDUL HAMID
NR554	MR PERFUSION CAN BE THE LITTLE KEY TO OPEN THE HEAVY DOOR OF CNS LYMPHOMA NAMRATA PAL, SANDIP PARIA, COL SUNITA DASHOTTAR
NR571	CORRELATION BETWEEN FRACTIONAL ANISOTROPY AND MEAN DIFFUSIVITY ON DIFFUSION TENSOR IMAGING WITH HISTOPATHOLOGY GRADING IN PRIMARY INTRACRANIAL TUMOR FRANSISCA RIKA ANDRIANI, SRI ANDREANI UTOMO, ROSY SETIAWATI, DYAH FAUZIAH
NR578	BRAIN MRI MORPHOMETRY IN CORRELATION WITH NEUROCOGNITIVE FUNCTION FOLLOWING MILD TRAUMATIC BRAIN INJURY (MTBI) NORHAMIMAH MOHD NOOR, NORLISAH RAMLI, NORHAMIZAN HAMZAH, KARTINI RAHMAT, TAN LI KUO, VAIRAVEN NARAYANAN
NR667	ADVANCE IMAGING AS BIOMARKER FOR MILD TRAUMATIC BRAIN INJURY COGNITIVE OUTCOME: AN INTERVENTION STUDY NORHAMIZAN HAMZAH, TAN LI KUO, NOR ASIAH MUHAMAD, NOR ATIKAH MUSTAPHA, NUR ADIBAH MOHAMMAD TAHIR, AVRIL DRUMMOND, ROSHAN DAS NAIR, MAZLINA MAZLAN, VAIRAVAN NARAYANAN, NORLISAH RAMLI
NR694	INTRACRANIAL GADOLINIUM DEPOSITION FOR GADOLINIUM BASED CONTRAST AGENTS (GBCAS) IN PEDIATRIC POPULATION SEEN ON MRI AIDURA EIZWANIE ABDUL WAHAB, KARTINI RAHMAT, NORLISAH RAMLI, ROZIAH MURIDAN, TAN LI KUO
NR856	PROBABILISTIC FIBRE TRACKING IN HIGH-VS LOW-GRADE GLIOMA Seow Pohchoo, Vairavan Narayanan, Jennie Wong, Kartini Rahmat, Norlisah Ramli

ORAL PRESENTATION

ID	Title
NEURORADIOLOGY	
NR1216N	SREBPS GENE EXPRESSION PROFILING FOR CHARACTERISATION OF FLIOMA : A PRELIMINARY STUDY KHAIRUNNISA ABDUL RASHID, NORLISAH MOHD RAMLI, KAMARIAH IBRAHIM, SEOW POH CHOO, N VAIRAVAN N.V.V.E NARAYANAN, JEANNIE WONG HSIU DING, TAN LI KUO, AZLINA AHMAD ANNUAR
NR1257N	IMAGING PATTERN AND ARTERIAL SIGNAL LABELLING (ASL)PERFUSION IN POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES). SAVITH KUMAR, APRUVA JAVALGI
PAEDIATRICS RADIOLOGY	
PD392	SURVEY: AWARENESS OF MEDICAL STUDENTS ON DIAGNOSTIC RADIOLOGICAL EXAMINATION RELATED RADIATION USED IN PAEDIATRIC POPULATION NG CHEE GUAN, HANANI AM, FAIZAH MZ, ROZMAN Z
PD437	ESTABLISHING DIAGNOSTIC REFERENCE LEVELS FOR COMPUTED TOMOGRAPHY OF HEAD IN PEDIATRIC POPULATION PRIYANKA, RAJAGOPAL K V, SURESH SUKUMAR
PD450	ASSESSMENT OF ORGAN DOSE AND IMAGE QUALITY OF CT BRAIN EXAMINATION USING 1-YEAR-OLD ANTHROPOMORPHIC PHANTOM NOR AZURA MUHAMMAD, MUHAMMAD KHALIS ABDUL KARIM, JEANNIE HSIU DING WONG, HASYMA ABU HASSAN
PD500	4D CT AORTOGRAM : A REVOLUTIONARY TECHNIQUE FOR PRE-SURGICAL EVALUATION OF EXTRA CARDIAC ANOMALIES IN PAEDIATRIC PATIENTS. NIVEDITA DIVEKAR, ANIRUDDHA JOSHI
PD560	MRI OF CORPUS CALLOSUM IN PATIENTS WITH AUTISM SPECTRUM DISORDER IN KUANTAN RAJEEV SHAMSUDDIN PERISAMY, AZIAN ABD AZIZ, NORA MAT ZIN, TAUFIQ HIDAYAT HASSAN, MOHAMAD SHAHRIR ABDUL RAHIM
PD583	SECOND GENERATION OF DUAL SOURCE COMPUTED TOMOGRAPHY FOR EVALUATING CORONARY ARTERY LESIONS IN VIETNAMESE PEDIATRIC PATIENTS WITH KAWASAKI DISEASE NGUYEN THI THANH HUONG, NGUYEN NGOC TRANG
PD680	IMAGING SPECTRUM OF COMMON AND UNCOMMON RENAL MASSES IN PEDIATRIC POPULATION PUNEET GUPTA, KUSH RAJENDER
PD717	MAGNETIC RESONANCE IMAGING EVALUATION OF PEDIATRIC LEUKODYSTROPHIES IN NORTH WEST INDIA: A PROSPECTIVE STUDY MANIK MAHAJAN, PUNEET GUPTA
PD744	PILOT STUDY: LONGITUDINAL STUDY OF PITUITARY GLAND, HIPPOCAMPUS, AMYGDALA AND CORPUS CALLOSUM VOLUME IN GROWTH HORMONE DEFICIENCY CHILDREN TREATED WITH GROWTH HORMONES LOW LEE SHIEN, NORLISAH RAMLI, LI KUO TAN, JEANNIE HSIU DING WONG, WAI YEE CHAN, MUHAMMAD YAZID JALALUDIN, AZRIYANTI ANUAR ZAINI
PD769	EFFECT OF CT HEAD REFERRAL CRITERIA FOLLOWING MILD HEAD INJURY ON DIAGNOSTIC PERFORMANCE. NUR ATIKAH MUSTAFA, RAJA RIZAL AZMAN, ROZIAH MURIDAN, MOHAMMAD NAZRI MD SHAH
PD1125N	NORMOGRAM ON TRANSFONTANNELLE DOPPLER INDICES AND CEREBRAL BLOOD FLOW VELOCITIES IN HEALTHY PRETERM AND TERM NEONATES WITHIN 72 HOURS OF LIFE KAJAL LIMBAD, BHAUTIK KAPADIYA, CHETAN MEHTA

LIVE POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB048	CT IMAGING FEATURES DIFFERENTIATING BLAND VS TUMEROGENIC PORTAL VEIN THROMBOSIS: PICTORIAL REVIEW. SHAHMEER KHAN, BASIT SALAM, DAWAR KHAN, AYESHA SHOUKAT, NAQIBULLAH FOLADI
AB076	IMAGING OF ABDOMINAL AORTIC ANEURYSM (AAA) WITH ULTRASOUND HENDRA SARAGIH
AB077	IMAGING OF BLADDER STONE : BEFORE SURGERY AND AFTER SURGERY HENDRA SARAGIH
AB184N	DIAGNOSTIC DILEMMA IN OVARIAN PREGNANCY : A CASE REPORT AND IMAGING FEATURES ARIF KAMARUDDIN, NABILAH KHALIM, NYAZIRAH A WAHAB
AB196	COMPUTED TOMOGRAPHY FINDINGS WITH HISTOPATHOLOGICAL CORRELATION IN INFLAMMATORY, BENIGN & MALIGNANT APPENDICEAL MUCOCELES KUMAIL KHANDWALA, NIDA SAJJAD, WASIM AHMED MEMON, NASIR UDDIN
AB228	GARGANTUAN HYDRONEPHROSIS -EVADING THE GRADES. A RARE CASE OF MASSIVE HYDRONEPHROSIS UNEXAMPLED TO MEDICAL LITERATURE WITH COINING OF "MAMMOTH FOOT "SIGN FOR GIANT HYDRONEPHROSIS NIKUNJ VIKRAM CHOUDHARY, KUNAL G SOLANKI, HADIN MATADAR
AB282	EMERGING CANCER TRENDS AMONG YOUNG ADULTS. A STUDY OF DISTRIBUTION OF NEWLY DETECTED INTRA-ABDOMINAL CANCER AT THE AGE GROUP OF 25 TO 45 YEARS. MOHAMMED SHABIR
AB310	CT IMAGING OF BLADDER INFLAMMATORY MYOFIBROBLASTIC TUMOR: A RARE CASE REPORT IN PEDIATRIC TAUFIK AGUNG WIBOWO, TAUFIK BUDIANTO, SAHAT MATONDANG, AGUS RIZAL ARDY HARIANDY HAMID, BUDIANA TANURAHARDJA
AB386	"MORE THAN MEETS THE EYE" - A CASE OF SCOLIOSIS SECONDARY TO GANGLIONEUROMA VANESSA A. ALMADEN, MATEO T. ILANO, VICTOR Q. ALABASTRO
AB396	PATIENT HABITUS AND RENAL VOLUME HAVE NO EFFECT ON A REDUCED PATIENT-SPECIFIC CONTRAST MEDIA ADMINISTRATION DURING RENAL CTA: IMPACT ON CONTRAST MEDIA, RADIATION DOSE AND IMAGE QUALITY CHARBEL SAADE
AB426	UTERINE NICHE: MRI FINDINGS AND ITS CLINICAL IMPORTANCE. MOHD SHUKRY MOHD KHALID, NORAZILAH MAT JIN
AB452	CORRELATION OF BILIARY STONES AND CHOLELITHIASIS WITH SEVERITY OF ACUTE PANCREATITIS ALIYA SHARIF
AB458	A CASE OF BELLY TWIST LIM AUN NEE, WONG JIA HUEY, LAU SONG LUNG
AB512	OBSTRUCTED HEMIVAGINA WITH IPSILATERAL RENAL AGENESIS (OHVIRA) SYNDROME PRESENTED WITH URINARY RETENTION MUHAMAD HAFIZAL ABDULLAH, JUHARA HARON
AB538	WANDERING SPLEEN SIMULATING GYNAECOLOGICAL MALIGNANCY IN A FEMALE LIM DWEE SHION, ALEX LIM, HASNIZAN HASSAN
AB576	CHRONIC CYSTITIS - ATYPICAL PRESENTATION OF APPENDICEAL CARCINOMA: A CASE REPORT RAJEEV SHAMSUDDIN PERISAMY, SITI KAMARIAH CHE MOHAMED, MOHD NAZLI KAMARULZAMAN, FAISAL ELAGILI, KHAIRUNISA AHMAD AFFANDI

LIVE POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB626	SHEAR WAVE ELASTOGRAPHY DETECTS CHANGES IN RENAL HISTOPATHOLOGY LEONG SOOK SAM, JEANNIE HSIU DING WONG, MOHAMMAD NAZRI MD SHAH, ANUSHYA VIJAYANANTHAN, TAK KUAN CHOW, MAISARAH JALALONMUHALI, NUR HIDAYATI MOHD SHARIF, KWAN HOONG NG
AB627	COMPARISON OF SHEAR-WAVE ELASTOGRAPHY AND CONVENTIONAL ULTRASOUND IN ASSESSING KIDNEY FUNCTION AS MEASURED USING 51CR-ETHYLENEDIAMINETETRAACETIC ACID AND 99MTC-DIMERCAPTOSUCCINIC ACID LEONG SOOK SAM, JEANNIE HSIU DING WONG, MOHAMMAD NAZRI MD SHAH, ANUSHYA VIJAYANANTHAN, MAISARAH JALALONMUHALI, KWAN HOONG NG
AB648	THE CAECAL BASCULE : A RARE DISEASE VARIANT SITI FATIMA AZAHRAA MA, NUR MADIAH KS, NOOR HASNITA IM, NURUL AIN MI
AB681	GASTROINTESTINAL STROMAL TUMORS(GISTS): AN IMAGING PERSPECTIVE VIKAS CHAUDHARY
AB698N	DETERMINATION OF URINARY CALCULI COMPOSITION USING DUAL ENERGY CT WAN IRFAN W MUSTAPHA, AHMAD RAZALI MD RALIB, MOHD NAZLI KAMARULZAMAN, RAZMAN MOHD RUS
AB704	SMALL BOWEL VOLVULUS : A RARE CAUSE OF SURGICAL EMERGENCY IN ADULT ZAN ZULIANIE ISMAIL, AMYNY AISHA CM, NOOR HASNITA IM
AB740	URINARY BLADDER TUBERCULOSIS; AN UNEXPECTED DISSEMINATION PATHWAY OF GASTROINTESTINAL TUBERCULOSIS MOHAMAD FIRDAUS AHMAD, NASIBAH MOHAMAD, NOR ADIBAH RAZALI, ABDUL HADI ANUAR
AB811	NEUROENDOCRINE NEOPLASM OF UNKNOWN PRIMARY SITE LARISSA DE ANDRADE DEFENDI, LUANA MARTINS SILVA, JUAN MARCELO FERNANDEZ ALCALA, MARCELO ORANGES FILHO, ALAN DINIZ HÜMMEL, RONALDO HUEB BARONI
AB815	PREDICTING PERICHOLECYSTIC ADHESIONS IN GALLBLADDER CALCULUS DISEASE BY HIGH RESOLUTION ULTRASONOGRAPHY RAJUL RASTOGI, NEHA, SATISH PATHAK, VIJAI PRATAP
AB872	EVALUATION OF THE CLINICAL ROLE OF VIRTUAL UNENHANCED IMAGES IN DUAL ENERGY EXCRETORY CT UROGRAPHY IN DETECTION OF UROLITHIASIS SHOBHANA SIVANDAN, CAROLINE JUDY WESTERHOUT, GNANA KUMAR
AB911	UTILITY OF SHEAR WAVE ELASTOGRAPHY (ARFI) & HEPATIC VEIN DOPPLER IN PATIENTS WITH BUDD-CHIARI SYNDROME: PRE & POST TIPS ANNAMALAI VAIRAVAN, AMAN KUMAR, RAJESH MALIK, RADHA S GUPTA
AB936	ADULT PRESENTATION OF HIRSCHSPRUNG'S DISEASE; A CASE REPORT. ZAINAB MALIK, SALMA GUL, RAHILA TAHIR
AB939	PANCREATIC LIPOMATOSIS AND DIABETES MELLITUS - MDCT EVALUATION AND CORRELATION PUNEET GUPTA
AB973	LOW-DOSE ABDOMINAL CT USING DEEP LEARNING-BASED RECONSTRUCTION ALGORITHM : EVALUATION OF RADIATION DOSE AND IMAGE QUALITY WITH AN ANTHROPOMORPHIC PHANTOM ATSUSHI NAKAMOTO, HIROMITSU ONISHI, TAKASHI OTA, HIDEYUKI FUKUI, KAZUYA OGAWA, KEIGO YANO, YUKIHIRO ENCHI, MITSUAKI TATSUMI, NORIYUKI TOMIYAMA
AB974	RETROPERITONEAL ANGIOLEIOMYOMA : A RARE TUMOR WITH ATYPICAL IMAGING FEATURES IN A TEENAGER. NUR AMALINA KASNO, ZURINA ABDUL WAHAB

LIVE POSTER PRESENTATION

ID	Title
BREAST IMAGING	
BR600	COMPARISON OF 2D VERSUS 3D MAMMOGRAM IN RADIOLOGY DEPARTMENT OF HOSPITAL KUALA LUMPUR SHRINA DEVI CHANDRA SEGRAN, SHANTINI ARASARATNAM
BR710	CONTRAST ENHANCED MAMMOGRAPHY : TAKING BREAST IMAGING TO A WHOLE NEW LEVEL. NUR MARINI ZAINAL, SHANTINI ARASARATNAM, SURYATI MOHD YUSOFF
BR727	USE OF CONTRAST ENHANCED SPECTRAL MAMMOGRAPHY IN DETECTING MALIGNANT BREAST LESION AS COMPARED TO FULL FIELD DIGITAL MAMMOGRAPHY : THE MALAYSIAN EXPERIENCE SHANTINI ARASARATNAM, VICTOR CHONG XING DAO
BR801	THE CLINICAL DIAGNOSTIC VALUE OF BI-RADS IN MAMMOGRAPHY QIAN-YE YONG, YUAN-YUAN YE, CHENG-YU PENG, RUI WANG, BING-MEI ZHANG
BR810	MEAN GLANDULAR DOSE OF THREE MAMMOGRAPHIC PROCEDURES: 2D, 3D IMAGING AND CONTRAST ENHANCEMENT DIGITAL MAMMOGRAPHY (CEDM) AT DIFFERENT BREAST THICKNESS JUSTINE GO MEI SIN, NORHASHIMAH MOHD NORSUDDIN, SHANTINI ARASARATNAM, FAEZAH HARUN
BR981	ARTEFACTS IN HIGH RESOLUTION IMAGING OF THE BREAST. ONCO-RADIOLOGIST'S WORST NIGHTMARE. SUDHANSHU TONPE
CHEST IMAGING	
CH453	THE WANDERING AIR IN THE THORACIC AORTA- A CASE OF MASSIVE HEMOPTYSIS. DIVANN ESVARAN SIVANESVARAN, SUBBASHINI SUBRAMANIAM
EMERGENCY	
EM308	CHOUHDARY'S TERNION OF BOERHAVE SYNDROME, SLIT VENTRICLE SYNDROME AND GIANT CSFOMA. A RARE CASE OF GIANT ABDOMINAL CSF PSEUDOCYST CAUSING VENTRICULO-PERITONEAL SHUNT MALFUNCTION LEADING TO BOERHAVE'S SYNDROME NIKUNJ VIKRAM CHOUHDARY
EM1184N	RATIONAL USE OF COMPUTED TOMOGRAPHY SCAN HEAD IN THE EMERGENCY DEPARTMENT OF A HIGH VOLUME TERTIARY CARE PUBLIC SECTOR HOSPITAL TAHIRA NISHTAR, NOSHEEN NOOR, TABISH AHMAD, MUHAMMAD FAYAZ
EM1268N	CT IMAGING OF THE TRAUMATIC BRAIN: COUP AND CONTRE COUP INJURIES AS PREDICTORS OF OUTCOME MEGHANAA JAYAKUMAR, ANIRUDDHA RANGARI

LIVE POSTER PRESENTATION

ID	Title
HEAD & NECK IMAGING	
HN344	RADIOLOGICAL EVALUATION OF TYPICAL AND ATYPICAL PRESENTATIONS OF MUCORMYCOSIS INFECTION AND PATHOLOGICAL CORRELATION: CASE BASED REVIEW. SANEESH P S, U C GARGA, YASHVANT SINGH, SHIBANI MEHRA
HN455N	RELATIONSHIP BETWEEN PARATHYROID HORMONE LEVEL AND PARATHYROID GLAND SIZE AND NUMBERS IN RENAL HYPERPARATHYROIDISM THANATTHA INTRARAK, NETSIRI DUMRONGPISUTIKUL
HN799	ON-SITE MICROSCOPIC EVALUATION OF UNSTAINED SLIDES TO ASSESS ADEQUACY OF ULTRASOUND GUIDED FINE NEEDLE ASPIRATION CYTOLOGY OF THYROID NODULES. NIK MOHD HARRIS NIK HUSSIN, MATTHEW BROWN, PHUOC-TAN DIEP, MANAL ATWAN, KASHMIR KENYON
INFORMATICS	
IN112	MACHINE LEARNING IN MEDICINE: PRESENT AND FUTURE SIM ZHENG TING JORDAN, FONG QI WEI, HUANG WEIMIN, TAN CHER HENG
IN615	THE IMPACT OF CONTRAST LIMITED ADAPTIVE HISTOGRAM EQUALIZATION AS IMAGE ENHANCEMENT ON BREAST SEGMENTATION MUHAMMAD KHALIS ABDUL KARIM, SITI FAIRUZ MAT RADZI, MOHD AMIR ABDUL RAHMAN
INTERVENTIONAL RADIOLOGY	
IR348N	PERCUTANEOUS TRANSHEPATIC BOWEL STENT DEPLOYMENT; AN ALTERNATIVE APPROACH FOR MALIGNANT AFFERENT LOOP OBSTRUCTION FOLLOWING WHIPPLE'S PROCEDURE: A CASE REPORT ZAHID AMIN KHAN, RAANA KANWAL, ATIF NAWAZ, ALISHBA ZAID, MUHAMMAD SHOZAB, ATIF RANA, HAIDER ALI
IR690	DURAL ARTERIOVENOUS FISTULA (DAVF) AS COMPLICATION OF POST BURR HOLE: CASE REPORT ABDALRAHIM ALHASSAN, NORLISAH RAMLI, KHAIRUL AZMI
IR730	EARLY EXPERIENCE WITH WOVEN ENDOBRIDGE (WEB) SYSTEM FOR THE TREATMENT OF INTRACRANIAL ANEURYSM KHAIRUL AZMI ABD KADIR, CHAN KIN WONG, FADHLI MOHAMED SANI, LAU JIA HIM, NOORSHAHRIZAL, MOHD SALAHUDDIN KAMARUDDIN
IR756	ANALYSIS OF DIAGNOSTIC ACCURACY AND SAFETY OF CT- GUIDED TRANSTHORACIC NEEDLE BIOPSY WITH A COAXIAL AUTOMATED 18 GAUGE BIOPSY SYSTEM: SINGLE INSTITUTION EXPERIENCE OF 238 CASES CHEW FATT YANG, KANG LUN CHENG, CHANG YU SONG, CHUNG-YI WANG, SU-TSO YANG, YUNG-FANG CHEN
IR797	DECISIVE TECHNICAL FACTORS IN THE THERAPEUTIC SUCCESS OF PULMONARY ABLATION LARISSA DE ANDRADE DEFENDI, KATIA PINHEIRO SOUZA, PRISICILA MINA FALSARELLA, JULIANO RODRIGUES DE ANDRADE, ANTONIO RAHAL FILHO
IR1035N	STUDY ULTRASOUND IMAGING AND EFFECTIVE TREATMENT IN VARICOSE VEINS OF LOWER LIMBS BY COMBINED FOAM SCLEROTHERAPY, ENDOVENOUS THERAPY AND MICROPHLEBECTOMY CONG THAO TRINH, VAN TRUNG HOANG, HOANG ANH THI VAN, VICHIT CHANSOMPPOU, CAM VAN T NGUYEN

LIVE POSTER PRESENTATION

ID	Title
INTERVENTIONAL RADIOLOGY	
IR1363N	PERCUTANEOUS TRANSHEPATIC STENTING OF JEJUNO-JEJUNAL ANASTOMOSIS STRICTURE TO RELIEVE AFFERENT LOOP SYNDROME: CASE REPORT KRISHANT RAJ, CH'NG LI SHYAN, BIBI SADAQAT, ANIS SHAFINA MAHFUDZ, MOHD RIZAL ROSLAN
IR1425N	BALLOON-EXPANDABLE STENT IMPLANTATION FOR SEVERE COARCTATION OF AORTA IN ADULTS- A CASE REPORT RAANA KANWAL, ZAHID AMIN KHAN, MUHAMMAD SHOZAB, ATIF RANA, JAMSHAI ANWER, OMER EHSAN, HAIDER ALI, MARIA RAUF
MOLECULAR IMAGING/NUCLEAR MEDICINE	
MI030	MULTIPARAMETRIC MRI OF EARLY TUMOUR RESPONSE TO IMMUNE CHECKPOINT INHIBITORS AI HUI DOREEN LAU, MARY MCLEAN, ANDREW PRIEST, FRANK RIEMER, ANDREW GILL, MARTIN GRAVES, KEVIN BRINDLE, EDWIN CHILVERS, KLAUS OKKENHAUG, PIPPA CORRIE, FERDIA GALLAGHER
MI055	ESTIMATION OF GFR BY RADIOISOTOPE CAMERA METHOD (DTPA) AND CORRELATION WITH CREATININE BASED FORMULA (MDRD) OF GFR ESTIMATION IN HEALTHY DONORS- INSTITUTIONAL EXPERIENCE RAJEEV KUMAR, POKHRAJ SUTHAR, MAHESH CHAUHAN, ANURAG JAIN, AMIT SHARMA
MI356	THE UTILITY OF 18 F-FLUROCHOLINE POSITRON EMISSION COMPUTED TOMOGRAPHY (18F-FCHPETCT) IN DETERMINING BREAST CANCER AGGRESIVENESS MOHD HAZEMAN ZAKARIA, SHAZREEN S, SHAHRUN NIZA S, FATHINUL F
MI848N	THYROID SCINTIGRAPHY REBORN! UTILISING QUANTITATIVE THYROID SPECT/CT IN THE MANAGEMENT OF HYPERTHYROIDISM. MUHAMMAD ADIB ABDUL ONNY, MUHAMMAD YUSRI UDIN, SYED EJAZ SHAMIM, MOHD SYAHIR MANSOR, HAZLIN HASHIM
MI938	FDG-PET CT SCAN AS A USEFUL DIAGNOSTIC TOOL TO FACILITATE THE DIAGNOSES OF DIFFERENT SUBTYPES OF DEMENTIA WAN MOHAMMAD IBRAHIM WAN AZMAN, KARTINI RAHMAT, NORLISAH RAMLI, ABDAL SALAM, NOR 'IZZATI SAEDON, TAN MAW PIN
MI1329N	4D-CT VERSUS TC99M-MIBI SPECT/CT IN LOCALISATION OF PARATHYROID DISEASE - A PILOT STUDY KWOK YAN LI, WING HANG LUK, FUNG HIM NG, CHI MAN CHAU, STEPHEN KA HON WONG, NIN YUAN PAN
MI1337N	INCIDENTAL FINDING OF HEPATOCELLULAR CARCINOMA USING GA68-PSMA PET-CT: FUTURE USE FOR DETECTION AND THERANOSTICS? EW-JUN CHEN, TEIK HIN TAN, NIK MUHD ASLAN
MUSCULOSKELETAL	
MK160	CASE REPORT: TENOSYNOVIAL GIANT CELL TUMOR(TGCT,GIANT CELL RICH NEOPLASM) IN HOFFA'S FAT PAD DALSU PARK, KYUNG HWAN KIM
MK580	THE COMPARISON OF APPARENT DIFFUSION COEFFICIENT & FRACTIONAL ANISOTROPY OF THE ROTATOR CUFF MUSCLES USING 3T-MRI IN HEALTHY SUBJECTS MOHD FARIQ, MOHD EZANE, ESTHER RISHMA SUNDRAM
MK933	STATIN INDUCED MYOPATHY CAN PRESENT AS SUDDEN SORENESS IN BILATERAL CALVES; A CASE REPORT ZAINAB MALIK, ATIF RANA, BELQEES YAWAR FIAZ
MK1019N	PSEUDOTUMOR: DISTAL ADDUCTOR LONGUS MUSCLE COMPLETE TEAR WITH PSEUDOMASS FORMATION HAZWANI MD NOOR, YAP SHEAU HUEY

LIVE POSTER PRESENTATION

ID	Title
MEDICAL PHYSICS	
MP096	<p>COMPARATIVE ANALYSIS OF PATIENT'S ENTRANCE SURFACE DOSE BETWEEN SCREEN-FILM AND COMPUTED-DIGITAL RADIOGRAPHY AGAINST DIAGNOSTIC REFERENCE LEVEL FOR ADULT CHEST X-RAY EXAMINATION AT BATANGAS MEDICAL CENTER</p> <p>MARIA JESA B. GOMESERIA-MERCADO, JUZZEL IAN B. ZERRUDO</p>
MP119	<p>PATIENT SKIN DOSE OF FOUR-DIMENSIONAL DIGITAL SUBTRACTION ANGIOGRAPHY: HOW IS IT DIFFERENT FROM THE THREE-DIMENSIONAL TECHNIQUE?</p> <p>CELINA LI</p>
MP153	<p>HOW CAN THREE DIMENSIONAL PRINTING FACILITATE THE QUALITY ASSURANCE IN NUCLEAR MEDICINE?</p> <p>CELINA LI</p>
MP807	<p>A NOVEL QUANTITATIVE METRICS FOR ASSESSING IMRT PLAN COMPLEXITY: A VIRTUAL PHANTOM STUDY</p> <p>SOH HWEE SHIN, K A LANGMACK, P S MORGAN, A C PERKINS</p>
MP1039N	<p>UNDERSTANDING THE ROLE OF MEDICAL PHYSICIST IN HEALTHCARE</p> <p>ABDULLAH MOHD NOH, NORDIN AYOUB, SITI ZURINA MAT NOOR</p>
MP1300N	<p>A CROSS-SECTIONAL STUDY ASSESSING THE KNOWLEDGE, ATTITUDE AND PRACTICE OF RESIDENT PHYSICIANS IN A RURAL TERTIARY HOSPITAL IN PHILIPPINES ON RADIATION EXPOSURE IN DIAGNOSTIC IMAGING</p> <p>PRINCESS ERIKA JOY C. MENDOZA-DE MESA</p>
MP1321N	<p>ESTABLISHING DIAGNOSTIC REFERENCE LEVELS FOR COMPUTED TOMOGRAPHY EXAMINATIONS OF HEAD, THORAX AND ABDOMEN</p> <p>IRWAN ISKANDAR JUSOH, KAMARUL AMIN ABDULLAH, MOHD HANAFI ALI</p>
NEURORADIOLOGY	
NR163	<p>INTRATUMORAL MICROHEMORRHAGES DEPICTED ON MRI AS A PREDICTOR OF HISTOLOGICAL GRADE OF PRIMARY BRAIN TUMORS.</p> <p>MUHAMMAD SAMI ALAM, WASIM MEMON</p>
NR261	<p>COMPARATIVE RETROSPECTIVE STUDY OF HRCT, CT CISTERNOGRAPHY AND MRI IN EVALUATION OF CSF LEAK</p> <p>DIMPLE BHATIA, NAGARAJ MURTHY</p>
NR327	<p>THINK OUTSIDE THE BOX IN CT PERFUSION STUDY OF STROKE PATIENTS WITH UNEXPECTED PERFUSION FINDINGS - A CASE REPORT OF SEVERE ICA STENOSIS IPSILATERAL TO THE SIDE OF PATIENT'S SYMPTOMS</p> <p>MARIAM MALIK, BILQEES YAWAR FAIZ, ATIF IQBAL RANA, RASHED NAZIR</p>
NR393	<p>CONTRAST-ENHANCED MR IMAGING OF BRAIN TUMORS: COMPARISON WITH T1-CUBE AND 3D FAST SPOILED GRADIENT RECALL ACQUISITION IN STEADY STATE SEQUENCES</p> <p>MUNGUNKHUYAG MAJIGSUREN, TAKASHI ABE, MASAFUMI HARADA</p>
NR555	<p>DIFFUSION TENSOR IMAGING IN BRAIN LESIONS: NEOPLASTIC VS INFLAMMATORY BRAIN LESIONS.</p> <p>NAMRATA PAL, SANDIP PARIA, NEERA KOHLI, ANIT PARIHAR</p>
NR569	<p>BRAIN TUMOR CHARACTERISTIC IN MR-TRACTOGRAPHY</p> <p>SRI ANDREANI UTOMO, FRANSISCA RIKA ANDRIANI</p>

LIVE POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR775	CT SWIRL SIGN IN SPONTANEOUS INTRA-CEREBRAL HAEMORRHAGE AND ITS ASSOCIATION WITH HEMATOMA EXPANSION. ANUSHA APPARAU, NORLISAH RAMLI, KARTINI RAHMAT, KHAIRUL AZMI ABD. KADIR, JEANNIE WONG HSIU DING
NR813	CLINICAL ROLE OF DIFFUSION TENSOR TRACTOGRAPHY IN COMPRESSIVE MYELOPATHY RAJUL RASTOGI, NEHA, SATISH PATHAK, VIJAI PRATAP
NR851	IMAGING THE NIGROSOME-1 IN THE SUBSTANTIA NIGRA USING SUSCEPTIBILITY WEIGHTED IMAGING AND T2* GRADIENT RECALLED ECHO 3D SEQUENCES: AN APPLICATION TO PARKINSON'S DISEASE KARTINI RAHMAT, TAN WEIJOE, NORLISAH RAMLI, ABDAL RAHIM AL HASSAN
PAEDIATRICS RADIOLOGY	
PD047	TERATOID WILMS' TUMOR: A RARE HISTOLOGIC VARIANT MARYAM ABDUL-JABBAR AL-KHOURI, YAHYA AL BARASHDI
PD217	LANGERHANS CELL HISTIOCYTOSIS IN A TERTIARY PAEDIATRIC REFERRAL CENTRE - CASE SERIES WITH MULTIMODALITY IMAGING FINDINGS WAI YEE CHAN, NG YI-DE, CAROLINE JUDY WESTERHOUT, NADIA FAREEDA MUHAMMAD GOWDH
PD315	MULLERIAN DUCT CYST : A CASE REPORT NUR FARADISHA AZMIN, THAJUNNISA HASSAN, ABDUL RAZAK MOHAMMED
PD391	CASE REPORT: MIT FAMILY TRANSLOCATION RENAL CELL CARCINOMA NG CHEE GUAN, MARINA S, CHE ZUBAIDAH CD, ZAKI F, SIAH HH, ROSNA Y
PD567	TEMPORAL BONE LANGERHANS CELL HISTIOCYTOSIS: A RARE DISEASE WITH A RARE PRESENTATION NORHAZURA ABDUL WAHAB, UMAH SUBURAMANIAM, HAZRINI ABDULLAH, KHATIJAH ABU BAKAR
PD629	JUVENILE ONSET RECURRENT RESPIRATORY PAPILOMATOSIS WITH PULMONARY INVOLVEMENT: A CASE REPORT AND REVIEW OF THE LITERATURE. AHMAD NAZMI MOHAMAD, FAIZAH MOHD ZAKI
PD731N	THE ROLE OF THREE-DIMENSIONAL MULTIPLE PLANAR RECONSTRUCTION OF LUNG VOLUME AND TRANSPARENCY VOLUME RENDERING AS IMAGING FOR POST-SURGERY TO EVALUATE TRACHEO-ESOPHAGEAL FISTULA AND GIANT ESOPHAGEAL DIVERTICULUM GERY PERDANA YOGASWARA, HARRY GALUH NUGRAHA
PD735	A PICTORIAL REVIEW OF VACTERL ASSOCIATION-HOW TO MAKE IT EASY? SOO SUET WOON, KARTINI RAHMAT
PD754	SYNCHRONIC SYNTHESIS OF SCHIZENCEPHALY: THE MALFORMATIONS AND MIMICS FATT YANG CHEW, YU-CHIEN LO, YING-HSUAN LI, CHAO-CHUN LIN, WU-CHUNG SHEN
PD790	RADIOLOGICAL REVIEW OF INTESTINAL OBSTRUCTION IN NEONATES.WHAT RADIOLOGISTS NEED TO KNOW? SOO SUET WOON, KARTINI RAHMAT
PD977N	COMPARATIVE EVALUATION OF MRI WITH TRANSFONTANELLE NEUROSONOGRAPHY IN NEONATES WITH HYPOXIC ISCHEMIC ENCEPHALOPATHY VIJAYPAVAN KUMAR DASARAJU, ANIL, VEENA, SRINIVAS

LIVE POSTER PRESENTATION

ID	Title
PAEDIATRICS RADIOLOGY	
PD1089N	A RARE DUAL PRESENTATION OF CAUDAL REGRESSION SYNDROME AND UNILATERAL RENAL AGENESIS IN A 5-YEAR-OLD PATIENT: A CASE REPORT KHURRAM KHALIQ BHINDER, SHAISTA RIAZ, ZAINAB MALIK, AFAF ARIF, AMEENA
PD1116N	UNRAVELING THE MYSTERY BEHIND THE ANOMALY: A PICTORIAL REVIEW OF MULTIDETECTOR COMPUTED TOMOGRAPHIC (MDCT) IMAGING OF CONGENITAL PULMONARY ARTERY ANOMALIES FLORELYN P. AGRAVANTE, MARIAEM M. ANDRES
PD1139N	COBWEB OF CULVERTS- AN INSIGHT INTO THE ATYPICAL PAEDIATRIC VASCULAR MALFORMATIONS SREEKUMAR MUTHIYAL, ADHAM MUSTHAK
PD1140N	RELATIONSHIP OF FETAL TRANSCEREBELLAR DIAMETER MEASUREMENT TO FETAL BIOMETRY-DERIVED GESTATIONAL AGE OF FILIPINO PREGNANT WOMEN ON SECOND TO THIRD TRIMESTERS AT A TERTIARY CARE HOSPITAL IN MAKATI EZEKIEL T. ARTETA
PD1187N	INCIDENTAL FINDING OF CHRONIC MALROTATION IN A 12-YEAR-OLD CHILD WITH OMPHALOCELE AND LIVER HERNIATION: A CASE REPORT AND REVIEW OF LITERATURE SAMEER SALEEM TEBHA, KHURRAM KHALIQ BHINDER, NASIR ALI AFSAR, ZOUINA SARFRAZ
PD1236N	PYGOPAGUS PARASITIC TWIN: A RARE ENTITY PALWASHA GUL, PARI GUL, KHANDA GUL
PD1254N	IMAGING FINDINGS OF POSTERIOR FOSSA TUMORS IN CHILDREN: A CASE-BASED REVIEW BALA SUBASHREE A, RASHMI DIXIT, SAPNA SINGH, SNEHA HARISH C
PD1322N	DIAGNOSIS AND MANAGEMENT OF PRUNE BELLY SYNDROME THE HUAN HOANG, HOANG ANH THI VAN, VAN TRUNG HOANG, THU HA THI LE, VAN HUY LE
PD1364N	A RARE CASE OF INTRACRANIAL ANEURYSM IN PAEDIATRIC POPULATION WITH PSEUDOCOARCTATION OF AORTA AND MULTIPLE THORACIC VASCULAR ANOMALIES FATIN SHAAYA, SEE KHIM SIM
PD1419N	RETINOBLASTOMA: SPECTRUM OF CT AND MR IMAGING FEATURES JOVYNEL CABACCAN
PD1426N	MRI EVALUATION OF EVAN'S INDEX AND ITS CORRELATION WITH CALLOSAL ANGLE IN PEDIATRIC HYDROCEPHALUS SACHIN SHANKAR PATHARE, BHAUTIK KAPADIA, CHETAN MEHTA

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB014	QUALITATIVE AND QUANTITATIVE VOLUMETRIC ASSESSMENT OF ASCITES ON PLAIN COMPUTED TOMOGRAPHY SCAN OF THE ABDOMEN DANLEN C. MASANGYA, IMARZEN V. ELEPAÑO
AB029	ROLE OF 3-TESLA DIFFUSION WEIGHTED MRI IN EVALUATION OF FOCAL LIVER LESIONS APARNA KATYAL, SHAHINA BANO, YASHVANT SINGH
AB053	HYPERDENSE WALL-LUMEN SIGN: NEW IMAGING CLUE TO THE DIAGNOSIS OF GANGRENOUS CHOLECYSTITIS BINIT SUREKA, POONAM ELHENCE, MAHAVIR SINGH ROHDA, RAMKARAN CHOUDHARY, PUSHPINDER SINGH KHERA
AB063	SPONTANEOUS RUPTURE OF RENAL ANGIOMYOLIPOMA IN A TWIN PREGNANCY : A CASE REPORT SHOBHANA SIVANDAN
AB068	IMAGING OF SPLENIC ABCESS WITH ULTRASOUND GRAY SCALE HENDRA SARAGIH
AB071	ANTERIOR ABDOMINAL WALL ABSCESS WITH ASCARIS WORMS IN A PATIENT WITH ABDOMINAL TUBERCULOSIS: A MAZE RUNNER SHEEN URQUIZA, ANDRO REGINALD L. LICAROS, MARK JEROME G. MAURICIO, DENNIS RAYMOND L. SACDALAN, JILLIAN T. SAMSON, PAOLO MIGUEL B. VERAYO, IMARZEN V. ELEPANO
AB073	UTERINE LEIOMYOMA POST SURGERY WITH ULTRASOUND HENDRA SARAGIH
AB075N	GREATER SCIATIC HERNIA: A CASE REPORT MOHAMAD NAZRI MUNAWAR KHAN, MUHAMAD ZABIDI AHMAD, MAZEDA MURAD
AB116	MESENTERIC VEIN THROMBOSIS CAUSING BOWEL ISCHEMIA: A DIAGNOSIS DILEMMA IN TRAUMATIC PATIENT WITH SEAT BELT SYNDROME WITHOUT SEAT BELT SIGN. MOHD HAFIZUDDIN HUSIN, HAPSAH ARIFIN, FADHILA HANAPIAH, MOHD EZANE AZIZ
AB125	GOSSYPIBOMA: A 'PAIN' TO THE PATIENT AND SURGEON VATSELA KRISHNAN, TAN YUAN YING, NOOR SHAHIDA MYDIN PITCHAY
AB129	MISSED OPPORTUNITY OF DIAGNOSING AORTIC DISSECTION IN A PATIENT SUSPECTED RENAL ARTERY STENOSIS : A CASE REPORT MOHD NOOR AKMAL ADAM, RAYYAN MARDHIYAH NIK MOHD KAMIL
AB134	THE BLEEDING KIDNEY, A CASE OF WUNDERLICH SYNDROME NOOR AIDA MAT DAUD, MOHAN DASS PATHMANATHAN
AB180N	CASE OF AN ABDOMINAL AORTIC ANEURYSM COMPLICATED BY FISTULA TO A RETROAORTIC LEFT RENAL VEIN ANDRE YEE YUE MENG
AB230	EXTRATESTICULAR EPIDERMOID CYST PRESENTING AS A LARGE SCROTAL MASS YUET YU SOON, MALINDA ABD MAJID
AB238	A RARE CASE OF PRIMARY BILATERAL ADRENAL NON-HODGKIN'S LYMPHOMA PRESENTING WITH ABDOMINAL PAIN NORLIANA DALILA MOHAMAD ALI, NATASHA MOHD ARIFIN, ROQIAH FATMAWATI ABDUL KADIR, JAZLAN JAMALUDDIN
AB247	A CASE REPORT OF PRIMARY ABDOMINAL PREGNANCY WITH PLACENTAL BLOOD SUPPLY FROM ILIAC VESSELS AILEEN JOANNE Q. ARGANZA, ANN JOSELL V.HERRERA

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB255	ARTERIOPORTAL FISTULA WITH GASTRODUODENAL ARTERY ANEURYSM - A RARE COMPLICATION OF CHRONIC PANCREATITIS YIAW YEONG HUEI, AIDA MASTURA MUSTAPHA
AB278	MAGNETIC RESONANCE (MR) & ULTRASOUND (US) DETECTION OF SPONTANEOUS RENAL PELVIS RUPTURE IN THE SETTING OF HYDRONEPHROSIS DUE TO PELVIURETERIC JUNCTION (PUJ) OBSTRUCTION MUHAMMAD SHOYAB
AB283	HEPATIC HILAR INFLAMMATORY PSEUDOTUMOR MIMICKING CHOLANGIOCARCINOMA - A RARE ENTITY MOHAMMED SHABIR
AB284	INTRABILIARY METASTASIS FROM CARCINOMA RECTUM -A RARE ENTITY MOHAMMED SHABIR
AB286	IMAGING FEATURES OF PERITONEAL TUBERCULOSIS IN ENDEMIC COUNTRY MOHAMED ALI TOUIHRI, LASSOUED KHOULOU, BALAAZI AHMED, GARGOURI DALILA, CHAMMAKHI CHIRAZ
AB297	ROLE OF MDCT IN PLANNING TREATMENT OF HEPATOCELLULAR CARCINOMA AND IMAGING FINDINGS IN TREATED LESIONS. UMMARA SIDDIQUE, AMAN NAWAZ KHAN, KHALID SHAKEEL BABAR, WASIF FARMAN, SHAHJEHAN ALAM, HADIA ABID, ARUBA NAWAZ, FARIA MAQSOOD
AB298	EXCELLENCE IN DIAGNOSING HEPATIC LESIONS ON MRI: DISCRIMINATION OF BENIGN LESIONS FROM MALIGNANT LESIONS WITH HEAVILY AND MODERATELY T2-WEIGHTED FAST SPIN-ECHO IMAGING. UMMARA SIDDIQUE, AMAN NAWAZ KHAN, ZAMARA SOHAIL, ALIYA SHARIF, ARUBA NAWAZ, SHAHJEHAN ALAM, SYED GHULAM GHAUS
AB312	PARADUODENAL HERNIA : A RARE ENTITY NUR FARADISHA AZMIN, ABD SAMAD SAKIJAN
AB329	TUMOR VERSUS BLAND THROMBUS: SENSITIVITY, SPECIFICITY AND ACCURACY OF DIFFERENT RADIOLOGICAL CHARACTERISTICS MARIAM MALIK, MUHAMMAD NAUMAN MALIK, RAHEELA AQEEL, ATIF IQBAL RANA, KHOLOOD JANJUA
AB333	SACCULAR DIRVERTICULUM OF INFERIOR VENA CAVA - A CASE REPORT MARIAM MALIK, BELQEES YAWAR FAIZ
AB347	ACUTE RENAL INFARCTIONS MIMICKING LARGE BOWEL ISCHEMIA WITH UNDERLYING ATRIAL FIBRILLATIONS HOE HAN GUAN, NG HUI ROU
AB352	OUTCOME OF ENDOVASCULAR TREATMENT IN ACUTE GI BLEEDING REFERRED TO RMI AMAN NAWAZ KHAN, UMMARA SIDDIQUE UMER, SHAHJEHAN ALAM, MUHAMMAD ABDULLAH, HADIA ABID
AB363	A RARE CASE OF LARGE INTRACARDIAC THROMBUS COMPLICATED WITH RENAL INFARCTION NATASHA MOHD ARIFIN, NORLIANA DALILA MOHAMAD ALI, ROQIAH FATMAWATI ABDUL KADIR, CHAN WAI YEE
AB404	"THE INTERSEX : FEMALE PSEUDOHERMAPHRODITISM" - A CASE REPORT ANNA FITRIANA ABDUL RAHAMAN, MALINDA ABDUL MAJID
AB438N	RENAL RESISTIVE INDEX AS A HEMODYNAMIC PREDICTOR OF RENAL IMPAIRMENT IN PATIENTS WITH LIVER CIRHOSSIS ALSABA KHAN, KUSHAL B. GEHLOT, NARENDRA K KARDAM

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB440	NON-PUERPERAL INCOMPLETE UTERINE INVERSION SECONDARY TO UTERINE ADENOSARCOMA NABILLAH MOHD JADI, SOON YUET YU, MALINDA ABD MAJID, SHARIFAH MASTURA SAB
AB459	CLINICAL PRESENTATION AND OUTCOME OF GALLBLADDER PERFORATION: A CASE SERIES SITI SORAYA AB RAHMAN, NORHASLINDA KAMISO, ASSYIFAA NIK MAZIAN
AB489	CHROMOPHOBE RENAL CELL CARCINOMA OR ONCOCYTOMA IN PREGNANCY: RADIOLOGY DIAGNOSTIC DILEMMA TAN CHEN CHONG, NADIA ABDUL MALIK, MALINDA ABD MAJIK MD GALIB, SHARIFAH MASTURA SYED ABD BAKAR
AB493	SPLENOGONADAL FUSION SYNDROME: A DIAGNOSTIC QUAGMIRE OF TWO CASES SEETAM KUMAR, KARTIK RATHI, PRADEEP KAJAL, ROHTAS K YADAV
AB515	SMALL BOWEL ISCHEMIA WITH DIFFERENT ETIOLOGIES AND TREATMENT OUTCOME: 2 CASE REPORTS ASSYIFAA NIK MAZIAN, SITI SORAYA AB RAHMAN, EMELIANAH SAIDI, SIM LIN KIAT
AB525	IMAGING FINDINGS OF URACHAL ABSCESS: A CASE REPORT YI-FEN WANG
AB534	MALIGNANT TRANSFORMATION OF CHRONIC BOWEL DISEASE: WARNING SIGNS JULIANA FAIRUZ MAKTAR, HAMZAINI ABDUL HAMID
AB552	UNCOMMON PRESENTATION OF HEPATIC ARTERIOBILIARY FISTULA WITH SUCCESSFUL EMBOLIZATION: A CASE REPORT CHONG CHIA YIN
AB573	CASE SERIES OF EXTRAPULMONARY TUBERCULOSIS DIAGNOSED IN HOSPITAL TAIPING GEETHA RAKWAN, NURUL AKHMAR OMAR
AB581N	ANALYSIS OF CHEST RADIOGRAPHIC FINDINGS IN NEW CASE PATIENTS WITH CERVICAL CANCER AT OCEAN ROAD CANCER INSTITUTE TANZANIA LATIFA RAJAB ABDALLAH
AB587	PERFORATED BOWEL LYMPHOMA POST CHEMOTHERAPY: REPORT OF 2 CASES MAN CHIN HAM, ASSYIFAA NIK MAZIAN, SITI SORAYA AB RAHMAN, EE SHUAN LIM, EMELIANAH SAIDIL, WAN ZAINAB HAYATI WAN MOKHTAR
AB599	RARE SUPPLY OF EXOPHYTIC HEPATOCELLULAR CARCINOMA FROM SPLENIC ARTERY COLLATERAL MOHAMAD AIZUDDIN MOHD NASRI, ANIS SHAFINA MAHFUDZ
AB610	FOREIGN BODY INGESTION MIMICKING ACUTE GASTROENTERITIS: AN UNUSUAL CASE IN A MENTALLY-CHALLENGED ADULT SHAZATUL EZANNI SAMSUDIN, AHMAD HADIF ZAIDIN SAMSUDIN, WAN AIREENE WAN AHMED
AB613	MDCT EVALUATION OF RENAL VASCULAR ANATOMY AND VARIANTS AND ITS SURGICAL RELEVANCE IN DONOR KIDNEY EXTRACTION. SONGA RAMYA, VEMURI NAGA VARAPRASAD
AB618	RARE CASE OF PLUMMER VINSON SYNDROME SAANGEETHA SUNDARA, SAZALI SATARI
AB620	EFFICACY AND SAFETY OF CT-GUIDED DRAINAGE FOR COMPLICATED APPENDICITIS AND FACTORS FOR PREDICTING RECURRENCE AFTER THE DRAINAGE SAYAKA SHIRAI

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB622	A RARE CASE OF VOLVULUS OF MECKEL'S DIVERTICULUM (MD) MIMICKING PERFORATED APPENDICITIS IN AN 8 YEAR OLD CHILD: A DIAGNOSTIC CHALLENGE FOR RADIOLOGISTS. RIDHWAN RAMLI, ZURINA ABDUL WAHAB
AB628	PRIMARY LIVER YOLK SAC GERM CELL TUMOR: A RARE ENTITY IN AN UNFORESEEABLE CLINICAL SCENARIO. INTAN BAZILAH ABU BAKAR, AIDI ASWADI HALIM LIM, MOHD RADHWAN ABIDIN, AHMAD RAZALI MD RALIB, RADHIANA HASSAN, AZLIANA ABDUL FUAAT, JUNAINI KASIAN
AB643	UNILATERAL SAGITTAL RENAL MALROTATION: A RARE REPORTED CASE OF ASYMPTOMATIC PATIENT NOORUL ADILA MUHAMMAD, AHMAD TARMIZI MUSA
AB644	THREE CASE REPORTS OF ZINNER SYNDROME WITH VARIABLE CLINICAL PRESENTATIONS AND ITS RADIOLOGICAL FEATURES. SONGA RAMYA, VEMURI NAGA VARAPRASAD
AB652N	LIVER ABSCESS WITH UNDERLYING CHOLEDOCHOLITHIASIS COMPLICATED WITH BILIARY FISTULA: A RARE COMPLICATION MUHD RIFQI RAHIM, KHAIRIL AMIR SAYUTI
AB665	PRIMARY RENAL SOLITARY FIBROUS TUMOUR: A CASE REPORT WENDY NG YIN LING, MALINDA ABD MAJID MD GALIB , SHARIFAH MASTURA SYED ABU BAKAR
AB669N	ROLE OF SONOSALPINOGOGRAPHY IN FEMALE SUBFERTILITY - DIAGNOSTIC OR THERAPEUTIC TOOL? RAJUL RASTOGI, NEHA, REHANA NAJAM, VIJAI PRATAP
AB671	IMAGING FEATURES OF UTERINE SARCOMA SUNG BIN PARK, HYUN JEONG PARK, EUN SUN LEE, BYUNG IHN CHOI
AB682	EVALUATION OF HEMATURIA IN YOUNG ADULTS USING MDCT UROGRAPHY: A PROSPECTIVE STUDY IN TERTIARY CARE CENTRE. PUNEET GUPTA
AB705N	COMBINED PANCREATIC INJURY AND DUODENAL TRANSECTION IN BLUNT TRAUMA CHIEW CHEA LAU, MOHD SHAFIE ABDULLAH, AHMAD HADIF Z Aidin SAMSUDIN
AB770	CT FEATURES OF IMPENDING RUPTURE OF ABDOMINAL AORTIC ANEURYSM - TWO CASE REPORTS PEI HUA LEE, HUANG CHUN LIN
AB774	A PECULIAR WAY OF PASSING A STONE IN THE INTESTINES: TWO CASE REPORTS OF GALLSTONE ILEUS AND MINI REVIEW OF LITERATURE NYIN LI YUEN, KUA CHIN HONG
AB782	A MULTI-MODALITY APPROACH TO A RARE INTRA-ABDOMINAL MASS: MESENTERIC CYST PRANAV AJMERA
AB845	A CASE REPORT OF VILLAR'S NODULE: A RARE PRESENTATION OF EXTERNAL ENDOMETRIOSIS SHAMSI AH ABDUL HAMID, NATASHA MOHD ARIFIN, NAZIMAH AB MUMIN, PAUL NG HOCK OON, AQMAR SURAYA SULAIMAN, SHAHRIN ISKANDAR ABDUL WAHAB
AB855N	HEPATIC ARTERY RESISTIVE INDEX (HARI) AND BARD FIBROSIS SCORE: RISK ASSESSMENT OF ADVANCED LIVER FIBROSIS IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) ERNIE G. BAUTISTA II
AB857	A RARE CASE OF ADULT MORGAGNI HERNIA COMPLICATED WITH BOWEL ISCHEMIA AND SIGMOID COLON ADENOCARCINOMA TAN WEIJOE, MANINDERPAL KAUR, ANITHA HANIFFA

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB860N	A RARE CASE OF BILATERAL CRYPTORCHIDISM WITH BILATERAL SYNCHRONOUS TESTICULAR SEMINOMA KESHIKA KOIRALA, NIRMAL PRASAD NEUPANE
AB864	IMAGING OF MULTIPLE HEPATOCELLULAR CARCINOMA WITH ULTRASOUND ABDOMINAL HENDRA SARAGIH
AB899	ATYPICAL CT FEATURES OF ACUTE APPENDICITIS; A REVIEW OF UNCOMMON IMAGING PRESENTATIONS OF A COMMON PATHOLOGY. MARIA RAUF, SADAF IRSHAD KHAN, SURRAYYA BANO ZAFAR, RAANA KANWAL, RASHED NAZIR
AB927	AUDIT OF CT LIVER VOLUMETRY / LIVER DYNAMIC; PRE SCAN PREPARATION IN PROSPECTIVE LIVER DONORS BELQEES YAWAR FIAZ, ZAINAB MALIK, ATIF RANA, ALISHBA ZAID KHAN
AB947	GASTRIC DIEULAFOY: CASE REPORT OF A RARE CAUSE OF UPPER GASTROINTESTINAL BLEED FOUZIA WAZIR, AMAN NAWAZ KHAN, UMMARA SIDDIQUE UMER, SHAHJEHANALAM, SEEMAGUL, SYED GHULAMGHAUS, HADIA ABID, ABDULLAH SAFI, KALSOOM NAWAB
AB954	INTRA-ABDOMINAL EPITHELIOID MALIGNANT PERIPHERAL NERVE SHEATH TUMOR MASQUERADING AS OVARIAN CARCINOMA - AN UNFORESEEN DIAGNOSIS! SRIKIRAN T K, SATHEESH BABU T V, NEHA MOHAN, SANGEETHA NAYANAR, JOHN ALAPATT, NIKHILA PAULOSE
AB965	RENAL METASTASIS FROM COLORECTAL CARCINOMA MIMICKING RENAL CELL CARCINOMA: A CASE REPORT CHEW LEE LIAN
AB996N	COMPUTED TOMOGRAPHY (CT) IMAGING OF INJURIES FROM BLUNT AND PENETRATING ABDOMINAL TRAUMA. PRAVINKUMAR BHARDE, A PRAVEENKUMAR, CH SWAPNA
AB1004N	TRANSPERINEAL MRI-TRUS FUSION BIOPSY: A NEW PARADIGM FOR PROSTATE CANCER SUZANA AB HAMID, CHRISTOPHER LEE, KHAIRUL ASRI MOHD GHANI
AB1006N	THE VARIANTS OF HEPATOCELLULAR CARCINOMA ON IMAGING; A PICTORIAL REVIEW. TAHIRA NISHTAR, SHAMSULLAH BURKI, KHALID SHAKEEL BABAR, NOSHEEN NOOR
AB1007N	THE ART AND SCIENCE OF ABDOMINAL RADIOLOGY REPORTING; LITERATURE REVIEW OF MEASURES TO IMPROVE REPORTING STYLE TAHIRA NISHTAR, SHAMSULLAH BURKI, KHALID SHAKEEL BABAR
AB1018N	ACUTE ABDOMEN - PERFORATED MECKEL DIVERTICULUM TAN YUAN YING, LING SHAR REN
AB1020N	ATYPICAL HEPATOCELLULAR CARCINOMA HAZWANI MD NOOR, IZAZUL HUSIN
AB1038N	CONCOMITANT OBTURATOR HERNIA AND SLIDING HIATUS HERNIA IN A PATIENT WITH SMALL BOWEL OBSTRUCTION: CASE REPORT KOH HOOI CHING, NUR AISYAH KOSNIN
AB1045N	A CASE OF ERDHEIM CHESTER DISEASE WITH MULTISYSTEM INVOLVEMENT FATIMAH ISMAIL, WENDY NG YIN LING, MALINDA ABD MAJID, NURYAZMIN YAACOB
AB1065N	MISSED CONCOMITANT LEAKING ABDOMINAL AORTIC ANEURYSM IN A NEWLY DIAGNOSED OESOPHAGEAL ADENOCARCINOMA. MOHD SHUKRY MOHD KHALID, NORAZILAH MAT JIN

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB1067N	RED HERRINGS: ALWAYS CORRELATE CLINICALLY AIDI ASWADI HALIM LIM, SITI NOR SUZEANA MUSTFAR, NURUL AINI ABDUL HALIM, LOW CHOOI LENG
AB1069N	A RARE CASE OF PARARENAL MALAKOPLAKIA NUR WAHIDA HUSSIN, WENDY NG YIN LING, MALINDA ABD MAJID , LEONG YUH YANG, NORHAYATI OMAR
AB1072N	GROOVE PANCREATITIS IN CHRONIC ALCOHOLIC PATIENT WITH VASCULAR COMPLICATIONS PRESENTING AS SPLENO-PORTAL THROMBOSIS. NEHAL AHMAD, PRABHPREET R SINGH
AB1076N	A RARE CASE OF LEMMEL'S SYNDROME PRABHPREET R SINGH, NEHAL AHMAD
AB1082N	STREAK GONADS, HYPOPLASTIC SMALL UTERUS HAVING FEMALE EXTERNAL GENITALIA IN A 18-YEAR-OLD PATIENT: A RARE CLINICAL ENTITY-SWYER SYNDROME SHARMIN AKTER, SHAMSI ARA, ABU TAHER, GOLAM FAHAD
AB1085N	CT CHARACTERISTIC OF RUPTURED ECTOPIC PREGNANCY IN A NEGATIVE SERUM BETA HCG LADY: A DIAGNOSIS NOT TO BE MISSED NG CHEE GUAN, KEW TY, ZAKI FM, ZAKARIA R
AB1088N	A RARE OCCURENCE OF JEJUNAL DIVERTICULA IN A 52-YEAR-OLD MAN ON BARIUM MEAL & FOLLOW THROUGH : A CASE REPORT KHURRAM KHALIQ BHINDER, ZAINAB MALIK, SHAISTA RIAZ, AFAF ARIF, AMEENA
AB1090N	FEASIBILITY OF 15-MINUTE DELAYED HEPATOBILIARY PHASE IMAGING USING A 30 DEGREE FLIP ANGLE IN GADOXETIC ACID-ENHANCED MRI IN THE DETECTION OF THE FOCAL LIVER LESION IN CIRRHOTIC LIVER WANWARANG TEERASAMIT, PIMPAKARN WONGPATTARANON, VORAPAREE SUVANNARERG
AB1095N	ADRENAL METASTASES OF OSTEOSARCOMA: CASE REPORT UMMARA SIDDIQUE UMER, ARUBA NAWAZ KHATTAK, FARIA MAQSOOD, AMAN NAWAZ KHAN
AB1108N	A CASE REPORT ON PNEUMATOSIS CYSTOIDES COLI WITH PNEUMOPERITONEUM: A RARE CAUSE OF NONSURGICAL PNEUMOPERITONEUM CHEUK HIM HO, TSZ WAI YEUNG, HIN YUE LAU
AB1111N	MORPHOLOGY OF NORMAL APPENDICES ON COMPUTED TOMOGRAPHY THI THANH NHI NGUYEN, TRONG BINH LE, TRONG KHOAN LE, THANH THAO NGUYEN
AB1123N	ATYPICAL CASE OF MAYER-ROKITANSKY-KÜSTER-HAUSER SYNDROME: UTERINE AGENESIS WITH NORMAL VAGINAL CANAL AND CERVICAL MORPHOLOGY ZUL KHAIRUL AZWADI ISMAIL, MOHD SHAFIE ABDULLAH, NUR ASMA SAPIAI
AB1128N	BRENNER'S TUMOR: CLINICAL, HISTOLOGICAL, AND RADIOLOGICAL FINDINGS HOANG ANH THI VAN, VAN TRUNG HOANG, THE HUAN HOANG, CONG THAO TRINH
AB1154N	SIGMOID COLON PERFORATIONS DUE TO WILD MANGOSTEEN SEEDS: A FIRST OF ITS KIND IN A PATIENT WITH NO GASTROINTESTINAL DISEASE. SITA KUMARI SANDARAN SAIGARAW, WAN AIREENE WAN AHMED, NURUL AIN MAT IDRIS
AB1182N	A RARE OCCURRENCE OF HORSESHOE KIDNEY IN A 31-YEAR OLD MALE PATIENT WITH LUPUS NEPHRITIS: A CASE REPORT ZOUINA SARFRAZ, SAMEER SALEEM TEBHA, AZZA SARFRAZ, KHURRAM KHALIQ BHINDER, SAJJAD ALI
AB1183N	OVARIAN DYSGERMINOMAS: ROLE OF IMAGING IN CORRECT DIAGNOSIS PALWASHA GUL, PARI GUL

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB1191N	EVIDENCE-BASED MOLECULAR IMAGING IN METABOLIC PROFILE FOR LIFE-LONG HEALTH RISK IN OBESITY KHIN THANDAR HTUN, CHATCHANOK UDOMTANAKUNCHAI, MONTREE TUNGJAI, JIE PAN, AYE THIDAR MOE MOE, SUCHART KOTHAN
AB1197N	SOLID PSEUDOPAPILLARY NEOPLASM OF THE PANCREAS SAANGEETHA SUNDARA MOORTHY RENGATHURI, MATHAN RAJ
AB1202N	ANTINATAL DIAGNOSIS OF CRANIOPAGUS PARASITICUS BY ULTRASONOGRAM IN 18 WEEKS OF GESTETIONAL AGE: A RARE ENTITY SHARMIN AKTER, ABU TAHER, SHAMSI ARA, GOLAM FAHAD
AB1205N	AN UNINVITED GUEST; A CASE REPORT OF HEPATIC HYDATID DISEASE. OSAMA ANJUM, NAVEEN VASIREDDY, SURESH BABU
AB1206N	A RARE CASE OF PERFORATED APPENDICITIS COMPLICATED WITH NECROTIZING FASCIITIS MUHAMMAD SYAZWAN MOHD ZAIN, AZWINI MOHAMED
AB1207N	IMAGING FEATURES OF A GIANT ADRENAL PSEUDOCYST TENGGU AZRAN RAJA MAMAT, CHANDRAN NADARAJAN, KHAIRIL AMIR SAYUTI, SEOPARJO AZMEL MOHD ISA
AB1225N	PLASMA CELL NEOPLASM PRESENTING AS GALLBLADDER MASS SILPA C. RAJU, RAJIV C. RAJU
AB1226N	INVASIVE MODERATELY DIFFERENTIATED ADENOCARCINOMA ARISING FROM A MUCINOUS CYSTIC NEOPLASM PRESENTING AS A PANCREATIC REGION MASS SILPA C. RAJU, RAJIV C. RAJU
AB1231N	ADVANCED ABDOMINAL PREGNANCY: A RARITY TO LIFE BELINDA CATHERINE SHEPHERDSON, CHAN KOK HOE, ROZITA MOHD GHAZALI
AB1237N	METASTATIC RECTAL LINITIS PLASTICA SECONDARY TO PROSTATE ADENOCARCINOMA: IMAGING FEATURES AND TISSUE DIAGNOSIS. YING YING SEE, SUZANA AH, SITI MAISARAH MOHD NASIR
AB1246N	MALE INFERTILITY: AN INSIGHT TO THE ROLE OF IMAGING IN ITS DIAGNOSIS. MARIA RAUF, CHANDRA BAI, RAANA KANWAL, BELQEES YAWAR FAIZ, ATIF IQBAL RANA, SALMA GUL, MADIHA SAEED WAHLA
AB1249N	VASCULAR ANOMALIES MIMICKING NEOPLASMS IN THE SOLID ABDOMINAL VISCERA YI TING LIM, XI ZHEN LOW, PENG WU, MEI CHIN LIM
AB1251N	IRON DEPOSITION PATTERNS IN THALASSEMIA ON 3T MAGNETIC RESONANCE IMAGING BALA SUBASHREE A, RASHMI DIXIT, ANJU GARG, URMILA JHAMB, S. SUDHA
AB1258N	IMAGING OF DIVERTICULAE IN GASTRO-INTESTINAL TRACT : PICTORIAL REVIEW APURVA JAVALGI, ARUNA R PATIL
AB1292N	REAL-TIME POINT SHEAR WAVE LIVER ELASTOGRAPHY IN HEALTHY ADULTS ANNAMALAI VAIRAVAN
AB1299N	RETROPERITONEAL MALIGNANCY MIMICKING RUPTURED LIVER ABSCESS NORSARAH SHAMSUDIN, LEONG YUH YANG
AB1302N	SHEARWAVE ELASTOGRAPHY IMPROVES DIAGNOSTIC VALUES OF TRANSVAGINAL ENDOMETRIAL ULTRASOUND BARBARA KUOK LI LIAN

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB1306N	ANKLE LEIOMYOSARCOMA WITH METASTATIC GALLBLADDER DISEASE DEIVIND KUMAR NAGALINGAM, MOHD SHAFIE ABDULLAH
AB1308N	LOW-GRADE APPENDICEAL MUCINOUS NEOPLASM MIMICKING APPENDICULAR ABSCESS: A CASE REPORT YUEN JIANG KEAT, SHAHIZON AZURA MOHAMED MUKARI
AB1309N	PRIMARY HEPATIC LYMPHOMA : TWO RARE CASE REPORTS AND LITERATURE REVIEW TJUN HOE LUI, NUR YAZMIN YAACOB
AB1324N	CHILADITI'S SYNDROME COMPLICATED BY SMALL BOWEL OBSTRUCTION ONG WEE KEE, JULIAN MOHD RAMLI, TONY YONG YEE KHONG
AB1328N	AN EXTREMELY RARE CASE OF URETEROSCIATIC HERNIA TAN WEN NIAN, FARIHAH ABD GHANI
AB1334N	CAESAREAN SCAR ECTOPIC PREGNANCY, DIAGNOSTIC DILEMMA IN DELAYED PRESENTATION NYAZIRAH ABDUL WAHAB, SOOK YIN CHUA, KHATIJAH ABU BAKAR
AB1335N	ROLE OF MAGNETIC RESONANCE IMAGING (MRI) IN DIAGNOSING MAYER-ROKITANSKY-KÜSTER-HAUSER (MRKH) SYNDROME - CASE REPORTS FUAZA IZZATI BOSRO, NYAZIRAH ABDUL WAHAB, SHARIFAH MASTURA SYED ABU BAKAR, MALINDA ABD MAJID
AB1336N	GENITOURINARY TUBERCULOSIS- ESSENTIAL RADIOLOGICAL IMAGING FEATURES: AN AID FOR EARLY DIAGNOSIS AND TREATMENT- A CASE REPORT JANICE GOH HUI LING, CHIAM WK, SOON YY, WENDY NYL, MALINDA AM, TAM WL, KHAIRUL ASRI MG
AB1341N	SPONTANEOUS BLADDER DOME RUPTURE, A RARE ASSOCIATION WITH EXTRAPERITONEAL LEAKAGE. SITI NOR SUZEANA MUSTFAR, AIDI ASWADI HALIM LIM
AB1345N	MATURE OVARIAN TERATOMA MIMICKING SUPERFICIAL ANTERIOR ABDOMINAL MASS IN PREGNANCY: A DIAGNOSTIC DILEMMA. SAKINAH MAZLAN, SUZANA AB HAMID, NYAZIRAH ABDUL WAHAB
AB1351N	URETERAL STUMP SYNDROME - A RARE POST NEPHRECTOMY COMPLICATION LIM AUN NEE, AHMAD TIRMIZI JOBLI, LEE CHEN DAR
AB1354N	AN UNFORTUNATE TWIST - A RARE CASE OF TRANSVERSE COLON VOLVULUS WITH ASSOCIATED CHILADITI'S SYNDROME MOHD SHAFIQ AZMAN, AMIRAH ABDUL WAHID, FATIMAH HARTINA HUSSIN, NASIBAH MOHAMAD
AB1355N	CASE REPORT : ADULT MIDGUT VOLVULUS -THE DISCLOSURE OF EARLY HIGH GRADE PRIMARY PERITONEAL SEROUS CARCINOMA NOR FAUZIAH MUHAMAD HANDAR, YAMUNADEVI ARUNASALAM, NORLY SALLEH, LAILI SURIANI AB LATIP
AB1359N	"AGGRESSIVE RENAL ANGIOMYOLIPOMATOSIS WITH RENAL VEIN THROMBOSIS IN PATIENT WITH TUBEROUS SCLEROSIS" - A CASE REPORT NOR SYAHIDA MOHTAR RUDIN, NYAZIRAH ABDUL WAHAB, MALINDA ABD MAJID
AB1377N	PORTOMESENERIC VENOUS GAS IN ADULT BOWEL ISCHEMIA; THE OMINOUS SIGN IN CT SCAN SUHAIMI ARSAD, FADZILLAH MD KHADZARI, AHMAD HADIF ZAIDIN SAMSUDIN
AB1386N	COMPLICATIONS OF PANCREATITIS: A PICTORIAL REVIEW SMILY SHARMA, PANKAJ SHARMA, UDIT CHAUHAN, POONAM SHERWANI, VENKATA SUBBAIH ARUNACHALAM

E-POSTER PRESENTATION

ID	Title
ABDOMEN IMAGING	
AB1390N	THE PERFORMANCE OF SHEAR WAVE ELASTOGRAPHY : COMPARISON 2 -DIMENSION AND POINT SHEAR WAVE ELASTOGRAPHY FOR EVALUATION OF LIVER FIBROSIS. SEKSAN CHITWISSET
AB1391N	HEPATOCELLULAR CARCINOMA WITH DE NOVO INTRATUMORAL PSEUDOANEURYSM. NUR SALSABILA MOHD ROSLI
AB1404N	A RECHERCHE PRESENTATION OF PERSISTENT MULLERIAN DUCT SYNDROME DEVELOPING INTO AN ENDODERMAL SINUS TUMOUR. AISHWARYA JEYAKUMAR, RAJOO RAMACHANDRAN, P.M.VENKATA SAI
AB1406N	EXTRAUTERINE LEIOMYOMA- ATYPICAL PRESENTATIONS OF A COMMON DISEASE WONG SIU CHUN, WONG TING, CHAU CHI MAN GLADYS, NG FUNG HIM, MA KA FAI
BREAST IMAGING	
BR031	AN EXCEPTIONAL CASE : EXTREME GIGANTOMASTIA IN HIV PATIENT TREATED WITH EFAVIRENZ FRANSISCA RIKA ANDRIANI, LIES MARDIYANA
BR090	CLINICAL AND RADIOLOGICAL MANIFESTATIONS OF MALE BREAST MALIGNANCY IN A LOCAL ASIAN POPULATION - RETROSPECTIVE ANALYSIS WITH UTILIZATION OF LATEST BI-RADS LEXICON THOMAS WING-YAN CHIN, HAILEY HOI-CHING TSANG, JANET WING-CHONG WAI, JEFFREY LONG-FUNG CHIU
BR195N	QUANTITATIVE ADC EVALUATION OF BREAST CARCINOMA: CORRELATION OF DIFFUSIONAL PROPERTIES WITH TUMOUR GRADES AND IMMUNOHISTOCHEMICAL SUBTYPES. SITI HAFEEZAH RAMLI, CHAN WAI YEE, MARLINA TANTY RAMLI HAMID, KARTINI RAHMAT
BR244	DOES BONE SCINTIGRAPHY STILL HAVE A ROLE IN STAGING OF ADVANCED BREAST CANCER? THE MORECAMBE BAY EXPERIENCE. GREGORY MATAKA
BR271	POSITIVE PREDICTIVE VALUES AND PREDICTORS OF MALIGNANCY IN ARCHITECTURAL DISTORTION ON MAMMOGRAPHY VANASARIN MAITREEMIT, VORAPAREE SUVANNARERG
BR274	UTILITY OF ULTRASOUND AND MAMMOGRAPHY IN DETECTION OF NEGATIVE AXILLARY NODAL METASTASIS IN BREAST CANCER ANAM KHAN, KUMAIL KHANDWALA, IMRANA MASROOR
BR293	MAGNETIC RESONANCE IMAGING TEXTURE ANALYSIS OF BREAST CANCER NG BI YOKE, TANG ZI YING, TAN LI KUO, KARTINI RAHMAT, MARLINA TANTY RAMLI, JEANNIE H D WONG
BR331	NEVER ENDING FIGHT OF PATIENTS AGAINST BREAST CANCER : INCIDENTAL DETECTION OF BREAST CANCER IN PREVIOUS RADIOLOGICALLY NORMAL CONTRALATERAL BREAST MARIAM MALIK, ZAINAB ZAHUR
BR389	ELIMINATE FALSE NEGATIVE ASSESSMENT IN BREAST SCREENING GREGORY MATAKA
BR412N	PREOPERATIVE TUMOR SIZE MEASUREMENT IN PRIMARY BREAST CANCER USING MAGNETIC RESONANCE IMAGING, MAMMOGRAPHY, AND ULTRASONOGRAPHY IN COMPARISON TO HISTOLOGICAL FINDINGS KRITTARAT CHAIJIRAVIVAT, NARISARA LIMNINART, JIRARAT JIRARAYAPONG

E-POSTER PRESENTATION

ID	Title
BREAST IMAGING	
BR427	PLASMA LIPID PROFILE AND SONOGRAPHIC FEATURES OF CLINICAL GROUPS OF BREAST CANCER BASED ON MOLECULAR SUBTYPES MARLINA YUSUF, JUHARA HARON, HASNAN JAAFAR
BR484	CENTRAL VENOUS STENOSIS - A RARE CAUSE OF UNILATERAL BREAST OEDEMA SUGUNA RAMAN, NUR SAFIRA ABD ISA
BR495	MRI BREAST: FEATURES OF MALIGNANT VS BENIGN LESIONS AND CURRENT ADVANCES NAZIMAH AB MUMIN, KARTINI RAHMAT, MARLINA RAMLI
BR517	COMPARISON OF DIAGNOSTIC PERFORMANCE BETWEEN MRI AND ULTRASONOGRAPHY WITH MAMMOGRAPHY IN SURVEILLANCE FOR LOCAL RECURRENT BREAST CANCER AFTER BREAST CONSERVING THERAPY MINCHANAT SATJA, SOMCHANIN PIPATPAJONG
BR530	IMAGING OF LESION IN REGION RIGHT AXILLA WITH ULTRASOUND HENDRA SARAGIH
BR590	BILATERAL MAMMARY ANGIOSARCOMA WITH POSSIBLE LEFT ORBITAL METASTASIS - A CASE REPORT YONG XIN MIN, SHANTINI ARASARATNAM, NGAN KAH WAI, WAN ZAINAB HAYATI, YOGENDREN LETCHUMANASAMY
BR594N	A CASE REPORT: ROSAI-DORFMAN DISEASE OF THE BREAST AMORNTHIP ONGCHAIWATTANA, TIKAMPORN JITPASUTHAM, JENJEERA PRUEKSADEE
BR771	DUCTOGRAPHY COMBINED WITH DIGITAL BREAST TOMOSYNTHESIS FOR EVALUATION OF NIPPLE DISCHARGE: A FEASIBILITY STUDY DANARA SULEIMENOVA, ZHAMILYA ZHOLDIBAY
BR803	THE CORRELATION BETWEEN MAMMOGRAM WITH HISTOPATHOLOGY RESULT IN BREAST CANCER PATIENTS YOLANDA SITOMPUL, LINA CHORIDAH
BR819	SONOELASTOGRAPHY IN EVALUATION OF FIBROCYSTIC BREAST DISEASE RAJUL RASTOGI, NEHA, SATISH PATHAK, VIJAI PRATAP
BR832	CORONAL VIEW IN AUTOMATED BREAST ULTRASOUND (ABUS): THE EXTRA DIMENSION IN BREAST ULTRASOUND - A PICTORIAL REVIEW NAZIMAH AB MUMIN, KARTINI RAHMAT, MARLINA RAMLI, NG WEI LIN, CHAN WAI YEE, SHAMSI AH ABDUL HAMID
BR873	COEXISTING TB LYMPHADENITIS AND PRIMARY BREAST CANCER IN AXILLA: A CASE REPORT HYE-WON KIM, JI YOUNG RHO
BR877	USEFULNESS OF CONTRAST-ENHANCED ULTRASOUND (CEUS) IN BREAST CANCER PATIENTS HYE-WON KIM, JI YOUNG RHO
BR914	A RARE TYPE OF MRI FEATURES OF METAPLASTIC BREAST CARCINOMA SOO SUET WOON, KARTINI RAHMAT, MARLINA TANTY RAMLI HAMID
BR1015N	CASE SERIES OF BREAST FILLERS AND HOW THINGS MAY GO WRONG: RADIOLOGY POINT OF VIEW RAIHANAH HAROON, VIVIEN SURYANI AMRU, SITI KAMARIAH CHE MOHAMED, RADHIANA HASSAN
BR1027N	BILATERAL BREAT HAMARTOMAS IN A YOUNG FEMALE : A CASE REPORT AND LITERATURE REVIEW OF THE UNDER RECOGNIZED BREAST LESION M.H.W. MADHAHVI NADEESHA WIJAYAPALA, PERERA LDRA

E-POSTER PRESENTATION

ID	Title
BREAST IMAGING	
BR1037N	ULTRASOUND EVALUATION OF FOCAL ASYMMETRY SEEN ON MAMMOGRAPHY: CORRELATION WITH HISTOPATHOLOGY OR LONG TERM FOLLOW-UP PITSIREE BUNNAG, JENJEERA PRUEKSADEE
BR1056N	A RARE CASE OF SQUAMOUS CELL CARCINOMA OF THE BREAST FOO SEE YUN, AIDA WIDURE MUSTAPHA MOHD MUSTAPHA
BR1061N	IMAGE-GUIDED LOCALIZATION OF IMPALPABLE BREAST LESIONS: A COMPARATIVE ANALYSIS OF MAGSEED AND HOOKWIRE IN AN ASIAN POPULATION YANG SIYUE, LAI YEE TAK ALTA, LI ON CHEE ANGELA, LEONG PO WEY, KWOK KAI YAN, CHOW DENISE LONG YIN, LI BIRGITTA YAN WING, LENG YONGMEI, FUNG BRIAN WAI HIM, HO CHEUK HIM, WONG YIU CHUNG
BR1109N	A CASE OF SEVERE DRUG INDUCED GYNECOMASTIA ZHEN PANG CHANG, NOR HAFIZAH ABU HASSAN
BR1121N	MAGNETIC RESONANCE IMAGING AND ULTRASOUND FINDINGS OF BREAST IMPLANT RUPTURE PRESENTING AS A PAINFUL BREAST SWELLING- A CASE REPORT. DEBARPITA DATTA
BR1155N	CHARM IS DECEITFUL, BEAUTY IS VAIN: BREAST POST FILLERS' COMPLICATIONS - A CASE SERIES. ZAHURIN ISMAIL, WAN MEZLINA WAN ZAKARIA, NURLAILY SYAKIMAH
BR1269N	A RARE CASE OF METASTATIC SMALL CELL CARCINOMA OF BREAST FROM MIXED TYPES OF CERVICAL CARCINOMA ZAITUL AZRA MOHD NASIR, NUR ASMA SAPIAI, FAIROS ABDUL MUTHALIB, NURUL AIN MAT IDRIS
BR1312N	SHEAR WAVE VERSUS ELASTOGRAPHY OF BREAST LESIONS - THE VALUE OF INCORPORATING BOUNDARY TISSUE ASSESSMENT IN SHEAR-WAVE ELASTOGRAPHY LEONG LESTER, TAY WEI MING IAN, MOEY HUI LING TAMMY, SIM SHAO JEN, KAREN TAN
BR1401N	A CASE OF RARE DESMOID-TYPE FIBROMATOSIS PRESENTED AS A BREAST LUMP WAN IRFAN W MUSTAPHA, NUR SHAHIDA WAHAB, RADHIANA HASSAN, RAIHANAH HAROON
CARDIAC IMAGING	
CD019	SALIENT FEATURES OF CARDIAC AMYLOIDOSIS IN CARDIAC MRI HOSPITAL SERDANG SHARIPAH INTAN SYED ABAS, YUSRI MOHAMMED, KAMA AZIRA, T HURSTON, DALILA ADNAN
CD058N	PRE-OPERATIVE ASSESSMENT OF CONGENITAL HEART DISEASE: A PICTORIAL ASSAY NUSRAT GHAFOOR, ROKONUJJAMAN (SELIM)
CD062	ISOLATED INTERRUPTED AORTIC ARCH: A CASE REPORT SHOBHANA SIVANDAN, CAROLINE JUDY WESTERHOUT
CD085	MYOCARDIUM VIABILITY IN IMPAIRED LEFT VENTRICULAR EJECTION FRACTION PATIENTS AS EVALUATED USING TC99M-TETROFOSMIN CARDIAC VIABILITY STUDY AHMAD ZAID ZANIAL, SITI ZARINA AMIR HASSAN
CD099	CASE OF HETEROTAXY SYNDROME (RIGHT ISOMERISM) WITH COMPLEX CONGENITAL HEART DISEASE. PRAVINKUMAR BHARDE, A. PRAVEENKUMAR
CD103	PATTERNS OF HYPERTROPHIC CARDIOMYOPATHY IN CARDIAC MAGNETIC RESONANCE IMAGING: THE HOSPITAL SERDANG EXPERIENCE NORAIN TALIB, SHARIPAH INTAN S. SYED ABAS, YUSRI MOHAMMED, KAMA AZIRA AWANG RAMLI, JIMMY WOO SZE YANG

E-POSTER PRESENTATION

ID	Title
CARDIAC IMAGING	
CD145	COMPLETE AORTIC ARCH INTERRUPTION: A CASE REPORT AKSHAT AGRAWAL, RANJAN KUMAR SAHOO, KAMAL KUMAR SEN
CD149	CLINICAL VALUE OF 3D PRINTING IN CARDIOVASCULAR DISEASE ZHONGHUA SUN, YIN HOW WONG, CHAI HONG YEONG
CD154	CREATION OF PERSONALISED 3D PRINTED CORONARY ARTERY MODELS FOR INVESTIGATION OF OPTIMAL CARDIAC CT IMAGING OF CALCIFIED PLAQUES ZHONGHUA SUN
CD209	EVALUATION OF AN OPEN-SOURCE SOFTWARE TOOL FOR T2* MAPPING IN QUANTITATIVE MRI ALLEN LI, LI XIAO, Y C WONG, D NGAR
CD289N	CRITICAL STENOSIS AND CORONARY ARTERIOVENOUS FISTULAE IN MIDDLE-AGED WOMEN NURUL FATHIYA, DIAN KOMALADEWI, HILMAN, UNDANG RUHIMAT, ATTA KUNTARA, HARRY GALUH N
CD300	AORTIC DISEASE ASSESSMENT BY MULTIDETECTOR CT AORTOGRAM UMMARA SIDDIQUE, SHAHJEHAN ALAM, SYED GHULAM GHAUS, SAIMA RABBANI, ABIDA BIBI, NIDA GUL, HANIA MOIZ, ALI ASGHAR SAHIB
CD343	MDCT IMAGING IN ANOMALOUS PULMONARY VENOUS RETURN SANEESH P S, U C GARGA, SHIBANI MEHRA, YASHVANT SINGH
CD345	EMBRYOLOGICAL PERSPECTIVE OF FALLOT TETRALOGY AND IMAGING FINDINGS WITH MDCT SANEESH P S, U C GARGA, SHIBANI MEHRA, YASHVANT SINGH
CD350	LOCULATED PERICARDIAL ABSCESS SECONDARY TO HAEMATOGENOUS SPREAD OF STAPHYLOCOCCAL AUREUS INFECTION: A CASE REPORT HEW YIN CHENG, NORLIZA OTHMAN
CD368	A RARE CASE OF MALIGNANT CARDIAC MASS- THINK BEYOND SARCOMA SANDIP KUMAR PARIJA, NAMRATA PAL, SUNITA DASHOTTAR
CD377	INTERRUPTED AORTIC ARCH; A RARE SURVIVOR DIAGNOSED BY COMPUTED TOMOGRAPHY ANGIOGRAPHY NIK ABDUL HANNAN NIK MOHD NOOR, FADZILLAH MD KHADZARI
CD403	CT ANGIOGRAPHY IN DIAGNOSTICS OF TOTAL ANOMALOUS PULMONARY VENOUS RETURN TAIRKHAN DAUTOV, BABASOVA G.E.
CD470	A CASE REPORT OF A 22-YEAR-OLD PATIENT WITH NON-SURGICALLY CORRECTED D-LOOP TRANSPOSITION OF THE GREAT ARTERIES(TGA) WITH ASSOCIATED ANOMALIES FELIZ PAMELA P VASQUEZ
CD521	CT-ANGIOCARDIOGRAPHY IN DIAGNOSTICS SINGLE VENTRICLE DEFECT OF HEART TAIRKHAN DAUTOV, TAZHIGALIYEVA T.M, MEDETOVA G.L
CD565	PREVALENCE OF OBESITY IS INDEPENDENT OF CIRCLE OF WILLIS VARIATION IN A YOUNG ONSET HYPERTENSION POPULATION HAZRINI ABDULLAH, K MITROUSI, S NEUMANN, N MANGHAT
CD577	PULMONARY VEIN PSEUDOANEURYSM; A RARE COMPLICATION OF BLUNT CHEST TRAUMA RAJEEV SHAMSUDDIN PERISAMY, MOHAMAD SHAHRIR ABDUL RAHIM, SHARIFAH NOR ASHIKIN SYED YASIN

E-POSTER PRESENTATION

ID	Title
CARDIAC IMAGING	
CD649	CT-ANGIOPULMONOGRAPHY IN THE DIAGNOSTICS OF PULMONARY EMBOLISM IN PATIENTS WITH CARDIOVASCULAR DISEASES DANA IDRISOVA, DAUTOV T.B, BASTARBEKOVA L.A, MOLDAKHANOVA ZH.A, GALLYAMOVA D
CD711N	TOLERANCE AND SAFETY OF HIGH DOSE ADENOSINE IN STRESS PERFUSION CARDIAC MAGNETIC RESONANCE IMAGING MICHELLE M. SAMY, NOR ASHIKIN MD SARI, YANG FARIDAH ABDUL AZIZ
CD768	SINGLE CORONARY ARTERY: A CASE REPORT WAN IRFAN W MUSTAPHA, MUBARAK MOHD YUSOF
CD836	SUPRACARDIAC TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION IN A SURVIVED PREGNANT YOUNG WOMAN: A RARE CASE REPORT ELIZABETH ANGELINE, BAMBANG SATOTO
CD874	A CASE OF COACRTATION OF AORTA WITH LEFT EXTERNAL ILIAC ARTERY THROMBOSIS TAN WEIJOE, CHITRA SUPRAMANIAM
CD884	TRIPLE-RULE-OUT CT ANGIOGRAPHY FOR EVALUATION OF ACUTE CHEST PAIN SHAHJEHAN ALAM, UMMARA SIDDIQUE, SEEMA GUL, SYED GHULAM GHAUS, MUHAMMAD ASIF, ARUBA NAWAZ, AMAN NAWAZ KHAN, HADIA ABID
CD889	DIAGNOSTIC ACCURACY OF CORONARY CT ANGIOGRAPHY SHAHJEHAN ALAM, UMMARA SIDDIQUE, SEEMA GUL, FARIA MAQSOOD, MUHAMMAD ABDULLAH, WASIF FARMAN
CD958	TRUNCUS ARTERIOSUS IN A NEWBORN WITH RIGHT SIDED ARCH AND TRACHEO OESOPHAGEAL FISTULA: A RARE DIAGNOSIS SMILY SHARMA, VENKATA SUBBAIH A, RAHUL DEV, POONAM SHERWANI, GANGOTRI, SHAILVI SINGHAL
CD1133N	BIOMECHANICAL AND ELECTRICAL PROPERTIES OF THE HEART DURING MILD ANXIETY ABDULLAH MOHD NOH, NORHAFIZAH MOHAMAD NONUDIN, AYMAN ISMAIL GHOLAM, AHMAD ISMAIL A GHOLAM, AMGAD ISMAEEL GHOLAM
CD1134N	THE ROLE OF CT ANGIOGRAPHY AND ECG IN HEART ARRHYTHMIA DIAGNOSES AFTER BETA-BLOCKER ADMINISTRATION ABDULLAH MOHD NOH, NORHAFIZAH MOHAMAD NONUDIN, AYMAN ISMAIL GHOLAM, AMGAD ISMAEEL GHOLAM, AHMAD ISMAIL A GHOLAM
CD1167N	AN INTERESTING CASE OF 24 YEARS OLD FEMALE WITH DOUBLE OUTLET RIGHT VENTRICLE, A RARE CASE REPORT AHMAD RIFAI, DIAN KOMALA DEWI
CD1168N	A RARE CASE OF MULTIPLE CORONARY ARTERY FISTULA WITH AORTOPULMONARY FISTULA AHMAD RIFAI, DIAN KOMALA DEWI, ACHMAD TRIADI SETIAWAN
CD1217N	FLOW ARTEFACT DUE TO POOR CONTRAST MIXING - MIMICKING AORTIC DISSECTION ANNA FITRIANA ABDUL RAHAMAN, SHAHIZON AZURA MUKARI
CD1247N	LEFT ATRIAL MYXOMA WITH TUMORAL SUPPLY FROM SA NODAL ARTERY ON CORONARY CT ANGIOGRAPHY ASMA JAVED, ATIF RANA
CD1357N	AN INCIDENTALLY DETECTED UNRUPTURED LARGE ABDOMINAL AORTIC ANEURYSM WITH MURAL THROMBOSIS AND CHRONIC HEAMATOMA- A CASE REPORT DEBARPITA DATTA

E-POSTER PRESENTATION

ID	Title
CHEST IMAGING	
CH013	VARIABILITY IN THE SIZE OF PULMONARY NODULES AND MASSES OBTAINED USING THE LUNG WINDOW AND MEDIASTINAL WINDOW OF THE COMPUTED TOMOGRAPHY SCAN DANLEN C. MASANGYA, JAROLD P. PAUIG
CH072	HYPOPLASTIC RIGHT UPPER LOBE IN AN ASYMPTOMATIC 28-YEAR OLD FEMALE: A CASE REPORT SHEEN URQUIZA, ROMELITO JOSE G. GALSIM
CH074	ADULT NON TRAUMATIC LEFT DIAPHRAGMATIC HERNIA MISTAKEN AS LEFT PLEURAL EFFUSION: A CASE REPORT RAYYAN MARDHIYAH NIK MOHD KAMEL, MOHD NOOR AKMAL ADAM
CH078	PYOPNEUMOTHORAX: A RARE CASE HENDRA SARAGIH
CH087	CASE SERIES PARTIAL ANOMALOUS PULMONARY VENOUS RETURN: A RARE ANATOMIC VARIANT NUR FATHIHAH, AHMAD RAZALI MD RALIB MD RAGHIB, MAH SIN YEAT
CH113	IMAGING FEATURES OF UNDIAGNOSED CONGENITAL DIAPHRAGMATIC HERNIA WITH ADULT PRESENTATION HEMA KALIPARUMAL, ROFIAH ALI, KHARIAH MAT NOR
CH141	ISOLATED UNILATERAL PROXIMAL INTERRUPTION OF THE PULMONARY ARTERY - INCIDENTALLY FOUND IN ADULTHOOD HOE HAN GUAN, NG HUI ROU
CH167	BOERHAAVE'S SYNDROME FATT YANG CHEW
CH187	AN UNUSUAL CASE OF PULMONARY CRYPTOCOCCOSIS IN AN IMMUNOCOMPETENT FEMALE PATIENT WHO HAVE CO-EXISTING RECURRENT CRYPTOCOCCAL MENINGITIS HOE HAN GUAN, NG HUI ROU
CH219	PRIMARY LUNG SARCOMA, RARE TYPE OF PRIMARY LUNG TUMOR: A CASE REPORT PUNITHA MOHANAN, MOHD NAIM YAAKOB, ZURINA ABDUL WAHAB
CH353	THE DEVELOPMENT AND EVALUATION OF FLIPPED CLASSROOM OF ULTRASOUND DETECTION ACUPUNCTURE MARK HOU, YING-LING CHEN
CH398	STATE OF THE ART OF PULMONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY IN PREGNANCY CHARBEL SAADE
CH485	DOUBLE ARCH OF AORTA WITH DOMINANT RIGHT ARCH AND VARIANT OF SEPARATE ORIGIN OF LEFT VERTEBRAL ARTERY IN ASYMPTOMATIC ELDERLY PATIENT NUR MASTURA NAZARUDIN, SHANTINI DEVI MUNIANDY, SAZALI SATARI
CH498N	STERNAL CLEFT ASSOCIATED WITH LARGE VESSEL ANOMALIES: A RARE CAUSE OF YOUNG STROKE LIM RU WOEI, KOA AJ, TEH YONG SIM, LEE CHUNG YUEN
CH638	CHEST IMAGING: DIAGNOSTIC VALUE OF ULTRASOUND IN DETECTING CENTRAL VEIN OBSTRUCTION AIE WEI TAN, MUHAMAD ASYRAF JAMALUDDIN, AUN KEE CHONG
CH663	HRCT PATTERNS OF INTERSTITIAL LUNG DISEASE IN PSORIASIS ROQIAH FATMAWATI ABDUL KADIR, BUSHRA JOHARI, MOHAMMAD HANAFIAH KREAH
CH666	DIFFUSE PLEURAL METASTASES FROM ADENOID CYSTIC CARCINOMA ROZALINA JOHARI, VITHYA VISALATCHI SANMUGASIVA, SRI ARUN MANICKAAM, HARYATI HUSIN

E-POSTER PRESENTATION

ID	Title
CHEST IMAGING	
CH686	THE BUBBLY LUNG - DIFFERENTIALS & APPROACH TO DIAGNOSIS PUNEET GUPTA
CH742	POCUS FOR ACUPUNCTURIST: A TRAINING PROGRAM OF ULTRASOUND DETECTION ACUPUNCTURE YING-LING CHEN, MARK C. HOU, KAI-WEN CHUAN
CH743N	RADIOLOGICAL ILD PATTERNS ON HRCT BY NON-THORACIC VERSUS THORACIC RADIOLOGIST: A SINGLE CENTRE EXPERIENCE ROQIAH FATMAWATI ABDUL KADIR, MOHAMMAD HANAFIAH, BUSHRA JOHARI, HAZLENAH HANAFIAH
CH747	ORTNER SYNDROME (CARDIO VOCAL HOARSENESS) - A RADIOLOGICAL DIAGNOSIS LEE SHIEN LOW, CAROLINE JUDY WESTERHOUT
CH761	THYMOMA: A RADIOLOGICAL REVIEW ALONG THE WHO CLASSIFICATION AND MASAOKA-KOGA STAGING SYSTEM JI YOUNG RHO, SOOYEON JEONG, HYEWON KIM
CH772	IMAGING EVALUATION OF LINES, TUBES AND MEDICAL DEVICES: PROPER POSITION AND COMMON COMPLICATION LEE PEI HUA, CHEW FATT YANG
CH875	CHEST RADIOGRAPHIC FEATURES OF PULMONARY TUBERCULOSIS (PTB) IN PATIENTS WITH UNDERLYING HIV MAHALATCHUMI SUBRAMANIAM, NUR SAFIRA ABD ISA, MOHAMED ASNAWI SORONI, ANUSHA SHUNMUGARAJOO, ANUSHYA VIJAYANANTHAN
CH888	TO CHARACTERIZE THE MDCT FINDINGS OF BRONCHIAL- PULMONARY ARTERY FISTULA. SHAHJEHAN ALAM, UMMARA SIDDIQUE, AMAN NAWAZ KHAN, SYED GHULAM GHAUS
CH903N	HEMOPTYSIS - DO NOT MISS BLEEDING GIANT BULLA. YAP TECK CHONG, WAN AIREENE WAN AHMED, CHANDRAN NADARAJAN
CH934	TUBERCULOSIS RATHER THAN INTERSTITIAL LUNG DISEASE, THE COMMONEST RADIOLOGICAL FINDING ON HIGH RESOLUTION COMPUTED TOMOGRAPHY IN A LOCAL COMMUNITY TAHIRA NISHTAR, NOSHEEN NOOR
CH988	PRIMARY MEDIASTINAL EXTRA-OSSEUS EWING'S SARCOMA - CASE REPORT AND REVIEW OF LITERATURE RAVINDAR KASHYAP, RAMKUMAR G, SWATHI KIRAN
CH1008N	ASSESSING MULTIPLE PULMONARY EMBOLISM WITH VIRTUAL MULTISLICE CT INTRAVASCULAR ENDOSCOPY IN A MIDDLE-AGED MALE PATIENT FREEDY LAISTO PANUSUNAN TAMBUNAN, DIAN KOMALADEWI, HARRY GALUH NUGRAHA
CH1044N	COVID-19 CHEST X-RAY SEVERITY SCORE SAMUEL CONYNGHAM, NANDULA DAYAN DANTANARAYANA, KIM-SON NGUYEN
CH1052N	ROLE OF CT SCAN IN PERSISTENT PNEUMOTHORAX IN PULMONARY TUBERCULOSIS PATIENT DUE TO PARENCHYMAL PLEURAL FISTULA VICTOR CHRISTIAN, NADIA A. P. PANISUTIA, ELIZABETH ANGELINE, BAMBANG SATOTO
CH1062N	ASSOCIATION OF INCREASED D DIMER WITH CT PULMONARY EMBOLISM IN SARS-COV-2 DONI NOVIARTHA PRASETYARTO, DIAN KOMALADEWI
CH1074N	A RARE CASE OF CHEST WALL SCHWANNOMA NEHAL AHMAD, SHASHWAT PRIYADARSHI, PRABHPREET R SINGH
CH1075N	INNOMINATE ARTERY MYCOTIC ANEURYSM - AN OVERLOOKED ENTITY ON CHEST RADIOGRAPH VENKATARAO RAMANAIDU, SURAYA ABDUL AZIZ, AIDA-WIDURE MUSTAPHA M

E-POSTER PRESENTATION

ID	Title
CHEST IMAGING	
CH1091N	DIAGNOSTIC VALIDITY OF CHEST-XRAY IN DIAGNOSING PULMONARY TUBERCULOSIS WITH RESPECT TO GENEXPERT AND THE RADIOLOGIC FINDINGS CORRELATED WITH GENEXPERT RESULTS. MARIA CHRISTINA TABITHA P. BALACCUA
CH1126N	LESSON LEARNT FROM UNUSUAL INITIAL EXTRA-RENAL MANIFESTATION OF AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE LIM AUN NEE, YEW TING TING
CH1131N	QUALITY CONTROL OF DIGITAL RADIOGRAPHY SYSTEMS FOR GENERAL RADIOGRAPHY NORIAH JAMAL, AMINAH MOHAMED, FAEZAH HARUN, SHANTINI ARASATNAM
CH1141N	CASE SERIES OF PNEUMOMEDIASTINUM IN COVID-19 PNEUMONIA: A COMPLICATION TO PONDER NURUL NABILA MORTADZA, MAHALATCHUMI SUBRAMANIAM, AIDA ABDUL AZIZ, FATIMAH MOOSA
CH1146N	CASE REPORT: PRIMARY ANTERIOR MEDIASTINAL YOLK SAC TUMOR DANIELLE I. SANTOS
CH1149N	AN INCIDENTAL FINDING OF ABERRANT TORTUOSITY OF BRACHIOCEPHALIC TRUNK IN GERIATRIC KARINA SOLIKHA NURMALITA, IRMA HASSAN HIKMAT, HARI SOEKERSI
CH1162N	COMMON COUGH TURNS OUT TO BE A RARE MALIGNANCY- A CASE REPORT NIKHITA GADDAM, NLN MOORTHY, PRAVEEN KUMAR M.
CH1170N	A NEAR MISS: EXTENSIVE IMPENDING RUPTURE AORTIC DISSECTION IN A RELATIVELY HEALTHY PATIENT, AN INTERESTING CASE REPORT AHMAD RIFAI, DIAN KOMALA DEWI, INDAH NOVIANTY
CH1172N	PRIMARY UNDIFFERENTIATED PLEOMORPHIC SARCOMA OF LUNG: SPECTRUM IMAGING THROUGH TREATMENT DEVI KUSUMAWARDANI, IRMA HASSAN HIKMAT, HARRY GALUH NUGRAHA, BETHY SURYAWATHY HERNOWO
CH1178N	A RARE CONTRAST INFLUX INTO THORACIC DUCT DURING COMPUTED TOMOGRAPHY SCAN CHIA FUI PIN, MOHD EZANE AZIZ, NASIBAH MOHAMAD
CH1181N	X-RAY PATTERNS OF COVID -19 IN PATIENTS PRESENTING TO LADY READING HOSPITAL, PESHAWAR, PAKISTAN TAHIRA NISHTAR, NOSHEEN NOOR, SHANDANA LATIF KHAN
CH1222N	HOARSENESS AS INITIAL FINDING OF HUGE AORTIC ARCH ANEURYSM MIMICKING A LEFT MEDIASTINAL MASS KARINA SOLIKHA NURMALITA, UNDANG RUHIMAT
CH1235N	MALPOSITION OF THE CENTRAL VENOUS CATHETER IN THE ACCESSORY HEMIAZYGOS VEIN KAH LAI CHOONG, MUHAMMAD AMIN TUNAI SHAMSIDI
CH1265N	ARE WE OVER-REPORTING PULMONARY EDEMA AS INDETERMINATE COVID-19 PNEUMONIA ON HRCT? AN INTER-DEPARTMENTAL OBSERVATION ASMA JAVED, BELQEES YAWAR FAIZ, SAMEEHA ISMAIL, CHANDRA BAI
CH1271N	IMPORTANCE OF MDCT BRONCHIAL ARTERY ANGIOGRAPHY IN THE MANAGEMENT OF PATIENTS WITH HEMOPTYSIS SECONDARY TO TUBERCULOSIS INFECTION: A CASE SERIES HANCE ROMMEL PANIZALES, ANGELICO ROME ANDAYA, DENNIS C. VILLANUEVA, PRECIOUS JOY KATHERINE C. ALPANO, ANGELITO G. TINGCUNGCO, ZEUS S BERNARDO

E-POSTER PRESENTATION

ID	Title
CHEST IMAGING	
CH1323N	CARDIOVOCAL SYNDROME CAUSED BY CONCURRENT AORTIC ARCH ANEURYSM AND PULMONARY ARTERY DILATATION CHEONG KANG WEI, CHANDRAN NADARAJAN, INTAN ZARIZA HUSSAIN
CH1330N	PRIMARY CHEST WALL LYMPHOMA MIMICKING COLD ABSCESS - A CASE REPORT NABILLAH MOHD JADI, ERICA WONG YEE HING, RIZUANA IQBAL HUSSAIN
CH1366N	ORGANIZING PNEUMONIA PATTERN IN COVID-19 INFECTION: A CASE SERIES SITI ROHANI MOHD YAKOP
CH1380N	WHERE IS THE MISSING CHICKEN BONE ? A CASE OF FOREIGN BODY BRONCHIECTASIS NUR FATHIHAH AHMAD, NUR FARHANAH, RAIHANAH HAROON
CH1393N	DWI N MRS IN ESOPHAGEAL DYSPHAGIA: A NOVEL MNEMONIC BASED APPROACH MEGHANAA JAYAKUMAR
CH1395N	CHALLENGING CHEST WALL LESIONS : A LAYERED IMAGING APPROACH MEGHANAA JAYAKUMAR
CH1411N	SPONATNEOUS PNEUMOMEDIASTINUM, PNEUMOTHORAX AND SURGICAL EMPHYSEMA IN COVID 19 PATIENTS AKSHAT AGRAWAL, KAMAL KUMAR SEN, GITANJALI SATPATHY, HUMSHEER SETHI, AJAY SHARAWAT
CH1412N	BILATERAL MASSIVE HYDATID PULMONARY EMBOLISM: A RARE OCCURRENCE PALWASHA GUL
EMERGENCY	
EM070	IMAGING OF CELLULITIS LIP WITH EXAMINATION ULTRASOUND LIP HENDRA SARAGIH
EM100	A CASE OF MASSIVE THORACIC AORTIC ANEURYSM WITH RUPTURE IN A YOUNG MALE PATIENT PRAVINKUMAR BHARDE, A. PRAVEENKUMAR
EM122	BAILING OUT A RARE MISHAP: EMBOLIZATION OF AN ACCIDENTALLY CUT CHEMOPORT CATHETER TO THE HEART MUHAMMAD AMINUDDIN ASHARI, YUEN JIANG KEAT, MELISA LIM SEER YEE
EM295	INTRAMURAL HAEMATOMA OF THE THORACIC AORTA WITH IMPENDING RUPTUR AORTA DESCENDEN DAN AORTA ABDOMINALIS FREEDY TAMBUNAN, DIAN KOMALADEWI, UNDANG RUHIMAT
EM351	OUTCOME OF ENDOVASCULAR EMBOLIZATION IN CASE OF ACUTE BLEEDING REFERRED TO RMI AMAN NAWAZ KHAN, UMMARA SIDDIQUE UMER, SHAHJEHAN ALAM, HADIA ABID
EM492	AUDIT TO ASSESS ADEQUATE CONTRAST ENHANCEMENT IN CT PULMONARY ANGIOGRAMS (CTPA) IN PATIENTS PRESENTING WITH ACUTE ONSET SHORTNESS OF BREATH UMMARA SIDDIQUE UMER
EM550	ULTRASOUND AND COMPUTERIZED TOMOGRAPHIC ANGIOGRAPHY (CTA) EVALUATION OF SIMULTANOUES IATROGENIC PSEUDOANEURYSMS AND ARTERIOVENOUS (AV) FISTULAS RELATED TO TRANSFEMORAL CATHETERIZATION FOR DIALYSIS ACCESS QUEK CHOON YEE

E-POSTER PRESENTATION

ID	Title
EMERGENCY	
EM722	CASE REPORT: INCARCERATED OMENTAL HERNIA AS UNTWISTABLE CAUSE OF TESTICULAR ISCHEMIA RAYYAN MARDHIYAH NIK MOHD KAMEL, AHMAD AZAM ANWAR, NOR FAUZIAH MUHAMAD HANDAR
EM753	BLEEDING COMPLICATIONS IN ANTICOAGULATED PATIENTS: PICTORIAL REVIEW OF IMAGING FINDINGS TIMOTHY SHAO ERN TAN, SOOK CHUEI WENDY CHEONG, TIEN JIN TAN
EM792	RENAL ARTERY THROMBOSIS; A RARE SEQUELAE OF BLUNT ABDOMINAL TRAUMA NUR WAHIDA HUSSIN
EM800	AN OVARIAN VEIN THROMBOSIS CAUSING ACUTE ABDOMEN IN POST PARTUM PYREXIA: A RARE ENTITY AHMAD AZAM ANWAR, RUSLI ZAIM
EM814	PERFORATED TRANSVERSE COLON BY ACCIDENTAL FISH BONE INGESTION: A FISHY AND RARE ENTITY BELINDA SHEPHERDSON, SUBASHINI SUBRAMANIAM, ROZITA MOHD GHAZALI
EM1051N	ROLE OF RADIOLOGIC EXAMINATION IN URINARY BLADDER HERNIATION VICTOR CHRISTIAN, ELIZABETH ANGELINE, NADIA A. P. PANISUTIA, TITIK YULIASTUTI
EM1130N	FOURNIER'S GANGRENE: UPDATE IN DIAGNOSIS AND MANAGEMENT HOANG ANH THI VAN, VAN TRUNG HOANG, THE HUAN HOANG, CONG THAO TRINH
EM1136N	THE LATERAL CRESCENT SIGN OF DIRECT INGUINAL HERNIAS DIFFERENTIATES FROM INDIRECT INGUINAL HERNIAS AND FEMORAL HERNIAS VAN TRUNG HOANG, THE HUAN HOANG, HOANG ANH THI VAN, VICHIT CHANSOMPHOU, THANH NHI THI NGUYEN, CONG THAO TRINH, HONG VU THI LE
FORENSICS	
FR598	CARDIOPULMONARY RESUSCITATION INJURIES: TYPE AND INCIDENCE WITH COMPUTED TOMOGRAPHY IN RETURN-OF-SPONTANEOUS-CIRCULATION PATIENTS FUMIE SUGIHARA, JUN WATARI, SAYAKA SHIRAI, SHIN-ICHIRO KUMITA
HEAD & NECK	
HN020	PROGRESSIVE INTRAOCULAR RETINOBLASTOMA: A MULTIPLE CASE STUDY IN SAIFUL ANWAR HOSPITAL MALANG-INDONESIA REGINALD MALEACHI, YUYUN YUENIWATI
HN060	ARE WE MISSING SOMETHING? TONSILLAR LYMPHOMA PRESENTING AS HUGE RIGHT NECK ABSCESS NOOR HAFIFAH JAMIAN, RAYYAN MARDHIYAH NIK M. KAMEL, NIK AZRIZIE MUHAMED, LAILI SURIANI AB LATIP
HN079	IMAGING OF THYROID NODULE WITH ULTRASOUND THYROID HENDRA SARAGIH
HN118N	LEONTIASIS OSSEA: UNIQUE IMAGING FINDINGS OF HYPERPARATHYROIDISM MARIA CRISPINA CORRAL, IRENE S. BANDONG
HN385	ORTNER'S SYNDROME : CARDIOVOCAL CAUSE OF HOARSENESS - A CASE SERIES CHEONG KANG WEI, INTAN ZARIZA HUSSAIN, ISAAC TAN, HENG PEK SER
HN503	IMAGING FEATURES OF INVASIVE OTITIS EXTERNA (IOE) MOHAMED ALI TOUIHRI, AMMAR MOHAMED ANAS, MBAREK CHIRAZ, CHAMMAKHI CHIRAZ

E-POSTER PRESENTATION

ID	Title
HEAD & NECK	
HN528	OUTCOME OF THYROID FNAC FOUZIA WAZIR, AMAN NAWAZ KHAN, UMMARA SIDDIQUE UMER, SHAHJEHAN ALAM, SEEMA GUL, SYED GHULAM GHAUS, HADIA ABID, ABDULLAH SAFI, KALSOOM NAWAB
HN566	A RARE CASE OF CONGENITAL EXTERNAL CAROTID ARTERY-EXTERNAL JUGULAR VEIN ARTERIOVENOUS FISTULA: CASE REPORT GEETHA RAKWAN, SITI HAJAR, NURUL AKHMAR
HN593	JUVENILE OSSIFYING FIBROMA: A RARE CASE REPORT IN THE PHILIPPINES DANILEE MAY FLOR ABANIL
HN683	ROLE OF MDCT IN EVALUATION OF JAW LESIONS BISHWANATH SAHU, PUNEET GUPTA
HN684	BIFID MANDIBULAR CONDYLE AND TMJ ANKYLOSIS PUNEET GUPTA
HN732	A SUBTLE DISEASE OF TEMPOROMANDIBULAR JOINT SEPTIC ARTHRITIS NURSOPIA DIANA AZMI, NASIBAH MOHAMAD, NOR ADIBAH RAZALI, AHMAD KAMAL TARMIZI ZAMLI ZAMDI
HN755	ANATOMIC VARIANTS OF THE COMPUTED TOMOGRAPHY PARANASAL SINUSES: IT'S IMPLICATION IN FUNCTIONAL ENDOSCOPIC SINUS SURGERY (F.E.S.S) NUR FARADISHA AZMIN, MOHAMMAD BAKRI MUSTAFA, ABD SAMAD SAKIJAN, LOKMAN SAIM, ROQIAH FATMAWATI ABDUL KADIR, NAZIMAH AB MUMIN
HN808N	POSTCONTRAST T1GRE OR T2FLAIR - WHICH IS BETTER AND WHERE? RAJUL RASTOGI, NEHA, VIJAI PRATAP
HN820	ODONTOGENIC CYST IN THE MAXILLARY SINUS CAUSING NASOLACRIMAL DUCT OBSTRUCTION ALEX LIM, TAN KHEOK CHOON, LIM DWEE SHION
HN838	ATYPICAL CLINICAL AND RADIOLOGICAL PRESENTATION OF MALIGNANT LYMPHOID NEOPLASM: A CASE REPORT QISTINA MUHAMAD, AZUA MOHD KHAIRY, NORAZALINA MOHD SONGIB, SUNDRARAJAN NAIDU RAMASAMY
HN866	A RARE CASE OF CONGENITAL NASAL PYRIFORM APERTURE STENOSIS WITH SOLITARY MEDIAN MAXILLARY CENTRAL INCISOR TAN WEIJOE, KASTURI NAIR
HN919	SYSTEMATIC APPROACH TO COMPUTED TOMOGRAPHY IN THE ASSESSMENT OF VOCAL CORD PALSY HAFIZAH MAHAYIDIN, AMALI AHMAD
HN940	CASTLEMAN DISEASE INVOLVING PAROTID GLAND: A RARE ENTITY PUNEET GUPTA
HN1002N	DEVELOPMENTAL VARIANT OF THE THYROID CARTILAGE MIMICKING SUSPICIOUS NODULES TIMOTHY SHAO ERN TAN, SARAT KUMAR SANAMANDRA
HN1066N	ACCURACY OF VOI DETERMINATION WITH CBCT IN PERIODONTITIS DUE TO PSYCHOLOGICAL STRESS BABY PRABOWO, ARIF RACHMAN, ANI MELANI MASKOEN, ARIEF BUDIARTO, FOURIER, ARNI DIANA FITRI
HN1119N	FREQUENCY OF BONE INVOLVEMENT IN ORAL CAVITY SQUAMOUS CELL CARCINOMA USING MULTISLICE COMPUTED TOMOGRAPHY AS A MODALITY OF CHOICE. UROOJ KANWAL, SHAISTA SHOUKAT, SHAZIA KADRI, TARIQ MAHMOOD
HN1157N	RECURRENT RESPIRATORY PAPILOMA IN SUNDANESE YOUNG FEMALE SETIA DEWI SARTIKA TAMBUN, HARRY GALUH NUGRAHA, R AYU HARDIANTI SAPUTRI

E-POSTER PRESENTATION

ID	Title
HEAD & NECK	
HN1169N	LOW-FLOW ARTERIO-VEINUS MALFORMATION OF EAR LOBULE- A CASE REPORT DEBARPITA DATTA
HN1179N	RHABDOMYOSARCOMA OF THE NASAL CAVITY INITIALLY DIAGNOSED AS CHRONIC SINUSITIS MANNEM ROOPA, NLN MOORTHY, SUDHANSHU TONPE
HN1209N	A RARE CASE OF INFRATEMPORAL SCHWANNOMA NOOR KHAIRIAH KAMALUDIN, EAMY CHE IBRAHIM
HN1275N	A COMPREHENSIVE PICTORIAL ESSAY OF ORBITAL MASS LESIONS BY 3 TESLA MAGNETIC RESONANCE IMAGING - LOOKING THROUGH ORBIT BEYOND THE FUNDOSCOPY SHRIRAM MATE, SHILPA DOMKUNDWAR, VARSHA RATHI, VIDYA DESAI
HN1303N	CARCINOMA EX PLEOMORPHIC ADENOMA OF THE NASAL CAVITY MICHELLE CASTILLO, GABRIEL MARTIN ILUSTRE, TIMOTHY CARL UY, JOHANNA PATRICIA CANAL, CHRISTINE JOY ARQUIZA, KAREN B. DAMIAN
HN1311N	PARAPHARYNGEAL EXTRAOSSEOUS EWING'S SACROMA TEOH KAR CHOON, RIZUANA IQBAL HUSSAIN, AMALI AHMAD
HN1313N	ECTOPIC MOLAR TOOTH IN MAXILLARY SINUS: A RARE REPORTED CASE OF ASYMPTOMATIC PATIENT OTHMAN PUTEH, MOHD SHAFIE ABDULLAH
HN1331N	PROPTOSIS IN A CHILD WITH LEARNING DISABILITY: LESSON LEARNT ABDUL QAYYUM, YEW TING TING, LIM AUNEE
HN1356N	ACUTE CALFIC TENDITIS OF THE LONGUS COLLI MUSCLE: THE UNDERDIAGNOSED CAUSE OF NECK PAIN MUHAMMAD ZAHID ABDUL MUIEN, SHAHIZON AZURA MOHAMED MUKARI
HN1384N	REVISITING SINONASAL MASSES: A PICTORIAL REVIEW SMILY SHARMA, VENKATA SUBBAIH ARUNACHALAM, PANKAJ SHARMA, POONAM SHERWANI, ANJUM SYED
INFORMATICS	
IN024	THE FACTORS BEHIND THE INCREASING TREND IN THE USE OF DIAGNOSTIC IMAGING IN THE PHILIPPINE GENERAL HOSPITAL FROM THE RADIOLOGISTS' POINT OF VIEW DANLEN C. MASANGYA, JOHANNA PATRICIA A. CAÑAL
IN081	SIMPLE AND COST-EFFECTIVE MEDICAL IMAGING SOLUTION SETUP IN COMBINATION WITH CLOUD TECHNOLOGY AS AN ALTERNATIVE TO CONVENTIONAL RIS-PACS LEE SU ANN, EDWARD TAN, WEE SIXUN
IN101	BURNOUT: PREVALENCE AND ASSOCIATED FACTORS AMONG RADIOLOGY RESIDENTS IN THE PHILIPPINES RENE EDWARD SAMONTE, STELLA ESTHER G. CUA
IN366	AUDIT TO ASSESS THE QUALITY OF RADIOLOGY MDT INPUT ARUBA NAWAZ KHATTAK, UMMARA UMER, AMAN NAWAZ KHAN USTRANA, FARIA MAQSOOD, ZAMMARA SOHAIL
IN417	SAFETY OF IOPROMIDE (ULTRAVIST) IN PATIENTS UNDERGOING COMPUTED TOMOGRAPHY EXAMINATION: A REVISIT SHARANJEET KAUR KARTAR SINGH

E-POSTER PRESENTATION

ID	Title
INFORMATICS	
IN418	<p>WHAT GETS MEASURED, GETS BETTER MANAGED: A DESCRIPTIVE ANALYSIS OF LICENSED ZAMBIAN RADIOLOGICAL RESOURCES</p> <p>CHITANI MBEWE, PASCALINA CHANDA-KAPATA, VERONICA SUNKUTU-SICHIZYA, NASON LAMBWE, NATALIYA YAKOVLYEVA, MASAU SO CHIRWA, BIRHANU T. AYELE, RICHARD DENYS PITCHER</p>
IN616	<p>AVOIDING RADON INHALATION IN RADIOLOGY DEPARTMENT</p> <p>ABDULLAH MOHD NOH, NORDIN AYOUB, SITI ZURINA MAT NOOR, NORHAFIZAH ZAHARI, MARDHIYATI MOHD YUNUS</p>
IN767	<p>DEEP LEARNING IN MEDICAL IMAGING - A BIT OF DEMYSTIFICATION</p> <p>LI KUO TAN, JEANNIE HSIU DING WONG, RAJA RIZAL AZMAN RAJA AMAN</p>
IN828	<p>AUDIT TO ESTIMATE THE PROPORTION OF RADIOLOGY REPORTS CHANGED DURING DOUBLE READING OF IMAGES AND TO ASSESS THEIR POTENTIAL CLINICAL IMPACT.</p> <p>ARUBA NAWAZ KHATTAK, UMMARA SIDDIQUE UMER, AMAN NAWAZ USTRANA, HANIA MOIZ, SEEMA GUL, SHAHJEHAN ALAM, ALIYA SHARIF</p>
IN829	<p>A COMPENDIUM OF CLASSIC MACHINE LEARNING VIS A VIS DEEP LEARNING ALGORITHMS IN IMAGING APPLICATIONS</p> <p>PRANAV AJMERA</p>
IN937	<p>RADIATION AWARENESS AMONGST RADIATION WORKERS IN DIAGNOSTIC RADIOLOGY DEPARTMENT OF A PUBLIC SECTOR HOSPITAL IN KPK</p> <p>TAHIRA NISHTAR</p>
IN1029N	<p>IDEAL PRACTICE FOR AVOIDING RADON ACCUMULATION IN X-RAY ROOM</p> <p>ABDULLAH MOHD NOH, NORDIN AYOUB, SITI ZURINA MAT NOOR, NORHAFIZAH ZAHARI, MARDHIYATI MOHD YUNUS</p>
IN1033N	<p>RADIOLOGISTS' PERCEPTION ON TELERADIOLOGY PRACTICE TOWARDS QUALITY HEALTHCARE IN THE PHILLIPINES</p> <p>JERIK V. YUMOL, FR. JERRY R. MANLANGIT</p>
IN1040N	<p>COMPARISON OF MACHINE LEARNING ALGORITHMS FOR CLASSIFICATION OF MAMMOGRAPHIC MASSES</p> <p>SILPA C. RAJU, RAJIV C. RAJU</p>
IN1041N	<p>USING MACHINE LEARNING IN RADIOLOGY: AN INTRODUCTION FOR THE NON-PROGRAMMER</p> <p>SILPA C. RAJU, RAJIV C. RAJU</p>
IN1142N	<p>BURNOUT: JOB RESOURCES AND JOB DEMANDS ASSOCIATED WITH LOW PERSONAL ACCOMPLISHMENT AMONG RADIOLOGY RESIDENTS IN THE PHILIPPINES</p> <p>RENE EDWARD SAMONTE, MARIE RHIAMAR SAULER-GOMEZ</p>
IN1213N	<p>MOBILE APP DEVELOPMENT FOR CLINICAL REFERRAL GUIDELINES IN RADIOLOGY</p> <p>FRANCIS TANG, K Y KWOK, Y C WONG, LILIAN LEONG, C K LAW</p>
IN1260N	<p>DEVELOPMENT OF PSYCHOSOCIAL ONCOLOGY AND SUPPORTIVE CARE (PSOSC) GUIDELINES FOR RADIATION THERAPIST (RTTS) AND ITS FEASIBILITY: A SYSTEMATIC REVIEW</p> <p>NOR ANIZA AZMI, NUR ATHIRAH KHAMSANI, FARAH WAHIDA ZAMBAHARI, CHAN CARYN MEI HSIEN, AHMAD SYAHMIUDDIN SHAMSUDDIN, AMELIA ANAK REJOS, ZUL ISKANDAR JOHARI</p>
IN1289N	<p>ARTIFICIAL INTELLIGENCE IN AUTOMATED TRIAGING OF CHEST X-RAY DURING COVID 19 PANDEMIC: OUR EARLY EXPERIENCE ON EARLY ADOPTER IN MALAYSIA</p> <p>EZAMIN ABDUL RAHIM, MOHD KHAIRIL ANWAR RAMLI</p>

E-POSTER PRESENTATION

ID	Title
INFORMATICS	
IN1318N	STRUCTURED OR PROSE REPORT? A SURVEY ON THE PREFERENCES OF REFERRING CLINICIANS ON THE STYLE AND CONTENT OF RADIOLOGY REPORTS KAMILLE COMILANG-MARTINEZ
IN1348N	INTRACRANIAL HEMORRHAGE DETECTION IN CT SCAN USING ARTIFICIAL INTELLIGENCE ANAS THAREK, AHMAD SOBRI MUDA, AQILAH BASSERI HUDDIN, AZZAM BASERI HUDDIN
IN1353N	ARTIFICIAL INTELLIGENCE EVALUATION OF INTRACEREBRAL HAEMORRHAGE IN COMPUTED TOMOGRAPHY AZZAM BASERI HUDDIN, AHMAD SOBRI MUDA, WAN MIMI DIYANA WAN ZAKI, AQILAH BASSERI HUDDIN, ANAS THAREK
INTERVENTIONAL RADIOLOGY	
IR332	LOW DOSE CT GUIDED BIOPSIES- OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL MARIAM MALIK, AFSPAN FAYYAZ
IR388	ANALYSIS OF MECHANICAL THROMBECTOMY FOR ELDERLY PATIENTS IN OUR HOSPITAL TAKASHI MATSUMOTO, GAKU MATSUMOTO, YUTA KAWASHIMA, KAZUKI HAGIWARA, FUMIAKI IWASE
IR523	A CASE REPORT OF SPONTANEOUS FRACTURE GUIDEWIRE, POST PLEURAL PROCEDURAL COMPLICATIONS MOHD AZAAD A HAMID, AHMAD HADIF ZAIDIN
IR679	RENAL ARTERY EMBOLIZATION FOR RENAL HEMORRHAGE AND IMPENDING HEMORRHAGE AMAN NAWAZ KHAN
IR712	ORTNER'S SYNDROME: THORACIC ANEURYSM PRESENTING WITH VOCAL CORD PALSY. KHOIRUL HADI ABD AZIZ, NG WEI LIN
IR840	ACUTE DISSECTING MID BASILAR ARTERY ANEURYSM IN PEDIATRIC PATIENT TREATED WITH PARENT ARTERY OCCLUSION KHAIRUL AZMI, FADHLI MOHAMED SANI, CHAN KIN WONG, MOHD SALAHUDDIN KAMARUDDIN, NUR ADURA YAAKUB, NORSHAZRIMAN SULAIMAN, ERIC CHUNG, NG WEI LIN
IR844	RADIATION DOSE TO THE PATIENT'S EYE LENS THROUGH NEURO-INTERVENTIONAL RADIOLOGY PROCEDURES: WHAT EVERY INTERVENTIONAL RADIOLOGIST AND RADIOGRAPHER SHOULD KNOW MOHAMMAD JAVAD SAFARI, JEANNIE HSIU DING WONG, KWAN HOONG NG
IR850	ENDOVASCULAR TREATMENT FOR INTRACRANIAL DURAL ARTERIOVENOUS FISTULA WITH LIQUID EMBOLIC AGENTS KHAIRUL AZMI ABD KADIR, MUHAMMAD ZULHELMI AHMAD, FADHLI MOHAMED SANI, CHAN KIN WONG, MOHD SALAHUDDIN KAMARUDDIN, NUR ADURA YAAKUB, NORSHAZRIMAN SULAIMAN, ERIC CHUNG, NG WEI LIN
IR852	EARLY EXPERIENCE IN ENDOVASCULAR THERAPY FOR ACUTE ISCHAEMIC STROKE WITHOUT GENERAL ANAESTHESIA KHAIRUL AZMI ABDUL KADIR, CHAN KIN WONG, FADHLI MOHAMED SANI, MOHD SALAHUDDIN KAMARUDDIN, NUR ADURA YAAKUB, ERIC CHUNG, NG WEI LIN
IR854	SUCCESSFUL EMERGENT ENDOVASCULAR MECHANICAL THROMBECTOMY (EMT) FOR LIFE THREATENING CEREBRAL VENOUS THROMBOSIS (CVST) IN COMA. KHAIRUL AZMI ABDUL KADIR, LAU KAR FOO, TOH TSUN HAW, SHARON TAI MEI LING, FADHLI MOHAMED SANI, CHAN KIN WONG, MOHD SALAHUDDIN KAMARUDDIN, NUR ADURA YAAKUB, NORSHAZRIMAN SULAIMAN

E-POSTER PRESENTATION

ID	Title
INTERVENTIONAL RADIOLOGY	
IR858	<p>MALEFICIENT'S HORN LIKE APPEARANCE MYXOMATOUS SACCCULAR ANEURYSM OF THE RIGHT MIDDLE CEREBRAL ARTERY: AN EVIL CAUSED BY THE ATRIAL MYXOMA.</p> <p>KHOIRUL HADI ABD AZIZ, CHAN KIN WONG, FADHLI MOHAMED SANI, MOHD SALAHUDDIN KAMARUDDIN, KHAIRUL AZMI ABD KADIR, NUR ADURA YAAKUB, NORSHAZRIMAN SULAIMAN</p>
IR922	<p>OBTURATOR HERNIA : A RARE CAUSE OF SMALL BOWEL OBSTRUCTION DIAGNOSED ON CT</p> <p>NOOR ZULAIKA RUSLI, ASIAH ZULKIFLY APANDI, ZURINA ABDUL WAHAB</p>
IR970	<p>INTRA-PROCEDURAL COELIAC ARTERIO-PORTOGRAPHY COMPUTED TOMOGRAPHY (ICAP-CT) FOR TRANSARTERIAL CHEMOEMBOLIZATION (TACE): A MALAYSIAN EARLY EXPERIENCE</p> <p>ANIS SHAFINA MAHFUDZ, ANDARIAS YANGKAT, IZAZUL HUSSIN, MOHD RIZAL ROSLAN</p>
IR1031N	<p>ENDOVASCULAR TREATMENT OF CAVERNOUS SINUS DURAL ARTERIOVENOUS FISTULA VIA RADIAL ARTERY AND MEDIAN CUBITAL VEIN</p> <p>TAN WEN NIAN, ARVIN RAJADURAI, DHAYAL BALAKRISHNAN</p>
IR1060N	<p>ADRENAL VENOUS SAMPLING: A PRACTICAL GUIDE</p> <p>MASAKI KATSURA, JIRO SATO, MASAOKI AKAHANE, OSAMU ABE</p>
IR1112N	<p>EFFECT OF MUSIC ON ANXIETY AND PAIN DURING ULTRASOUND GUIDED CORE NEEDLE BREAST BIOPSY: A RANDOMIZED CONTROLLED TRIAL</p> <p>MUSTAFA EMRE AKIN</p>
IR1192N	<p>HAEMATOSPERMIA AND POST-COITAL HAEMATURIA SECONDARY TO TRAUMATIC ARTERIO-VEIN FISTULA (AVF)</p> <p>TAN TIONG KEAT, ROZMAN ZAKARIA</p>
IR1195N	<p>PYELOVENOUS FISTULA-RARE BUT SIGNIFICANT COMPLICATION OF PERCUTANEOUS NEPHROSTOMY</p> <p>CHIN YUNCI, TEOH JIA QING, CHIA KOK KING, CHAN PING KIAT</p>
IR1203N	<p>CASE-BASED ILLUSTRATION OF IMAGING FINDINGS OF TUBEROUS SCLEROSIS COMPLEX (TSC) AND EMERGENCY INTERVENTIONAL TREATMENT OF ASSOCIATED LIFE-THREATENING RENAL BLEED</p> <p>JAMSHAI ANWAR, ASMA JAVED, BELQEES YAWAR FAIZ, KHURRAM KHALIQ BHINDER</p>
IR1262N	<p>ACQUISITION PROTOCOL CBCT IN ACUTE STROKE AND NEUROVASCULAR INTERVENTION: OUR EARLY EXPERIENCE</p> <p>MOHAMMAD MUDZAKIR ZAINAL ALAM, MOHD KHAIRUL FAZWAN MOHD YUSOF, MUHAMMAD IZZUDDIN ZAINI, MOHD NAIM MOHD YAAKOB, MOHD FANDI AL KHAFIZ KAMIS, EZAMIN ABD RAHIM, AHMAD SOBRI MUDA</p>
IR1288N	<p>DIRECT PERCUTANEOUS LIPIODOL LYMPHANGIOGRAPHY IN CHYLOUS LEAKAGE POST MASTECTOMY WITH SUCCESSFUL EMBOLISATION: A CASE REPORT</p> <p>MOHD NAIM MOHD YAAKOB, EZAMIN ABDUL RAHIM, MOHD FANDI AL KHAFIZ KAMIS, MUHAMMAD SYAFEEQ FAIZ MD NOH, RIDZUAN ABDUL RAHIM, NIK AZUAN NIK ISMAIL, MOHD HADY SHUKRI AS</p>
IR1314N	<p>OUTCOME AND SAFETY OF SELECTIVE INTERNAL RADIATION THERAPY (SIRT) USING YTTRIUM-90 MICROSPPHERES FOR THE TREATMENT OF UNRESECTABLE PRIMARY AND SECONDARY HEPATIC TUMOURS: A SINGLE-INSTITUTION EXPERIENCE</p> <p>TJUN HOE LUI, NUR YAZMIN YAACOB, THANUJA MAHALETCHUMY</p>
IR1326N	<p>ASSISTANT INTERVENTIONIST WORKFLOW EFFICIENCY IN ACUTE STROKE THROMBECTOMY: EARLY EXPERIENCE IN A TEACHING HOSPITAL</p> <p>NAZHIRAH AZMI, NURUL HIDAYATUL SYAZWANI YAACOB, WAN NUR ASILAH WAN ZAKARIA, AHMAD SOBRI MUDA, AHMAD SYAHMI MOHD SAUFI, MUHAMMAD NABEEL MOHD YUSOF, AIKA DANIEL MUHAMMAD AZIAN, AHMAD FAIZ IZUDDIN ABDUL RAZAK</p>

E-POSTER PRESENTATION

ID	Title
INTERVENTIONAL RADIOLOGY	
IR1344N	SPLenic ARtery PSEUDOANEURYSM SECONDARY TO NECROTISING PANCREATITIS: SUCCESSFUL TRANSCATHETER EMBOLIZATION FATIN SYAHIRAH SULAIMAN, NASIBAH MOHAMAD, NORHAFIZAH EHSAN, IZAZUL HUSSIN
IR1347N	STUCK CUFFED CATHETER: NOT AS SIMPLE AS IT SEEMS ABDUL QAYYUM, DHAYAL BALAKRISHNAN, ZAKHIRATI ZAINOL ABIDIN
IR1350N	SELECTIVE INTERNAL RADIATION THERAPY (SIRT) USING YTTRIUM-90 TO TREAT UNRESECTABLE LIVER METASTASES FROM NEUROENDOCRINE TUMOUR AND IGF-2-SECRETING TUMOUR: A REPORT OF 3 CASES TJUN HOE LUI, NUR YAZMIN YAACOB
IR1369N	CRYPTOGENIC STROKE ASSOCIATED WITH MECHANICAL THROMBECTOMY FOR PULMONARY EMBOLISM IN A PATIENT WITH PATENT FORAMEN OVALE HOOI LAM TAN, SEE KHIM SIM
IR1396N	FACTORS AFFECTING RESPONSE TO TRANSARTERIAL CHEMOEMBOLIZATION IN HEPATOCELLULAR CARCINOMA(HCC) TREATMENT LIEW YUAN HWEN, NUR ADURA YAAKUP, NORSHAZRIMAN SULAIMAN, CHAN WAI YEE, MOHD RIZAL ROSLAN
MOLEUCLAR IMAGING/NUCLEAR MEDICINE	
MI056	ROLE OF FDG PET/CT IN DIAGNOSIS OF LARGE VESSEL VASCULITIS IN CASES OF FUO RAJEEV KUMAR, POKHRAJ SUTHAR, ANURAG JAIN, AMIT SHARMA, KP SOLANKI
MI144	VISION LOSS- AN UNUSUAL PRESENTATION OF LUNG CARCINOMA AKSHAT AGRAWAL, KHUSHI AGRAWAL, MATULI DAS, MANMAT DAS, KAMAL KUMAR SEN
MI323	DETECTION OF ADDITIONAL SUSPICIOUS FOCUS OF INFECTION AND DISEASE EXTENSION SEEN ON BONE SCAN IN A RARE CASE OF ADULT NON-TRAUMATIC SKULL VAULT OSTEOMYELITIS AHMAD ZAID ZANIAL, NADIAH ABD RAZAK, NUR LIYANA BUJANG
MI354	DIAGNOSTIC ACCURACY OF LUMBAR SPINE BONE MINERAL DENSITY (BMD) MEASUREMENTS VIA QUANTITATIVE COMPUTED TOMOGRAPHY (QCT) IN THE ASSESSMENT OF OSTEOPOROSIS IN FILIPINO WOMEN DIAGNOSED WITH BREAST CANCER USING DUAL-ENERGY X-RAY ABSORPTIOMETRY (DXA) AS GOLD STANDARD ANGELA KRISTA PEDROSO, IRENE S. BANDONG, RAQUEL MARIE R. CABATU
MI677N	NOT SO 'LOVE'LY SURPRISE. INCIDENTAL FINDING OF LARGE BLADDER DIVERTICULUM ON TC99M-MDP BONE SCINTIGRAPHY MUHAMMAD ADIB ABDUL ONNY, MUHAMMAD AZIZUL MOHD DAUD, EZMA YANIS MOHD MAHIDIN, SYED EJAZ SHAMIM, HAZLIN HASHIM, NORAZLINA MAT NAWI, WAN FATIHAH WAN SOHAIMI
MI787	153 SM LABELLED MICROPARTICLES AS A POTENTIAL REPLACEMENT FOR 90 Y IN HEPATIC RADIOEMBOLIZATION NURUL ASYKIN, CHAI HONG YEONG, A. C. PERKINS, KWAN HOONG NG
MI791	A RARE CASE OF CUTANEOUS T-CELL LYMPHOMA WAI KEONG CHEAH, NORLISAH MOHD RAMLI
MI1094N	IN VIVO COMPARISON OF VOI DETERMINATION ON MAXILLARY BONE REGENERATION ORTHODONTIC TREATMENT: CBCT VERSUS MICRO-CT SUDARMONO, SUNARDHI WIDYAPUTRA, SUHARDJO SITAM, INNE SUHERNA, FOURIER D.E. LATIEF, ARNI DIANA FITRI, ARIF RACHMAN

E-POSTER PRESENTATION

ID	Title
MOLEUCLAR IMAGING/NUCLEAR MEDICINE	
MI1152N	EXPECTING THE UNEXPECTED. A CASE OF RIGHT-TO-LEFT SHUNT SECONDARY TO EISENMENGER SYNDROME DUE TO ATRIAL SEPTAL DEFECT ON LUNG VQ SCINTIGRAPHY IN A PATIENT WITH HISTORY OF PULMONARY THROMBOEMBOLISM. MUHAMMAD ADIB ABDUL ONNY, ANTHONY LOUIS ANAK KINDU, LIM JIN LEE, NG CHEN SIEW, MAHAYUDDIN MANAP
MI1156N	BASELINE DATASET FOR GASTRIC EMPTYING STUDY BASED ON MALAYSIAN LOCAL DIET - PILOT STUDY HANIFF SHAZWAN MUHD SAFWAN SELVAM, TEIK HIN TAN, MOHD AFANDI AZMAN, YEE LIAN NG
MI1160N	DETECTION OF SYNCHRONOUS PHOSPHATURIC MESENCHYMAL TUMOUR BY 'EXTENDED' WHOLE-BODY GA68-DOTATATE PET-CT IN TUMOUR-INDUCED OSTEOMALACIA: A CASE REPORT TEIK HIN TAN, EW-JUN CHEN, MING TSUEY CHEW, PING CHING CHYE, MING WONG
MI1424N	THE DIAGNOSTIC VALUE OF HEPATOBILIARY SCINTIGRAPHY FOR CHOLEDOCHAL CYSTS IN THE ERA OF MAGNETIC RESONANCE IMAGING WITH CHOLANGIOPANCREATOGRAPHY AND HEPATIC CONTRAST AGENT: A CASE REPORT AND REVIEW TAK KWONG CHAN, W H LUK, F H NG, ROIS CHAN, W H CHEUNG
MUSCULOSKELETAL	
MK082	DETECTION SOFT TISSUE MASSES USED ULTRASOUND HAND: SOLID OR CYSTIC A RARE CASE HENDRA SARAGIH
MK165	CORRELATION OF CLINICAL, MRI AND ARTHROSCOPIC FINDINGS IN DIAGNOSING LIGAMENT INJURIES OF THE ANKLE JOINT SURAINI MOHAMAD SAINI, KHAULAH KARIMAH AZNI, NORAFIDA BAHARI, HASYMA ABU HASSAN, EZAMIN ABDUL RAHIM
MK166	MORPHOLOGICAL OF THE ARTICULAR CARTILAGE THICKNESS OF THE KNEE USING 3 TESLA MRI IN NORMAL YOUNG ADULT SURAINI MOHAMAD SAINI, IDRIS IBRAHIM, SUBAPRIYA SUPPIAH, FATHINUL FIKRI AHMAD SAAD
MK168	PARALABRAL CYST VS CYSTIC HYGROMA OF THE SHOULDER CAUSING SUPRASCAPULAR NERVE COMPRESSION. A CASE REPORT EZAMIN ABDUL RAHIM, ARIFAIZAD ABDULLAH, FARIDAH HANIM MOHAMED, SURAINI MOHAMAD SAINI
MK171	POPLITEAL NEUROFIBROMA MIMICKING BAKER CYST SURAINI MOHAMAD SAINI, IDRIS IBRAHIM, NORAFIDA BAHARI, LAILA MASTURA AHMAD APANDI, SUZANA AB. HAMID
MK325N	ASSESSMENT OF LIPID IN MULTIFIDUS MUSCLE, GASTROCNEMIUS, SOLEUS, AND TIBIALIS ANTERIOR OF OBESE, OVERWEIGHT, AND NORMAL WEIGHT YOUNG ADULTS BY PROTON NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY TECHNIQUE THANAPORN PETCHAROEN, NATTACHA CHAMTA, SUPAK KOSICHAROEN, KHIN THANDAR HTUN, SUCHART KOTHAN
MK335	UNUSUAL PRESENTATION OF PRIMARY OSTEOSARCOMA OF THE SPINE IN AN ADOLESCENT NADIA FAREEDA, HAZWAN AMZAR KHAIRUL ANNUAR
MK337	MULTIFOCAL SKELETAL TUBERCULOSIS MIMICKING SECONDARY LYTIC BONE METASTASIS: THE GREAT MIMICKER AHMAD FARID ZULKIFLE, MOHAMMAD KHAIRUL AWANG
MK359	SIGNIFICANCE OF 3-DIMENSIONAL FAST IMAGING EMPLOYING STEADY-STATE ACQUISITION IN COMPARISON TO PROTON DENSITY SEQUENCES IN MRI DIAGNOSIS OF ANTERIOR, POSTERIOR CRUCIATE LIGAMENTS AND MENISCAL TEARS MOHAMAD SAFWAN ZAINUDDIN, FAIZATUL IZZA

E-POSTER PRESENTATION

ID	Title
MUSCULOSKELETAL	
MK383	MULTIPLE SPINAL LESIONS: A DIAGNOSTIC MIMICKER NURDILLAH IDRIS, SYAZARINA SHARIS OSMAN
MK402	SECONDARY TUMORAL CALCINOSIS MASQUERADING PRIMARY BONE TUMOUR VITHIYA SANMUGANATHAN, CHEW CHEE KEONG, ROZITA MOHD GHAZALI
MK408	MR IMAGING OF THE SCAPHOLUNATE LIGAMENT - NORMAL ANATOMY AND CLINICAL EXAMPLES KENNETH SHEAH, SELVAM SEKAR, COLIN SHEAH, RYAN SHEAH, LIM BENG HAI
MK409	MINI-AUDIT OF TECHNICAL ADEQUACY OF MAGNETIC RESONANCE IMAGING OF THE SHOULDER COLIN SHEAH, RYAN SHEAH, SELVAM SEKAR, SUPRAJO AMAT, TITUS, KENNETH SHEAH
MK507	EXTRAOSSEOUS MASS PRESENTING AS PELVIC MASS WAN AHMAD FIRDAUS WAN CHEK, ANITHAA TANGAPERUMAL, PARAMENDRA V THARUMAKUNASINGAM
MK513	ASSESSMENT OF CORRELATION BETWEEN COBB'S ANGLE AND PELVIC TILTING ON STANDING WHOLE SPINE RADIOGRAPHS IN SRI LANKA A L ABEYWEERA, P SATHYATHA
MK592	SURGICAL SITE INFECTION OF TOTAL HIP REPLACEMENT AND ROLE OF DUAL RADIONUCLIDE IMAGING STUDIES IN EVALUATING TREATMENT RESPONSE AHMAD ZAID ZANIAL, BOEY CHING YEEN, SITI ZARINA AMIR HASSAN
MK762	MEDIAL THIGH PAIN IN YOUNG ATHLETE: MR IMAGING FINDINGS NURUL FATHIAH KHALID, LILY LIM, HAMZAINI AH
MK779	TUMOUR-TO-TUMOUR METASTASIS (TTM) NURUL AIDA SELAMAT, SURYASMI DUSKI
MK780	PRIMARY SPINDLE CELL SARCOMA OF BONE: IMAGING FEATURES IN 37 PATIENTS NURUL AIDA SELAMAT, ASIF SAIFUDDIN
MK849	TWO CASE REPORTS OF LIPOFIBROMATOUS HAMARTOMA OF MEDIAN AND ULNAR NERVES ASSOCIATED WITH MACRODACTYLY AND THEIR MRI FEATURES VEMURI NAGA VARA PRASAD, SONGA RAMYA
MK878	LUMBAR DISC DEGENERATIVE DISEASE AND LUMBAR STENOSIS: A CORRELATION BETWEEN THE MRI FINDINGS AND DISABILITY AMONG THE LOW BACK PAIN PATIENTS USING OSWESTRY DISABILITY INDEX IN HOSPITAL SERDANG, MALAYSIA ROZI MAHMUD, SURAINI MOHAMAD SAINI, FARIDAH HANIM MOHAMED
MK885N	MRI BILATERAL THIGH IN QUANTIFYING OBESITY AND SARCOPENIA IN ELDERLY AND ITS RELATION TO FALL AND FALL-RELATED OUTCOMES VIJEYA PRIYAN SUBRAMANIAM
MK892	MRI KNEE ASSOCIATION OF PERIPHERAL VERTICAL MENISCAL TEARS WITH ANTERIOR CRUCIATE LIGAMENT TEARS UMMARA SIDDIQUE, SHAHJEHAN ALAM, SEEMA GUL, SYED GHULAM GHAUS, MUHAMMAD ASIF
MK952	DIRECT MR ARTHROGRAM OF THE SHOULDER: HOW WE DO IT MUHAMMAD TAHIR, MALIHA FANSUR
MK968	ASSESSMENT OF SEVERITY OF CARPAL TUNNEL SYNDROME WITH ULTRASONOGRAPHY: VALUE OF MEDIAN NERVE CROSS-SECTIONAL AREA IN RELATION TO DISEASE SEVERITY ON NERVE CONDUCTION STUDIES ALIYA AHMED, GHAZALA MALIK, HASSAN IMTIAZ, RAMISH RIAZ, MUZHAR BADSHA, SHAHLA ZAMEER

E-POSTER PRESENTATION

ID	Title
MUSCULOSKELETAL	
MK976	A CASE REPORT: GIANT CELL TUMOR WITH SECONDARY ANEURYSMAL BONE CYST OF FEMUR AGNES WANDA SUWANTO, IRMA DARINAFITRI
MK1001N	THE UTILITY OF MULTIMODALITY IMAGING IN EVALUATING ATYPICAL SPINAL TUBERCULOSIS TIMOTHY SHAO ERN TAN, RAMEYSH DANOVANI MAHMOOD
MK1005N	EWINGS SARCOMA WITH SKIP LESION: A RARE PRESENTATION SHARMILA ARRUMUGAM, NOOR KHAIRIAH A. KARIM, JUHARA HARON
MK1016N	INCIDENTAL FINDINGS ON MRI OF SACROILIAC JOINTS AASMA NUDRAT ZAFAR, SAQIB QAYYUM AHMAD
MK1017N	MRI DIAGNOSIS OF AVASCULAR NECROSIS - A CASE REPORT OF MULLER WEISS SYNDROME AASMA NUDRAT ZAFAR, ISHTIAQ AHMED QURESHI, UMAR ISLAM, SAERAH IFFAT ZAFAR, NOUREEN TASSADAQ
MK1025N	RECCURENT GIANT CELL TUMOR OF TENDON SHEATH ALBERT ALFONSO
MK1034N	ASEPTIC LYMPHOCYTE DOMINATED VASCULITIS-ASSOCIATED LESIONS SECONDARY TO METAL ON METAL HIP PROSTHESIS CHUNG SIOK LI, EELCO BOORSMA, SIMON SPENCER
MK1054N	FGF23-RELATED HYPOPHOSPHATEMIC OSTEOMALACIA: CURRENT VIEWS ON ETIOPATHOGENESIS, DIAGNOSTIC MODALITIES, AND THERAPEUTIC OPTIONS MASAKI KATSURA, JIRO SATO, MASAOKI AKAHANE, OSAMU ABE
MK1058N	"DOT IN CIRCLE" SIGN, A CHARACTERISTIC MRI SIGN FOR SOFT TISSUE MYCETOMA. CHIAM WOOI KEE, SURAYA AZIZ, MAIZATUL JAMNY MAHMOOD
MK1087N	RARE OCCURRENCE OF ARTHROGRYPOSIS MULTIPLEX CONGENITA IN A 26-YEAR-OLD PREGNANT FEMALE: A CASE REPORT AND REVIEW OF LITERATURE KHURRAM KHALIQ BHINDER, SHAISTA RIAZ, ZAINAB MALIK
MK1103N	CASE OF AN UNUSUAL CAUSE OF LOW BACK PAIN - BERTOLOTTI SYNDROME WITH TUBERCULOUS SACROILIITIS SHARLLINA PRASAD, FARIHAH ABD GHANI, MANOREKHA SUPRAMANI
MK1135N	OVERVIEW OF GENERALIZED LYMPHATIC ANOMALY HOANG ANH THI VAN, VAN TRUNG HOANG, THE HUAN HOANG, CONG THAO TRINH
MK1189N	PERIOSTEAL CHONDROMA OF TIBIA IN PEDIATRICS LAKSHMI RENUKA MALIREDDY, N L N MOORTHY, SHRITHI BHUI
MK1196N	SCAPULOTHORACIC DISSOCIATION: A DEVASTATING BUT EASILY OVERLOOKED DIAGNOSIS IN THE POLYTRAUMA PATIENT: A CASE REPORT HOI MING KWOK, EUGENE SEAN LO, NIN YUAN PAN, ROIS L.S. CHAN, SIU CHUN WONG, LIK FAI CHENG, KA FAI MA
MK1210N	CHRONIC PATELLOFEMORAL INSTABILITY - ANATOMICAL VARIANTS, MRI CONSIDERATIONS AND WILL DIFFERING KNEE FLEXION/EXTENSION ON MRI AFFECT OUR REPORTING? BRIAN FUNG WAI HIM, ANGELA LI ON CHEE, KENNETH CHONG WING HO, KEVIN YU CHUN HUNG, YANG SIYUE
MK1212N	RADIOLOGY APPROACH FOR EARLY DIAGNOSIS AND EVALUATION OF TENOSINOVIAL GIANT CELL TUMOR MALIGNANCY: A CASE REPORT ASWIN GUNAWAN CHRISTANTO, UNDANG RUHIMAT

E-POSTER PRESENTATION

ID	Title
MUSCULOSKELETAL	
MK1230N	A RARE CASE REPORT OF PLEXIFORM NEUROFIBROMA OVER DORSUM OF FOOT IN A PATIENT WITH NEUROFIBROMATOSIS TYPE 1 PRAGATI JADHAV, BHAWANA SONAWANE, ANAGHA DESHPANDE, SUNITA BHUTADA
MK1248N	COMPARATIVE EVALUATION OF HIGH-RESOLUTION ULTRASONOGRAPHY (HRUS) AND MAGNETIC RESONANCE IMAGING (MRI) IN PAINFUL WRIST JOINT RAJUL RASTOGI, ABHISHEK KUMAR SINGH, NEHA, VIJAI PRATAP
MK1250N	MELORHEOSTOSIS: THE DRIPPING MOLTEN WAX BONE WAN IRFAN W MUSTAPHA, MUHAMMAD RIDHUAN ISKANDAR, SITI KAMARIAH CHE MOHAMED
MK1261N	EVALUATION OF THE INSALL-SALVATI RATIO AMONG VIETNAMESE POPULATIONS: APPLICATION FOR DIAGNOSIS OF PATELLAR MALPOSITION? HOANG DI THU LE, THANH THAO NGUYEN
MK1305N	ANOMALOUS ORIGIN OF DORSALIS PEDIS ARTERY FROM THE PERONEAL ARTERY: A CASE SERIES. YOGAMBIGAI BALAKRISHNAN, IZZATUL AINI MOHAMAD IDRIS, WAN NAJWA ZAINI WAN MOHAMED
MK1383N	A RARE CASE OF ADULT RHABDOMYOSARCOMA WITH RARE SECONDARY INVOLVEMENT NUR SALSABILA MOHD ROSLI, ZAIHAN AWANG
MK1414N	FOCAL LESIONS OF HAND AND WRIST: A SMOOTH MR ROADMAP FOR IMAGING THE LUMPY BUMPY HAND MEGHANAA JAYAKUMAR
MEDICAL PHYSICS	
MP131	DEVELOPMENT OF AN IN-HOUSE PROTOCOL FOR THE QUALITY ASSURANCE OF DIGITAL BREAST TOMOSYNTHESIS SYSTEM BY ADOPTING DIFFERENT INTERNATIONAL STANDARDS CELINA LI
MP483	COMPARISON OF ABSORBED DOSE OF ORGANS AND EFFECTIVE DOSE IN INTERVENTIONAL PROCEDURE USING MCNP CHEOL-HA BAEK, DONG-HEE HAN, JONG-HUN WON, SEUNG-JAE LEE
MP544	OPTICALLY STIMULATED LUMINESCENT DOSIMETRY FOR DIAGNOSTIC X-RAY BEAMS AND PATIENT DOSIMETRY JEANNIE WONG, KWAN HOONG NG
MP640	EFFECTIVENESS OF LEAD APRON: HOW PROTECTIVE ARE THE APRONS AGAINST IONIZING RADIATION? SITI ZUBAIDAH ISMAIL, SHARIZAN SHAHARRUDDIN
MP746	DEVISING REAL-TIME RADIOLUMINESCENCE DOSIMETRY SYSTEM FOR MEGAVOLTAGE (MV) PHOTON JANATUL MADINAH WAHABI, JEANNIE WONG HSIU DING, UNG NGIE MIN, GHAFOR AMOUZAD MAHDIRAJI
MP784	MEDICAL PHYSICS POSTGRADUATE PROGRAMME - MASTER OF MEDICAL PHYSICS AT UNIVERSITY OF MALAYA AZLAN CHE AHMAD, JEANNIE HSIU DING WONG, MUHAMMAD SHAHRUN NIZAM DAMANHURI, LI KUO TAN, NGIE MIN UNG, KWAN HOONG NG
MP785	QUALITY CHECKS OF MOLYBDENUM BREAKTHROUGH TEST IN MOLYBDENUM-99/TECHNETIUM-99M GENERATORS: 6 YEARS EXPERIENCE AT SINDH INSTITUTE OF UROLOGY 7 TRANSPLANTATION(SIUT) SYED MUHAMMAD ARAIZ, AKHTER AHMED, SYED RASHID-UL- AMIN

E-POSTER PRESENTATION

ID	Title
MEDICAL PHYSICS	
MP786	ASSESSMENT OF PERSONNEL DOSIMETER PRACTISE IN NUCLEAR MEDICINE/PET-CT IN SINDH INSTITUTE OF UROLOGY & TRANSPLANTATION (SIUT) SYED MUHAMMAD ARAIZ, AKHTER AHMED, SYED RASHID-UL- AMIN
MP842	FABRICATION OF BISMUTH MICROPARTICLES-LOADED POLYMER COMPOSITE FOR ADDITIVE MANUFACTURING OF RADIATION SHIELDING ADAM EFFENDI ASHAARI, HUI LENG CHOO, YIN HOW WONG, CHAI HONG YEONG
MP924	DEVELOPMENT OF A TISSUE-EQUIVALENT ABDOMINAL PHANTOM FOR CT-GUIDED BIOPSY TRAINING CHAI HONG YEONG, AINA QISTINA, JASON NG, ALAN GOH, PENG LOON CHEAH, NORSHAZRIMAN SULAIMAN, ERIC CHUNG, MOHD KAMIL MOHD FABELL, BASRI JOHAN JEET ABDULLAH
MP1224N	DETECTION OF ORTHOPEDIC IMPLANTS AND IN VITRO OBJECTS USING HAND-HELD METAL DETECTOR RIZWAN KHAN, KHAIRIL AMIR SAYUTI
NEURORADIOLOGY	
NR028	THE IVY SIGN IN ADULT MOYAMOYA DISEASE NURUL HAFIDZAH RAHIM, HILWATI HASHIM, NORZAINI ROSE MOHD ZAIN
NR035	SPINAL MUCORMYCOSIS - A DIAGNOSTIC CHALLENGE FOR RADIOLOGIST TEO HAN LIANG, SHAHIZON AZURA MOHAMED MUKARI, TAN HUI JAN, JEGAN THANABALAN
NR036	CHANGES IN VERTEBRAL BODY HEIGHT AND SPINAL CANAL DIAMETER DUE TO AGING AND BMI NOMUUNDARI GANBAT
NR043	GLIOBLASTOMA SINGLE LESION METAEXTRAAXIAL VS MULTIPLE LESION: A MULTIPLE CASE STUDY IN SAIFUL ANWAR HOSPITAL MALANG-INDONESIA AVELINO MEOL, YUYUN YUENIWATI, ANDINA WIRATHMAWATI
NR045	ATTEMPT TO MEASURE SIMPLE T1 VALUES OF NEONATAL BRAINS BY MODIFIED T1 MAPPING KEISUKE DASAI
NR051	CENTRAL NERVOUS SYSTEM TUBERCULOSIS: LITERATURE REVIEW FOR IMAGING MODALITIES AND PROTOCOLS SHAHMEER KHAN, MUHAMMAD AWAIS, MUHAMMAD WASAY, AYESHA SHOUKAT, SHAHEER KHAN
NR080N	RARE CASE OF SINONASAL TRACT EWING SARCOMA SHAFORA BIBI SAMRI, NUR ASMA SAPIAI, WAN AIREENE WAN AHMED
NR088	CHIASMAL HERNIATION INTO EMPTY SELLA. NUR FATHIHAH, MOHD NAZRI MOHD NASIR
NR092N	CLINICAL RELATIONSHIP ANTERIOR INFERIOR CEREBELLAR ARTERY LOOPING: A SERIAL CASE AGNES WANDA SUWANTO, YUYUN YUENIWATI
NR095	ACUTE BILATERAL MEDIAL MEDULLARY INFARCTION - A RARE ENTITY DIAN NORIZA EDDY SURYONO, NORLISAH MOHD RAMLI
NR108	MRI FEATURES OF JAPANESE ENCEPHALITIS THOO FOONG SHI, NORIZA ZAINOL ABIDIN, MUHAMMAD ZABIDI AHMAD
NR115	SPINAL DYSRAPHISM: IMAGING SIGNS OF CROSS-SECTIONAL IMAGING T SEETAM KUMAR, ROHTAS K YADAV

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR117	A RARE CASE OF BICKERSTAFF'S ENCEPHALITIS MOHD AZAAD A HAMID
NR124	CRANIAL POLYNEUROPATHY SECONDARY TO VERTEBROBASILAR DOLICHOECTASIA TAY POH SEN, NOOR AIDA MAT DAUD, HILWATI HASHIM
NR136	DIFFERENTIATION OF FUNGAL BRAIN ABSCESES FROM GLIOMAS USING ADVANCED MR IMAGING TECHNIQUES FATIMA MUBARAK
NR137	PRIMARY MALIGNANT MELANOMA OF BRAINSTEM MEDULLA MIMICKING AS CAVERNOMA - CASE REPORT FATIMA MUBARAK
NR140	TUBEROUS SCLEROSIS COMPLEX (TSC) IN THE BRAIN - A PICTORIAL REVIEW TAY POH SEN
NR147	DIFFUSION-WEIGHTED MAGNETIC RESONANCE IMAGING MAY BE USEFUL IN DIFFERENTIATING FUNGAL ABSCESS FROM MALIGNANT INTRACRANIAL LESION: CASE REPORT FATIMA MUBARAK
NR162	METHANOL ENCEPHALOPATHY - A SPECTRUM OF PLAIN CT BRAIN FINDINGS VITHIYA SANMUGANATHAN, ROZITA MOHD GHAZALI
NR174	VENTRAL CORD SYNDROME, DIAGNOSTIC CHALLENGE: A CASE REPORT NUR ASMA SAPIAI, NUR HANEEFA AHMAD
NR175	"THALAMIC INFARCT VS GLIOMA; A DIAGNOSTIC CHALLENGE" NUR ASMA SAPIAI, NUR NAZLEEN SAID MOGUTHAM
NR181N	CASE OF ISOLATED CORTICAL VEIN THROMBOSIS ANDRE YEE YUE MENG
NR204	CORRELATION OF MILD SPONDYLOLISTHESIS' GRADE BY MEYEDERING WITH LIGAMENTUM FLAVUM THICKENING BASED ON LUMBOSACRAL MRI EXAMINATION IN PATIENTS WITH LOW BACK PAIN YUYUN YUENIWATI, JUNUS ASIU BULU BAAN
NR211	EVOLUTION OF SUBACUTE ARTERY OF PERCHERON INFARCTION - A CASE REPORT NABILLAH MOHD JADI, HAIRUDDIN ACHMAD SANKALA, NOR ZAINI ROSE MOHD ZAIN
NR227	BILATERAL HIPPOCAMPAL BRIGHT SPOTS: TRANSIENT GLOBAL AMNESIA - A CASE SERIES SRIKIRAN T K, SUNITHA ROBERT, ROBERT MATHEW, GEENA BENJAMIN, SHIVAPRAKASH B HIREMATH
NR236N	HEMORRHAGIC STROKE ON DWI; MRI AS THE FIRST LINE NEUROIMAGING FOR ACUTE STROKE MOHD FANDI AL-KHAFIZ KAMIS, AZRIL ISHAK, NORAFIDA BAHARI, MOHD NAIM MOHD YAAKOB, EZAMIN ABDUL RAHIM, AHMAD SOBRI MUDA
NR242N	HEMORRHAGIC HERPES ENCEPHALITIS MASKING AS MIDDLE CEREBRAL ARTERY TERRITORY INFARCT RAYYAN MARDHIYAH NIK MOHD KAMEL
NR243	DUPLICATION OF PITUITARY GLAND PLUS SYNDROME FATIMA MUBARAK, RAIMA ZAKARIA
NR252N	DECODING REGION-SPECIFIC CORTICAL COMPLEXITY WITH MULTI-SCALE MORPHOMETRIC ANALYSIS HANNA LU
NR260	AN UNUSUAL CASE OF STROKE IN PERIPARTUM DIMPLE BHATIA

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR266	MAGNETIC RESONANCE IMAGING EVALUATION OF SELLAR AND JUXTASELLAR MASSES AND THEIR HISTOPATHOLOGICAL CORRELATION GOBARDHAN THAPA, ROSHNA GIRI
NR281	MRI - APPARENT DIFFUSION COEFFICIENT (ADC) IN DEFINING STAGES OF CEREBRAL INFARCTION MOHAMMED SHABIR
NR301	A VANISHING TUMOUR: SPONTANEOUS INVOLUTION OF A LARGE PITUITARY MACROADENOMA UMMARA SIDDIQUE, ALI ASGHAR SAHIB, SEEMA GUL, SYED GHULAM GHAUS, SHAHJEHAN ALAM, MUHAMMAD ASIF, MUHAMMAD ABDULLAH, FARIA MAQSOOD
NR330	A RARE CASE OF VEIN OF GALEN MALFORMATION WITH CHANGES OF CHRONIC VENOUS HYPERTENSION IN ADULT FEMALE PATIENT MARIAM MALIK, BELQEES YAWAR FAIZ, MUHAMMAD YOUSAF CHAUDERY, ATIF IQBAL RANA
NR334N	PROMINENT CORTICAL VEIN SIGN ON SUSCEPTIBILITY-WEIGHTED IMAGING (SWI) IN LARGE VESSEL OCCLUSION DURING HYPERACUTE STROKE AS AN INDIRECT MARKER TO EVALUATE ISCHEMIC PENUMBRA MOHD FANDI AL-KHAFIZ KAMIS, AZLIN TASNIM CHE OSMAN, MOHD NAIM MOHD YAAKOB, EZAMIN ABDUL RAHIM, AHMAD SOBRI MUDA
NR338	CALCIFIED CORTICAL GYRATION POST CEREBRAL INFARCTION IN NORMOCALCEMIC PATIENT: CASE REPORT NUR SALSABILA MOHD ROSLI, NICQESHEN NAIR BALACHANTHREN, WOO XIANG LING
NR339	CYTOMEGALOVIRUS TRANVERSE MYELITIS WITH BRAINSTEM INVOLVEMENT IN PATIENT WITH HIV; CASE REPORT NUR SALSABILA MOHD ROSLI, SE TO WEI LI
NR375	DIAGNOSTIC CHALLENGE IN A CASE OF NEUROLYMPHOMATOSIS RADHIANA HASSAN, SITI KAMARIAH CHE MOHAMED, MOHD RADHWAN ABIDIN, MOHAMED SAUFI AWANG, MUHAMAD AZAMIN ANUAR, AZLIANA ABDUL FUAAT, AZIAN ABD AZIZ
NR407	CONGENITAL ABSENCE OF THE RIGHT INTERNAL CAROTID ARTERY PRESENTING AS INTERMITTENT LOSS OF CONSCIOUSNESS MARIA CHRISTINA TABITHA BALACCUA
NR413	PINEAL APOPLEXY WITH ACUTE TRANSIENT SENSORY SYMPTOMS: CASE REPORT NUR ASMA SAPIAI, AIMAN ASYRAF AHMAD SUKARI
NR419	AZYGOS ANTERIOR CEREBRAL ARTERY WITH ASSOCIATED SACULAR ANEURYSM AND PIAL ARTERIOVENOUS MALFORMATION: A CASE REPORT GERARD G. VITERBO, CINDY PEARL J. SOTALBO, JEFFREY P. APO, RENATO M. CARLOS
NR432	MULTIPLE INTRACRANIAL DOLICHOECTATIC AND LEFT GIANT ANEURYSMS PRESENTING AS LEFT ABDUCENS NERVE PALSY IN A YOUNG PATIENT SEAH SHIAO-CHIN, NORHANANI HJ MD TAP, LAILI SURIANI AB LATIP
NR435	ROLE OF MR SPECTROSCOPY IN THE ASSESSMENT OF GLIOBLASTOMA MULTIFORME MIMICKING MENINGIOMA: REPORT OF 3 CASES AND LITERATURE REVIEW DINA MUSTIKASARI AMRULLAH, S. A. UTOMO
NR442	MYXOMATOUS CEREBRAL ANEURYSMS - A RARE SEQUELAE OF CARDIAC ATRIAL MYXOMA VIDHYAH SIVAKUMAR, NORLISAH RAMLI
NR449N	DTI - CONNECTING THE DOTS - WHITE MATTER TRACT ANATOMY R.K.PRAVEEN KUMAR

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR457	MRI FINDINGS OF DIABETIC STRIATOPATHY EMMANUEL MAMURI
NR461	INTRACRANIAL AND CRANIAL VENOUS ANOMALIES IN PATIENT WITH ORBITAL LYMPHATICOVENOUS MALFORMATION HAFIZAH MAHAYIDIN, AMALI AHMAD
NR475	CASE REPORT OF PNEUMOCOCCAL BRAIN ABSCESS: A RARE ENTITY. LIM WEI CHIA, SITI SALWA MOHAMAD ZAINI, KARTIKASALWAH ABD LATIF
NR491	ATYPICAL UREMIC ENCEPHALOPATHY DIVYA DESAI, ARNAB MARIK
NR505	CEREBROTENDINOUS XANTHOMATOSIS: CASE REPORT OF A RARE GENETIC DISORDER ONG LI XIN, YIK WENG FAI, CHEW CHEE KEONG, NOOR KHAIRIAH A. KARIM
NR516	NEUROSYPHILIS : PRESENTED AS ACUTE ISCHEMIC STROKE ZUBAIR AHMAD SHARIFUDDIN, SITI SALWA MOHAMAD ZAINI, KARTIKASALWAH ABD LATIF
NR518	INTRASPINOID MYCOTIC ANEURYSM OF THE INTERNAL CAROTID ARTERY - AN IMPORTANT DIFFERENTIAL DIAGNOSIS FOR EPISTAXIS PHUAR AI PING, NOOR AIDA MAT DAUD, NORHAFIZAH EHSAN, ZULKIFLI ZAKI ABDUL GHANI
NR529	RARE CASE OF SPINAL INTRAMEDULLARY TUBERCULOMA: THE IMAGING DIAGNOSIS JUN EE TAN, A YEE, HH FATIMAH
NR579	CONCURRENT INTRACRANIAL SCHWANNOMA AND AN ANGIOGRAPHICALLY OCCULT CEREBRAL ANEURYSM: A CASE-REPORT YONG XIN MIN, NORZAINI ROSE MOHD ZAIN, SARAWANA CHELWAN MUNIANDY, THINESH KUMARAN JAYARAMAN
NR582	CENTRAL NEUROCYTOMA - AN AGGRESSIVELY BENIGN TUMOUR AKSHAT AGRAWAL, KHUSHI AGRAWAL, AJAY SHARAWAT, RANJAN KUMAR SAHOO, KAMAL KUMAR SEN
NR597	A NON BENIGN PRESENTATION OF A BENIGN LESION ZHEN PANG CHANG, MASIYATI JAMIL, NOR HAFIZAH ABU HASSAN
NR612	MDCT ANGIOGRAPHY CHARACTERISTICS OF INTRACRANIAL ANEURYSMS IN PATIENTS SUSPECTED WITH SUB-ARACHNOID HEMORRHAGE VEMURI NAGA VARA PRASAD, SONGA RAMYA
NR625	A CASE OF INTRA-PARENCHYMAL BLEED WITH INCIDENTAL FINDINGS OF MIDDLE CEREBRAL ARTERY FENESTRATION SITI FITRIWATI KHAZIS ISMAIL, CHANDRAN NADARAJAN, JUHARA HARON
NR634	DETECTION OF ALZHEIMER'S DISEASE USING STATISTICAL LIKELIHOOD RATIO OBSERVER XIAOMING ZHENG
NR639	NEURORADIOLOGY DIAGNOSTIC AND INTERVENTIONAL ANGIOGRAPHY RADIATION EXPOSURE AT HOSPITAL SUNGAI BULOH MALAYSIA WAN NUR AIN WAN GHAZALI, FAIZAL MOHAMED, NUR RATASHA ALIA MD. ROSLI, IRMAN ABDUL RAHMAN, ZULKIFLI ZAKI ABDUL GHANI, NORAFATIN KHALID, MOHAMMAD AZWIN ABDUL KARIM
NR654N	BODY FAT MASS AND BONE MINERAL DENSITY IN PARKINSON'S DISEASE NG YI-DE, NORLISAH MOHD RAMLI, MOHAMMAD NAZRI MD SHAH, RAJA RIZAL AZMAN RAJA AMAN, LIM SHEN-YANG, TAN AI HUEY, KAVITA SUGUMARAN, YONG VOON WEI, TAN YAN JING, CHOO XING YAN

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR655	RAPID DETERIORATION OF A FEBRILE CHILD - A CASE REVIEW NG YI-DE, NORLISAH MOHD RAMLI
NR660	DIFFERENT IMAGING FEATURES OF PILOCYTIC ASTROCYTOMA: CORRELATION WITH TUMOR LOCATION AND HISTOPATHOLOGY. CASE SERIES ADNAN NAEEM
NR664	COMPARISON OF PHASE CONTRAST AND TIME OF FLIGHT (TOF) MR CEREBRAL VENOGRAPHY IN THE DEPICTION OF NORMAL INTRACRANIAL VENOUS ANATOMY IN 3T MR INTAN BAZILAH ABU BAKAR, RADHIANA HASSAN, JAMALLUDIN AB RAHMAN
NR675	CEREBRAL VENOUS SINUS THROMBOSIS: A UNICENTRE CASE SERIES REVIEW IN MALAYSIA. AHMAD HADIF ZAIDIN SAMSUDIN, NUR ASMA SAPIAI, MOHD SHAFIE ABDULLAH
NR692	CHARACTERIZATION OF ALAR LIGAMENT ON 3.0T MRI: A CROSS-SECTIONAL STUDY IN IIUM MEDICAL CENTRE, KUANTAN RAIHANAH HAROON, SITI KAMARIAH CHE MOHAMED, KARIMAH HANIM ABD. AZIZ
NR699	DIFFUSE CEREBROSPINAL FLUID ENHANCEMENT FOLLOWING GADOLINIUM-BASED CONTRAST ADMINISTRATION: A CASE REPORT OF A RARE OCCURENCE. MOHAMAD AKRAM RUSLAN, AIDI ASWADI HALIM LIM, AZIAN ABD AZIZ
NR751	PARACLINOID ANEURYSMS ARE FREQUENTLY FOUND IN YOUNG FEMALE. REO KAWAGUCHI, TOMOTAKA OHSHIMA, NAOKI MATSUO, SHIGERU MIYACHI
NR758	MALEFICIENT'S HORN' LIKE APPEARANCE MYXOMATOUS FUSIFORM ANEURYSM OF THE RIGHT MIDDLE CEREBRAL ARTERY CAUSED BY ATRIAL MYXOMA KHOIRUL HADI ABD AZIZ, KHAIRUL AZMI ABD KADIR
NR806	A RARE COMPLICATION TUBERCULOUS MENINGITIS IN YOUNG PATIENT NUR SHIDA AHMAD, CHANDRAN NADARAJAN
NR818	ARNOLD CHIARI MALFORMATION TYPE I PRESENTING AS UNILATERAL VOCAL CORD PARALYSIS IN AN ADULT ALEX LIM, LIM DWEE SHION
NR826	AUDIT INTO THE APPROPRIATENESS OF CT HEAD REQUESTING IN THE EMERGENCY DEPARTMENT ARUBA NAWAZ KHATTAK, UMMARA SIDDIQUE UMER, AMAN NAWAZ USTRANA, FARIA MAQSOOD, MUHAMMAD ABDULLAH
NR835N	SYMMETRICAL HAEMORRHAGIC CEREBRAL INFARCTION IN A YOUNG PATIENT: A CASE OF VENOUS SINUS THROMBOSIS KESHIKA KOIRALA, NIRMAL PRASAD NEUPANE
NR847	EVALUATION OF FAT-SAT SEQUENCE IN 3T MRI FOR THE DETECTION OF LIPID USING SINGLE VOXEL SPECTROSCOPY NORLISAH RAMLI, KHAIRUNNISA ABDUL RASHID, SEOW POH CHOO, TAN LI KUO, KARTINI RAHMAT, YEW YING RONG
NR869N	HEMORRHAGIC POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN A PATIENT WITH SECONDARY THROMBOTIC THROMBOCYTOPENIC PURPURA (TTP) PRESENTED WITH BILATERAL EYE CORTICAL BLINDNESS DURING PUERPERIUM SIN TEIN SEE
NR900N	THE SHRINKING BRAIN: VOXEL-BASED MORPHOMETRY REVEALS EFFECTS OF PROBLEMATIC INSTAGRAM USE AMONG YOUNG ADULTS IN UNIVERSITY PUTRA MALAYSIA AIDA ABDUL RASHID, MAZLYFARINA MOHAMAD, AHMAD NAZLIM YUSOFF, NISHA SYED NASSER, SUBAPRIYA SUPPIAH

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR904	CASE SERIES: MRI FEATURES OF HYPERTROPHIC OLIVARY DEGENERATION (HOD) CHAI JIA-NING, SHAHIZON AZURA MOHAMED MUKARI
NR910N	ACUTE NECROTIZING ENCEPHALOPATHY(ANEC) IN CHILDREN, DIAGNOSTIC CHALLENGE: A CASE REPORT RENUKA DEVI, ZABIDI AHAMAD
NR920	A CASE REPORT OF SEPTO-OPTIC DYSPLASIA IN PAEDIATRIC PATIENT SOO SUET WOON
NR959	ATYPICAL SITE OF INTRACRANIAL GERMINOMA - A CASE REPORT RAANA KANWAL, SALMA GUL
NR962	MENINGIOMATOSIS: CASE REPORT OF INNUMERABLE BRAIN AND SPINAL MENINGIOMAS SMILY SHARMA, PANKAJ SHARMA, VENKATA SUBBAIH A, AMIT KUMAR, ANURAG MODI, SHAILVI SINGHAL
NR978	A PROSPECTIVE STUDY TO EVALUATE THE ROLE OF MRI WITH MR SPECTROSCOPY OF RING ENHANCING LESIONS IN THE BRAIN SUDHANSHU TONPE
NR994N	ISCHEMIC STROKE IN YOUNG MEN HAS BEEN LINKED TO COVID-19 FREEDY LAISTO PANUSUNAN TAMBUNAN, DIAN KOMALADEWI, GUSTIARA MUNIR, GANJAR SIMAKERTI, ASWIN GUNAWAN CHRISTANTO, SETIA DEWI SARTIKA TAMBUN, R.VERA INDRIANI
NR995N	CRANIAL VAULT EXTRAMEDULLARY HEMATOPOIESIS WITH HEPATIC AND PANCREATIC SECONDARY HEMOCHROMATOSIS IN A BETA THALASSEMIA PATIENT PRAVINKUMAR BHARDE, CH SWAPNA, A PRAVEENKUMAR
NR1014N	ADAMANTINOMATOUS CRANIOPHARYNGIOMA MISTAKEN AS RATHKE CLEFT CYST: A CASE REPORT RAIHANAH HAROON, SITI NOR SUZEANA MUSTFAR, INTAN BAZILAH ABU BAKAR, RADHIANA HASSAN, SITI KAMARIAH CHE MOHAMED
NR1042N	THE IMPORTANCE OF PRE-OPERATIVE CT LOCALIZATION OF THE ANTERIOR ETHMOIDAL ARTERY FOR THE PREVENTION OF INJURY DURING ENDOSCOPIC SINUS SURGERY SILPA C. RAJU, RAJIV C. RAJU
NR1043N	NON-KETOTIC HYPERGLYCEMIC HEMICHOREA: "DANCING LIMBS" IN THE "OVERLY SWEET" VATSELA KRISHNAN
NR1049N	ITS NOT OVER YET: A REVIEW OF CEREBRAL TUBERCULOSIS AND ITS COMPLICATIONS MARIA RAUF, BELQEES YAWAR FAIZ, ASMA JAVED, MUHAMMAD USMAN, SURRAYA ZAFAR, KHURRAM KHALIQ BHINDER
NR1077N	RARE CLINICAL ENTITY - TRANS-SPHENOIDAL MENINGOCELE PRABHPREET SINGH, NEHAL AHMAD, KRITI MALHOTRA
NR1080N	SUPRATENTORIAL EXTRA-VENTRICULAR EPENDYMOMA IN A YOUNG ADULT: A CASE REPORT EMIZA AZREEN AHMAD SUHAIMI, JUHARA HARON, MOHD SHAFIE ABDULLAH
NR1092N	CRYPTOCOCCUS MENINGITIS: A REVIEW OF PATHOLOGICAL-IMAGING CORRELATION NOOR BADRIAH OTHMAN, MUHAMMAD HILMI B HUSMAN, NURUL AKHMAR
NR1100N	NEUROCUTANEOUS MELANOSIS:A RARE MELANCHOLIC MELANGE OF NEURAL AND CUTANEOUS MELANOSIS SHUBHAM SAHA, TAPAN DHIBAR, SUMIT CHAKRABORTY, SUDIPTA SAHA, BIJAYA GAYARI, ARINDAM SANTRA, UTTARA CHATTERJEE

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR1129N	MAGNETIC RESONANCE IMAGING CHARACTERISTICS OF COMMON SELLAR AND PARASELLAR LESIONS: A PICTORIAL REVIEW FATIN NUR JANNAH SAHAR, FARIHAH ABD GHANI, HAIRUDDIN ACHMAD SANKALA, SITI SALWA MOHAMAD ZAINI, HILWATI HASHIM
NR1153N	INTERACTIVE CASES ILLUSTRATING THE ANATOMY AND PATHOLOGY DEFORMING THE FOURTH VENTRICLE YAP CHEE WOEI, CLEMENT YONG, SOON KAR HOON BETSY
NR1158N	A CASE REPORT OF POLYCYTHEMIA AND UNIFORMLY HYPERDENSE INTRACRANIAL VESSELS IN NON-CONTRASTED COMPUTED TOMOGRAPHY OF THE BRAIN. PEI TING LEOW, WM WAN ZAKARIA
NR1164N	MOYAMOYA DISEASE: ATYPICAL PRESENTATION OF SENSORINEURAL HEARING LOSS ZUBAIR AHMAD SHARIFUDDIN, HAIRUDDIN ACHMAD SANKALA, SHAHIZON AZURA MOHAMED MUKARI
NR1165N	ASSOCIATION OF TEACHING INSTITUTIONS WITH THE USAGE OF FLUOROSCOPIC-GUIDED LUMBAR PUNCTURES: A HEALTHCARE COST AND UTILIZATION STUDY AARUSHI AGGARWAL, ALI SEIFI
NR1171N	SKULL BASE ANATOMY AND PATHOLOGY EDUCATIONAL EXHIBIT: KEY CONCEPTS VIA INTERACTIVE DIGITAL MODERN IMAGING SOFTWARE THROUGH SERIES OF CASES TZE HOW YEONG, BETSY KAR HOON SOON, POH SUN GOH
NR1174N	SPINAL PARAGANGLIOMA IN A 37-YEAR-OLD MALE PRECIOUS JOY KATHERINE C. ALPANO, JOYCE D. KOMIYA
NR1177N	PICTORIAL REVIEW: DIFFERENT DISEASES CAUSING ISCHAEMIC INFARCTION IN YOUNG ADULTS AND THEIR RADIOLOGICAL FEATURES CHEUNG KIN ON, WONG KIN HOI
NR1186N	A GIANT SACRAL PLEXIFORM NEUROFIBROMA KOMMURU SUHAS, N.L.N MOORTHY, KOTTE ABHIJITH KUMAR
NR1190N	THE KEY IMAGING DIAGNOSTIC FEATURE OF TUMEFACTIVE DEMYELINATING LESIONS: A CASE REPORT TAN TIONG KEAT, TAN PENG PENG
NR1193N	A CASE REPORT OF A RARE SOLITARY NEUROCYTOMA IN THE THIRD VENTRICLE SOHINI GANDHAM, NLN MOORTHY, SINDHURA MANNE
NR1198N	EXTREMELY RARE TRIPLE PATHOLOGY OF RASMUSSEN'S ENCEPHALITIS , FOCAL CORTICAL DISPLASIA, AND HIPPOCAMPAL SCLEROSIS ANNISA ZEINADINANDA, GUSTIARA MUNIR
NR1200N	BILATERAL CEREBELLAR LIPONEUROCYTOMA SHAISTA RIAZ, KHURRAM KHALIQ BHINDER, ZAINAB MALIK
NR1221N	TUMOUR-LIKE PRESENTATION OF BRAINSTEM TUBERCULOMA: A LESSON LEARNT YEAT CHIA MING, HAIRUDDIN ACHMAD SANKALA, SHAHIZON AZURA MOHAMED MUKARI, NIK FARHAN NIK FUAD
NR1227N	POST-INFECTIOUS CEREBRAL VASCULITIS: INTRACRANIAL VESSEL WALL MRI IMAGING KHOO SIAN ZHEN, HAIRUDDINACHMAD SANKALA, ERICA YEE HING WONG, SHAHIZON AZURA MOHAMED MUKARI
NR1240N	AN UPDATE OF DISTINGUISHING HEMORRHAGE AND CALCIFICATION IN BRAIN PARENCHYMA BY DUAL-ENERGY COMPUTED TOMOGRAPHY THANH NHI THI NGUYEN, CONG THAO TRINH, VAN TRUNG HOANG

E-POSTER PRESENTATION

ID	Title
NEURORADIOLOGY	
NR1266N	MRI STROKE PROTOCOL AS FIRST LINE NEUROIMAGING IN ACUTE STROKE MOHAMAD KHAIRI MAHMOOD AB HAMID, NABILA HANEM ARSHAD, AHMAD SOBRI MUDA, ANIS SHAMIMI MOHD DARUS, MOHD FANDI AL KHAFIZ, MOHD NAIM MOHD YAAKOB
NR1273N	MAN IN THE BARREL DUE TO SNAKE EYES IN HIS SPINAL CORD - A RARE MENIFESTATION OF ANTERIOR SPINAL ARTERY INFARCT VIDYA DESAI, BHAWANA SONAWANE, ANAGHA DESHPANDE, SHRIRAM MATE
NR1280N	LEPTOMENINGEAL METASTASES IN A CASE OF RENAL CELL CARCINOMA: RARE BUT NOT TO BE MISSED KAVITHA KRISHNAMURTI
NR1304N	SPINAL DURAL ARTERIOVENOUS FISTULA; A RARE CASE OF ACUTE LOWER LIMB PARALYSIS IN ADOLESCENT SUSANTINA YULIANTI
NR1310N	ANATOMICAL VARIANT OF ANTERIOR CEREBRAL ARTERIES: CASE SERIES YOGAMBIGAI BALAKRISHNAN, ROUDHOTUL NADIAH MD. HAMSIN, SITI MAYZURA ABDUL RASID, SITI KHAIRUNNISAAK ABDUL RAHMAN, WAN NAJWA ZAINI WAN MOHAMED
NR1316N	SYMPTOMATIC CERVICAL TARLOV'S CYST THIBAN SIVAPRAGASAM, CHANDRAN NADARAJAN
NR1319N	JULIE'S HOT BUNS: COULD IT BE MULTIPLE SYSTEM ATROPHY? KAMILLE COMILANG-MARTINEZ
NR1352N	RELAXATION-ENHANCED ANGIOGRAPHY WITHOUT CONTRAST AND TRIGGERING (REACT) VERSUS CONVENTIONAL MAGNETIC RESONANCE ANGIOGRAPHY (MRA) FOR IMAGING OF EXTRACRANIAL ARTERIES IN ACUTE ISCHEMIC STROKE AT 3T MOHAMAD SYAFEEQ FAEZ MD NOH, FATHINA MARNIE OTHMAN, MOHD NAIM MOHD YAAKOB, MOHD FANDI AL-KHAFIZ KAMIS, EZAMIN ABDUL RAHIM, AHMAD SOBRI MUDA
NR1367N	DEVELOPMENTAL DELAY DUE TO UNILATERAL CONGENITAL HYDROCEPHALUS KALYANI KALAMBE, BHAWANA SONAWANE, ANAGHA VAIDYA-DESHPANDE
NR1370N	CRADLE IN THE TOMBSTONE DUE TO A BLEED IN THE GERMINAL MATRIX ABHIJIT C MORE, BHAWANA SONAWANE, RAMESH CHAPLE, ANAGHA VAIDYA DESHPANDE
NR1373N	IMAGING THE NEURAL BRIDGE-ULTRASOUND AND MRI IN CORPUS CALLOSAL DYSGENESIS AND AGENESIS MEGHANAA JAYAKUMAR, ANIRUDDHA RANGARI
NR1376N	PRIMARY CEREBRAL INTRAVENTRICULAR HYDATID DISEASE IN A CHILD: A RARE CASE REPORT SHUBHAM SAHA, SHAHID IFTEKHAR SIDDIQUE, ANISH KUMAR MONDAL, SUDIPTA SAHA, BIJAYA GAYARI
NR1389N	AN UNUSUAL CASE OF CENTRAL PONTINE MYELINOLYSIS GOH CHONG CIEK, SOH KOK MING, SANGEETHA ARUMUGAM, GAN EE LENG, TEH PEI CHIEK
NR1398N	ARTIFICIAL INTELLIGENCE IN THE NEW MILLENIA: DECIPHERING THE MYSTERY OF ALZHEIMER'S DISEASE BY FUNCTIONAL MAGNETIC RESONANCE IMAGING BUHARI IBRAHIM, SUBAPRIYA SUPPIAH, HASYMA ABU HASSAN, MAZLYFARINA MOHAMED, NORMALA IBRAHIM, IQBAL M. SARIPAN
NR1399N	A CASE OF SPORADIC CREUTZFELDT-JAKOB DISEASE LAI PICK YEEN, MUHAMMAD ZABIDI AHMAD, PREETVINDER SINGH DHEER SINGH

E-POSTER PRESENTATION

ID	Title
PAEDIATRICS RADIOLOGY	
PD026	IMAGING FEATURES OF EPIGASTRIC PARASITIC TWINNING: A CASE REPORT JULIAN SANTOS, NONETTE A. CUPINO
PD109N	SPLenic TORSION AND ACUTE APPENDICITIS AS CAUSES OF ACUTE ABDOMEN IN A CHILD WITH HETEROTAXY SYNDROME MARIA CRISPINA CU CORRAL, NATHAN DAVID P. CONCEPCION
PD146	OSTEOPETRO-RICKETS: A RARE PARADOXICAL ASSOCIATION LIEW XIAO CHING, CAROLINE JUDY WESTERHOUT
PD155	SONOGRAPHIC RENAL LENGTH IN MALAYSIAN INFANT POPULATION - A HOSPITAL BASED CROSS-SECTIONAL STUDY AIDI ASWADI HALIM LIM, AZIAN ABD AZIZ
PD179	CAN THE SIMPLY QUANTIFIED BASIC MRI SEQUENCES DIFFERENTIATE PEDIATRIC MEDULLOBLASTOMA AND EPENDYMOMA? NGUYEN MINH DUC, HUYNH QUANG HUY, PHAM MINH THONG, MAI TAN LIEN BANG, NGUYEN CHANH THI, BILGIN KESERCI
PD183N	SYNCHRONOUS MALIGNANCY OF MEDULLOBLASTOMA AND RENAL EPITHELIOID SARCOMA IN A NEWBORN NUR SHEZWANI AKMAL MOHD SHARIF, CHANDRAN NADARAJAN, MOHD SHAFIE ABDULLAH
PD198	INIENCEPHALY CLAUSUS WITH CONGENITAL PERITONEOPERICARDIAL DIAPHRAGMATIC HERNIA: AN EXTREMELY RARE ASSOCIATION SEEMA ROHILLA, T SEETAM KUMAR
PD205	RETROPERITONEAL TERATOMA IN AN INFANT: A CASE REPORT SITI DAYANA MOHAMAD, MUHAMAD ZABIDI AHMAD, NIK FATIMAH SALWATI NIK MALEK
PD253	CYSTIC HYGROMA ASSOCIATED WITH ANEURYSM OF THE COMMON FACIAL VEIN: A CASE REPORT PALWASHA GUL
PD361	OSSEOUS HEMANGIOMA: A MULTIMODALITY PERSPECTIVE SITI NADIAH MOHAMAD NAWI, TEH YONG GUANG
PD370	ACUTE TRANSVERSE MYELITIS PROGRESSING TO SPINAL CORD ATROPHY. A CASE REPORT AZIAN ABD AZIZ, ZARIFA ZAINUDDIN, AZHAR MAHMUD, FARAH SYUHADA MOHD RADZI
PD371	MASSIVE HEMOPTYSIS IN PAEDIATRIC AGE GROUP: CASE REPORT JULIANA FAIRUZ MAKTAR, HAMZAINI ABDUL HAMID
PD378	EPIGNATHUS TERATOMA IN A CASE OF FACIAL DUPLICATION - A CASE REPORT NURDILLAH IDRIS, VICTOR CHONG XING DAO, ASIAH KASSIM, ZAKARIA ZAHARI, ROHAZLY ISMAIL, CHE ZUBAIDAH CHE DAUD, ZALEHA ABD MANAF, NORMAWATI MAT SAID, SYAZARINA SHARIS OSMAN
PD382	CONGENITAL UNILATERAL HYDROCEPHALUS IN NEONATE DUE TO MEMBRANOUS OCCLUSION OF FORAMEN OF MONRO, MANAGED SUCCESSFULLY WITH VENTRICULO-PERITONEAL SHUNTING. A RARE CASE REPORT IN THE PHILIPPINES ERNIE G BAUTISTA II
PD436	CONGENITAL TALIPES EQUINOVARUS IN TWINS HENDRA TOREH, MUHAMMAD ILYAS, RAFIKA RAUF, DARIO NELWAN
PD443	IN-UTERO AUTOAMPUTATED OVARIAN CYST MIMICKING A MESENTERIC DUPLICATION CYST VIDHYAH SIVAKUMAR, CAROLINE JUDY WESTERHOUT
PD447	UNUSUALLY LARGE INFLAMED MECKEL'S DIVERTICULUM IN A PAEDIATRIC PATIENT NG BI YOKE, CHAN WAI YEE, RAJA RIZAL AZMAN

E-POSTER PRESENTATION

ID	Title
PAEDIATRICS RADIOLOGY	
PD471	LATE PRESENTATION OF PLEUROPULMONARY BLASTOMA: CLINICAL RADIOLOGICAL DIAGNOSIS TASNIM M, NOOR HASNITA IM, NOR HAYATI YUNUS
PD479	DISSEMINATED TUBERCULOSIS PRESENTING AS CHRONIC ABDOMINAL MASS LIM GUAN TATT, PG MOHAMMAD NIZAM, ANITHAA TANGAPERUMAL
PD488	HYBRID LESION OF CYSTIC ADENOMATOID MALFORMATION AND BRONCHOPULMONARY SEQUESTRATION: A CASE REPORT ONG LI XIN, YIK WENG FAI, PREETVINDER SINGH, NOOR KHAIRIAH A. KARIM
PD504	EMBRYONAL RHABDOMYOSARCOMA OF BILE DUCT IN A CHILD: A CASE REPORT ONG LI XIN, TAN LING SZE, TAN SUZET, NOOR KHAIRIAH A. KARIM
PD506	SEPTO OPTIC DYSPLASIA PLUS: A CASE REPORT NUR ATIFAH MOHD NAIM, ANITHAA TANGAPERUMAL
PD535	TO BE OR NOT TO BE; DILEMMA IN DIAGNOSING DISORDERS OF SEXUAL DEVELOPMENT (DSD) JULIANA FAIRUZ MAKTAR, HAMZAINI ABDUL HAMID
PD542	PHACE SYNDROME: A CASE REPORT AND ITS RADIOLOGICAL IMAGING CHARACTERISTICS NORSARAH SHAMSUDIN, MARINA SOPHIANNA MARZUKIE, ROHAZLY ISMAIL, LEONG YUH YANG
PD570	ABDOMINAL CYSTIC LYMPHANGIOMAS, A RARE ENTITY PRESENTING AS JEJUNAL VOLVULUS IN A CHILD CHITRA SUPURAMANIAM, ANAND SANMUGAM, CHOW TAK KUAN, ANUSHYA VIJAYANATHAN
PD575	MESENTERIC CYST ASSOCIATED WITH SMALL BOWEL VOLVULUS - A DIAGNOSTIC CHALLENGE: A REPORT OF 2 CASES TJUN HOE LUI, NUR YAZMIN YAACOB, NORMAWATI MAT SAID
PD633	APPENDICITIS: A TALE OF COMMON WITH ATYPICAL STORY SITI NUR ADNI MOHD ALI, AHMAD HADIF ZAIDIN, NUR ASMA SAPIAI, MOHD SHAHRULSALAM MOHD SHAH
PD661	COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN: ROLE OF CXR ON ADMISSION IN PREDICTING OUTCOME OF PNEUMONIA NOR FAUZIAH MUHAMAD HANDAR, FAIZAH MOHD ZAKI, ERICA YEE HING, HAMZAINI ABDUL HAMID, HASNIAH ABDUL LATIF, ROZITA HOD
PD676	EXTRAOSSEOUS EWING'S SARCOMA INVOLVING VAS DEFERENS: A CASE REPORT FATIMAH ISMAIL
PD701	TORTICOLLIS POST RECURRENT TONSILLITIS IN CHILDREN : GRISEL SYNDROME REVISITED SHAZATUL EZANNI SAMSUDIN, AHMAD HADIF ZAIDIN SAMSUDIN, CHE MAZURA HUSSAIN
PD739	PULMONARY GLUE EMBOLISM: A RARE POTENTIALLY FATAL COMPLICATION OF N-BUTYL-2-CYANOACRYLATE INJECTION IN A CHILD. ANUSHA APPARAU, CAROLINE JUDY WESTERHOUT, ERIC CHUNG
PD760	A CURIOUS CASE OF CURRARINO TRIAD LEE SHIEN LOW, CAROLINE JUDY WESTERHOUT
PD789	ESSENTIAL RADIOLOGY REVIEW OF SHORT LIMB SKELETAL DYSPLASIA IN PAEDIATRIC GROUP SOO SUET WOON, KARTINI RAHMAT, CAROLINE JUDY WESTERHOUT
PD837	FETUS IN FETU: A RARE CASE REPORT OF RETROPERITONEAL MASS IN A NEWBORN NADIA A. P. PANISUTIA, FARAH HENDARA NINGRUM
PD846	A PICTORIAL GUIDE OF VOIDING CYSTOURETHROGRAM IN PAEDIATRIC VESICourethRAL REFLUX: INDICATIONS, TECHNIQUE, ANATOMY OF URINARY SYSTEM, GRADE OF VESICourethRAL REFLUX AND ANOMALIES OF URINARY SYSTEMS CHEW FATT YANG, TZU JING WANG, KANG-LUN CHENG, PEI HUA LEE, CHUN-LIN HUANG

E-POSTER PRESENTATION

ID	Title
PAEDIATRICS RADIOLOGY	
PD862	A RARE CASE OF PAEDIATRIC SINONASAL EWING'S SARCOMA: THE DIAGNOSTIC CHALLENGE AND RADIOLOGICAL FEATURES DUXBURRY DIX, ISA AZZAKI ZAINAL
PD870	A RARE AND INTRIGUING CASE OF PONTOCEREBELLAR HYPOPLASIA OO CHENG YEOW, EMY SAERA
PD881	IMAGING FINDINGS OF BRANCHIAL CLEFT ANOMALIES: A PICTORIAL REVIEW MOHD ZULKIMI ROSLLY, FAIZAH MOHD ZAKI
PD896	INCARCERATED INGUINAL HERNIA MIMICKING ACUTE SCROTUM IN A CHILD: A CASE REPORT JANICE GOH HUI LING, E. Y. HING, NORHAFIZA AB. RAHMAN
PD991	POSTERIOR URETHRAL VALVE WITH PROSTATIC UTRICLE CYST AND URETHRO EJACULATORY DUCT REFLUX RAVINDAR KASHYAP, SUBATHRA A, SWATHI KIRAN, KUMARAVEL S
PD1023N	COMPLICATION OF UMBILICAL VENOUS CATHETER IN NEONATE: TPNOMA THIBAN SIVAPRAGASAM, TAN YUAN YING
PD1028N	MR IMAGING OF MOYA-MOYA SYNDROME IN A 10 YEAR OLD MALE WITH BETA THALASEMIA NADIA A. P. PANUSUTIA, F. MARDIANA WAHYUNI, ELIZABETH ANGELINE, VICTOR CHRISTIAN
PD1050N	A CASE REPORT OF SURVIVING UNTREATED 11 YEARS-OLD MALE WITH ENDOCARDIAL CUSHION DEFECT, MONOVENTRICLE HEART, VENA CAVA DISPLACEMENT, AND SITUS INVERSUS VICTOR CHRISTIAN, NADIA A. P. PANISUTIA, ELIZABETH ANGELINE, MARDIANA WAHYUNI
PD1057N	HSV ENCEPHALITIS COEXIST WITH ABUSIVE HEAD INJURY?? OR ATYPICAL HSV ENCEPHALITIS PRESENTATION?? CHIAM WOOI KEE, FAIZAH MOHD ZAKI
PD1104N	FETAL CHOLEDOCHAL CYST IN 37 WEEK GESTATIONAL FETUS VICTOR CHRISTIAN, ELIZABETH ANGELINE, NADIA A. P. PANISUTIA, FARAH HENDARA
PD1143N	A CASE REPORT OF PHOCOMELIA SUSHUMA REDDY
PD1204N	MULTIMODALITY DEPICTION OF CONGENITAL HERNIA WITH GASTRIC PERFORATION IN A NEWBORN SHASHANK S. PRASAD, YACOUB KHATAB, NITI MANGLIK
PD1219N	ALVEOLAR SOFT PART SARCOMA IN THE GLUTEAL REGION: A CASE REPORT IN AN 18-YEAR-OLD FEMALE NATHAN DAVID P. CONCEPCION, JOSEFINA MARIE P. MEDINA
PD1234N	SCROTAL SWELLING IN A NEWBORN: A RARE CASE OF MECONIUM PERIORCHITIS KAH LAI CHOONG, SHAMINI MANIAM
PD1255N	RARE PRESENTATION OF CYCLOPHOSPHAMIDE INDUCED INTRA-CEREBRAL HEMORRHAGES AT GREY-WHITE MATTER JUNCTION IN A PATIENT OF IGA NEPHROPATHY BELQUEES YAWAR FAIZ, ASMA JAVED, HUMERA BASHIR
PD1320N	ACUTE PANCREATITIS : DIAGNOSING A RARE ENTITY IN PAEDIATRIC POPULATION FADHILA MOHD HANAPIAH, MOHD EZANE AZIZ, NAZRI ISMAIL
PD1365N	POSTERIOR MEDIASTINAL NEUROBLASTOMA IN A 3-YEAR-OLD CHILD WITH SPASTIC PARALYSIS OF BILATERAL LOWER LIMBS - A CASE REPORT. DEBARPITA DATTA
PD1385N	SPERMATIC CORD INVOLVEMENT IN A RARE CASE OF BURKITT'S LYMPHOMA SMILY SHARMA, VENKATA SUBBAIH ARUNACHALAM, BIKRAM RAJA SHARMA, RAKESH CHAUHAN
PD1407N	CONGENITAL BRAIN ANOMALIES MASKED BY CHRONIC SUBDURAL EFFUSION CHIN YUNCI, NIK FATIMAH SALWATI NIK MALEK

BACTERIOLOGICAL EXAMINATION OF COMPUTER KEYBOARDS USED FOR DIAGNOSTIC IMAGING IN A TERTIARY HOSPITAL IN THE PHILIPPINES

Sheen C. Urquiza*¹; Marvin M. Masalunga²; Leizl B. Valerio¹

¹*Department Of Radiology, Philippine General Hospital,* ²*Department Of Pathology, Philippine General Hospital*

OBJECTIVE: Diagnostic imaging keyboards can serve as reservoir for healthcare-associated infections (HAIs). Growth of a single pathogen may mean that (i) healthcare staff pay more attention to disinfecting “real” medical devices; (ii) easier to disinfect smooth surfaces, than surfaces with indentations and protrusions; and (iii) healthcare staff underestimate the possibility of keyboard-associated contamination. Since neglecting the disinfection of keyboards and long survival of some microorganisms are critical in hospitals nowadays, the investigator seeks to conduct the study in a tertiary, end-referral hospital in the Philippines.

MATERIALS AND METHODS: All eighteen keyboards were grouped into three depending on their room locations. A total of 66 specimens (N=66) were needed for statistical analysis. Sampling and swabbing of the “backspace”, letter “e” and “spacebar” were done (most commonly used keys). The swabs were sent to the Department of Pathology for culture, isolation and identification (using the VITEK®2 machine).

RESULTS: The prevalence of bacterial growth was highest in room 5 (13.6%) (N=3), followed by room Escandor (9.1%)(N=2) and reading room (4.5%) (N=1). However, the observed differences were not statistically significant (p-value=0.577). Of the three rooms, two rooms showed isolates of *Acinobacter lwofflii*, two rooms showed *Staphylococcus* sp., while the other growth included micrococcus, *Aeromonas* and *Sphingomonas* species.

CONCLUSION: Minimal growths of bacterial organisms were demonstrated in the workplace of the Department of Radiology, PGH. Though the growths were not significant clinically, it still warrants appropriate disinfection and decontamination measures, for these organisms contain potential pathogenic and health risks.

A COMPARATIVE STUDY TO EVALUATE CT-BASED SEMANTIC AND RADIOMIC FEATURES IN PREOPERATIVE DIAGNOSIS OF INVASIVE PULMONARY ADENOCARCINOMAS MANIFESTING AS SUBSOLID NODULES

Fu-Zong Wu*¹

¹*Radiology Department, Kaohsiung Veteran General Hospital, Taiwan (ROC)*

OBJECTIVE: This study aims to predict the histological invasiveness of pulmonary adenocarcinoma spectrum manifesting with subsolid nodules ≤ 3 cm using the preoperative CT-based radiomic approach.

MATERIALS AND METHODS: A total of 186 patients with 203 SSNs confirmed with surgically pathologic proof were retrospectively reviewed from February 2016 to March 2020 for training cohort modeling. The validation cohort included 50 subjects with 57 SSNs confirmed with surgically pathologic proof from April 2020 to August 2020. CT-based radiomic features were extracted using an open-source software with 3D nodular volume segmentation manually. The association between CT-based conventional features/ selected radiomic features and histological invasiveness of pulmonary adenocarcinoma status were analyzed.

RESULTS: Diagnostic models were built using conventional CT features, selected radiomic CT features and experienced radiologists. In addition, we compared diagnostic performance between radiomic CT feature, conventional CT features and experienced radiologists. In the training cohort of 203 SSNs, there were 106 invasive lesions and 97 pre-invasive lesions. Logistic analysis identified that a selected radiomic feature named GLCM_Entropy_log10 was the predictor for histological invasiveness of pulmonary adenocarcinoma spectrum (OR: 38.081, 95% CI 2.735–530.309, $p = 0.007$). The sensitivity and specificity for predicting histological invasiveness of pulmonary adenocarcinoma spectrum using the cutoff value of CT-based radiomic parameter (GLCM_Entropy_log10) were 84.8% and 79.2% respectively (area under curve, 0.878). The diagnostic model of CT-based radiomic feature was compared to those of conventional CT feature (morphologic and quantitative) and three experienced radiologists. The c-statistic of the training cohort model was 0.878 and 0.923 in the validation cohort.

CONCLUSION: The nomogram may help clinicians with decision making in the management of subsolid nodules.

PREDICTIVE PERFORMANCE OF QUANTITATIVE CT TEXTURE FEATURES FOR MYCN GENE AMPLIFICATION STATUS IN NEUROBLASTOMA

Eelin Tan*¹; Khurshid Merchant¹; Seyed Ehsan Saffari²; Joseph Zhao³; Edna Aw¹; Kenneth Chang¹; Tang Phua Hwee¹

¹*Department of Diagnostic and Interventional Imaging, KK Womens' and Childrens' Hospital, Singapore,* ²*Centre for Quantitative Medicine, Duke-NUS Medical School, Singapore,* ³*Yong Loo Lin School of Medicine, National University of Singapore*

OBJECTIVE: MYCN oncogene amplification in neuroblastoma confers patients to the high-risk disease category for which prognosis is poor and more aggressive multimodal treatment is indicated. This study explores if quantitative tumour texture features on contrast-enhanced CT (CECT) can non-invasively predict MYCN gene status.

MATERIALS & METHODS: From 2009-2019, fifty consecutive patients treated for neuroblastoma at a tertiary paediatric hospital with pre-operative CECT and MYCN gene status were identified. MYCN amplification was positive in 16 tumours and negative in 34. Following manual whole tumour segmentation, 107 radiomic features were extracted. Feature selection was performed with univariate analysis, removal of highly correlated features and finally with a wrapper algorithm. Scan parameters (aortic enhancement, slice width, kV, mA, kernel, machine) were treated as potential confounding factors. Predictive accuracy of the machine learning algorithms was estimated with leave-one-out cross validation.

RESULTS: None of the scan parameters were significantly associated with MYCN status. The final radiomics signature consist of 3 texture features: "MajorAxisLength", "Strength" and "Busyness". The eXtreme Gradient Boosting (XGBoost) algorithm returned the highest area under the receiver operating characteristics curve (AUC) of 0.86 (95% confidence interval [CI], 0.74-0.98); at this threshold, sensitivity was 0.88 (95% CI, 0.64-0.97) and specificity was 0.79 (95% CI, 0.63-0.90); corresponding F1 score was 0.76 and informedness was 0.67.

CONCLUSION: The CT radiomics signature was able to reliably and non-invasively classify MYCN gene status. The main limitations of the study were small sample size which precluded data splitting and lack of a separate data set for external validation.

ROLE OF MAGNETIC RESONANCE IMAGING IN THE EVALUATION OF SPINAL TUBERCULOSIS

Manik Mahajan*¹

¹*Department of Radiology, GMC Jammu, India*

OBJECTIVE: Spinal tuberculosis (TB) is the commonest clinically important extra-pulmonary form of the disease. Early recognition of the disease is necessary to minimize residual spinal deformity and/or permanent neurological deficit. Hence, the study was performed to evaluate the usefulness of MRI as a non-invasive diagnostic tool in spinal tuberculosis

MATERIALS & METHODS: Thirty proven patients with spinal TB were included. MRI images of the patients were retrospectively analyzed to determine the site and pattern of the lesions and extent of vertebral and soft tissue involvement. Post-operative and follow up cases were excluded from the study.

RESULTS: Majority of the patients had two vertebral involvement (56.6%) followed by multilevel involvement (36.7%). Single vertebral involvement was seen in 2 cases only. Thoracic spine was the commonest site of the disease (43.3%) followed by lumbar region (36.7%). Vertebral end plate involvement seen in 86.7% cases followed by disc involvement (83.3%). Majority of cases had pre and paravertebral collections and anterior epidural component. 90.0 % patients had thecal sac compression with cord compression in 36.7 % and cord edema in 20% patients causing neurological complaints.

CONCLUSION: MRI is a highly sensitive technique in the detection of various pathological processes of spinal tuberculosis. MRI is also helpful to determine cord compression, osseous and non-osseous involvement and extent of the disease. The extent of soft tissue involvement is best assessed by MRI which helps in guiding the surgical treatment as well as to monitor the response to treatment during follow up.

RESTING-STATE DEFAULT MODE NETWORK FUNCTIONAL CONNECTIVITY AND EXECUTIVE DYSFUNCTION IN SPINOCEREBELLAR ATAXIA TYPE 3: A PRELIMINARY STUDY

Kah Hui Yap*¹; Shahrul Azmin¹; Hanani Abdul Manan²; Noorazrul Yahya³; Siti Hajar Mat Desa⁴; Shahizon Azura Mohamed Mukari²; Hamdi Najman Achok⁵; Bart Van De Warrenburg⁶; Norlinah Mohamed Ibrahim¹

¹Department of Medicine , UKMMC, ²Department of Radiology, UKMMC, ³School of Diagnostic and Applied Health Science, UKM, Malaysia, ⁴Department of Nursing, UKMMC, Malaysia, ⁵Department of Medicine, Hospital Sultanah Aminah, Malaysia, ⁶Department of Neurology, Radboud University Medical Centre, Netherlands

OBJECTIVE: Executive dysfunction has been reported in spinocerebellar ataxia type 3 (SCA3). Default mode network (DMN) is a resting-state, functional magnetic resonance imaging (fMRI) network associated with cognitive function. This preliminary study aims to correlate executive dysfunction in SCA3 with DMN connectivity.

METHODOLGY: Ten SCA3 patients (Age: 41.9±11.4 years, 6 Male 4 Female) underwent executive function (EF) tests, namely Matrix Reasoning (MR) and Digit Span (DS). Participants underwent a 10-minute, resting-state 3T fMRI scan and the data were processed using dynamic causal modelling. Posterior cingulate cortex (PCC), medial prefrontal cortex (mPFC), left (LIPC) and right intraparietal cortices (RIPC) were selected as DMN nodes. Pearson's correlation was used to determine the strength of association between EF and DMN.

RESULTS: Increased connectivity between RIPC and mPFC was correlated with better MR performance ($r = .696$, 95% CI = [.118, .922]). Increased connectivity between mPFC and PCC was correlated with better DS forward performance ($r = .776$, 95% CI = [.286, .944]). Reduced connectivity between LIPC and RIPC was correlated with better DS forward ($r = -.716$, 95% CI = [-.928, -.153]) and backward ($r = -.773$, 95% CI: [-.943, -.279]) performances.

CONCLUSION: Disrupted connectivity in the prefrontal regions (PCC and mPFC) within the DMN might be associated with executive dysfunction in SCA3. This disruption may in turn lead to the inability to downregulate posterior regions (LIPC and RIPC), thereby impinging on the EF. Inclusion of larger samples and healthy controls are needed to confirm the findings.

**CONCORDANCE OF CHEST ULTRASONOGRAPHY (US) WITH CONTRAST-
ENHANCED CHEST CT SCAN IN THE DETECTION OF MEDIASTINAL
LYMPHADENOPATHY AMONG PEDIATRIC PATIENTS AGES 5-17
CLINICALLY DIAGNOSED WITH TUBERCULOSIS (TB) DISEASE: A PILOT
STUDY**

Jerald Garvin S. Lim*¹; Bernard F. Laya¹; Mariaem M. Andres¹; Marion O. Sanchez²; Agnes R. Mendoza²; Lady Anarose I. Regala²

¹Radiology, St. Luke's Medical Center, ²Pediatrics, St. Luke's Medical Center, Philippines

OBJECTIVE: To determine the agreement of chest sonography with contrast-enhanced chest CT scan in the detection of mediastinal lymphadenopathy in children with clinically diagnosed tuberculosis.

MATERIALS AND METHODS: Twelve (12) patients (5 females and 7 males) with age range of 8-17 years old, clinically diagnosed TB disease were prospectively recruited and underwent chest ultrasound using standard sonographic protocol. CT scan was used as a gold standard to confirm the presence of mediastinal lymphadenopathy. The images were interpreted blindly by two pediatric radiologists. Concordance rate and measure of agreement between ultrasound and CT scan were measured.

RESULTS: Sonographic zones showing the highest concordance with CT include those taken in the transverse suprasternal and left parasternal views namely, zones B (prevascular/ left upper paratracheal, 91.7%), C (subaortic/ AP window, 100%), G (prevascular, 100%) & H (pericardial, cardiophrenic, 100%). The sonographic zones that show lower concordance are zone A (83.3%), as well as those taken in the suprasternal oblique views namely, zone E (retrotracheal, 75%) and zones D (prevascular) and F (retrotracheal/subcarinal), both at 83.3% concordance. Overall, the level of agreement of ultrasound findings with CT scan findings is classified as “moderate agreement” (89.6%, 95% CI Concordance = [0.835, 0.957] Cohen’s Kappa = 0.535**), and was found to be statistically significant.

CONCLUSION: Chest sonography shows moderate agreement with chest CT in detecting mediastinal lymphadenopathies in children with TB. Ultrasound may therefore be used as an initial tool to detect enlarged lymph nodes in children clinically diagnosed with TB and assess for disease progression.

**COMPARATIVE STUDY OF IMAGE QUALITY AND RADIATION DOSE
BETWEEN 120KVP FILTERED BACK PROJECTION AND 80KVP ITERATIVE
RECONSTRUCTED COMPUTED TOMOGRAPHY IMAGES**

Sweta Joshi^{*1};

¹*Radiology, Institute of Medicine, Nepal*

OBJECTIVE: To compare the image quality and radiation dose between 120kVp Filtered Back Projection and 80kVp Iterative Reconstructed CT images.

MATERIALS & METHODS: This qualitative/quantitative, cross-sectional study was performed in patients referred for CT Urography examinations for various clinical indications to Tribhuvan University Teaching Hospital, Maharajgunj, Nepal. Data were collected for a period of 4 months from August to November 2019 after approval from Institutional Review Board. Convenience sampling was employed and a total of 96 examinations were included. Among them 48 were male and 48 were female. Data were obtained from the 128 slice MDCT Siemens Somatom Definition AS+ CT scanner. Venous phase scans were obtained with Protocol A (120kVp and FBP) and non-contrast scans were obtained with Protocol B (80 kVp and Sinogram Affirmed Iterative Reconstruction). The mAs was fixed at 200 for both protocols.

RESULTS: There was a 72.5% reduction in Size Specific Dose Estimates in Protocol B compared to Protocol A. However, there was a 13.17% increase in noise in Protocol B compared to Protocol A. SSDE values showed moderate negative correlation ($r=-0.65$ and -0.66) with BMI for Protocols A and B respectively. Noise correlated poorly with BMI ($r=-0.27$ and -0.161) for Protocols A and B respectively. Qualitative analysis showed a 98.95% acceptability for the low dose i.e. Protocol B images.

CONCLUSION: CT using low kV (80kVp) and low mAs (200mAs) along with iterative reconstruction algorithm (SAFIRE) can provide diagnostically acceptable images at very low dose for examinations of the Urinary tract.

DETERMINING OPTIMUM POST-PROCESSING PARAMETERS OF ¹⁷⁷LU-DOTATATE XQUANT IMAGES IN PEPTIDE RECEPTOR RADIONUCLIDE THERAPY (PRRT) IMAGING

Haniff Shazwan Muhd Safwan Selvam*¹; Teik Hin Tan¹; Mohd Shazwan Hafiz Shukri¹

¹*Nuclear Medicine Centre, Sunway Medical Centre, Malaysia*

OBJECTIVE: Patient-specific-dosimetry in nuclear medicine is essential to determine the outcome of treatment in Peptide Receptor Radionuclide Therapy (PRRT). Image reconstruction for Lu-177 imaging is one of key factors to ensure the accuracy of the patient-specific-dosimetry. To obtain a reliable information of Lu-177 DOTATATE therapy dosimetry, it is crucial to obtain accurate and precise quantification by SPECT/CT. The aim of this study was to determine in a clinical context, the optimum image reconstruction for Lu-177.

MATERIALS & METHODS: NEMA 2007/IEC 2008 phantom was used and prepared with total activity of 1414 MBq of Lu-177 source, lesion-to-background ratio of four. Clinical acquisition was performed on the phantom using Symbia Intevo 16. A series of post-processing parameters were applied in phantom's image reconstruction. Five parameters were selected based on quantitative assessment; accuracy of activity concentration and image noise that were calculated on phantom images. They were then applied in five selected clinical cases of PRRT images and phantom images to be qualitatively evaluated by our nuclear medicine physician.

RESULTS: Among all five selected parameters, 12mm Gaussian filter and 8x16s showed the best feature as it has the good quantitative accuracy(>80% accuracy), acceptable image noise (<20%) and satisfactory quality on actual clinical cases according to clinician assessment.

CONCLUSION: The optimum parameter selection was 12 mm Gaussian filter and 8x16s based on quantitative and qualitative evaluation. This post processing parameter will be used post-image reconstruction for Lu-177 DOTATATE PRRT SPECT/CT imaging in our centre.

AUDIT ON CONTRAST CT ADRENAL PROTOCOL: OUR INSTITUTIONAL EXPERIENCE.

Cheung Kin On*¹; Wong Kin Hoi¹

¹*Department of Radiology, North District Hospital, China*

OBJECTIVE: Retrospective review on our protocol driven contrast CT adrenal perform during 2018. Review number of avoidable post-contrast CT adrenal scans if ACR appropriateness criteria applied (i.e. if lesion has pre-contrast HU ≤ 10 AND max. size ≤ 4 cm)

MATERIALS AND METHODS: Retrospective review contrast CT adrenal performed during 1/1/2018 to 31/12/2018. We look into following parameters: Performed Date, Age, Sex, Number of adrenal nodules, Adrenal nodule size (3 dimension), Attenuation at pre-contrast (HU), Attenuation at portovenous phase, Attenuation at Delay phase, Any Macroscopic fat, Any calcifications, Absolute washout, Relative washout, Report diagnosis

RESULTS: Total 55 patients were included in this study. 58% are male patients, 42% are female patients. Age range: 36-87, with mean 61.24 and median 62 years old. For the 55 patients included, 5 patients had no adrenal nodules. 54 nodules were detected: 26 are lipid-rich adrenal adenoma. 17 are lipid-poor adrenal adenoma. 7 are indeterminate nodule. 2 are nodules but nature not described. 1 is a cyst. 1 is pheochromocytoma. Primary outcome: For 55 contrast CT adrenal performed, 20 patients had one lipid rich adrenal adenoma. 2 patients had 2 lipid rich adrenal adenomata. 5 patients had no adrenal nodule. These are regarded as avoidable post-contrast scan. % of avoidable scan would be $27/55 = 49.1\%$

CONCLUSION: As large proportions of unnecessary post-contrast scans were performed, we will setup new protocol to avoid unnecessary radiation, IV contrast related adverse reaction, wasted CT capacity, unnecessary tube usage, cost of IV contrast, unnecessary usage of image storage, deviation from established guidelines.

MRI-BASED RADIOMICS OF WHOLE TUMOR TO CLASSIFY THE TYPES OF PEDIATRIC POSTERIOR FOSSA BRAIN TUMORS

Shujie Wang*¹; Ming Yang¹

¹Children's Hospital Affiliated To Nanjing Medical University, Radiology Department, China

OBJECTIVE: To investigate the noninvasive MRI-based radiomics analysis of whole tumor to classify the histologic tumor types of pediatric posterior fossa brain tumors and improve accuracy of discrimination by using random forest classifier.

MATERIALS & METHODS: A total of 99 histologically confirmed posterior fossa brain tumors (59 MBs, 13EPs, 27PAs) were retrospectively analyzed and divided into training set (80%) and a validation set (20%). MRI images of 99 patients confirmed by operation and pathology before treatments were enrolled in this retrospective study. Registration was performed among the three sequences and high-throughput features were extracted from manually segmented tumors in MR images of each case. Forest-based feature selection method was adopted to select the top ten significant features. Finally, the results were compared and analyzed according to the classification.

RESULTS: The top ten contribution orders to classify wavelet features all came from the ADC sequence. The random forest classifier achieved 100% accuracy on training data and was validated best accuracy (0.938), sensitivity = 1.000, 0.948, 0.808, specificity = 0.952, 0.926, 1.000 for EP, MB and PA respectively.

CONCLUSION: Random forest classifier based on ADC sequence of entire tumor can provide more quantitative information than TIWI and T2WI in differentiating the pediatric posterior fossa brain tumors. Particularly, the histogram percentile value showed great superiority which add diagnostic value of diffusion MR imaging in pediatric neuro-oncology.

REDUCED CONTRAST VOLUME AND RADIATION DOSE FOR CT CHEST ABDOMEN AND PELVIS EXAMINATION: PROTOCOL DESIGN AND OPTIMISATION

Lilian Poh Poh Yap*¹; Jeannie Hsiu Ding Wong¹; Ravi Chanthriga Ethurajulu¹; Nadia Fareeda Muhamamd Gowdh¹; Eric Chung¹; Fadhli Mohamed Sani¹; Anushya Vijayanathan¹; Sue Anne Manushya Foo¹; Wei Lin Ng¹

¹*Biomedical Imaging, University Malaya Medical Centre, Malaysia*

OBJECTIVE: In general, the standard protocol of a contrast enhanced CT uses a fixed volume (FV) of contrast media with tube potential of 120 kVp. This study compared the image quality, contrast enhancement and radiation dose using a customized CT protocol using weight-based volume (WBV) and low tube potential (100 kVp).

MATERIALS & METHODS: Data was retrospectively collected for 220 patients who underwent CT thorax-abdomen-pelvis studies using FV with standard tube potential 120 kVp (protocol A) and WMV with standard tube potential 120 kVp (protocol B) between June 2017 to December 2019. A subset of 39 patients also underwent CT studies using WBV with low tube potential 100 kVp (protocol C). Contrast enhancement of the portal venous phase images from the 3 scanning protocols were assessed quantitatively and qualitatively. Radiation dose was also compared.

RESULTS: Quantitative assessment of CE (n=39) showed protocol A > B, A > C and C > B with p=0.03, p=0.32 and p=0.20 respectively. Median effective dose in protocol A, B and C were 12.4, 12.3 and 10.8mSv respectively. Patients experienced a mean contrast volume reduction of 23.9ml when WBV used compared to FV. On qualitative assessment, all images were rated good or excellent.

CONCLUSION: Weight based protocol with low tube potential improved patient outcomes with reduced contrast volume and radiation dose while maintaining good image quality as compared to standard protocol.

ENDOVASCULAR MANAGEMENT OF HEPATIC ARTERY ANEURYSM AND PSEUDOANEURYSM - A RARE CAUSE FOR GASTROINTESTINAL BLEED

Amin Dhanush Jayananda*¹; S Rammurti¹; M Phani Chakravarty¹; N Bheerappa²

¹Department Of Radiology And Imageology, Nizam's Institute Of Medical Sciences, Hyderabad, ²Department Of Surgical Gastroenterology, Nizam's Institute Of Medical Sciences, Hyderabad, India

OBJECTIVE: To analyze the demographic profile and to evaluate the effectiveness of endovascular management in the treatment of Hepatic artery aneurysm/pseudoaneurysm and its immediate and short-term outcome.

MATERIALS AND METHODS: This is a retrospective study in which etiologies, presentations, procedures rendered, and outcome were analyzed. Amongst 560 patients evaluated with diagnostic visceral angiography on Universal angiography system (Axiom Artis FA, Siemens Medical Systems, Germany) over 10years (2011-2020), Visceral-artery aneurysm/pseudoaneurysm were detected in 140patients with 30patients having hepatic artery involvement. Following angiographic localization of bleeding source, sub-selective cannulation with embolization of feeding branch-artery was done with pushable micro-coils or particulate embolics. Endosaccular coiling was done in selected cases with detachable micro-coils. Immediate success was noted as cessation of hemorrhage and/or exclusion of the aneurysm/pseudoaneurysm on control angiogram (100%). Patients were followed up for 3 months to evaluate short-term efficacy.

RESULTS: Most common age-group was 20-40years, males were more common (84%). 27 patients (90%) had solitary lesion. Majority were 1-2cm (40%) and Intrahepatic (73%) with right hepatic artery most commonly involved (50%). Most common clinical presentation was pain abdomen (75%) with Blunt-Abdominal Trauma being most common etiology (47%). Embolization of the feeding artery with micro-coils was done in 20/28(71.4%); particulate embolics in 2/28(7.1%). Endosaccular coiling was done in 6/28(21.5%). Endovascular management was not done in 2/30 patients (6.6%). Immediate success was seen in all 28 patients. No short-term complications were observed.

CONCLUSION: Endovascular management by transcatheter embolization is highly effective and should be considered as preferred treatment modality for Hepatic artery aneurysm/pseudoaneurysm.

USE OF ARTIFICIAL INTELLIGENCE IN BREAST CANCER DETECTION USING DEEP LEARNING

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

OBJECTIVE: Convolutional neural network is an artificial intelligence technique based on physiological principles underlying human visual cortex. This study aims to evaluate the potential of a deep learning algorithm to be used for evaluation of these masses for breast cancer detection.

MATERIALS AND METHODS: Mammograms conducted at a tertiary hospital between May 17 and April 19 were studies with equivocal findings excluded resulting in 190 mammograms. Test set of 45 images was randomly selected from initial sample (27 abnormal, 18 normal) and were not used in training process. Further 37 abnormal scans were randomly excluded resulting in training set of 54 normal and 54 abnormal mammograms. Equal number of images were required in each group for optimal network training and converted to JPEG format image. The initial sample was amplified 26-fold using combination of horizontal flip, size alteration and rotation. The pre-trained Inception v3 network was then retrained using the amplified mammograms with learning rate of 0.01.

RESULTS: The proportion of abnormal mammograms was 62%. Area under receiver-operator curve for this CNN as a diagnostic test was 0.87 demonstrating a high level of diagnostic test accuracy. Output from CNN produces a continuous score of between 0 (abnormal) and 1 (normal). Setting the threshold to 0.395 as the output score results in a test sensitivity of 96.3%, specificity of 66.7%, positive predictive value of 81.3% and negative predictive value of 92.3%.

CONCLUSION: This proof of concept study demonstrates that high diagnostic test accuracy can be achieved in automated analysis of mammograms. In this study CNN could never outperform radiologist since radiologist's opinion was the ground truth.

INTRACRANIAL HEMORRHAGE DETECTION AND CLASSIFICATION USING SEQUENCED DEEP LEARNING MODEL

Tran Duy Quoc Khan*¹; Masahiro Hashimoto¹; Hasnine Haque²; Masahiro Jinzaki¹

¹*Department of Diagnostic Imaging, Keio University Hospital, Japan,* ²*Technical Leader, GE Healthcare Japan, Japan*

OBJECTIVE: Intracranial Hemorrhage (ICH) is an emergency condition that requires quick and accurate detection which depends on radiologists. Due to the acuteness of ICH, an improvement in interpretation time with reliable accuracy would be preferable. Deep learning algorithm has been continuously developed and now it can achieve comparable and quicker results compared to doctors. This study was conducted with the approval of the Ethics Committee.

MATERIALS AND METHODS: In this study we proposed a method using prebuilt Convolutional Neural Networks (CNNs) in combination with Gated Recurrent Units (GRUs) for detection as well as classification of ICH on brain computed tomography (CT) scans. Particularly, we used a modified EfficientNet-B6 architecture for extracting image features in tandem with GRUs to connect features between slices. The model was trained with RSNA Intracranial Hemorrhage Detection Challenge's dataset, which includes about 25,000 both normal and ICH-positive CT scans. Additionally, we proceeded 5-fold validation on the dataset. After fine-tuning the model's parameters to achieve a good result with that dataset, we collected 300 cases (205 positive, 95 negative) from our hospital to test its performance with real-world data.

RESULTS: The result when training with RSNA dataset achieved an average result of 98% accuracy. After testing process with our hospital cases, we achieved an average accuracy of 92.7% and F1-score of 94.5% for detecting ICH cases, with a maximum of 95.2% accuracy for sub-arachnoid hemorrhages. We also measured the inference time with an average of 1.8 seconds per case.

CONCLUSION: The study has shown superior speed and reasonable accuracy in detecting ICHs compared to radiologists.

COMPUTER-ASSISTED SUBJECTIVE ANALYSIS OF THYROID NODULES MAY LIMIT NODULE NON-SPECIFICATION THAN COMPUTER-AIDED DIAGNOSIS

Nonhlanhla Chambara*¹; Michael Ying¹; Shirley YW Liu²; Xina Lo³

¹*Health Technology and Informatics, The Hong Kong Polytechnic University, China,*
²*Department of Surgery, Prince of Wales Hospital, Shatin, Hong Kong, China,* ³*Department of Surgery, North District Hospital, Hong Kong, China*

OBJECTIVE: To evaluate the diagnostic performance of a thyroid ultrasound computer-aided diagnosis (CAD) software in comparison with computer-assisted subjective analysis for thyroid nodule differentiation.

MATERIALS AND METHODS: Grey-scale sonograms of 48 benign and 32 malignant thyroid nodules that were diagnostically confirmed by fine-needle aspiration cytology or histopathology after thyroidectomy, were analyzed in this retrospective study. The AmCAD-UT (AmCad Biomed, Taipei, Taiwan) software was used for the CAD malignancy risk stratification of the ultrasound images using the American Thyroid Association (ATA) and American Association of Clinical Endocrinology (AACE) guidelines. Two readers who were blinded to the pathology results independently rated the sonographic features of the thyroid nodules using a web-based scoring risk-stratification system (<http://www.gap.pe.kr/thyroidnodule.php>). The diagnostic performance measures of the readers and CAD software were calculated and compared with reference to pathology results based on the corresponding guidelines.

RESULT: The sensitivity of computer-assisted rating was higher than CAD with ATA (65.6% vs 50%, $p < 0.050$) whereas it was comparable for all raters with AACE (84.4% vs 81.3%, $p > 0.050$). The AACE specificity was higher with computer-assisted rating than with CAD (72.9% vs 54.2%, $p < 0.001$), whereas that of ATA remained the same for computer-assisted rating and CAD (87.5% (74.8; 95.3)). The CAD non-specified rate was 35% (28/80) with ATA and 31.3% (25/80) with AACE. Computer-assisted rating had a 13.8% (11/80) non-specified rate with ATA, while AACE specified all nodules.

CONCLUSION: Computer-assisted subjective analysis has high sensitivity and specificity and may best limit the non-specified nodule rate in ATA and AACE guidelines than sole CAD analysis.

BLOOD IRRADIATION KIT: AN UPDATE ON LOCAL BLOOD IRRADIATION TECHNIQUE USING MEDICAL LINAC

Janatul Madinah Wahabi*¹; Noor Zati Hani²; Manshahruddin Sawal²; Md Faziali Sulaiman²;
Musa Mohd Salehuddin²

¹*Department of Radiotherapy and Oncology, National Cancer Institute, Malaysia,* ²*Pusat Rawatan Onkologi, Hospital Sultan Ismail, Malaysia*

OBJECTIVE: Blood irradiation is a procedure of irradiating blood and its component using ionising radiation prior to blood transfusion. The purpose of blood irradiation is to prevent the risk of Transfusion Associated Graft versus Host Disease (TA-GvHD) to the receiver. The objective of this study is to improve blood irradiation technique that has been employed previously and increase the amount of irradiated packed cells to cater for increasing local demand.

MATERIALS & METHODS: In this study, plastic acrylic was assembled into a box and a homogeneous material was then used to increase dose homogeneity around the packed cells. A treatment plan was then created and the dose distribution around the box was evaluated. The dose delivered to the box was measured using Optically Stimulated Luminescent Dosimeter (OSLDs) to compare between calculated dose and measured dose.

RESULTS: The dose distribution calculated was within 95% to 106% of prescribed dose inside the blood irradiation kit. The box can fill up to 7 units of packed cells and irradiation time was 20 minutes per box. Furthermore, the measured dose using OSLDs were within 5% of the prescribed dose.

CONCLUSION: The box provides better dose homogeneity and better dose accuracy compared to previous technique adopted. It also simplifies the workflow and is easy to understand by the operators.

RADIOLOGICAL FEATURES OF PULMONARY FAT EMBOLISM IN TRAUMA PATIENTS: A CASE SERIES

Shourye Dwivedi*¹; Lara Kimmel²; Asher Kirk²; Dinesh Varma³

¹Central Clinical School, Monash University, Australia, ²Department of Physiotherapy, The Alfred Hospital, ³Department of Radiology, The Alfred Hospital, Australia

OBJECTIVE: Fat embolism syndrome (FES) is a rare complication in trauma patients (usually with long bone fractures), with migrating medullary fat precipitating multiorgan dysfunction, including pulmonary fat embolism (PuFE). Presence of petechial rash and neurocognitive dysfunction occurring with FES may aid PuFE diagnosis. Typical radiographic features of PuFE are not established, although increasing use of CT Pulmonary Angiography (CTPA) in this cohort may provide important diagnostic information. We therefore conducted a retrospective cohort study of FES patients who had undergone a CTPA at a Level 1 Trauma Centre in Melbourne, Australia.

MATERIALS & METHODS: Records and radiology of FES patients between 2006 and 2018, including demographics, injury, hospital course, and CTPA images, were reviewed.

RESULTS: Fifteen FES patients with retrievable CTPAs were included (mean age 31.2 years, range 17-69; 12 males [80%]). 93.3% had long bone fractures. CTPA was performed 2.00±1.41 days post-admission, with images showing: opacity in 14 (93.3%; 9 ground-glass opacities [64.3%], 6 alveolar opacities [42.9%]), interlobular septal thickening in 10 (66.7%), and pleural effusions in 7 (46.7%). Opacities were most frequently distributed to left/right postero-basal segments (n=12, 85.7% each), or left apico-posterior segment (n=10, 71.4%). Filling defects were identified in three (20%) CTPAs, with density -20HU to +63HU. Ten patients (66.7%) had neuroimaging performed, with two cerebral fat emboli identified: one 19.7 hours prior to CTPA, one 45.3 hours post-CTPA.

CONCLUSION: CTPA features of PuFE are variable, with ground-glass parenchymal opacification and septal thickening most commonly seen. Filling defects were uncommon.

SUB-REGIONAL BIOCHEMICAL ASSESSMENT OF KNEE ARTICULAR CARTILAGE ON 3T MRI.

Rachit Khandelwal*¹; Amit Kharat¹; Dileep Kumar²

¹Radio-Diagnosis, Dr. DY Patil Medical College, Pune, India, ²Siemens Healthineers, Bengaluru

OBJECTIVE: To assess biochemical changes in the sub-regions of knee articular cartilage by automated computation of T2* relaxation time in patients with healthy cartilage as well as those with pathologic/degenerative/traumatic disease. In-turn facilitating early detection and consequent timely interventions.

MATERIALS & METHODS: Prospective observational study was designed to assess 36 cases : 15 with normal cartilage and 7 patients each of Chondromallacia patellae (CP), osteoarthritis(OA) and traumatic injuries.MR scanning was performed on 3T MRI MAGNETOM Vida (Siemens Healthineers, Germany) using 18-channel knee coil. Post processing was done using MR Chondral health (Version 2.1) work-in-progress (WIP) package provided by Siemens Healthineers. Automated segmentation of the entire knee articular cartilage was done into 21 subregions and corresponding T2* relaxation time values were generated for biochemical analysis.

RESULTS: Mean T2* relaxation time values for femur, patella and tibia of normal subjects are 21.87±2.53ms, 26.25±4.35ms, and 19.48±5.29mm respectively. In CP, a slight increase in mean T2* values were found at patella (34.91ms) and tibia(21.76ms). In cases of OA, the mean T2* relaxation time for femur was 21.63ms, for patella was 29.39ms and for tibia was 19.78ms. . In cases with traumatic etiology, slight increase in mean T2* values were noted at patella (34.10ms) and tibia (21.76ms). Further a significant p value was obtained in the lateral anterior sub-region of femur when comparing osteoarthritis with normal group.

CONCLUSION: Automated cartilage segmentation with generation of T2* relaxation time values has significantly reduced time and has facilitated accurate analysis of biochemical structure of cartilage at subregional level.

IMAGING FINDINGS AND CLINICOPATHOLOGICAL CORRELATION OF HEPATOCELLULAR CARCINOMA RECURRENCE AFTER LIVER TRANSPLANTATION

Luana Martins Silva*¹; Larissa De Andrade Defendi¹; Marcelo Oranges Filho¹; Ronaldo Hueb Baroni¹

¹*Imaging Department, Hospital Israelita Albert Einstein, Brazil*

OBJECTIVE: Orthotopic liver transplantation is the best therapeutic option for unresectable hepatocellular carcinoma (HCC). In Brazil, patient selection for transplantation is based on Milan criteria. The study aimed to identify clinical, epidemiological and radiological factors that would predict HCC recurrence.

MATERIALS & METHODS: Data from 1021 patients who underwent transplantation from 2006 to 2015 were retrospectively analyzed. Explanted livers were evaluated for tumor features as size, number, pathological grade and vascular invasion. Dynamic magnetic resonance with gadolinium in a 1.5T/3.0T system or computed tomography with iodinated contrast were performed every 6 months and interpreted by two radiologists experienced in abdominal imaging. Serum levels of alpha-fetoprotein were assessed during follow-up. Prognostic factors significance was assessed by univariate analysis with log-rank test and simple Cox regression and by multivariate analysis with multiple Cox regression. HCC recurrence was based on clinical, laboratory and radiological findings.

RESULTS: HCC recurrence was identified in 31 patients (8.6%), mostly (87.1%) two years after the procedure (mean interval 13.5 +/- 11.6 months). The liver allograft was the most affected organ, followed by the lungs. When compared to the primary neoplasia, recurrence assumed different radiological aspects. Numerous lesions and sometimes an infiltrative pattern were identified. Both micro and macrovascular invasion proved to be independent risk factors for recurrence.

CONCLUSION: The characterization of microvascular invasion requires histopathological data obtained only after transplantation. The findings reinforce the need to review Brazil's current transplantation criteria, since diagnosis of HCC and treatment decisions are based on imaging findings without histological diagnosis.

BONE MARROW FAT IN B-THALASSAEMIA MAJOR PATIENTS: 1H-MR SPECTROSCOPY STUDY

Umi Nabilah Ismail*¹; Che Ahmad Azlan¹; Shasha Khairullah²; Raja Rizal Azman Raja Aman¹; Nur Farhayu Omar³; Chai Hong Yeong⁴; Mohammad Nazri Md Shah¹; Nicholas Jackson⁵; Kwan Hoong Ng¹

¹*Biomedical Imaging Department, University of Malaya, Malaysia,* ²*Haematology Unit, University of Malaya, Malaysia,* ³*Department of Imaging, Universiti Putra Malaysia* ⁴*School of Medicine, Taylor's University Lakeside Campus, Malaysia,* ⁵*Haematology Department, University College Hospital, London, Malaysia*

OBJECTIVE: Recently bone marrow fat fraction (BMFF) has been shown to play a part in the regulation of haematopoiesis. Furthermore, the inverse relation between BMFF and body haematopoietic needs also has been well established. We hypothesize this relation can be utilized to evaluate the efficacy of the treatment given to fulfil body haematopoietic needs. Thus, it is of interest to investigate the difference of BMFF in β -thalassaemia patients who had received treatment.

MATERIALS & METHODS: Stimulated Echo Acquisition Mode (STEAM) sequence was used to scan five β -thalassaemia major (β TMa) patients who were transfused monthly. The parameters used on the 3T MRI system (MAGNETOM Prisma, Siemens Healthcare, Germany) were TE: 20, 25, 30, 35, 40ms and TM:10ms. The spectra were obtained from the known regions of fatty marrow: 1) femoral head (FH) and 2) greater trochanter (GT) and haematopoietic marrow: 1) femoral neck (FN) and 2) diaphysis (D) of each subject. AMARES algorithm included in the jMRUI software package was used to analyse the spectra. The difference in BMFF obtained were then studied using a one-way repeated measures ANOVA analysis.

RESULTS: The results obtained show that the difference of BMFF between all regions (FH: $37.7.3\pm 37.1$, GT: 33.5 ± 33.7 , FN: 26.4 ± 27.9 and D: 27.3 ± 32.8) are not as significant compared to the differences between subjects (p -value > 0.05). The large variation of BMFF between subjects may indicate the response of subjects to the treatment given.

CONCLUSION: Our preliminary results have demonstrated that BMFF can be used to evaluate the efficacy of the prescribed treatment.

**ULTRASOUND-GUIDED CORE NEEDLE BIOPSY IN THE DIAGNOSIS OF
RETROPERITONEAL TUMORS IN CHILDREN: A RETROSPECTIVE STUDY ON
52 CASES**

Nguyen Thi Thanh Huong*¹; Le Dinh Cong¹; Hoang Ngoc Thach²; Pho Hong Diep²

¹Radiology Department, Vietnam National Children's Hospital, ²Pathology Department, Vietnam National Children's Hospital

OBJECTIVE: Ultrasound-guided biopsy technique has widely been applied in the diagnosis of adult abdominopelvic, mediastinal cavity and breast tumors. There are few reports on ultrasound-guided biopsy in pediatric retroperitoneal cavity tumors. This study was to evaluate the ultrasound features and the diagnostic value of ultrasound-guided core needle biopsy for pediatric retroperitoneal tumors.

MATERIALS & METHODS: The pediatric patients with retroperitoneal tumor that determined by ultrasound, CT or MRI examination and underwent ultrasound guided core needle biopsy from October 2018 to January 2020 were reviewed at VNCH. A minimum of five cores in each case was obtained. 13 patients were operated and had surgical pathology results. The ultrasound features and the diagnostic accuracy of ultrasound-guided core needle biopsy were evaluated.

RESULTS: Fifty - two patients (25 males) with the mean age of (3.6 ± 3.3) years were enrolled into the study. Ultrasound examination showed irregular hypoechoic or mixed echo masses with calcification and liquefied necrosis. The quality of tissue sample enough to make diagnosis was 98.1% (51/52). Only one case was misdiagnosed because of inadequate tissue sample. The diagnostic accuracy of ultrasound guided core needle biopsy compared to surgical histopathology was 76.9 % (10/13). Retroperitoneal tumor pathology varying with neuroblastic tumor was 86.3% (60.8% NB, 11.8% GNB and 13.7% GN), ACC was 5.9%, germ cell tumor was 5.9% (2.0% teratoma, 3.9% yolk sac tumor) and rhabdomyosarcoma was 2.0%. No serious complication occurred.

CONCLUSION: Ultrasound-guided core needle biopsy seems to be an accurate, minimally invasive and safe diagnostic method of pediatric retroperitoneal tumor.

**APPLICATION OF TEXT MINING IN NARRATIVE BREAST RADIOLOGY
REPORTING FOR AUDIT AND RESEARCH IN UNIVERSITY MALAYA
MEDICAL CENTER**

Tan Wee Ming*¹; Ng Wei Lin²; Mogana Darshini¹; Nur Aishah Taib³; Kartini Rahmat²;
Sarinder Kaur Dhillon¹

¹*Department Of Bioinformatics, University Malaya,* ²*Department Of Biomedical Imaging, University Malaya,* ³*Department Of Surgery, University Malaya, Malaysia*

OBJECTIVE: Radiology reporting is narrative and the information of reports is unstructured and detailed. Extracting information for auditing and research is time consuming. The aim of this study is to develop an artificial intelligence (AI) based radiology reporting system that will enable structured narrative breast radiology reporting using text mining for information extraction in the clinical and research settings.

MATERIALS & METHODS: A total of 147 ultrasound and mammogram reports for model building and 150 reports for model testing from patients of University Malaya Medical Centre in free text format were used. The programming languages used for the text mining were R, while PHP, HTML and JavaScript together with the XAMPP and MySQL platforms were used to develop the front-end to insert new reports and to view and edit existing reports. The text mining with information extraction was developed based on a rule-based system. The system was evaluated by calculating the precision, recall and F1-score using confusion matrix.

RESULTS: Twenty important variables were successfully mined from free text into a structured format. The evaluation of the system using the training set data showed 0.9691 of precision, 0.9918 of recall and 0.9804 of F1-score calculated using the confusion matrix, while the testing set results showed 0.9778 of precision, 0.9880 of recall and 0.9829 of F1-score.

CONCLUSION: The text mining algorithm developed and tested in this study was highly accurate. In the future, it can turn unstructured data into validated structured form which can provide useful insights for employing AI and big data tools.

RADIATION SHIELDING EFFICIENCY STUDIES OF TUNGSTEN CARBIDE/EPOXY COMPOSITE AT 140 KEV AND 356 KEV IN NUCLEAR MEDICINE

Nadin Jamal Abualroos*¹; Noorfatin Aida Baharul Amin¹; Rafidah Zainon¹

¹*Advanced Medical and Dental Institute, Universiti Sains Malaysia*

OBJECTIVE: For many years, lead was the primarily used radiation shielding material. Recently, concern has been growing that the use of lead poses safety and health hazards. Researchers are working on finding a non-toxic radiation shielding material. The main objective of this study was to validate the efficacy of tungsten carbide/epoxy composite as environmentally friendly, lead-free radiation shielding material in nuclear medicine at different energy ranges.

MATERIALS & METHODS: Tungsten carbide/epoxy composite discs were fabricated by mixing pure tungsten carbide powder with epoxy resin and hardener (E-110I/H-9) at different weight percentages (90% WC-10% Epoxy), (85% WC-15% Epoxy), (80% WC-20% Epoxy), (75% WC-25% Epoxy), (70% WC-30% Epoxy) respectively. In this study, gamma radiation attenuation behaviours of tungsten carbide/epoxy composites have been investigated and compared with lead. ^{99m}Tc and ¹³³Ba radionuclides were used as gamma radiation sources. The radioactive sources used to test the shielding efficiency of tungsten carbide/epoxy composites by placing the sample between a shielded vial contained the radioactive source and detector. The attenuation of gamma photons narrated by the reductions in the counts' rate.

RESULTS: The experimental attenuation coefficient of tungsten carbide/epoxy composites were compared with the attenuation coefficient of pure tungsten carbide and lead. Good agreement has been observed in attenuation coefficient values of tungsten carbide/epoxy composites specially (90% and 85% WC) with pure tungsten carbide and conventional shielding material (Lead).

CONCLUSION: This study shows that tungsten carbide/epoxy composite has the potential to replace lead as a lead-free radiation shielding material in diagnostic imaging and therapy.

OVERVIEW OF EARLY CLINICAL IMPLEMENTATION OF DIGITAL BREAST TOMOSYNTHESIS: A SINGLE CENTRE EXPERIENCE

Soo Suet Woon*¹; Kartini Rahmat¹; Marlina Tanty Ramli Hamid¹; Shamsiah Abdul Hamid¹;
Yeong Chai Hong¹

¹*Department Of Radiology, University Malaya Medical Centre, Malaysia*

OBJECTIVE: Evaluate impact of performance of mammographic study before and after the introduction of digital breast tomosynthesis (DBT) into clinical practice in our Centre (UMMC).

MATERIALS & METHODS: Retrospective study was conducted on patients who underwent breast biopsy in UMMC 6 months before and after the introduction of DBT. The patients were divided into two groups: FFDM (n = 1250) and FFDM + DBT (n = 2174). Histopathological examination results were the gold standard of the study. Biopsy rate, cancer detection rate, sensitivity & positive prediction values (PPV) were calculated & compared between the groups.

RESULTS: Combination of FFDM and DBT resulted in significant reduction of biopsy rate from 9.8% to 7.7% (p = 0.030). The cancer detection rates were not statistically significant different between FFDM and FFDM + DBMT groups (43% versus 36%, p = 0.275). Not significant difference (p = 0.326) was found between BIRADS scoring (1-3 considered as benign; 4-5 considered as malignant) and histopathological results for the FFDM + DBT group. However, statistical significant difference (p = 0.001) was found between BIRADS scoring and histopathological results for the FFDM group. The sensitivity and PPV were 90% and 36% for FFDM group; and 92% and 38% for FFDM + DBT group, respectively.

CONCLUSION: Combination of FFDM and DBT significantly reduced biopsy rate compared to FFDM alone. Sensitivity and PPV were also increased from 90% to 92% and 36% to 38%, respectively, indicating that incorporation of DBT in mammographic examinations increased the number of true positive cases.

A NOVEL APPLICATION OF NEURITE ORIENTATION DISPERSION AND DENSITY IMAGING (NODDI) TO DIFFERENTIATE COGNITIVELY RECOVERED VERSUS NON-RECOVERED IN MILD TRAUMATIC BRAIN INJURY (MTBI)

Prasath Swaminathan*¹; Norlisah Mohd Ramli¹; Norhamizan Hamzah²; Kartini Rahmat¹; Tan Li Kuo¹; Vairavan Narayanan³

¹*Department of Biomedical Imaging, University of Malaya,* ²*Department of Rehabilitation Medicine, University of Malaya,* ³*Department of Neurosurgery, University of Malaya, Malaysia*

OBJECTIVE: DTI can detect changes of microstructural brain damage in mTBI, however subtle changes in recovery process remains a challenge. NODDI measures Orientation Dispersion Index (ODI), Neurite Density Index (NDI) and Isotropic Volume Fraction (ISOVF) which may elucidate the process in mTBI recovery.

MATERIALS & METHODS: 56 mTBI and 19 healthy controls (HC) were recruited. Neuropsychological Assessment Battery-Screening Module (S-NAB) performance were assessed 2 weeks post-trauma and at 3 months. The mTBI group was then divided into recovered (REC; S-NAB ≥ 85) and non-recovered (NREC; S-NAB < 85), whereby domains affected were mainly attention and language. DTI and NODDI were done at 3 months. Using Tract-Based Spatial Statistics (TBSS), DTI and NODDI parameters were obtained for 50 white matter tracts (WMTs). Data was analysed using SPSS.

RESULTS: NODDI demonstrated significant changes ($p < 0.050$) in multiple WMTs. Significantly lower NDI was demonstrated in REC (0.4260, 0.4034) versus NREC (0.4540, 0.4389) in both cingulate gyri suggestive of ongoing reparative process in the still-recovering NREC WMTs. Significantly higher ISOVF was seen in REC (0.0716, 0.1349) than NREC (0.0526, 0.0983) in the right external capsule and left fornix/stria terminalis, which may represent increased CSF surrounding tracts which have completed healing. No significant difference between REC and NREC was found in DTI.

CONCLUSION: NODDI detected more microstructural WMT changes in mTBI 3 months post-injury than DTI, largely involving WMTs in the limbic system which has significant function in attention and language. The recovery process, however, could not be readily explained, suggesting the need for further research in this area.

FUNCTIONAL ASSESSMENT OF THE HEART IN PATIENTS IN THE EARLY AND DELAYED PERIODS AFTER SURGICAL CORRECTION IN PATIENTS WITH TETRALOGY OF FALLOT

Azhar Zhampiissova*¹; Rakhimzhanova Raushan²; Dautov Tairkhan¹

¹Radiology, National Research Cardiac Surgery Centre, Kazakhstan, ²Radiology, Astana Medical University, Kazakhstan

OBJECTIVE: Tetralogy of Fallot (TF) is the most common cyanotic (blue) congenital heart disease and accounts for about 7-10%. According to the Baltimore-Washington Infant Research, tetralogy of Fallot accounts for 6.7% of all newborn with congenital heart disease.

MATERIALS & METHODS: In the radiology department of the NRCSC since October 2011 to December 2019 a total of 122 patients were examined on MRI after radical surgical correction of the Fallot tetrad, of which 30 (24.5%) patients showed indications for the second operation - implantation of a valve-bearing conduit into the position of the pulmonary artery.

RESULTS: The age of patients who underwent implantation of a valve-containing conduit is from 5 to 15 years. The interval between TF correction and the second operation averaged from 2 to 12 years. The average level of the ejection fraction was 51%. In addition, we calculated the coefficients EDV / BSA (ml / m²) and ESV / BSA (ml / m²) in 30 patients and amounted to 136.4 ± 11 and 75 ± 9 , respectively (with normal values up to 108, 46), which served as an additional the criterion for the selection of patients for the second stage of the operation. The correlation between the level of NTproBNP pg / ml and EDV was also calculated and amounted to $r = 0.4$, which indicates a weak positive direct correlation.

CONCLUSION: MRI allows to effectively evaluate and predict the results of surgical correction of TF.

DIFFERENTIAL DIAGNOSIS OF MEDIASTINAL MASSES USING CHEMICAL EXCHANGE SATURATION TRANSFER (CEST) MR IMAGING: PHANTOM & CLINICAL STUDIES

Masahiro Yanagawa*¹; Hiroyuki Tarewaki²; Akinori Hata¹; Yuriko Yoshida¹; Tomo Miyata¹;
Noriko Kikuchi¹; Yukihiisa Satoh¹; Noriyuki Tomiyama¹

¹Radiology, Osaka University Graduate School of Medicine, Japan, ²Medical Technology, Osaka University Hospital, Japan

OBJECTIVE: To evaluate CEST effects under various conditions of the respiratory gating(RG) on dynamic phantoms, and to differentiate mediastinal masses using CEST effects.

MATERIALS & METHODS: In a phantom study, each raw egg on the static condition(C0) was scanned on amide proton transfer (APT)-weighted CEST MR imaging. Next, each raw egg on the anterior chest of 5 volunteers was scanned on CEST MR imaging under various conditions of the RG: voluntary breathing without the RG(C1); voluntary breathing with the RG(C2); slow breathing (half the normal RR) with the RG(C3); and fast breathing (twice the normal RR) with the RG(C4). In a clinical study, 12 thymic cysts and 13 thymic epithelial tumors (8 thymomas, 5 thymic carcinomas) were scanned on CEST MR imaging. A region of interest(ROI) was placed over objects, making it as large as possible to minimize the effects of inhomogeneity. Each z-spectrum within the ROI (offset frequency, 7 to -7ppm) was computationally generated. A magnetization transfer ratio(MTR) asymmetry at 3.5 ppm (MTR_{asym}[3.5ppm]) was measured as a CEST effect(%). Mean MTR values at z-spectrum were statistically evaluated.

RESULTS: Mean MTR values at z-spectrum had no significant differences among C0-4: C0, 16%; C1, 11.9%; C2, 10.9%; C3, 11.9%; C4, 11.4% (p>0.05). MTR_{asym}[3.5ppm] was significantly lower for thymic cysts (mean±SD, -11.1%±12.9) than for thymic epithelial tumors (5.4%±4.8, p<0.0001). The threshold value(0.635%) can differentiate between thymic cysts and thymic epithelial tumors(sensitivity, 100%; specificity, 100%; p<0.001).

CONCLUSION: APT-weighted CEST MR imaging without the RG can differentiate between thymic cysts and thymic epithelial tumors.

PICKING THE BLACK HAT IN THE OVARINOMA'S' - IMAGING DIFFERENTIATION OF THE MALIGNANT AND BENIGN OVARIAN LESIONS.

Avni Skandhan*¹;

¹*Radiology, Aster Mims Kottakkal, India*

LEARNING OBJECTIVE: Ovarian masses are a common finding in routine clinical practice with many of them being incidentally detected and some identified in symptomatic patients.

BACKGROUND: Ovarian cancer is the second most common gynaecologic malignancy and a leading cause of death among these diseases. A multidisciplinary approach must be undertaken. Preoperative biopsy should not be performed as this raises the risk of spreading cells and potentially leads to iatrogenic upstaging. Pre-operative assessment is a diagnostic challenge.

FINDINGS AND/OR PROCEDURE DETAILS: Diagnostic imaging plays a crucial role in characterization and staging of adnexal masses. Ultrasound (US) is often the first imaging study performed in evaluation of suspected ovarian lesion because it's widely available, well accepted by patients, non-invasive and of low cost. Computed Tomography (CT) after contrast administration is important both in the evaluation of spread of malignant lesions and in the detection of recurrence after therapy, whereas it has a limited value in primary detection and characterization of an ovarian mass. 18F-FDG PET/CT is being increasingly used and its role in the evaluation of ovarian tumours appears to be crucial in the postoperative follow-up of patients with suspected recurrence. Magnetic Resonance Imaging (MRI) is an essential problem-solving tool to determine the site of origin of a pelvic mass and then to characterize an adnexal mass, especially in patients with indeterminate lesions. MRI is also reliable in detecting local invasion.

CONCLUSION: Characterization of an ovarian lesion is of utmost importance, in order to plan adequate therapeutic management.

ROLE OF MULTIDETECTOR CT IN THE ASSESSMENT OF ACUTE PANCREATITIS AND SEVERITY GRADING BASED ON MODIFIED CT SEVERITY INDEX AND ITS CORRELATION WITH SEVERITY GRADING AS PER REVISED ATLANTA CLASSIFICATION 2012 AND CLINICAL OUTCOME.

Saneesh P S¹; U C Garga¹; Yashvant Singh¹

¹*Radiodiagnosis, Pgimer & Dr.Rml Hospital, New Delhi, India*

OBJECTIVE: Role of Multidetector CT in the assessment of the severity of acute pancreatitis using modified CT scoring system and correlate the MDCT scoring with clinical severity of the disease and patient outcome.

MATERIALS & METHODS: It was a cross-sectional observational study of 152 patients conducted in the Department of Radiodiagnosis at P.G.I.M.E.R & Dr Ram Manohar Lohia Hospital. CT was performed 128-slice Simens dual-energy CT scanner. Severity grading of acute pancreatitis was assessed based on Modified CT Severity Index (MCTSI). Clinical severity of acute pancreatitis evaluated based on Revised Atlanta classification (RAC) 2012. Clinical outcomes of patients were noted in terms of, Duration of hospital admission, ICU stay, Evidence of organ failure., Evidence of infection, The need for intervention and Death.

RESULTS: Study group included 152 cases of acute pancreatitis. According to MCTSI 25 mild, 49 moderate and 78 severe cases. Clinically 27 Mild, 76 Moderately severe and 49 Severe cases based on RAC. MCTSI showed good concordance (Kappa -0.540) with RAC grading in 23 (84.18%) mild, 40 (52.6%) moderate and 44 (89.7%) severe cases. MCTSI showed significant statistical correlation ($p < 0.001$) with outcome parameters except for evidence of infection and death.

CONCLUSION: The present study MCTSI showed good concordance with clinical severity grading (RAC). MCTSI grading of acute pancreatitis is helpful for clinicians for prognosticating and decision making in the duration of hospital stay, need of ICU care, intervention and follow up.

MAIN PANCREATIC DUCT (MPD) DIAMETER: CECT MEASUREMENT IN NORMAL SUBJECTS IN SRI LANKA.

Mudunkotuwa Hitiwedi Widanelage Madhavi Nadeesha Wijayapala*¹; D.D.Ranasinghe²

¹*Department of Radiology, National Hospital Sri Lanka, Sri Lanka,* ²*Department of Radiology, Colombo South Teaching Hospital, Sri Lanka*

OBJECTIVES:

- To assess the diameter of MPD in normal subjects.
- To describe the age and sex related changes in the MPD diameter.

Dilatation of the MPD is associated with number of significant pancreatic pathologies. To identify the dilated MPD, it is of great importance to study the demographic data of the normal size of the MPD in a given population.

MATERIALS & METHODS: Prospective descriptive study was carried out at Colombo South Teaching Hospital from March 2016 to May 2016. All the subjects with clinical, biochemical and radiological evidence of normal pancreas were included. CT measurements of the MPD diameter were obtained by two individuals independently on the subjects who underwent abdominal CECT scans (16 section MDCT, 1-5mm increments, and dual phase) and each measurement was measured for three times and mean value was taken.

RESULTS: There were 190 men and 132 women with age ranging from 20–88 years (mean 53.6). MPD was adequately visualized only in 72% (n=231) of subjects. The mean diameter of the MPD in the head, body and tail were 2.9, 2.2 and 1.6 mm respectively. No statistically significant difference observed in MPD diameter between sexes and two age groups of <40 and >40 years (p>0.05).

CONCLUSION: The diameter values of MPD in our study are comparable to that of foreign population groups. However, there was no correlation between MPD diameter with the age or sex in the study which was different to the published data which showed higher proportion of MPD diameter with increasing age and female sex.

ULTRASOUND GUIDED PIGTAIL CATHETER DRAINAGE: AN EFFECTIVE ALTERNATIVE TO EXPLORATORY LAPAROTOMY

Vikas Jadhav*¹; Chirag Patel¹ ; Rajesh Kuber¹

¹Radiology, DR. D. Y. Patil Medical College, Hospital & Research Centre, Pune, India

OBJECTIVE: It has been long-established that extensive surgeries were the only options available for the management of the intra-abdominal abscesses or collections. These were associated with increased morbidity and mortality. Traditionally, the idea of percutaneous needling could not gain popularity due to poor localization of collections. However, with the advent of ultrasound, percutaneous pigtail catheter drainage has proven to be a safe, effective, minimally invasive and allows precise localization of the drainage site.

MATERIALS & METHODS: A total of 48 patients were studied retrospectively in Dr.D Y Patil Medical College and Research center, Pune, from October 2018 to October 2019. Out of 48 patients, 18 cases were liver abscess, 12 were PCN tube placement, 6 cases of malignant ascites and splenic collection respectively, 4 of them were psoas abscess and 2 were pseudocyst. The efficacy of the drainage was assessed by serial ultrasound.

RESULTS: Out of 48 patients, 34 were male and 14 were female, ranging between the age of 19 to 67 years. All patients that were diagnosed for intra-abdominal abscesses or collection underwent ultrasound-guided pigtail catheter drainage. The average hospital stay for patients was 2 to 3 days. All patients were followed up periodically for 3 months following the procedure and none had significant post-procedure complications or recurrence.

CONCLUSION: Ultrasound guided pigtail catheter is an effective alternative to extensive surgeries and should be the treatment of choice for liquefied intra-abdominal collections or abscesses which help to reduce post-procedure hospital stay and complications.

CT BASED RADIOMICS TO PREDICT THE PATHOLOGICAL GRADE OF BLADDER CANCER: A PRELIMINARY STUDY

Lili Xu*¹; Gumuyang Zhang¹; Lun Zhao²; Li Mao²; Xiuli Li²; Zhengyu Jin¹; Hao Sun¹

¹Department of Radiology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, China, ²Deepwise AI Lab, Deepwise AI Lab, China

OBJECTIVE: To build a CT-based radiomics model to predict the pathological grade of bladder cancer (BCa) preliminarily.

MATERIALS & METHODS: Patients who received CT urography (CTU) in our institution from October 2014 to September 2017 with pathologically confirmed BCa were retrospectively enrolled in this study. A total of 145 patients (109 males and 36 females) with an average age of 64.0 ± 11.9 years were collected, and randomly divided into the training group (108 patients) and the validation group (37 patients). After feature extraction, we calculated the linear dependent coefficient between features to eliminate the collinearity. F-test was then used to identify the best features related to pathological grade. The logistic regression method was used to build the prediction model, and diagnostic performance were analyzed by plotting receiver operating characteristic curve (ROC) and calculating area under the curve (AUC), sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

RESULTS: The AUC value of the radiomics prediction model to diagnose the pathological grade of BCa was 0.950 (95% confidence interval [CI] 0.912-0.988) in the training group and 0.860 (95% CI 0.742-0.979) in the validation group, respectively. In the validation group, the diagnostic accuracy, sensitivity, specificity, PPV and NPV was 83.8%, 88.5%, 72.7%, 88.5%, and 72.7%, respectively.

CONCLUSION: CT based radiomics model is demonstrated feasible to differentiate high-grade and low-grade BCa with fairly good diagnostic performance.

**ASSESSMENT OF EFFECTS AND SIDE EFFECTS IN USING MAGNETIC
RESONANCE IMAGING-GUIDED HIGH INTENSITY FOCUSED ULTRASOUND
THERAPY FOR SYMPTOMATIC UTERINE FIBROID**

Aishah Saizan*¹; Mohd Shafie Abdullah¹; Wan Aireene Wan Ahmed¹

¹*Radiology, USM, Malaysia*

OBJECTIVE: MRI-guided High Intensity Focused Ultrasound Surgery (MRI-HIFU) is a minimally invasive treatment for symptomatic uterine fibroids, which have shown clinical effectiveness. This study is to describe our experience of assessing effect and side effect of MRI-HIFU in terms of complications.

MATERIALS & METHODS: Observational retrospective cohort study was conducted on 15 female patients who had MRI-HIFU done in HUSM from Jan 2013 until December 2018. The fibroid volumes of pre, immediately after and a month post treatment were measured and analysed using paired t test. Data of predicted treatment volumes (PDV) was retrieved from the HIFU system, and non-perfused volumes (NPV) was measured using T1-weighted MRI images immediately post-treatment. Spearman correlation test was used to test the correlation between PDV and NPV. Data on complications were taken during, after the treatment and during follow-up.

RESULTS: From 15 patients, 60% were type 1 and 40% were type 2 uterine fibroid. The mean fibroid volume before HIFU was 341.69ml, which increases post HIFU (348.15ml) and dropped one month after HIFU (305.37ml). The fibroid volume was significantly lower one month after HIFU compared to immediate post HIFU. The correlation between PDV and NPV was moderate, however not statistically significant. Only 26.7% developed complication during the procedure, however resolved a day after.

CONCLUSION: Significant change of uterine fibroid volumes at immediate post HIFU and one month after sonication. However, no significant difference of fibroid volumes at baseline and immediately post HIFU. Moderate correlation demonstrated between PDV with NPV.

PERCUTANEOUS INTRADUCTAL BILIARY BIOPSY: AN INITIAL EXPERIENCE IN NEPAL

Ajit Thapa*¹; Sundar Suwal¹; Dinesh Chataut¹; Prakash Kayastha¹; Sharma Paudel¹

¹*Radiology And Imaging, Tribhuvan University Teaching Hospital, Institute Of Medicine, Nepal*

OBJECTIVE: Yield of fine needle aspiration biopsy (FNAB) is low in biliary system as compared to other systems as the tumors of biliary system are often too small for having specific imaging findings and also image guided sampling is difficult in those presenting with hilar stricture. Percutaneous intraductal brush cytology and forceps biopsy via percutaneous transhepatic biliary drainage (PTBD) route can be helpful for diagnosis of inoperable hilar strictures. The purpose of this study was to assess yield of percutaneous transhepatic intraductal biliary biopsy in a tertiary hospital of Nepal.

MATERIALS & METHODS: Eight patients with inoperable obstructive jaundice due to hilar stricture sent to our department for PTBD during the period of June 2019 to December 2019 were included in the study. Under fluoroscopy guidance forceps biopsy were taken from the stenotic duct through the biliary drainage route. Corresponding histopathology reports were traced.

RESULTS: We obtained 100% technical success rate on obtaining tissue sample from the hilar stricture. Among eight patients, histopathology confirmed malignancy (adenocarcinoma) in six patients (75%) and two patients were negative for malignancy. Repeat biopsy done in one patient with high suspicion of malignancy and histopathology showed eosinophilic cholangitis, a great mimicker of malignancy. No significant complications seen during the procedure, except for mild hemophilia in one of the patient which subsided subsequently.

CONCLUSION: Percutaneous transhepatic intraductal biliary biopsy is safe and reliable technique for obtaining difficult diagnosis of biliary hilar stricture.

RADIOMICS BASED ON MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING TO PREDICT EXTRAPROSTATIC EXTENSION OF PROSTATE CANCER

Lili Xu*¹; Gumuyang Zhang¹; Lun Zhao²; Li Mao²; Xiuli Li²; Weigang Yan¹; Yu Xiao¹; Jing Lei¹; Zhengyu Jin¹; Hao Sun¹

¹*Department of Radiology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, China,* ²*Deepwise AI Lab, Deepwise Inc, China*

OBJECTIVE: To develop a radiomics model based on multiparametric MRI (mpMRI) for preoperative prediction of extraprostatic extension (EPE) in patients with prostate cancer (PCa).

MATERIALS & METHODS: Ninety-five pathology-confirmed PCa patients with 115 lesions (49 positive and 66 negative) were enrolled. A 3.0T MR scanner was used to perform T2-weighted imaging (T2WI), diffusion-weighted imaging (DWI), and dynamic contrast-enhanced imaging. Radiomics features extracted from T2WI, DWI, apparent diffusion coefficient (ADC) and DCE were used to build a radiomics model. Patients' clinical and pathological variables were also obtained to build a clinical model. The radiomics model and clinical model were further integrated to build a combined nomogram. All lesions were randomly divided into the training group (82 lesions) and the validation group (33 lesions). A least absolute shrinkage and selection operator (LASSO) regression algorithm was applied to build the radiomics model. The diagnostic performance of different models was assessed by calculating the area under the curve (AUC) and compared using the Delong test.

RESULTS: The AUC values for the radiomics model in the training and validation group were 0.919 and 0.865, respectively. And the accuracy, sensitivity, and specificity were 81.8%, 71.4%, and 89.5% in the validation group. In the validation group, the radiomics model outperformed the clinical model (AUC = 0.658, P = 0.020), and was comparable with the combined nomogram (AUC = 0.857, P = 0.644).

CONCLUSION: The radiomics model based on mpMRI could differentiate EPE and non-EPE lesions with satisfactory diagnostic performance, which might assist in predicting EPE before prostatectomy.

**MAGNETIC RESONANCE (MR) GUIDED HIGH INTENSITY FOCUSED
ULTRASOUND (HIFU) IN THE TREATMENT OF UTERINE FIBROID AND
ADENOMYOSIS – OUR EXPERIENCE IN UNIVERSITY MALAYA MEDICAL
CENTER.**

Wei Lin Ng*¹; Eric Chung¹; Anushya Vijayanathan¹

¹*Department Of Biomedical Imaging, University Malaya, Malaysia*

OBJECTIVE: Benign uterine conditions such as uterine fibroids and adenomyosis often causes clinical symptoms such as menorrhagia or dysmenorrhoea. Conventional treatment comprises of hysterectomy, myomectomy or hormonal manipulation. High intensity focused ultrasound (HIFU) is a non-invasive treatment compared to surgical treatment. It causes instant coagulative necrosis in 1-3 seconds and can be performed under image guidance.

MATERIALS & METHODS: This is a retrospective study of patients from January 2009 to December 2019 who underwent HIFU in University Malaya Medical Center (UMMC). The HIFU treatment is guided by MRI to target the monitor and ablation process. An average of 40 number of sonification was used. The volume of the lesion pre and post ablation was measured.

RESULTS: There were a total of 94 patients who underwent HIFU. The majority of patients had uterine fibroid 70.3% (71), followed by adenomyosis 25.7%(26) and mix uterine fibroid and adenomyosis 4%(4). Successful ablation of more than 50% of tumor were achieved in 47.5%(48). 38.6% of patients (39) had ablation area of between 11-50%. Only a minority of patients had less than 10 % of ablation area.

CONCLUSION: HIFU is a non-invasive technique that can be used as an alternate treatment in uterine fibroid and adenomyosis.

**CORRELATION OF MAGNETIC RESONANCE PANCREAYOGRAPHY(MRCP) AND
SURGICAL FINDINGS IN PATIENTS WITH OBSTRUCTIVE JAUNDICE AT
MUHIMBILI NATIONAL HOSPITAL(MNH) TANZANIA**

Latifa Rajab Abdullah*¹

¹*Radiology And Imaging, Ocean Road Cancer Institute, Tanzania*

OBJECTIVE: MRCP has shown an excellent capability in outlining the biliary tree hence demonstration of the level of biliary blockage(obstruction). To determine the correlation of MRCP and intra operative (surgical) findings in patients with obstructive jaundice at MNH from June-December2016.

MATERIALS AND METHODS: This is a cross-sectional hospital-based study in which patients with obstructive jaundice were recruited. An estimated sample size of 60 patients were studied using standardized questionnaires. Data analysis was done using statistical software(SPSS version 20) and statistical level of significance was $p < 0.050$.

RESULTS: In this study females 37(61.7%) are more affected than males 23(38.3%). Of these 41-60 years old age group were commonly seen. Obstructive jaundice was commonly caused by Cholelithiasis followed by pancreatic head tumor. Obstructive jaundice is significantly caused by cholelithiasis($p < 0.001$) and pancreatic head tumor ($p\text{-value} < 0.0001$). MRCP sensitivity and specificity of almost 100%. The results depict that MRCP findings are almost similar to the intraoperative results. The results show that there were very strong and positive correlation between MRCP and intra operative findings.

CONCLUSION: MRCP is highly sensitive and specific with almost 100% in provision of accurate diagnosis. It is important because it shows level, possible cause and extent of obstructions making it easier for surgeons to intervene.

ESTIMATION OF RENAL FUNCTION USING KIDNEY PERFUSION CT

Sung Bin Park*¹; Hyun Jeong Park¹; Eun Sun Lee¹; Byung Ihn Choi¹

¹Radiology, Chung-Ang University Hospital, Korea

OBJECTIVE: The purpose of this study was to measure GFR with a two point Patlak plot technique based on kidney perfusion CT and correlate with estimated GFR (eGFR) using CKD-EPI (Epidemiology Collaboration) and MDRD (Modification of Diet in Renal Disease Study) equation.

MATERIALS & METHODS: Fifty-five adult patients were enrolled with perfusion kidney CT. All kidney perfusion CT acquisitions were obtained on 256-slice multi-detector CT scanner (80 kV; 40 mAs; iterative reconstruction) during 2 minutes continuously with breathing. Both each renal volume and permeability was measured. From Patlak equation, the separate and total renal GFR were measured. Paired t tests and Pearson's correlation test (Correlation coefficient, R < 0.25: low, 0.25 ~ 0.5: moderate, 0.5 ~ 0.75: strong, > 0.75: Excellent correlation) were used for comparisons between the two estimates (perfusion CT and eGFR equations). A p-value < 0.050 was considered statistically significant.

RESULTS: The mean GFR from kidney perfusion CT was 91.19 ± 20.71 ml/min/1.73 m². The estimated GFR using CKD-EPI and MDRD equation were 89.64 ± 19.74 ml/min/1.73 m² and 89.50 ± 24.89 ml/min/1.73 m², respectively. No significant differences were found between CT-GFR and eGFRs (p > 0.050). Excellent correlation between CT-GFR and eGFRs (correlation coefficient, R = 0.91 in CKD-EPI and 0.84 in MDRD, respectively).

CONCLUSION: Kidney perfusion CT scan is a simple and feasible technique to assess renal function. The presented method can be used to calculate single or residual renal function in patients receiving surgery partial or radical nephrectomy.

MULTIPARAMETRIC MRI OF THE PROSTATE – ITS IMPACT ON PSA TESTING, PROSTATE BIOPSIES & PROSTATE CANCER IN AUSTRALIA

Diane Lim*¹; Rebecca Kippen²; Sarah Skinner³; Janelle Brennan¹

¹*Urology, Bendigo Health,* ²*Rural Health, Monash University, Australia,* ³*Radiology, Bendigo Health, Australia*

OBJECTIVE: To assess the impact of the availability of multiparametric magnetic resonance imaging (mpMRI) of the prostate as a rebatable Medicare item on rates of prostate-specific antigen (PSA) testing, prostate biopsies and prostate cancer diagnosis in Australia.

MATERIALS & METHODS: Retrospective analysis of annual data on Medicare funded prostate mpMRI, PSA testing and prostate biopsies; in comparison with the Australian Institute of Health and Welfare rate and incidence of prostate cancer diagnosis. Trends in PSA testing, prostate biopsies and prostate cancer diagnosis with the increasing availability of prostate mpMRI, and the subsequent availability of a Medicare rebate.

RESULT: The overall incidence of PSA tests has been steady over the last decade, but free-to-total PSA ratio tests have increased since there has been a Medicare rebate for prostate mpMRI. From 2009 to 2016, the incidence of prostate biopsies has fallen by 50%, but the incidence of prostate cancer diagnosis has only decreased by 29%. Since the Medicare rebate for prostate mpMRI was introduced, 81,709 prostate mpMRI were performed of which 82.5% were in patients suspected of having prostate cancer based on an elevated PSA or abnormal digital rectal exam (DRE). The remaining 17.5% of mpMRIs were performed in patients undergoing active surveillance for a known prostate cancer diagnosis.

CONCLUSION: Medicare funded prostate mpMRI and increased utilisation of free-to-total PSA ratio tests are associated with a decrease in patients requiring prostate biopsies without a significant decrease in prostate cancer diagnosis rates.

**DIAGNOSTIC VALUE OF VESICAL IMAGING – REPORTING AND DATA SYSTEM
(VI-RADS) IN DIFFERENTIATING T STAGING OF BLADDER CANCER – A
SYSTEMATIC REVIEW**

Diane Lim*¹; Michael McClatchey¹; Neetu Tejani²; Sarah Skinner³; Janelle Brennan¹

¹*Urology, Bendigo Health, ²Radiation Oncology, Peter MacCallum Cancer Centre, Australia,*

³*Radiology, Bendigo Health, Australia*

LEARNING OBJECTIVE: To assess the diagnostic accuracy of the VI-RADS reporting system for multiparametric magnetic resonance imaging of the bladder (mpMRI) for differentiating stage $\leq T1$ from stage $\geq T2$ urothelial carcinoma (UC) of the bladder.

BACKGROUND: Histopathological T staging of UC of the bladder, via transurethral resection of bladder tumours (TURBT), determines its management strategies, but is highly operator dependent. In view of this, many patients have to undergo two TURBT's to improve diagnostic accuracy. mpMRI had been shown to differentiate non-muscle invasive (NMIBC) from muscle invasive bladder cancer (MIBC), but there was no standardised image acquisition protocol and reporting until VI-RADS was created in May 2018. A systematic literature review was conducted using the PRISMA criteria for VI-RADS.

FINDINGS AND/OR PROCEDURE DETAILS: Six studies (1067 patients with bladder cancer) were analysed. Five studies compared the sensitivity (ranging from 94.6% to 82%) and specificity (ranging from 96.5% to 43.9%) of VI-RADS >2 for confirmed pathological MIBC diagnosis, whereas three studies did the same comparison with VI-RADS >3 (sensitivity ranging from 91.3% to 76.0%; specificity ranging from 93.0% to 76.0%) instead. One study looked at the overall sensitivity (78%) and specificity (88%) of all VI-RADS categories.

CONCLUSION: In summary, VI-RADS appears to be a highly promising classification that needs to be further validated in future with large multi-centre studies in order to determine the score best associated with radiological evidence of MIBC.

**MULTIPHASIC COMPUTED TOMOGRAPHY PERFORMANCES AND P53
EXPRESSION IN HEPATOCELLULAR CARCINOMA. CORRELATION ANALYSIS**

Bekzhan Issamatov*¹; Bolatbek Baimakhanov²; Ulugbek Medeubekov²; Zhamilya Zholdybay³;
Evgeny Yenin⁴

¹Radiology, JSC “National Scientific Center Of Surgery Named After A.N. Syzganov”,
²Hepatopancreatobiliary Surgery And Liver Transplantation, JSC “National Scientific Center Of
Surgery Named After A.N. Syzganov”, ³Radiology, Kazakh National Medical University Named
After S.D.Asfendiyarov, Kazakhstan, ⁴Pathomorphology, JSC “National Scientific Center Of
Surgery Named After A.N. Syzganov”, Kazakhstan

OBJECTIVE: To conduct a correlation analysis between the size of HCC and expression of the p53.

MATERIALS & METHODS: 50 patients with HCC were studied. There were 28 men and 22 women, aged 34 to 74 years. Multiphasic computed tomography and immunohistochemistry studies were performed. Pearson’s correlation analyses was used.

RESULTS: 56 nodules of HCC were detected, ranging in size from 1cm to 16.3cm. The number of HCC depending on size were: up to 1 cm - 10 nodules, 1 - 5 cm – 31 nodules, 5 cm and more - 15 nodules of HCC. The level of p53 overexpression ranged from 32.0% to 50.0% of the HCC area (average 39.7%) with HCC sizes from 4.2 cm to 15.0 cm (average 8.2 cm). High p53 expression ranged from 12.0% to 29.0% of the HCC area (average 20.7%) with HCC sizes from 2.0 to 16.3 cm (average 5.3 cm). Low p53 expression was ranged 4.0% to 9.0% of the HCC area (average 6.2%) with HCC sizes from 1.0 cm to 3.9 cm (average 1.95 cm). The correlation degree between the size of HCC and the level of expression p53 was moderate ($r = 0.48$, $p < 0.01$), which means that the level of p53 expression depends on the size of HCC.

CONCLUSION: p53 has the meaning in the prognosis of the HCC. The p53 expression was moderate significantly associated with size of HCC. Consequently, we suggest that the size of HCC on multiphasic CT has a predictive role in the prognosis of disease.

EVALUATING THE ROLE OF SONOURETHROGRAPHY (SUG) IN MALE ANTERIOR URETHRAL STRICTURES

Rajul Rastogi*¹; Neha¹; Satish Pathak¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Center, India*

OBJECTIVE: Sonourethrography (SUG) has recently gained acceptance over Retrograde Urethrography (RGU) for evaluation of anterior urethral strictures because of its several advantages. In However, today, MR Urethrography (MRU) is gold standard. This prospective study aimed to:

- Compare accuracy of SUG in evaluation of anterior urethral strictures.
- Role of SUG in predicting management of anterior urethral strictures.

MATERIALS & METHODS: Twenty male patients with anterior urethral strictures under SUG prior to MRU that was performed on 1.5T scanner. Data related to site & length of stricture; presence or absence of spongiofibrosis with its extent and any other associated abnormality was recorded in both SUG & MRU.

RESULTS: Out of 20 patients, three patients were excluded from our study due to suboptimal MRI scan quality. Long-segment stricture in anterior urethra was detected in 10 out of 17 (58.8%) patients by SUG while MRU detected it in 14 out of 17 (82.4%) patients meaning thereby that 4 patients were falsely diagnosed as short-segment stricture by SUG out of which two were in bulbar and two in penobulbar urethra. Thus, SUG has a sensitivity, specificity and accuracy of 71.4%, 42.9% and 76.5% respectively. SUG was able to predict the correct mode of management in nearly 90% patients

CONCLUSION: SUG can be used with a fair degree of accuracy in anterior urethral strictures especially to complement retrograde urethrography. Clinical Relevance: In developing countries like India with scarcity of MR scanners, competence of radiologist with experience in MRU and financial constraints, SUG can supplement retrograde urethrography and affect management decisions.

**MR ACCURACY IN DETECTING ABNORMAL PLACENTATION WITH STRONG
ULTRASOUND CONCERN FOR MYOMETRIAL INVASION AND ITS
CORRELATION WITH CLINICAL OUTCOME.**

Ummara Siddique*¹; Shahjehan Alam¹; Syed Ghulam Ghaus¹; Aman Nawaz Khan¹; Aruba
Nawaz¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

OBJECTIVE: The purpose of this study was to evaluate MRI for the prenatal diagnosis of placenta percreta and its correlation with clinical outcome.

MATERIALS & METHODS: This is a study of 6 patients performed at our institution to identify women at risk of placenta accreta who had undergone both prenatal ultrasound and MRI. Findings at ultrasound and MRI were compared with the final diagnosis, which was established with clinical findings at surgery. Volume measurements were made of low-signal-intensity intraplacental bands on T2- weighted image. All those patients who were at a high risk of abnormal placentation (placenta accreta, increta and percreta) regarding their clinical history of either one or all of the following: placenta previa, previous uterine interventional procedures (e.g. cesarean sections, dilation & curettage and myomectomy, maternal age of 35 years or more and grand multiparty. The age of the patients ranged from 20 to 42 years (mean age: 31years).

RESULTS: Ultrasound and MRI showed no significant difference in sensitivity and specificity in diagnosing abnormal placentation (97 to 100% and 9 to100%, respectively). MRI was more sensitive than US for the detection of myometrial invasion and the type of abnormal placentation.

CONCLUSION: Early and systematic detection of abnormal placentation is a crucial step in planning delivery and subsequent management to overcome the morbidity associated with abnormal placentation. MRI is highly accurate in predicting the radiological patterns of placenta accreta. MRI and ultrasound are excellent methods for the prediction of maternal morbidity and planning as pre-caesarian section precaution.

MRI AND LAPAROSCOPY IN FEMALE SUBFERTILITY – A FAIR COMPARISON

Rajul Rastogi*¹; Neha¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Centre, India*

OBJECTIVE: In modern era of conservative therapies and minimal invasive surgeries, imaging plays an important role in diagnosis, treatment and determination of the prognosis of diseases. Role of imaging in female subfertility has been documented in Medical literature. In this study, we aim to determine the role of magnetic resonance imaging in determining variety of causes of female infertility using hysterolaparoscopy as a gold standard. The aim of study is to assess the relative role of Magnetic Resonance Imaging (MRI) in detecting various causes of female subfertility

METHODOLOGY: Fifty-five females in reproductive age-group presenting with primary and secondary subfertility were included in the study. All the patients underwent noncontrast MRI pelvis.

RESULTS: MRI was nearly 100% accurate in detecting the cause of subfertility showing nearly 100% sensitivity and specificity.

CONCLUSION: MRI is highly accurate in detecting polycystic ovaries, leiomyoma, endometriosis / adenomyosis, endometrial thickening and uterine and ovarian anomalies. It serves as a problem-solving tool in patients with complex clinical disease showing unremarkable or non-characteristic findings on ultrasonography. MR imaging can complement hysterolaparoscopy especially when tubal diseases or endometriosis are suspected causes of subfertility. MR imaging is useful in predicting the outcome in patients treated conservatively for adenomyosis, leiomyoma and endometriosis and may help in better treatment planning.

EFFICACY OF DATE SYRUP IN SUPPRESSION OF UPPER GASTROINTESTINAL SIGNALS IN MRCP

Irsa Shuaib*¹; Kalsoom Nawab¹

¹*Radiology Department, Khyber Teaching Hospital, Pakistan*

OBJECTIVE: To assess the efficacy of date syrup in suppression of upper GI signals in MRCP. Orally administered substances which suppress signals from gastrointestinal fluid can be used to enhance image quality in MRCP. Date syrup is a rich source of iron can be used as a suitable negative oral contrast agent in MRCP.

MATERIALS AND METHODS: This study was conducted at department of Radiology, Khyber Teaching Hospital, Peshawar from January 2019 to June 2019. Date syrup was given to the patient and then MRCP sequences will be done. MRCP done twice in the same patient before and then after the administration of date syrup and effect of syrup on suppression of fluid signal in GI had been evaluated. Eighty patients underwent MRCP before and 30 minutes after ingestion of 100 mL of date syrup. Unenhanced and contrast-enhanced images were scored for gastrointestinal tract signal suppression and visualization of various pancreaticobiliary structures

RESULT: The images obtained with date syrup had signal-to-noise ratio comparable to that of images obtained with fruit juice and water in MRCP sequences. The iron concentration in date syrup was 2.6 mg/dL. Images obtained after oral contrast administration had significant improvement in gastrointestinal tract signal suppression and an increase in visibility of the CBD, cystic duct, and pancreatic duct.

CONCLUSION: Date syrup can be used as a negative oral contrast agent for gastrointestinal signal suppression during MRCP and for improving visualization of various structures. The application of oral substances for gastrointestinal signal suppression in MRCP is recommendable

TO DETERMINE THE SENSITIVITY OF DIFFUSION WEIGHTED IMAGING FOR DIAGNOSIS OF HEPATOCELLULAR CARCINOMA, KEEPING THE DYNAMIC POST CONTRAST MRI AS GOLD STANDARD.

Raana Kanwal*¹; Belqees Yawar Faiz¹; Fatima Moin¹; Khalood Janjua²; Maaz Ahmed Maghazi³

¹*Diagnostic Radiology, Shifa International Hospital*, ²*Research Cell, Shifa International Hospital*, ³*Physiology, Shifa International Medical College And Hospital, Pakistan*

OBJECTIVE: To evaluate and compare the sensitivity of diffusion weighted imaging (DWI) in diagnosis of hepatocellular carcinoma (HCC) with post contrast dynamic MR imaging.

MATERIALS & METHOD: After IRB approval a retrospective study was conducted, 123 diagnosed hepatocellular carcinoma cases from hospital database from July 2018 to October 2019 were evaluated by two experienced radiologists. MR-imaging was performed at 1.5 T Titan Toshiba. Magnetic resonance (MR) sequences were T1, T2, and DWI/ADC (b value of 1000). Contrast enhanced (CE) T1 after 25, 60, 180 seconds. DWI was performed by SEPI sequence. Data analysis was done using SPSS version 21 and results were compiled.

RESULTS: 105 patients (85%) showed typical pattern on CE dynamic imaging. 18 patients (15%) showed equivocal pattern on arterial and venous phases. Restricted diffusion was seen in patients 62 (50%). Sensitivity of diffusion weighted imaging alone for diagnosis of HCC is 91.07%.

CONCLUSION: DWI can act as standalone sequence in diagnosis of HCC in patients with any contraindication to contrast administration. Exploring new non-invasive diagnostic modality to help improve diagnosis of HCC is challenging, this study will open doors for new researches in future.

ROLE OF CONTRAST ENHANCED UNTRASONOGRAPHY IN GRADING THE SEVERITY OF ACUTE PANCREATITIS

Swathikiran Rajkumar*¹; Ramesh A¹; Sreenath G.S²

¹Radiodiagnosis, JIPMER, ²General Surgery, JIPMER, India

OBJECTIVE:

- To assess the diagnostic accuracy of Contrast Enhanced Ultrasound (CEUS) in grading the severity of acute pancreatitis
- To correlate CEUS findings with clinical outcome variables such as need for intervention, ICU admission and BISAP score

MATERIALS AND METHODS: 56 patients with acute pancreatitis referred for CECT between January 2019 and August 2020 were included in the study and B-mode USG and CEUS were performed in all these patients. Parameters such as size and enhancement of pancreas, presence of peripancreatic fluid collections and extrapancreatic complications were recorded in CEUS and compared with CECT. Ultrasound severity index (USSI) and modified ultrasound severity index were calculated for each patient and compared with CT severity index and modified CT severity index respectively.

RESULTS: The sensitivity and specificity of CEUS in differentiating AIP from ANP were 93.1% and 96.3%. The sensitivity of CEUS in diagnosing splenic vein thrombosis and peripancreatic fluid collections was 87.9% and 76.9%, whereas the specificity was 100% in both. The agreement between USSI and CTSI was calculated as 0.86 (Cohen's kappa coefficient) and between modified USSI and modified CTSI as 0.85, indicating an almost perfect agreement. No significant differences were noted between USSI and modified USSI in grading the severity of acute pancreatitis and both indices showed a good correlation with clinical outcome variables.

CONCLUSION: CEUS has a good diagnostic accuracy to detect necrosis and grade the severity of acute pancreatitis and can be used as a substitute to CECT. USSI and modified USSI are equally good indicators to predict clinical outcome.

**ASSESSMENT OF LOCOREGIONAL SPREAD OF CARCINOMA CERVIX BY
PELVIC MRI**

Supriya Das*¹; Sohini Sengupta¹; Archana Singh¹; Shubham Saha¹; Partha Sarathi Chakravorty¹

¹*Department Of Radiodiagnosis, Institute Of Post Graduate Medical Education & Research,
India*

OBJECTIVE: Cervical cancer is the 4th most common gynaecological malignancy worldwide.(GLOBOCON 2018 data).Imaging has a more central role in staging of cervical cancer in 2018 FIGO guidelines. MRI is the preferred imaging modality because of its ability to assess soft tissue in detail. Purpose is to evaluate role of MRI in detection of cervical carcinoma and assessment of locoregional spread of the disease including lymph node invasion for proper staging.

MATERIALS AND METHODOLOGY: It was prospective single institution cross sectional observational study. Sample Size was 40.Biopsy proven patients before starting any treatment undergone contrast enhanced MRI pelvis in GE healthcare 3 .0 tesla machine.

RESULTS: 50% patients were in 5th decade. Majority patients were multiparous(45% 3rd parity).87.5% patients had squamous cell carcinoma.75% patients had upper 2/3rd vagina involvement. Only 12.5% patients had rectal invasion.32.5% patients had pelvic lymph node involvement. Most commonly diagnosed stage was stage IIB.

CONCLUSION: MRI is very useful in local staging of the disease. following FIGO 2018 guidelines. It is also helpful to differentiate residual tumour from radiation fibrosis.

LIVER AND LIVER TUMOR SEGMENTATION FROM ABDOMINAL CT IMAGES USING DEEP LEARNING AND K-MEANS ALGORITHM

P Vaidehi Nayantara*¹; Surekha Kamath¹; Manjunath K N²; Rajagopal K V³

¹*Instrumentation And Control Engineering, Manipal Institute Of Technology, Manipal Academy Of Higher Education, Manipal,* ²*Computer Science And Engineering, Manipal Institute Of Technology, Manipal Academy Of Higher Education, Manipal, India,* ³*Department Of Radiodiagnosis And Imaging, Kasturba Medical College, Manipal Academy Of Higher Education, Manipal, India*

OBJECTIVE: We propose liver and liver tumor segmentation algorithms for computer aided diagnosis of liver diseases.

MATERIALS AND METHODS: The segmentation was performed in two stages, first, the liver was segmented from the abdominal Computed Tomography (CT) images using the deep convolutional encoder-decoder network called SegNet. Then, liver tumors were segmented using K-Means clustering, morphological and logical operations. The concept of transfer learning/fine-tuning was used in the deep learning model. SegNet with pre-trained weights from VGG16 was fine-tuned with 3D-IRCADb-01 dataset. The images were converted to three channels by duplicating the slice in each channel and then resized thus producing images of dimension 380* 380* 3 suitable for SegNet. The number of epochs, learning rate and optimization algorithm used were 90, 0.001 and stochastic gradient descent with momentum, respectively. For empirical testing, ten portal venous phase CT datasets (500 images in Feet First-Supine patient position) obtained from KMC hospital, Manipal were employed for evaluating the performance of the proposed algorithm.

RESULTS: The quantitative evaluation metrics such as, Average Dice Coefficient (DC) = 0.94, Jaccard Index (JI) = 0.888 and Volumetric Overlap Error (VOE) = 0.113 were computed for liver segmentation and for liver tumor segmentation, the values were DC = 0.654, JI = 0.494 and VOE = 0.506.

CONCLUSION: The proposed segmentation technique has correctly delineated the liver and liver tumor which is proved through statistical analysis (qualitatively and quantitatively).

LIVER FAT QUANTIFICATION BY IMAGING MARKERS: HOW WE DO IT

Van Trung Hoang*¹; The Huan Hoang¹; Hoang Anh Thi Van¹; Vichit Chansomphou²; Thanh Nhi Thi Nguyen³; Cong Thao Trinh⁴; Hong Vu Thi Le⁵

¹*Department of Radiology, Thien Hanh Hospital, Vietnam,* ²*Department of Radiology, Savannakhet Medical-Diagnostic Center, Laos,* ³*Department of Radiology, Hue University of Medicine and Pharmacy Hospital, Vietnam,* ⁴*Department of Radiology, Hue Central Hospital, Vietnam,* ⁵*Department of Radiology, Vinmec Da Nang International Hospital, Vietnam*

LEARNING OBJECTIVE: Due to percutaneous liver biopsy limitations, noninvasive imaging techniques are increasingly used to manage hepatic steatosis (HS), especially nonalcoholic fatty liver disease (NAFLD). This paper presents an update on imaging markers of HS quantification.

BACKGROUND: NAFLD is a common chronic liver disease that affects approximately one billion people worldwide. Excessive and prolonged fat accumulation increases liver hepatocyte injury risk, which could cause a range of other serious problems.

FINDINGS AND/OR PROCEDURE DETAILS: Conventional ultrasound is considered a qualitative method with a low rate of accuracy. Better quantitative methods are being developed based on fundamental tissue parameters such as attenuation coefficient and backscatter coefficient. Controlled attenuation parameter based on transient elastography is also being extensively studied. (2) Computed tomography plays an increasing role in HS assessment based on absolute liver attenuation value or relative liver attenuation value compared with the spleen. Single-energy and dual-energy computed tomography are being developed. (3) In-phase opposed-phase imaging or fat suppression methods with conventional magnetic resonance imaging allow for HS evaluation qualitatively based on observable signal intensity differences. Stimulated-echo acquisition mode and point-resolved spectroscopy method based on magnetic resonance spectroscopy are widely accepted as a reference standard for HS quantification. The chemical shift-encoded magnetic resonance imaging method separates the signal of the water and fat components, allowing good quantification of HS. Parametric quantifying proton density fat fraction maps analysis method can assess whole-liver segmentation automatically.

CONCLUSION: Imaging markers are noninvasive HS estimation methods developed and hold great promise for the future.

MUCINOUS COLORECTAL ADENOCARCINOMA: IS CT GOOD ENOUGH FOR PREOPERATIVE PREDICTION?

Piyaporn Apisarnthanarak*¹; Sirudcha Polsak¹; Voraparee Suvannarerg¹; Vilasinee Rerkpichaisuth¹; Kobkun Muangsomboon¹; Wanwarang Teerasamit¹; Sopa Pongpornsup¹; Anucha Apisarnthanarak²

¹Radiology, Faculty Of Medicine Siriraj Hospital, Thailand, ²Medicine, Thammasat University Hospital, Thailand

OBJECTIVE: To assess the characteristics of mucinous versus non-mucinous colorectal adenocarcinoma by preoperative computed tomographic (CT).

MATERIALS AND METHODS: A retrospective study was conducted for a comparative assessment of preoperative CT in patients post-operatively confirmed with either mucinous or non-mucinous colorectal adenocarcinoma. Two experienced abdominal radiologists separately conducted a blinded review of preoperative CT for location, size, morphology, enhancement, area of hypoattenuation, internal calcification, extracolonic spreading, adjacent organ invasion, obstruction, complications, lymphadenopathy, and distant metastases. Any discrepancies were reconciled by a consensus review. Subsequently, a stratified comparative analysis was performed for patients with mucinous versus non-mucinous colorectal adenocarcinoma.

RESULTS: Over a 12-year, 6-month period, there were 143 patients meeting inclusion criteria, 47 with mucinous and 96 with non-mucinous adenocarcinoma. The mean age (SD) and gender distributions were similar for both groups. The mean (SD) tumor diameter and length were 4.7 (2.1) and 7.7 (3.9) cm in mucinous group vs. 3.1 (1.4) and 5.4 (2.2) cm in non-mucinous group ($p < 0.001$). The presence of heterogeneous enhancement and area of hypoattenuation greater than two-third of tumor volume were more frequently visualized in the mucinous group ($p = 0.001$ and $p < 0.001$, respectively); and the combination of these 2 characteristics had diagnostic utility for mucinous adenocarcinoma with sensitivity, specificity, and accuracy of 66.0%, 95.8%, and 86.0%, respectively.

CONCLUSION: Preoperative CT had a potential for preoperative diagnosis of mucinous adenocarcinoma. Colonic mass with heterogeneous enhancement and an area of hypoattenuation more than two-third of tumor volume should increase the preoperative index of suspicion for mucinous adenocarcinoma.

EXTRAOSSEOUS MYELOMA OF LIVER MIMICKING HEPATOCELLULAR CARCINOMA WHERE A DISTINCTION HAS TO BE MADE: A CASE REPORT

Hoi Ming Kwok*¹; Eugene Sean Lo¹; Heather Hoi Ching Lee¹; Wing Hang Luk¹; Ka Fai Ma¹

¹*Radiology, Princess Margaret Hospital, Hong Kong (SAR)*

INTRODUCTION: Multiple myeloma (MM) refers to malignancy of clonal plasma cell proliferation arising in the bone marrow. Extra-osseous MM is not uncommon and associate with poorer prognosis. Imaging findings of extraosseous myeloma of liver are non-specific. Hypervascular enhancement pattern with washout has been reported on multiphasic CT or MRI. We report a case of known MM with rapidly progressive multifocal hypervascular hepatic masses with washout on CT mimicking hepatocellular carcinoma (HCC). Liver biopsy was arranged and revealed myelomatous involvement. To our knowledge, the rapid progression of extraosseous myeloma of liver has not been reported in Chinese population before.

RESULTS: A 67-year-old male with known MM on first cycle of second line chemotherapy with progressive deranged liver function and new onset of pancytopenia with fever. Ultrasound revealed multiple bilobar hepatic hypoechoic lesions, some with bullseye appearance, suggesting possible hepatic candidiasis. There is progressive worsening of liver function despite intravenous antifungal therapy. Multiphasic CT revealed a small arterial enhancing nodule in hepatic segment V with washout and a newly developed lytic sacral lesion. CT liver three weeks later showed interval increase in size and number of these liver lesions with similar enhancement pattern, therefore suspicious of HCC. However, the rapid disease temporal pattern would be unusual. Ultrasound-guided liver biopsy confirmed myeloma involvement.

CONCLUSION: Extraosseous myeloma of liver is uncommon but important to recognize. The presence of hypervascular liver masses in patients with known MM should alert radiologists to get definitive tissue diagnosis instead of satisfying the imaging diagnosis of HCC.

USE OF POINT-SHEAR WAVE ELASTOGRAPHY IN IDENTIFYING LIVER FIBROSIS IN VIRAL HEPATITIS & ALCOHOLIC LIVER DISEASE PATIENTS IN COMPARISON WITH SERUM BIOMARKERS

Annamalai Vairavan*¹;

¹*Radiology Resident, AIIMS, Bhopal, India*

OBJECTIVE: Real-time Point shear wave elastography is a recent two-dimensional shear wave elastographic method that helps us to estimate the severity & quantify liver fibrosis. Liver stiffness is dependent on its composition, which is altered by deposition of collagen in patients with fibrosis or cirrhosis, hepatocellular carcinoma, or metastases. The aim of our current study is to evaluate P-SWE elastography as a diagnostic tool for liver fibrosis in comparison with Aspartate transaminase to Platelet Ratio Index (APRI) score, and Fibrosis 4 tests in patients with alcoholic liver disease & Viral hepatitis.

MATERIALS AND METHODS: It was a cross-sectional study at tertiary care center, Bhopal over a period of one year. Patients of age more than 18 years referred for an ultrasound with a clinical diagnosis of CLD were included in the study. Patients with diagnosed hepatocellular carcinoma by imaging or serology; and patients with decompensated liver disease, massive ascites, or Body mass index <18.5 or > 35 Kg/m² were excluded.

RESULTS: There were 100 participants, among them 88 patients met the inclusion criteria, rest were excluded due to non-compliance/ inability to breath-hold. Kappa value of elastographic measurements & biomarker indices in alcoholic & viral hepatitis patients implied a fair & moderate agreement respectively (P<0.001).

CONCLUSION: We identify P-SWE as an important non-invasive diagnostic test as well as a screening tool in detecting significant liver fibrosis. Data validating our findings from larger multicenter studies in the Indian population is required. P-SWE can eventually replace invasive liver biopsies in near future.

THE CLINICAL VALUE OF CONTRAST-ENHANCED ULTRASOUND (CEUS) FOR ASSESSING DIAGNOSIS OF VIABLE HEPATOCELLULAR CARCINOMA AFTER TACE IN COMPARISON WITH CONTRAST- ENHANCED MRI AND CT

Vuthy Than*¹;

¹*University of Health Science (UHS) & Chongqing Medical University, Cambodia*

OBJECTIVE: The purpose of this study was to focus on the assessing diagnosis of CEUS, CECT and CEMRI which can be used as imaging options for the treatment response evaluation of HCC after TACE.

MATERIALS AND METHODS: Online databases were comprehensively searched up to 2020. The methodological quality was assessed by using QUADAS-2. Pooled statistics were calculated with a random effect or fixed-effect model. Heterogeneity was assessed by the X2 test and I2 value. The sources of heterogeneity were explored by meta-regression analysis.

RESULTS: 19 studies were finally included in this meta-analysis. In total, there are 862 patients with 1116 nodules of HCC after treatment. Most of the included studies had a low risk of bias regarding the study design and a low risk of concerns regarding clinical applicability. In terms of pooled sensitivity of CEUS, CECT and CEMRI, it was 0.94, 0.73, and 0.90, respectively; pooled specificity was 0.90, 0.88, and 0.92, respectively. Pooled +LR of CEUS, CECT and CEMRI was 7.17, 6.39, and 8.29, respectively; pooled –LR of CEUS, CECT and CEMRI was 0.08, 0.34 and 0.16, respectively. Pooled DOR of CEUS, CECT and CEMRI were 101.74, 19.89 and 53.56, respectively. AUCs of CEUS, CECT and CEMRI were 0.9635, 0.7969 and 0.9452 respectively.

CONCLUSION: This comprehensive meta-analysis revealed that the assessing diagnosis of CEUS is better than that of CECT and CEMI suggesting that both CEUS and CMRI may play important roles in oncology management and clinical practice.

**METEOR SHOWER IN THE ABDOMEN: A LETHAL SPONTANEOUS
EXTRAPERITONEAL HEMATOMA WITH CONCURRENT COVID-19 PNEUMONIA**

Nur Liyana Mohamed Mustafa*¹; Amirah Abdul Wahid¹; Fatimah Hartina Hussin¹; Nasibah
Mohamad²

¹*Department of Radiology, Hospital Queen Elizabeth, Malaysia* ²*Department of Radiology, School of Medical Sciences, Universiti Sains Malaysia*

INTRODUCTION: Coronavirus disease 2019 (COVID-19) is a disease caused by coronavirus SARS-CoV-2, resulting in a global pandemic. Patients commonly present with respiratory tract symptoms though some may be asymptomatic while others have atypical presentations. These proved to be a challenge in both diagnosis and treatment. Here, we demonstrate a case of a lethal spontaneous extraperitoneal hematoma in a patient with COVID-19 pneumonia.

REPORT: A 65-year-old lady with hypertension presented to our hospital following a positive SARS-CoV-2 throat swab with fever, sore throat, myalgia and anosmia. During admission, she developed sudden onset suprapubic pain and progressive fall in haemoglobin level. Contrast-enhanced computed tomography (CECT) of the abdomen revealed a right rectus abdominis muscle and extraperitoneal hematomas with hemoperitoneum, and active bleeding from the inferior epigastric arteries. There was also pectineus muscle hematoma with active bleed in the inguinal regions. Her case proved to be a fatal one due to profound bleeding and development of disseminated intravascular coagulation.

CONCLUSION: COVID-19 is a novel disease with emerging complications, such as spontaneous internal bleeding, including extraperitoneal hematomas. High clinical suspicion and thorough evaluation aids in early diagnosis and prompt management. Although coagulopathy has been linked with COVID-19, thrombosis is commoner than bleeding. A progressive fall in haemoglobin levels should particularly raise the suspicion for internal bleeding and CECT abdomen is recommended in aiding prompt diagnosis and management.

**ACCURACY OF CT SCAN STAGING AND CORRELATION OF
HISTOPATHOLOGICAL FINDINGS IN PATIENT WITH COLORECTAL
CARCINOMA**

Akshat Agrawal*¹; Kamal Kumar Sen¹; Subrat Mohanty²; Swati Das¹; Ajay Sharawat¹

¹Radiodiagnosis, Kalinga Institute Of Medical Sciences, ²Surgery, Kalinga Institute Of Medical Sciences, Bhubaneswar, India

OBJECTIVE: Colorectal cancer (CRC) is one of the most common malignancies and usually ranks high in incidence and mortality among all Western world malignancies. Carcinoma of the rectum and sigmoid colon is one of the most common gastrointestinal tract malignancy sites and accounts for 20% of all gastrointestinal malignancies

- To study the diagnostic performance of preoperative tumour staging by CT scan in colon cancer and comparison with histopathological staging
- To characterize benign and malignant colorectal lesions by contrast CT study of the abdomen.
- To study the demographic pattern of colon cancer.

MATERIALS AND METHODS: Combinations of biphasic or triphasic enhanced-phase CT scans were obtained for 48 patients with colorectal carcinoma, and the TNM stage was determined based on imaging reconstruction. The preoperative TNM stage was compared with the postoperative pathological stage, and the consistency between the 2 methods was tested by the k test using SPSS software.

RESULTS: The rectum was the most common site of involvement followed by the recto-sigmoid involvement. CT showed to have a sensitivity of 83.3%, the specificity of 92%, in the diagnosis of T1 and T2 lesions, sensitivity and specificity of 88.2%, and 93.8%, in the diagnosis of T3 lesions with a sensitivity and specificity of 100%, in the diagnosis of T4 lesions.

CONCLUSION: CT scan is an excellent modality in the local staging of malignant lesions of the colon and rectum but in terms of nodal metastasis, it does not fare very well.

PATIENT REPORTED COSMETIC OUTCOME AFTER VACUUM ASSISTED EXCISION OF BENIGN BREAST LESIONS: A CROSS-SECTIONAL STUDY

Elles Van De Voort*¹

¹*Surgery, Franciscus Gasthuis & Vlietland, Netherlands*

OBJECTIVE: About 80% of all breast tumors are benign and can be excised through a vacuum assisted excision (VAE) under local anesthetics. Although most studies imply that cosmetic outcome after VAE is superior to cosmetic outcome after surgical excision (SE), hardly any studies on this subject are conducted. In this study we aimed to evaluate cosmetic outcome and possible influencing factors after VAE for benign lesions.

MATERIALS & METHODS: In this cross-sectional study all eligible patients were contacted to complete the Dutch BCTOS-13 questionnaire on cosmetic outcome (no difference (1) to a big difference (4)). Socio-demographic and procedure-related characteristics were retrospectively collected from the electronic patient record. All possibly associated variables with cosmetic outcome were included in a WLS multivariate linear and a binary multiple logistic regression analysis.

RESULTS: A total of 47/65 (72%) patients completed the questionnaire on cosmetic outcome. Cronbach's alpha for internal consistency of the questionnaire was good (0.73). Overall cosmetic outcome was good in 74% of patients (mean 1.5). The presence of follow-up complications was significantly associated with cosmetic outcome after WLS multivariate linear regression and binary multiple regression analysis.

CONCLUSION: VAE has several advantages over SE, such as lower costs and less invasiveness. Overall cosmetic outcome after VAE was good and the presence of follow-up complications seem to have a negative effect on cosmetic outcome. Compared to literature VAE seems to have a better cosmetic outcome than surgical excision. A comparative study for results after VAE and SE is necessary to confirm findings.

**ASSOCIATION BETWEEN ONCOTYPE DX RECURRENCE SCORE AND DCE-MRI
FEATURES IN PATIENTS WITH ER-POSITIVE HER2-NEGATIVE INVASIVE
BREAST CANCER**

Hee Jeong Kim*¹; Woo Jung Choi²; Hak Hee Kim²; Joo Hee Cha²; Hee Jung Shin²; Eun Young
Chae²

¹*Department of Radiology, Dankook University Hospital, Korea,* ²*Department of Radiology, Asan
Medical Center, Korea*

OBJECTIVE: To investigate the association between magnetic resonance imaging (MRI) features and the Oncotype DX recurrence score (RS) in patients with estrogen receptor (ER)-positive HER2-negative invasive breast cancer and evaluate whether MRI can be used to predict the Oncotype DX RS.

MATERIALS & METHODS: Between January 2015 to December 2018, 471 patients with ER-positive HER2-negative invasive breast cancer who performed preoperative MRI and Oncotype DX assay were included. MRI morphologic and kinetic features were reviewed. Association between Oncotype DX RS and clinicopathologic and imaging features were evaluated. Logistic regression analysis was used to identify independent predictors of high and low RS.

RESULTS: Of the 485 cancers, 288 (59.4%) had low (RS < 18), 155 (31.9%) had intermediate (RS 18-30), and 42 (8.7%) had high RS (RS ≥ 31). For 461 cancers (95.1%) detected as mass on MRI, multiple logistic regression analysis showed that round shape (Odds ratio [OR] = 2.55, P = 0.089), and low proportion of washout component (OR = 1.01, P = 0.014) were associated with low RS; heterogeneously dense (OR = 3.21, P = 0.007) or fibroglandular (OR = 3.78, P = 0.005) breast tissue, not-spiculated margin (OR = 5.44, P = 0.007), and low proportion of persistent component (OR = 1.01, P = 0.036) were associated with high RS.

CONCLUSION: MRI features may predict RS levels in patients with ER-positive HER2-negative invasive breast cancer, enhancing the ability to diagnose and treat these patients.

CORRELATION BETWEEN MAMMOGRAPHIC FEATURES AND EXPRESSION OF ER, PR AND HER2 RECEPTORS

Mirna Muis*¹; Lina Choridah²; Sariningsih Hikmawati³

¹Radiology, Hasanuddin University, Indonesia, ²Radiology, Gadjahmada University, Indonesia,

³Radiology, Dharmais Hospital, Indonesia

OBJECTIVE: Determination of hormone receptors consisting of estrogen receptors, progesterone, and human epidermal growth factors 2 (HER2) in invasive breast cancer is very important as a predictive and prognostic factor in breast cancer management. If morphology tumors based on mammography can be used to predict the types of hormone receptors, this information will be very useful in planning the pretreatment or prognosis of breast carcinoma. Purpose: To determine the correlation between morphological features and calcifications of breast carcinoma with the hormone receptors.

MATERIALS & METHODS: Observational cross-sectional study, non-random consecutive sampling. Assessment of breast morphology, shape, and distribution of calcifications based on mammography of craniocaudal (CC) and mediolateral-oblique (MLO) positions. Assessment of hormone receptor expression consists of estrogen, progesterone and HER2 receptors according to international standards.

RESULTS: A total of 150 subjects, age 22 to 93 years old. The age group that suffers most from breast carcinoma is 40-50 years. Most breast density is scattered fibro glandular and there is a significant relationship between age and breast density. In this study, no significant relationship was found between morphology and the shape and distribution of calcifications with the status of estrogen and progesterone receptors. However, there is a significant relationship between breast carcinoma density and the presence of calcification with HER2 receptors.

CONCLUSION: Breast carcinoma with hyper dens density and without calcification tends to have negative HER2 receptor status.

THE ROLE OF CT SIMULATOR FINDINGS AS A GUIDANCE IN PRETREATMENT AND REPLANNING RADIOTHERAPY BREAST CANCER STAGE III AND IV

Lydia Kuntjoro*¹; Lina Chorridah²; Triwulan Handarini³; Astika Utomo⁴; Albertus Ari⁵; Eko Kuntjoro⁶; Elia Kuncoro⁷; William Pandeiro⁸; Subiyanto⁸

¹Radiology, Diponegoro University, ²Radiology, Gajah Mada University, Indonesia, ³Radiology, Airlangga University, Indonesia, ⁴Pharmacology, Diponegoro University, ⁵Surgery, Diponegoro University, Indonesia, ⁶Radiology, Ken Saras Hospital, ⁷Radiotherapy, Ken Saras Hospital, ⁸Surgery, Ken Saras Hospital, Indonesia

LEARNING OBJECTIVE: CT scan is not standard assessed for breast cancer, but the image from CT scan simulator pretreatment and replanning can reveal the size of the tumor, invasion, lymphadenopathy, also skin and fibroglandular thickening.

MATERIALS & METHODS: Patients breast cancer stage III dan IV receiving initial and adaptive radiotherapy from January to October 2019 in Ken Saras Hospital, Semarang.

RESULTS: Tumor size was defined as the largest diameter of anterior posterior (AP), latero lateral (LL), and cranio caudal (CC). Among all subjects, mean tumor size in replanning CT simulator was smaller than pretreatment (AP 29.70 ± 15.78 vs 36.58 ± 21.66 , $P=0.004$; LL 52.10 ± 32.42 vs 59.42 ± 36.46 , $P=0.036$; CC 51.68 ± 31.69 vs 61.86 ± 43.85 , $P= 0.029$). Mean replanning tumor invasion, skin, and fibroglandular thickening were smaller than pretreatment (30.01 ± 16.90 vs 37.84 ± 21.83 , $P=0.006$; 6.09 ± 2.43 vs 8.03 ± 2.59 , $P=0.001$; 14.90 ± 7.87 vs 17.25 ± 9.15 , $P=0.025$, respectively). Mean lymph node size in replanning CT simulator was smaller than pretreatment (AP 8.72 ± 6.25 vs 12.21 ± 4.77 , $P=0.001$; LL 9.20 ± 6.10 vs 13.42 ± 6.48 , $P=0.002$).

CONCLUSION: We strongly recommend an accurate interpretation of the size of the tumor, invasion, lymphadenopathy, also skin and fibroglandular thickening based on CT simulator pretreatment and replanning by a diagnostic radiologist, to emphasize the need for careful review of CT simulator images before adaptive radiotherapy, planning therapy and evaluation.

THE ROLE OF PRE-OPERATIVE MRI AS ADJUNCT TO CONVENTIONAL IMAGING IN THE MANAGEMENT OF EARLY BREAST CANCER PATIENTS SELECTED FOR INTRAOPERATIVE RADIOTHERAPY (IORT)

Wai Keong Cheah*¹; Kartini Rahmat¹; Wai Yee Chan¹; Marlina Tanty Ramli Hamid²; Mee Hoong See³; Nur Aishah Md Taib³

¹*Biomedical Imaging, University of Malaya (UM)*, ²*Department of Radiology, Universiti Teknologi MARA (UiTM), Malaysia*, ³*Department of Surgery, University of Malaya (UM), Malaysia*

OBJECTIVE: We aim to determine the usefulness of MRI in decision making and surgical management for patients selected for IORT. We also aim to compare lesion measurements in different modalities (ultrasound, mammogram, MRI) against pathological size as gold standard.

MATERIALS & METHODS: 62 patients were eligible for IORT over a 34-month period. All had pre-surgical mammogram and ultrasound while 41/62 had preoperative MRI. Imaging-pathological size concordances were analysed.

RESULTS: 5/21 (23.8%) patients were subjected to additional EBRT post-surgery due to lymphovascular invasion and involved margins. 10/41 patients (24.4%) in the MRI group were subjected to additional EBRT due to lymphovascular invasion, involved margins, and axillary lymph node metastasis. 5/41 patients were deemed not suitable for BCS and IORT and had change in surgical management post MRI. MRI and mammogram showed better imaging-pathological size correlation with smaller mean difference in size compared to pathological size. Ultrasound underestimated lesion sizes by a mean of 4.5mm, while MRI and mammogram overestimated with a mean of 1mm and 1.1mm respectively. Statistically significant differences were seen in tumors smaller than 2cm on ultrasound, whereas no significant differences were noted on MRI and mammogram regardless of tumor size. Discordant sizes were seen in larger tumors and associated with estrogen receptor negativity.

CONCLUSION: MRI is a useful adjunct to conventional imaging and impacts decision making in IORT. It is also the better modality in determining the actual pathological size.

SONOGRAPHIC FEATURES TO DIFFERENTIATE PHYLLODES TUMORS AND FIBROADENOMAS

Naela Himayati Afifah*¹; Lina Choridah¹; Didik Setyo Heriyanto²

¹Radiology Department, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University, ²Anatomical Pathology Department, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University, Indonesia

OBJECTIVE: Due to the high resemblance of clinical characteristics between phyllodes tumors and fibroadenomas, this study was conducted to distinguish them in sonographic features.

MATERIALS & METHODS: We collected 32 breast ultrasound images of female patients presented in Oncology Clinic Yogyakarta, to this retrospective study; 15 pathologically proven phyllodes tumors and 17 pathologically proven fibroadenomas. Patients' age was also recorded. Statistical significance was then evaluated using Chi-square analysis.

RESULTS: In sonographic features, tumor size for more than 5 centimeters were seen in 82.4% of phyllodes, while only 4% in fibroadenomas ($p < 0.0001$). Phyllodes showed 88.2% heterogenous internal structure compared to 11.8% in fibroadenomas ($p < 0.0001$). About 94.1% oval shape lesion were observed in fibroadenomas and 29.4% in phyllodes ($p = 0.047$). Solitary lesion was characteristic of phyllodes; 35.3% of fibroadenomas were multiple ($p = 0.011$). About 88.2% of phyllodes presented with vascularization in color Doppler; 47.1% in fibroadenomas ($p = 0.001$). The presence of cleft cyst spaces in phyllodes was 82.4% compared to fibroadenomas for only 1% ($p < 0.0001$). No significant difference was found in posterior attenuation ($p = 0.320$) and location of the affected breast ($p = 0.290$). All of the lesions examined in the study presented with circumscribed margin and parallel orientation. Meanwhile, age also differed phyllodes from fibroadenomas ($p = 0.019$) with 73.3% occurrence in more than 40 years-old in phyllodes, and only 23.5% in fibroadenomas.

CONCLUSION: Breast ultrasound could help radiologists to differentiate phyllodes tumors from fibroadenomas related to pathological findings concordance. Age could also be considered as an important factor to make diagnosis more accurately.

MRI FEATURES OF PAPILLARY LESIONS OF THE BREAST: IMAGING AND HISTOPATHOLOGIC CORRELATION

Syarifah Muna-Izzati Sayed Abul Khair*¹; Marlina Tanty Ramli Hamid²; Farhana Fadzli¹; Ouzreiah Nawawi¹; Norlisah Ramli¹; Faizatul Izza Rozalli¹; See Mee Hoong³; Nur Aishah Mohd Taib³; Teoh Kean Hooi⁴; Kartini Rahmat¹

¹*Biomedical Imaging, University Malaya Medical Centre, ²Radiology, University Teknologi Mara, Sungai Buloh Campus, Malaysia, ³Surgery, University Malaya Medical Centre, Malaysia, ⁴Pathology, University Of Malaya, Malaysia*

OBJECTIVE: To evaluate the imaging findings of papillary breast lesions [PBL], in particularly the characteristic features of malignant papillary lesions on magnetic resonance imaging (MRI).

MATERIALS & METHODS: This retrospective study includes 33 histopathological proven PBL in 18 patients who underwent MRI between 2016 and 2019. The imaging findings were reviewed by breast imaging specialist based on Breast Imaging Reporting and Data System (BIRADS) parameters. Lesions were divided into benign (with/without atypia-BA) and malignant categories. Chi-squared and Fisher's exact tests were used for analysis between these two groups.

RESULTS: There were 18 BA and 15 malignant lesions. On MRI, irregular shapes (n=6), non-circumscribed margins (n=6), heterogenous enhancement (n=11) and associated non-mass enhancement (NME) (n=11) were all significantly associated (p<0.050) with malignant lesions. Linear (n=6) and segmental NME (n=4) were observed in malignant lesions. No associated NME was seen in BA lesions.

On ultrasound, posterior features (n=6) and increased vascularity (n=10) were significantly associated (p<0.05) with malignant lesions. Absence of posterior features (n=15) and vascularity (n=13) were significantly associated (p<0.050) with BA lesions. On mammogram, malignant lesions (n=6) frequently presented as mass while majority of BA (n=16) did not present as mass on mammogram (p=0.025). No significant differences were seen in other parameters on MRI, mammogram or ultrasound between the two groups.

There were 6 BA lesions upgraded to malignant on surgical excision with no surgical intervention in 3 cases.

CONCLUSION: Irregular shapes, non-circumscribed margins, heterogenous enhancement and association with linear and segmental NME were features significantly predictive of malignant papillary lesions on MRI.

RADIOLOGICAL FINDINGS AND CLINICO-PATHOLOGICAL CORRELATION OF DUCTAL CARCINOMA IN-SITU(DCIS):10-YEAR REVIEW FROM OPPORTUNISTIC SCREENING AND DIAGNOSTIC ASSESSMENT

Aye Nyein Thinzar*¹; Wai Yee Chan¹; Marlina Tanty²; Nazimah Ab Mumin²; Mee Hoong See³; Mei Sze Teh³; Nur Aishah Taib³; Kartini Rahmat¹

¹Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, ²Department of Radiology, Faculty of Medicine, Universiti Teknologi Mara, Malaysia, ³Department of Surgery, Faculty of Medicine, University of Malaya, Malaysia

OBJECTIVE: To determine the incidence, clinical features and imaging findings of different grades of ductal carcinoma in-situ (DCIS) in a tertiary referral centre over a 10-year period.

MATERIALS & METHODS: Retrospective recruitment of 142 patients diagnosed pathologically with DCIS obtained through breast cancer registry. Patient's clinical presentation, imaging features and histopathological features were evaluated and the relationship between pathological and imaging findings was investigated.

RESULTS: Of the 142 patients, 49.3% and 50.7% were from symptomatic and opportunistic screening respectively. 70.4% were in the high risk (age 50-74), 24.6%, intermediate risk (age 40-49) and 4.9% low risk (age<40) groups. 38.7% were high grade, 20% intermediate and the rest was low grade DCIS. Mass with/without calcifications was found in 72% of high grade, 76% intermediate and 82.8% low grade, with most of them were symptomatic and majority was associated with B3 lesions. Of the 32 patients who presented with calcification, only 4/5 were from screening. Irregular hypoechoic/heterogeneous lesions with indistinct or spiculated margin were the most common sonographic findings in high grade DCIS (14.5%,n=8/55).

Comedonecrosis was more significant in high grade DCIS (n=8, 14.5%) Whereas non-comedo cell type was more commonly seen in low and intermediate grade cases 19.5%(n=19/87).

CONCLUSION: DCIS incidence was highest in the high risk age group. Most DCIS in our study presented with mass with/without calcification, contrary to screening population data whereby 75% of DCIS present with microcalcifications only. Careful consideration of mass and proliferative B3 lesions were therefore crucial to capture DCIS at its early stage.

**PREOPERATIVE EVALUATION OF AXILLARY LYMPH NODE STATUS IN
BREAST CANCER PATIENTS USING ULTRASOUND SHEARWAVE
ELASTOGRAPHY**

Norlia Omar*¹; Ng Wei Lin¹; Kartini Rahmat¹; Anushya Vijayanathan¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia*

OBJECTIVE: Ultrasound shearwave elastography (SWE) has been shown in several studies to improve diagnostic value of the conventional ultrasound in the assessment of axillary lymph node (ALN) metastases in breast cancer patient. The objective of this study is to evaluate the diagnostic performance of ultrasound SWE in differentiating benign and metastatic ALN.

MATERIALS & METHODS: SWE ultrasound was performed as a preoperative assessment using Supersonic Aixplorer scanner in women with breast cancer from August 2018 until November 2019. Conventional ultrasound of the breast lesion and ALN were evaluated based on the size of the breast lesion and ALN, presence of ALN hilum and also ALN cortical thickening. For Qualitative SWE, the images of ALN were classified into four colour pattern. Quantitative SWE measurements involved calculation of the stiffness of the breast lesion and ALN.

RESULTS: To date, a total of 105 patients, comprising of 98 patients with invasive carcinoma and 7 ductal carcinoma in-situ were examined. 49 patients have metastatic ALN whilst 56 were benign. Qualitative SWE gives a positive predictive value of 65.2% with sensitivity 95.9 % (p value <0.001). Using cut off value ALN Emax (maximum stiffness) of 12.7 kPa Quantitative SWE, gives a positive predictive value of 61.0 % with sensitivity 61.2 % and area under the curve (AUC) of 63% (p value < 0.005).

CONCLUSION: SWE in combination with conventional ultrasound have a potential diagnostic tools adjunct in differentiating metastatic ALN. Qualitative shearwave elastography in our study exhibited better diagnostic performance than quantitative SWE and conventional ultrasound parameters.

**MRI BREAST – INITIAL FIVE-YEAR EXPERIENCE AT TERTIERY CARE
HOSPITAL**

Aasma Nudrat Zafar*¹

¹*Diagnostic Radiology, Foundation University Medical College And Fauji Foundation Hospital,
Pakistan*

OBJECTIVE: Dynamic magnetic resonance imaging (MRI) of breast is a functional technique. It is relatively newer imaging modality for breast imaging. We aim to share initial five-year experience after installation of MRI machine at our teaching hospital.

MATERIALS AND METHODS: This study was carried out at Fauji Foundation Hospital, Rawalpindi, from April 2015 to December 2020. Demographic details and indications for MRI breast according to recommendations by American College of Radiology (ACR) relating to each patient were recorded. Mean and standard deviation of quantitative variables were worked out; frequency and percentages were calculated for qualitative variables.

RESULTS: Majority of the patients (51.51%; n = 33) were referred from specialists outside our institution. Age range was 25 – 82 years (mean 47.96; median 49 years). Out of 33 subjects, 18 (54.54%) were referred for additional evaluation of imaging or clinical findings. Screening was performed in 27.27% patients. This included patients at risk of developing breast carcinoma, screening of malignancy in contralateral breast and in augmented breast. Six out of thirty-three (18.18%) subjects were sent for evaluation of extent of known malignancy. This included ruling out multifocality and multicentricity, relationship to deep fascia and evaluation of treatment response.

CONCLUSION: Appropriate patient selection, according to ACR practice parameters for performance of contrast-enhanced MRI of breast, is the most important criterion for adequate and accurate reporting of MR mammogram. Effective communication with referring clinicians helps to avoid unnecessary use of resources.

**PERICARDIAL PERIL - A CURIOUS CASE OF INVASIVE LOBULAR CARCINOMA
WITH PERICARDIAL INVASION**

Renata Mak*¹; KM Chu¹; LF Chiu¹

¹*Radiology & Imaging, Queen Elizabeth Hospital, China*

INTRODUCTION: Malignant pericardial involvement through direct infiltration is rare. In this report, we go through a case of invasive lobular carcinoma of the breast choosing “the road less traveled” and directly infiltrating the mediastinum and pericardium, which is rarely reported in literature. This case also highlights the significance of MRI for problem-solving in unusual situations.

REPORT: Madam C is a middle-aged lady who presented with a breast lump in November 2020. Her ultrasound showed a left inner breast tumor. Core biopsy revealed hormone-receptor-positive invasive lobular carcinoma (ILC). PET-CT showed the index breast tumor involving the ipsilateral pectoralis major muscle and chest wall, with ipsilateral internal mammary and axillary nodal metastases. Interestingly, PET also revealed an FDG-avid anterior mediastinal mass. An MRI breast clearly delineated direct extension of the tumor through the chest wall and intercostal spaces to infiltrate the anterior mediastinum, pleura and pericardium. Madam C’s case has been reviewed in a multi-disciplinary team meeting and, due to pericardial invasion, deemed not a surgical candidate and for palliative chemo- and hormonal therapy.

CONCLUSION: While ILC is recognized for its insinuating nature, infiltration through the chest wall and intercostal spaces to involve the anterior mediastinum, pleura and even the pericardium is extremely rare. It is important for radiologists to realise that, while unusual, invasive breast cancer can involve the pericardium in ways more than one, and that MRI proves vital to diagnosing exact tumor extent, which may alter patient management, clinical outcome and expectations.

**CORRELATION OF THE HISTOPATHOLOGY OF FOCAL BREAST LESIONS
FOUND ON MAMMOGRAPHY WITH STRAIN ELASTOGRAPHY.**

Sana Sayeed*¹; Laiba Masood¹; Samreen Aslam¹; Rashid Nazir¹

¹Radiology, Shifa International Hospital, Pakistan

OBJECTIVE: To assess the validity of strain elastography in better characterization of breast lesions with mammography and histopathological correlation.

MATERIALS AND METHODS: After approval from the institutional review board committee we conducted a retrospective study, analyzing 50 female patients undergoing diagnostic mammography for palpable breast lumps, January 2017 to December 2019 having BIRADS 3 and 4 lesions on mammography. Ultrasound and strain elastography was performed on these patients with the assessment of strain ratios (SR) for benign and malignant tumors, followed by correlation with histopathological analysis.

RESULTS: All of the BIRADS 4b and 4c lesions having higher strain ratios, were proven malignant on biopsy. While BIRADS 3 lesions having lower values were all benign. Indeterminate BIRADS 4a lesions were benign except for two lesions having higher strain ratios which turned out to be malignant. 21 malignant tumors exhibited an average SR of 7.8 +/- 6.87; SR of 39 benign lesions was 2.21 +/- 1.73. The mean strain ratio was significantly higher for malignant lesions. ROC analysis threshold was >4 for malignant disease. Strain elastography was able to detect all malignant lesions (sensitivity 99%, specificity 98.9%, and accuracy 95.9%), providing a better diagnostic yield, and NPV of 96%.

CONCLUSION: Strain elastography is an adjunct method for increasing the accuracy and diagnostic yield of conventional mammography in a clinical setting, especially in low suspicion lesions (BI-RADS 3 and 4A). This would also justify avoiding unnecessary biopsy which adds a financial burden to the patient, instead of considering follow-up mammograms for these cases.

STRAIN ELASTOGRAPHY OF BREAST LESIONS: ELASTICITY CONTRAST INDEX AND ITS COMPARISON WITH TSUKUBA SCORE

Anamika Jha*¹; Amlendu Kumar¹; Ghanshyam Gurung¹

¹*Department of Radiology, Institute of Medicine, Nepal*

OBJECTIVE: Elasticity contrast index (ECI) is a strain elastography technique evaluated for thyroid lesions with utility in breast lesions yet to be ascertained. In this study, we determined the cut-off value of ECI for differentiating benign and malignant breast lesions, and compared the diagnostic performance of B-mode sonography, ECI and Tsukuba score.

MATERIALS AND METHODS: This prospective cross-sectional study included 110 lesions in 102 patients. The solid breast lesions seen on breast ultrasound (BUS) were categorized on grey scale sonography followed by elastography using both ECI and Tsukuba score with pathological diagnosis as gold standard. Cut off value of ECI was obtained using ROC curve. Correlation of B-Mode, Tsukuba score and ECI with tissue diagnosis was calculated using Mann Whitney U test and independent t test.

RESULTS: The mean age was 33 years (range 15-73 years) with nearly 63% of the lesions in BIRADS category 3 and 21% in category 4. On tissue diagnosis, three quarters of lesions were benign. The accuracy of grey scale BUS for benign and malignant lesions was 96.2% and 100 % respectively, combined accuracy, sensitivity and specificity being 96.9 %, 85.7 % and 100% respectively. The ECI cut off value was 2.8. Accuracy of Tsukuba score and ECI was 81.9% and 81.8%, respectively. There was statistically significant correlation ($p < 0.050$) between grey scale, Tsukuba score and ECI.

CONCLUSION: Grey scale ultrasound imaging has high diagnostic accuracy which increases with addition of elastography. ECI is comparable to Tsukuba score in its diagnostic accuracy.

OPTIMIZATION OF COMPUTED TOMOGRAPHY PULMONARY ANGIOGRAPHY PROTOCOLS USING 3D PRINTED MODEL WITH SIMULATION OF PULMONARY EMBOLISM

Sultan Al Dosari*¹; Zhonghua Sun¹; Shirley Jansen²

¹*Medical Radiation Sciences, Curtin University, Australia,* ²*Curtin Medical School, Curtin University, Australia*

OBJECTIVE: The aim of this study was to investigate optimal computed tomography pulmonary angiography (CTPA) protocols for detection of pulmonary embolism based on a 3D printed pulmonary model.

MATERIALS & METHODS: A patient-specific 3D printed pulmonary artery model was generated with thrombus placed in both main pulmonary arteries to represent pulmonary embolism. The model was scanned with 128-slice dual-source CT with slice thickness of 1 mm and 0.5 mm reconstruction interval. The tube voltage was selected to range from 70, 80, 100 to 120 kVp, and pitch from 0.9 to 2.2 and 3.2. Signal-to-noise ratio (SNR) was measured in the main pulmonary arteries and within the thrombus regions to determine the relationship between image quality and scanning protocols.

RESULTS: There were no significant differences in SNR measured in the main pulmonary arteries with 100 and 120 kVp CTPA protocols ($p > 0.05$), regardless of pitch value used. SNR was significantly lower in the high-pitch 3.2 protocols when compared to other protocols using 70 and 80 kVp ($p < 0.05$). There were no significant differences in SNR measured within the thrombus among the 100 and 120 kVp protocols ($p > 0.05$). For low dose 70 and 80 kVp protocols, SNR was significantly lower in the high-pitch of 3.2 protocols than that in other protocols with different pitch values ($p < 0.01$). Radiation dose was reduced by up to 80% when lowering kVp from 120 to 100 and 80 kVp without significantly affecting image quality.

CONCLUSION: Patient-specific 3D printed model can be used to develop optimal low-dose CT pulmonary angiography protocols.

USEFULNESS OF PATIENT-SPECIFIC 3D PRINTED CORONARY MODELS IN CORONARY STENTING

Zhonghua Sun*¹

¹*Medical Radiation Sciences, Curtin University, Australia*

OBJECTIVE: To insert coronary stents into personalized 3D printed coronary models with the aim of determining optimal coronary CT protocols for stent lumen visibility.

MATERIALS & METHODS: A total of six coronary stents with diameter ranging from 2.5 to 4.0 mm were placed into 3 3D printed coronary models for simulation of coronary stenting. The 3D printed models were placed in a plastic container and scanned on a 192-slice third generation dual-source CT scanner with images reconstructed with soft (Bv36) and sharp (Bv59) kernel algorithms. Thick and thin slab maximum-intensity projection (MIP) images were also generated from the original CT data for comparison of stent lumen visibility. Stent lumen diameter was measured on 2D axial and MIP images.

RESULTS: The stent lumen visibility ranged from 54 to 97%, depending on the stent location in the coronary arteries. The mean stent lumen diameters measured on 2D axial, thin and thick slab MIP images were found to be significantly smaller than the actual size ($p < 0.010$). Thick slab MIP images resulted in measured stent lumen diameters smaller than those from thin slab MIP images, with significant differences noticed in most of the measurements (4 out of 6 stents) ($p < 0.050$), and no significant differences in the remaining 2 stents ($p = 0.190-0.380$). Images reconstructed with sharp kernel Bv59 significantly improved stent lumen visibility when compared to the smooth Bv36 kernel ($p = 0.010$).

CONCLUSION: This study shows the feasibility of using 3D printed coronary artery models in coronary stenting for investigation of optimal coronary CT protocols.

A LASSO-DERIVED RISK MODEL FOR SUBCLINICAL CAC PROGRESSION IN ASIAN POPULATION WITH AN INITIAL SCORE OF ZERO

Fu-Zong, Wu*¹

¹*Department of Radiology, Kaohsiung Veterans General Hospital, Taiwan (ROC)*

OBJECTIVE: This study is aimed at developing a prediction nomogram for subclinical coronary atherosclerosis in an Asian population with baseline zero score, and to compare its discriminatory ability with FRS and ASCVD models.

MATERIALS & METHODS: Clinical characteristics, physical examination, and laboratory profiles of 830 subjects were retrospectively reviewed. Subclinical coronary atherosclerosis in term of Coronary artery calcification (CAC) progression was the primary endpoint. A nomogram was established based on a least absolute shrinkage and selection operator (LASSO)-derived logistic model.

RESULTS: Of the 830 subjects with baseline zero score with the average follow-up period of 4.55 ± 2.42 year in the study, these subjects were randomly placed into the training set or validation set at a ratio of 2.8:1. These study results showed in the 612 subjects with baseline zero score, 145 (23.69%) subjects developed CAC progression in the training cohort (N = 612), while in the validation cohort (N = 218), 51 (23.39%) subjects developed CAC progression. This LASSO-derived nomogram included the following 10 predictors: “sex,” “age,” “hypertension,” “smoking habit,” “Gamma-Glutamyl Transferase (GGT),” “C-reactive protein (CRP),” “high-density lipoprotein cholesterol (HDL-C),” “cholesterol,” “waist circumference,” and “follow-up period.” Compared with the FRS and ASCVD models, this LASSO-derived nomogram had higher diagnostic performance and lower Akaike information criterion (AIC) and Bayesian information criterion (BIC) value. The discriminative ability, as determined by the area under receiver operating characteristic curve was 0.780 in the training cohort and 0.836 in the validation cohort.

CONCLUSION: This validated nomogram provided a useful predictive value for subclinical coronary atherosclerosis in subjects with baseline zero score, and could provide clinicians and patients with the primary preventive strategies timely in individual-based preventive cardiology.

SEVERITY OF CORONARY ATHEROSCLEROSIS ON CT CORONARY ANGIOGRAPHY IN PATIENTS WITH ZERO CALCIUM SCORE

Ummara Siddique*¹; Shahjehan Alam¹; Sana Iqbal¹; Seema Gul¹; Syed Ghulam Ghaus¹;
Muhammad Asif¹; Hadia Abid¹; Muhammad Abdullah¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

INTRODUCTION: To find frequency of the presence and severity of coronary plaques on computed tomography coronary angiography (CTCA) in patients with zero calcium score.

MATERIALS & METHODS: Prospective descriptive study of 245 selected patients, who had a zero coronary calcium score (Age range of 30 to 66 years, Median =44.8) and underwent CT coronary angiography on 128 slice Toshiba's Multidetector CT scanner (MDCT), between Dec 2012 and January 2018 at a hospital in Peshawar. Images were assessed on Vitrea workstation for calculation of plaque burden and vessel analysis was done using automated and manual select vessel option. The presence of plaques and extent of stenosis were evaluated. Retrospective interpretation of prospectively acquired data was done using Microsoft Excel and SPSS.

RESULTS: 130 patients (53%) had atherosclerotic disease; 23 (9.3% of total patients) had significant (>50%) coronary stenosis, out of which 10 patients had >70% stenosis. 107 (43.6% of total patients) had non-significant (<50%) coronary stenosis. 115 (46.9%) of the patients had normal coronary arteries with no disease. We conclude from our results that in patients with zero calcium score, atherosclerosis was seen in 53% patients and 9.3% had significant coronary artery disease. Hence, zero calcium score does not absolutely exclude the coronary artery disease.

CONCLUSION: We conclude from our results that in patients with zero calcium score, atherosclerosis was seen in 53% patients and 9.3% had significant coronary artery disease. Hence, zero calcium score does not absolutely exclude the coronary artery disease.

CT RADIATION DOSE REDUCTION IN PEDIATRIC CARDIAC CT FOR CARDIOVASCULAR ANOMALIES – CLINICAL AUDIT IN A SINGLE CENTRE

Ummara Siddique*¹; Shahjehan Alam¹; Syed Ghulam Ghaus¹; Aruba Nawaz¹; Aman Nawaz
Khan¹; Hadia Abid¹; Ali Asghar Sahib¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

OBJECTIVE: To reduce radiation dose from Multidetector computed tomography (MDCT) using techniques with low tube voltage and modified image parameters without significant degradation of image quality

MATERIALS & METHODS: This is a prospective analysis with single blind selection of cardiac anomaly patients referred to radiology department for cardiac CT scan during Jan 2013 to Dec 2015. Total of 100 patients with age range of 1 week to 16 years were selected with echocardiographic suspicion of cardiovascular anomalies. It was probability sampling. Scan was performed on 128 multislice Toshiba scanner. ECG gated retrospective and prospective scanning was performed using modified tube voltage (80kVp, 100kVp and 120 kVp) and with manual adjustment of low tube current. Radiation dose measurement was done by multiplying conversion factor with dose length product (DLP), which was provided by the CT scanner. Data wa processed using Microsoft Excel 2010. Images were reviewed on 5.1 vitrea workstation using multiplanar and 3D reconstruction. Two radiologists independently assessed subjective quality of the CT images to assess cardiac anomalies and normal anatomical structures.

RESULTS: Prospective ECG gating significantly reduced radiation dose 22 mSv (retrospective) to 13.96 mSv (prospective) with standard inbuilt 120kVp setting. Reducing the kVp to 100 further reduced dose to 10.3 mSv and dropped down to 5.46mSv with 80kVp and no significant image distortion. Manually adjusting and reducing the mAs with added filtration reduced the radiation dose to 3.64mSv.

CONCLUSION: By using radiation lowering dose techniques i.e. prospective ECG gating, low kVp and mAs, we reduced radiation dose by 83.45% (22 to 3.46 mSv)

STATE OF THE ART OF CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY

Charbel Saade*¹

¹*Department of Radiology, University of Canberra, Australia*

LEARNING OBJECTIVE: The aim of this paper is to evaluate contrast media (CM) bolus geometry and opacification patterns in the coronary arteries with particular focus on patient, scanner and safety considerations during coronary computed tomography angiography (CCTA).

BACKGROUND: With rapid advances in CT scanner technology with faster scan acquisitions, the risk of poor opacification of coronary vasculature increases significantly. Therefore, awareness of CM delivery is paramount in consistently providing optimal image quality at low radiation dose.

FINDINGS AND/OR PROCEDURE DETAILS: The rapid evolution of computed tomography (CT) technology has seen this imaging modality challenge conventional coronary angiography in the evaluation of coronary artery disease. Increases in spatial and temporal resolutions have enabled CCTA to become the modality of choice when evaluating the coronary vascular tree as an alternative in the diagnostic algorithm for acute chest pain. However, these new technologic improvements in scanner technology have imposed new challenges for the optimization of CM delivery and image acquisition strategies.

CONCLUSION: Understanding basic CM-imaging principles is essential for designing optimal injection protocols according to each specific clinical scenario, independently of scanner technology.

SURVEY OF CT PRACTICE IN MALAYSIA: LOCAL DIAGNOSTIC REFERENCE LEVEL (LDRL) WITH THE ADVANCEMENT OF NOISE MAGNITUDE PERFORMANCES IN ADULT COMPUTED TOMOGRAPHY PULMONARY ANGIOGRAPHY (CTPA) EXAMINATION.

Hanif Haspi Harun*¹; Muhammad Khalis Abdul Karim¹; Zulkifly Abbas¹; Akmal Sabarudin²; Sarawana Chelwan Muniandy³; Ng Kwan Hoong⁴; Faezah Harun^{3,5}

¹*Department Of Physics, Faculty Of Science, University Putra Malaysia, Malaysia,* ²*Health Science, UKM, Malaysia,* ³*Radiology, Hospital Kuala Lumpur, Malaysia,* ⁴*Medicine, University Malaya, Malaysia,* ⁵*Radiology, University Malaya, Malaysia*

OBJECTIVE: To establish the Local Diagnostic Reference Levels (LDRLs) of CTPA examinations in our institution with respective of image noise in different patient's size groups.

MATERIALS & METHODS: This study was held in Radiology Department, Hospital Kuala Lumpur. 127 patients (55 males and 72 females) who had undergone CTPA examinations using 128-slices CT-Scanner (Philips Brilliance iCT) were retrospectively selected. Dose information, scanning acquisition parameters and patient demographics, are recorded in standardized forms. Patient's sizes are categorized into three different groups based on their effective diameter (cm), P1 (14-19), P2 (19-24) and P3 (24 - 31). Noise is determined quantitatively by measuring the standard deviation in Hounsfield unit (HU) at five different arteries within the pulmonary trunk.

RESULTS: We observed that the LDRL values are significantly different ($p < 0.050$) with the sizes, where median values of CTDI_{vol} for P1, P2 and P3 sizes indicate 6.13, 8.3 and 21.40 mGy respectively. It is notable that the noise reference value is 23.78, 24.26 and 23.97 HU for P1, P2 and P3, respectively ($p = 0.538$). The CTDI_{vol} and DLP attained to have the second highest value, 15 mGy and the highest value 542 mGy.cm, respectively compared to other countries available.

CONCLUSION: This study has successfully established the LDRLs with respective of image noise in different patient's size groups.

LEFT VENTRICULAR ABNORMALITIES DETECTION THROUGH AUTOMATIC EDGE CONTOURING METHOD

Md. Al Noman*¹; Md. Asadur Rahman²

¹*Department of Biomedical Engineering, Khulna University of Engineering & Technology (KUET), Bangladesh,* ²*Department of Biomedical Engineering, Military Institute of Science and Technology (MIST), Bangladesh*

OBJECTIVE: The left ventricle (LV) shape of a cardiac magnetic resonance imaging (CMRI) helps doctor's identify various cardiac problems, but this involves difficulties such as the intensity and resemblance in shape between the LV and other organs. The main goal of this study is to segment 3D LV from CMRI images and classify the normal and abnormal conditions of heart automatically.

MATERIALS & METHODS: We have proposed an automatic edge contouring method that enables a system to take the decision from a CMRI left ventricle whether the patient belongs any abnormalities. This method utilizes the artificial neural network to predict the possible initial position of the LV and contour accurately the left ventricle from the CMRI. From the segmented shapes of the left ventricle from a series of CMRI, this method can predict the volume of the LV of the heart from where it finds the end-diastole and end-systole volume. From some standard statistical references, the proposed work decides the abnormalities of the CMRI.

RESULTS: The model was applied to a renowned database and found that the accuracy of abnormality detection is 92%. On the other hand, the overall normal-abnormal detection rate is 85%.

CONCLUSION: Since the results of this work are quite convincing, hope that the proposed method will reduce the manual effort to detect left ventricular abnormalities based on CMRI images. Furthermore, this is the first work that utilizes the proposed method to evaluate the stroke volume and predicts the left ventricular abnormalities from the CMRI images.

BRONCHIAL ARTERY EMBOLIZATION; RETROSPECTIVE SURVEY FROM A TERTIARY CARE HOSPITAL IN A DEVELOPING SOUTH-ASIAN COUNTRY

Muhammad Sami Alam*¹; Muhammad Azeemuddin¹

¹*Radiology, Aga Khan University, Pakistan*

OBJECTIVE: To evaluate clinical presentation, etiological cause and source of hemoptysis in patients undergoing bronchial artery embolization. A 5 year experience of success rate, complications and follow up at a tertiary care hospital in developing country.

MATERIALS & METHODS: A retrospective cross-sectional study was conducted between January 2014 to December 2018. The study population included patients undergoing angiography for Bronchial artery embolization (BAE). Demographic details including risk factors were included. Clinical sign and symptoms were recorded. Bronchoscopy and Arteriography were used to locate the source of bleed. Embolization technique and post procedure results were analyzed. Success and Failure rates were noted. Lastly, complication, follow-up results and mortality were also discussed.

RESULTS: The study included 40 cases. Of these, 80% were males. 50% had tuberculosis. 37.5% underwent bronchoscopy. On imaging 32.5% had bronchiectasis, 30% had pleural thickening and infiltrate/consolidation was seen in 32.5% of cases. Disease distribution was unilateral in 72.5% of cases. Bronchial artery involvement was seen in 67.5% and both bronchial and systemic involvement was seen in 25% of cases. Technical success of embolization was 87.5%. Micro catheter was used in 91.4%. Poly vinyl alcohol (PVA) alone was used in 68.6%.

CONCLUSION: Bronchial and non-bronchial systemic artery embolization is a safe and effective nonsurgical treatment for patients with massive hemoptysis.

IMAGE DETECTION OF LUNG CANCER USING YOLOV4

Toshihiro Ojima*¹; Naoya Kitamura¹; Yushi Akemoto¹

¹*Department of Thoracic Surgery, Kurobe City Hospital, Japan*

OBJECTIVE: Lung cancer is one of the most highly malignant types of tumor. Statistically, its 5-year survival rate is 40.6%, which is lower than any other cancer in Japan. Chest computed tomography (CT) scanning plays an important role in identifying and diagnosing lung cancer. For this reason, the accurate detection of a tumor from CT images is important. Recently, a remarkable development within Artificial Intelligence particularly, the generation of deep learning models, has improved the identification of various diseases. In this study, we trained a neural network termed YOLOv4-arch to detect lung tumors on CT images. Then, we evaluated its detection performance on test dataset.

MATERIALS & METHODS: We retrospectively built the training dataset of lung tumors by collecting 2731 CT images from 108 patients. With this training dataset, a YOLOv4 model was trained to detect lung tumors on CT images. Then, we collected 69 images of lung tumors from another 56 patients as the test dataset. Finally, we evaluated the detection performance of the YOLOv4 model on this test dataset.

RESULTS: The YOLOv4 model accurately detected lung tumors on 64 images (92.8%).

CONCLUSION: Although a neural network requires considerable amount of training data to detect something, our YOLOv4 model performed well with less training data. Based on these results of the identification of lung tumors on CT images, the YOLOv4 may be an efficient neural network model.

**A NEW PROTOCOL UTILIZING DUAL ENERGY DUAL SOURCE CT
VENOGRAPHY (DECTV) FOR THE DIAGNOSIS OF CENTRAL VEIN
STENOSIS/OCCLUSION IN PATIENTS WITH END STAGE RENAL DISEASE (ESRD)**

Mohamad Syafeeq Faez Md Noh*¹; Hasyma Abu Hassan¹; Shahrin Md Sidek²; Sharifah
Mastura Syed Abu Bakar²; Ezamin Abdul Rahim¹

¹*Department of Radiology, Universiti Putra Malaysia (UPM) Teaching Hospital, Malaysia,*

²*Department of Radiology, Hospital Serdang, Malaysia*

OBJECTIVE: To propose a new protocol applying dual-energy dual-source CT venography (DECTV) in the diagnosis of central vein stenosis/occlusion in patients with end-stage renal disease (ESRD), in comparison to the gold standard, digital subtraction venography (DSV).

MATERIALS & METHODS: 11 ESRD patients (21 readings) scheduled for DSV in our center were consecutively enrolled to undergo the proposed CT protocol. Both studies were done during the same visit. The degree of stenosis, image quality/artefacts, and confidence level of making a diagnosis when compared to DSV (as the gold standard) were assessed. The specificity, sensitivity, positive predictive value, and negative predictive value were also determined. Statistical analysis was done utilizing Cohen's kappa coefficient and Chi square.

RESULTS: The inter-observer agreement analyzed via Cohen's kappa coefficient demonstrated excellent agreement, with kappa of 0.93 for DECTV, and kappa of 1.00 for DSV. Meanwhile, the sensitivity of DECTV when compared to DSV was 71.4%, while the specificity was found to be 100% ($p < 0.050$). The positive predictive value of DECTV, in comparison to DSV was 100%, while the negative predictive value was found to be 87.5% ($p < 0.050$). Lastly, DECTV managed to demonstrate additional causes of central vein stenosis/occlusion, which were not seen on DSV.

CONCLUSION: Our proposed protocol demonstrates that DECTV is a viable alternative to DSV, in the diagnosis of central venous occlusion/stenosis. Additionally, other causes not demonstrable on DSV as the cause of stenosis/occlusion were detected on DECTV. This protocol allows prompt diagnosis in Centres where endovascular intervention is not readily available.

**PATIENT LUNG VOLUME IS DIRECTLY RELATED TO CONTRAST MEDIA
VOLUME DURING CT PULMONARY ANGIOGRAPHY WHEN EMPLOYING A
PATIENT SPECIFIC CONTRAST PROTOCOL**

Charbel Saade*¹

¹*Department of Radiology, University of Canberra, Australia*

OBJECTIVE: To investigate the effect of contrast media and patient lung volume on pulmonary artery opacification using a patient-specific contrast formula during pulmonary CT angiography.

MATERIALS & METHODS: IRB approved this retrospective study. CTA of the pulmonary arteries was performed on 200 patients with suspected PE using a 256-channel computed tomography scanner and a dual-barrel contrast injector. The contrast media volume was calculated by employing a patient-specific contrast formula. Both contrast media and saline were injected at flow rate of 4.5 mL/s. The mean cross-sectional opacification profile of eight central and eleven peripheral pulmonary arteries and veins were measured for each patient and arteriovenous contrast ratio(AVCR) calculated for each lung segment. Mean body mass index(BMI) and lung volume were quantified. Receiver operating(ROC) and visual grading characteristics(VGC) measured the confidence intervals and image quality respectively. Inter and intra-observer variations were investigated employing Cohen's kappa methodology

RESULTS: Right upper(316.51 ± 23 HU), middle(312.5 ± 39 HU) and lower(315.23 ± 65 HU) lobes and left upper(318.76 ± 83 HU) and lower(321.91 ± 12 HU) lobes. The mean venous opacification of all pulmonary veins was below 182 ± 72 HU. Subsequently, the AVCR was observed at all anatomic locations($p < 0.0002$) where this ratio was calculated. Mean contrast volume of 33 ± 9 mL. Larger lung volumes were significantly correlated to larger volumes of contrast($r = 0.89$, $p < 0.030$). Inter-observer variation was observed as excellent($\kappa = 0.71$).

CONCLUSION: Increased patient lung volume is significantly correlated to increased contrast media volume and radiation dose when employing a patient-specific contrast formula. The effects of patient habitus and weight are highlighted.

THE ACCURACY AND PRECISION OF HRCT CHEST FOR DIAGNOSIS OF ANAEMIA

Mahnoor Hafeez*¹; Amjad Sattar¹

¹Radiology, Dow University of Health Sciences, Pakistan

OBJECTIVE: In Pakistan, the prevalence of anemia is high. The aim of our study is to determine the accuracy and precision for diagnosis of Anemia at HRCT chest, keeping Complete blood count (CBC) as the gold standard.

MATERIALS AND METHODS: A cohort of 124 patients attending our Hospital underwent CBC and Chest HRCT within 7 days interval comprised the study population. The Blood attenuation measurements and visual perception of inter ventricular septum (IVS) was done while blinded to Hemoglobin (Hb) lab values; IVS visualization is equivalent to Qualitative diagnosis of anemia. Region of Interest (ROI) cursor was placed within Right and Left ventricular chambers at Soft tissue window on axial sections. Quantitative diagnosis of anemia at CT was made when the HU was <35HU in a chamber.

RESULT: There were 62 males and 62 females. 50 subjects comprised the control group and 74 were anemic acc. to Hematology. The Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value and Diagnostic accuracy of HRCT Chest for Quantitative diagnosis of anemia was 48.6%, 76.5%, 76.5%, 50.6% and 60.5% resp. and for Qualitative diagnosis of anemia was 55.4%, 88.0%, 87.2%, 57.1% and 68.5% resp. Chi square demonstrated significant association of anemia with visualization of IVS and AUC was found to be 0.312 with left sided skewed ROC curve; ICC= 0.74.

CONCLUSION: Overall, there is a high positive predictive value for the Quantitative diagnosis of anemia at HRCT chest with good precision. A Radiologist can arouse the suspicion of anemia ‘Virtually’ at HRCT chest.

**DIAGNOSTIC ACCURACY OF NON-ECG GATED CHEST CT (NEGCT) FOR
CARDIAC CHAMBERS' DIMENSIONS, IN COMPARISON WITH
ECHOCARDIOGRAPHY.**

Mahnoor Hafeez*¹; Amjad Sattar¹

¹*Radiology, Dow University of Health Sciences, Pakistan*

OBJECTIVE: Assessment of heart chambers at CT scans has been understudied subject among Radiologists. Our study analyzed the accuracy of NEGCT for cardiac chambers' dimensions, keeping Echocardiography (Echo) as the gold standard.

MATERIALS AND METHODS: After IRB approval, patients' data were archived from HMIS PACS that comprised NEGCT/CTPA and Echo exams performed within a month interval. The sizes of right ventricle (RV), left ventricle (LV), left atrium (LA) were recorded in short axis at axial sections. RV and LV- transverse diameter was measured at basal third of the heart, from the inner-to-inner myocardium perpendicular to the inter-ventricular septum and LA- max. Anterior-posterior dimension was measured at the level of the aortic root. Concurrent Echo measurements were recorded.

RESULTS: Total 213 subjects were found in the study, with average age of 52.1 yrs. The CT-Echo measurement concordance rates are significantly high for LA, LV and RV measuring 93.8%, 96.7% and 69.01% resp. Using CT threshold for LA, LV, RV enlargement \geq or equal to 45, 55, 35mm, the AUC via ROC curve analysis was estimated to be 0.912, 0.992, 0.650 respectively. The Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Diagnostic accuracy of NEGCT was found to be 66.67%, 95.10%, 37.5%, 98.5% and 93.90% for LA; 100%, 96.67%, 30.0%, 100%, 96.7% for LV and 33.33%, 74.86%, 17.86% 87.26% and 69.01% for RV resp.

CONCLUSION: The accuracy of chamber dimensions at NEGCT was excellent, making it a modality of choice for examining cardiac chamber sizes.

COMPUTER AIDED READING OF CHEST X-RAY IN SCREENING OF PULMONARY TUBERCULOSIS IN A HIGH-VOLUME TERTIARY CARE PUBLIC SECTOR HOSPITAL, PESHAWAR, KHYBER-PAKHTUNKHWA PROVINCE, PAKISTAN

Tahira Nishtar*¹; Shamsullah Burki¹; Tabish Ahmad¹; Syed Muhammad Hamid²; Amir Ali¹

¹Radiology Department, Lady Reading Hospital, Peshawar, Pakistan, ²Statistics, Quaid E Azam University, Pakistan

OBJECTIVE: An important aspect of the report was to highlight the incidence of positive GeneXpert and its correlation with both the number of patients having a score above the value of 70 as well as below on CAD4TB software. This screening program involves a cascade including inter-referral between chest clinic and mobile x-ray unit, referral for GeneXpert, treatment plan, drug availability, testing for rifampicin resistance and treatment outcome. All of the above were provided free of cost.

MATERIALS AND METHODS: This retrospective observational study was conducted by Radiology Department of a high-volume tertiary care public sector hospital in affiliation with Indus Hospital network. Data collected from mass screening by using CAD4TB software to analyze chest radiographs using scoring of 1-100. Individuals presumptive of tuberculosis referred for GeneXpert.

RESULTS: Out of 26,997 individuals screened, 2617 individuals were found presumptive for pulmonary TB by CAD4TB on X-ray findings and symptomology. Sputum samples for GeneXpert were obtained in 2100 individuals, out of which 1825 were presumptive on CAD4TB. GeneXpert was positive in 159 patients and negative in 1666 individuals. 275 of the 2100 were assessed for GeneXpert on the basis of symptomatology as their CAD4TB was negative out of which 32 patients were positive and 243 negative on GeneXpert. Hence sensitivity of 83.2% and specificity of 12.7%.

CONCLUSION: CAD4TB used for reading CXR is a useful tool for mass screening of TB in a high burden countries. The software can be strengthened by radiologist input, hence making it an effective tool for mass screening and early diagnosis of TB in individuals, who would otherwise go undiagnosed.

EFFECT OF AGE ON CT FINDINGS : SPECIFICITY AND SENSITIVITY IN COVID-19 INFECTION

Erdal Karavas*¹; Edhem Unver²; Sonay Aydin¹; Ufuk Kuyruklyıldız³; Gonul Seven Yalcin²; Mustafa Yazici⁴; Y. Arslan²

¹Radiology, *Erzincan University, Faculty Of Medicine, Turkey*, ²Chest Disease, *Erzincan University, Turkey*, ³Anesthesiology, *Erzincan University, Turkey*, ⁴Statistics, *Erzincan University, Turkey*

OBJECTIVE: In this study, it is aimed to evaluate the sensitivity and specificity of Thoracic CT findings of COVID-19 pneumonia according to age groups.

MATERIALS AND METHODS: 411 patients with PCR and CT results were reviewed. The diagnosis of COVID-19 pneumonia was made by two radiologists. LAP, pericardial effusion, pleurisy, pleural thickening, pleural effusion, location features of the lesions, ground glass, consolidation, air bronchogram, vascular enlargement, bronchial dilatation, halo finding, inverted halo sign, nodularity, air bubble, subpleural band (curvilinear density), reticular density, paving stone pattern, and fibrosis findings were recorded. The patients were divided into 9 groups in decades while calculating the sensitivity, specificity and diagnostic efficacy for CT positivity.

RESULTS: The mean age of the cases was 48.1 ± 22.7 . The CT finding with the highest diagnostic power was ground glass. Vascular enlargement and bronchial dilatation follow ground glass. Pericardial effusion is the finding with the lowest diagnostic accuracy. The incidence of LAP, pleurisy, pleural thickening, peripheral localization, bilateral, glaucoma, vascular enlargement, bronchial dilatation, cobblestone view, fibrosis findings increase significantly with age in patients with positive PCR test.

CONCLUSION: There are few publications comparing sensitivity and specificity of thorax CT findings according to age. In cases of COVID-19 pneumonia, there is an increase in the variety and frequency of CT findings with age and parallel to this, the sensitivity and specificity of the findings increase. COVID-19 cases in the pediatric age group have fewer lung findings than adults, and this situation decreases the diagnostic value of CT in pediatric patients.

**CHEST COMPUTER TOMOGRAPHY FINDINGS OF PATIENTS WITH COVID-19
DISEASE WHO ARE IN THE FIRST DAY OF THEIR SYMPTOMS**

Mustafa Emre Akin*¹

¹*Department of Radiology, Ankara Yıldırım Bayazıt University Faculty of Medicine, Yenimahalle Training and Research Hospital, Turkey*

OBJECTIVE: As chest computer tomography (CCT) mostly detects coronavirus disease 2019 (COVID-19) patients who have been symptomatic for >3 days, it was aimed to report the CCT findings of COVID-19 patients who are in the first day of their symptoms.

MATERIALS AND METHODS: In a retrospective-design, CCTs' of COVID-19 PCR positive patients in the first day of symptoms between 1st June 2020- 1st August 2020 were evaluated by two radiologists independently.

RESULTS: Totally, 612 COVID-19 patients were recruited, 329 (53.8%) were excluded as they had symptoms for >1 day, 146 (23.9%) had no symptoms, 40 (6.5%) were younger than 18 years, 34 (5.6%) had chronic lung diseases. Remaining 63 patients (10.3%) comprised the sample, 46 (73.0%) were male. Mean age was 42.3±12.2. Overall, 36 (57.1%) patients had normal CCTs. All 26 patients with abnormal CCTs had ground glass opacities, 21 (80.8%) had lesions in >1 lobe, 17 (65.4%) in bilateral lungs. Seven patients (26.9%) had air bronchograms, 7 (26.9%) vascular thickening, 6 (23.1%) subpleural linear opacities, 3 (11.5%) consolidations, 3 (11.5%) nodular infiltration, 2 (7.7%) bronchiectasis, 1 (3.8%) interlobular septal thickening, 1 (3.8%) halo sign. No patients had reticular pattern, intralobular septal thickening, bronchial thickening, reverse halo sign, tree in bud, pleural effusion, crazy paving pattern, fibrosis, cavitation, pericardial effusion or pneumothorax.

CONCLUSION: This study reported the abnormal CCT findings of the COVID-19 positive patients in the first day of their symptoms and showed that most had normal CCTs. The results imply to clinicians and radiologists working with COVID-19.

**INTEROBSERVER VARIABILITY AND CORRELATION WITH CLINICAL
OUTCOMES IN ASSESSING COVID-19 RELATED CHEST X-RAY FINDINGS USING
THE BRIXIA SCORING SYSTEM**

Michelle Castillo*¹; Jorrel Valdez¹; Rovi Nino Samedra¹

¹*Department Of Radiology, Philippine General Hospital*

OBJECTIVE: Chest X-ray is valuable in monitoring the rapid progression of COVID-19 pneumonia, especially in critical patients. Borghesi and Maroldi have proposed the Brixia score, a chest X-ray scoring system that aims to facilitate the clinical grading of chest X-ray reports in hospitalized patients with COVID-19 pneumonia. This study aims to further validate the Brixia Scoring system for grading the severity and monitoring disease progression of COVID-19 pneumonia.

MATERIALS AND METHODS: A total of 70 COVID-19 confirmed x-ray images were interpreted by junior and senior trainee radiologists using the Brixia scoring system, which were compared against an expert radiologist. The Brixia scores were dichotomized into <8 and ≥ 8 , and the levels of agreement were computed. The final outcome of each patient, which were classified as either improving or worsening, were correlated with the expert radiologist's Brixia score.

RESULTS: There was substantial agreement ($\kappa=0.74$) between the junior residents and expert reader, as well as with the senior residents and expert reader ($\kappa=0.68$). Based on review of records, of the patients with poor outcomes, majority (79.3%) had an overall Brixia score ≥ 8 . Of the recovered patients, 68.3% had an overall Brixia score of <8 . Using the Mann Whitney U test, it was noted that the Brixia scores were significantly higher among those with poor outcomes.

CONCLUSION: In a COVID-19 referral center, chest x-rays proves to be a cost-effective tool in monitoring disease progression of COVID-19 pneumonia. The Brixia scoring tool is straightforward and provides possible insight to the patients' clinical outcome.

LOCAL ADAPTATION IMPROVES ACCURACY OF DEEP LEARNING MODEL FOR AUTOMATED X-RAY THORACIC DISEASE DETECTION: A THAI STUDY

Isarun Chamveha*¹; Trongtum Tongdee²; Pairash Saiviroonporn²; Warasinee Chaisangmongkon³

¹*Machine Learning Development, Perceptra Co., Ltd., Thailand,* ²*Radiology Department, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand,* ³*Institute of Field Robotics, King Mongkut's University of Technology Thonburi, Thailand*

OBJECTIVE: Despite much promising research in the area of artificial intelligence for medical image diagnosis, there has been no large-scale validation study done in Thailand to confirm the accuracy and utility of such algorithms when applied to local datasets.

MATERIALS AND METHODS: We constructed two variants of deep learning models: the Reference model and the Locally Adapted model. The Reference model was trained on a repository of 705,184 CXR images gathered from medical centers around the world, excluding Thailand. The Locally Adapted model was trained on the Reference dataset combined with the Thai CXR dataset, comprising 421,859 frontal chest X-ray images from Siriraj Hospital in Thailand.

RESULTS: The Reference model saw a 3.8% drop of the area under receiver operating characteristic curve (AUROC) from 0.899 when tested with the Reference dataset to 0.848 when tested with Thai CXR dataset. On the contrary, the Locally Adapted model was able to obtain the AUROC of 0.914 when tested with Thai CXR dataset while maintaining the AUROC of 0.894 when tested with the Reference dataset. This represents 8.3% improvement from the Reference model on the Thai CXR dataset. When set at an operating point at which the algorithm makes only 5% false negative error, our Locally Adapted model reduces screening load by 55.9% on average.

CONCLUSION: We present a locally adapted state-of-the-art model for diagnosis of Thai chest X-ray images, coupled with analysis on the usability and utility of deep learning in realistic clinical scenarios.

DIAGNOSTIC YIELD OF CT ANGIOGRAPHY IN PENETRATING LOWER EXTREMITY TRAUMA

Alwyn Le Roux*¹; Anne-Marie Du Plessis¹; Richard Pitcher¹

¹*Radiology, Stellenbosch University, South Africa*

OBJECTIVE: Injury is a major public health challenge, placing significant demand on hospital resources, particularly in resource limited settings. With the rise of interpersonal and gang violence, there has been an increase in lower extremity penetrating injury, and the use of CT angiography for suspected arterial injuries. Over-utilization of expensive imaging - with a relatively low yield - significantly increases healthcare costs. The aim of the study is to determine the value of CTA in penetrating lower extremity injuries in a resource-limited setting.

MATERIALS & METHODS: This retrospective descriptive study from 1 July 2013 – 31 June 2018 included all Tygerberg Hospital patients undergoing penetrating trauma-related emergency lower extremity CTA for suspected arterial injury. The yield of clinically significant injuries and the positive predictive value of specific clinical signs were calculated.

RESULTS: 982 patients (median age 27 years, 91% male) were included. 90% (885/982) had gunshots, 9% (89/982) stabs and 0.5% (5/982) other injuries. 33% (23/68) of patients with hard signs of vascular injury and 7.9% (73/914) with soft signs/no indication for imaging had clinically significant injuries. Significant ($p < 0.05$) correlations were a rapidly expanding hematoma (PPV 40%), an absent pulse (PPV 39%), and a diminished pulse (PPV 18%). There was a year-on-year rise in the number of studies, but no significant difference in injury yield.

CONCLUSION: The current utilization of CTA has a low yield in detecting clinically significant vascular injuries in penetrating lower extremity trauma with poor correlation between the clinical indication provided and imaging findings.

DIRECT CT VENOGRAPHY FOR UPPER LIMB DEEP VEIN THROMBOSIS

Dorothy Khai Chin Kuek*¹; Dinuke Warakaulle¹; Tom Meagher¹; Clare McLoughlin¹; Alison Reid¹; Wei Chuen Liong¹

¹*Radiology, Buckinghamshire Healthcare NHS Trust, United Kingdom*

LEARNING OBJECTIVE: To illustrate protocol and technique to obtain a good quality direct computed tomographic (CT) venogram. Educational cases will be presented to demonstrate the findings of deep vein thrombosis (DVT), frequently encountered pitfalls and artefacts, including relevant comparison with duplex ultrasound scans and indirect CT venograms.

BACKGROUND: Upper limb DVT is an increasing clinical problem due to use of upper limbs veins for lines, pacemakers and other invasive procedures. Traditionally digital subtraction venography (DSV) and duplex ultrasonography are the investigations of choice in lower limb DVT but have significant limitations in the upper limb veins. We have developed a local protocol for direct CT venography to overcome these difficulties.

FINDINGS AND/OR PROCEDURE DETAILS: Direct CT venography involves cannulation of the ipsilateral hand or forearm and a tourniquet in the upper arm during the scan. Dilute contrast (20% iobitridol 350, 80% saline) is injected via a dual head injector with helical scan acquired after a 25 second delay. Its' advantages include reduced contrast and radiation dose in comparison to conventional DSV, reduced artefacts from overlying structures and improved recognition of flow artefacts versus thrombus.

CONCLUSION: Direct CT venography is a robust diagnostic technique which can reliably diagnose DVT and potentially other venous abnormalities in the upper limb with high diagnostic confidence and should be considered as a first line investigation for suspected upper limb DVT. We present our protocol should be relatively straight forward to replicate in most radiology departments together with a series of educational cases.

**HIGH RESOLUTION ULTRASONOGRAPHIC (HRUS) EVALUATION OF
SUBGLOTTIC DIAMETER FOR PREANESTHETIC ESTIMATION OF
ENDOTRACHEAL TUBE DIAMETER**

Rajul Rastogi*¹; Neha¹; Satish Pathak¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Center, India*

OBJECTIVE: Endotracheal intubation, a prerequisite for surgical procedures is mainly governed by narrowest diameter of upper airway. Size of endotracheal tube can be calculated by physical indices or invasively by laryngoscopy. Over-size tubes lead to airway injuries while under-size tubes lead to inadequate ventilation. High-resolution ultrasonography (HRUS) not only allows objective measurement of airway dimensions but is also non-invasive & cheap technique . This prospective study mainly aimed to:

- Determine the accuracy of HRUS-determined diameter compared with endotracheal tube diameter used clinically during surgery.

MATERIALS & METHODS: This study was carried out on 25 patients appearing for preanesthetic check-up for elective surgery. HRUS was performed in extended neck position . The subglottic, transverse, tracheal diameter was measured just inferior to true vocal cords at the level of cricoid arch. The diameter of endotracheal tube used clinically during the anaesthesia was noted . The diameters thus obtained were then matched with each other to determine the accuracy of the HRUS determined diameter.

RESULTS: The age of patients ranged from 3rd to 6th decade. The accuracy of HRUS determined subglottic diameter is approximately 75% in patients below the age of 50years.

CONCLUSION: HRUS is a safe and reliable imaging tool for preanesthetic determination of subglottic diameter for ET insertion. Though in experienced hands, HRUS-determined subglottic diameter may not be significantly useful in decreasing the number of attempts required for determination of clinically useful ET diameter yet it may be definitely useful for trainees / residents / inexperienced hands and in emergency, thus reducing morbidity related with intubation.

**COLD BLOODED MURDER MASKED BY SAVAGE CROCODILE ATTACK:
BIOLOGICAL PROFILING WITH RADIOGRAPHS**

Wong Yi Li*¹; Kunasilan Subramaniam²; Norzila Ibrahim³; Mohamad Helmee Mohamad Noor⁴

¹*Radiology, Miri General Hospital, Malaysia,* ²*Forensic Medicine, Miri General Hospital, Malaysia,* ³*Forensic Medicine, Sarawak General Hospital, Malaysia,* ⁴*Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: In the absence of post-mortem CT and MRI facilities, radiographs function as adjunct examinations to autopsy in ascertaining biological profile and mechanism of death. There is an estimated 13,500 crocodiles in Sarawak, Malaysia with 27 deaths from 52 crocodile attacks between 2010-2017. Up to 2013, Oswald. et. al reported that Sarawak recorded the highest crocodile attacks in the world with an average of 10 per year. Increase in local violent crimes has also been reported between 2018-2019. Both crocodile attacks and violent crimes may lead to severe disfigurement of body habitus.

REPORT: We report a case where an unidentified disarticulated human cadaver was found whilst being mauled by a crocodile. The incomplete remains demonstrated early to moderate decomposition during autopsy. Radiographs also demonstrated decomposition changes, supported anthropological biological profiling as well as demonstrated the severity of decapitation and traumatic fragmentation of body parts. Both post-mortem and radiographic biological profiling matched that of a local gentleman who had been reported missing and allowed presumptive identification until DNA results were available. A month later, six local suspects were arrested; a knife and iron bar seized as murder weapons.

CONCLUSION: Although not as sensitive or specific as CT and MRI, radiographs still have a complimentary role in supporting autopsy findings for biological profiling and demonstrating mechanism of death in district setting. Determination of exact timing of death however, proves challenging on imaging alone due to variable intrinsic and extrinsic factors.

ROLE OF ULTRASOUND ELASTOGRAPHY: DIFFERENTIATING TUBERCULOSIS FROM MALIGNANT LYMPH NODES.

Andre Yee Yue Meng*¹; Norlisah Ramli²; Ch'ng Li Shyan¹

¹Radiology, Universiti Malaya, Hospital Sungai Buloh, ²Biomedical Imaging, Universiti Malaya, Malaysia

OBJECTIVE: To assess the diagnostic accuracy of ultrasound elastography and grayscale features in differentiating TB and malignant lymph nodes.

MATERIALS & METHODS: 54 patients (6 malignant, 39 tuberculosis, 9 reactive) were examined by both elastography and B mode sonography in this cross-sectional study. Elastographic patterns were determined according to the area and appearance of the hard regions within the lymph node, grade 1 to grade 6 in ascending stiffness. Strain ratio was obtained by comparing the stiffness of the lymph node against the adjacent sternocleidomastoid muscle. Greyscale features of both lymph node groups were compared.

RESULTS: Sensitivity, specificity, positive predictive value and negative predictive value of elastography of 2 and below as well as a strain ratio of higher than 3.475 to diagnose tuberculosis (TB) were 92.3%, 71.4%, 94.7% and 57.1%. It also found that greyscale features of thin echogenic layer and strong internal echoes were only present in TB lymph nodes and not the reactive or malignant lymph node groups.

CONCLUSION: This study shows that the accuracy of ultrasound elastography to differentiate TB from malignant lymph nodes is higher than usual B mode parameters. This can expedite treatment and reduce the need for unnecessary biopsies.

**SERIAL MULTIMODAL ASSESSMENT OF OSTEO-ODONTO-KERATOPROTHESIS
(OOKP) RESORPTION ON ORBITAL COMPUTED TOMOGRAPHY (CT) AND
CLINICAL IMPACT**

Rebekah Lee*¹

¹*Neuroradiology, Singapore General Hospital*

OBJECTIVE: Osteo-odonto-keratoprosthesis (OOKP) surgery utilizes an autologous dental-alveolar lamina complex as biological support for an optical cylinder for patients with bilateral corneal blindness not amenable to transplantation. OOKPs are routinely followed up for laminar resorption, which often results in endophthalmitis and irreversible blindness. We report results from serial CT assessment of laminar resorption in OOKP and the impact on clinical management.

MATERIALS & METHODS: Patients who underwent OOKP surgery from 2004 to 2017 and at least one repeat scan after baseline CT were prospectively evaluated for serial radiological features of resorption on linear, volumetric and 3D rendering. Findings were correlated with resorption related complications on clinical follow-up.

RESULTS: 40 OOKPs in 38 patients (mean age at surgery 39.9 ± 16.4 years, 22 men) underwent a total of 158 repeat scans, averaging 4.0 ± 2.3 (1-10) scans per OOKP at intervals of 1.41 ± 0.97 years (0.13-6.33) between scans over a follow-up period of 5.5 ± 3.7 years (0.7-12.0). There was significant resorption (>25% in linear dimension and/or volume) in 26 of the 40 OOKPs (63.4%), which was mild in 17 (63.0%) were mild, moderate in six (23.1%), and severe in three (11.1%). The anterior and superior dimension were most commonly affected. Detection was the most sensitive on linear measurement. Patients with regular CT detecting significant laminar resorption were able to take preventive measures to prevent infection, including repeat OOKP. Those discharged from radiological follow-up were at higher risk of late detection and permanent blindness.

CONCLUSION: Regular and continuous CT assessment is indispensable for preclinical detection of resorption, which guides expectant management.

**EVALUATION OF ULTRASOUND AND CYTOLOGY OF THYROID NODULES
USING THE TI-RADS AND BETHESDA CLASSIFICATIONS: A RETROSPECTIVE
STUDY.**

Siti Soraya Ab Rahman*¹; Norhaslinda Kamiso²; Assyifaa Nik Mazian¹; Nadeeya Mohamad
Nor³

¹*Radiology Department, Universiti Sains Islam Malaysia,* ²*Radiology Department, Hospital Ampang, Malaysia* ³*Community Health, Universiti Sains Islam Malaysia*

OBJECTIVE: The Thyroid Imaging, Reporting and Data System (TI-RADS) is a risk-stratification system for classifying thyroid nodules based on their ultrasound features. Prior to 2019, referrals for ultrasound-guided fine-needle aspiration (FNA) in our centre were determined on a case-by-case basis. We aimed to categorise the thyroid nodules which underwent FNA using TI-RADS classification, and to study the corresponding Bethesda cytology classification.

MATERIALS & METHODS: We retrospectively selected all patients who underwent FNA in our centre from January 2018 to December 2019. Two experienced radiologists blinded to the cytology results reviewed the ultrasound images and assigned a TIRADS category independently. Differences were resolved with consensus.

RESULTS: A total of 122 thyroid nodules from 113 patients were analysed, with mean size of 2.7 cm. Most FNA were performed on patients with TI-RADS 3 (32.0%) and 4 (36.1%), while 23.8 % was performed on patients with TI-RADS 1 and 2 collectively. Of the total 122 FNA, 30.3% were nondiagnostic and 51.6% were benign. Only 7.4% nodules were classified as Bethesda IV, V and VI, and these were from TI-RADS categories 3, 4 or 5. Excluding the nodules which were classified as nondiagnostic, those with TI-RADS 2 category were mostly Bethesda 2 (87.5%).

CONCLUSION: Without a standard risk stratification system, there is a high percentage of FNA performed on benign nodules. TI-RADS is useful in the assessment of thyroid nodules and prevention of unnecessary FNA.

RADIOMICS STUDY OF HEPATOCELLULAR CARCINOMA (HCC) BASED ON MR IMAGES WITH SUPPORT VECTOR MACHINE (SVM) AS CLASSIFIER

Muhammad Khalis Abdul Karim*¹; Noraini Abdul Rahim²; Sarah Muhammad Said²; Ng Kwan Hoong³; Nurin Syazwina¹

¹*Department of Physics, Universiti Putra Malaysia,* ²*Department of Radiology, Institut Kanser Negara, Malaysia,* ³*Department of Biomedical Imaging, Universiti Malaya, Malaysia*

OBJECTIVE: Hepatocellular Carcinoma (HCC) is a complex disease and is the most common cancer in Malaysia ranked as the eighth-highest mortality rate with a prevalence of 2.4 percent. Although MRI acknowledges for its advantages, the false-negative diagnosis from the examinations is inevitable although several quantitative techniques have been introduced which mostly in regard to MR study.

MATERIALS & METHODS: In this study, MR images from 97 patients diagnosed with HCC are used to evaluate a proposed algorithm for radiomics study of machine learning and to improve the accuracy and quality rate of Support Vector Machine (SVM) as a classifier. The relevant features were extracted from the segmented MR images of HCC. There are three types of features extraction used for this study which are Higher Order Statistics (HoS), Shape Feature (SF) and Textural Feature (TF).

RESULTS: The experimental results of the proposed technique have been evaluated and validated for performance and quality analysis on the data, based on accuracy, sensitivity and specificity. The accuracy of SVM classifier on both training and test images are ranged from 0.80 - 0.90 which considered as significant. Moreover, the proposed algorithm demonstrates its effectiveness compared with the other machine learning recently published techniques. Features selection yielded several relevant features.

CONCLUSION: Therefore, the proposed algorithm improves radiomics quantification and possibly increase the survival prediction accuracy when added to input images and tumour volumetric features.

INTERACTIVE EXPLORATION OF DEEP LEARNING RELATED TO RADIOLOGY IN A WEB BROWSER

Kim-Ann Git*¹;

¹*Department of Radiology, Selayang Hospital, Malaysia*

OBJECTIVE: Deep learning for radiology is a multidisciplinary field, requiring expertise in clinical radiology, statistics, computer science and data science. Radiologists without a data science background occasionally struggle to understand deep learning despite the need to grasp basic concepts required for judicious use of this new technology. A web-browser based application was developed to facilitate understanding of deep learning for radiologists by using a hands-on approach.

MATERIALS & METHODS: CNNPlay (<http://isodense.com/cnnplay>) uses the ConvNETJS library to allow interactive development, training and testing of novel neural networks in a single interface. For assessment of the practicability of this application, a series of networks were developed, trained and tested on a classification dataset of chest and abdominal radiographs. Total images in the dataset were 16 (training set), 4 (validation set) and 21 (testing set). The hidden layers in the tested networks ranged from 1 fully connected (FC) layer to 7 mixed (convolutional (CONV), pooling (POOL) and FC) layers. Each model was trained for 50 epochs.

RESULTS: Pure FC networks with low neuron numbers trained fastest ($1144\pm 58\text{ms}$, $1180\pm 28\text{ms}$) but had the lowest accuracies (72.4%, 72.4%). The most complex tested network (CONV-POOL-CONV-POOL-CONV-POOL-FC) trained slowest ($31176\pm 257\text{ms}$) but had excellent accuracy of 92.4%. Interestingly, a 2-layer FC network of high neuron numbers showed similar accuracy (92.4%) but with faster training time ($7247\pm 15\text{ms}$).

CONCLUSION: CNNPlay can be used to develop and train simple networks of up to 7 layers fairly quickly and may be of use to facilitate understanding of deep learning among radiologists.

ARTIFICIAL INTELLIGENCE IN THE EVALUATION OF PROPTOSIS ON COMPUTED TOMOGRAPHY.

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

OBJECTIVE: Study evaluates the potential of a deep learning algorithm for evaluation of proptosis with convolutional neural network(CNN).

MATERIALS & METHODS: Computed tomography(CT)scans of head was conducted at tertiary hospital between May-17 & April-19 with equivocal findings excluded resulting in 190CT- scans. Test set of 45images was randomly selected from initial sample(27- abnormal,18-normal) & it was not used in training process. Further 37-abnormal scans were randomly excluded resulting in training set of 54-normal & 54-abnormal CT- scans. Equal numbers were required in each group for optimal network training & converted to JPEG-image format. Initial sample was amplified 26-fold using combination of horizontal flip, size alteration & rotation. Pre-trained Inception-v3 network was then retrained using amplified CT-scans. Training data was randomly split with 80% for training, 10% for validation & 10% for final testing. Model was trained over 2000-iterations with learning rate of 0.01. Area under Receiver- operator-curve(ROC) was calculated using a web-based analysis tool.

RESULTS: Area under ROC for this CNN was 0.87 demonstrating high levels of diagnostic test accuracy. Output from CNN produces a continuous score of between 0(abnormal)& 1(normal). Setting output score threshold to 0.395 results in test sensitivity of 96.3%, specificity of 66.7%, positive predictive-value of 81.3% &negative predictive-value of 92.3%.

CONCLUSION: This proof of concept study demonstrates that high diagnostic test accuracy can be achieved in an automated analysis of head CT. Results obtained from this study may help ophthalmologists & radiologists to objectively evaluate patients with proptosis and can be adopted across many different imaging.

WHICH SIDE IS WHICH? AUDIT TO ASSESS RADIOGRAPHIC IMAGE LABELLING

Ummara Siddique Umer,*¹; Aruba Nawaz Khattak¹; Faria Maqsood¹; Aman Nawaz Khan¹

¹Radiology, Rehman Medical Institute, Pakistan

LEARNING OBJECTIVE: To assess the local practice of anatomic side markers placement at radiology department of RMI. To ascertain the placement of legible markers. To assess the accuracy of marker placement and to verify whether markers were placed during pre-exposure or in post processing.

BACKGROUND: Anatomic side markers are radiopaque markers containing letters “R” and “L” to mark the anatomy imaged on the radiographs. They are divided into pre- and post-exposure types.

FINDINGS AND/OR PROCEDURE DETAILS: A hospital based descriptive prospective study was conducted at Rehman Medical Institute from July to October 2020. The sample size was set for 100 consecutive x-ray images of each chest, musculoskeletal, kidney ureter and bladder (KUB), paranasal sinuses and pelvis. The Australian Institute of Radiography guidelines and ‘Best practices in digital radiography’ were taken as a standard. Each image was assessed for placement of a legible anatomic side marker, missing markers and errors in their placements. For images where pre-exposure marker was used documentation of placement of marker in primary or secondary beams were made. A close ended questionnaire was distributed among the radiographers to assess their knowledge related to standard guidelines.

CONCLUSION: We found errors of missing markers in 6 images (1.2%), erroneous placement of markers in 9 radiographs (1.8%) and a heavy practice (79.8%, n= 399) of post processing marker placement. Pre-exposure markers were placed mostly by senior radiographers. 4 out of 11 radiographers were aware of standards. We intend to have a re audit after discussion regarding to methods that can be applied for the improvements.

ARTIFICIAL INTELLIGENCE- A FRIEND OR FOE IN CT PNEUMONIA ANALYSIS FOR TYPICAL COVID-19

Kamal Kumar Sen*¹; Sudhansu Mohanty¹; Sangram Panda¹; Manoj Kumar¹; Akshat Agrawal¹

¹*Radiodiagnosis, Kalinga Institute Of Medical Sciences, Bhubaneswar, India*

OBJECTIVE: In view of the pandemic situation with high turnover of COVID-19 patients, this automated tool for quantification of lung involvement could be used for rapid interpretations, understand the temporal evolution of COVID-19 and monitor the disease progression. This approach could potentially eliminate the subjectivity in the initial assessment and follow up of pulmonary findings in COVID-19.

MATERIALS AND METHODS: A cohort of 2500 RT- PCR positive patients with HRCT chest were analyzed by three radiologists and dataset obtained was used for deep learning evaluation. The aim of the study is to demonstrate the findings related to COVID-19 based on Lung Severity Score (LSS) by AI algorithm and to compare with the actual CT severity scores. A linear relationship between automated and actual values was demonstrated by using Pearson's correlation coefficient (r). Inter-Class Correlation (ICC) coefficient based on single rater, consistency and two-way random effect model was used for the assessment of the degree of correlation. The level of agreement between two methods of LSS was further assessed using Bland–Altman analysis.

RESULTS: The quantitative CT parameter calculated by the deep learning method showed comparable results among three clinical severity types ($P < 0.001$). Lung opacification percentage may be used to monitor disease progression and help understand the course of COVID-19.

CONCLUSION: CT Pneumonia analysis showed comparable results as compared with conventional evaluation quantitatively by skilled radiologists for analysis of the severity of pulmonary manifestations of the typical category of COVID-19.

EFFICACY OF MRI CORRELATED CT GUIDED BONE BIOPSIES IN SUSPECTED TB SPINE

Annamalai Vairavan*¹; Aman Kumar¹; Rajesh Malik¹; Radha S Gupta¹

¹Radiology, AIIMS, Bhopal, India

OBJECTIVE: The spine is the most frequent location of musculoskeletal TB. Drug resistance is a serious problem and one of the reasons for primary treatment failure. To prevent patient morbidity & mortality, it is important to diagnose them earlier and initiate specific treatment. To ensure effective treatment against spinal tuberculosis is to confirm diagnosis and testing for drug resistance. However, many times it is difficult to get adequate sample for histopathology and microbiological testing, especially in cases of Tuberculous spondylodiscitis where no paraspinal soft tissue is present. In this study we present efficacy of CT guided biopsy from vertebral body when there is no targetable paraspinal soft tissue is present

MATERIALS & METHODS: It is a retrospective evaluation and analysis of 28 Patients who had undergone CT guided Biopsy for suspected Tuberculous spondylodiscitis. All of these patients had MRI findings consistent with subacute/chronic spondylodiscitis with no paraspinal soft tissue. CT guided biopsy was done from para-discal bone/endplate which showed High signal on T2W MRI or Post gadolinium enhancement.

RESULTS: The total success rate of MRI correlated CT guided vertebral biopsies performed was— 88 per cent(25/28). Out of 28 patients, 23 of them had CBNAAT positivity, granulomatous inflammation was seen in 15 patients in histopathology, only 5 patients had culture positivity. Few patients had mild back discomfort, however, no major complications requiring treatment were seen.

CONCLUSION: MRI Correlated CT guided vertebral body biopsy is a safe and effective method in diagnosing Tuberculous spondylodiscitis and can be of great utility, especially in patients without paraspinal soft tissue.

TRANSRADIAL ACCESS IN NEUROINTERVENTION – A SINGLE TEAM EXPERIENCE

Ng Yun Hui*¹; Arvin Rajadurai²; Dhayal Balakrishnan³; Zulkifli Zaki Abd Ghani²

¹Medical Department, Hospital Sungai Buloh, ²Interventional Radiology Unit, Radiology Department, Hospital Sungai Buloh, Malaysia, ³Interventional Radiology Unit, Radiology Department, Hospital Umum Sarawak, Malaysia

OBJECTIVE: Transradial access is becoming a more popular technique for neurointerventionalists worldwide. This once unorthodox approach is now becoming the go to access for neuroendovascular procedures. In coronary intervention, research shows transradial access to have less complications and better patient comfort than transfemoral access. The objective of this study is to assess a single team experience of transradial access in neurointervention.

MATERIALS AND METHODS: A retrospective analysis involving 16 patients was carried out from July 2020 till Jan 2021 by the neurointervention team in Hospital Sungai Buloh. Cases were initially performed on follow-up angiogram patients but subsequently done for diagnostic angiograms and those requiring intervention. The time required to puncture and sheath insertion, vessels cannulated, fluoroscopy time, conversion to femoral access and complications were analysed.

RESULTS: The right radial artery was accessed for all cases. The average time for a radial puncture and sheath insertion was 4.2minutes. 50% of cases were bilateral vessel studies, followed by right (38%) and left (12%) . 44% of cases were reassessment angiograms, 31% for diagnostic angiography and 25% for embolisation. Vasospasm encountered in 15 patients that was treated with IA verapamil. 1 patient had conversion to transfemoral access due to bovine arch anatomy and 1 patient sustained skin blistering from the compression plaster. No cases of pseudoaneurysm, vascular occlusion or haematoma formation noted.

CONCLUSION: Transradial access is a safe and effective technique for diagnostic neuro-angiography and therapeutic neurovascular interventions with low risk of complications and femoral conversion.

**TUNNELED ADULT PERIPHERALLY INSERTED CENTRAL CATHETER (PICC)
FOR CENTRAL VENOUS ACCESS IN PEDIATRICS: A SINGLE CENTRE
EXPERIENCE**

Nurul Nabila Mortadza*¹; Arvin Rajadurai¹; Zulkifli Zaki Abdul Ghani¹

¹*Radiology, Hospital Sungai Buloh, Malaysia*

OBJECTIVE: Long term intravenous access in pediatrics has been challenging in terms of ease of procedure, maintenance of catheter and complications that may arise. Our center adopted the use of tunneled adult Peripherally Inserted Central Catheter (PICC) for central venous access in paediatrics with the hope to improve these challenges. We describe a single institute 3-year experience of this technique.

MATERIALS AND METHODS: Retrospective medical records were reviewed for pediatric patients aged less than 12 years old who had tunneled PICC insertions from January 2018 till December 2020. The following data were recorded: indication, diagnosis, reason for removal, duration of PICC, vessel inserted, PICC device type and complications.

RESULTS: Eleven adult PICCs were inserted from this technique in 10 children. The average age was 35.7 months and average weight was 13.2 kg. The youngest patient was 3 months old at 6.9 kg. Most common indication for insertion was for long term antibiotics (82%) and the remainder were for difficult intravenous access. The procedure was done under local anesthetic with sedation in 90% of cases. Average duration of PICC was 24.4 days. Out of 11 PICCs only 1 had line related infection that required premature removal of the catheter. 45% completed the intended duration while 27% PICCs had dislodged.

CONCLUSION: Tunneled adult PICC for central venous access in the paediatric age group at our institution has a lower risk of infection. However, almost a third of the catheters inserted still suffered dislodgement.

**PIONEERING EXPERIENCE OF REAL TIME MRI-GUIDED MICROWAVE
ABLATION OF HEPATOCELLULAR CARCINOMA IN A SINGLE CENTRE IN
HONG KONG.**

Chun Kei Boris Chow*¹; Jeanie Betsy Chiang¹; Wai Lun Poon¹

¹*Department of Radiology and Imaging, Queen Elizabeth Hospital, Hong Kong (SAR)*

LEARNING OBJECTIVE: To illustrate the procedure of magnetic resonance imaging (“MRI”)-guided microwave ablation of hepatocellular carcinoma (“HCC”), with references to our experience of five cases over the period of 10 months.

BACKGROUND: Heat-based ablation technique is a good alternative to surgery for small HCC in appropriate patients. Occasionally faced with guidance issues when lesions are not visible on ultrasound and cannot be stained/are contraindicated to lipiodol staining, we started using MRI as a guidance tool for accurate placement of the antenna.

FINDINGS AND/OR PROCEDURE DETAILS: Total of five tumours in five patients were selected for ablation under MRI guidance due to non-visualisation on other imaging modalities. The mean age was 71.2 years old (61-83); mean tumour size was 1.6cm in long axis (0.8-2.7cm). All procedures were performed under conscious sedation. Microwave ablation (80W) was used for 5-8 minutes, up to two cycles, depending on size of the lesion. A 1.5-T MRI scanner and prototype balanced steady-state free precession sequence (BEAT interactive real-time tracking) were used to guide the placement of microwave antennas in real time. All procedures were successful with no complications observed. For the four cases with follow-up imaging at time of writing, no local recurrences at the ablation zones were identified with a mean follow-up period of 3 months (1-6 months).

CONCLUSION: Our initial experience showed that MRI is a safe and effective imaging modality for guidance of microwave ablation of HCC and provides a good alternative image guidance method for those where CT and US guidance is not feasible.

SALINE: A COST-EFFECTIVE BIOPSY TRACT SEALANT IN LUNG BIOPSY

Pooja Kulkarni*¹

¹Radiology, AJ Institute Of Medical Sciences And Hospital, India

OBJECTIVE: The aim of this article is to discuss the indications for CT guided lung biopsies, identify the technical factors important in performing the procedure, and explain the complications and the techniques which we have undertaken to reduce the complications associated with the procedure.

MATERIALS AND METHODS: This is a retrospective descriptive study of patients with undiagnosed lung pathologies who underwent CT guided biopsy. The underlying disease, lesion location, size, depth, biopsy related complications and biopsy outcome were recorded. The patients' position during the procedure, complication during and after procedure, discharge timeline were documented. Care was taken to seal the biopsy tract with saline in almost all of the patients who had a long biopsy tract i.e. more than 4cm while the sheath was being withdrawn. All the cases were done on OPD basis and even those with complications only required day care admission.

RESULTS: 110 patients underwent CT guided lung biopsies. 56.4% of the sample population had peripheral lesions and 30% were central lesions. 13.6% of the population had lesions large enough to encompass both the central and peripheral lung fields. 50.9% of the cases had a large mass (>5 cm) and 32.7% had a mass ranging between 3-5 cm. Complication rate was 13.6%, of these 20% resolved spontaneously and in cases that needed intervention 83% of them were managed by small bore catheters.

CONCLUSION: In a resource constricted setting, saline proves to be an effective choice in sealing the biopsy tract after image guided biopsy of lung lesions.

**DEMOGRAPHICS, CLINICAL PROFILES, IMAGING FINDINGS, AND
MANAGEMENT OUTCOMES OF PATIENTS WITH CAROTID CAVERNOUS SINUS
FISTULA IN SOUTHERN PHILIPPINES MEDICAL CENTER FROM 2015 TO 2019**

Caroline Calumba Fabian-Vecina*¹; Samuel B. Bangoy¹; Maria Theresa Sanchez¹

¹*Department Of Radiological And Imaging Sciences, Southern Philippines Medical Center, Philippines*

LEARNING OBJECTIVE: To establish the demographics, clinical profiles, imaging findings, and outcomes of patients with carotid cavernous sinus fistulas managed in a tertiary Philippine hospital.

BACKGROUND: Carotid cavernous fistulae (CCFs) represent an abnormal communication between the carotid artery and the cavernous sinus. Clinically, they are difficult to diagnose, but may be suggested based on the patient's history and physical examination findings. Radiological imaging is crucial in cementing the diagnosis, while interventional radiology provides an opportunity for definitive management of the condition.

FINDINGS AND/OR PROCEDURE DETAILS: Sixteen patients with CCF were referred to the Interventional Radiology Section of reporting institution from 2015 to 2019, and demographics, clinical profiles, imaging findings, and outcomes were assessed. Computed tomography was most widely used to diagnose patients, while MRI was utilized for complicated cases, prior to undergoing conventional angiography. A majority of the cases were post-traumatic and direct fistulae (87.5%), involving only one side (87.5%). Chemosis and proptosis were seen in all patients in the study, with several others complaining of headache and eye pain. Cavernous sinus distension was marked (average: 15.8mm) as was the superior ophthalmic vein dilatation (average: 4.02mm). Fistula occlusion was attained using coils (81.3%), coils with glue and liquid coil (6.3%), flow diverter (6.3%), and coils with gel foam (6.3%). Twelve of the patients showed immediate improvement post-embolization, with three (n=16) improving within a week, and one complicated case that needed a second embolization.

CONCLUSION: CCF cases in this institution present with large and complex fistulae. Management outcomes compare favorably with available international data.

EMERGENCY CAROTID STENTING IN ACUTE ISCHEMIC STROKE: CASE SERIES OF EARLY HPUPM NEUROINTERVENTIONAL CENTER EXPERIENCE

Mohd Naim Mohd Yaakob*¹; Mohd Fandi Al Khafiz Kamis¹; Ahmad Sobri Muda¹; Ezamin Abdul Rahim¹

¹Radiology, Universiti Putra Malaysia

OBJECTIVE: Tandem vessel occlusion remains a big challenge for the neuro interventionalist in the current era. We presented case series from our early experience starting a new neuro intervention center.

MATERIALS AND METHODS: 3 cases of emergency internal carotid artery stenting in which the ICA persistently re-occluded despite thrombectomy were done. We achieved good revascularization of Thrombolysis In Cerebral Infarction (TICI) score of 2b and 3 in all cases. 2 out of 3 were discharged well, while the other one transferred out due to logistic reasons. She was subsequently succumbed due to infection post total hysterectomy.

RESULTS: Presence of ICA occlusion or tandem occlusion during mechanical thrombectomy for AIS is approximately around 10% - 20% and associated with poor outcome. In the case of ICA occlusion, emergency intracranial stenting has been proven to be feasible achieving revascularization up to 90% (TICI 2b and above). Main patient criteria that are eligible for acute stenting is mainly persistent re-occlusion of ICA despite good perfusion of the brain. No symptomatic intracranial haemorrhage (sICH) occurred.

CONCLUSION: Emergency stenting can achieve revascularization in AIS during emergency thrombectomy. Patient selection criteria and angiographic findings are important criteria. sICH remains a concern, however, the rate of occurrence is acceptable. Further data collections and the long-term outcome will be obtained for evaluation.

INSTITUTIONAL EXPERIENCE AND REVIEW OF KIDNEY SCARRING DEPICTED ON RENAL DMSA SCINTIGRAPHY AMONG CHILDREN WITH PRIOR URINARY TRACT INFECTION

Ahmad Zaid Zainal*¹; Hazimah Husain Mohamed²; Siti Zarina Amir Hassan¹

¹*Nuclear Medicine Department, Hospital Kuala Lumpur, Malaysia,* ²*Advanced Medical & Dental Institute, University Of Science Malaysia*

OBJECTIVE: Urinary tract infection (UTI) is common in children. Vesicoureteric reflux (VUR) is a well-recognised risk factor for recurrent UTI and renal scarring. Renal DMSA scintigraphy is being advocated to evaluate kidney function and cortical morphology. Hence, caution needed when interpreting scintigraphy of susceptible children. Our study objectives were to examine DMSA scintigraphy findings of children with prior UTI and identify factors associated with cortical scarring/abnormalities.

MATERIALS & METHODS: Retrospective observation of children (≤ 18 years) who underwent DMSA scintigraphy after ≥ 6 months of documented UTI between June 2016 and May 2018 in Hospital Kuala Lumpur. Children with congenital absent, dysplastic or polycystic kidneys were excluded. Altogether 82 children were included. They received intravenous ^{99m}Tc-DMSA followed by static 2-hour planar and SPECT imaging. Cortical findings and differential functions of the worst affected kidney were categorised (graded) accordingly. Compiled data were statistically analysed.

RESULTS: Majority were boys (65%). Mean age was 3.87 years. Recurrent UTIs were predominant (59%). 58 children had congenital urinary tract anomaly with majority were VURs (61%). Scintigraphy showed abnormalities in 62 children affecting unilateral (65%) or both kidneys (35%). There were 34 children respectively in the extensive cortical scarring/damage category (grade III-IV) and the substantially impaired differential renal function category (function $< 40\%$). VURs were significantly associated with abnormal scintigraphy ($p < 0.050$). Significant association found between extensive scarring and substantially impaired differential function ($p < 0.050$).

CONCLUSION: Significant association demonstrated between VURs and abnormal DMSA scintigraphy besides between extensive scarring and impaired differential function. Special attention needed during scintigraphy reporting of these cases.

SAMARIUM-153 POLYHYDROXYBUTYRATE MICROSPHERES FOR TRANSARTERIAL RADIOEMBOLIZATION OF HEPATIC MALIGNANCIES

Yin How Wong*¹; Hun Yee Tan²; Azahari Kasbollah³; Basri Johan Jeet Abdullah¹; Chai Hong Yeong¹

¹*School of Medicine, Faculty of Health and Medical Sciences, Taylor's University*, ²*School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Malaysia*, ³*Medical Technology Division, Malaysian Nuclear Agency, Malaysia*

OBJECTIVE: Transarterial radioembolization (TARE) is a minimally invasive procedure involving intraarterial administration of radioembolic microspheres for the treatment of hepatic malignancies. This study aimed to synthesize a biodegradable radioactive samarium-153 (¹⁵³Sm) polyhydroxybutyrate (PHB) microspheres and evaluate its physicochemical properties after neutron activation.

MATERIALS & METHODS: The ¹⁵²Sm PHB microspheres were synthesized using solvent evaporation method. The synthesized microspheres were irradiated in a nuclear reactor, converting ¹⁵²Sm to ¹⁵³Sm (E_{max} = 807.6 keV, half-life= 46.3 hours) through ¹⁵²Sm(n,γ)¹⁵³Sm reaction. Physicochemical characterization, gamma spectroscopy and in-vitro retention efficiency studies were carried out to study the properties and stability of the develop microspheres before and after neutron activation.

RESULTS: The ¹⁵³Sm PHB microspheres achieved a specific activity of 4.20 ± 0.06 GBq.g⁻¹ after 6 hours of neutron activation. Scanning electron microscope (SEM) and particle size analysis showed that the microspheres remained spherical with diameters within 20 – 60µm after neutron activation. The EDX spectroscopy and gamma spectrometry suggesting no elemental impurities present in the irradiated microspheres. The ¹⁵³Sm PHB microspheres achieved retention efficiency of more than 95% in both saline and human plasma over the duration of 480 hours.

CONCLUSION: The ¹⁵³Sm PHB microspheres are potentially useful for transarterial radioembolization of hepatic malignancies in view of its biodegradability, favourable physicochemical characteristics and excellent retention efficiency added with post-procedural imaging capability.

COMPARISON OF NECK-THIGH RATIO OF PLANAR THYROID SCINTIGRAPHY WITH QUANTITATIVE SPECT/CT STANDARDISED UPTAKE VALUE(SUV) & TECHNETIUM THYROID UPTAKE(TcTU) IN ASSESSING HYPERFUNCTIONING THYROID GLAND

Muhammad Adib Abdul Onny*¹; Muhammad Yusri Udin¹; Syed Ejaz Shamim¹; Mohd Syahir Mansor²; Hazlin Hashim²

¹*Department Of Nuclear Medicine, Radiotherapy & Oncology, Hospital Universiti Sains Malaysia (HUSM),* ²*Advance Medical & Dental Institute, Universiti Sains Malaysia*

OBJECTIVE: Functional status of thyroid gland can be assessed using Tc99m-pertechnetate thyroid scintigraphy. In Malaysia, neck-thigh-ratio(NTR) of planar thyroid scintigraphy is the preferred method but the validated Tc99m-pertechnetate thyroid uptake(%TcTU) measurement has gained acceptance in our daily practices. We aim to investigate the correlation of quantitative parameters from single photon emission computed tomography/computed tomography (SPECT/CT) thyroid scintigraphy with NTR and %TcTU.

MATERIALS & METHODS: We retrospectively analysed quantitative thyroid scintigraphy with SPECT/CT of 169 patients (45 males & 124 females; age 44+/-13.036-years-old) with hyperthyroidism referred for radioiodine therapy. Standard thyroid planar imaging with 185MBq of Tc99m-pertechnetate followed by SPECT/CT acquisition of the neck performed. NTR and %TcTU of planar scintigraphy, as well as quantitative SPECT/CT parameters such as %TcTU and standardized uptake value (SUV) were described and correlation analysis performed.

RESULTS: NTR, planar & SPECT/CT %TcTU as well as SUVmean and SUVmax were consistently highest in Graves' disease. NTR correlated well with planar & SPECT/CT %TcTU ($r=0.904$ & 0.928 , $P<0.050$). Only fair correlations were observed between %TcTU with SUVmean/max ($r=0.462$ & 0.329 , $P<0.05$) and NTR with SUVmean/max ($r=0.584$ & 0.458 , $P<0.050$). No significant correlations were observed between quantitative Thyroid SPECT/CT SUVmean/max with serum T4 & TSH.

CONCLUSION: NTR is as accurate as %TcTU in assessing functional status of thyroid gland. Although SUVmax & SUVmean of quantitative Thyroid SPECT/CT in this study were consistent in stratifying hyperthyroidism aetiology, it did not show good correlation with values from the conventional NTR and %TcTU of planar thyroid scintigraphy.

HYBRID GAMMA CAMERA FOR INTRAOPERATIVE IMAGING: LOOKING WITH NEW EYES

Aik Hao Ng*¹; Sarah L Bugby²; John E Lees³; Alan C Perkins⁴

¹*National Cancer Institute, Ministry of Health, Malaysia,* ²*Department of Physics, Loughborough,* ³*University Department of Physics and Astronomy, Space Research Centre, University of Leicester,* ⁴*Radiological Sciences, Division of Clinical Neuroscience, University of Nottingham, United Kingdom*

OBJECTIVE: There is an increasing interest of the applications of handheld gamma cameras in intraoperative imaging in cancer management. The objective of the study was to translate the hybrid gamma camera (HGC) technology from laboratory studies to clinical application. We also reported the feasibility of the modified HGC for both gamma and near-infrared fluorescence (NIRF) imaging.

MATERIALS & METHODS: The HGC consists of a CsI:Tl columnar scintillator coupled to an electron multiplying charged coupled device (EMCCD), a 1.0mm diameter tungsten pinhole collimator and an optical camera. The performance of the optical-gamma imaging was assessed utilising bespoke phantoms and in house developed protocol. Clinical studies were undertaken at Nuclear Medicine Clinic, Queen's Medical Centre. The HGC was modified with an addition of a band-pass filter and an external excitation light source for gamma-NIRF imaging. Preliminary study was undertaken using a range of bespoke phantom experiments containing hybrid tracer (CW800-111In).

RESULTS: The camera system was able to provide real-time, high resolution fused optical-gamma images in both phantom and clinical settings. The modified HGC has been shown to successfully image dual NIR-gamma tracers for the first time.

CONCLUSION: The results show that the system would be suitable for use at patient's bedside and could be used intraoperatively. Further development in hybrid gamma-NIRF imaging would offer added values of gamma imaging at deep-seated tumours and high-resolution surface NIRF imaging in compact small field of view imaging system.

TO EVALUATE THE USE OF FDG PET-CT IN ASSESSING DISEASE ACTIVITY IN LARGE VESSEL VASCULITIS

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

OBJECTIVE: To evaluate the use of FDG PET-CT in the assessment of disease activity in large vessel vasculitis (LVV).

MATERIALS & METHODS: 54 PET-CT scans were performed in 19 pts with suspected and diagnosed LVV (Takayasu arteritis, giant cell arteritis, or idiopathic aortitis). The amount of vascular uptake was graded with the help of a 4-point scale

0=no uptake, 1=less than liver, 2=similar to liver, 3=higher than liver

Grade 0-1 was negative, 2 was moderately positive and 3 was markedly positive.

This PET/CT was correlated with clinical indices of

- ITAS (Indian Takayasu Activity Score) and
- Kerr/National Institute of Health (Kerr/NIH)
- Serum acute-phase reactants ESR
- C-reactive protein [CRP] levels
- Interleukin-6 (IL-6)
- Soluble IL-6 receptor (sIL-6R).

RESULTS: 43% of 54 PET-CT were negative, 31% were moderately positive and 26% were markedly positive. A significant correlation between the SUV uptake and both ESR and CRP levels was found and correlated. Significantly higher ESR values were observed in patients with markedly positive PET-CT (49.4 + 36.5 mm/1st h) compared with moderately positive (27+ 21 mm/1st h, $p = 0.0001$) and inactive scans (22.7 + 15.9 mm/1st h, $p=0.0001$). CRP levels were 0.8+1.0 mg/dL, 1.3+ 2.2 mg/dL and 3.0 + 3.6 mg/dL in inactive scans in patients with moderately positive ($p=0.001$) and in patients with markedly positive scans ($p = 0.0001$) respectively. Patients with markedly positive scans resulted in higher levels of IL-6 (10.0 + 8.9 pg/ml) compared to those with inactive scans (8.1+18.5 pg/ml, $p=0.013$). We could not find any association between sIL-6R levels and vascular FDG uptake. There was a significant association between vascular FDG uptake and both ITAS and Kerr/NIH scores.

CONCLUSION: The above findings of PET-CT is a very useful tool for evaluating disease activity in patients with LVV.

EVALUATE THE EFFICACY OF 68GA-DOTA-TOC AND 18F-FDG PET-CT IN THE FOLLOW-UP OF PATIENTS WITH NEUROENDOCRINE TUMOR TREATED WITH THE FIRST FULL PEPTIDE RECEPTOR RADIONUCLIDE THERAPY CYCLE

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

OBJECTIVE: To evaluate efficacy of 68Ga-DOTA-TOC and 18F-FDG PET-CT for initial and follow-up evaluation of patients with neuroendocrine tumour(NET) treated with peptide receptor radionuclide therapy(PRRT).

MATERIALS & METHODS: We evaluated 33 histologically proven NET patients. All these patients underwent both PRRT and three combined 68Ga-DOTA-TOC and 18F-FDG PET/CT studies.68Ga-DOTA-TOC PET-CT was performed before starting PRRT then at 3 months and after 6-9 months after completion of PRRT.18F-FDG PET-CT was done within 2 months of 68Ga-DOTA-TOC PET-CT. Follow-up was carried out between 11.8 to 80.0 months(mean 34.5 months).

RESULTS: All patients were 68Ga-DOTA-TOC PET-positive initially and at follow-up after the first PRRT cycle. Overall 31 of the 99 18F-FDG PET studies(31 %) were true- positive in 19 of the 33 patients(58 %).Of the 33 patients, 14(3 grade 1, 11 grade 2) were 18F-FDG-negative initially. During follow-up(group 1), 12(3 grade 1, 6 grade 2, 3 grade 3) were 18F-FDG-positive initially and during follow-up (group 2). 5 patients(1 in grade 1, 3 in grade 2, 1 in grade 3) were 18F-FDG-negative initially but 18F-FDG-positive during follow-up (group 3), and 3 patients(all grade 2) were 18F- FDG-positive initially but 18F-FDG-negative during follow-up(group 4).18F-FDG PET showed more and/or larger metastases than 68Ga-DOTA-TOC PET in three patients of group 2 and two patients of group 3, all with progressive disease. In two patients with progressive disease who died during follow-up tumour SUVmax increased by 41 – 82 % from the first to the last follow-up investigation.

CONCLUSION: In patients known to have NET, the presence of 18F-FDG-positive tumours correlates strongly with a higher risk of progression. Thus FDG PET-CT and Thus FDG PET-CT & 68Ga-DOTA-TOC PET-CT are complimentary to each other in evaluation and follow up after therapy.

USE OF GALLIUM-67 SCAN WITH SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT) WITH CONTRAST CT IN EVALUATION & MONITORING OF MYCOTIC ABDOMINAL AORTIC ANEURYSM WITH ENDOVASCULAR AORTIC REPAIR (EVAR): A CASE SERIES OF OUR INITIAL EXPERIENCE

Hoi Ming Kwok*¹; Wing Hang Luk¹; Lik Fai Cheng¹; Nin Yuen Pan¹; Ho Fung Chan¹; Ka Fai Ma¹

¹*Radiology, Princess Margaret Hospital, Hong Kong(SAR)*

OBJECTIVE: To report our experience with the use of computed tomography angiography (CTA), together with Gallium-67 SPECT with contrast CT in the evaluation and monitoring of mycotic abdominal aortic aneurysm (MAAA).

MATERIALS AND METHODS: We performed a retrospective cohort analysis of prospectively collected data involving all patients experiencing mycotic aneurysms referred to a radiology unit from a large territory hospital in Hong Kong between the years of 2010 to 2020. Patients were identified from the Radiology Information System (RIS) with Gallium-67 SPECT with contrast CT performed for mycotic aneurysm during the years 2010 to 2020. Cases with another intra-abdominal infective / inflammatory foci that might lead to a false positivity in Gallium-67 scan were excluded.

RESULTS: All 5 patients had proven MAAA by CT. Among them, 3 patients were further supported by positive blood culture results. Gallium-67 SPECT with contrast CT was useful in the detection of residual disease, monitoring, and detection of recurrence.

CONCLUSION: Our results indicate that Gallium-67 SPECT with contrast CT is helpful in evaluating MAAA. It plays a central role in guiding management especially in the long-term follow-up.

FUNCTIONAL IMAGING OF BONE TUMORS : WHAT MORE IT CAN OFFER

Garima Sharma*¹; Sudhir Saxena¹

¹*Radio-Diagnosis And Imaging, All India Institute Of Medical Sciences, Rishikesh, Uttarakhand, India*

OBJECTIVE: The diagnostic performance of functional MRI in bone tumors have remained largely unexplored. Role of functional MRI techniques, i.e., Diffusion Weighted imaging (DWI) and Dynamic contrast enhanced (DCE) imaging offer better understanding of nature (benign or malignant) and behavior (low grade or aggressive) of the lesions as well as their response to therapy. The role of multi parametric evaluation has been well established in cancers like breast and prostate and form a part of routine assessment, hence similar approach can be followed in assessment of bone tumors.

MATERIALS & METHODS: A cross sectional study was conducted in our institute over a period of two years including patients who had radiological suspicion of tumor, were biopsy proven cases or post chemotherapy cases. Apart from routine sequences, DWI along with ADC map and DCE sequences were taken. ADC values were determined for most cellular part of tumor. A signal intensity versus time curve was created. We attempted to correlate these parameters with the histopathological diagnosis.

RESULTS: Different types of DCE-curves were obtained (e.g. rapid washout, progressive enhancement) which well correlated with nature of lesion. DWI with ADC values were indicative of behavior of lesion. They indicated cellular and microvascular properties of the lesion. Both entities were also useful as baseline data in follow up imaging.

CONCLUSION: Functional MRI techniques have diagnostic, prognostic as well as response assessment values as they depict physiological alterations as well as morphological changes. Hence, they must be incorporated in routine assessment of bone tumors.

MRI EVALUATION OF ANTEROLATERAL LIGAMENT OF THE KNEE: A CROSS-SECTIONAL STUDY IN MALAYSIA

Chooi Leng Low*¹; Kow Ren Yi²; Siti Nor Badriati Sheik Said³

¹*Department Of Radiology, Hospital Tengku Ampuan Afzan,* ²*Department Of Orthopaedic Surgery, International Islamic University, Malaysia,* ³*Department Of Radiology, Hospital Tengku Ampuan Afzan, Malaysia*

OBJECTIVE: Anterolateral ligament (ALL) of the knee has been demonstrated to be an important secondary restrainer in providing rotational stability to the knee. ALL stabilizes the internal tibial rotation with increasing knee flexion. ALL injuries with concomitant anterior cruciate ligament (ACL) injuries have a higher grade of pivot shift. Magnetic resonant (MR) studies on ALL have been performed but there is no such data among the Malaysian population. We aim to investigate the reproducibility of ALL identification on 1.5T MRI and the association with other ligamentous injuries.

MATERIALS & METHODS: Magnetic resonant imaging of the knees with suspected ligamentous injuries from 1st January 2017 to 30th June 2017 were reviewed for suitability of this study. Post-operative MRI and MRI of patients with suspected tumour at the knee region were excluded. 1.5T MRI (Siemens Medical Solution) was used for assessment of all the knees. All MRIs were double read and approved by a consultant radiologist.

RESULTS: A total of 36 knee MR images were obtained from 31 patients during the study period. 5 patients were excluded (3 for suspected tumour and 2 for post-operative). Mean age of the patients was 29.44. All three components of ALL were identified in 20 MRIs (55.6%): femoral component (75%); meniscal (69.4%) and tibial (58.3%). There were 11 knees identified to have ALL injury, which was associated with ACL injury.

CONCLUSION: ALLs of the knees are delineated in more than half of the MR images. There is an association between ALL injuries and ACL injuries.

AUTOMATED IDENTIFICATION OF ORTHOPEDIC IMPLANTS IN RADIOGRAPHS USING DEEP LEARNING

Ravi Patel*¹; Elizabeth Grace Hui Thong²; Vineet Batta³; Anil Bharath⁴; Darrel Francis²; James Howard²

¹*Faculty Of Medicine, Imperial College Healthcare NHS Trust, Singapore,* ²*Faculty Of Medicine, Imperial College Healthcare NHS Trust, United Kingdom,* ³*Department Of Orthopaedic Surgery, Luton And Dunstable University Hospital, United Kingdom,* ⁴*Department Of Bioengineering, Imperial College London, United Kingdom*

OBJECTIVE: Accurate identification of orthopaedic implant model is essential to planning revision arthroplasty and verification of magnetic resonance imaging compatibility. Operative records of implant model are frequently unavailable, and failure to identify implants associated with poorer patient surgical outcomes, significant time burdens on clinical staff, and increased healthcare costs. This study aims to develop and evaluate a convolutional neural network classifier for identifying the model of orthopedic implants in radiographs, with network performance compared to human expert performance.

MATERIALS AND METHODS: 427 knee and 922 hip unilateral anterior-posterior radiographs including 12 implant models, were collated retrospectively from a tertiary orthopaedic center between March 2015 and November 2019, to develop a range of neural network classifiers. A total of 198 images paired with auto-generated image masks were used to develop a U-Net segmentation network to automatically zero-mask around the implants in the radiographs. Classification networks processing original radiographs, and two-channel conjoined original and zero-masked radiographs, were ensembled to provide a consensus prediction. Accuracies of five senior orthopedic specialists assisted by a reference radiographic gallery were compared to network accuracy using McNemar's exact test.

RESULTS: Evaluated on a balanced unseen dataset of 180 radiographs, the final network achieved a 98.9% accuracy (178 of 180) and 100% top 3 accuracy (180 of 180). The network performed superiorly to all five specialists (76.1% [137 of 180] median accuracy and 85.6% [154 of 180] best accuracy; both $P < 0.001$), with robustness to scan quality variation and difficult to distinguish implants.

CONCLUSION: This is the first reported neural network to outperform senior orthopedic specialists at identifying implant models in radiographs. Real-world application can now be readily realized through training on a broader range of implants and joints, supported by all code and radiographs being made freely available

CORRELATION BETWEEN HOUNSFIELD UNIT DERIVED FROM HEAD, THORAX, ABDOMEN, SPINE AND PELVIS CT AND T-SCORES FROM DUAL ENERGY X-RAY ABSORPTIOMETRY(DXA)

Mohamad Farhan Mohamad Amin*¹; Wan Mezlina Wan Zakaria²; Noorazrul Yahya¹

¹*Faculty of Health Sciences, The National University of Malaysia, ²Radiology Department, Hospital Putrajaya, Malaysia*

OBJECTIVE: Computed Tomography (CT) examination can potentially be utilized for early detection of bone density changes with no additional procedure and radiation dose. We hypothesize that the Hounsfield Unit (HU) measured from CT images are correlated to the t-scores derived from Dual Energy X-ray Absorptiometry (DEXA) in multiple anatomic regions.

MATERIALS & METHODS: Data were obtained retrospectively from all patients who underwent both CT examinations - brain (HU obtained from frontal bone), thorax (T7), abdomen (L3), spine (T7 & L3), or pelvis (left hip) and DEXA. To ensure comparability, the period between CT and DEXA studies must not exceed one year. Correlations between HU values and t-scores were calculated using Pearson's correlation. A receiver operating characteristic (ROC) curve was generated, and the area under the curve (AUC) was used to determine threshold HU values for predicting osteoporosis.

RESULTS: Total 1043 of CT examinations fulfilled the inclusion criteria (head, thorax, lumbar, and left hips). The left hip consistently provided the strongest correlations and the best AUC (0.875-0.893). Meanwhile, thorax T7 and lumbar L3 shows average correlations and moderate AUC (0.680-0.783). Frontal bone shows poor correlation and weak AUC with $r < 0.5$, $AUC = 0.538-0.655$, all $p > 0.050$.

CONCLUSION: HU values derived from the hip, T7, and L3 provided good to moderate correlation to t-scores with a reasonable predilection for osteoporosis. The suggested optimal thresholds may be used in clinical settings after external validations are performed.

RELIABILITY OF SUPRASPINATUS PENNATION ANGLE MEASUREMENT USING DIFFUSION TENSOR FIBER TRACTOGRAPHY AT 3-TESLA MRI

Mohd Hafizuddin Husin*¹; Mohd Ezane Aziz¹

¹Radiology, Universiti Sains Malaysia

OBJECTIVE: Several attempts have been made to measure supraspinatus pennation angle using different modalities, however with many limitations and not consistent results. This study aims to determine the reliability of supraspinatus muscle pennation angle measurement using DTI fiber tractography.

MATERIALS & METHODS: Diffusion tensor images of 38 healthy volunteers were included in this study. Muscle fiber tract of supraspinatus muscle was generated using a tractography software and pennation angle were measured. Mean measurements by the raters were compared. Interclass correlation (ICC) was used to determine agreement between first and second measurement by the first rater (intra-rater agreement) and between the first and the second rater's measurement (inter-rater agreement) with values lesser than 0.50, between 0.5 and 0.75, between 0.75 and 0.90, and greater than 0.90 are indicative of poor, moderate, good and excellent reliability respectively.

RESULT: Mean pennation angle measured by the first rater were 14.70° (±1.83°) and 14.32° (±1.18°) respectively. Mean pennation angle measured by the second rater was 14.76° (±1.07°). There was no significant difference between measurements by first rater (p-value>0.050) and between the first and the second rater's measurement (p-value>0.050). Supraspinatus pennation angle measurement using fibre tractography yielded good (0.82, 95% CI) intra-observer and moderate (0.54, 95% CI) inter-observer reliability.

CONCLUSION: Supraspinatus pennation angle can be reliably measured using fiber tractography. This method has an advantage over conventional MRI sequences as each individual muscle fibers can be visualized, making the measurement possible even for an unexperienced individual.

MODIFIED CT SKELETAL MUSCLE INDEX NOMOGRAM

Rajeshwar Balaji Venkatasubramanian*¹; Arunan Murali¹; Venkata Sai¹

¹*Radio-Diagnosis, Sri Ramachandra Institute Of Higher Education And Research, India*

OBJECTIVE: Sarcopenia, an indicator of morbidity and mortality among post-chemotherapy and bed-ridden patients, has limited nomograms for comparison. The aim is:

- To create age- and sex-matched nomogram for sarcopenia assessment by modified Skeletal Muscle Index(SMI) analysis, by measuring Total Abdominal Muscle Area(TAMA) in Cross Sectional Area at L3 level in the CT Abdomen/KUB studies and assess the average range of the muscle area for standardization purposes. Conventional SMI uses height-parameter which is mostly unavailable practically, thus we use height-independent modified SMI.
- To evaluate correlation between tissue attenuation and muscle size in abdominal wall muscles at L3 level.
- To emphasize that Modified SMI is as effective as conventional SMI.

MATERIALS AND METHODS: Randomized set of 3000 patients referred for CT abdomen/KUB in the age group 21-80 years, between 2018-2020, were included in this retrospective cross-sectional study, excluding those with chronic debilitating illnesses. From the images, attenuation HU of selected area and Total Abdominal Muscle Area(TAMA) at L3 level were measured by Freehand-ROI tool and recorded. Conventional Skeletal Muscle Index was calculated for 118 participants and compared with modified SMI to assess their correspondence.

RESULTS: Categorized into six sex matched-age groups, TAMA at L3 level and its corresponding average HU were noted, for each scan. The nomogram was constructed using SPSS software. There was also significant correlation between

- TAMA and HU across age groups($p < 0.001$).
- SMI and modified SMI($p < 0.050$).

CONCLUSION: Modified CT skeletal muscle index is an easy, non-invasive method to assess sarcopenia, as effective as conventional SMI, and our study has prepared a nomogram for reference values.

PREDICT THE SEVERITY OF OSTEOARTHRITIS OF KNEE ON AP RADIOGRAPHS USING DEEP LEARNING

Amit Kharat*¹; Rachit Khandelwal¹; Pranav Ajmera¹; Sudeep Kondal²; Viraj Kulkarni²;
Aniruddha Pant²

¹Radio-Diagnosis, Dr. Dy Patil Medical College, Pune, India, ²Deeptek, Deeptek Inc. Pune, India

OBJECTIVE: To use deep learning models to predict the severity of osteoarthritis of knee on AP radiographs. Osteoarthritis is a degenerative joint disease typically due to the result of wear and tear causing progressive loss of articular cartilage. Kellegren-Lawrence (KL) grading system is employed to grade the severity of the disease on radiographs.

MATERIALS & METHODS: A total of 174 x-rays were evaluated. Two models were used to predict the grades by deep learning : Mask R-CNN and Densenet-121. Mask R-CNN was primarily used for extracting the knee joints and classifying them as left or right knee, following this the Densenet-121 model was run to predict the KL grade on the extracted knee joints. The results were then compared with the results of a trained musculoskeletal specialist radiologist.

RESULTS: The data was compiled in a confusion matrix as the true labels for KL grading of knee OA were already annotated by experienced radiologists and hence this was a comparison of a test classifier with already known values. It revealed that the mean absolute error in prediction (MAEP) was around 0.2817. A subsequent test on a sample of 100 cases revealed a MAEP around 0.3111.

CONCLUSION: The model is working well as the misclassifications are limited and careful analysis reveals that amongst these the misclassifications were mostly to adjacent classes only and hence the impact of the misclassification is minimal.

EFFECTIVENESS OF HYDRODILATATION IN ADHESIVE CAPSULITIS OF SHOULDER: DOES IT OFFER ADDED ADVANTAGE OVER INTRA-ARTICULAR STEROID?

Mehtab Ahmad*¹; Rida Fatima¹; MJ Khan²; Ibne Ahmad¹; Amir Sabir²

¹*Department of Radiodiagnosis, JN Medical College AMU, Aligar,* ²*Orthopaedics, JN Medical College, AMU, Aligar, India*

OBJECTIVE: Role of ultrasound guided hydrodilatation in management of adhesive capsulitis.

MATERIALS AND METHODS: Prospective, randomized, case-control study. Two groups of 30 patients through randomization. The Study group (n=30) underwent hydrodilatation with the help of ultrasound guided injection through the rotator interval approach with 10-20 ml of saline on the top of LA and steroid (40 mg triamcinolone acetonide) was used depending on the stiffness of the joint and intraarticular tension. Control group (n= 30) was managed with the routine treatment method of image guided steroid injection and physiotherapy. The patients were then followed prospectively for clinical improvements which was assessed by visual analogue scoring (VAS), oxford shoulder score (OSS) and range of movement (ROM) for each patient.

RESULTS: Data was analysed using the SPSS v20.0, compared using the paired t test. Study group showed a mean of 4.3-point reduction in pain on VAS, mean of 14.1-point improvement on OSS with improved ROM (mean improvement ~20 degrees). Means improvement in the control group were 2.6 in VAS, 7.9 in OSS and 12 degrees in ROM which was significantly lesser than study group (p < 0.050 in each of the 3 parameters). In our study, patients presenting with shorter duration of symptoms respond well than the patients presented with > 6months of duration of symptoms. 3 of the patients required repeated injections due to minimal improvement.

CONCLUSION: Ultrasound guided Hydrodilatation along with steroid injection leads to significant improvement in adhesive capsulitis when compared to intraarticular steroid injection alone.

ARTIFACTS IN ABDOMINAL CT: THEY ALL LOOK THE SAME TO ME! LET'S RECOGNIZE IT AND ELIMINATE IT!

Binit Sureka*¹; Neelmani Sharma¹; Pawan Kumar Garg¹; Taruna Yadav¹; Sarbesh Tiwari¹;
Pushpinder Singh Khera¹; Alex Fernandus¹

¹*Diagnostic & Interventional Radiology, All India Institute of Medical Sciences, Jodhpur, India*

LEARNING OBJECTIVE:

- Identify various types of artifacts that can appear in abdominal CT images
- Discuss the physics behind these artifacts
- To describe how we can eliminate or suppress these CT artifacts

BACKGROUND: Artifacts can seriously degrade the quality of computed tomographic (CT) images, sometimes to the point of making them diagnostically unusable. To optimize image quality, it is necessary to understand why artifacts occur and how they can be prevented or suppressed. CT artifacts originate from a range of sources. Design features incorporated into modern CT scanners minimize some types of artifacts, and some can be partially corrected by the scanner software. However, in many instances, careful patient positioning and optimum selection of scanning parameters are the most important factors in avoiding CT artifacts.

FINDINGS AND/OR PROCEDURE DETAILS:

- Physics-based artifacts - Beam-hardening, Streaking or Dark bands, Cupping artifact, Partial-volume artifact, Photon starvation, Undersampling
- Patient-based artifacts - Metal Artifact, Patient motion, Incomplete Projection
- Scanner-based artifacts - Ring artifact
- Helical and multisection artifacts - Cone Beam Artifact, Windmill Artifact, Stair Step Artifact, Zebra Artifact, Noise

CONCLUSION: Identification and recognizing type of artifact is very important. Design features incorporated into modern CT scanners minimize some types of artifacts. Most of the artifacts are corrected by scanner software. Careful patient positioning and selection of scan parameters are most important parameters in avoiding CT artifacts.

DEVELOPMENT OF PATIENT-SPECIFIC 3D-PRINTED BREAST PHANTOM USING SILICONE AND PEANUT OILS FOR MAGNETIC RESONANCE IMAGING

Rooa Sindi*^{1,2}; Yin How Wong³; Chai Hong Yeong³; Zhonghua Sun¹

¹*Discipline of Medical Radiation Sciences, School of Molecular and Life Sciences, Faculty of Science and Engineering, Curtin University, Australia,* ²*Medical Physics Department, King Fahd Armed Forces Hospital, Jeddah, Kingdom of Saudi Arabia;* ³*School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, Malaysia*

OBJECTIVE: To design a patient-specific 3D printed breast phantom and to identify the most appropriate materials for simulating the MR imaging characteristics of fibroglandular and adipose tissues.

MATERIALS & METHODS: A patient-specific 3D printed breast model was generated using 3D-printing techniques for the construction of the hollow skin and fibroglandular regions shells. Then, the T1 relaxation time of five selected materials (agarose gel, silicone rubber, fish oil, silicone oil, and peanut oil) were measured on a 3T MRI system to determine which could be used to represent the MR imaging characteristics of fibroglandular and adipose tissues. Results were compared to the reference value of T1 relaxation time of corresponding tissues; 1324.42 ± 167.63 and 449.27 ± 26.09 ms, respectively. Finally, materials that matched the T1 relaxation time of these tissues were chosen to fill in the 3D printed breast phantom.

RESULTS: The silicone and peanut oils were found to resemble the T1 relaxation time and imaging characteristics of these two tissues; which are 1515.8 ± 105.5 and 405.4 ± 15.1 ms, respectively. Agarose gel had the longest T1 relaxation time.

CONCLUSION: A patient-specific 3D printed breast phantom was successfully designed and constructed using silicone and peanut oils to simulate the MR imaging characteristics of fibroglandular and adipose tissues. The phantom can be used to examine different MR breast-imaging protocols to identify the most appropriate protocol for the quantitative assessment of breast density.

AUTOMATIC EVALUATION TO IMAGE QUALITY FOR ACR MAMMOGRAPHY PHANTOM USING MACHINE LEARNING

Pei-Shan Ho*¹; Yi-Shuan Hwang²; Hui-Yu Tsai³

¹*Department of Engineering and System Science, National Tsing Hua University,* ²*Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital at Linkou, Taiwan (ROC),*

³*Institute of Nuclear Engineering and Science, National Tsing Hua University, Taiwan (ROC)*

OBJECTIVE: To correctly detect abnormalities on mammographic images, the image quality (IQ) is crucial for clinical diagnosis. In the quality assurance process, the IQ evaluation in phantom images is conventionally scored manually by experienced medical physicists, which is labor-intensive and time-consuming. Furthermore, the scores tend to be subjective and deficient in repeatability. Many recent studies have thus focused on IQ evaluation automation development. Our objective is to develop an automatic mammographic phantom IQ evaluation framework under the basis of support vector machine (SVM) algorithm.

MATERIALS & METHODS: The model 015 mammographic accreditation phantom (CIRS, Inc. Norfolk, VA, USA) consists of 16 patterns (six fibers, five specks, and five masses). In our study, 461 phantom images were acquired using ten vendors of machines, and IQ scores were labeled in consensus by two experienced medical physicists. The 80% and 20% of phantom images were randomly selected as training and testing datasets, respectively. After segmenting each phantom image into 16 pattern images, 159 features were identified for each pattern image. The patterns were labeled as visible, invisible, and semi-visible according to manual scores. The multi-class SVM models were trained with the one-vs-one strategy for each type of pattern.

RESULTS: With regarding manual evaluation as ground truth, the accuracies of fiber, speck, and mass patterns were 90.2%, 98.2%, and 88.9%, respectively.

CONCLUSION: In this study, we proposed an automatic IQ evaluation framework for the mammographic phantom. This framework may assist medical physicists in improving the efficiency of the quality assurance process.

CORRECTION FOR CT NUMBER CHANGES CAUSED BY OFF-CENTRE PATIENT POSITIONING: A PHANTOM STUDY

Xiaoming Zheng*¹; Yazan Al Hayek¹; Chris Cummins¹

¹*Dentistry and Health Sciences, Charles Sturt University, Australia*

OBJECTIVE: To present a correction scheme for X-ray CT number variations caused by off-centre patient positioning and correction results of tissue equivalent materials within an electron density phantom.

MATERIALS & METHODS: A Somatom Emotion CT scanner (Siemens, Germany) was employed to acquire images of model 062M electronic density phantom from CIRS (Computerized Imaging Reference System). The phantom's 17 tissue filling holes were first filled with water balloons. Images of water filled phantom were acquired at various positions of 0 (iso-centre), 2, 4, 6 and 8 cm off-centre. One water balloon at 450 of the outer ring of the phantom was then replaced by tissue equivalent materials. CT numbers were calculated by averaging 6 central slices of the phantom using ImagJ. The measured water CT numbers were used to correct for the CT numbers of tissue equivalent materials at various off-centre locations.

RESULTS: Both water and tissue equivalent material's CT numbers were found to be decreased as phantom position is shifted from the iso-centre. For an 8cm shift from the iso-centre and at the 450 outer ring location, the water's CT number is decrease by 5.4 HU whilst a liver tissue is decreased by 6.1 HU. Employing measured water attenuation co-efficient in the Hounsfield formula for CT number calculations, the liver's CT numbers at various off-centre shifts were calculated which is constant of 55 HU for all off-centre positions.

CONCLUSION: Local water's attenuation co-efficient can be used to correct for tissues' CT number variations caused by off-centre patient positioning.

COMMUNICATING RADIATION RISK TO PUBLIC

Kwan Hoong Ng*¹; Jeannie Hsiu Ding Wong¹

¹*Department of Biomedical Imaging, University of Malaya, Malaysia*

LEARNING OBJECTIVE: We aim to describe how to communicate radiation risk to the public, with particular emphasis on the method of comparing risk.

BACKGROUND: In communicating risk to members of the public, risk comparison is often helpful but it could be challenging. We wish to convey complex concepts of radiation to laymen but often this is fraught with ambiguity, confusion and maybe even contradictory. It is essential to know our audience and the situation. As the media, especially social media, is playing an important role in influencing public opinion, it is imperative for radiation protection specialists to educate and work with them.

FINDINGS AND/OR PROCEDURE DETAILS: We will review some principles of comparing risk, such as using analogies, comparing to standards, and comparing to other estimates of the same risk. In this educational exhibit, we will give some examples of the use and abuse of risk comparison and explain the principles behind these. The examples will cover, amongst others, radiological examinations, Fukushima nuclear reactor accident and rare earth refineries.

CONCLUSION: Improper management of risk communication may lead to unnecessary public outrages. Risk comparison can be a useful tool in communicating radiation risk.

ANALYSIS OF GRAY MATTER VOLUME IN ISCHEMIC STROKE PATIENTS WITH DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING

Dian Yuliani Alam*¹; Johan Ae Noor¹; Yuyun Yueniwati²

¹Department of Physics, Faculty of Mathematics and Natural Sciences, Brawijaya University,

²Department of Radiology, Faculty of Medicine, Brawijaya University, Indonesia

OBJECTIVE: The ischemic stroke is one of the major causes of disability and death worldwide. It has an impact on the grey matter in the brain. In this research, the aim was to analyze the grey matter volume (GMV) in ischemic stroke patients by Magnetic Resonance Imaging (MRI) with Diffusion-Weighted Imaging (DWI) sequence.

MATERIALS AND METHODS: The MRI data were collected randomly in 10 ischemic stroke patients and 10 normal patients. Some parameters in DWI axial images, i.e. time repetition (TR), time echo (TE), and b-value were analyzed. The image segmentation method was used to get the GMV values by MATLAB software.

RESULTS: The obtained result showed that the DWI axial images of all patients had long TR values (2,700 – 5,900 ms), short TE values (82 – 87 ms), and a high b-value (1,000 s/mm²). The long TR and short TE values made the images have less T1 weight and the grey matter appear clearer. Meanwhile, the high b-value was linked to short TE values. The mean thresholds in the image segmentation showed that the grey matter has the highest pixels than cerebrospinal fluid (CSF) and white matter. As for the mean GMV of ischemic stroke and normal patients were 14.340 cm³ and 14.870 cm³, respectively.

CONCLUSION: Since the GMV in ischemic stroke patients was lower, it can be concluded that the ischemic stroke could reduce grey matter content in the brain.

DEVELOPMENT OF COMPLEX SHIELDING SHEET FOR MAMMOGRAPHY USING MONTE CARLO SIMULATION

Cheol-Ha Baek*¹; Dong-Hee Han¹; Seung-Jae Lee²

¹*Department of Radiological Science, Kangwon National University, Korea,* ²*Department of Radiological Science, Dongseo University, Korea*

OBJECTIVE: We aim to evaluate the performance of a complex shielding sheet made of eco-friendly materials with laminated structures that can be utilized in the 30-40 kV range, which is mainly used for mammography, through GATE.

MATERIALS & METHODS: A complex shielding sheet of non-mixing laminated structures was determined by the principle that radiation with reduced energy due to scattering from high atomic number materials is absorbed by low atomic number shielding. The sheet size is 200 x 200 mm² and the distance from the X-ray tube is 200 mm, using SRS-78 software to calculate the energy spectrum, with an anode angle of 9 degrees, and an inherent filtration of 0.03mmMo. For performance evaluation, we calculate the rate of shielding by dividing the energy range into low, medium, and high zones.

RESULTS: Considering that it is one of the most used substances as an eco-friendly shield and high atomic number of bismuth 0.01 mm and the mammography is conducted closely to the skin, it used silicon 2.0 mm that is less irritated and harmless. Simulations conducted under the conditions of tube voltage of 30 kV showed relatively high shielding rates of 81.85%, 97.66%, and 99.02%, respectively, with individual use of bismuth and silicon in the low-energy(0-9 keV) and complex shielding. in the medium-energy(10-20 keV), 66.94%, 82.51%, 94.29% were confirmed, and 40.30%, 42.84%, and 65.42% were confirmed in the high-energy(21-30 keV), respectively.

CONCLUSION: Finally, we propose a complex shielding sheet consisting of bismuth and silicon, an eco-friendly material, confirming efficient shielding performance in mammography.

EVALUATION OF PAEDIATRIC PATIENT'S SIZE FOR SIZE-SPECIFIC DOSE ESTIMATE (SSDE)

Noor Diyana Osman*¹; Muhammad Kabir Abdulkadir¹; Ibrahim Lufti Shuaib¹; Anusha Achuthan¹

¹*Oncological And Radiological Science Cluster, Advanced Medical And Dental Institute, Universiti Sains Malaysia*

OBJECTIVE: The purpose of the study is to evaluate paediatric patient size distribution in head and abdominal computed tomography (CT) for implementation of size-specific dose estimate.

MATERIALS AND METHODS: In this retrospective study, we used CT images of 302 children (164 head and 138 abdomen CT) aged 0-12 years and they were further classified into four age groups of < 1, 1 - 5, 6 -10 and 10 - 12 years. The patient size was estimated using attenuation based; water-equivalent diameter (Dw) and geometry-based; anteroposterior (AP) and lateral dimensions to estimate effective diameter (Deff) using manual measurement on CT image viewer tools. A comparative study was performed to determine the difference between our study and other studies on the population's estimated children sizes.

RESULTS: From the findings, for head size, the range, mean and standard deviation of Dw and Deff were 9.4 - 16.9 cm (14.5±1.8) and 9 - 16 cm (14.8±1.7) respectively and for the abdomen, Deff was 7 – 22 cm (16.3±3). From the comparative study, the Dw and Deff of this study are smaller, the overall difference between our study and other studies was between 1.7 and 6.2 cm and P = 0.025 at 95% confidence interval.

CONCLUSION: For this population, the distribution of typical patient sizes for SSDE implementation was estimated in line with AAPM recommendation and our value differs with other population to within 6.2 cm.

CORRELATION BETWEEN SCATTERED RADIATION DOSE AND HEIGHT OF THE STAFF'S EYES AT DIFFERENT POSITIONS IN AN ANGIOGRAPHY ROOM

Halimatussa'diah Ahmad Radzi*¹; Norhanna Sohaimi¹; Ahmad Razali Md Ralib²

¹*Department of Diagnostic Imaging and Radiotherapy, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia (IIUM),* ²*Department of Radiology, Kulliyyah of Medicine, IIUM, Malaysia*

OBJECTIVE: Scattered radiations could reach the angiographic staff's eyes during procedures and causes radiation induced cataract. The aim of this study was to correlate between scattered radiation doses and the heights of staff's eyes at several positions in an angiography room.

MATERIALS AND METHODS: An anthropomorphic Kyoto Kagaku PBU-31 phantom (Kyoto, Japan) which simulated a male patient's torso was exposed using Siemen's Artis Q (Erlangen, Germany) angiographic system. Technical factors were set for percutaneous transhepatic biliary drainage procedure in posteroanterior projection. Exposures were done in digital subtraction angiography acquisition for durations of 4s, 10s and 20s. For each duration, 96 nanodot optically stimulated luminescence (OSL) dosimeters (Landauer, Inc., Glenwood, USA) were used to record the scattered radiation dose. The nanodots were placed at 8 heights from the floor (135, 140, 145, 150, 155, 160, 165 and 170 cm) and on twelve paper tubes which simulated twelve different positions. The recorded radiation doses were read in mGy units and were normalised to the dose area product (mGym²) of each exposure duration. A non-parametric Spearman rank correlation test was used since the data were not normally distributed.

RESULTS: For the overall locations, scattered radiation dose and eye heights were found to be moderately negative correlated, $r_s(288) = -0.499$, $p\text{-value} = < 0.001$. However, different strengths of correlation were found for the individual positions.

CONCLUSION: This study found that stronger correlations were observed near the patient but weaker or no correlations were seen towards the patient's feet.

GERMANIUM-DOPED OPTICAL FIBRES: A NEW RADIO PHOTOLUMINESCENCE (RPL) DOSIMETER IN CLINICAL COMPUTED TOMOGRAPHY

H. G. Sarhan*¹, N. M. Noor^{1,2}; S. M. Saini¹; N. M. Bahri^{1,2}; D. A. Bradley^{3,5}; H. T. Zubair^{4,6};
H. A. Abdul Rashid⁴

¹*Department of Radiology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia,*

²*Department of Radiology, Teaching Hospital Universiti Putra Malaysia, Universiti Putra*

Malaysia, ³*Department of Physics, University of Surrey, Guildford, Surrey GU2 7XH, United*

Kingdom, ⁴*Fibre Optics Research Centre, Faculty of Engineering, Multimedia University,*

Malaysia, ⁵*Centre for Applied Physics and Radiation Technologies, Sunway University, Malaysia,*

⁶*Lumisyns Technology Sdn. Bhd., Cyberjaya, Malaysia*

OBJECTIVE: In studies based on clinical computed tomography (CT), wasted dose and the added risk of radiocarcinogenesis has been a particular concern. Accordingly, effective means of dosimetry are required. Current study examines the dosimetric properties of germanium (Ge)-doped optical fibers utilizing a real-time system (model LS-2000, Lumisyns) applied to a Somatom Definition Flash dual-source 128-slice CT scanner (Siemens Healthcare), measuring beam quality, dose linearity and exposure time accuracy.

MATERIALS AND METHODS: Comparison has been made with a RaySafe X2 test device (Unfors RaySafe) and Black Piranha (RTI) QA meter. Irradiations involved tube currents from 50 to 300mA, exposure durations of 750 to 2000ms, and acceleration potentials from 80- to 140kVp.

RESULTS: The LS-2000 system has been found effective, beam quality maximum discrepancies from RaySafe X2 and Black Piranha measurements being 1% and 5%, respectively; the coefficients of linearity of the RaySafe X2, Black Piranha and LS-2000 were 1%, 0.4% and 1.4%, respectively; the maximum deviations for the time accuracy test were 0.5%, 2% and 1.3%, respectively. Furthermore, a statistical analysis showing insignificant difference between the three sensors, with p-values of > 0.050 for all tested parameters.

CONCLUSION: Real-time dosimetry assessment of the LS-2000 with a Ge-doped fiber optical scintillator supports its future use in clinical CT dosimetry.

DEVELOPMENT OF MULTI-MODALITY RENAL PHANTOM

Hairil Rashmizal *¹; Khalis Abdul Karim²; Syamsiah Mashohor³; Athirah Syima⁴; Izdihar Kamal⁴

¹Radiology Department Pusat Perubatan Nuclear UPM, University Putra Malaysia, ²Physics Department, Faculty Science, University Putra Malaysia, ³Faculty Of Engineering, University Putra Malaysia, ⁴Medical Imaging, KPJ Healthcare University College, Malaysia

OBJECTIVE: In the medical imaging field, calibration of the machine, training of operators, surgical planning, and simulation are conducted using a phantom. This study aims to create tissue-mimicking phantoms appropriate for Computed Tomography Texture Analysis (CTTA) and ultrasound for calibration of modality, training of operators and surgical planning.

MATERIALS AND METHODS: Polydimethylsiloxane (PDMS) (Sylgard 184, Dow Corning) and Silicone Elastomer (SE) (Ecoflex 00-20, Smooth on, PA, USA) were synthesized using various series of compound to mimic kidney tissue. The phantom was moulded in the round container with a separation between the base tumour and stone for the texture analysis purpose. After data acquisition from both CT and U/S, the signal data was recorded and analyzed via ImageJ.

RESULTS: SE records a CT number of 60-80 HU while CT number of PDMS range from 100 to 140 HU. In addition, the CT number for the tumour which made of Aldrich is consistent at 40 HU. We observed that the mean signal of SE and PDMS under U/S are 74.5 ± 43.2 and 75.88 ± 48.78 , respectively.

CONCLUSION: In summary, SE is superior to PDMS in term of fabrication process while PDMS supersede the SE in term of stability of the sample. Due to its similarity in human tissue features both materials are considered to be suitable for building a phantom especially used in various multi modalities imaging.

**ASSESSMENT OF 3D PRINTED PHANTOM MATERIAL FOR QUANTIFICATION
ACCURACY, REPEATABILITY, AND VARIATION OF MATERIAL
DECOMPOSITION WITH PRE-CLINICAL PHOTON-COUNTING SPECTRAL CT**

Wing Yan Ip*¹; David FK Yeung¹; Shang Peng Felix Yung¹; Varut Vardhanabhuti¹

¹*Diagnostic Radiology, The University Of Hong Kong*

OBJECTIVE: Photon-counting spectral CT scanner is an advanced imaging modality capable of multi-material decomposition. The objectives of this study are 1) to investigate the effect of using 3D printed material in the phantom by comparing quantification of materials derived from different types of known contrast agents with conventional phantom material PMMA and 2) to investigate the repeatability of quantifiable materials between different scanning sessions.

MATERIALS AND METHODS: A pre-clinical photon-counting spectral CT scanner with 5 detectors and multi-energy range was used (MARS Bioimaging Ltd, New Zealand). PMMA (density =1.18 g/cm³) and 30% ABS (density =1.05 g/cm³) were the two phantom materials used. 15 contrast vials were placed consisting of Gold (2 mg/ml, 4 mg/ml, 8 mg/ml), Iodine (4 mg/ml, 8 mg/ml, 16 mg/ml), Gadolinium (2 mg/ml, 4 mg/ml, 8 mg/ml), Calcium (35 mg/ml, 70 mg/ml, 140 mg/ml), water and lipid into respective phantoms with prior calibration. To investigate the repeatability, experiment was repeated 5 times. Regions of interests were placed in different contrast vials in 5 consecutive slices. Average values, standard deviation, coefficient of variation (CV) and root mean square error (RMSE) were calculated.

RESULTS: RMSE of PMMA phantom and ABS phantom were 1.5% and 1.3% compared to reference value. The CV was in the range of 1.3 - 46% depending different materials and concentration (with average being 14%). This was similar between PMMA and ABS material. The full results will be presented at the meeting.

CONCLUSION: Similar accuracy in quantification and repeatability can be expected when using custom-made phantoms.

DUAL ENERGY CT: PRINCIPLES AND APPLICATIONS

Smily Sharma *¹; Venkata Subbaih Arunachalam¹; Rakesh Chauhan²; Bikram Raja Sharma³;
Poonam Sherwani¹

¹Radiology, All India Institute of Medical Sciences Rishikesh, India, ²Radiology, Dhillon Scan, India, ³Medicine, SGRR, India

LEARNING OBJECTIVE:

- To discuss the basic Physics and Principles of Dual Energy CT
- Using a case-based review, to study in details various applications of Dual Energy CT.

BACKGROUND: Dual Energy CT is state of the art technology that has widespread applications in Clinical Radiology.

FINDINGS AND/OR PROCEDURE DETAILS: Basic Principles of Dual Energy CT will be discussed in brief. Using cases done on Single Source Dual Energy CT Scanner available to the authors, an explicit discussion of applications of Dual Energy CT are detailed in the exhibit. Dual Energy CT has various applications like production of Virtual Non-Contrast images from Contrast enhanced scan, assessment of composition of renal stones, automated bone removal for angiographic studies, assessment of perfusion defects in Pulmonary Thromboembolism and assessment of cardiac Perfusion Defects. It has revolutionized imaging in Oncology by creating iodine overlay maps, thereby helping in more accurate evaluation of contrast uptake and infiltration by the neoplastic masses like pancreatic adeno carcinoma etc. Using Virtual Non-Contrast images, unnecessary radiation exposure can be avoided. Comparison of Dual Energy CT with conventional CT including advantages and disadvantages is also discussed in the exhibit.

CONCLUSION: Dual Energy CT is state of the art technology that has revolutionized the field of Imaging. Radiologists should be well versed with the applications and how to use them to take maximum benefit from this wonderful Technology. It is indeed a step towards "Precision Medicine".

LANDSCAPE: AN MRI-BASED PROJECT FOR COMPUTATIONAL NEUROMODULATION

Hanna Lu*¹; Linda Lam²; Li Zhang³

¹Neuromodulation Lab, Psychiatry, Chinese University Of Hong Kong, ²Psychiatry, Chinese University Of Hong Kong, ³Mechanical And Automation Engineering, Chinese University Of Hong Kong

OBJECTIVE: Neuromodulation is increasingly used as a probe of brain function and potential therapeutics in experimental neuroscience and neurorehabilitation. Scalp to cortex distance (SCD), as a key parameter, has been shown to potentially impact on the neuromodulation-induced electric field. This study aimed to examine the region-specific SCD in the context of age-related brain atrophy.

MATERIALS & METHODS: We launched an MRI-based project named as “Localized Analysis of Normalized Distance from Scalp to Cortex and Personalized Evaluation” (LANDSCAPE). We analysed the SCD of left primary motor cortex (M1) and dorsolateral prefrontal cortex (DLPFC) in 643 cognitively normal adults from the Cambridge Centre for Ageing and Neuroscience (Cam-CAN). Computational head model was developed to simulate the impact of SCD on the electric field.

RESULTS: We found age-related increased SCD in the left DLPFC ($p < 0.001$), but not M1 ($p = 0.134$). The electric field induced by stimulation was consequently decreased with the increased SCD across normal aging individuals.

CONCLUSION: Age have differential impacts on the SCDs of left DLPFC and M1. The findings suggest that it is important to be aware of region-specific distance measures when conducting neuromodulation in individuals with old age

DETERMINATION OF CUT- OFF VALUES FOR HIPPOCAMPAL VOLUME VIA AUTOMATED SEGMENTATION ON MRI BRAIN FOR IDENTIFICATION OF HIPPOCAMPAL ATROPHY IN HIPPOCAMPAL SCLEROSIS

Liew Xiao Ching*¹; Kartini Rahmat¹; Farhana Fadzli¹; Norlisah Ramli¹; Lim Kheng Seang²; Vairavan Narayanan³; Eric Tatt Wei Ho⁴

¹Department of Biomedical Imaging, University of Malaya, ²Department of Medicine, University of Malaya, ³Department of Surgery, University of Malaya, Malaysia, ⁴Center for Intelligent Signal and Imaging Research, University Technology Petronas, Malaysia

OBJECTIVE: Hippocampal sclerosis is diagnosed on MRI brain by hippocampal volume reduction with presence of hippocampal hyperintensity on T2-weighted and FLAIR images. We attempted to delineate the cut- off values for hippocampal volume on MRI brain via automated hippocampal volumetry using FreeSurfer software, in order to facilitate diagnosis of hippocampal sclerosis.

MATERIALS & METHODS: This is a cross-sectional study of 40 anonymized control subjects and 43 patients with temporal lobe epilepsy. MRI brain acquisition was performed with GE Signa EXCITE 3.0T MRI scanner and 16-channel head coil using standard epilepsy protocol of University Malaya Medical Centre. Hippocampal atrophy and hyperintensity on axial T2 FSE/ coronal FLAIR CUBE sequences were identified on MRI by two neuroradiologists. MRI images on axial FSPGR 3D were converted from DICOM to NIFTI format. Hippocampal volume was obtained via automated segmentation on FreeSurfer software version 6.0. Statistical analysis was performed with SPSS.

RESULTS: Median right hippocampal volumes are greater than left side in both control subjects and patients. Mann-Whitney test showed that hippocampal volume in control group was statistically significantly higher than patient group ($p < 0.001$). The optimal cut- off values obtained with Receiver operating characteristics (ROC) curve and Youden index for left and right hippocampal volumes are 3257mm^3 (sensitivity:0.692, specificity:0.968) with area under curve (AUC) of 0.850 (95% CI:0.746-0.955) and 3761mm^3 (sensitivity:0.9, specificity:0.957) with AUC of 0.950 (95% CI:0.876-1.0) respectively.

CONCLUSION: The cut-off values of hippocampal volume determined in this study would be valuable in diagnosis of hippocampal atrophy in hippocampal sclerosis, in combination with MRI visual assessment by neuroradiologists.

MOLECULAR AND RADIOLOGICAL CHARACTERIZATION OF GLIOBLASTOMA MULTIFORME USING MRI

Fatima Mubarak*¹

¹*Radiology, Aga Khan University Hospital, Pakistan*

OBJECTIVE: Glioblastoma multiforme (GBM) is the most malignant, aggressive and common form of primary brain cancer. Currently, GBM is considered to be a homogenous mass as all of its margins are treated equally at the time of resection. However, it is not known whether radiologically distinct regions of GBM are also distinct at molecular level. We conducted this study to see if radiologically distinct regions were also different at the molecular level.

MATERIALS & METHODS: In 20 patients, MRI derived variance known as Apparent Diffusion Coefficient (ADC) was plotted against Contrast Enhancement (CE). Four radiologically distinct regions were identified: 1) high ADC and low CE, 2) low ADC and low CE, 3) high ADC and high CE and 4) low ADC and high CE. Biopsy samples were collected from these four regions of interest in each patient and immunohistochemistry was conducted to characterize cellular features and identify oncogene and stem cell marker expressing cells.

RESULTS: Markedly increased nuclear pleomorphism, cellularity and necrosis were seen in region 2. Oncogene IDH was expressed in all regions, however, it was highest in region 4. Stem cell marker, CD44 expression was highest in region 1 and lowest in region 2 and 3. The expression of CD133 was highest in region 3.

CONCLUSION: This study shows that ADC/CE plot can divide GBM into four regions, whose heterogeneity is evidenced by differential expression of nuclear pleomorphism, necrosis, cellularity and mitotic rate as well as the expression of oncogene and stem cell markers.

UTILITY OF APPARENT DIFFUSION COEFFICIENT, CHEMICAL SHIFT IMAGING AND DIFFUSION TENSOR IMAGING OF TUMOR CENTRE AND PERITUMORAL ZONE IN DIFFERENTIATING GLIOBLASTOMA MULTIFORME AND PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA FROM METASTASIS PREOPERATIVELY.

Fatima Mubarak*¹

¹*Radiology, Aga Khan University Hospital, Pakistan*

OBJECTIVE: Glioblastoma, primary CNS lymphomas and metastasis may appear quite similar on convention MRI. Objective of this study was to determine effectiveness of diffusion weighted imaging ,diffusion tensor imaging and spectroscopy in preoperative differentiation of these tumors.

MATERIALS & METHODS: Forty patients with solitary enhancing brain tumors were studied retrospectively. All cases were histologically proven (20 GBMs, 10 PCNLs, 10 metastasis). All patients underwent 1.5 or 3.0 Tesla MRI scanner with standard head coil. Diffusion weighted imaging, DTI and spectroscopy were performed. We drew region of interest for ADC value and MRS at the center of lesion and in peritumoral zone and assessed fiber configuration for deviation, disruption, edema and infiltration on tractography.

RESULTS: In the centre of lesions, ADC values were lowest in PCNLs followed by GBMs and mets. While in peritumoral region, ADC values were low in GBMs, +/- in PCNLs and normal in mets. On MRS tumor core showed raised choline and low NAA in GBMs and PCNLs while in mets all metabolites were low. Choline peak was also raised in peritumoral zone of GBMs and it was equivocal in cases of PCNLs and normal in mets. Tractography showed fibre disruption and infiltration within the centre and surroundings of GBMs. Disruption and infiltration also noted within the core of PCNLs, however, in these cases, peritumoral zone showed edema or infiltration. In cases of mets, centre showed deviation and edema of fibres and perilesional area showed deviation and also edema.

CONCLUSION: ADC value, DTI and MRS are reliable parameters to differentiate GBMs and PCNSLs from metastasis and can be used as useful tool.

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME IN CHILDREN: THE ASSOCIATION OF BLOOD PRESSURE WITH IMAGING SEVERITY

Kumail Khandwala*¹; Kiran Hilal¹; Nida Sajjad¹

¹Radiology, Aga Khan University, Pakistan

OBJECTIVE: To evaluate the association and correlation between blood pressure (BP) and posterior reversible encephalopathy syndrome (PRES) imaging severity in the paediatric population whom radiological features and pathophysiology remains obscure.

MATERIALS & METHODS: A retrospective evaluation of paediatric patients diagnosed with PRES over the last 10 years was performed. Findings were reviewed by two paediatric radiologists along with the clinical profile and outcome. Imaging severity was categorised into mild, moderate and severe. The distribution of lesions, enhancement, diffusion restriction and haemorrhage were assessed. Various conditions that may resemble PRES were excluded.

RESULTS: Out of 43 children, 20 were males and 23 were females with a mean age of 10.7 years. The most common primary disease was malignancy (28%) out of which lymphoma predominated. The mean systolic BP was 131.5 (70-205) mmHg and diastolic was 82.9 (35-170) mmHg. 14 children had hypertension higher than autoregulatory limits. Imaging showed a parieto-occipital lobe involvement pattern in 42% of cases, holo-hemispheric pattern in 30.2%, cerebellar involvement in 23.3% and superior frontal sulcus pattern in 2.3%. 4.7% had a haemorrhage, 25.6% had contrast enhancement and 27.9% had a positive diffusion restriction (cytotoxic oedema). No statistically significant association of imaging severity with BP ($P=0.700$), imaging severity with haemorrhage ($P=0.300$) and diffusion restriction ($P=0.640$) with imaging severity and with each other ($P=1.000$) was seen.

CONCLUSION: We did not find any significant association of blood pressure with imaging severity, haemorrhage and diffusion restriction. Further prospective studies are needed to determine the pathophysiological mechanisms and correlation with imaging findings in paediatric PRES.

IMAGING DEMENTIA: COMPUTER-AIDED AUTOMATED HIPPOCAMPAL VOLUME CALCULATION AND ITS CORRELATION WITH CLINICAL COGNITIVE PERFORMANCE

Nurhuda Hendra Setyawan*¹; Lina Choridah¹; Astuti¹; Whisnu Nalendra Tama¹

¹*Department of Radiology, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia*

OBJECTIVE: To evaluate the correlation of automatically segmented and calculated hippocampal volume with clinical cognitive performance.

MATERIALS & METHODS: Forty subjects clinically diagnosed as dementia were taken from memory clinic's patients. Hippocampal volume and its ratio to intracranial volume were automatically segmented and calculated from 3-dimensional T1-weighted gradient-echo brain magnetic resonance images (MRI) using unedited pipeline of Harvard's FreeSurfer software suite (Massachusetts, US). Cognitive performance was evaluated using Montreal Cognitive Assessment Indonesian version (MoCA-Ina) by two neurologists.

RESULTS: Mean age of participants were 61.73 ± 11.73 years consisted of 29 males and 11 females. The average MoCA-Ina scores were 18.13 ± 7.54 . Bivariate Spearman correlation revealed statistically significant moderate positive correlation between total hippocampal volumes and MoCA-Ina scores ($r=0.51$; $p=0.001$). Adjusting hippocampal volumes to intracranial volumes also resulted in moderate positive correlation with MoCA-Ina scores ($r=0.46$; $p=0.003$).

CONCLUSION: These findings supported the association between hippocampal volumes and cognitive performances. Total hippocampal volumes and their ratio to intracranial volumes provides a better understanding about cognitive decline in demented patients. Therefore, MRI with automated segmentation and brain volumetric processing could be a helpful tool to evaluate and follow-up dementia patients.

ROLE OF DIFFUSOR TENSOR IMAGING(DTI) IN SEIZURE PATIENTS

Rajul Rastogi*¹; Vishakha Mittal¹; Neha¹; Vijai Pratap¹

¹*Department of Radiodiagnosi, Teerthanker Mahveer Medical College & Research Center, Moradabad, India*

OBJECTIVE: Diffusion Tensor Imaging (DTI) is a new noninvasive MRI technique providing insight into the white matter microstructure. DTI has been found to be useful in demonstrating the focus of epileptiform activity in brain especially in white matter, hence it can be used to plan successful epilepsy surgery. Hence, we conducted a pilot study on seizure patients where focal organic brain lesions were ruled out on conventional MRI. We aimed to assess the role of DTI in various portions of the brain in patients with seizure.

MATERIALS AND METHODS: We evaluated twenty patients with seizure disorder using DTI, conventional MRI and clinical parameters. We compared the final diagnosis achieved by DTI and conventional MRI and correlated with EEG localization.

RESULTS: Fourteen out of twenty patients revealed abnormality on DTI that correlated with EEG correlation. Ten patients had mesial temporal sclerosis while four had focal white matter disease adjacent to focal cortical dysplasia.

CONCLUSION: DTI can serve as an important radiological tool in presurgical evaluation of epilepsy patients which often considered as idiopathic and refractory to medical treatment.

A WORKING MEMORY STUDY ON SMARTPHONE ADDICTION USING FMRI

Nadia Salwa Jalaldin*¹; Azlan Che Ahmad²; Aini Ismafairus Abdul Hamid³

¹*Molecular Imaging, Universiti Putra Malaysia*, ²*Biomedical Imaging, University Of Malaya, Malaysia*, ³*Neuroscience, Universiti Sains Malaysia*

OBJECTIVE: To assess the brain regions that were activated among smartphone addicted group (SMA) and non-smartphone addicted group (NSMA) during working memory (WM) tasks.

MATERIALS & METHODS: Thirty-six first-year undergraduate students of Universiti Putra Malaysia (aged: 19-22) were classified as SMA and NSMA based on their scoring in the Smartphone Addiction Questionnaire. Three conditions of WM task (numbers, visuospatial and alphabets) were given to participants during fMRI. We used Statistical Parametric Mapping 12 software to analyse the fMRI data. Voxels surviving with the uncorrected threshold of $P < 0.001$ were considered significant.

RESULTS: The main effect of group (SMA vs NSMA) showed significant differences. Right inferior frontal gyrus showed significantly higher activation in SMA than NSMA. While right superior frontal cortex, right middle temporal gyrus, right superior temporal gyrus, right angular gyrus, left precuneus and left superior parietal lobule activated significantly in NSMA than SMA. The comparison of brain activation during visuospatial task indicates significantly higher activation in the left superior parietal lobule (SPL) in SMA than NSMA. Number and alphabet condition showed no significant difference in the brain activation between both groups

CONCLUSION: SMA has higher activation in brain regions involving making precise phonological decisions, perceptual tasks and inhibitory control but less activation during decision making, cognitive processing, attention, information processing, awareness and consciousness. SMA gave high attention in visual spatial where SPL processes and preserves visual attention and shift the attention from one item to another.

MR PERFUSION CAN BE THE LITTLE KEY TO OPEN THE HEAVY DOOR OF CNS LYMPHOMA

Namrata Pal*¹; Sandip Paria²; Col Sunita Dashottar²

¹Radiodiagnosis, King George Medical College, India, ²Radiodiagnosis, Command Hospital, Central Command, India

OBJECTIVE: Primary CNS Lymphoma (PCNSL) accounts for 1–5% of all brain tumors. The incidence rates are increasing among immunocompetent patients. Immunocompromised patients have an increased risk. Early diagnosis of CNS lymphoma is helpful for proper management in both immunocompetent and immunocompromised individuals. Although CNS lymphomas may have characteristic imaging findings on traditional MR imaging, none of these will unequivocally differentiate CNS lymphoma from other intraaxial brain neoplasms (eg, metastases, malignant gliomas etc.). The importance of revascularization through angiogenesis for tumor growth has led to a growing interest in novel imaging techniques to assess tumor vascularity.

MATERIALS & METHODS: The retrospective study included 20 patients with intraaxial brain tumours who are referred to the department of radiology & imaging of a tertiary care hospital. Histopathologically, 7 patients were diagnosed as glioblastoma, 10 as metastasis and 3 patients as primary CNS lymphoma. Perfusion-weighted DSC-MRI was performed with 3D echo-planar principles of echo shifting with a train of observations applied for perfusion studies, with acquisition of images before, during, and after rapid administration of a contrast bolus. The maximum rCBV were recorded by ROI method.

RESULTS: On evaluating different coordinates generated by ROC analysis, rCBV cut-off came to be 1.5 to differentiate PCNSL from metastasis and glioblastoma. Furthermore, maximum relative CBV being typically lower in lymphomas than in other brain tumors can help to differentiate glioblastomas and metastases from lymphomas.

CONCLUSION: MR perfusion will play an important role in the planning of new targeted therapies and for the monitoring of treatment response.

**CORRELATION BETWEEN FRACTIONAL ANISOTROPY AND MEAN
DIFFUSIVITY ON DIFFUSION TENSOR IMAGING WITH HISTOPATHOLOGY
GRADING IN PRIMARY INTRACRANIAL TUMOR**

Fransisca Rika Andriani*¹; Sri Andreani Utomo²; Rosy Setiawati²; Dyah Fauziah³

¹Radiology, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia, ²Radiology, Faculty of Medicine Universitas Airlangga, Dr. Soetomo General Hospital, Surabaya, ³Pathological Anatomy, Faculty of Medicine Universitas Airlangga, Dr. Soetomo General Hospital, Surabaya, Indonesia

OBJECTIVE: Diffusion tensor imaging (DTI) has been studied to evaluate pathological changes in brain tumors. This study was to examine whether there is a correlation between fractional anisotropy (FA) and mean diffusivity (MD) on DTI with histopathology grading in the primary intracranial tumor.

MATERIALS & METHODS: We performed a retrospective-observational analytical study of 35 primary intracranial tumor patients which had been examined with DTI in 1.5T MRI. FA and MD values were measured by placing ROI in intratumoral (IT), peritumoral (PT) and normal area. Tumor's histopathologies were classified into low and high grades. A correlation test was performed to examine whether there is a correlation between FA and MD with tumor histopathology grading and AUC ROC test was done to evaluate whether there is significance cut off value.

RESULTS: There was a strong correlation between FA IT and weak correlation between MD IT with primary intracranial histopathology tumor grading. Cut off value of FA IT was 0.1196 ($p=0.002$), MD IT was 1.0397 ($p=0.004$) and conversely, there was no correlation between FA PT and MD PT with tumor histopathology grading. Meningioma and glioma samples were separately calculated and the obtained cut off value for FAIT in meningioma was 0.153 ($p = 0.007$), MDIT was 0.9503 ($p = 0.005$), FAIT in glioma was 0.1038 ($p=0.015$) and MDIT was 1.8950 ($p = 0.048$).

CONCLUSION: FA IT and MD IT values can be used to differentiate between low and high-grade primary intracranial tumors with different cut off values for each histopathology tumor type.

BRAIN MRI MORPHOMETRY IN CORRELATION WITH NEUROCOGNITIVE FUNCTION FOLLOWING MILD TRAUMATIC BRAIN INJURY (MTBI)

Norhamimah Mohd Noor*¹; Norlisah Ramli², Norhamizan Hamzah², Kartini Rahmat², Tan Li Kuo², Vairavan Narayanan²

¹*Department Of Biomedical Imaging, Hospital Sultan Haji Ahmad Shah, Temerloh, Malaysia,*

²*Department Of Biomedical Imaging, University of Malaya, Malaysia*

OBJECTIVE: The main objective is to evaluate the BCT differences in between healthy subject and mTBI patient and its correlations with neurocognitive performances.

MATERIALS & METHODS: 65 mTBI patients (3 months post injury) and 20 healthy controls [HC] underwent MRI brain and Neuropsychological Assessment Battery-Screening Module (S-NAB) in term of 5 cognitive domains (attention, language, executive function, memory and visual spatial). mTBI group was divided into recovered [R] (S-NAB >85) and non-recovered [NR] (S-NAB <85). Data were processed using FreeSurfer Software. The relations between BCT and neurocognitive deficit were measured with Spearman Correlation.

RESULTS: At 3 months, there are reduced language (82.4) with borderline attention (90.6) and executive function (87.27) for mTBI group. Abnormal language (78.48), attention (85.45) and executive functions (83.66) in NR group. For R and HC groups, all 5 cognitive domains remained normal. mTBI patients had significantly ($p < 0.050$) thinner cortex in left inferior parietal (4658.60mm^2 vs 5037.70mm^2), left paracentral (1523.40mm^2 vs 1624.30mm^2), right fusiform (3017.27mm^2 vs 3262.45mm^2) and right pars triangularis (1497.72mm^2 vs 1643.50mm^2) structures compared to HC. There is a trend of decreasing BCT in the R vs NR in the above structures. Thinner cortex of left inferior parietal and right pars triangularis which coincides with language deficit as well as in right fusiform which affecting attention function. We found a significantly positive correlation between left inferior parietal cortex thickness and language function ($r = 0.428$, $p = 0.030$).

CONCLUSION: Our findings imply that at 3 months post mTBI, thinner cortex is seen in areas coinciding with neurocognitive deficit.

ADVANCE IMAGING AS BIOMARKER FOR MILD TRAUMATIC BRAIN INJURY COGNITIVE OUTCOME: AN INTERVENTION STUDY

Norhamizan Hamzah*¹; Tan Li Kuo²; Nor Asiah Muhamad³; Nor Atikah Mustapha¹; Nur Adibah Mohammad Tahir¹; Avril Drummond⁴; Roshan Das Nair⁵; Mazlina Mazlan¹; Vairavan Narayanan⁶; Norlisah Ramli²

¹Rehabilitation Medicine, University Of Malaya, ²Biomedical Imaging, University Of Malaya, ³National Institute Of Health (NIH), Ministry Of Health, Malaysia, ⁴Faculty Of Medicine And Health Sciences, University Of Nottingham, ⁵School Of Medicine, University Of Nottingham, United Kingdom, ⁶Surgery, University Of Malaya, Malaysia

OBJECTIVE: To measure the white matter tract (WMT) changes via Diffusion Tensor Imaging (DTI) and Neurite Orientation Dispersion Density (NODDI) following cognitive intervention in mild traumatic brain injury (mTBI) adult population.

MATERIALS & METHODS: Adults (18-60 years old) with mTBI due to road traffic accident, no previous history of head trauma and abnormal cognition at 3 months injury, were included. They were assigned to treatment groups 1) structured cognitive rehabilitation (IG) and 2) best-care group (BG). Neuropsychological Assessment Battery (S-NAB), DTI/NODDI and functional outcomes performed at pre- and post-treatment.

RESULTS: Treatment groups improve overall cognitive functions (IG $p < 0.000$, Cohen's d 0.84; BG $p = 0.020$, Cohen's d 0.51). At 3 months injury, DTI and NODDI parameters were all low for IG ($p < 0.050$), as compared with healthy controls, reflecting axonal degeneration and possible remyelination. At 6 months, more established microstructural damages had occurred with low FA and AD, high MD and RD, low ICVF, ODI and ISOVF ($p < 0.050$). CG had delayed but similar changes to IG with high FA at 3 months injury but persistently low for other parameters at 6 months ($p < 0.050$). Comparatively, spontaneously recovered group, reported highly myelinated and aligned WMT (high FA and AD, low ODI; $p < 0.050$) but with a mild degree of axonal degeneration/demyelination (high MD and RD, low ICVF; $p < 0.050$) at 6 months injury.

CONCLUSION: Both DTI and NODDI were highly responsive to microscopic changes of WMT at different injury timelines for mTBI.

INTRACRANIAL GADOLINIUM DEPOSITION FOR GADOLINIUM BASED CONTRAST AGENTS (GBCAS) IN PEDIATRIC POPULATION SEEN ON MRI

Aidura Eizwanie Abdul Wahab*¹; Kartini Rahmat¹; Norlisah Ramli¹; Roziah Muridan¹; Tan Li Kuo¹

¹*Biomedical Imaging, University Malaya, Malaysia*

OBJECTIVE: To assess intracranial gadolinium deposition within the dentate nucleus in pediatric MRI brain using both linear and macrocyclic gadolinium contrast agents (GBCAs) by automated analysis.

MATERIALS & METHODS: This is a single centre study of pediatric patients that underwent 3 or more GBCAs enhanced MRI for both linear and macrocyclic GBCAs. Out of 80 patients acquired, 60 patients underwent linear GBCAs and 20 patients underwent macrocyclic GBCAs. Data for the study was collected from year 2009 to July 2017 for linear GBCAs and from August 2017 to 2019 for macrocyclic GBCAs. Dentate nucleus to pons ratio signal intensity was evaluated on an unenhanced T1 weighted MR images using an automated analysis (Spatially Unbiased Atlas Template- SUIT Toolbox). Data was analysed using SPSS v25.0.

RESULTS: Statistical analysis using Repeated Measure analysis, considering patient's gender, age, exposure to chemotherapy, radiotherapy as well as interval between initial and last scan, it shows significant different (p value = 0.010) in the dentate nucleus to pons (DN/P) ratio (mean= 1.027 and 1.063 in the initial and last scans respectively) in the left dentate nucleus of linear GBCA group, in keeping with gadolinium deposition. In macrocyclic GBCA group, no significant different of DN/P ratio to suggest intracranial gadolinium deposition.

CONCLUSION: Automated quantitative analysis evaluation of the dentate nucleus to pons ratio done in the pediatric brain demonstrate evidence of gadolinium deposition in linear GBCA but not in macrocyclic GBCA after multiple administration of contrast agent.

PROBABILISTIC FIBRE TRACKING IN HIGH-VS LOW-GRADE GLIOMA

Seow Pohchoo*¹; Vairavan Narayanan²; Jennie Wong¹; Kartini Rahmat¹; Norlisah Ramli¹

¹*Department of Biomedical Imaging, University of Malaya, ²Surgery, University of Malaya, Malaysia*

OBJECTIVE: We investigated the white matter (WM) tract distribution and diffusion tensor imaging (DTI)-derived tensor metrics in the tumour and peri-tumour regions between low- (LGG) and high-grade gliomas (HGG).

MATERIALS & METHODS: Magnetic resonance imaging (MRI) using a standard tumour protocol with DTI of forty-two glioma patients were acquired. The tumour region and peri-tumour mask were delineated using the snake model. Tractography was performed to evaluate the WM tracts in the selected regions via probabilistic tracking. DTI indices were investigated through mapping of WM tracts and tumoural masks in LGG and HGG.

RESULTS: Significant differences were seen in the planar tensor (C_p) of peri-tumour regions in LGG and HGG. The mean diffusivity, axial diffusivity (AD) and pure isotropic diffusion demonstrated significant differences ($p < 0.05$) between LGG and HGG for the WM tracts in solid-enhancing regions. In the solid non-enhancing regions, fractional anisotropy, AD, pure anisotropic diffusion (q), total magnitude of diffusion tensor (L), relative anisotropy, C_p and spherical tensor (C_s) were significantly different for the affected WM tracts. Intra-lesional tracts were seen suggesting preservation of the WM integrity in all grades. In most cases of GBM, the WM tracts were not completely destroyed but found intact inside the tumour.

CONCLUSION: Probabilistic fiber tracking revealed the existence of WM tracts inside tumour core for all grades of glioma. The preoperative identification of WM tracts and its characterization of the DTI-metrics provide insights into regional WM tracts impairment and facilitate neurosurgical planning in brain tumour.

SREBPs GENE EXPRESSION PROFILING FOR CHARACTERISATION OF GLIOMA : A PRELIMINARY STUDY

Khairunnisa Abdul Rashid*¹; Norlisah Mohd Ramli¹; Kamariah Ibrahim²; Seow Poh Choo³; N Vairavan N.V.V.E Narayanan⁴; Jeannie Wong Hsiu Ding¹; Tan Li Kuo¹; Azlina Ahmad Annuar²

¹*Department Of Biomedical Imaging, Faculty Of Medicine, University Of Malaya,* ²*Department Of Biomedical Science, University Of Malaya,* ³*Department Of Diagnostic Radiology, Singapore General Hospital,* ⁴*Department Of Surgery, University Of Malaya, Malaysia*

OBJECTIVE: We aim to investigate the relationship between lipid-imaging profiles and sterol regulatory element binding proteins (SREBPs) gene expression in diffuse gliomas.

MATERIALS AND METHODS: A total of 24 glioma patients with grade II (N=12) and grade IV (N=12), and 6 control samples were studied in this preliminary study. All patients underwent a standard pre-operative MRI tumour protocol. The lipid fractions (LF) were derived from the segmented non-enhancing tumour regions overlaid on the constructed lipid map. SREBPs gene expression analysis was performed using quantitative real-time PCR.

REPORT: The LF of the solid non-enhancing region was slightly higher for grade IV than grade II. Statistical analysis revealed negative correlation between LF value with SREBP1 expression ($r=-0.731$, $p=0.025$) and SREBP2 expression ($r=-0.636$, $p=0.066$). In contrast, LF value was positively correlated with SREBP1 expression ($r=0.196$, $p=0.709$) and SREBP2 expression ($r=0.262$, $p=0.616$). Additionally, there was a significant difference between the SREBP1 and SREBP2 gene expression in grade II and grade IV glioma with p-value of 0.024 and 0.021 respectively. Our analysis shows that the expression of SREBP1 is 10-fold higher in grade II in comparison with grade IV. SREBP2 expression is 6-fold higher in grade II than in grade IV.

CONCLUSION: Overall, upregulation of SREBP in grade II glioma suggest that lipid and cholesterol metabolism is highly activated due to excessive demands of low-grade glioma cells to proliferate while these activities are suppressed in the late stage of glioma. SREBP1 and SREBP2 may serve as radiogenomics marker for glioma.

IMAGING PATTERN AND ARTERIAL SIGNAL LABELLING (ASL)PERFUSION IN POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES).

Savith Kumar*¹; Apurva Javalgi¹

¹*Intervention Neuroradiology, Apollo Hospitals, Bangalore, India*

OBJECTIVE: PRES is a clinico-radiological disorder characterised mainly by vasogenic edema in the posterior parietal and occipital poles. Two theories are proposed as mechanism - one being hypertension with autoregulation failure and hyperperfusion and another being vasoconstriction and hypoperfusion. Our purpose was to identify various imaging patterns, ASL perfusion characteristics and to extrapolate associations, if any with etiology.

MATERIALS AND METHODS: The lesion distribution, diffusion restriction, hemorrhage and perfusion characteristics of PRES along with the various clinical presentation and etiologies were analyzed retrospectively in 26 patients from Jan 2018 to Jan 2021, at tertiary care center in Bangalore, India.

RESULTS: Out of the 26 patients evaluated(M:F 4:22), most common clinical presentation was seizures (21/26-80%). Most common etiology was found to be hypertension (15/ 25(60%);10 accelerated hypertension(66%), 5 eclampsia(33%)) followed by drug induced(6/25-24%), followed by post-partum period (5/25- 20%).Most common imaging feature was superior frontal sulcus pattern (12/ 26- 46%) followed by posterior parieto–occipital pattern (10/26- 38%). 10 cases had asymmetrical distribution and 13/26 (50%) had central involvement along with other areas. 4/25 had associated hemorrhage. ASL: 12 patients perfusion imaging was performed and all showed elevated perfusion corresponding to the areas of lesion with only 4 having hypertension at presentation. MRI with contrast was done which showed Dural Enhancement in various regions of the spinal cord as well as thickening and enhancement of the left facial nerve.

CONCLUSION: Lesion distribution was seen beyond the typical location of parieto-occipital lobe in majority of cases, most cases showed ASL hyperperfusion irrespective of presence of hypertension at presentation.

SURVEY: AWARENESS OF MEDICAL STUDENTS ON DIAGNOSTIC RADIOLOGICAL EXAMINATION RELATED RADIATION USED IN PAEDIATRIC POPULATION

Ng Chee Guan*¹; Hanani AM¹; Faizah MZ¹; Rozman Z¹

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia*

OBJECTIVE: Children are not small adults. They are generally more radiosensitive. In recent years, request for radiological examinations has increased concordant with the advancement of radiological investigation. Some radiological examinations utilise ionizing radiation such as CT scan. Hence, medical students who are our future clinicians play an important role in radiation protection. A survey was carried out in a local university to determine the level of knowledge in radiological examination related radiation among medical students.

MATERIALS & METHODS: A total of 204 medical students from 4th and 5th year participated in this survey. This survey was carried out in a form of questionnaire. The questionnaire was made up of two sections, which include demographic data and knowledge of diagnostic radiological examination related radiation.

RESULTS: 88.7% of the participants were unaware and do not know about ALARA (as low as reasonably achievable). There were 10 questions, testing on the participants' knowledge regarding which radiological examinations utilise ionizing radiation. Out of the 10 questions, 68.1% of participants were able to correctly answered 6 or more questions. Only 21.6% of respondents were able to correctly determine the number of CXRs equivalent radiation dose for CT head in children.

CONCLUSION: In general, more than half of the medical students are aware of the usage of ionizing radiation in diagnostic medical examination. However, most of them are not exposed to the radiation protection concept i.e ALARA which need to be introduced to them in the medical curriculum for better understanding of radiation protection principle.

ESTABLISHING DIAGNOSTIC REFERENCE LEVELS FOR COMPUTED TOMOGRAPHY OF HEAD IN PEDIATRIC POPULATION

Priyanka*¹; Rajagopal K V²; Suresh Sukumar³

¹Medical Imaging Technology, Manipal College of Health Professions, India, ²Department of Radio Diagnosis & Imaging, Kasturba Medical College, Manipal Academy of Higher Education, Karnataka, India, ³Department of Medical Imaging Technology, Manipal College of Health Professions, Manipal Academy of Higher Education, Karnataka, India

OBJECTIVE: Pediatric CT has been increased with the advancements in CT. Radiation dose in CT pose major adverse effects in pediatrics. The purpose of study is to establish Diagnostic Reference Levels (DRL's) for pediatric population undergoing CT head in 128 slice CT and compare with Internationally recommended DRLs.

MATERIALS & METHODS: This is a prospective study. A total 60 pediatric patients referred for CT head was included in study and were divided into two age groups: < 1 year and 1-5 years. Uncooperative patients were excluded from study. Scanning was performed by 128 slice Philips Incisive CT scanner using standard pediatric head protocol. Dose indices such as Volumetric Computed Tomography Dose Index (CTDIvol) and Dose Length Product (DLP) was noted from CT console. Effective dose was calculated by multiplying DLP with conversion factor. 75th percentile of CTDIvol and DLP was calculated to establish DRL's and compared with Internationally recommended DRLs.

RESULTS: 75th percentile of CTDIvol and DLP for pediatric CT head was 15.11mGy and 320.76mGy.cm for <1 year and 19.75mGy and 543.59 mGy.cm for 1-5 years age group respectively. The mean effective dose was: 3.52mSv and 3.58mSv for <1 year and 1-5 years age group respectively.

CONCLUSION: DRLs for pediatric CT head was higher for both the age groups compared to European and other Internationally recommended DRL's. Therefore, our study concludes that tailored protocol with optimum exposure parameters depending on the patient age and size must be used to obtain optimum diagnostic image quality with minimum radiation dose to the patients.

ASSESSMENT OF ORGAN DOSE AND IMAGE QUALITY OF CT BRAIN EXAMINATION USING 1-YEAR-OLD ANTHROPOMORPHIC PHANTOM

Nor Azura Muhammad*¹; Muhammad Khalis Abdul Karim¹; Jeannie Hsiu Ding Wong²;
Hasyma Abu Hassan³

¹*Department Of Physics, Universiti Putra Malaysia,* ²*Department Of Biomedical Imaging, University Malaya, Malaysia,* ³*Department Of Imaging, Universiti Putra Malaysia*

OBJECTIVE: Lack of awareness and optimization practice among radiology personnel also might increase the probability of higher radiation exposure to the patients. The purpose of this study is to investigate the radiation dose in the radiosensitive organ and image quality in CT Chest-Abdomen-Pelvis (CAP) examination.

MATERIALS & METHODS: We evaluate the organ dose by using 1-year-old anthropomorphic phantom and thermoluminescence dosimeter (TLD). The study was performed on 64 slices multidetector CT scanner (MDCT) Siemens Definition AS (Germany) by applying six different CT protocols (P1 to P6). The tube potential of P1, P2 and P3 were fixed at 100 kVp and P4, P5 and P6 were fixed at 80kVp with various tube current reference value (ref.mAs). Three TLD chips were inserted into the phantom slab no 7, 9, 10, 12, 13 and 14 to represent thyroid, lung, liver, stomach, gonads and skin respectively. The image quality was assessed by using Radiant DICOM Viewer software to extract noise value from each protocol.

RESULTS: As a result, a decreased organ dose was noted along with reducing tube voltage and tube current and slightly increase in the noise index value. The organ with the highest dose was found in the liver in all CT parameter setting with a mean range 10.5 – 3.6 mSv while the range of noise value in all CT parameter setting are 11.38HU- 23.4HU.

CONCLUSION: Optimization of CT acquisition parameter led to reduced radiation dose in radiosensitive organ in CT examination.

4D CT AORTOGRAM : A REVOLUTIONARY TECHNIQUE FOR PRE-SURGICAL EVALUATION OF EXTRA CARDIAC ANOMALIES IN PAEDIATRIC PATIENTS.

Nivedita Divekar*¹; Aniruddha Joshi¹

¹*Radiodiagnosis, Deenanath Mangeshkar Hospital & Research Center, Pune, India*

OBJECTIVE: To assess diagnostic yield of 4D CT Aortogram for pre-surgical evaluation of extra cardiac anomalies in paediatric patients.

MATERIALS & METHODS: 4D CT aortograms performed in paediatric patients in last 2 years were reviewed. We performed non ECG-gated 4D CT aortogram on 128 slice DECT scanner. Successive time frames were obtained by sequential scanning, followed by independent reconstruction of each 3D dataset. Post surgical outcomes were evaluated. Total number of aortic, other associated abnormalities and incidental findings like collaterals were calculated. This data was compared to the routine CT aortograms (42 cases) done in the previous years.

RESULTS: 73 cases of 4D aortogram were analysed, out of which 8 cases of clinical suspicion were normal. 60 patients had aortic abnormalities. Out of these, 17 had associated pulmonary vascular and/or vena cava abnormalities. 4D acquisition helped in detection of small branch vessels and collaterals in 21 cases. Statistical analysis stated significant variance (p value <0.050) of detection of small vessels among both the techniques.

CONCLUSION: 4D CT gave very high spatial and temporal resolution of the anatomical variants. Cine viewing allowed selection of the best phase for a given abnormality and provided invaluable dynamic information that was not obvious on static images. Being a fully automated technique, this method is not operator dependent and helps in reducing radiation dose by tailoring dose to patient's morphology. In 28.7% of cases, 4D CT could identify small branch vessels and collaterals which would be difficult to identify on routine multislice CT angiography done on same scanner in previous years.

MRI OF CORPUS CALLOSUM IN PATIENTS WITH AUTISM SPECTRUM DISORDER IN KUANTAN

Rajeev Shamsuddin Perisamy*¹; Azian Abd Aziz¹; Nora Mat Zin¹; Taufiq Hidayat Hassan¹;
Mohamad Shahrir Abdul Rahim¹

¹*Radiology Department, International Islamic University Malaysia Medical Centre*

OBJECTIVE: To study the integrity of the corpus callosum among autistic children population in Kuantan, Pahang, Malaysia, which is determined by MRI's diffusion tensor imaging (DTI) parameters, fractional anisotropy (FA) and radial diffusivity (RD). These parameters represent the direction dependence of water molecules diffusion within the measured tissues. As corpus callosum is saturated with brain white matter tracts, the water molecules diffusion here will be direction dependent. Studies involving foreign populations have shown that there is distortion in the corpus callosum's DTI parameters in autistic population indicative of microstructural distortion. Whether similar findings will be observed in our local autistic population still remains a question. Other gross corpus callosum parameters such as its thickness, length and size are also studied.

MATERIALS & METHODS: 28 randomly selected autistic children under the International Islamic University Malaysia Medical Centre (IIUMMC), Kuantan follow-up are subjected to MRI scan. Limited MRI sequences including DTI are obtained and analysed. FA, RD, midsagittal thickness at the genu, body and splenium of the corpus callosum as well as its midsagittal length and size are measured. Data are tabulated according to age followed by statistical analysis.

RESULTS: A weak negative correlation is found between the age and the FA of the corpus callosum. Other parameters such as the thickness, length and size show weak positive correlation with age.

CONCLUSION: Although the correlation is weak, our study shows that there is evidence of distortion of corpus callosum white matter microstructure in children with autism spectrum disorder in Kuantan, Pahang.

**SECOND GENERATION OF DUAL SOURCE COMPUTED TOMOGRAPHY FOR
EVALUATING CORONARY ARTERY LESIONS IN VIETNAMESE PEDIATRIC
PATIENTS WITH KAWASAKI DISEASE**

Nguyen Thi Thanh Huong*¹; Nguyen Ngoc Trang²

¹*Radiology Department, Vietnam National Children's Hospital,* ²*Radiology Department, Bach Mai University Hospital, Vietnam*

OBJECTIVE: To evaluate coronary artery lesions (CAL) in pediatric patients with Kawasaki disease by DSCT 256 detectors then comparing with the measurements of 2D echocardiography (2DE).

MATERIALS & METHODS: 33 children (17 males, 16 females) with Kawasaki disease underwent DSCT 256 detectors at Bach Mai Hospital and Vietnam National Children's Hospital from December 2015 to September 2019. The average effective dose of DSCT and 4-point subjective imaging quality was collected. The location, number and size of coronary aneurysm were independently evaluated by DSCT and 2DE. Bland – Altman analysis was used to evaluate the agreement of aneurysms measurements between DSCT and 2DE.

RESULTS: 96.7% (232/240) coronary artery segments had good imaging quality (score ≤ 3). Average effective dose of DSCT was 1.58 ± 0.56 mSv (0.77–3.20). Coronary aneurysm in 1 segment, 2 segments and 3 segments were 85.1%, 12.7% and 2.1%, respectively. The medium and giant CAA ratio was 72.3%. The mean \pm SD aneurysm diameter measured by DSCT and 2DE was 7.18 ± 2.72 mm and 7.16 ± 2.55 mm, respectively. The mean \pm SD aneurysm length measured by DSCT and 2DE was 13.49 ± 8.65 mm and 13.28 ± 8.58 mm, respectively. Bland – Altman plot showed a good agreement between DSCT and 2DE.

CONCLUSION: DSCT is a feasible modality with excellent imaging quality and low effective dose exposure for rapid and accurate assessment of CAL in infants and children due to Kawasaki disease.

IMAGING SPECTRUM OF COMMON AND UNCOMMON RENAL MASSES IN PEDIATRIC POPULATION

Puneet Gupta*¹; Kush Rajender²

¹Radiology, ASCOMS, India, ²Radiology, ESIC, India

LEARNING OBJECTIVE:

- To review the ultrasound and Multidetector computed tomography (MDCT) findings in benign and malignant pediatric renal masses
- To emphasize the role of MDCT in paediatric renal masses

BACKGROUND: Incidence of pediatric renal masses has significantly increased in the last few decades owing to the widespread use of imaging modalities like USG and MDCT. Pediatric renal masses are mostly neoplastic in nature with Wilms tumour being the commonest. Earlier, most of renal masses were considered Wilm's tumour, however pathological updates revealed its several different subtypes including clear cell sarcoma, malignant rhabdoid tumor, mesoblastic nephroma and etc. This article aims at describing the clinical presentation and imaging findings of different pediatric renal masses.

FINDINGS AND/OR PROCEDURE DETAILS: Common pediatric renal masses include :

- Wilms tumour is the most common pediatric renal malignancy. Its uncommon malignant variants include mesoblastic nephroma (in neonates), clear cell sarcoma (frequently associated with skeletal metastases) and rhabdoid tumor of the kidney (associated with brain neoplasms)
- Nephroblastomatosis is difficult to differentiate from leukaemic infiltrates as both show low-attenuating focal parenchymal lesions
- Cystic nephroma and cystic partially differentiated nephroblastoma (CPDN) are unilateral benign masses, grossly identical and cannot be distinguished at imaging alone, and hence needs histopathological correlation.
- Renal Lymphoma: B-cell type non-Hodgkin lymphoma is most common type and it may mimic RCC.
- Others

CONCLUSION: MDCT plays an important role in diagnosing pediatric renal masses as well as depicting their extent, involvement of vascular structures, pelvicalyceal system and status of contralateral kidney, thus helps in planning appropriate therapy and better management.

MAGNETIC RESONANCE IMAGING EVALUATION OF PEDIATRIC LEUKODYSTROPHIES IN NORTH WEST INDIA: A PROSPECTIVE STUDY

Manik Mahajan*¹; Puneet Gupta²

¹Department of Radiology, GMC Jammu, India, ²Department of Radiology, ASCOMS Hospital, Jammu, India

OBJECTIVE: Leukoencephalopathies are disorders which selectively involve the cerebral white matter. The term “leukodystrophies” refer to the disorders with primary white matter involvement with demonstrable biochemical or molecular defect and usually with a progressive clinical course. The clinical and radiological clues may be very helpful in guiding the investigations of a child with suspected leukodystrophy. Hence, the study was performed to describe the pattern and radiological profile of leukodystrophies in North-West India using Magnetic Resonance Imaging.

MATERIALS & METHODS: Thirty cases of Pediatric Leukodystrophies diagnosed on Magnetic Resonance Imaging were evaluated and clinical findings were recorded. The leukodystrophies were categorised into following categories: a) Hypomyelinating disorders, b) White Matter Disorders with Demyelination, c) White matter disorders with vacuolisations, d) Cystic Leukoencephalopathies and e) Miscellaneous. Biochemical Analysis was performed wherever possible and diagnosis was correlated with MRI findings.

RESULTS: Thirty cases of suspected Pediatric Leukodystrophies on MRI were evaluated. Majority of cases were seen less than 5 years of age. White Matter Disorders with Demyelination was the commonest category followed by cystic leukoencephalopathies and hypomyelinating disorders. Biochemical analysis was available in 12 cases only. MRI was able to correctly identify the pathology in 11 cases with a diagnostic accuracy of 91.2%.

CONCLUSION: Pediatric Leukodystrophies have no definite cure and has a progressive clinical course. A simplified approach to diagnose common leukodystrophies on MRI is required for early diagnosis, appropriate genetic counselling and further management.

PILOT STUDY: LONGITUDINAL STUDY OF PITUITARY GLAND, HIPPOCAMPUS, AMYGDALA AND CORPUS CALLOSUM VOLUME IN GROWTH HORMONE DEFICIENCY CHILDREN TREATED WITH GROWTH HORMONES

Low Lee Shien*¹; Norlisah Ramli¹; Li Kuo Tan¹; Jeannie Hsiu Ding Wong¹; Wai Yee Chan¹;
Muhammad Yazid Jalaludin²; Azriyanti Anuar Zaini²

¹*Department of Biomedical Imaging, University of Malaya,* ²*Department of Paediatrics, University of Malaya, Malaysia*

OBJECTIVE: To assess volumetric changes in the pituitary gland, basal ganglia, corpus callosum, thalamus, hippocampus and amygdala in children with isolated growth hormone deficiency (IGHD) and its response to treatment.

MATERIALS & METHODS: This is a longitudinal study of eight IGHD patients (2 male, 6 female) with mean age of 10.7 ± 1 years and age-matched control group. Volume of pituitary gland, basal ganglia and limbic structures were obtained using 3T MRI (Siemens Magnetom, Munich or GE Signa HDxt, Boston) voxel-based morphology. Left hand bone age was assessed using the Tanner-Whitehouse method. Follow up comparison imaging was done after average of 1.84 ± 0.4 years on recombinant human growth hormone therapy (rhGH).

RESULTS: Patient with IGHD have smaller mean volume of the pituitary gland, hippocampus and amygdala compared to control. On follow-up, these structures volume normalize after rhGH therapy. IGHD on rhGH therapy showed large effect size in volumetric changes across time for pituitary gland ($d=1.84$), hippocampus (Lt: $d=0.88$ and Rt: $d=0.93$) and amygdala (Lt: $d=1.18$ and Rt: $d=0.97$). The right thalamus and corpus callosum also showed similar growing trend, however, not amounting to normal value (as compared to age-matched control) in response to rhGH therapy. There were changes towards normalisation of bone age deficit of IGHD in response to rhGH therapy ($M=1.07$, 95% CI [0.35 to 1.79]), $t(8)=3.52$, $p=0.010$.

CONCLUSION: Pituitary gland, hippocampus and amygdala volume in IGHD population are smaller than age-matched control groups and show the most response to GH therapy.

EFFECT OF CT HEAD REFERRAL CRITERIA FOLLOWING MILD HEAD INJURY ON DIAGNOSTIC PERFORMANCE.

Nur Atikah Mustafa*¹; Raja Rizal Azman¹; Roziah Muridan¹; Mohammad Nazri Md Shah¹

¹*Department of Biomedical and Imaging, Faculty of Medicine University of Malaya, Kuala Lumpur, Malaysia*

OBJECTIVE: Paediatric mild traumatic brain injury(TBI) is one of the common presentation in Emergency Department but there is no specific universally accepted guideline. Commonly used guidelines in our centre is the PECARN guidelines. We aim to evaluate retrospectively the effects of this guidelines on diagnostic performance and if the benefit varied according to level of experience of referring clinicians as well as time the referral was made.

MATERIALS & METHODS: 31 paediatric patients(age <2) were retrospectively included in the study. Request forms were reviewed to determine whether the CT head met the criteria in line with PECARN guidelines. Additional information regarding time of referral as well as referring clinicians' particular were obtained. The positive predictive value(PPV) for the population before and after the criteria were applied were then calculated.

RESULTS: Following retrospective application of the PECARN criteria, PPV improved from 19.4 to 40.0(presence of fracture) and 16.1 to 42.9(presence of haemorrhage). Following the retrospective application of the PECARN criteria, PPV for referrals made during working and on call hours improved from 7.2 and 29.4 to 14.3 and 62.5(presence of fracture) and 21.4 and 11.1 to 42.9 and 25(presence of haemorrhage). Following the retrospective application of the PECARN criteria, PPV for referrals made by the less and more experienced clinicians improved from 21.1 and 16.7 to 36.4 and 50(presence of fracture) 21.1 and 8.3 to 36.4 and 25(presence of haemorrhage).

CONCLUSION: CT head referral criteria following mild head injury improves the PPV for detection of intracranial haemorrhage or skull fracture. Benefit was equal for referrals made during oncall or working hours and from more or less experienced clinicians.

**NORMOGRAM ON TRANSFONTANNELLE DOPPLER INDICES AND
CEREBRAL BLOOD FLOW VELOCITIES IN HEALTHY PRETERM AND TERM
NEONATES WITHIN 72 HOURS OF LIFE**

Kajal Limbad*¹; Bhautik Kapadiya¹; Chetan Mehta¹

¹*Radiodiagnosis, Baroda Medical College and SSG Hospital, India*

OBJECTIVE: To generate normal reference data for anterior and middle cerebral artery blood flow velocity and resistance index in preterm and term neonates as a baseline. Grey-scale ultrasound for brain parenchyma is non-invasive, portable, inexpensive and gives realtime assessments. However, many cerebral lesions are circulatory in origin so it is important to study Doppler which provide ideal tool for diagnosis, follow-up and management of brain damage caused by perinatal asphyxia, infection, developmental and cerebrovascular disorders.

MATERIALS AND METHODS: An observational study of transfontanelle and transtemporal pulsed wave Doppler of 715 neonates born at gestational age 27-42 weeks within 72 hours of life. Parameters measured were peak systolic velocity(PSV), End diastolic velocity (EDV), time average maximum and mean velocities (TAMAX & TAMEAN), Pulsatility index(PI) and resistive index(RI) in anterior and middle cerebral arteries.

RESULTS: The mean PSV, EDV and TAMAX were 27.78 ± 11.45 , 7.69 ± 2.62 , 15.56 ± 5.42 and 27.86 ± 0.16 , 5.19 ± 0.87 and 20.95 ± 7.19 for ACA and MCA, respectively. The mean PI and RI were 1.50 ± 0.39 , 0.76 ± 0.07 for ACA and 1.74 ± 0.16 , 0.83 ± 0.005 for MCA.

CONCLUSION: This is the largest study to establish a normative database for above mentioned indices. CRBV are directly proportional to gestational age and birth weight. Higher RI seen in preterm as compared to term neonates. No statistically significant differences on Doppler parameters in relation to type of delivery, sex and postnatal age. No correlation was observed between Doppler indices and gestation as component velocities all increase with advancing gestation. These data are important for facilitating the correct interpretation of abnormal findings.

CT IMAGING FEATURES DIFFERENTIATING BLAND VS TUMEROGENIC PORTAL VEIN THROMBOSIS : PICTORIAL REVIEW.

Shahmeer Khan*¹; Basit Salam¹; Dawar Khan¹; Ayesha Shoukat²; Naqibullah Foladi³

¹ Radiology, Aga Khan University Karachi, Pakistan, ²Pharmacology, Karachi Institute Of Medical Sciences, Pakistan, ³Radiology, French Medical Institute For Mothers And Children, Afghanistan

LEARNING OBJECTIVE:

- To discuss the appearance of tumerogenic and bland portal vein thrombosis on computed tomography.
- To discuss literature review regarding sensitivity and specificity of these differentiating features.

BACKGROUND: Portal vein thrombosis is a fairly common complication of chronic liver disease along with increased prevalence in patients with hepatoma. Its recognition is important as it changes the LIRAD category along with tumerogenic thrombosis being a contraindication to liver transplant. Past literature has described certain features which help differentiate tumerogenic from bland thrombosis including thrombus enhancement, venous expansion, neovascularity and thrombus being adjacent to hepatoma. Here we describe a series of three cases with portal vein thrombosis emphasizing the differentiating features between bland and tumerogenic thrombus.

FINDINGS AND/OR PROCEDURE DETAILS: Three patients, known case of chronic liver disease with hepatoma underwent triphasic CT scan of abdomen with hepatoma protocol. All three cases had findings of chronic liver disease with features of portal hypertension, hepatoma and portal vein thombosis. One patient had bland thrombus, while the other patient has tumerogenic thrombus, while in the third case, both types of thrombogenic mechanism co existed in different branches of portal system.

CONCLUSION: It is important to identify portal vein thrombosis as it is a contraindication to liver transplant and changes the LIRADS category of the hepatoma.

IMAGING OF ABDOMINAL AORTIC ANEURYSM (AAA) WITH ULTRASOUND

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Abdominal Aortic Aneurysm (AAA) is a common progressive and potentially lethal vascular .Detection for abdominal aortic aneurysm (AAA) with using ultrasound .The others examination may be use computed tomography and magnetic resonance imaging. Abdominal aortic aneurysm (AAA) treatment option is surgical intervention and endovascular repair .

REPORT: We will report a case rare a man 34 years old with symptom palpable mass in region abdominal umbilical. On physical examination a pulsatile abdominal mass may be palpable ,fatigue,lower back pain. We using a bedside ultrasound with Philip convex probe .

CONCLUSION: Ultrasound is modality used for screening Abdominal aortic aneurysm (AAA).Computer tomography (CT) is generally to be diagnostic modality of choice for the AAA to be charaterized for surgical treatment .

IMAGING OF BLADDER STONE : BEFORE SURGERY AND AFTER SURGERY

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Bladder stone are small mineral deposits that can form in bladder. This allows for minerals such as calcium or magnesium salts, to crystallize and forms stone . Stone bladder stone may pass without treatment, but bigger bladder stone needs surgery . This is a rare case in my country. Detection for this case is using plain abdomen x ray and the others examination with ultrasound bladder .

REPORT: We want to report a case a man had symptom lower abdomen pain, blood in urine, pain during urination , and frequent urination .

CONCLUSION: Bladder stone can detection with used plain abdominal x ray and the next examination using ultrasound bladder.

DIAGNOSTIC DILEMMA IN OVARIAN PREGNANCY : A CASE REPORT AND IMAGING FEATURES

Arif Kamaruddin, Nabilah Khalim*¹; Nyazirah A Wahab²

¹*Radiology Department, Hospital Sultanah Aminah Johor Bahru, Malaysia,* ²*Radiology Department, Hospital Serdang, Malaysia*

INTRODUCTION: Ovarian pregnancy are one of the rare types of ectopic pregnancy with an incidence of in natural conception vary from one in 7,000 to one in 40,000 deliveries and accounts for <3% of all ectopic pregnancies. Ovarian pregnancy is defined as pregnancy which is implanted on the ovary, diagnosis is often made microscopically using Spiegelberg criteria.

REPORT: 42-year-old gravida 4, para 3, at 28 weeks and 2 days of gestation. She presented to a general practitioner clinic with on and off localized right sided abdominal pain for 1 month. Transabdominal ultrasound by the obstetric team reveals a singleton foetus with breech presentation on the left side of the abdomen and placental over the right side. Uterus was empty. Subsequently, she underwent MRI and MRA of the Abdomen which demonstrated an empty uterus. There is a singleton fetus in longitudinal lie located on the left side of the abdomen with the placenta on the right side. The arterial supply of the placenta is likely and solely from branches of the right internal iliac artery. There are two draining veins from the placenta into the inferior vena cava. Delivery methods were planned in which pre surgical occlusion of both internal iliac arteries and midline laparotomy and right salpingo-oophorectom.

CONCLUSION: Ovarian pregnancy associated with very high morbidity and mortality for both the mother and the fetus at advanced gestation. Diagnosis is unsurprisingly difficult in advanced gestation. A high index of suspicion, detailed clinical and imaging examinations are needed to make the diagnosis.

COMPUTED TOMOGRAPHY FINDINGS WITH HISTOPATHOLOGICAL CORRELATION IN INFLAMMATORY, BENIGN & MALIGNANT APPENDICEAL MUCOCELES

Kumail Khandwala*¹; Nida Sajjad¹; Wasim Ahmed Memon¹; Nasir Uddin²

¹Radiology, Aga Khan University, ²Pathology & Laboratory Medicine, Aga Khan University, Pakistan

OBJECTIVE: To identify the computed tomography (CT) features of histopathological proven inflammatory, benign & malignant appendiceal mucocoeles and whether these entities can be differentiated on CT imaging.

MATERIALS & METHODS: Clinical and pathologic data obtained over a 10-year period in 31 patients with appendiceal mucocoeles were reviewed. CT studies were analyzed retrospectively by two radiologists. The appendix was evaluated for morphology, location, presence of mural calcification and internal septations, maximal diameter, wall irregularity and thickness, attenuation, soft tissue thickening and enhancement.

RESULTS: The mean appendiceal diameter was 2.6 cm (1.1-5.4 cm), wall thickness was 2.8 mm (1.1-8.8 mm) and mean attenuation was 28 HU (5-173 HU). Focal cystic dilatation was present in 15 out of 31 patients while 16 patients had generalized dilatation; however, these did not show statistically significant associations with histopathology. Presence of soft-tissue thickening was seen in 19.4% and this showed statistically significant association with malignant mucocoeles (P-0.010). Mural calcification achieved statistical significance in predicting benign mucocoeles (P-0.003). Internal septations were seen in only in benign and malignant mucocoeles (P-0.04). Periappendiceal fat stranding showed statistically significant association with inflammatory mucocoeles with appendicitis (P-0.010). ROC analysis showed best cut-off diameter for diagnosis of inflammatory mucocoeles ≤ 2.2 cm with a sensitivity of 90.0% and specificity of 71.4%.

CONCLUSION: Differentiating inflammatory, benign and malignant mucocoeles can be challenging with CT. Our results show that soft-tissue thickening and internal septations are features most likely to be associated with malignancy. Mural calcification is more associated with benign mucocoeles and periappendiceal fat stranding with inflammatory mucocoeles.

GARGANTUAN HYDRONEPHROSIS -EVADING THE GRADES. A RARE CASE OF MASSIVE HYDRONEPHROSIS UNEXAMPLED TO MEDICAL LITERATURE WITH COINING OF "MAMMOTH FOOT "SIGN FOR GIANT HYDRONEPHROSIS

Nikunj Vikram Choudhary*¹; Kunal G Solanki¹; Hadin Matadar²

¹*Department Of Radiodiagnosis, Sir Takhtsinh Ji Hospital, Government Medical College Bhavnagar Gujarat India,* ²*Department Of Radiodiagnosis, Government Medical College Bhavnagar Gujarat India*

INTRODUCTION: Hydronephrosis is defined as urine filled dilatation of kidney as a result of obstruction in ureter common grading systems are :

- society of fetal ultrasonography
- onen's grading system.

Giant hydronephrosis is a rare entity with less than 500 cases reported in literature worldwide. Radiological diagnostic criteria :

- presence of > 1000ml urine in kidney
- renal pelvis meets midline
- occupies hemiabdomen
- extends for length of 5 vertebrae

Gargantuan hydronephrosis(gargantuan means large in size volume or degree) is term coined by us for massive hydronephrosis of our case , which debunks all criterias of all grade of hydronephrosis maximum dimensions of height -38.23cm, length -29.39cm and width - 22.08cm.

REPORT: A 40 year patient was reffered for ultrasonography of abdomen with history of progressively increasing abdominal distension with pain, persistent hypertension, and constipation.

Ultrasonography

- anechoic lesion obscuring entire abdomen was seen mimicking large mesentric cyst or gross ascites , paper thin cortex gave a clue of hydronephrosis , followed contrast enhanced CT scan was done.
- CT scan revealed massive hydronephrotic left kidney measuring 38.23 x 29.39 x 22.08 Cm with severe thinning of renal parenchyma cause : pelvi-uretric junction obstruction.

CONCLUSION: Volume of left hydronephrotic kidney was calculated using ellepsoid formula=12,989ml (approximately 13 litres). It extends from T6 to S4 (15 vertebrae in height) possibly hydronephrosis with maximum height in world. Giant hydronephrosis resembles the shape of Mammoth's foot, so we have coined mammoth foot sign as a contribution to literature of hydronephrosis.

EMERGING CANCER TRENDS AMONG YOUNG ADULTS. A STUDY OF DISTRIBUTION OF NEWLY DETECTED INTRA-ABDOMINAL CANCER AT THE AGE GROUP OF 25 TO 45 YEARS.

Mohammed Shabir*¹

¹*VPS Lakeshore Hospital, India*

OBJECTIVE: Among 25- to 45-year-old, cancer causes more deaths than any other disease except depression that culminates in suicide. More females in the age group die of cancer than other causes. Cancer trends in young adults, often under 45 years, reflect recent changes in carcinogenic exposures, which could foreshadow the future overall disease burden. Previous studies reported an increase in early onset colorectal cancer, which could partly reflect the obesity epidemic.

MATERIALS & METHODS: This study was carried out in our institute which is one of the largest oncology center in Kerala.

A retrospective study from January 2016 to December 2017 was undertaken on newly detected intra-abdominal cancer (aged 25-45 years).

RESULTS: Totally 610 new cases of cancers were identified in all the age groups. Out of that 179 cases were under the age group of 45 years, which accounts 29.3 % of the total cases. Out of that 57% were females and rest 43 males. Ovarian tumors accounts the most with 21 % of cases followed by 16.7 % each of CA colon and CA rectum.

CONCLUSION: Our findings draw attention to the specific psychosocial and clinical needs that may necessitate support services. Satisfying these needs may help adult onset cancers to minimize the negative consequences of cancer while promoting or supporting positive aspects during an already profound time of developmental change and consequently may improve the quality of life of survivors.

CT IMAGING OF BLADDER INFLAMMATORY MYOFIBROBLASTIC TUMOR: A RARE CASE REPORT IN PEDIATRIC

Taufik Agung Wibowo*¹; Taufik Budianto¹; Sahat Matondang¹; Agus Rizal Ardy Hariandy Hamid²; Budiana Tanurahardja³

¹*Department of Radiology, Faculty of Medicine, Universitas Indonesia,* ²*Department of Urology, Faculty of Medicine, Universitas Indonesia,* ³*Department of Anatomical Pathology, Faculty of Medicine, Universitas Indonesia*

INTRODUCTION: Inflammatory Myofibroblastic Tumors (IMT) is a rare and benign tumor that can arise from respiratory, gastrointestinal, and least common in genitourinary system. Due to similar presentation, it often misinterpreted as malignant tumor. Therefore, radiological imaging supported by histopathological examination played a key role in establishing diagnosis.

REPORT: A 16 years-old girl came to the urology clinic complaining a painless bloody urine. Initial assessment showed severe anemia and suspicion of urinary bladder tumor based on Intravenous Urography (IVU) findings. Further CT scan examination showed a quite large homogenous intravesical mass sized 8,7 x 13,5 x 7,3 cm with progressive delayed enhancement after contrast injection, bilateral hydronephrosis and left hydroureter. No involvement of perivesical fat and lymph nodes enlargement was found. Histopathologic confirmation showed proliferative connective tissue comprising of spindle shaped cells, mild pleomorphic eosinophilic cytoplasm, and partially myxoid stroma consists of chronic inflammatory cells and vessels, well corresponded with an IMT.

CONCLUSION: Although CT cannot rule out the possibility of malignancy, these findings may be valuable in diagnosing bladder IMT and help clinicians to consider further treatment approach. Keywords: inflammatory myofibroblastic tumor; CT scan; histopathological examination.

“MORE THAN MEETS THE EYE” - A CASE OF SCOLIOSIS SECONDARY TO GANGLIONEUROMA

Vanessa A. Almaden*¹; Mateo T. Ilano¹; Victor Q. Alabastro¹

¹*Radiology, De La Salle University Medical Center, Philippines*

INTRODUCTION: The incidence of ganglioneuroma, in the study by S. Shekar and colleagues, is approximately less than 1 per 100, 000, 000 adults with slight female predominance and according to Y. Yang et. al, it represents approximately 0.1 to 0.5 % of total CNS tumors. Retroperitoneal ganglioneuroma with scoliosis is a rare entity with only few data reported accounting to only around 14 cases cited in literature based on a study by Xialo Wang et. al.

REPORT: A 27-year-old female diagnosed with scoliosis, complaining of low back pain with no history of trauma or associated motor or sensory deficit. Plain radiograph of the thoracolumbar spine revealed an s-shaped scoliosis thoracolumbar spine with an incidental mass located in the convex side of the lumbar levoscoliosis. Additional CT scan and MRI were done revealing a retroperitoneal paravertebral mass (ganglioneuroma) arising from the widened right neural foramina of L3-L4. The patient then underwent exploratory laparotomy with tumoral excision. Histopathologic findings confirm ganglioneuroma.

CONCLUSION: Ganglioneuroma is a benign, usually, asymptomatic, slowly enlarging tumor that arises anywhere from the skull base down to the pelvis which grows extensively causing mass effect on adjacent structures. In patients with scoliosis of unknown etiology, especially those showing red flags, a possibility of retroperitoneal mass, especially ganglioneuroma should be considered in the diagnosis. In line with this, imaging studies are necessary for prompt evaluation and early diagnosis.

**PATIENT HABITUS AND RENAL VOLUME HAVE NO EFFECT ON A REDUCED
PATIENT-SPECIFIC CONTRAST MEDIA ADMINISTRATION DURING RENAL
CTA: IMPACT ON CONTRAST MEDIA, RADIATION DOSE AND IMAGE
QUALITY**

Charbel Saade*¹;

¹*Department of Radiology, University of Canberra, Australia*

OBJECTIVE: To investigate the effect of kidney volume, patient habitus and a reduced patient-specific contrast media administration protocol (PSP) on renal artery and parenchymal opacification during renal CTA.

Materials & Methods: IRB approved Renal CTA was performed on 101 patients with suspected renal disease. Contrast media was injected at 4.5 mL/s with a 100 mL saline flush employing PSP. Mean contrast media (CMV) and renal volumes were quantified. The multivariate analysis compared the patient demographics, renal and CMV, and effective radiation dose. The arteriovenous contrast ratio (AVCR) and corticomedullary contrast ratio (CMCR) was calculated for each renal segment employing a student t-test. Regression analyses was performed between each contrast media volume group; 1:<37mL, 2:>37-<50mL and 3:>50mL. Receiver operating (ROC) and visual grading characteristics(VGC) measured the confidence intervals and image quality respectively.

RESULTS: There was no significant difference in patient demographics and radiation dose between each CMV group($p>0.05$). Linear regression analyses demonstrated no statistical significance in the renal vascular across CMV groups. There was no statistical difference in mean opacification values between each kidney ($p>0.05$). Mean AVCR and CMCR had no statistical significance ($p>0.05$) between each kidney with a strong correlation of opacification difference between the renal cortex and medulla in each kidney ($r=0.993$) and renal artery and vein ($r=0.946$). Both ROC and VGC demonstrated strong reader confidence($p<0.03$) and pathology($p<0.0001$) detection respectively.

CONCLUSION: Patient habitus, kidney volume, vascular and parenchymal opacification have no correlation when employing a PSP during renal CTA.

UTERINE NICHE: MRI FINDINGS AND ITS CLINICAL IMPORTANCE.

Mohd Shukry Mohd Khalid*¹; Norazilah Mat Jin²

¹*Department Of Radiology, Universiti Teknologi Mara, Malaysia* ²*Obstetric & Gynaecology, Universiti Teknologi Mara, Malaysia*

INTRODUCTION: Caesarean section rate is on the rise worldwide. While its primary intention is to save lives, it can also create various complications and side effects, including subsequent subfertility. Uterine niche is a defect at the site of cesarean delivery scar. An incompletely healed scar is a long-term complication of cesarean delivery and is associated with symptoms such as postmenstrual spotting, dysmenorrhoea, chronic pelvic pain, dyspareunia and subfertility.

REPORT: We report a case of 38-year-old lady, parity 2+2 with two previous lower section Caesarean section following successful in vitro fertilisation (IVF) respectively. She complained of inter-menstrual bleeding for two years. Bedside ultrasound and subsequent MRI of the pelvis revealed interesting findings.

CONCLUSION: Future pregnancy is a dilemma as she has another precious four freezed embryos from her fourth IVF cycle. The tricky management of her condition will also be discussed.

CORRELATION OF BILIARY STONES AND CHOLELITHIASIS WITH SEVERITY OF ACUTE PANCREATITIS

Aliya Sharif*¹

¹*Radiology, Rehman Medical Institute, Pakistan*

OBJECTIVE: Acute pancreatitis is a sudden inflammatory condition of the pancreas. Although most patients will improve with conservative management, about 5-10% will progress to develop serious complications like multisystem organ failure resulting in high mortality and morbidity. Gall stones remain the most common cause followed by alcohol with about half of UK cases are attributed to gall stones. Although physical examination and laboratory evaluation is the mainstay for detecting pancreatitis, imaging plays a pivotal role in determining the cause, assessing the severity.

MATERIALS & METHODS: This retrospective, cross-sectional study was performed at Rehman medical institute, Peshawar from October 2007 till September 2018, and comprised computerized records and contrast enhanced computerized tomography scan images related to cases of pancreatitis. Modified CTSI was calculated for each patient based on imaging findings.

RESULTS: Of the 332 patients included with acute pancreatitis, 197 were male and 135 were female. Out of these 35 had cholelithiasis (15 female and 20 male) and 21 had choledocholithiasis. (11 female and 10 male). Among 35 patients with gall stones, 8 had mild disease, 20 had moderate and 7 had severe disease. Chi-square and Pearson correlation was performed which came out to be 0.166 and -0.095 respectively which are not significant. Patients who had choledocholithiasis, 5 had mild disease. 12 had moderate and 4 had severe disease. Chi-square and Pearson came out to be 0.442 and -0.064 which are not significant.

CONCLUSION: Hence no significant correlation was observed between cholelithiasis and choledocholithiasis with severity of acute pancreatitis.

A CASE OF BELLY TWIST

Lim Aun Nee*¹; Wong Jia Huey¹; Lau Song Lung¹

¹*Radiology Department, Sarawak General Hospital, Malaysia*

INTRODUCTION: Gastric volvulus is a rare condition, in which the stomach rotates along its long or short axis. It can be divided into two main subtypes: organoaxial and mesenteroaxial. Organoaxial gastric volvulus, being the more common subtype, is a potential surgical emergency as it can result in gastric outlet obstruction, and eventually ischemia. However, diagnosis can be challenging based on clinical presentations as not all patients will present with the classic presentation of Borchardt triad. We present an atypical presentation of perforated organoaxial gastric volvulus with underlying paraesophageal hernia.

REPORT: 66 years old gentleman, presented with 2 days history of epigastric pain and constitutional symptoms requiring fluid resuscitation. Initial provisional diagnosis was to exclude malignancy or perforated gastric ulcer.

FINDINGS: Chest radiograph shows markedly elevated right hemidiaphragm with bowel loops at subdiaphragmatic region and absence of gastric shadow. Subsequent CT shows herniation of stomach to right hemithorax via widened hiatus with rotation of the stomach along its long axis and leakage of oral contrast from the antrum; in keeping with organoaxial gastric volvulus via paraesophageal hernia complicated with perforation at antrum.

CONCLUSION: As gastric volvulus has significant morbidity and mortality, clinical suspicion with early detection is imperative. This interesting case illustrates the radiological findings, complication and treatment of organoaxial volvulus. Thus, emphasizing the importance of multidisciplinary approach in recognition and communication of these findings.

OBSTRUCTED HEMIVAGINA WITH IPSILATERAL RENAL AGENESIS (OHVIRA) SYNDROME PRESENTED WITH URINARY RETENTION

Muhamad Hafizal Abdullah¹; Juhara Haron¹

¹*Radiology, Universiti Sains Malaysia*

INTRODUCTION: Obstructed hemivagina and ipsilateral renal anomaly (OHVIRA) or Herlyn-Werner-Wunderlich (HWW) syndrome is a rare congenital anomaly of urogenital tract involving Mullerian ducts and mesonephric ducts. It is characterised by a triad of - uterus didelphys, obstructed hemivagina and ipsilateral renal agenesis. The most common presentation is pain and dysmenorrhea. Another uncommon presentation is acute urinary retention. Strong suspicion and knowledge of this anomaly are essential for a precise diagnosis and management.

REPORT: A 17-years-old girl, single, not sexually active and nulliparous presented with acute urinary retention. The initial diagnosis is urinary tract infection. Physical examination noted there is vague mass at the suprapubic region. Transabdominal ultrasound reveal cystic pelvic mass. Patient was subjected for CT scan for further evaluation. CT was done and reported as left adnexal cystic lesion with bicornuate uterus and absent of left kidney. Patient was planned for laparotomy and cystectomy bases on CT findings. MRI pelvis done prior to the operation and and the findings consistent with OHVIRA syndrome. Hysteroscopy and vaginal septostomy done after the acute diagnosis.

CONCLUSION: OHVIRA syndrome is an uncommon congenital anomaly with clinical significance and simple surgical management. Typical presentation is dysmenorrhea. However, it also can be presented with uncommon presentation of urinary retention as in our case. Imaging, particularly an MRI plays a major role in diagnosis. An early correct diagnosis is the goal to relieve the symptoms and prevent complications.

WANDERING SPLEEN SIMULATING GYNAECOLOGICAL MALIGNANCY IN A FEMALE

Lim Dwee Shion¹; Alex Lim¹; Hasnizan Hassan¹

¹*Department Of Radiology, Hospital Sultan Ismail, Malaysia*

INTRODUCTION: Wandering spleen is caused by laxity of the ligaments surrounding the spleen or due to massively enlarged spleen and may present as a pelvic mass. However, the differentials diagnosis of pelvic mass in a female are myriad and gynecological tumors is the usual diagnosis. Wandering spleen as a cause of pelvic mass is rare.

REPORT: A young lady presents with symptoms of anemia, dysmenorrhea, abdominal mass and subfertility. From abdominal examination, there is a mass at the lower abdomen up to 18 weeks in size. Bedside ultrasound revealed a large solid mass at the pelvis with feeding vessels. A provisional diagnosis of pelvic mass TRO gynecological malignancy was made and a staging contrast-enhanced computed tomography (CECT) was performed. CECT showed an enlarged spleen with abnormal location at the pelvic cavity. There were also concomitant findings of pancreatic volvulus, organo-axial gastric volvulus and displaced transverse colon.

CONCLUSION: Wandering spleen though rare should be included in the differential diagnosis of a pelvic mass in a female patient. An abdominal ultrasound would identify absence of spleen at the left hypochondrium which will be helpful in getting the diagnosis. The concomitant finding of pancreatic volvulus, organo-axial gastric volvulus and displaced transverse colon found together with wandering spleen is very rare and is due to the pulling effect from excessive mobility of the displaced spleen and also laxity or absence of peritoneal attachments.

CHRONIC CYSTITIS – ATYPICAL PRESENTATION OF APPENDICEAL CARCINOMA: A CASE REPORT

Rajeev Shamsuddin Perisamy¹; Siti Kamariah Che Mohamed¹; Mohd Nazli Kamarulzaman²;
Faisal Elagili³; Khairunisa Ahmad Affandi⁴

¹*Radiology Department, International Islamic University Malaysia Medical Centre, ²Urology Unit Department of Surgery, International Islamic University Malaysia Medical Centre, ³Colorectal Unit, Department of Surgery, International Islamic University Malaysia Medical Centre, ⁴Department of Pathology, International Islamic University Malaysia Medical Centre*

INTRODUCTION: Primary appendiceal carcinoma is a rare malignancy, being found in approximately 0.01%–1.0% of all gastrointestinal malignancies. It can cause a spectrum of clinical presentation mainly gastrointestinal in nature. Rarely, it can directly invade the urinary bladder, giving an atypical presentation of lower urinary tract symptoms.

REPORT: We report a case of a 65-year-old lady who presented with hematuria and was initially treated as urinary tract infection. She denied any gastrointestinal symptoms. Further investigations showed possible bladder growth, but multiple tissue biopsies only revealed chronic cystitis. CT scan showed right bladder wall thickening with out-pouching lesion and ileocecal involvement, in which could not rule out possibility of carcinoma. Colonoscopy shows features of colitis at caecum, but no mass identified. Colonoscopy and fluoroscopic cystography also failed to demonstrate colovesical fistula. Consequently, she underwent partial cystectomy and limited right hemicolectomy with primary ileocolic anastomosis. Histology revealed cystitis glandularis of the urinary bladder with well-differentiated adenocarcinoma of the appendix invading the outer muscular layer of the urinary bladder wall.

CONCLUSION: This case illustrates the potential of appendiceal malignancy to invade urinary bladder and only causing lower urinary tract symptoms, leading to an atypical presentation of the tumour. In view of this, it should be considered within clinician's differential diagnoses especially in elderly patients.

SHEAR WAVE ELASTOGRAPHY DETECTS CHANGES IN RENAL HISTOPATHOLOGY

Leong Sook Sam¹; Jeannie Hsiu Ding Wong¹; Mohammad Nazri Md Shah¹; Anushya Vijayanathan¹; Tak Kuan Chow²; Maisarah Jalalonmuhali³; Nur Hidayati Mohd Sharif³; Kwan Hoong Ng¹

¹*Department of Biomedical Imaging, University of Malaya Medical Centre,* ²*Pathology, University of Malaya,* ³*Medicine, University of Malaya, Malaysia*

OBJECTIVE: The purpose of this study is to investigate the association of kidney stiffness and histopathological findings measured by shear wave elastography (SWE) imaging.

MATERIALS & METHODS: 75 patients referred for renal biopsy were included. Using an ultrasound system (Philips EPIQ 7, Bothell, Washington) equipped with SWE software (Philips ElastPQ, Bothell, Washington), Young's modulus (YM) measurement in kilopascal (kPa) from SWE were correlated with histological parameters.

RESULTS: Positive correlation was reported between YM measurements with both tubular interstitial score ($\rho = 0.442$, $p < 0.001$) and glomerular score ($\rho = 0.375$, $p = 0.001$). Patients with no glomerular sclerosis showed lower mean YM measurements compared to groups with <10%, 10%-25%, >25%-50% and >50% of glomerular sclerosis. Mean YM measurements increased as the percentage of interstitial fibrosis and tubular atrophy increased. There was a significant difference between the YM measurement of the <25% (6.13±3.42kPa) and 25% - 50% (8.70±3.71kPa) interstitial fibrosis groups, as well as the <25% and >50% (8.93±3.36 kPa) interstitial fibrosis groups. Significant difference was found between YM measurements of the <25% (5.86±2.95kPa) and 25% - 50% (8.65±3.54kPa) tubular atrophy groups as well as the <25% and >50% (11.46±3.67kPa) tubular atrophy groups. The area under the ROC curve for SWE imaging of kidney was 0.702. The cut-off value of ≥ 5.81 kPa indicated moderately impaired kidney.

CONCLUSION: SWE accurately determine chronic renal damaged resulted in glomerular sclerosis, interstitial fibrosis and tubular atrophy. A cut-off value of ≥ 5.81 kPa suggested a moderately impaired kidney.

**COMPARISON OF SHEAR-WAVE ELASTOGRAPHY AND CONVENTIONAL
ULTRASOUND IN ASSESSING KIDNEY FUNCTION AS MEASURED USING
51CR-ETHYLENEDIAMINETETRAACETIC ACID AND 99MTC-
DIMERCAPTOSUCCINIC ACID**

Leong Sook Sam¹; Jeannie Hsiu Ding Wong¹; Mohammad Nazri Md Shah¹, Anushya
Vijayanathan¹, Maisarah Jalalonmuhali²; Kwan Hoong Ng¹

¹*Department Of Biomedical Imaging, University Of Malaya Medical Centre, Malaysia,*

²*Medicine, University Of Malaya, Malaysia*

OBJECTIVE: To assess the potential of using shear wave elastography (SWE) as an indicator to detect abnormal kidney function defined by radiolabeled glomerular filtration rate (GFR).

MATERIALS & METHODS: 57 patients referred for 51Cr-ethylenediaminetetraacetic acid GFR and 99mTc-dimercaptosuccinic acid renal scintigraphy were included. Using an ultrasound system (Philips EPIQ 7, Bothell, Washington) equipped with SWE software (Philips ElastPQ, Bothell, Washington), Young's modulus (YM) measurement from SWE and kidney length, volume, cortical thickness, and parenchymal echogenicity from conventional ultrasound data were correlated with patients' GFR and renal scintigraphy results.

RESULTS: Spearman correlation coefficients showed negative correlation between SWE and GFR for the right ($\rho = -0.635$, $p < 0.0001$) and left kidneys ($\rho = -0.817$, $p < 0.0001$). Positive correlations between left renal cortical thickness ($\rho = 0.381$, $p = 0.04$) and left kidney volume ($\rho = 0.356$, $p = 0.019$) with GFR were reported. SWE correctly predicts the dominant functioning kidney in 94.7% of cases. The area under the ROC curve for SWE (0.800) was superior to conventional ultrasound (0.252 - 0.415). The cut-off value ≥ 5.52 kPa suggested a kidney function ≤ 60 ml/min/1.73m² (82.4% sensitivity and 76.2% specificity).

CONCLUSION: SWE has advantages over conventional ultrasound in assessing kidney function and distinguishing the dominant functioning kidney.

THE CAECAL BASCULE : A RARE DISEASE VARIANT

Siti Fatima Azahraa MA¹, Nur Madihah KS¹, Noor Hasnita IM¹, Nurul Ain MI¹

¹Radiology, HRPZ II, KKM, Malaysia

INTRODUCTION: Worldwide, tumour accounts for majority of cases of intestinal obstruction with diverticular disease and volvulus accounting for the remainder. Cecal volvulus is a rare cause of intestinal obstruction, with the bascule subtype accounting for < 10% of all cases of caecal volvulus. It is associated with significant morbidity and mortality if left undiagnosed.

REPORT: A 58-year-old male with history of recurrent abdominal pain since few months back, presented with acute abdominal pain and distension associated with vomiting. The abdomen was distended and tender mainly at bilateral lumbar. However, vital sign was normal with no sign of peritonism. On admission, abdominal radiograph showed large bowel dilatation mainly at right lumbar region with small bowel loops dilatation. Subsequently, computed tomography (CT) scan was done and demonstrated distended caecum with its position slightly at the anterosuperomedial, rising the suspicion of caecal bascule. The small bowel was also dilated. Interestingly, CT images also showed gastric soft tissue tumour. Subsequently, he underwent right hemicolectomy and resection of stomach tumour. Intraoperatively, there was grossly dilated caecum and its position displaced anteromedially with dilated small and large bowel. Stomach tumour noted at fundus and D1. Histopathology revealed multiple benign ulcer with ischemic changes consistent with volvulus and low risk gastrointestinal stromal tumour (GIST) of stomach.

CONCLUSION: Cecal bascule is a rare critical entity, which mostly encountered in patient with peritoneal adhesion, mobile caecum and bowel dysfunction. It should be considered in a patient with recurrence or persistence abdominal pain and distension with imaging show distended caecum in abnormal location.

GASTROINTESTINAL STROMAL TUMORS(GISTS): AN IMAGING PERSPECTIVE

Vikas Chaudhary*¹

¹Radiology, Lady Hardinge Medical College, India

OBJECTIVE:

- List the clinical features and imaging findings of GISTs.
- Describe how GISTs can be diagnosed on the basis of the imaging findings.

MATERIALS & METHODS: We reported 22 cases of pathologically and surgically proven GISTs at our hospital. The aim of this retrospective study was to review the imaging features of 22 GIST cases. We also describe the clinical and pathological findings of this well-recognized entity.

RESULTS: Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract. CT is the imaging modality of choice for diagnosing GIST at initial presentation, staging and monitoring the disease during and after the treatment. The aim of imaging is to locate the lesion, define its morphological characteristics, evaluate local invasion and detect distant metastasis. CT is the imaging of choice for these purposes. Multidetector CT can pick up most lesions > 2 cm. CT is also superior for staging of GISTs and monitoring the disease during and after treatment. Radiologists can often predict the correct diagnosis at presentation by the appearance of a large exophytic gastrointestinal mass without significant lymphadenopathy.

CONCLUSION: Gastrointestinal stromal tumors (GISTs), which arise from the interstitial cells of Cajal, are the most common mesenchymal tumors of the gastrointestinal tract. The increasing recognition of GISTs and prolonged survival of the patients with GISTs have made imaging increasingly important not only for diagnosis, but also for monitoring the effects of treatment. Computed tomography (CT) is the imaging modality of choice for these purposes

DETERMINATION OF URINARY CALCULI COMPOSITION USING DUAL ENERGY CT

Wan Irfan W Mustapha*¹; Ahmad Razali Md Ralib¹; Mohd Nazli Kamarulzaman²; Razman Mohd Rus³

¹Radiology, *International Islamic University Malaysia*, ²Surgery, *International Islamic University Malaysia*, ³Community Medicine, *International Islamic University Malaysia*

OBJECTIVE: The main aim is to determine the prevalence of the various urinary calculi composition types using dual energy CT (DECT). We also aim to measure the urinary calculi sizes, location, characterization, and radiation exposure for DECT KUB.

MATERIALS & METHODS: This is a cross-sectional study conducted at the Radiology Department of Hospital Tengku Ampuan Afzan (HTAA) from June 2018 until December 2019. All patients who had fulfilled the inclusion criteria will undergo a DECT KUB. A total of 170 patients were selected using simple random sampling.

RESULTS: There are 67% males and 33% females in this study. From that, 26% of the urinary calculi are of a uric acid type. Out of the 74% non-uric acid type, calcium oxalate and calcium hydroxyapatite formed 46%, and cystine formed the other 28% of the urinary calculi. The majority of the calculi (42%) are less than 5 mm in size. 45% are located in the lower pole of the kidney. The average radiation exposure for DECT is about 11.5 mGy.

CONCLUSION: Dual energy CT is capable of distinguishing uric acid calculi with 92 to 100 percent accuracy from the other types of urinary calculi. Uric acid calculi only formed a small percentage of urinary calculi. The radiation exposure of DECT is not dissimilar with the standard CT KUB (ranging from 6.39 mGy to 20.6 mGy).

SMALL BOWEL VOLVULUS : A RARE CAUSE OF SURGICAL EMERGENCY IN ADULT

Zan Zulianie Ismail¹, Amyny Aisha CM¹, Noor Hasnita IM¹

¹Radiology HRPZ II, KKM, Malaysia

INTRODUCTION: Small bowel volvulus (SBV) refers to the abnormal twisting of a loop of small bowel around the axis of its mesentery. It results in proximal bowel obstruction or closed loop obstruction with resultant ischaemia if prompt treatment is not instigated. Presentation in adult is consider rare which can either be primary or secondary. Secondary is considered in presence of anatomical pathologies including congenital abnormalities, bands, adhesions, and tumours. Meanwhile primary is when no evidence of underlying causes.

REPORT: A 44 years old male presented with 2 days history of lower abdominal pain, associated with vomiting. The pain was significantly worsened on second day which not relieved with Morphine. On examination, all the vitals were stable and blood investigations were normal including serum amylase. Abdominal Xray showed focal central dilated small bowel with thickened wall. A computed tomography revealed similar features and abrupt transitions in mid-abdomen with a "swirled appearance", that give rise to diagnosis of SBV. Intraoperatively, there is volvulus of proximal small bowel due to congenital adhesion band between small bowel and mesentery. Adhesiolysis was done and bowel was rotated back to normal position. The post-operative period was uneventful.

CONCLUSION: A high index of suspicion is required to identify SBV. Owing to its variable presentation and high mortality, clinicians must consider SBV as a possible diagnosis in a patient with significant abdominal pain. Congenital adhesion band should be considered as a possible cause of a small bowel obstruction not only in pediatric patients but also in adult patients.

URINARY BLADDER TUBERCULOSIS; AN UNEXPECTED DISSEMINATION PATHWAY OF GASTROINTESTINAL TUBERCULOSIS

Mohamad Firdaus Ahmad¹, Nasibah Mohamad¹, Nor Adibah Razali¹, Abdul Hadi Anuar¹

¹*Radiology Department, Hospital Kuala Lipis, Malaysia*

INTRODUCTION: Genitourinary tract (GUT) is a common site of haematogenous dissemination of extra-pulmonary tuberculosis with kidneys being the commonest GUT organ infected. Urinary bladder tuberculosis (UBT) results from antegrade spread of the bacilli shed into the urine from infected kidneys. Hence, UBT is almost always secondary to renal tuberculosis. We presented a case of UBT alone without involvement of kidney.

REPORT: A 47-year-old male presented with acute lower abdominal pain with no fever. The initial ultrasound showed minimal right iliac fossa interloop fluid. Contrast enhanced computed tomography (CECT) abdomen showed terminal ileum thickening with normal appendix (Figure 1a, 1b). He was then treated with antibiotic for ileitis. After two months, patient presented with worsening suprapubic pain, dysuria and gross haematuria. Cystourethroscopy revealed irregular mucosal growth with contact bleed (Figure 2a). A repeat CECT abdomen showed worsening small bowel wall thickening at right iliac fossa with extension into urinary bladder (Figure 2b, 2c). Incidental findings of bi-apical lung consolidation (Figure 3a, 3b) raised suspicion of pulmonary tuberculosis. Colonoscopy done until terminal ileum revealed normal mucosa. Diagnostic laparoscopic surgery showed adhesion band between peritoneum and bowel at the right iliac fossa. The histopathology examination (HPE) of bladder mucosa showed polypoid cystitis with positive acid-fast bacilli (AFB) culture. Urine AFB is also positive. He was then treated with multidrug regimen of antimycobacterial medication.

CONCLUSION: This case illustrates that a multisystem disease involvement should raise a suspicion of tuberculous infection. However, biopsy or culture specimens are mandatory for a definitive diagnosis.

NEUROENDOCRINE NEOPLASM OF UNKNOWN PRIMARY SITE

Larissa De Andrade Defendi*¹, Luana Martins Silva¹, Juan Marcelo Fernandez Alcala¹,
Marcelo Oranges Filho¹, Alan Diniz Hümme¹, Ronaldo Hueb Baroni¹

¹*Imaging Department, Hospital Israelita Albert Einstein, Brazil*

INTRODUCTION: Neuroendocrine tumors originate from enterochromaffin cells. When located in the small bowel or rectum, they can be small and multiple, hardly evaluated by imaging. Most cases of primary occult site neoplasms are well-differentiated and exhibit liver metastases. Carcinoid syndrome is common but not mandatory. Mesenteric nodules favor a low-grade tumor. PET-CT with DOTATATE can find the primary site in up to 80% and endoscopic techniques may identify an ileal or pancreatic primary site. Immunohistochemistry may suggest the primary site, but it is not definitive.

REPORT: Male, 54 years old, asymptomatic. Routine ultrasound (US) showed multiple, hypoechogenic and circumscribed liver nodules up to 1.4 cm. Enhanced computed tomography (CT) showed non-specific hypoattenuating liver nodules. Additionally, a well-defined 1.8 cm solid nodule in the great omentum with early enhancement was characterized (suspected for neoplasia). Resonance imaging with paramagnetic contrast showed multiple liver nodules with increased T2 signal, diffusion restriction and arterial hypervascularization. The nodule in the great omentum showed an intermediate T2 signal and post-contrast enhancement. Positron emission tomography with CT (PET-CT) using 68Ga-DOTATATE showed radiotracer concentration in multiple liver lesions and two mesenteric nodules (maximum SUV of 12.0). Mesenteric lesion biopsy showed a low-grade neuroendocrine tumor. Endoscopic evaluation was not revealing.

CONCLUSION: Surgical exploration, both diagnostic and therapeutic, is the last alternative left. Primary site detection is essential in therapeutics, even in metastatic cases. Radiologists must be familiar with the different presentations of neuroendocrine tumors of hidden site since it is associated with a worse prognosis.

PREDICTING PERICHOLECYSTIC ADHESIONS IN GALLBLADDER CALCULUS DISEASE BY HIGH RESOLUTION ULTRASONOGRAPHY

Rajul Rastogi*¹; Neha¹; Satish Pathak¹; Vijai Pratap¹

¹*Radiodiagnosi, Teerthanker Mahaveer Medical College and Research Center, India*

OBJECTIVE: Currently laparoscopic cholecystectomy forms the mainstay of treatment in gallbladder calculus disease demanding surgeon's expertise. Large size of gallbladder & calculus; inconspicuity of Calot's triangle and presence of large calculus in short cystic duct, biliary drainage anomalies, pericholecystic adhesions, gallbladder wall edema & vascularity in adjacent hepatic parenchyma are unfavourable factors affecting laparoscopic cholecystectomy. With recent-advanced USG scanners, it is now possible to preoperatively assess many of the above factors. Hence, this study primarily aimed to:

- Determine the preoperative role of USG in prediction of pericholecystic adhesions in gallbladder calculus disease.
- Determine the preoperative role of USG in predicting difficult laparoscopic cholecystectomy

MATERIALS & METHODS: 100 patients with gallbladder calculus disease were evaluated for presence of pericholecystic adhesions. The data thus obtained was compared with that of laparoscopic or open cholecystectomy.

RESULTS: Pericholecystic adhesions were suspected in patients of gallbladder calculus disease where interface between the gallbladder wall & hepatic parenchyma was indistinct; gallbladder neck was not optimally visualised and patients with WES complex. Using the above criterion, USG predicted pericholecystic adhesions in 84 out of 100 patients with an accuracy of more than 93% with at least 28 patients with difficult laparoscopic cholecystectomy with an accuracy of more than 95%.

CONCLUSION: USG is highly accurate in only for predicting pericholecystic adhesions in patients with gallbladder calculus disease but also in predicting difficult laparoscopic cholecystectomy thus helping the surgeon in selecting appropriate mode of operation (laparoscopic vs open cholecystectomy). It also helps in predicting time of operation, duration of anaesthesia required and postoperative prognosis.

EVALUATION OF THE CLINICAL ROLE OF VIRTUAL UNENHANCED IMAGES IN DUAL ENERGY EXCRETORY CT UROGRAPHY IN DETECTION OF UROLITHIASIS

Shobhana Sivandan¹; Caroline Judy Westerhout¹; Gnana Kumar¹

¹*Radiology Department, UMMC, Malaysia*

OBJECTIVE: To determine the diagnostic value based on the sensitivity and specificity of virtual unenhanced (VUE) images generated at excretory phase dual-energy computed tomography urography (DECTU) using dual-source CT in the detection of urolithiasis

MATERIALS & METHODS: 100 patients had undergone DECTU, which consisted of true unenhanced and excretory phase scans performed using a dual energy dual-source scanner. Commercial software (Liver VNC) was used to create VUE images.

RESULTS: On a per patient basis, sensitivity was 76.6% and specificity was 99.9%. On a per stone basis, the overall sensitivity for detecting stones was 54% (94 of 175 stones). Sensitivities were 7% (1/15 stones) for 1-1.9 mm stones, 10% (4/39 stones) for 2-2.9 mm stones, 23% (8/35 stones) for 3-3.9 mm stones, 80% (16/20 stones) for 4-4.9 mm stones, 93% (14/15 stones) for 5-5.9 mm stones and 100% (31/31 stones) for ≥ 6 mm stones. The size of stones detected on VUE were significantly smaller than those detected on TUE images. Size of stones missed on VUE images was also significantly smaller compared with stones detected on VUE ($p < 0.050$). 81 stones were missed on VUE and the sizes ranged from 1.0 to 5.3 mm (mean 2.5 ± 0.9 mm).

CONCLUSION: VUE images generated at excretory DECTU enabled the detection of urolithiasis measuring > 5 mm with good sensitivity and specificity.

UTILITY OF SHEAR WAVE ELASTOGRAPHY (ARFI) & HEPATIC VEIN DOPPLER IN PATIENTS WITH BUDD–CHIARI SYNDROME: PRE & POST TIPS

Annamalai Vairavan¹, Aman Kumar¹, Rajesh Malik¹, Radha S Gupta¹

¹*Radiology, AIIMS, Bhopal, India*

OBJECTIVE: Budd–Chiari syndrome (BCS), which leads congestive hepatopathy and aggravates cirrhosis, is typically treated by interventional angioplasty or TIPSS to ameliorate blood flow. This study was to analyze the relationships between liver stiffness measurement (ARFI)-liver fibrosis in patients with BCs and to demonstrate the utility of real-time shear wave elastography for evaluation of BCs patients before and after intervention.

MATERIALS & METHODS: Retrospective study where a total of 3 patients with Budd-Chiari syndrome were included and Shear wave elastography was used to generate dynamic liver stiffness measurement with hepatic vein doppler 2 days before angioplasty and 2 days, 2 weeks, 3 months and 6 months after intervention.

RESULTS: Mean liver stiffness was at baseline and 2 days, 2 weeks, 3 months, and 6 months after intervention were measured. Liver stiffness measured at 2 days before and 2 days, 2 weeks, 3 months and 6 months after intervention was significantly decreased ($P < 0.001$). Liver stiffness measured by ARFI at 6 months after angioplasty was not significantly different from that measured at 3 months after angioplasty. Liver stiffness measured at 2 days and 3 months after angioplasty was significantly decreased ($P < 0.001$), remaining stable at 3 months, though still in the cirrhotic range.

CONCLUSION: The liver stiffness of Budd-Chiari syndrome patients, measured by shear wave elastography, decreased considerably after hepatic venous recanalization, and significantly correlated with hepatic venous pressure though not with degree of fibrosis. Shear wave elastography may be effective in monitoring short- and long-term treatment outcomes in Budd-Chiari syndrome.

ADULT PRESENTATION OF HIRSCHSPRUNG'S DISEASE; A CASE REPORT.

Zainab Malik*¹ , Salma Gul¹ , Rahila Tahir¹

¹*Radiology, Shifa International Hospital, Pakistan*

INTRODUCTION: Young patients presenting with chronic constipation and failure to thrive, should be promptly investigated and looked upon for late presentation of congenital diseases like Hirschsprung disease (HD). This case is reported to highlight rare case of adult presentation of HD who presented to emergency department with complaints of lower abdominal pain, flatulence and lethargy. Considering the findings of CT scan suspicion of Adult presentation of HD was given and lateral biopsy confirmed the diagnosis.

REPORT: A 17-year-old male was referred to radiology department through emergency department with history of chronic constipation and failure to thrive since early childhood, complaints of increased flatulence, lower abdominal pain and anemia. Contrast enhanced CT scan of abdomen and pelvis was performed which showed significantly dilated large bowel loops filled with air and fecal matter from caecum up to the rectosigmoid junction with abrupt transition of caliber seen at rectosigmoid junction. After which the rectum and anal canal was found be collapsed. Based on CT findings a radiological diagnosis of Hirschsprung's disease was made and urgent specialist referral was advised to avoid complications. The patient then underwent elective exploratory laparotomy and intraoperative frozen section biopsy was performed, which revealed aganglionosis of collapsed segment. Hence the diagnosis of Hirschsprung's disease confirmed.

CONCLUSION: Hirschsprung's disease is congenital disorder; its adult presentation though rare but still an encountered entity. It is a treatable condition provided prompt diagnosis and early surgical treatment is provided.

PANCREATIC LIPOMATOSIS AND DIABETES MELLITUS - MDCT EVALUATION AND CORRELATION

Puneet Gupta*¹

¹*Radiology, ASCOMS, India*

OBJECTIVE: Fatty replacement is a common condition involving the pancreas. Small focal fatty deposits in pancreas are relatively insignificant; however, excessive fat has a pathologic significance and is commonly associated with marked reduction in exocrine function of pancreas. The objective of this study was to evaluate the incidence of pancreatic lipomatosis and its association with diabetes mellitus.

MATERIALS & METHODS: Multi-Detector Computed Tomography (MDCT) scans of 270 consecutive patients who underwent abdominal examination during a period of 1 year at a tertiary care centre were retrospectively reviewed. Pancreatic lipomatosis was evaluated in all the patients and their association with Type 2 diabetes mellitus was analyzed.

RESULTS: Among 270 patients, 155 were males & 115 were females. Pancreatic lipomatosis was seen in 8 patients with incidence of 2.96 %. Among the two types, even type of pancreatic lipomatosis was seen in 2 cases and uneven type in 6 cases. In 4 out of 6 (66.7%) patients, the uneven fatty infiltration was of type 1 while in 2 out of 6 (33.3%) patients, type 2 pancreatic lipomatosis was seen. Diabetes mellitus was seen in 14 patients out of 270. Pancreatic lipomatosis was seen in 6 out of 14 diabetic patients (42.8%). Significant correlation was established between pancreatic lipomatosis and Type 2 diabetes mellitus ($p < 0.0001$).

CONCLUSION: Pancreatic lipomatosis is often an asymptomatic and incidental finding in MDCT with incidence of 2.96 % and significant correlation exists between pancreatic lipomatosis and Type 2 diabetes mellitus.

**LOW-DOSE ABDOMINAL CT USING DEEP LEARNING-BASED
RECONSTRUCTION ALGORITHM : EVALUATION OF RADIATION DOSE AND
IMAGE QUALITY WITH AN ANTHROPOMORPHIC PHANTOM**

Atsushi Nakamoto*¹; Hiromitsu Onishi²; Takashi Ota²; Hideyuki Fukui²; Kazuya Ogawa²;
Keigo Yano²; Yukihiro Enchi³; Mitsuaki Tatsumi²; Noriyuki Tomiyama²

¹*Department of Diagnostic and Interventional Radiology, Osaka University Graduate School of Medicine,* ²*Department of Radiology, Osaka University,* ³*Department of Radiology, Osaka University Hospital, Japan*

OBJECTIVE: To compare the image quality of abdominal CT images reconstructed with a deep learning-based reconstruction technique (TrueFidelity, TF), a hybrid iterative reconstruction technique (ASIR-V) and a filtered back projection (FBP) at different radiation dose

MATERIALS & METHODS: An anthropomorphic upper abdomen CT phantom was scanned with a 256-slice CT scanner (Revolution CT, GE Healthcare) using five different tube-current settings (200, 100, 50, 25, and 12.5 mAs). For each mAs setting, axial images were reconstructed with FBP, 50% ASIR-V, and TF (Medium). Objective image noise and contrast-to-noise ratio (CNR) for the liver parenchyma relative to the portal vein were evaluated. A radiologist assessed the image quality using a five-point rating scale as a qualitative analysis.

RESULTS: ASIR-V yielded 30-38% noise reduction and 37%-61% CNR increase compared with FBP. TF yielded 32-46% noise reduction and 47%-80% CNR increase compared with FBP. Objective image noise and CNR for 50 mAs with ASIR-V (11.2 and 3.3) and TF (10.1 and 3.5) were comparable with those for 200 mAs with FBP (11.2 and 3.3). At lower mAs settings (25 and 12.5 mAs), TF yielded about 20% noise reduction compared with ASIR-V. The visual scores of image quality for 100 mAs with ASIR-V and TF were equivalent to that for 200 mAs with FBP.

CONCLUSION: Both ASIR-V and TF achieved 75% radiation dose reduction in abdominal CT maintaining objective image noise and CNR in comparison with standard FBP reconstruction. TF would have a potential to enable even lower radiation dose.

RETROPERITONEAL ANGIOLEIOMYOMA : A RARE TUMOR WITH ATYPICAL IMAGING FEATURES IN A TEENAGER.

Nur Amalina Kasno*¹; Zurina Abdul Wahab¹

¹*Radiology, Hospital Tuanku Ampuan Najihah, Malaysia*

INTRODUCTION: Angioleiomyoma is a rare benign neoplasm of smooth muscle arising from the tunica media of vessel. It is often found in patients aged 30 to 50 years old. It has predilection for the lower extremities but can occur anywhere in the body. Imaging study usually shows features of well-demarcated tumor with vascular component.

REPORT: A 14-year-old male presented with potential self-harm opiod poisoning for vague abdominal pain for past 3 months duration. Physical examination revealed right flank mass. Other systemic examinations were unremarkable. Blood tests including tumor makers were normal. Ultrasound abdomen done showed well-defined heterogenous hypoechoic mass at right lumbar region without vascular signal on Doppler scan. Later a contrast-enhanced Computed Tomography of abdmone revealed a right retroperitoneal lobulated non-enhancing homogenous isodense (to muscle) mass associated with scattered internal calcified foci. No enhancement, cystic or fatty component. Surprisingly, complete surgical removal of mass revealed multiple blood vessels within the mass. Histopathological examination confirmed that mass as primary retroperitoneal angioleiomyoma.

CONCLUSION: This case highlights the absence of typical imaging features of vascular component such as vascular flow on Doppler scan or tubular enhancement on CT does not exclude the possibility of diagnosing this rare benign neoplasm. Furthermore, this neoplasm also can occur at younger age group. This case is diagnosis dilemma whereby it did not fit the criteria of age onset and features of vascular tumor on imaging study. Biopsy is questionable. Nonetheless, final diagnosis is based on histopathological result in the few reported cases.

COMPARISON OF 2D VERSUS 3D MAMMOGRAM IN RADIOLOGY DEPARTMENT OF HOSPITAL KUALA LUMPUR

Shrina Devi Chandra Segran*¹; Shantini Arasaratnam¹

¹*Radiology, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: A study comparing breast lesion detection ability using 2D versus Tomosynthesis (3D images) over 6 months duration in 2018 in Mammogram Unit of Radiology Department Hospital Kuala Lumpur. To look at the superiority of breast lesion detection using the 3D mammogram over 2D as well as to strengthen the sensitivity of breast lesion detection on both 2D & 3D images.

MATERIALS & METHODS: This study was done by performing mammogram on patients who were appointed for mammogram using Hologic Selenia Dimension Full Field Digital Mammography Machine. All patients appointed for both screening and diagnostic mammograms ie, follow-up cases, new patients & post mastectomy patients. The Tomosynthesis Machine has the in-built capability of both 2D and 3D mammogram. Hence, we were able to perform this study without exposing patients to double radiation. The mammograms were interpreted independently by 2 Radiologists. Exclusion Criteria: Patients appointed for Contrast Enhance Mammogram, Stereotactic biopsies & Hook Wire Localization.

RESULTS: Findings of this study in July to December 2018 a total of 1820 patients imaged with 472 lesions detected and 124 of these lesions biopsy proven malignant.

CONCLUSION: This study showed that Tomosynthesis (3D Mammogram) was far better in detection of breast lesions predominantly in patients with breast density C & D. Furthermore, the characteristics of malignant lesions such as architectural distortion, spiculation and asymmetric density of lesions were sharper on Tomosynthesis. However, micro-calcifications and the morphology of the calcifications were better depicted on the 2D images.

CONTRAST ENHANCED MAMMOGRAPHY : TAKING BREAST IMAGING TO A WHOLE NEW LEVEL.

Nur Marini Zainal*¹; Shantini Arasaratnam¹; Suryati Mohd Yusoff¹

¹*Radiology, Kuala Lumpur General Hospital, Malaysia*

INTRODUCTION: Digital mammography has the potential to improve breast cancer detection that were not possible with film-screen technology. Contrast enhanced digital mammogram (CEDM), is a promising new technology for early detection of malignant breast lesion. We report a case of a 62 year old woman with a left breast lump, whereby there were lesions not detected on the standard mammogram. With the application of CEDM, these lesions were identified and histopathological examinations confirms the invasive carcinoma.

REPORT: A 62 year old nulliparous lady, with no known medical illness, presented to the local health clinic complaining of left sided breast lump for 4 months. Mammogram and ultrasound done showed left 2 o'clock lesion that was highly suspicious with left axillary lymphadenopathy and suspicious left retroareolar lesion, probably intraductal in origin (BIRADS V). There were other enhancing lesions noted on CEDM at left 1 o'clock, 4 o'clock and 5o'clock position. These three lesions were not visualized on the standard mammogram. A second look ultrasound done, and all three lesions were biopsied under ultrasound guidance. The biopsy result of the 2 o'clock lesion was invasive carcinoma of the breast with no special type, left 4 o'clock lesion showed invasive carcinoma and left 5 o'clock lesion showed scanty atypical cells in a background of hyalinised stroma with presence of myoepithelial cells.

CONCLUSION: CEDM has a role in detecting malignant lesions at an earlier stage, and this will alter the treatment and management for patients.

**USE OF CONTRAST ENHANCED SPECTRAL MAMMOGRAPHY IN DETECTING
MALIGNANT BREAST LESION AS COMPARED TO FULL FIELD DIGITAL
MAMMOGRAPHY : THE MALAYSIAN EXPERIENCE**

Shantini Arasaratnam*¹; Victor Chong Xing Dao¹

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: The main goal of this study was to compare contrast-enhanced spectral mammography (CESM) and conventional digital mammography in the detection of breast malignancy in the Malaysian population. Evaluation was done with histopathological correlation to compare the sensitivity, accuracy, positive and negative predictive values for both imaging modalities.

MATERIALS & METHODS: 101 patients who underwent CESM and digital mammography during the study period, from January 2018 to June 2019 were evaluated. Their images were evaluated by breast radiologists and lesions were evaluated using BI-RADS scoring system. BI-RADS IV and V lesions were biopsied and the findings were compared with the histopathological report.

RESULTS: The results of this study showed an accuracy of 93% with CESM.

CONCLUSION: Our study shows CESM demonstrates better sensitivity and specificity compared to conventional digital mammogram. Hence, CESM is a promising tool for breast cancer detection in the Malaysian population.

THE CLINICAL DIAGNOSTIC VALUE OF BI-RADS IN MAMMOGRAPHY

Qian-Ye Yong*¹; Yuan-Yuan Ye¹; Cheng-Yu Peng¹; Rui Wang¹; Bing-Mei Zhang¹

¹*Department of Radiology, Zhong-Da Hospital, Southeast University, China*

OBJECTIVE: To evaluate the diagnostic value of the breast imaging reporting and data system (BIRADS) in mammography

MATERIALS & METHODS: A total of 911 patients with 1063 breast lesions were included in this study. Each lesion was analyzed according to BI-RADS and categorized as category 3 (probably benign), category 4A,4B,4C (probably malignant), or category 5 (highly suggestive of malignancy). The classification of BI-RADS assessment results was compared with the pathological results.

RESULTS: Compared with the pathological results, the area under the receiver-operating characteristic curve (AUC) of BI-RADS classification for breast lesions was 0.94 ($p < 0.010$), the sensitivity was 86.5%, the specific degree of 88.5%. The Positive predictive value (PPV) for category 3,4A,4B,4C,5 were 7.2%, 25.2%, 75.8%, 96.9%, 98.7%. The diagnostic performance of BI-RADS Compared with the pathological results, the area under the receiver-operating characteristic curve (AUC) of BI-RADS classification for breast lesions was 0.94 ($p < 0.010$), the sensitivity was 86.5%, the specific degree of 88.5%. The Positive predictive value (PPV) for category 3,4A,4B,4C,5 were 7.2%, 25.2%, 75.8%, 96.9%, 98.7%. The diagnostic performance of BI-RADS

CONCLUSION: The BI-RADS reporting system has a high value in the qualitative diagnosis of breast diseases and provides guidance for the follow-up treatment.

MEAN GLANDULAR DOSE OF THREE MAMMOGRAPHIC PROCEDURES: 2D, 3D IMAGING AND CONTRAST ENHANCEMENT DIGITAL MAMMOGRAPHY (CEDM) AT DIFFERENT BREAST THICKNESS

Justine Go Mei Sin*¹; Norhashimah Mohd Norsuddin²; Shantini Arasaratnam³; Faezah Harun³

¹*Faculty Of Health Science UKM KL Campus, Universiti Kebangsaan Malaysia,* ²*Programme Of Diagnostic Imaging And Radiotherapy, Universiti Kebangsaan Malaysia,* ³*Radiology Department, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: This study aims to determine the Mean Glandular Dose (MGD) delivered by three mammographic procedures which are two dimensional (2D) imaging, three-dimensional (3D) imaging and contrast-enhanced digital mammography (CEDM) at different breast thickness.

MATERIALS & METHODS: The data on patient's demographic information, breast thickness, the compression force, peak kilovoltage (kVp) and current (mAs) from January 2018 until December 2019 will be collected from the Hologic Selenia Dimensions machine console retrospectively. MGD is determined by multiplying the surface exposure value published dose factors and will be tabulated at different breast thickness.

RESULTS: The results from this study is estimated to have significant difference of MGD among 2D mammography, 3D mammography and CEDM. The radiation dose of CEDM could be slightly higher than 2D and 3D mammography and is directly proportional to the breast thickness.

CONCLUSION: We estimated that CEDM could have higher MGD as compared to 2D mammography and 3D mammography due to the double exposures technique. Although an increment of the radiation dose might be seen in CEDM, we presume the value does not exceed the recommendation for maximum dose in mammography.

ARTEFACTS IN HIGH RESOLUTION IMAGING OF THE BREAST. ONCO-RADIOLOGIST'S WORST NIGHTMARE.

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

LEARNING OBJECTIVE: The purpose of this study is to present the varying appearances of artefacts in ultrasound of the breast because they may result in the failure to recognize a breast cancer or prompt unnecessary biopsy of a benign finding.

BACKGROUND: Ultrasound is a useful imaging tool to provide clinically vital information in assessing a wide range of breast pathologies. It is an excellent imaging tool to determine the nature of a mass lesion (cystic or solid) and anatomic relation to adjacent structures. Lesions can be also characterized in terms of their size, shape, number, echotexture, and vascularity with power and colour Doppler US. Ultrasound can also demonstrate compressibility of the lesion and relation with adjacent moving structures, such as tendons. In this pictorial assay we present the common sources of error include the failure to recognize the sonographic appearance of normal breast anatomy, the improper setting of instrumentation controls, strangeness of sonography physics, and the presence of iatrogenic air and foreign bodies in the breast. To minimize confusion and misdiagnosis, we review and illustrate characteristic artefacts and pitfalls encountered during ultrasound of the breast.

FINDINGS AND/OR PROCEDURE DETAILS:

- Normal Anatomy: Rib, Nipple, Fat Lobule, Lactiferous Duct.
- Acoustic Shadowing: Cooper's suspensory ligament, Poor transducer–skin contact, Scar formation
- Sonography Physics and Instrumentation: Edge Shadowing, Reverberation Artefact, Gary-Scale Gain, Dynamic Range, Focal Zone.
- Air and Foreign Bodies

CONCLUSION: To circumvent overlooking signs of breast cancer while preventing unnecessary biopsies, It is important to recognize the artefacts and pitfalls commonly encountered at breast sonography. Knowledge of normal breast anatomy, an understanding of the appropriate instrumentation, and the performance of routine imaging in two orthogonal planes is essential for accurate interpretation of breast sonograms.

THE WANDERING AIR IN THE THORACIC AORTA- A CASE OF MASSIVE HEMOPTYSIS.

Divann Esvaran Sivanesvaran*¹; Subbashini Subramaniam¹

¹Radiology, Hospital Sungai Buloh, Malaysia

LEARNING OBJECTIVE: Aorto-bronchial fistula (ABF) is a fistulous connection between the thoracic aorta and lung. ABF is a life-threatening condition causing massive hemoptysis. We describe a case of patient with left empyema thoracis and underlying thoracic aortic aneurysm, developing ABF manifested by recurrent massive hemoptysis managed with surgery and lung resection.

BACKGROUND: A 67-year old male with multiple comorbidities with previous history of empyema thoracis and thoracic aortic aneurysm presented to ED after 10 months interval with complaints of hemoptysis of more than 10 episodes. Blood investigations showed no coagulopathy/thrombocytopenia. CTA Aorta demonstrated few air locules in pre-existing mural thrombus of saccular descending thoracic aortic aneurysm. No evidence of active bleed. A conclusion of a suspicious ABF was made. Patient was then referred to a Cardio-thoracic centre. Intraoperatively, a fistulous communication between the aneurysm and left lower lobe bronchus was seen. Aneurysm was removed, thoracic aorta repair and left lower lobe lobectomy was performed.

FINDINGS AND/OR PROCEDURE DETAILS: As first reported in 1934, ABF is a rare complication of aortic aneurysm, characterised by acute hemoptysis sustained by massive endobronchial bleeding. Fistulas commonly involve the left side of bronchial tree due to narrow distance between thoracic aorta and left bronchial hemi-system. However, ABF per se is difficult to be demonstrated by either angiography or/CT scan. Hence, presence of air in the aorta should be a clue to suspect ABF in patients with known thoracic aortic aneurysm and presenting with hemoptysis.

CONCLUSION: Aorto-bronchial fistula is a rare etiology of hemoptysis and is a surgical emergency. Due to its high morbidity and mortality, a prompt diagnosis is crucial and surgical intervention should proceed immediately.

CHOUDHARY'S TERNION OF BOERHAVE SYNDROME, SLIT VENTRICLE SYNDROME AND GIANT CSFOMA . A RARE CASE OF GIANT ABDOMINAL CSF PSEUDOCYST CAUSING VENTRICULO-PERITONEAL SHUNT MALFUNCTION LEADING TO BOERHAVE'S SYNDROME

Nikunj Vikram Choudhary*¹

¹*Department Of Radiodiagnosis, GMC Bhavnagar, Sir Takht Sinji Hospital And Government Medical College, Bhavnagar Gujarat India*

INTRODUCTION:

1. CSFoma-is also known as csf pseudocyst, it is defined as loculation of cerebrospinal fluid at distal end of ventriculo-peritoneal shunt. Cerebrospinal fluid from tip is no longer absorbed by peritoneum

Clinical findings- abdominal distension, symptoms of increased intracranial pressure

2. Slit ventricle syndrome- refers to slit like lateral ventricles, possibly due to negative pressure or non-compliance

Cause—blockage or malfunctioning of ventriculoperitoneal shunt(i.e csfoma in this case)

Symptoms-headaches ,fatigue, nausea, projectile vomiting.

3.Boerhave' syndrome- is defined as oesophageal rupture secondary to forceful vomiting and retching, which is characterized by MACKLER'S triad, which includes vomiting ,chest Pain and subcutaneous emphysema

REPORT: A 25-year-old patient was referred to us for usg abdomen with chief complaint of persistent vomiting, dysphagia, chest pain and abdominal distension with past history of ventriculo-peritoneal shunt, altered behavior, seizures and periodic episodes of vomiting in past. A large cystic structure with low level echoes was seen around peritoneal end of vp shunt. On chest x-ray PA view ,subcutaneous emphysema was visible in supraclavicular region. Followed Non contrast computed tomography of brain thorax and abdomen was done(due to vital instability)

CONCLUSION: NCCT revealed ,approx 25.39 x 15.10 x 8.10cm size csf pseudocyst associated with peritoneal end of vp shunt,volume =3,252 ml(calculated using ellipsoid formula), (disrupting the siphoning mechanism of vp shunt) right lateral ventricle appears slit like, possibly due to non-compliance. increased intra-cranial pressure resulted in persistent vomiting and retching leading to rupture in lower 1/3 of oesophagus with pneumo-mediastinum and subcutaneous emphysema in chest,axillary region and neck spaces.

**RATIONAL USE OF COMPUTED TOMOGRAPHY SCAN HEAD IN THE
EMERGENCY DEPARTMENT OF A HIGH VOLUME TERTIARY CARE PUBLIC
SECTOR HOSPITAL**

Tahira Nishtar*¹; Nosheen Noor¹; Tabish Ahmad¹; Muhammad Fayaz¹

¹*Radiology, Lady Reading Hospital, MTI, Pakistan*

OBJECTIVE: To emphasize the rational use of Computed Tomography (CT) head in emergency department of a high volume tertiary care hospital.

MATERIALS AND METHODS: This retrospective observational study was conducted in Radiology Department of Medical Teaching Institute Lady Reading Hospital (MTI-LRH), Peshawar, Pakistan from 01.11.2017 to 31.01.2018. Patients of all ages and both genders presenting to the emergency department with post traumatic and non-traumatic indications for emergency CT scan were included in the study. The imaging was performed on 16 multi slice CT system. The imaging protocol included slice thickness of 3-5mm, non-contrast study for cases of trauma or stroke. Where needed intravenous contrast was administered. CT images were reported on PACS in morning and evening sessions. Information was analyzed using latest SPSS version.

RESULTS: Out of total 4284 CT scans performed in ED 90.8% were CT head (3893). Among 3893 CT brain scans done in ED, 2581 cases were reported normal (66.29%), while 1312 cases had positive findings (33.7%), including post traumatic and non-traumatic.

CONCLUSION: Misuse of CT scan is common especially in an emergency setting. Emergency physicians should be encouraged to obtain a detailed history and perform a thorough physical examination with reference to internationally standardized guidelines while requesting a CT scan.

CT IMAGING OF THE TRAUMATIC BRAIN: COUP AND CONTRE COUP INJURIES AS PREDICTORS OF OUTCOME

Meghanaa Jayakumar*¹; Aniruddha Rangari¹

¹*Radiodiagnosis, AMD Centre Of Imaging Sciences, India*

OBJECTIVE: Focal brain injuries are found in approximately half of all the patients with severe brain trauma and are responsible for nearly 66 % of deaths . With CT imaging, it is possible to precisely delineate and determine whether injuries are coup or contre coup. Since there are very few studies in literature comparing outcome in coup-contre coup injuries, this study aims to bridge the gap.

MATERIALS & METHODS: A retrospective study of 179 patients with traumatic head injuries who underwent CT scanning was carried out. The injuries were divided into three groups: Coup injuries with intraparenchymal injury (n=89)contrecoup injuries (n=44)and coup-contre coup injuries(n=46).Site of primary impact was determined by clinical and CT scan criteria. Using the Chi square test, the mortality rates were compared across the groups and then correlated with the GCS and age and conclusions were made based on the "p" value.

RESULTS: The most common coup injury was depressed fracture with contusion while bilateral contusions and EDH with contusion formed the majority in the coup-contre coup group. There was a statistically significant difference in mortality between patients with coup injuries and patients with contrecoup ($p < 0.005$) and coup-contre coup injuries ($p < 0.001$).Mortality in patients aged less than 60 years and patients with GCS > 8 was significantly higher in patients with contrecoup and coup-contre coup injuries.

CONCLUSION: The present study shows that the presence of contrecoup contusions, with or without coup contusions, is associated with a poor prognosis across all GCS and age categories and may warrant aggressive management.

RADIOLOGICAL EVALUATION OF TYPICAL AND ATYPICAL PRESENTATIONS OF MUCORMYCOSIS INFECTION AND PATHOLOGICAL CORRELATION: CASE BASED REVIEW.

Saneesh P S¹; U C Garga¹; Yashvant Singh¹; Shibani Mehra¹

¹Radiodiagnosis, Pgimer & Dr.Rml Hospital, New Delhi, India

LEARNING OBJECTIVE:

- Radiological evaluation of typical and atypical cases of mucormycosis infection and imaging findings
- To analyse the CT and MRI appearance of rhinocerebral mucormycosis, local invasion and its complication.
- To analyse the typical and atypical CT appearance of pulmonary mucormycosis, its complication and follow up imaging.
- Radiological evaluation of rare infestation of mucormycosis infection affecting stomach and kidney.

BACKGROUND: Mucormycosis is life threatening invasive fungal infection caused by filamentous fungi of all class Zygomycetes. Types are rhinocerebral, pulmonary, disseminated, cutaneous/soft tissue, gastrointestinal, uncommon (like Renal). Mode of inoculation are inhalation, ingestion and traumatic. Pathophysiology- Angioinvasion, Vessel thrombosis, Tissue necrosis. It has very high Mortality (50%-85%).

FINDINGS AND/OR PROCEDURE DETAILS: Case-based review of mucormycosis infection involving different organs. Imaging was done in 128 slice Siemens Dual-energy Scanner and 3T Siemens MRI in Dr.RAM MANOHAR LOHIA hospital, New Delhi. Radiological diagnosis was correlated with histopathological report. Cases were categorized into four groups – rhinocerebral mucormycosis, pulmonary mucormycosis, renal mucormycosis and gastric mucormycosis.

CONCLUSION: Mucormycosis is a life threatening invasive fungal infection commonly affecting immunocompromised patients like uncontrolled diabetes, hematological malignancy, HIV infection, solid organ transplant patients etc. In rhinocerebral mucormycosis computed tomographic evaluation helps to assess epicentral of lesion, local invasion and its complication. CT is superior to MRI in evaluation in bony involvement. MRI is superior to CT in assessment of invasion into neck spaces, orbital and brain involvement. Usual CT appearance of pulmonary mucormycosis are lobar consolidation, mass like lesion and multiple nodules. Classical radiological appearance in pulmonary mucormycosis is reverse halo sign. Pulmonary mucormycosis can also present as multi focal lesion giving centrilobular air spaces nodules with peripheral ground glassing in invasive endobronchial mucormycosis. Renal and gastric mucormycosis is rare form of infestation, usually these are histopathological diagnosis.

**RELATIONSHIP BETWEEN PARATHYROID HORMONE LEVEL AND
PARATHYROID GLAND SIZE AND NUMBERS IN RENAL
HYPERPARATHYROIDISM**

Thanattha Intrarak*¹; Netsiri Dumrongpisutikul¹

¹*Radiology, Faculty of Medicine, Chulalongkorn University, King Chulalongkorn Memorial Hospital, Thailand*

OBJECTIVE: The aim of our study is to investigate the relationship between serum parathyroid hormone (PTH) levels and the parathyroid gland size and numbers in patients with renal hyperparathyroidism.

MATERIALS & METHODS: We retrospectively identified patients with renal hyperparathyroidism who had focused ultrasound of parathyroid glands performed in our institution between August 1st, 2010 and June 30th, 2019. The summations of maximum diameters and numbers of parathyroid glands were collected and compared with serum PTH levels using Pearson correlation, ANOVA test and independent t test.

RESULTS: A total of 110 parathyroid glands in 40 patients were identified by ultrasound. There was positive correlation between serum PTH levels and the sum max diameters of parathyroid glands ($r = 0.397$, $P < 0.050$). There is a trend toward statistically significant to predict parathyroid enlargement ≥ 3 glands (AUC=0.659, 95% CI: 0.482-0.836, $P=0.085$). At cut-off PTH level of more than 2100 pg/ml, high specificity was achieved ($>81\%$) for detection of ≥ 3 parathyroid glands enlargement.

CONCLUSION: Serum parathyroid hormone level in patients with renal hyperparathyroidism is positively correlated with parathyroid gland size. Patients with higher serum parathyroid hormone levels also tend to have increased numbers of parathyroid glands. Further searching for more parathyroid tissue may be helpful in patients who have discrepancy between parathyroid gland size and serum parathyroid hormone level.

**ON-SITE MICROSCOPIC EVALUATION OF UNSTAINED SLIDES TO ASSESS
ADEQUACY OF ULTRASOUND GUIDED FINE NEEDLE ASPIRATION
CYTOLOGY OF THYROID NODULES.**

Nik Mohd Harris Nik Hussin*¹; Matthew Brown²; Phuoc-Tan Diep²; Manal Atwan²; Kashmir
Kenyon¹

¹*Department Of Radiology, University Hospitals Morecambe Bay NHS Foundation Trust,*

²*Department Of Histopathology, University Hospitals Morecambe Bay NHS Foundation Trust,
United Kingdom*

OBJECTIVE: On-site evaluation of thyroid fine needle aspiration cytology (FNAC) on stained slides is a useful way to reduce inadequate samples, however, slide preparation requires additional time and reduces clinic throughput. Our institution utilizes a unique approach to evaluating the adequacy of thyroid cytology sampling by assessing unstained slides. This study aimed to evaluate our practice of assessing adequacy of ultrasound guided fine needle aspiration biopsy of thyroid lesions using contemporaneous microscopy on unstained, air-dried samples.

MATERIALS & METHODS: Retrospective review of cytopathology and radiology reports on 139 consecutive patients who had undergone FNAC sampling between September 2015 and August 2016 at regional specialist service for suspected thyroid cancer. The samples were obtained and slides prepared by 3 Histopathologists and 1 Radiologist using a standardized technique. Each operator evaluated the unstained slides for adequacy and performed up to 3 needle passes if the sample was inadequate on microscopy.

RESULTS: Using our method of assessing unstained thyroid fine needle cytology biopsy, our service was able to achieve a collective adequacy rate of 93.9% (range 90-100%). This adequacy rate is higher than that cited in literature when on-site evaluation of adequacy is not utilized. Our adequacy rate is comparable to studies that evaluate stained samples, but without the time penalty required to prepare the slides.

CONCLUSION: On-site evaluation of thyroid FNAC on unstained slides is practical and efficient in achieving high adequacy rates. Radiologists can adopt this skill to expedite diagnosis and prevent repeat sampling.

MACHINE LEARNING IN MEDICINE: PRESENT AND FUTURE

Sim Zheng Ting Jordan*¹; Fong Qi Wei²; Huang Weimin³; Tan Cher Heng¹

¹*Diagnostic Radiology, Tan Tock Seng Hospital, Singapore* ²*Geylang Polyclinic, National Healthcare Group, Singapore,* ³*Healthcare-Medtech Division & Visual Intelligence Department, Institute For Infocomm Research, A*Star, Singapore*

LEARNING OBJECTIVE:

- To grasp basic concepts and terms used in AI and ML.
- To brainstorm on the feasibility of machine autonomy in Medicine.

BACKGROUND: With the advent of artificial intelligence (AI) in recent years, machines are being called upon to complete increasingly complicated tasks, often with remarkable results. Machine learning (ML) is the most relevant subset of AI with regards to medicine, and it will be a matter of time before it becomes an integral part of our everyday practice. It is therefore timely for physicians to understand what machine learning and artificial intelligence is about, and that it can be a new tool for doctors, to act as an enabler, rather than viewing it as a competitor.

FINDINGS AND/OR PROCEDURE DETAILS: The purpose of this article is to introduce basic concepts and terms used in AI and ML. We aim to demystify commonly used AI/ML algorithms such as Neural Networks / Deep Learning, Decision Tree, and Computer Vision, through specific examples spread across the different realms of medicine. We will discuss how machines are already being used in the practice of medicine, to augment the physician's decision making process. We will postulate the impact ML will have on medical practice and medical research based on its current capabilities and current limitations. We will also discuss the feasibility of full machine autonomy in medicine.

CONCLUSION: AI will have a pivotal part to play in Medicine. The time freed up by the increased productivity and efficiency should be spent with patients.

THE IMPACT OF CONTRAST LIMITED ADAPTIVE HISTOGRAM EQUALIZATION AS IMAGE ENHANCEMENT ON BREAST SEGMENTATION

Muhammad Khalis Abdul Karim*¹; Siti Fairuz Mat Radzi¹; Mohd Amir Abdul Rahman¹

¹*Jabatan Fizik, Fakulti Sains, Universiti Putra Malaysia(UPM)*

OBJECTIVE: Breast cancer is one of the most common cancers among women in both developing and developed country. It is notable that numbers of diagnosis have a higher error rate of false-negative (FNs) and false positives (FPs), technological improvement needs to be developed to reduce the error rate. In this study, 100 datasets of the mammographic images with lesion obtained from The Cancer Imaging Archive (TCIA) in DICOM format is used to evaluate the percentage difference between two semi-automatic segmentation techniques using Contrast Limited Adaptive Histogram Equalization (CLAHE) as an enhancement.

MATERIALS & METHODS: There are three sets of images which ROI was adapted with; Contrast Limited Adaptive Histogram Equalization (CLAHE) and Adaptive Histogram Equalization (AHE), only Contrast Limited Adaptive Histogram Equalization (CLAHE) and with no enhancement. Segmentation process from two sets of enhanced images was performed by using Seeded Region Growing Algorithm (SRG) to be compared with manual segmentation.

RESULTS: The experimental results of the proposed technique for enhanced image have been compared with manual segmentation by evaluating Dice-Sørensen coefficient for both sets. The percentage difference between segmented images enhance with CLAHE and AHE is smaller than images enhanced with CLAHE only. The value of Dice-Sørensen Coefficient for images enhanced with CLAHE only is between 0.7 to 0.9 while for images enhanced with CLAHE and AHE are between 0.9 to 1.0.

CONCLUSION: The results suggest that segmented images enhanced with CLAHE and AHE have higher similarity with manual segmentation compared to non-enhanced.

PERCUTANEOUS TRANSHEPATIC BOWEL STENT DEPLOYMENT; AN ALTERNATIVE APPROACH FOR MALIGNANT AFFERENT LOOP OBSTRUCTION FOLLOWING WHIPPLE'S PROCEDURE: A CASE REPORT

Zahid Amin Khan*¹; Raana Kanwal²; Atif Nawaz³; Alishba Zaid³; Muhammad Shozab³; Atif Rana³; Haider Ali³

¹*Interventional Radiology, Shifa International Hospital, Pakistan*, ²*Diagnostic Radiology, Shifa International Hospital, Pakistan*, ³*Radiology, Shifa International Hospital, Pakistan*

INTRODUCTION: Afferent loop obstruction is a rare complication of Whipple's procedure. Here we present a case of afferent loop obstruction in a known case of pancreatic carcinoma, status post Whipple's, in which we used a percutaneous transhepatic approach to relieve the afferent loop obstruction using a self-expanding bare metal stent.

RESULTS: 47 years old male patient treated for periampullary adenocarcinoma with Whipple's procedure and adjuvant chemotherapy presented with obstructive jaundice and biliary sepsis. CT abdomen showed local recurrence with ill defined, focal, soft tissue mass obstructing the afferent loop several centimeters distal to CBD resulting in upstream dilatation of afferent loop as well as dilation of intrahepatic biliary channels and adjacent ureter with a resultant hydronephrosis. Due to Whipples anatomy and obstruction of the afferent Roux loop endoscopic biliary drainage was impossible. Referred to IR for percutaneous biliary drain placement. Initially external PTBD was placed from left hepatic lobe. Later on patient's request due to aesthetic and care reasons we injected contrast via PTBD. Short segment of narrowed bowel lumen due to tumor infiltration seen while pulling the catheter back. Stricture was crossed with the glide wire again and exchanged for stiff Amplatz wire via the angle tip catheter. A self expandable metallic stent (Epic Boston Scientific) 14 x 60 mm was deployed and dilated with 8 x 40 mm (RIVAL PTA) balloon. Hydronephrosis was relieved, saving patient from nephrostomy tube. No immediate or late complications were seen.

CONCLUSION: Percutaneous transhepatic metallic stent deployment for malignant bowel stricture is safer alternative treatment option.

DURAL ARTERIOVENOUS FISTULA (DAVF) AS COMPLICATION OF POST BURR HOLE: CASE REPORT

Abdalahim Alhassan*¹; Norlisah Ramli¹; Khairul Azmi¹

¹*Biomedical Imaging, University Of Malaya Medical Centre, Malaysia*

INTRODUCTION: Multiple DAVFs cases were reported as a complication of post intracranial surgical interventions like craniotomy, ventriculostomy and Burr hole. However, DVF as complication of Burr hole is extremely rare, only 2 reported cases. We report a case of venous hypertension with DVF developing after Burr Hole surgery.

REPORT: A 77 year-old female presented with progressive right upper and lower limb weakness 8 months after Burr hole operation for bilateral subdural hematoma. MRI brain showed confluent left posterior parietal focal T2/Flair high signal intensity area edema, with bilateral enhancing dural thickening. The case was initially misdiagnosed as Glioblastoma multiforme due to progressive white matter edema. However after the prominent ECA vessels converging towards the Burr hole and enlarged enhancing left parietal superficial cortical veins were detected, diagnosis of Dural fistula with venous hypertension was entertained. Digital subtraction angiography was performed and confirmed DAVF at left parietal Burr hole with arterial supply from left middle meningeal artery venous drainage to left parietal cortical veins. The fistula was successfully embolised using Onyx. Post procedure patient recovered well with improving weakness of right upper and lower limb from grade 0 to grade 1.

CONCLUSION: This was a rare case of post Burr hole DAVF with unilateral diffuse white matter venous hypertension. The radiological features are described along with the literature review.

EARLY EXPERIENCE WITH WOVEN ENDOBRIDGE (WEB) SYSTEM FOR THE TREATMENT OF INTRACRANIAL ANEURYSM

Khairul Azmi Abd Kadir*¹; Chan Kin Wong¹; Fadhli Mohamed Sani¹; Lau Jia Him²;
Noorshahrizal²; Mohd Salahuddin Kamaruddin¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: The safety and efficacy of the Woven Endo Bridge (WEB) device for the treatment of cerebral aneurysms has been investigated in several studies. Our objective was to report early experience with the WEB device in the treatment of intracranial aneurysms, including the technical feasibility and safety as well as short term MRI, angiographic and clinical follow-up-results

MATERIALS & METHODS: We performed a retrospective analysis of all 5 aneurysms treated with a WEB device (WEB Single-Layer and Single-Layer Sphere) recently. Primary outcome measures included the feasibility of implantation and the angiographic outcome. Secondary outcome measures included the clinical outcome at discharge and procedural complications

RESULTS: Five unruptured intracranial aneurysms in 3 patients were treated with the WEB device. Implantation was successful in all aneurysms. Additional devices (stents/coils) were necessary for 1 of the aneurysms. One patient had acute thrombosis side branch vessel which successfully reversed with deployment of stent and antiplatelet agent. No other complication seen. MRI and Angiographic follow-up at 1 and 3 months respectively, showing complete occlusion. Delayed aneurysm ruptures have not been observed during the follow-up period to date.

CONCLUSION: The WEB device offers a safe and effective treatment option for intracranial aneurysms with or without the need for antiplatelet therapy.

**ANALYSIS OF DIAGNOSTIC ACCURACY AND SAFETY OF CT- GUIDED
TRANSTHORACIC NEEDLE BIOPSY WITH A COAXIAL AUTOMATED 18
GAUGE BIOPSY SYSTEM: SINGLE-INSTITUTION EXPERIENCE OF 238 CASES**

Chew Fatt Yang*¹; Kang Lun Cheng¹, Chang Yu Song¹, Chung-Yi Wang¹, Su-Tso Yang¹,
Yung-Fang Chen¹

¹*Department of Medical Imaging, China Medical University Hospital, Taiwan (ROC)*

OBJECTIVE: To evaluate the diagnostic accuracy and the complications of CT-guided transthoracic needle biopsy (TTNB) with a coaxial automated 18 gauge biopsy system.

MATERIALS & METHODS: A total of 242 CT guided TTNBs performed in 238 patients (mean patient age, 62.84 years; range, 6–92 years) from January 2018 to December 2019 were retrospectively evaluated. The demographic data of patients, lesions' characteristics, technique, complications, and pathological results were reviewed. The frequency and factors affecting pneumothorax and pulmonary hemorrhage were determined. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of TTNBs for diagnosis of malignancy were measured.

RESULTS: Pneumothorax and pulmonary hemorrhage occurred in 67 of the 242 TTNBs (27.7%) and 75 of the 242 TTNBs (30.1%), respectively. Four patients with pneumothorax necessitated admission for percutaneous drainage and one patient with hemothorax was admitted for surgical evacuation. No procedure-related mortality was found. Univariate analysis demonstrated that pneumothorax was more likely to occur with lesions in lower lobe ($p=0.0003$), small size of lesion ($p < 0.0001$), lesion size of 30mm or smaller ($p=0.0004$) and non-subpleural location ($p=0.007$). The significant variables associated with pulmonary hemorrhage were small size of lesion ($p = 0.005$), lesion size of 30mm or smaller ($p=0.0005$), non-subpleural location ($p < 0.0001$), and increase distance to pleural ($p < 0.0001$). Sensitivity, specificity, PPV, NPV, and accuracy of CT-guided TTNBs for the diagnosis of malignancy were 96.7%, 100%, 100%, 82.6%, and 96.1%, respectively.

CONCLUSION: CT-guided TTNB with a coaxial automated 18 gauge biopsy system is a safe procedure with high accuracy and low rate of complication.

DECISIVE TECHNICAL FACTORS IN THE THERAPEUTIC SUCCESS OF PULMONARY ABLATION

Larissa De Andrade Defendi*¹; Katia Pinheiro Souza²; Priscila Mina Falsarella²; Juliano Rodrigues De Andrade²; Antonio Rahal Filho²

¹*Imaging Department, Hospital Israelita Albert Einstein,* ²*Interventional Radiology, Hospital Israelita Albert Einstein, Brazil*

LEARNING OBJECTIVE: This essay aims to elucidate the technical principles, current indications and specific care that contribute to the optimal development of percutaneous lung thermal ablation techniques.

BACKGROUND: Percutaneous thermal ablation is a minimally invasive approach to treat pulmonary malignancies not eligible for surgical resection. The procedure is performed using technologies that may involve radiofrequency, microwave or argon gas (cryoablation).

FINDINGS AND/OR PROCEDURE DETAILS: Thermal ablation aims to destroy the target tissue using heating (radiofrequency and microwave) or cooling (cryoablation). Lung tissue peculiarities must be considered for successful treatment, such as thermal insulation, lower conductivity, respiratory movement, accentuated heat sink effect and vicinity to vital structures. The tumor relationship with adjacent structures, access route, target-skin distance (a predictor of complications) and needle location should be observed in the initial procedure planning. In terms of local control, lesion size is the most relevant factor (up to 3 cm in radiofrequency). Cryoablation and microwaves are alternatives in larger lesions, as well as using more than one probe or its repositioning during the procedure. The intent is to obtain a margin of tissue necrosis wide enough to avoid therapeutic failure and restricted enough to prevent critical structures injuries. A minimum of 5 mm (ideal 10 mm) margin should be respected in patients with curative intent (an independent predictor of failure).

CONCLUSION: Several factors are decisive for pulmonary ablations success. The interventionist, in addition to excellent training, is responsible for meticulously understanding the techniques' indications and contraindications, with adequate patient selection.

STUDY ULTRASOUND IMAGING AND EFFECTIVE TREATMENT IN VARICOSE VEINS OF LOWER LIMBS BY COMBINED FOAM SCLEROTHERAPY, ENDOVENOUS THERAPY AND MICROPHLEBECTOMY

Cong Thao Trinh*¹; Van Trung Hoang²; Hoang Anh Thi Van²; Vichit Chansomphou³; Cam Van T Nguyen¹

¹*Functional Exploration Department, Hue Central Hospital, Vietnam,* ²*Department Of Radiology, Thien Hanh Hospital, Vietnam,* ³*Department Of Radiology, Savannakhet Medical-Diagnostic Center, Laos*

OBJECTIVE: Investigate clinical features, Doppler ultrasound characteristics and evaluate treatment efficacy of foam sclerotherapy in combination with endovenous therapy and microphlebectomy for patients with lower extremity varicose veins.

MATERIALS AND METHODS: A longitudinal prospective uncontrolled intervention study, with a convenient sample size of 33 patients diagnosed with varicose veins of lower extremities, who were then treated with foam injection in combination with endovenous therapy and microphlebectomy at Hue Central Hospital from 3/2018 - 8/2020.

RESULTS: The average age of the research group is 52.2 ± 10.96 years, ranging from 25-83 with the female: male ratio of 4.5:1. Pain, severity, numbness, leg fatigue, and cramps were symptoms for the majority of patients at grade C2 and a mean VCSS score of 4.51 ± 1.47 . The mean diameter of the great saphenous vein in the mid-thigh position was 5.4 ± 1.21 mm, the superficial tributary veins were 3.7 ± 0.56 mm with the venous reflux time greater than 0.5s. After 1 month of treatment, functional symptoms, CEAP and VCSS resolution and venous diameter all decreased significantly. 100% of the intervention veins had no reflux flow on Doppler ultrasound. Complications reported after the intervention were skin paresthesia, skin pigmentation disorder and interventional pain with the prevalences of 42.6%, 12.8% and 8.5%, respectively.

CONCLUSION: Doppler ultrasound plays an important role in the diagnosis and follow-up after treatment in patients with varicose veins of the lower extremities. The foam sclerotherapy in combination with endovenous therapy and microphlebectomy is a safe, non-invasive and highly effective procedure with acceptable complications in the treatment for this disease.

**PERCUTANEOUS TRANSHEPATIC STENTING OF JEJUNO-JEJUNAL
ANASTOMOSIS STRICTURE TO RELIEVE AFFERENT LOOP SYNDROME:
CASE REPORT**

Krishant Raj*¹; Ch'ng Li Shyan¹; Bibi Sadaqat¹; Anis Shafina Mahfudz²; Mohd Rizal
Roslan¹

¹Radiology, Hospital Selayang, Malaysia, ²Radiology, UiTM, Malaysia,

INTRODUCTION: Malignant afferent loop syndrome (ALS) is a rare complication after pancreaticoduodenectomy, Roux-en-Y, or Billroth 2 surgeries. It can lead to biliary obstruction and cholangitis hence increasing the risk of mortality.

REPORT: A 57-year-old lady who underwent pancreaticoduodenectomy in 2019 for adenocarcinoma of the ampulla of Vater with liver and peritoneal metastasis followed by adhesiolysis, gastrojejunostomy, and jejunostomy a year later for ALS due to gastrojejunal anastomosis recurrence. Peritoneal metastases adjacent to the inferior vena cava and L3 vertebral body was unresectable during the second surgery. She presented with vomiting (bilious), on and off fever, upper abdominal pain with difficulty tolerating fluids and solids 2 months after the last surgery. Computed tomography (CT) done, showed a dilated afferent loop of bowel, dilated intrahepatic ducts as well as micro abscesses in segment VIII of the liver secondary to jejunostomy anastomotic stricture. The L3 peritoneal metastases had also invaded into the jejunostomy anastomosis as well as right mid ureter causing right hydronephrosis and hydroureter. Endoscopic stenting of the jejunostomy stricture was unsuccessful. Percutaneous Transhepatic Biliary Drainage (PTBD) was performed to relieve the dilated system and followed by internalization. The jejunostomy anastomosis stricture was serially dilated and then stented using a self-expandable metallic stent (Epic, Boston Scientific) via percutaneous transhepatic route.

CONCLUSION: Malignant afferent loop syndrome can be managed by surgical and non-surgical interventions. Non-surgical treatment includes stenting of stricture via endoscopic or percutaneous transhepatic route. As of our knowledge, this is the second case report of jejunostomy stricture stenting via PTBD.

BALLOON-EXPANDABLE STENT IMPLANTATION FOR SEVERE COARCTATION OF AORTA IN ADULTS- A CASE REPORT

Raana Kanwal*¹; Zahid Amin Khan¹; Muhammad Shozab²; Atif Rana²; Jamshaid Anwer²;
Omer Ehsan³; Haider Ali³; Maria Rauf³

¹*Diagnostic Radiology, Shifa International Hospital, Pakistan*, ²*Radiology, Shifa International Hospital, Pakistan*, ³*Vascular, Shifa International Hospital, Pakistan*

INTRODUCTION: Coarctation of the aorta, when presents later in adult life manifests unique endovascular challenges. Balloon angioplasty, a viable alternative to surgery, is commonly used as treatment option in children. For adult patients TEVAR remains an option but with some caveats. A case report is presented providing an alternative option to conventional TEVAR in management.

REPORT: A 25 years hypertensive man with bilateral lower limbs claudication presented with weak femoral pulses. Initial imaging showed coarctation of aorta (CoA) and pressure measurement at the time of angiography revealed a mean systolic gradient of 18 mmHg. Due to a long segment of post-stenotic dilatation involving the entire descending thoracic aorta, conventional TEVAR would risk spinal ischemia. In addition the TEVAR would have insufficient radial force even with the help of a moulding balloon. Another technical challenge would be significant mismatch in size of the aortic arch and dilated descending thoracic aorta. A 24 x 37 mm balloon expandable stents graft (BeGraft Aortic Stent Graft System - Bentley) advanced through a 14 Fr sheath via surgical cut down. In case of an aortic tear/rupture or dissection two TEVAR's were available. Adequate position of stent-graft achieved by using a catheter placed via the left brachial artery. Pressure gradient significantly reduced with symptomatic improvement.

CONCLUSION: Short stent-graft implantation is safer than conventional TEVAR and more effective due to the increased radial force in dilating the narrowed aortic segment. The superiority of TEVAR to conventional surgery is already well established.

MULTIPARAMETRIC MRI OF EARLY TUMOUR RESPONSE TO IMMUNE CHECKPOINT INHIBITORS

Ai Hui Doreen Lau*¹; Mary McLean¹; Andrew Priest¹; Frank Riemer¹; Andrew Gill¹; Martin Graves¹; Kevin Brindle²; Edwin Chilvers³; Klaus Okkenhaug⁴; Pippa Corrie⁵; Ferdia Gallagher¹

¹Department of Radiology, University of Cambridge, ²Radiology, CRUK Cambridge Institute, United Kingdom, ³Medicine, University of Cambridge, ⁴Pathology, University of Cambridge, United Kingdom, ⁵Oncology, Addenbrooke's Hospital, United Kingdom

OBJECTIVE: Immune checkpoint inhibitors have shown great promise in the treatment of cancers. There is an unmet need for the development of predictive biomarkers of tumour response at early timepoints for patient monitoring and treatment selection. The aim of this study was to investigate early changes in the function, microstructure and heterogeneity of the tumour microenvironment following immune checkpoint blockade using multiparametric MRI.

MATERIALS & METHODS: Metastatic melanoma patients on treatment using immune checkpoint inhibitors were imaged longitudinally at Baseline, Post Cycle 1 and Post Cycle 4 of treatment using T2WI, diffusion-weighted/ kurtosis imaging (DWI/DKI) and dynamic contrast enhanced (DCE) MRI.

RESULTS: Different patterns of response to treatment: 70% of patients showed immediate reduction in tumour volume whilst 30% of patients demonstrated pseudoprogression as early as 3 weeks after the start of treatment. Intra- and inter-tumoural heterogeneity in vascular permeability was observed in all lesions, with decreased K_{trans} and v_e measured in the majority of the responding lesions including the pseudoprogressive lesions at Post Cycle 1. This suggests that tumour vasculature remodelling may facilitate T-cell recruitment into tumours in response to immunotherapy. Histogram analysis of the ADC, apparent diffusivity D_{app}, and K_{app} showed wider spread of diffusion signal and greater heterogeneity within the responding lesions, which may reflect underlying cellular alterations such as immune cell infiltration and cell death during the course of therapy.

CONCLUSION: In this study, we have demonstrated early changes in the microstructure, vascular permeability and heterogeneity of the tumour microenvironment following immunotherapy using multiparametric MRI.

**ESTIMATION OF GFR BY RADIOISOTOPE CAMERA METHOD (DTPA) AND
CORRELATION WITH CREATININE BASED FORMULA (MDRD) OF GFR
ESTIMATION IN HEALTHY DONORS- INSTITUTIONAL EXPERIENCE**

Rajeev Kumar *¹; Pokhraj Suthar²; Mahesh Chauhan¹; Anurag Jain¹; Amit Sharma¹

¹*Nuclear Medicine, Army Hospital R&R New Delhi, India,* ²*Radiology, Sterling Cancer Hospital, India*

OBJECTIVE: To assess correlation of GFR as calculated by Radioisotope camera method (Tc-99m- DTPA) against MDRD formula using serum creatinine in healthy donors.

MATERIALS & METHODS: Study was conducted in 64 healthy prospective kidney donors over the periods of 3 years. The study includes prospective renal donors. These patients undergone DTPA scan for GFR estimation. Each subject, after formal consent for the study was subjected to detail clinical history and thorough physical examination, including weight and height. Serum creatinine was done in each subject on same day. Correlation with MDRD formula of GFR estimation was done.

RESULTS: Among 64 patients out of which 36(56.2%) are females and 28(43.8%) are males. We estimated GFR with the mGFR (99mTc DTPA by Gates method) in all cases and compared with abbreviated MDRD formula. In donor, mean normalized GFR by DTPA is 104.39 ± 17.26 (range 67.4-144.8) ml/min/1.73m², whereas mean GFR by Abbreviated MDRD is 99.40 ± 25.14 (range 51-161) ml/min/1.73m². In our study GFR by DTPA method is significantly positive correlation with GFR by MDRD (p value: 0.002).

CONCLUSION: For the renal transplantation, it is not important to know the GFR precisely, it being enough to know that which kidney is doing well. Even though MDRD formula and Gamma camera method gives matching results about GFR, Gamma Camera method gives several added information's and hence it is justified to be used in centers where the facility is available.

**THE UTILITY OF 18 F-FLUROCHOLINE POSITRON EMISSION COMPUTED
TOMOGRAPHY (18F-FCHPETCT) IN DETERMINING BREAST CANCER
AGGRESIVENESS**

Mohd Hazeman Zakaria *¹; Shazreen S¹; Shahrin Niza S²; Fathinul F.¹

¹*Centre for Diagnostic Nuclear Imaging, Universiti Putra Malaysia,* ²*Department of Surgery, Faculty of Medicine, The National University of Malaysia*

OBJECTIVE : To determine the potential of 18 Flurocholine (FCH) PET-CT as a predictor of breast cancer aggressiveness phenotype markers and the quality of life (QOL) post-treatment surveillance.

MATERIALS & METHODS: Seventeen consecutive patients with breast carcinoma underwent 18 F-FCH PET-CT for pre-treatment staging. All subjects were dichotomised into single hormone receptor(HR)- HER-ve and single HR (HER +ve) immunohistochemical markers (phenotype). Analysis utilising the standardised uptake value (SUVmax/g/dl) was used to predict the two groups of phenotype markers and the quality of life (QOL). The QOL domains –Global Health Status (GHS), Physical function(PF), Role Function(RF) and Social function(SF) were evaluated for the satisfaction scoring based on the EORTC and Quality of life (QOL) (The SF-25v2®Heal-copyrighted by Quality Metric Incorporated).

RESULTS: There were 17 females with mean age of 52.82±10.71 years. Fourteen patients had malignant disease (82.35%) with eight (47.1%) with single HR -HER–ve phenotype. There was a significant different between 18F-FCH SUVmax of the single HR-(HER-ve) and the single HR-(HER+ve) positive group (1.99±1.52 g/dl vs. 0.2g±0.22/dl; p<0.050). Eight patients (cohort 8/17) are alive at 2 years close-out date. The low 18F-FCH SUVmax (mean, 0.053±0.49 dl/ml)of the primary tumour predicted the good scoring satisfaction on the QoL SF at 6 months (p<0. 050) but it was insignificant at the 2 years follow-up.

CONCLUSION: The SUVmax FCH PET-CT is potentially a good predictor for breast carcinoma aggressiveness and it has an important role in predicting the quality of life parameters on the disease surveillance.

THYROID SCINTIGRAPHY REBORN! UTILISING QUANTITATIVE THYROID SPECT/CT IN THE MANAGEMENT OF HYPERTHYROIDISM

Muhammad Adib Abdul Onny*¹; Muhammad Yusri Udin¹; Syed Ejaz Shamim¹; Mohd Syahir Mansor²; Hazlin Hashim²

¹*Department Of Nuclear Medicine, Radiotherapy & Oncology, Hospital Universiti Sains Malaysia (HUSM),* ²*Advance Medical & Dental Institute (AMDI), Universiti Sains Malaysia*

INTRODUCTION: Thyroid scintigraphy plays an important role in the assessment and diagnosis of thyroid disease by providing structural but more importantly functional information. Thyroid scintigraphy with Quantitative Single Photon Emission Tomography / Computed Tomography (SPECT/CT) has revolutionised its utilization and allows the assessment of not only functional status but also provides accurate anatomical information thus making it an ideal one-stop-modality for diagnosis, management and dosimetry for radioiodine (RAI) therapy in hyperthyroidism.

REPORT: We present 3 cases of hyperthyroidism whereby Quantitative Thyroid SPECT/CT (QT-SPECT/CT) has been utilized in the evaluation, diagnosis and management of hyperthyroidism. Patient A, 39-year-old lady presented with suppressed TSH(<0.005mIU/L) and negative thyroid antibodies, referred for evaluation of factitious thyroiditis. QT-SPECT/CT analysis revealed heterogenous increased uptake of Tc99m-pertechnetate in the thyroid gland with elevated Technetium Thyroid Uptake (TcTU) 2.63%. Dosimetry calculation of RAI performed and a calculated dose of 12mCi was prescribed consequently rendering patient euthyroid at 6 months. Patient B&C were 45-year-old and 50-year-old ladies presented with overt hyperthyroid symptoms. QT-SPECT/CT showed findings representing goitres of opposite ends of the spectrum; patient B with a large goitre, volume measuring 128ml, TcTU 47.85% and calculated RAI of 24mCi where-else patient C had a goitre of 20ml, TcTU 3.99% and calculated RAI of 7mCi. Despite the significant difference in dose, both patients achieved remission at 6 months.

CONCLUSION: QT-SPECT/CT is certainly a game-changer modality and proves to be an effective one-stop modality in the evaluation, diagnosis and management of thyroid disorders particularly hyperthyroidism.

FDG-PET CT SCAN AS A USEFUL DIAGNOSTIC TOOL TO FACILITATE THE DIAGNOSES OF DIFFERENT SUBTYPES OF DEMENTIA

Wan Mohammad Ibrahim Wan Azman*¹; Kartini Rahmat¹; Norlisah Ramli¹; Abdal Salam¹;
Nor 'Izzati Saedon²; Tan Maw Pin²

¹*Bio-Medical Imaging, University Malaya, Malaysia,* ²*Geriatric Unit, Department Of Medicine, Universiti Malaya, Malaysia*

OBJECTIVE: Prevalence of dementia in Malaysia was 123,000 people in 2015 and is projected to increase to 590,000 people in 2050. Alzheimer's disease is the most common type of dementia. Others are vascular dementia, dementia with Lewi Body and frontotemporal dementia. These types of dementia often present themselves with very similar symptoms, causing difficulty to determine type of dementia clinically. It is crucial to differentiate these subtypes as the treatment strategy are different. Here we evaluate the usage of FDG-PET CT to facilitate the clinical diagnoses of dementia.

MATERIALS & METHODS: 16 dementia patients referred from Geriatric memory clinic underwent FDG-PET CT scan are included in the study. Pre-PET CT scan diagnoses, PET CT scan diagnoses and final diagnoses were evaluated. These cases were discussed in multidisciplinary neuro-cognitive conference involving geriatrician, radiologist and neurologist taking into account patient's clinical symptoms and FDG-PET CT findings. Final diagnoses are established post discussion.

RESULTS: 7 patients (43.8%) had similar Pre and Post-PET CT scan diagnoses with PET CT scan findings. Another 7 patients (43.8%) had different both Pre and Post-PET CT scan diagnoses with PET CT scan findings. Lastly 2 patients (12.5%) had different Pre-PET CT scan diagnoses, but this was changed to different subtype diagnoses similar to PET CT scan findings.

CONCLUSION: FGD-PET CT Scan of the brain is a useful tool to facilitate clinician in the diagnoses of different subtypes of dementia however larger study need to be done to further evaluate this.

4D-CT VERSUS TC99M-MIBI SPECT/CT IN LOCALISATION OF PARATHYROID DISEASE - A PILOT STUDY

Kwok Yan Li*¹; Wing Hang Luk¹; Fung Him Ng¹; Chi Man Chau¹; Stephen Ka Hon Wong¹;
Nin Yuan Pan¹

¹*Department of Radiology, Princess Margaret Hospital, Hong Kong (SAR)*

OBJECTIVE: In the workup for primary hyperparathyroidism, 4DCT is gaining popularity with emerging evidence of superior performance. However, it does impart a higher radiation dose. There is still no consensus on the optimal localization pathway as different institutes vary in preference between modalities, alone or in combination. We aim to compare the diagnostic efficacy of 4DCT and sestamibi-SPECT/CT and assess its value in the initial workup of hyperparathyroidism.

MATERIALS AND METHODS: We performed a single-institution retrospective review of patients referred to us for hypercalcaemia and hyperparathyroidism. We included those who underwent both sestamibi-SPECT/CT and 4DCT in a single setting from March 2018 to September 2019 with subsequent pathological confirmation. Imaging results were based on consensus of two blinded radiologists with more than 10 years of experience, who reviewed the images independently.

RESULTS: Out of 14 patients with pathological diagnosis of parathyroid abnormality (12 adenomas, 1 lipoadenoma, 1 hyperplasia), 4DCT gave positive results in all 14 patients versus only 12 with sestamibi. 4DCT appears to have a higher sensitivity (100% vs. 85.7%). We also note that sensitivity of sestamibi-SPECT/CT seems to deteriorate with the size of parathyroid lesion.

CONCLUSION: So far in our pilot study, we see that 4DCT could be superior to sestamibi-SPECT/CT in terms of diagnostic efficacy, likely due to better spatial resolution and hence detection of smaller sized lesions.

INCIDENTAL FINDING OF HEPATOCELLULAR CARCINOMA USING GA68-PSMA PET-CT: FUTURE USE FOR DETECTION AND THERANOSTICS?

Ew-Jun Chen*¹; Teik Hin Tan¹; Nik Muhd Aslan²

¹*Nuclear Medicine Centre, Sunway Medical Centre, Malaysia,* ²*Clinical Oncology, Sunway Medical Centre, Malaysia*

INTRODUCTION: Prostate cancer is one of the most frequent malignancy affecting men. Due to high expression of prostate-specific membrane antigen (PSMA) in the epithelial vasculature of prostatic cancer cells, radiolabelled Gallium-68-PSMA Positron Emission Tomography-Computed Tomography (Ga68-PSMA PET-CT) has now become an essential imaging modality to stage high-risk prostate cancer as well as detect biochemical relapse. However, PSMA is also over-expressed in the neovasculature epithelium of other non-prostatic high-vasculature tumours.

REPORT: We report a case of incidental finding of hepatocellular carcinoma (HCC) by Ga68-PSMA PET-CT. Eighty-year-old male diagnosed with prostate cancer undergoing hormonal therapy was referred for Ga68-PSMA PET-CT for further staging. PET-CT findings showed a single large irregular hepatic lesion with concordant PSMA tracer uptake, likely suggestive of primary liver malignancy. Subsequent liver biopsy confirmed HCC. Patient then received concurrent treatments for both HCC and prostate cancer.

CONCLUSION: Neovascularisation is the foundation of growth, invasion and metastasis in HCC. The epithelium of neovasculatures may express PSMA, which could be a potential pitfall when staging for prostate carcinoma. Nonetheless, the expression of PSMA in HCC may suggest a possible role of Ga68-PSMA PET-CT in HCC detection and staging. Furthermore, this may allow for possible novel HCC treatments using PSMA as a potential therapeutic target in theranostics.

CASE REPORT: TENOSYNOVIAL GIANT CELL TUMOR(TGCT,GIANT CELL RICH NEOPLASM) IN HOFFA'S FAT PAD

Dalsu Park*¹; Kyung Hwan Kim²

¹Radiology, Yuil Hospital, Korea, ²Orthopaedic Surgery, Yu-Il Hospital, Korea

INTRODUCTION: We present an especially unusual case of TGCT(tenosynovial giant cell tumor,Giant cell rich neoplasm) that occur between parameniscal, tibia anterior wall and hoffa's fat pad.

REPORT: A-54 - years old male patient with lt knee joint pain 1 day. The patient was otherwise well reporting no history of trauma to the knee nor any symptoms. The patient was admitted to imaging study and biopsy. plain radiography show no abnormal finding. MR scan reveals a small sized heterogenous T2 hyperintense , T1 hypointense and hyperenhance in T1 FAT SAT lesion between lateral meniscus anterior horn ,tibia epiphysis lateral and hoffa's fat pad. which was followed by biopsy and mass remove. mass was easily remove from hoffa's fat pad but fibrous hard connection with tibia bone surface without significant blood supply .

CONCLUSION: TGCT(tenosynovial giant cell tumor,Giant cell rich neoplasm) is very rare neoplasm , but we must careful observation and consideration are needed in hyperenhance mass in hoffa's fat pad and parameniscal space.

THE COMPARISON OF APPARENT DIFFUSION COEFFICIENT & FRACTIONAL ANISOTROPY OF THE ROTATOR CUFF MUSCLES USING 3T-MRI IN HEALTHY SUBJECTS

Mohd Fariq*¹; Mohd Ezane²; Esther Rishma Sundram³

¹*Department Of Diagnostic Imaging, HSA, Malaysia,* ²*Department Of Diagnostic Imaging, School Of Medical Sciences USM, Malaysia,* ³*Port Dickson District Health Office, Malaysia*

OBJECTIVE: To determine the value of apparent diffusion coefficient (ADC), and fractional anisotropy (FA) of the rotator cuff muscles using a 3-Tesla MRI in healthy subjects and comparing its differences.

MATERIALS & METHODS: Diffusion parameters measured from Diffusion Tensor Imaging (DTI) data are used to characterize the relative probability of motion of water molecules. Thirty-eight healthy volunteers were included in this prospective study to determine the mean values of ADC and FA of the rotator cuff muscles. DTI of the rotator cuff muscles was performed with single-shot spin-echo echo-planar imaging sequences in 32 diffusion directions with a b-value of 400 s/mm² (the higher signal-to-noise ratio for this study). Values were calculated from the regions of interest drawn on sagittal oblique view of the shoulder using 3D fiber track analysis application on Philips Extended-MR-WorkSpace 2.6.3.5. Statistical analysis performed using SPSS-ver24 one-way ANOVA. Mean and SDs were obtained for each DTI parameters, and level of significance was determined ($P < 0.050$).

RESULTS: The mean of ADC between subscapularis (1.74(±0.15)) and supraspinatus muscles (1.63(±0.12)) as well as infraspinatus (1.61(±0.09)) were significantly different based on One-Way ANOVA post-hoc Scheffe test. The mean of FA between supraspinatus (0.45(±0.05)), infraspinatus (0.41(±0.36)) and subscapularis (0.47(±0.55)) muscles were significantly different. Intraclass Coefficient for FA and ADC between 2 raters ranges good to excellent results.

CONCLUSION: Our study showed that the water diffusivity values of rotator cuff muscles were significantly different which may reflect differences in muscular architecture. The techniques used was highly reliable and potentially be applied to evaluate muscular pathology

STATIN INDUCED MYOPATHY CAN PRESENT AS SUDDEN SORENESS IN BILATERAL CALVES; A CASE REPORT.

Zainab Malik*¹; Atif Rana¹; Belqees Yawar Fiaz¹

¹*Radiology, Shifa International Hospital, Pakistan*

INTRODUCTION: The objective of our study is to describe a rare case of acute onset of myopathy which was diagnosed through MRI examination and later confirmed by laboratory investigations as well as follow up MRI.

REPORT: Axial T1- and T2-weighted, coronal STIR and sagittal proton density images were obtained for the detection of edema in muscles of thighs and legs. Information about patient's age, sex, creatine phosphokinase (CPK) levels, presence of myalgia and muscle weakness were collected. First of all MRI showed significant edema signal in left gastrocnemius and subtle edema signal in some fibers of the medial head of right gastrocnemius, the diagnosis of statin induced myositis was established given patient's clinical history. The laboratory investigations were performed which showed CPK levels of 646 U/L and hence confirmed the diagnosis. A couple of weeks after the cessation of the lipid lowering drug (statin), there was decline in CPK levels to 181 U/L with resolution MRI changes.

CONCLUSION: This is a rare case of statin induced myopathy/myositis and MRI is an easy non-invasive modality not only to investigate very early changes but to prevent dreadful complications like myonecrosis, which develops if the case goes undiagnosed.

**PSEUDOTUMOR: DISTAL ADDUCTOR LONGUS MUSCLE COMPLETE TEAR
WITH PSEUDOMASS FORMATION**

Hazwani Md Noor*¹; Yap Sheau Huey¹

¹*Radiology, University Malaya - Outcampus Hospital Selayang, Malaysia*

INTRODUCTION: The adductor longus muscle is one of the adductor muscles of the hip. It is a triangular shaped long muscle located in the inner thigh. Adductor longus muscle rupture can be localized at the proximal or distal attachment of the muscle or in the intramuscular midsubstance. Rupture of the distal adductor longus muscle tendon is rare.

REPORT: We present a rare case of a 20-years-old male patient complaining of swelling at the left medial thigh and diagnosed as complete tear of distal adductor longus muscle.

CONCLUSION: A high index of suspicion of old rupture of adductor longus muscle is needed in patient presenting with tumour-like swelling in the proximal medial thigh and previous history of trauma. MRI is useful for definitive diagnosis and will show if the mass consists of muscle tissue and to differentiate complete or partial tendon rupture and tendinosis.

COMPARATIVE ANALYSIS OF PATIENT'S ENTRANCE SURFACE DOSE BETWEEN SCREEN-FILM AND COMPUTED-DIGITAL RADIOGRAPHY AGAINST DIAGNOSTIC REFERENCE LEVEL FOR ADULT CHEST X-RAY EXAMINATION AT BATANGAS MEDICAL CENTER

Maria Jesa B. Gomeseria-Mercado*¹; Juzzel Ian B. Zerrudo¹

¹*Radiology, Batangas Medical Center, Philippines*

OBJECTIVE: Assessment of entrance skin doses in conventional and computed-digital radiography should be made as a means for the optimization of the radiation protection of the patients. This study would like to compare the mean ESD for adult chest x-ray examination at Batangas Medical Center against the International Atomic Energy Agency (IAEA, 1996) diagnostic reference level.

MATERIALS & METHODS: A descriptive comparative design, retrospective chart review, employing total enumeration of adult patients undergone chest x-ray in one-year period (2015 to 2016) in Batangas Medical Center was used. Patients' demographic characteristics such as age and gender and radiographic characteristics as thickness (cm), kvp, mAs, focus-to skin distance (cm) and dose rate (mGy) were included in data collection. ESD was measured based on the x-ray equipment output obtained from a SHIMADZU 320/500mA dose rate meter. The mean for ESD for chest PA and AP views were determined and was compared to IAEA (1996) diagnostics reference level.

RESULTS: Out of 710 study participants, 55.2% were males and 44.8% were females. Their ages ranged from 18 to 94 years old. Radiographic characteristics were as follows: mean thickness was 20.49cm, tube potential (kVp) and tube current-time product (mAs) were 75.4275 and 3.225, respectively. The distance between the x-ray source and the film in diagnostic radiography was 145.85 centimeter. The mean ESD obtained in this study was 0.146 mGy while the ESD published by the IAEA (1996) was 0.3mGy.

CONCLUSION: The mean ESD obtained in this study was two times lower than IAEA (1996) recommendation.

PATIENT SKIN DOSE OF FOUR-DIMENSIONAL DIGITAL SUBTRACTION ANGIOGRAPHY: HOW IS IT DIFFERENT FROM THE THREE-DIMENSIONAL TECHNIQUE?

K W Li*¹

¹*Clinical Oncology, Tuen Mun Hospital, Hong Kong (SAR)*

OBJECTIVE: Digital subtraction angiography (DSA) has long been recognized as the gold standard of arteriovenous malformation (AVM) diagnosis and treatment planning. However, the traditional two-dimensional (2D) DSA is insufficient for stereotactic radiosurgery (SRS) which requires highly accurate target contours. In recent years, three-dimensional (3D) DSA and even four-dimensional (4D) DSA consisting of a series of time-resolved 3D-DSA volumes have been developed to provide higher temporal and spatial resolution. Despite the better visualization of cerebral vasculature, patient radiation dose is yet to be explored. In this study, patient skin dose of 4D DSA was compared with that of 3D DSA.

MATERIALS & METHODS: Gafchromic XR-RV3 films were wrapped around the surface of a Rando anthropomorphic head phantom. Acquisitions were performed using Siemens Artis Q biplane angiography system. Skin dose distribution was measured and peak skin dose (PSD) was identified for both 3D and 4D DSA. The 3D-DSA protocol acquired 133 projections over a 200-degree rotation in 5 seconds, whereas the 4D-DSA protocol acquired 173 projections over a 260-degree rotation in 6 seconds.

RESULTS: Seven acquisitions were performed for each protocol. The mean PSD measured using Gafchromic films was 18.4 mGy and 26.5 mGy for the 3D and the 4D protocol, respectively. The PSD was located at the upper back of the phantom for both protocols.

CONCLUSION: With comparable PSD and skin dose distribution, 4D DSA can replace 3D DSA in the assessment of AVMs, which can decrease the number of 2D DSAs required during the examination.

HOW CAN THREE-DIMENSIONAL PRINTING FACILITATE THE QUALITY ASSURANCE IN NUCLEAR MEDICINE?

K W Li*¹

¹*Clinical Oncology, Tuen Mun Hospital, Hong Kong (SAR)*

OBJECTIVE: Routine quality control tests of single-photon emission computed tomography (SPECT) system traceable to standard protocols, such as the National Electrical Manufacturers Association NU 1-2018 (NEMA) and International Atomic Energy Agency Human Health Series No. 6 (IAEA) are performed by radiographers or physicists on a periodic basis to verify the system performance. However, some of the measurements in these protocols require source holders and test fixtures of specified dimensions which are often not provided by the system manufacturer. To ensure the reproducibility and ease of the measurement setup, the feasibility of using three-dimensional (3D) printing to tailor-make them is studied.

MATERIALS & METHODS: The Ultimaker S5 3D printer was selected due to its low cost, compact size, dual extrusion to print complex structures with water-soluble material and capability to support filaments of materials with different properties. All models were designed in Autodesk Fusion 360 and printed by Polylactic Acid (PLA) filament.

RESULTS: Three 3D-printed prototypes were fabricated: (i) a pair of support stands each with two designated places of height 10 cm spaced 10 cm apart to hold the glass capillary tubes for the measurement of system spatial resolution without scatter, (ii) a mask with circular patterns located at nine specific points for the measurement of multiple window spatial registration and (iii) a support plate of three point source holders for the measurement of SPECT system alignment and reconstructed spatial resolution without scatter.

CONCLUSION: Acquisition of a 3D printer is a reasonable investment in the nuclear medicine department.

A NOVEL QUANTITATIVE METRICS FOR ASSESSING IMRT PLAN COMPLEXITY: A VIRTUAL PHANTOM STUDY

Soh Hwee Shin*¹; K A Langmack²; P S Morgan³; A C Perkins³

¹*Medical Radiation Surveillance Division, Ministry of Health, Malaysia,* ²*Medical Physics and Clinical Engineering, Nottingham University Hospitals NHS Trust, United Kingdom,* ³*Radiological Sciences, Division of Clinical Neuroscience, University of Nottingham, United Kingdom*

OBJECTIVE: In IMRT treatment planning, there has been little interest in defining metrics to assess the quality of the treatment plan quantitatively. This work was carried out for the first time to assess the IMRT planning complexity on virtual phantoms.

MATERIALS & METHODS: A series of virtual phantoms were designed by using MATLAB® software (MathWorks, Natick, MA, United States), IMRT techniques: step-and-shoot IMRT (SSIMRT), volumetric modulated arc therapy (VMAT) and helical tomotherapy (HT) were investigated. Later, dose profile and 3-D surface plot for 120 plans were plotted. The wiggleness of dose profile was quantified as spatial complexity matrix (SCM) to represent plan complexity. The second, 1-D power spectral density for dose surface was generated to characterise the high and low frequency components of the dose surface. Proportion of rapidly varying dose with distance in a plan was used to predict the plan complexity, namely spatial frequency ratio (SFR).

RESULTS: For SCM analysis, the dose profiles and 3-D plots for 7-field SSIMRT plans presented a noticeable seven dose peak with higher value of maximum dose compared with VMAT and HT. The calculated SCM value for SSIMRT was higher than VMAT and HT. For SFR analysis, HT was having the highest SFR, followed by VMAT and SSIMRT. The higher SFR indicated that the high frequency dose was varying rapidly with the distance.

CONCLUSION: The results have shown for the first time, the feasibility of using the self-developed metrics of SCM and SFR on virtual phantoms for assessing plan complexity.

UNDERSTANDING THE ROLE OF MEDICAL PHYSICIST IN HEALTHCARE

Abdullah Mohd Noh*¹; Nordin Ayoub²; Siti Zurina Mat Noor²

¹*Radiation Protection Unit, University of Selangor, Malaysia,* ²*Health Sciences, University Selangor, Malaysia*

OBJECTIVE: Medical physics is a professional academic program that involves the use of physics knowledge to be applicable in the healthcare delivery system. Many professionals in healthcare have less or no knowledge about the significant role play by medical or health physicists to maintain the optimal health level to the public. The purpose of the study to describe the important role play by this professional to ensure the community provided with maximum healthcare services.

MATERIALS AND METHODS: There are three main levels of healthcare systems that involve healthcare practitioners. In this study, the role of medical or health physicists will be discussed at each level of the healthcare system that involves primary, secondary, and tertiary care. These roles may range from radiation survey and monitoring to developing treatment plans and supervisory.

RESULT: It was found that many published articles discussed the role of medical physics in healthcare systems. These articles stated clearly the significant role play by medical or health physicists in providing maximum healthcare to the community that should be understood by the public and other healthcare professionals. It should keep in our mind that medical and health physicists are always involved for decades in many activities of prevention, diagnosis, and treatment of human diseases.

CONCLUSION: It is very important to enhance the public perception regarding the vital role play by medical and health physicists in the healthcare sector. It should be praiseworthy and meritorious as one of the healthcare professionals that should not be underestimated.

A CROSS-SECTIONAL STUDY ASSESSING THE KNOWLEDGE, ATTITUDE AND PRACTICE OF RESIDENT PHYSICIANS IN A RURAL TERTIARY HOSPITAL IN PHILIPPINES ON RADIATION EXPOSURE IN DIAGNOSTIC IMAGING

Princess Erika Joy C. Mendoza-De Mesa^{*1}

¹*Radiology, Batangas Medical Center, Philippines*

OBJECTIVE: The WHO and International Atomic Energy Agency (IAEA) proposed the Bonn Call-for-Action. It seeks to foster coordinated work to address issues arising in radiation protection in medicine. Studies from other countries have shown that there is a gap in knowledge regarding the risks of ionizing radiation to patients. The main objective of the study is to document the baseline knowledge, attitude and practice of the resident physicians with regards to radiation exposure in patients undergoing diagnostic imaging in Batangas Medical Center.

MATERIALS AND METHODS: A cross-sectional study using convenience sampling among resident physicians in the hospital was conducted. The questionnaire that was utilized was one that had been used in the literature with permission from its investigator.

RESULTS: There is a statistical difference (p value = 0.000) in the average baseline knowledge assessment score between resident physicians of different departments. Tukey post hoc test revealed that the physicians' baseline knowledge assessment score is significantly higher for Obstetrics & Gynecology and General Surgery departments. There is no significant difference in how often x-ray or CT scan examination is requested between resident physicians of different departments. There is a significant association between the physician's department and the attitude towards ordering a routine x-ray, fluoroscopy and CT scan examinations if there is proven increase in lifetime risk of cancer.

CONCLUSION: Resident physicians have areas where they are deficient in radiation exposure knowledge. Further training will help improve this and would provide the patients a safer and cost-effective health care.

ESTABLISHING DIAGNOSTIC REFERENCE LEVELS FOR COMPUTED TOMOGRAPHY EXAMINATIONS OF HEAD, THORAX AND ABDOMEN

Irwan Iskandar Jusoh*¹; Kamarul Amin Abdullah¹; Mohd Hanafi Ali²

¹*Faculty Of Health Science, Universiti Sultan Zainal Abidin, Malaysia,* ²*Discipline Of Medical Imaging Science, Sydney School Of Health Sciences, University Of Sydney, Australia*

OBJECTIVE: Computed Tomography (CT) is commonly used for various diagnostic examinations. Despite constant improvements to imaging technologies, the radiation dose to patients remains a concern. Diagnostic reference levels (DRLs) are used to identify any facility when using high radiation dose during CT. This study aims to assess current patient dose and establish new local diagnostic levels (LDRLs) for Computed Tomography (CT) examinations of brain, thorax, and abdomen at multiple sites in Terengganu, Malaysia.

MATERIALS AND METHODS: A comprehensive booklet survey was designed to record patient data and scanning protocols for three CT examinations. Data were collected retrospectively from the participating centers. LDRLs were defined as the values within 75th and 50th of volumetric CT dose index (CTDI_{vol}) and dose length product (DLP). Data sets collected were related to 82 of CT brain, 96 of CT thorax, and 120 of CT abdomen.

RESULTS: LDRLs for CTDI_{vol} and DLP for CT brain, thorax, and abdomen were $52.08 \pm 7.62\text{mGy} / 960.57 \pm 756.67\text{mGy.cm}$, $14.58 \pm 7.49\text{mGy} / 960.57 \pm 756.67\text{mGy.cm}$ and $17.97 \pm 11.35\text{mGy} / 842.67 \pm 541.59\text{mGy.cm}$, respectively

CONCLUSION: As compared to national DRLs, the LDRLs are comparable and within the range of acceptable percentiles, except for DLP values for thorax and abdomen are slightly exceeded. Major variations in patient dose during CT examination occur due to differences in CT scanners, scanning protocols, and modes.

INTRATUMORAL MICROHEMORRHAGES DEPICTED ON MRI AS A PREDICTOR OF HISTOLOGICAL GRADE OF PRIMARY BRAIN TUMORS.

Muhammad Sami Alam*¹; Wasim Memon¹

¹*Radiology, Aga Khan University, Pakistan*

OBJECTIVE: To determine the frequency of intratumoral microhaemorrhages among patients with primary brain tumour and its correlation with histopathological grading.

MATERIALS & METHODS: A retrospective cross-sectional study was conducted at tertiary care hospital in Karachi, Pakistan. The study was conducted from March 2019 to September 2019. A total of 76 suspected patients were included in the study. MRI brain was performed to look for intratumoral microhaemorrhages and grading of brain tumour was assessed using histopathology reports

RESULTS: In current study, patients were between 18-70 years of age and their mean age was 46.2±14.8 year. Majority of the patients were male 52 (68.4%) and remaining 24 (31.6%) were female. Intratumoural microhaemorrhage seen in 52 patients (68.4%). Out of these 52 patients, histopathological examination showed 22 patients (42.3%) of grade IV followed by 18 patients (34.6%) of grade III, 10 patients (19.2%) of grade II and 2 patients of grade I. Most of the patients were having supratentorial tumour site - 70 (92.1%) while in 6 patients (7.9%), the tumour site was infratentorial. Stratification for age, gender, size of tumour and site of tumour was also carried out.

CONCLUSION: In conclusion, on MRI, intratumoural microhaemorrhage revealed in 60.5% patients and majority of the patients correlated with histopathological grade IV followed by grade III.

COMPARATIVE RETROSPECTIVE STUDY OF HRCT, CT CISTERNOGRAPHY AND MRI IN EVALUATION OF CSF LEAK

Dimple Bhatia*¹; Nagaraj Murthy²

¹Radiology, Christian Medical College, India, ²Radiology, JSS Medical College, India

OBJECTIVE: Localizing and repairing CSF leaks needs robust radiological work up. HRCT & CT Cisternography are the routinely used investigations, sometimes complemented with heavily T2W MRI in localizing the bony / dural defects. The sensitivity and specificity of HRCT, CT Cisternography and MRI needs further validation.

Aim is to evaluate the utility of HRCT, CT Cisternography and MRI, individually and in combination, in localizing CSF fistula and compare the results with intra-operative findings.

MATERIALS & METHODS: Retrospective evaluation of radiological procedures of 40 patients with clinically suspected CSF rhinorrhea / otorrhea was carried out in JSS hospital, JSS Medical college Mysore. HRCT was done in all 40 patients, while CT cisternography in 38 patients and MRI in only 18 patients. Endoscopic evaluation / repair was carried out on 38 patients and was used as gold standard for statistical analysis.

RESULTS: Among 40 patients evaluated for CSF leak by radiological imaging, total of 38 patients underwent surgical / endoscopic exploration. Most common presenting symptom was CSF rhinorrhoea with cribriform plate and lateral lamella showing maximum number of defects. Sensitivity and specificity of imaging techniques improved significantly when used in combination.

CONCLUSION: HRCT of skull base is simple, fast, non-invasive and cost-effective choice of examination in the workup of CSF leak. However, when used in adjunct with CSF cisternography and heavily T2W MRI the accuracy improves significantly, justifying the additional efforts and cost.

**THINK OUTSIDE THE BOX IN CT PERFUSION STUDY OF STROKE PATIENTS
WITH UNEXPECTED PERFUSION FINDINGS - A CASE REPORT OF SEVERE
ICA STENOSIS IPSILATERAL TO THE SIDE OF PATIENT'S SYMPTOMS**

Mariam Malik*¹; Bilqees Yawar Faiz¹, Atif Iqbal Rana¹, Rashed Nazir¹

¹*Department of Radiology, Shifa International Hospital Islamabad, Pakistan*

INTRODUCTION: We aim to enlighten audience of abnormalities in perfusion study in asymptomatic ICA stenosis and its difference from acute stroke. We report an elderly male patient presenting in emergency department with acute history of left sided weakness. Immediate non-contrast CT brain with perfusion and CTA carotid were ordered as part of stroke protocol since findings were suspicious of right cerebral vascular insult. Further evaluation with MRI brain including DWI, ADC, FLAIR and gradient axial sequence was done.

REPORT: CT brain remained normal, right sided cerebral vasculature was patent in CTA and perfusion study demonstrated no significant abnormality of right cerebrum. Diffusion and gradient MR study of brain confirmed no acute ischemia or haemorrhage. There was incidental abnormal finding in CT perfusion in left lobe with reduction in CBF, increased CBV and MTT. This was unexpected considering patient's left sided symptoms. CTA showed dense calcified atherosclerotic plaque involving left petrous, cavernous and supraclinoid ICA resulting in more than 75% luminal stenosis with almost complete occlusion of the petrous portion. Left MCA and ACA remained patent.

CONCLUSION: Abnormalities in perfusion study of cerebral hemisphere ipsilateral to side of patient's symptoms indicate asymptomatic ICA stenosis on that side. Stenosis of ICA decreases cerebral perfusion pressure (CPP) and results in dilatation of intracranial vessels to maintain CBF which increases CBV. When vasodilatation is maximum further fall in CPP results in a fall in CBF. Awareness of this phenomenon could lead to early intervention and prevent a potential stroke.

**CONTRAST-ENHANCED MR IMAGING OF BRAIN TUMORS:
COMPARISON WITH T1-CUBE AND 3D FAST SPOILED GRADIENT RECALL
ACQUISITION IN STEADY STATE SEQUENCES**

Mungunkhuyag Majigsuren*^{1,3}; Takashi Abe²; Masafumi Harada²

¹*Department of Radiology, Second State Central Hospital, Mongolia,* ²*Department of Radiology, Tokushima University, Japan,* ³*Department of Radiology, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia*

OBJECTIVE: We compared the gadolinium enhancement characteristics of a heterogeneous population of brain tumors imaged by T1-Cube and 3D FSPGR at 3-T MRI with time-dependent changes.

MATERIALS & METHODS: A total of 91 lesions from 52 patients ((17 with metastasis (51 lesions), 17 with high-grade glioma(HGG) - 9 lesions, 7 with primary central nervous system (CNS) lymphoma (10 lesions), and 11 with meningioma)). The two sequences in 3T MRI (Discovery 750, GE Healthcare, Milwaukee, WI) were examined after administration of contrast agent (Gd-DTPA, 0.1 mmol/kg). Fifty-one (metastasis 32, HGG 11, meningioma 5, PCNSL 3) of the 91 lesions were depicted with T1-Cube first and 40 (metastasis 19, HGG 8, meningioma 6, PCNSL 7) lesions, with 3D FSPGR first. We measured the CNR which is the SI of a tumor and normalized by SI of the WM for each sequence on the pre- and post-contrast 3D FSPGR and post-contrast T1-Cube images.

RESULTS: The mean CNR was significantly higher on T1-Cube images than 3D FSPGR images for the total tumor population ($P < 0.0001$) and the histologic types, i.e., metastasis ($P < 0.001$) and HGG ($P < 0.050$). By the analysis concerning with sequence order, the first T1-Cube: mean CNR was slightly larger ($P < 0.0001$) and the first 3D FSPGR: mean CNR significantly higher ($P < 0.014$) on T1-Cube than on 3D FSPGR.

CONCLUSION: Gd enhancement of the same heterogeneous population of tumors was higher using T1-Cube than 3D FSPGR and suggest the superiority of T1-Cube to 3D FSPGR for the detection of metastatic brain lesions.

DIFFUSION TENSOR IMAGING IN BRAIN LESIONS: NEOPLASTIC VS INFLAMMATORY BRAIN LESIONS.

Namrata Pal*¹; Sandip Paria²; Neera Kohli¹; Anit Parihar¹

¹Radiodiagnosis, King George Medical College, India, ²Radiodiagnosis, Command Hospital, Central Command, India

OBJECTIVE: To evaluate the role of diffusion tensor imaging (DTI) in the differentiation of neoplastic and inflammatory brain lesions, on the basis of fractional anisotropy (FA), mean diffusivity (MD) and fibre tractography.

MATERIALS & METHODS: This retrospective study has been done on 15 patients with neoplastic [10 high grade gliomas (HGG), 1 metastases, 4 low grade glioma (LGG)] and 15 patients with inflammatory [9 tuberculomas and 6 neurocysticercosis (NCC)] brain lesions. They underwent an MRI, including the DTI. Fractional anisotropy from the lesion (FAL) and mean diffusivity from the lesion (MDL), as well as fractional anisotropy from the perilesional edema (FAPE), and mean diffusivity from the perilesional edema (MDPE) were calculated and quantified using region of interest (ROI) based assessment on DTI derived FA and MD parametric maps. The mean values of FAL, FAPE, MDL and MDPE from the two groups were compared by the independent sample t-test. Fibre tractography with colour intensity analysis was also done.

RESULTS: Perilesional edema of inflammatory lesions showed a significantly higher ($P < 0.001$) MD compared to the neoplastic group. Tractographic image demonstrated infiltrative or disruptive nature of neoplastic lesions. On the other hand, inflammatory lesions mainly displaced the fibre tract.

CONCLUSION: Quantitative DTI parameters, FA and MD as well as tractographic image are helpful in the evaluation and differentiation of brain lesions.

BRAIN TUMOR CHARACTERISTIC IN MR-TRACTOGRAPHY

Sri Andreani Utomo*¹; Fransisca Rika Andriani²

¹Radiology, Airlangga University, Indonesia, ²Radiology, Airlangga University, Dr. Soetomo General Hospital, Surabaya, Indonesia

OBJECTIVE: Visualization of white matter (WM) tracts by DTI is increasingly being used for neurosurgical planning. The precise location of the WM tracts in relation to the lesion helps the neurosurgeon in preoperative planning by defining the surgical access point and identifying the extent of tumor resection while preserving vital motor, visual, or language brain functions. This study was to examine brain tumor characteristics in MR-tractography.

MATERIALS & METHODS: We performed a retrospective-analytical study of 35 pathologically proven primary intracranial tumor patients which had been examined with DTI in 1.5T MRI before surgery. At the workstation, the homologous ROI was used as the “seed” in the tractography analysis. Tracts were then classified as displaced, infiltrated and disrupted.

RESULTS: 35 patients were included in this study, 21 females, 14 males with age range from 4 until 67 years old; 22 (63%) were extra-axial tumors and 13 (37%) were intra-axial tumors. 50% of low-grade glioma showed infiltration of surrounding WM tract whereas another 50% showed displacement. All 3 high-grade glioma samples showed disruption of adjacent WM tracts and 1 high-grade immature teratoma showed infiltration. All high-grade PCNSL and metastatic processes showed displacement. In the extra-axial tumor category, all grades I and 3 of grade II meningioma showed displacement and 1 sample of anaplastic meningioma showed disruption of adjacent white matter.

CONCLUSION: MR-tractography can be used for neurosurgical planning. Intra and extra-axial lesion, low and high-grade tumors both can give a characteristic of displaced, infiltrated and disrupted adjacent WM tracts.

CT SWIRL SIGN IN SPONTANEOUS INTRA-CEREBRAL HAEMORRHAGE AND ITS ASSOCIATION WITH HEMATOMA EXPANSION.

Anusha Apparau*¹; Norlisah Ramli¹; Kartini Rahmat¹; Khairul Azmi Abd. Kadir¹; Jeannie Wong Hsiu Ding¹

¹*Biomedical Imaging, University Of Malaya, Malaysia*

OBJECTIVE: To assess ratio of hypodense regions ('Swirl Sign') versus hyperdense regions in intracerebral hemorrhage and its association with hematoma expansion and to explore functional outcome of intracerebral hemorrhage patients with 'swirl sign' using modified Rankin score (mRS).

MATERIALS & METHODS: 34 patients who had spontaneous intracerebral hemorrhage with initial (CT1) and repeated CT (CT2) within 96 hours were included. Presence of 'swirl sign', its volume and hematoma volume in initial and repeated CT were calculated using semi auto-segmentation from 'ITK snap'.

RESULTS: 23 patients (67%) had swirl sign present in the hematoma with the mean initial and follow up hematoma volumes of 42.5 cm³ and 54.5cm³ respectively. Hematoma expansion of 11.9cm³ was documented for this group. 11 patients (33%) had no swirl sign present with the mean initial and follow up hematoma volumes of 9.7cm³ and 4.4cm³ respectively. The mean hematoma expansion of this group was 4.4cm³. The p-value of correlation between ratio of swirl volume/hematoma with percentage of hematoma expansion [(CT2-CT1)/CT1] was 0.041 with significant correlation at 0.05 level whilst the correlation co-efficient (r value) was 0.45. 20 patients (87%) with 'Swirl sign' had poor mRS (3-6). While only 5 patients (45%) had poor mRS (3-6) without presence of 'Swirl sign'.

CONCLUSION: Swirl sign is associated with hematoma expansion in patients with spontaneous intracerebral hemorrhage and can be used as a predictor of functional outcome of patients.

CLINICAL ROLE OF DIFFUSION TENSOR TRACTOGRAPHY IN COMPRESSIVE MYELOPATHY

Rajul Rastogi*¹; Neha¹; Satish Pathak¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College And Research Center, India*

OBJECTIVE: Magnetic resonance imaging (MRI) is the gold-standard imaging tool for evaluation of compressive myelopathy. These cases reveal signs of spinal cord compression with or without alteration in parenchymal signal alteration. Though, diffusion tensor imaging has been described to be superior to routine MRI in predicting prognosis and urgency of decompression yet fewer studies have been conducted to demonstrate it especially in developing world.

MATERIALS & METHODS: Thirty patients with clinical signs of CSCM were randomly selected for our study for conventional MRI and DTI examination with a high-resolution matrix on 1.5T magnet system. 3D-color coded maps were obtained on sagittal & coronal planes. Patient with traumatic spine & severe spinal pain were excluded from study.

RESULTS: Out of thirty, six patients were excluded from the study due to suboptimal DTT. In sixteen out of twenty-four patients with no spinal cord parenchymal signal alteration on T2W images, DTT revealed significant alteration in color code both at and above the level of compression signifying altered diffusion.

CONCLUSION: DTT may be used as a more sensitive indicator of spinal cord compression than conventional MRI by revealing color alterations in 3D color-coded maps, thinning and loss of integrity of spinal nerve fiber tracts providing easy and fast tool to predict the need of surgical decompression. DTT is a very good tool in objective assessment of patients with clinical signs of compressive myelopathy without obvious imaging signs on conventional MRI.

**IMAGING THE NIGROSOME-1 IN THE SUBSTANTIA NIGRA USING
SUSCEPTIBILITY WEIGHTED IMAGING AND T2* GRADIENT RECALLED
ECHO 3D SEQUENCES: AN APPLICATION TO PARKINSON'S DISEASE**

Kartini Rahmat*¹; Tan Weijoe¹; Norlisah Ramli¹; Abdal Rahim Al Hassan¹

¹*Department of Biomedical Imaging, University of Malaya Medical Centre, Malaysia*

OBJECTIVE: Parkinson's disease is a neurodegenerative disease with loss of dopaminergic neurons in the nigrosome-1 territory of the substantia nigra. This is a retrospective study to investigate the feasibility of nigrosome-1 detection using 3T-susceptibility weighted imaging and T2* gradient recalled echo 3D sequences as well as the diagnostic accuracy that can be achieved.

MATERIALS & METHODS: A group of 28 controls was used to characterize the appearance of the N1 sign and train the raters. Subsequently, 28 patients with PD and 28 controls were blindly analyzed for the presence or absence of the N1 sign on SWI and T2* GRE 3D sequences. First 5 caudal slices of the substantia nigra were reviewed.

RESULTS: From the group of 28 controls, N1 has variable appearance including the swallow tail sign. 17 (62.9 %) cases showed the N1 sign bilaterally. Of the 8 PD patients whose SWI images were reviewed, 6 (75%) cases showed bilateral loss of the N1 sign, 1 (12.5%) case showed the N1 sign unilaterally and 1(12.5%) case showed the N1 sign bilaterally. Of the 20 PD patients whose T2* GRE 3D images were reviewed, 12 (60%) cases showed bilateral loss of the N1 sign, 4 (20%) cases showed the N1 sign unilaterally and 4 (20%) cases showed the N1 sign bilaterally.

CONCLUSION: The N1 has variable appearance including the swallow tail sign. It can be visualized using SWI in the non-PD controls and is not visualized in most patients with PD.

TERATOID WILMS' TUMOR: A RARE HISTOLOGIC VARIANT

Maryam Abdul-Jabbar Al-Khouri*¹; Yahya Al Barashdi²

¹Radiology, Oman Medical Speciality Board, Oman, ²Radiology, The Royal Hospital, Oman

INTRODUCTION: Wilms's tumor is considered the most common pediatric renal masses in children below ten years of age. It accounts for 87% of pediatric renal tumors. It is an embryologic tumor that arises from metanephric blastema. Histologically, Wilms' tumor is mainly composed of variable amount of blastema, epithelium and stroma. Teratoid Wilms' tumor is a rare histologic variant of nephroblastoma in which a predominance of heterogenous components is identified in addition to the classic Wilms' tumor histologic triphasic pattern.

REPORT: A 2-year-old girl presented with right abdominal mass and pain for two weeks. On examination, a huge mass was palpable on the right lumbar region, that didn't cross the midline. Contrast-enhanced CT scan revealed a large well-defined right renal solid neoplasm with extensive intra-lesion fat density. It measured 10.4 X 8.2 cm. There was no internal cystic areas or calcifications. The tumor displaced liver hilum and pancreas medially, pushed IVC and right renal vein medially. However, no evidence of visceral or vascular infiltration, neither distant metastasis. Ultrasound-guided biopsy was performed. The histopathology results were compatible with Wilms' tumors with fibrofatty component. Neoadjuvant chemotherapy started with a 6-week follow up CT scan showing tumor size regression and no evidence of distant metastasis. A right radical nephroureterectomy was performed. The surgical specimen histopathology analysis came as Teratoid Wilms' tumor.

CONCLUSION: Teratoid Wilms' tumor is a rare histologic variant of nephroblastoma, that should be included in the differential diagnosis of fat containing renal neoplasm. This rare malignant pediatric renal neoplasm has a good prognosis following complete tumor resection.

**LANGERHANS CELL HISTIOCYTOSIS IN A TERTIARY PAEDIATRIC
REFERRAL CENTRE - CASE SERIES WITH MULTIMODALITY IMAGING
FINDINGS**

Wai Yee Chan*¹; Ng Yi-De¹; Caroline Judy Westerhout¹; Nadia Fareeda Muhammad Gowdh¹

¹*Biomedical Imaging, University Of Malaya, Malaysia*

LEARNING OBJECTIVE:

- To illustrate the various radiological findings of LCH
- To illustrate less common site of LCH with relevant radiological findings

BACKGROUND: Langerhans Cell Histiocytosis (LCH) is part of a group of disorders caused by overproduction of histiocytes, which in this case – immature Langerhans cells with wide range of manifestations. Definitive diagnosis often requires correlation of a combination of clinical features, histopathological, immunohistochemical and radiological findings. Radiology is also essential for treatment monitoring and follow-up as refractory LCH have poorer prognosis.

FINDINGS AND/OR PROCEDURE DETAILS: Bone lesions are most common and occur in approximately 80% of patients. LCH has a predilection for flat bones. Osseous and extra-osseous imaging findings that are more specific for LCH (although not diagnostic) include lytic skull lesions with bevelled edges, vertebra plana and pituitary infundibular thickening. Extra-osseous involvement of the central nervous system, lung, liver, spleen and lymph nodes are better assessed on CT and MRI. We present 5 different patients with osseous and extra-osseous manifestations of LCH showing multiple osseous involvement - C1/C2 subluxation, intrathoracic, abdominal, CNS involvement (middle cranial fossa, base of skull erosion, loss of posterior pituitary T1W bright spot) and lymphoid organs (lymphadenopathy).

CONCLUSION: LCH has various radiological findings and it is essential for radiologists to identify these at baseline for treatment monitoring.

MULLERIAN DUCT CYST : A CASE REPORT

Nur Faradisha Azmin*¹; Thajunnisa Hassan²; Abdul Razak Mohammed³

¹Radiology, KPJ Damansara Specialist Hospital, KPJ Healthcare University College, Malaysia, ²Radiology, KPJ Damansara Specialist Hospital, Malaysia, ³Paediatric Surgery, KPJ Damansara Specialist Hospital, Malaysia

INTRODUCTION: Mullerian duct cyst is an uncommon congenital anomaly, with a reported prevalence of 1–5%. It is usually asymptomatic, small midline cystic lesion located behind the bladder. Symptomatic Mullerian duct cysts in infancy leading to obstructive urinary symptoms is a rare entity.

REPORT: A 5 months old boy with acute urinary symptom, presented with distension at the suprapubic area. Initial abdominal ultrasound showed gross left hydronephrosis and hydroureter down to the urinary bladder. Child was catheterized with Foley balloon, however minimal urine noted. Repeated ultrasound demonstrates persistent gross left hydronephrosis and hydroureter, presence of debris and Foley catheter was not seen. Child underwent Suprapubic Cystostomy (SPC) and reinsertion of Foley catheter. Initial yellowish fluid came out followed by blood stained fluid from the SPC but clear urine from the Foley catheter. Micturating cystourethrography (MCU) study performed via SPC confirmed the SPC in retrovesical area within a large space occupying cyst superior to the bladder. While MCU study via Foley catheter revealed a normal urinary bladder distension. CECT of the abdomen showed a large enhancing encapsulated mass arising from the left hemipelvis with fluid and soft tissue density. He finally underwent emergency laparotomy which revealed a huge pseudocyst with blood clots and haematoma occupying the whole retrovesical area. HPE confirmed the diagnosis of Mullerian duct cyst.

CONCLUSION: Mullerian duct cyst should be kept in the differential diagnosis of midline swellings in rectovesical cystic location. Use of multi-imaging modalities are useful for aiding the identification of mullerian duct cyst.

CASE REPORT: MIT FAMILY TRANSLOCATION RENAL CELL CARCINOMA

Ng Chee Guan*¹; Marina S²; Che Zubaidah CD²; Zaki F¹; Siah HH³; Rosna Y³

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia,*

²*Radiology Department, Hospital Wanita Dan Kanak-Kanak, Kuala Lumpur, Malaysia,*

³*Pathology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Microphthalmia transcription factor (MiT) family translocation renal cell carcinoma (RCC) is an uncommon renal tumor among paediatrics population that is more well recognised in recent years. RCC frequently occurs in children at second decades of life with approximately one-third to nearly one-half of all paediatrics RCC being translocation RCC. It often poses diagnostic difficulty for radiologists to characterize the type of renal tumor in children especially if the tumor arises from atypical location or has rare local invasion site.

REPORT: We reported a case of MiT family translocation RCC in a 7-year-old girl presented with intermittent painless hematuria and anemia. Initial imaging shows a renal mass arising from renal pelvis with extension to the proximal ipsilateral ureter. Later, she underwent right radical nephrectomy. Histopathological examination of the renal tumor shows papillary pattern, psammoma bodies and large epitheloid cells with positive TFE3 in keeping with MiT family translocation RCC.

CONCLUSION: Multidisciplinary approach involving paediatric surgeon, paediatric oncologist, radiologist and pathologist is important for the diagnosis and management of uncommon renal tumor with atypical local invasion site for paediatric patients.

TEMPORAL BONE LANGERHANS CELL HISTIOCYTOSIS: A RARE DISEASE WITH A RARE PRESENTATION

Norhazura Abdul Wahab*¹; Umah Suburamianiam¹; Hazrini Abdullah¹; Khatijah Abu Bakar¹

¹*Radiology, Hospital Sultanah Aminah, Malaysia*

INTRODUCTION: Langerhans cell histiocytosis (LCH) is a rare disease and commonly affects paediatric age group patients and temporal bone involvement is rare. Few cases reported the prognosis of LCH localized to the temporal bone is favorable, however multisystemic involvement brings a poor survival rate. Our case is an infant with biopsy proven temporal bone LCH and a solitary lung nodule.

REPORT: 5.5 months old infant previously no significant medical history, presented with right temporal region mass. The mass is smooth and firm in consistency with reddish discolouration. Skull radiographs shows a soft tissue mass in right temporal region with adjacent bony destruction and a well defined lytic lesion at left orbital roof. The rest of the skeletal survey shows no other bony lesion. Ultrasound shows soft tissue mass with increased vascularity in colour Doppler. Computed Tomography (CT) shows right temporal mass involving the temporalis muscle with right zygoma and zygomatic arch bone destruction. Smaller lesion at left frontal lobe with adjacent inner cortex bony destruction. Solitary lung nodule in apicoposterior segment of right lower lobe. Magnetic Resonance Imaging (MRI) shows homogenous enhancing soft tissue mass in right temporal region involving the temporal muscle with no intracranial extension. Smaller extraaxial lesion in left frontal region. Biopsy of the right temporal mass done under general anaesthesia revealed Langerhans cell histiocytosis.

CONCLUSION: Multimodalities imaging plays a pivotal role in diagnosis and prognostications of LCH temporal bone.

**JUVENILE ONSET RECURRENT RESPIRATORY PAPILOMATOSIS WITH
PULMONARY INVOLVEMENT: A CASE REPORT AND REVIEW OF THE
LITERATURE.**

Ahmad Nazmi Mohamad*¹; Faizah Mohd Zaki¹

¹*Radiology Department, National University Of Malaysia*

INTRODUCTION: Juvenile onset recurrent respiratory papillomatosis (RRP) is a rare and benign disease caused by Human Papilloma Virus (HPV) which is known to cause high recurrence rate and progression of radiological findings over years duration.

REPORT: We will present a 13-year-old boy, who has been diagnosed with juvenile recurrent respiratory papillomatosis (RRP) since the age of 1. He underwent multiple endoscopic examinations and tumor debulking and subsequent tracheostomy tube insertion since the age of 15 months old. He had two CT thorax examinations that were done when he was 1 and 10 years old respectively whereby the disease has evolved to multiple cavitating lung nodules and recurrent upper airway lesion during the last CT.

CONCLUSION: We aim to discuss the radiological findings of CT thorax in RRP and compare the discussed case with literature reviews especially on the pattern and appearance of the airway and lung involvement. Differential diagnosis of this rare disease will also be discussed in this case report. We hope to conclude when to suspect this disease in the paediatric age group and discuss the role of different radiological investigations in diagnosing this disease.

**THE ROLE OF THREE-DIMENSIONAL MULTIPLE PLANAR
RECONSTRUCTION OF LUNG VOLUME AND TRANSPARENCY VOLUME
RENDERING AS IMAGING FOR POST-SURGERY TO EVALUATE TRACHEO-
ESOPHAGEAL FISTULA AND GIANT ESOPHAGEAL DIVERTICULUM**

Gery Perdana Yogaswara*¹; Harry Galuh Nugraha¹

¹*Radiology, Padjajaran University, Indonesia*

INTRODUCTION: Esophageal atresia and tracheoesophageal fistula is a common congenital anomaly. Esophageal diverticle is an outpouching projecting from the esophagus. Diverticula may be classified by their location or by their mechanism of formation.⁵⁻⁶ Esophageal diverticle was reported as a rare sequelae of esophageal atresia. Three-dimensional (3D) planar volume reconstruction utility (MPVR), 3D transparent lung volume rendering (TL-VR), for the diagnostic approach of infants with primary or secondary tracheoesophageal fistula (TEF), but also has reduced imaging time and dose are all recent advances in multi-detector computed tomography (CT)¹⁻⁴.

REPORT: A Two months old male baby was referred to our Hospital with complaints of saliva coming from the drain. The patient has a history of vomiting every time he is given breast milk from birth. At 4 days old, the patient was brought to a hospital and diagnosed as having esophageal atresia and tracheoesophageal fistula. The patient previously had 3 operations before being referred to our hospital, gastrostomy, tracheoesophageal fistula ligation and proximal distal esophageal ligation. The patient was subjected to a chest x-ray examination, showing giant bullae appearance in the right lung field. Multi Detector Computed Tomography (MDCT), with processing technique 3D reconstruction, MPVR and TL-VR were done, given an overview of esophageal diverticulum occupying up to 2/3 right lung field with suspected tracheo-esophageal fistula.

CONCLUSION: The MDCT examination with post-processing techniques such as 3D MPVR, 3D TL-VR techniques, is a significant tools in cases of esophageal atresia to determine surgical complications such as esophageal diverticulum and esophageal fistula.

A PICTORIAL REVIEW OF VACTERL ASSOCIATION-HOW TO MAKE IT EASY?

Soo Suet Woon*¹; Kartini Rahmat¹

¹*Department Of Radiology, University Malaya, Malaysia*

LEARNING OBJECTIVE: Provide an educational and pictorial review of the imaging features of VACTERL association that we encountered in UMMC.

BACKGROUND: VACTERL association is a condition comprising multisystem congenital malformations, causing severe physical disability. It is typically defined by the concurrence of at least three of the following component features: (i) vertebral anomalies (V) (ii) anal anomalies (A) (iii) cardiac malformations (C) (iv) tracheo-oesophageal fistula (TE) (v) renal dysplasia (R) (vi) limb abnormalities (L). Reported incidence varies from 1 in 10, 000 to 1 in 40, 000 live-born infants. We have encountered total of 13 patients diagnosed with VACTERL association in our centre. Esophageal atresia should be suspected .

FINDINGS AND/OR PROCEDURE DETAILS: Imaging is mandatory for suspected VACTERL association.

- Tracheo-esophageal fistula /esophageal atresia(TE): Chest radiograph - retrotracheal distended pouch of proximal esophagus and a feeding tube may be coiled within it after attempted passage. Gasless abdomen indicates no fistula or proximal fistula. Gas in the abdomen indicates presence of fistula. It can be part of VACTERL association. It is essential to check for other abnormalities.
Vertebral anomalies(V):(Modalities-plain radiograph, Ultrasound, CT& MRI for evaluation)
- Anal anomalies(A):(Barium enema) : imperforate anus-radiologically best clue is dilated distal colon with absence of air in distal rectum, anorectal malformations, anal atresia
- Cardiac malformations (C): Chest radiograph – VSD, PDA, ASD, right sided aortic arch(we detected via CTA thorax)
- Renal anomalies; radial ray anomalies (R): Ultrasound
- Limb anomalies (L): Plain extremities radiograph – polydactyly, oligodactyly

These non-random associated congenital abnormalities should be considered when one is present.

CONCLUSION: To educate the radiological manifestations of VACTERL association. Urgent referral to paediatric team would be indicated for repair for esophageal atresia.

SYNCHRONIC SYNTHESIS OF SCHIZENCEPHALY: THE MALFORMATIONS AND MIMICS

Fatt Yang Chew*¹; Yu-Chien Lo¹, Ying-Hsuan Li¹, Chao-Chun Lin¹, Wu-Chung Shen¹

¹*Department of Medical Imaging, China Medical University Hospital*

LEARNING OBJECTIVE: This pictorial review aims to discuss the broad spectrum of the imaging appearances of schizencephaly, its related malformations and mimics.

BACKGROUND: Schizencephaly is a gray matter-lined cleft that extends through the hemisphere, from the ependymal lining of the lateral ventricle to the cortical surface. This abnormality can be unilateral or bilateral with fused or separated lips, which are defined as closed-lip and open-lip schizencephaly.

FINDINGS AND/OR PROCEDURE DETAILS: Among the imaging modalities, MRI is the method of choice as it is more sensitive in detecting the clefts as well as the associated abnormalities. Schizencephaly is often associated with various brain abnormalities such as absent of septum pellucidum, callosal malformation, polymicrogyria and heterotopic gray matter. Furthermore, the existence of schizencephaly is sometimes relevant to the septo-optic dysplasia and posterior fossa malformations. This article will discuss the key features of schizencephaly in different imaging modalities, which allow for a better understanding and assessment of the degree of involvement. Several conditions may have imaging findings that mimic schizencephaly, such as focal cortical dysplasia, gray matter heterotopia, hydranencephaly, and porencephaly. A practical approach will be demonstrated in this exhibit to distinguish these entities from schizencephaly.

CONCLUSION: Schizencephaly is always not alone; it is crucial to scrutinize the whole brain for the co-existence of other abnormalities. It is helpful to be familiar with the imaging characteristics specific to the schizencephaly and the mimics as it could provide reliable information to guide therapy, genetic counseling, accurately predicting prognosis and perhaps in time, contributing to their prevention.

RADIOLOGICAL REVIEW OF INTESTINAL OBSTRUCTION IN NEONATES.WHAT RADIOLOGISTS NEED TO KNOW?

Soo Suet Woon*¹; Kartini Rahmat¹

¹*Department of Radiology, University Malaya Medical Centre, Malaysia*

LEARNING OBJECTIVE: To educate radiological manifestations of intestinal obstruction in neonates.

BACKGROUND: Neonates with suspected intestinal obstruction are divided into upper and lower gastrointestinal obstruction (IO) based on clinical symptoms and radiological findings.

FINDINGS AND/OR PROCEDURE DETAILS:

High IO obstruction:

- Radiographs: distention of stomach, duodenum and jejunum
- Common causes: midgut volvulus/malrotation, duodenal atresia/stenosis, duodenal web, annular pancreas and jejunal atresia

Lower IO obstruction:

- Radiographs: dilated loops of bowels with abdominal distention and failure to pass meconium.
- Barium enema: microcolon.
- Common causes: Hirschsprung disease, meconium plug syndrome, ileal atresia, meconium ileus, anal atresia/ malformations and necrotizing enterocolitis potentially life-threatening in premature neonates.

CONCLUSION: Recognise type of IO is important for early treatment and disease detection. Urgent referral to surgery is mandatory.

**COMPARATIVE EVALUATION OF MRI WITH TRANSFONTANELLE
NEUROSONOGRAPHY IN NEONATES WITH HYPOXIC ISCHEMIC
ENCEPHALOPATHY**

Vijaypavan Kumar Dasaraju*¹; Anil¹; Veena²; Srinivas¹

¹*Department Of Radiodiagnosis, Gandhi Medical College, India,* ²*Radiodiagnosis, Niloufer Hospital, India*

OBJECTIVE: Perinatal asphyxia is one of the common cause of neonatal mortality and morbidity. Currently, many imaging modalities are available. Present study evaluates the neonates with hypoxic ischemic encephalopathy with neurosonography and MRI brain and compares both the imaging modalities.

MATERIALS &METHODS : This is a prospective study performed over 88 neonates. The study has been done for a period of 19 months ranging from March 2018 to September 2019. All hemodynamically stable neonates with history of birth asphyxia were evaluated with NSG & MRI.

RESULTS: In the present study a total of 88 neonates with history of hypoxic ischemic encephalopathy were evaluated with transfontanelle neurosonography and MRI. Out of 88 neonates, 24 were preterm neonates (27 %) while 64 cases were term neonates (73 %) . Commonest imaging finding in preterm neonates in our study was white matter injury (75 %) Most common imaging in term neonates with HIE in the present study was water shed infarct 20cases (76 %).

CONCLUSION: Neurosonography (NSG) is sensitive in detecting GMH grade II and above along with white matter injury grade II and above. NSG is less sensitive in detecting noncavitary white matter injury , basal ganglion injury and small foci of GMH. NSG is also not sensitive in grading the GMH. MRI is superior in detecting mild to moderate and severe HIE injury in both preterm and term neonates. DWI is more sensitive in detecting HIE injuries than any other MRI sequences.

A RARE DUAL PRESENTATION OF CAUDAL REGRESSION SYNDROME AND UNILATERAL RENAL AGENESIS IN A 5-YEAR-OLD PATIENT: A CASE REPORT

Khurram Khaliq Bhinder*¹; Shaista Riaz²; Zainab Malik¹; Afaf Arif³; Ameena⁴

¹Radiology, Shifa International Hospital, Pakistan, ²Radiology, McGill University, Canada, ³Radiology, Fatima Jinnah Medical University, Pakistan, ⁴Radiology, Ameerudin Medical College, Pakistan

INTRODUCTION: Caudal regression syndrome (CRS) is an extremely uncommon and rare developmental anomaly in which there is failure of development of the spinal cord or some segments of it. The exact etiology behind CRS is unclear. In this case report we report a patient with CRS and unilateral renal agenesis without any history of maternal diabetes.

REPORT: A 5 year old girl with a history of urinary and bowel incontinence since birth presented to the out patient department (OPD). There was previous history of bilateral congenital valgus deformity that was corrected. The patient underwent X-ray L/S spine, which showed partial agenesis of the sacrum and complete absence of coccyx, the iliac bone articulates with S-1 and S-2 but the distal segments fail to develop, there was also a dimple on the lower back which was diagnosed to be spina bifida occulta thus the diagnosis, was made that it was a type-2 anomaly according to the Renshaw classification. Following this an ultrasound (US) abdomen and MRI was performed. US incidentally revealed absence of the left kidney, the right kidney measuring at 8 x 3.4 cm with mild hydronephrosis up to the vesico ureteric junction (VUJ). On MRI sacrococcygeal hemiagenesis with thickened filum terminale and club-shaped conus medullaris was found. A Micturating Cystourethrogram (MCUG) was performed to assess the function of the bladder that revealed a neurogenic bladder.

CONCLUSION: Although most cases are sporadic but it commonly presents in children of diabetic mothers with 200 times increase in risk.

**UNRAVELING THE MYSTERY BEHIND THE ANOMALY: A PICTORIAL
REVIEW OF MULTIDETECTOR COMPUTED TOMOGRAPHIC (MDCT)
IMAGING OF CONGENITAL PULMONARY ARTERY ANOMALIES**

Florelyn P. Agravante*¹; Mariaem M. Andres¹

¹*Radiology, St. Luke's Medical Center- Global City, Phillipines*

LEARNING OBJECTIVE: This is a pictorial review that shall illustrate the MDCT imaging findings of the common and rare pulmonary artery congenital anomalies classified into major categories, including abnormalities of development or course, anomalous origin and abnormal caliber.

BACKGROUND: A large number and variety of congenital abnormalities affect the pulmonary arteries. Many of these conditions are rare and their clinical features often overlap. Disruption of the pulmonary vasculature is often incompatible with life. Thus, efficient and accurate diagnosis are essential and critical. A myriad of imaging techniques are available to aid diagnosis however, Computed Tomography (CT) Angiography has been proven to be the most effective in demonstrating the anatomy and delineating the abnormalities. It provides optimal detail of the airways, lung parenchyma, and small vessels and has the advantages of speed and ease of access. In relation, awareness of these conditions is important for the radiologist in interpreting the chest CT as early recognition would be of significant benefit in the diagnosis and treatment.

FINDINGS AND/OR PROCEDURE DETAILS: MDCT imaging of 12 pediatric patients with pulmonary artery anomalies are reviewed, analyzed and set in this pictorial review. MDCT allows comprehensive noninvasive evaluation of pulmonary artery anomalies in neonates and children.

CONCLUSION: MDCT has proved to be effective in demonstrating anatomy and delineating congenital abnormalities of the pulmonary arteries namely anomalous origin of left pulmonary artery, interruption/agenesis, stenosis, dilatation and hypoplasia. This modality also provides an advantage of examining the lung parenchyma and osseous thoracic structures.

COBWEB OF CULVERTS- AN INSIGHT INTO THE ATYPICAL PAEDIATRIC VASCULAR MALFORMATIONS

Sreekumar Muthiyal*¹; Adham Musthak¹

¹Radiology, Hamad General Hospital, Qatar

LEARNING OBJECTIVE:

- To highlight some atypical presentations of Paediatric vascular malformations
- To enumerate the imaging characteristics
- To entice the importance of awareness such entities

BACKGROUND: Complex atypical vascular malformations are often manifested in paediatric patients. Through this presentation, we are trying to highlight the imaging characteristics of three such entities; encountered in our institution. They are a) Parkes Weber syndrome b) Extensive veno lymphatic malformation pelvic cavity c) Arterial tortuosity syndrome.

FINDINGS AND/OR PROCEDURE DETAILS: (i) Parkes Weber syndrome – 8 years old child with extensive high flow arteriovenous fistulous communications, predominantly at the periarticular regions in the right lower limb with limb hypertrophy, diagnosed on MRI and MRA. (ii) Extensive veno lymphatic malformation pelvic cavity – 4 years old child with extensive veno lymphatic malformation in the pelvic cavity and left gluteal region, showing macro cystic lymphatic components and tortuous dilated venous channels, diagnosed on MRI and MRA. (iii) Arterial tortuosity syndrome - 4 months old infant with dysmorphic features. CT Thoracic-abdominal angiography MIP image showed tortuous aorta and branches with right diaphragmatic hernia. On genetic studies, mutation in the SLC2A10 gene was seen.

CONCLUSION: Complex atypical vascular anomalies often present in the paediatric patients. Acquaintance of the imaging characteristics of such entities is imperative in precise diagnosis and proper clinical management.

**RELATIONSHIP OF FETAL TRANSCEREBELLAR DIAMETER MEASUREMENT
TO FETAL BIOMETRY-DERIVED GESTATIONAL AGE OF FILIPINO
PREGNANT WOMEN ON SECOND TO THIRD TRIMESTERS AT A TERTIARY
CARE HOSPITAL IN MAKATI**

Ezekiel T. Arteta*¹;

¹*Department of Radiology, Hospital Ng Makati, Philippines*

OBJECTIVE: Precise estimation of gestational age is important in order to give appropriate care to both the pregnant mother and fetus. While different biometric parameters exist, they are often affected by anatomic anomalies, molding and IUGR. Transcerebellar Diameter (TCD) is an emerging ultrasound parameter useful for the estimation of gestational age (GA). The study aims to determine the relationship of transcerebellar diameter with the ultrasound-derived gestational ages of pregnant women on second to third trimesters at a tertiary care hospital in Makati.

MATERIALS & METHODS: Transcerebellar diameter is measured in addition to the standard fetal biometry in patients coming in for routine pelvic ultrasound that satisfies the inclusion criteria. The TCD is then correlated with age of gestation by their last menstrual period, different biometric parameters (BPD, HC, AC and FL) and the ultrasound-derived gestational age.

RESULTS: Results showed that the transcerebellar diameter has a strong statistical correlation ($p < 0.001$) with AOG based on LMP (0.95), BPD (0.95), HC (0.94), AC (0.95), FL (0.95), and ultimately, to the ultrasound derived AOG (0.94). The transcerebellar diameter also has a positive linear association with the ultrasound-derived gestational age, increasing its size as the age of gestation progresses.

CONCLUSION: The results presented herein shows that the transcerebellar diameter is a potential parameter in the estimation of gestational age.

INCIDENTAL FINDING OF CHRONIC MALROTATION IN A 12-YEAR-OLD CHILD WITH OMPHALOCOELE AND LIVER HERNIATION: A CASE REPORT AND REVIEW OF LITERATURE

Sameer Saleem Tebha*¹; Khurram Khaliq Bhinder²; Nasir Ali Afsar³; Zouina Sarfraz⁴

¹*Department of Neurosurgery and Neurology, Jinnah Medical and Dental College, Pakistan ,*

²*Department of Radiology, Shifa International/ Pakistan,* ³*Department of Pharmacology,*

Jinnah Medical and Dental College, Pakistan, ⁴*Department of Research and Publication,*

Fatime Jinnah Medical University, Pakistan

INTRODUCTION: Malrotation of the intestines is an uncommon pediatric condition that typically presents in the first month of life. Using the SCARE 2018 criteria, we report a case of a 12-year-old female with omphalocele and bilobed liver herniation presenting with chronic intestinal malrotation.

REPORT: A computed tomography (CT) of abdomen and pelvis with IV contrast revealed a peritoneal defect measuring 4 cm in the upper abdomen, containing the gut including pylorus, duodenum while retrospective distension of the stomach was seen up to the pylorus. The open Ladd's procedure was performed to correct the defect. No complications were noted intra- or one month post-operatively.

CONCLUSION: Patients with intestinal malrotation may present with abdominal pain, intestinal obstruction, nausea, or vomiting, these conditions should be considered when excluding malrotation. The open Ladd's procedure was deemed safe, feasible, and effective in a resource limited country like Pakistan, in the treatment of young children with intestinal malrotation.

PYGOPAGUS PARASITIC TWIN: A RARE ENTITY

Palwasha Gul*¹; Pari Gul¹; Khanda Gul²

¹*Diagnostic Radiology, Bolan Medical Complex Hospital, Pakistan,* ²*Gynae and Obs, Bolan Medical Complex Hospital, Pakistan*

INTRODUCTION: Pygopagus parasiticus (PP) is a rare clinical entity consisting of asymmetric twinning in which the parasitic twin is attached to the dominant twin. Pygopagus parasiticus is a type of conjoint twins which itself is a monozygotic twinning. The classification of anatomic types depends on the point of attachment. Imaging such as antenatal ultrasound, CT scan and MRI may play vital role in diagnosing and deciding the type of twinning and its surgical approach.

REPORT: We report a rare case of pygopagus parasiticus in a 4-day old male neonate. He was born by emergency C section to a 32 year old mother with no family history of congenital fetal anomalies. On examination the baby had lobulated soft tissue attached to the lumbar region. No other congenital anomalies were noted on physical examination. His CE CT scan (128 slice prime aquilion) abdomen and pelvis was performed at Bolan Medical Complex Hospital, which showed 17 x 15 cm soft tissue mass attached to the lumbar soft tissues of the co twin showing iliac bone. Spina bifida was also noted in lumbar vertebra of co twin. No CT evidence of spinal anomaly was noted however MRI was recommended for further assessment and feasibility of separation. Further investigation and surgery is delayed due to financial constraints.

CONCLUSION: Asymmetric and parasitic conjoined twins are rare anomalies of monozygotic monoamniotic twins. We present a rare case of an externally attached parasitic twin in a neonate diagnosed on CT scan.

IMAGING FINDINGS OF POSTERIOR FOSSA TUMORS IN CHILDREN: A CASE-BASED REVIEW

Bala Subashree A*¹; Rashmi Dixit¹; Sapna Singh¹; Sneha Harish C¹

¹*Radiodiagnosis, Maulana Azad Medical College, India*

LEARNING OBJECTIVE: We aimed to evaluate the imaging findings of posterior fossa tumors in pediatric population based on retrospectively collected data emphasizing on magnetic resonance imaging(MRI).

BACKGROUND: Posterior fossa is a compact space and tumors in this region commonly presented with symptoms of raised intracranial pressure. The imaging approach to diagnosis of these tumors is based on the age and they differ according to their location in the posterior fossa i.e. brainstem, cerebellum and 4th ventricle. These tumors are most common in pediatric population. Majority of the primary childhood brain tumors occur in the infratentorial compartment including pilocytic astrocytoma, medulloblastoma, ependymoma and pontine glioma. Rare tumors like atypical teratoid rhabdoid tumor(ATRT) can also be seen.

FINDINGS AND/OR PROCEDURE DETAILS: MR examination was done on a 3T MR scanner (Magnetom Skyra, Siemens, Germany). Conventional MR sequences including T1, T2, inversion recovery sequence, gradient and post contrast images were obtained. Physiological features of the tumors were evaluated by using advanced imaging sequences like diffusion weighted imaging and spectroscopy wherever possible, helping in better preoperative characterization of the lesions. MR imaging characteristics of the common tumors involving the cerebellar hemispheres, brainstem and 4th ventricle will be discussed in this poster.

CONCLUSION: Few specific imaging findings along with patients' demographics and location in posterior fossa help in narrowing down the differentials and avoiding unnecessary interventions.

DIAGNOSIS AND MANAGEMENT OF PRUNE BELLY SYNDROME

The Huan Hoang*¹; Hoang Anh Thi Van¹; Van Trung Hoang¹; Thu Ha Thi Le¹; Van Huy Le¹

¹*Department of Radiology, Thien Hanh Hospital, Vietnam*

LEARNING OBJECTIVE: To present the definition, pathology, clinical manifestations, radiological features, and management of prune belly syndrome (PBS).

BACKGROUND: PBS is also known as Eagle-Barrett syndrome. This is a rare anatomic-radiological syndrome comprising a complex of three following anomaly malformation: hypoplasia or aplastic aplasia of the abdominal muscle, the urinary tract malformations, and bilateral undescended testis. The proper etiology of PBS remains controversial despite several proposed theories, such as disorders of mesenchymal development during the embryological period, a yolk sac defect, or chromosome abnormalities.

FINDINGS AND/OR PROCEDURE DETAILS: Clinical and radiological manifestations reveal the features of three prominent anomalies and complications as well. The patients may present with a prune-like and lax appearance of the abdomen, symptoms of urinary tract infections, bilateral nonpalpable testicles. PBS can happen in varying degrees of severity and involve other systems that can lead to pulmonary hypoplasia, chronic renal failure, cardiac disorder, and musculoskeletal defects. Bulging belly due to the absence of abdominal muscles can be found on plain radiograph. Ultrasound is chosen for initial evaluation and long-term follow-up to show small kidneys with urinary tract anomalies (dilation of the ureters, megaureter or hydronephrosis, backflow of vesicoureteral reflux), and the presence of cryptorchidism. Micturating cystourethrogram is an essential method of urethral assessment. Management of PBS includes medical treatment of infection, surgical treatment comprising urinary tract procedures, orchiopexy, and abdominal wall reconstruction.

CONCLUSION: PBS is a rare and compound malformation involving multiple organs. Radiologists need to pay attention during the postnatal and prenatal screening examinations.

**A RARE CASE OF INTRACRANIAL ANEURYSM IN PAEDIATRIC POPULATION
WITH PSEUDOCOARCTATION OF AORTA AND MULTIPLE THORACIC
VASCULAR ANOMALIES**

Fatin Shaaya*¹; See Khim Sim²

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Malaysia,* ²*Radiology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Intracranial aneurysms(IA) in children are rare. However, high index of suspicion of underlying vascular conditions which predispose the aneurysm occurrence is important. The underlying vascular anomalies, such as pseudocoarctation, often presented with haemodynamics alteration leading to hypertension and other sequelae such as aneurysms, dissections or rupture.

REPORT: We described a case of 16-year old girl with no background medical history presented with sudden onset severe headache due to spontaneous subarachnoid haemorrhage(SAH) secondary to ruptured anterior cerebral artery saccular aneurysm demonstrated on admission plain Computed Tomography(CT) brain and CT Angiography(CTA). Subsequently, she underwent cerebral angiogram and incidentally noted to have a right-sided aortic arch(RAA) with a large aneurysmal dilatation of the right subclavian artery(RSA) with associated pseudocoarctation of aorta proximal to the RSA ostium. A cross-sectional CTA of the neck and upper thorax performed and confirmed these findings. She was also noted to have common origin for both common carotid arteries(CCA) and also an aberrant left subclavian artery(ALSA) which is normal in calibre. On further evaluation, we noticed she has a short stature, standing at 140cm, with small fingers and toes, short neck and micrognathia raising the clinical suspicion of Turner's syndrome.

CONCLUSION: Surveillance and appropriate evaluation of the underlying vascular anomalies in paediatric with IA is important to prevent associated complications. To the best of our knowledge, this is the first reported case of pseudocoarctation of aorta with post-stenotic fusiform RSA aneurysm which is associated with RAA, common trunk for both CCA with ALSA.

RETINOBLASTOMA: SPECTRUM OF CT AND MR IMAGING FEATURES

Jovynel Cabaccan*¹;

¹*Radiology Department, St. Lukes Medical Center - Global City, Philippines*

LEARNING OBJECTIVE: The aim of this presentation is to provide the common imaging features of retinoblastoma in children.

BACKGROUND: Retinoblastoma is the most common primary ocular tumor in the Philippines, accounting for ~4% of all pediatric malignancies. It forms when mutation occurs in both RB1 alleles of a susceptible retinal cell. It usually occurs in patients younger than 5 years old and commonly present with leukocoria or strabismus.

FINDINGS AND/OR PROCEDURE DETAILS: CT and MRI are the primary modalities used for imaging retinoblastoma. CT findings typically demonstrate lesions of higher density relative to the vitreous body and usually present with calcification. On contrast study, moderate enhancement of the lesion is noted. Though detection of ocular calcification on CT is highly sensitive and specific to retinoblastoma, detailed delineation of soft tissue involvement is inferior to that of MRI. MRI is the most sensitive technique in evaluating tumor infiltration of the optic nerve, extra-ocular invasion, and intracranial extension. About 60% of retinoblastoma are unilateral with median age at diagnosis of 2 years while 40% are bilateral with median age at diagnosis of 1 year. Rarely, a unilateral or bilateral intraocular retinoblastoma may be associated with an intracranial primitive neuroectodermal tumor, a disease entity referred to as trilateral retinoblastoma.

CONCLUSION: Radiology plays a vital role in the assessment of retinoblastoma. CT and MRI are proven useful imaging modalities in the diagnostic confirmation of retinoblastoma, evaluation of tumor extent and associated intracranial abnormalities. It also aids in the highly individualized management of retinoblastoma patients.

MRI EVALUATION OF EVAN'S INDEX AND ITS CORRELATION WITH CALLOSAL ANGLE IN PEDIATRIC HYDROCEPHALUS

Sachin Shankar Pathare*¹; Bhautik Kapadia¹; Chetan Mehta¹

¹*Radiodiagnosis Department, Baroda Medical College, India*

OBJECTIVE: Hydrocephalus is the imbalance between production and absorption of cerebrospinal fluid resulting into the enlargement of ventricular system. Knowledge of ventricular size is mandatory, for the early and precise diagnosis. Assessment of ventricular enlargement is subjective and based on the radiologist's experience. Linear indices, such as Evans Index (EI) and callosal angle have been proposed as markers of ventricular volume. The aim is to establish Evan's index (EI) and callosal angle values in paediatric hydrocephalus cases of varied etiology with respect to gender and age. Also, to study any significant correlation between EI and callosal angle.

MATERIALS AND METHODS: Total 105 subjects of hydrocephalus aged between 0 to 12 years, comprising of 80 males and 25 females, were analysed using EI and callosal angle retrospectively on MRI Brain.

RESULTS: The mean EI in our study population was 0.413 ± 0.06 in males, 0.425 ± 0.08 in females and an overall mean is 0.419 ± 0.04 . A moderate inverse correlation ($r = -0.699$) was found between EI and callosal angle.

CONCLUSION: Mean EI of 0.41 ± 0.04 in our study supports the adaptation of international guideline cut-off value of $EI > 0.30$ in the diagnosis of hydrocephalus. EI and callosal angle is less technical, easily reproducible and less time consuming and shows significant correlation.

QUALITATIVE AND QUANTITATIVE VOLUMETRIC ASSESSMENT OF ASCITES ON PLAIN COMPUTED TOMOGRAPHY SCAN OF THE ABDOMEN

Danlen C. Masangya*¹; Imarzen V. Elepaño¹

¹*Radiology, UP-Philippine General Hospital, Philippines*

OBJECTIVE: In the UP-Philippine General Hospital (UP-PGH), the volume of ascites on imaging is only subjectively described as minimal, moderate, or massive. This study aimed to compare this qualitative method with established quantitative methods in the volumetric assessment of ascites on plain computed tomography scans of the abdomen and propose a more objective approach in reporting the volume of ascites.

MATERIALS & METHODS: All adult patients with ascites who underwent an abdominal CT scan from the period of January to June 2016 were included in this study. The volume of ascites was measured on plain abdominal CT images using the gold standard Volume Rendering method and the Oriuchi five-point method. These were correlated with the amount of ascites using the qualitative method as reported in the official radiologic report. Pearson correlation for the values obtained using both methods was performed. The mean volumes, range of values, and standard deviation for each subgroup of patients based on the UP-PGH qualitative method were also tabulated.

RESULTS: There is significant overlap among the ranges of values for the qualitative descriptors of ascites. There is good correlation between the values obtained using the two quantitative methods (Pearson correlation coefficient 0.902). The Oriuchi method is most accurate when applied for patients with massive ascites (0.863).

CONCLUSION: The Oriuchi method is a practical method of estimating the volume of ascites on CT, particularly for patients with massive ascites. It may be applied for patients who need quick and reasonably accurate estimation of intraperitoneal fluid volume.

ROLE OF 3-TESLA DIFFUSION WEIGHTED MRI IN EVALUATION OF FOCAL LIVER LESIONS

Aparna Katyal*¹; Shahina Bano¹; Yashvant Singh¹

¹*Radio-Diagnosis, Pgimer &Dr Rml Hospital, India*

OBJECTIVE: To evaluate the role of diffusion weighted imaging (DWI) in characterization of focal liver lesions (FLLs) using 3-T MRI.

MATERIALS & METHOD: MR evaluation was done using respiratory triggered DWI in addition to conventional and contrast-enhanced sequences. A total of 33 patients with 71 FLLs were evaluated qualitatively using visual assessment of DWI, and quantitatively using conventional ADC and normalized ADC measurements using spleen as the reference organ. Receiver operating characteristic (ROC) curve analyses was done to evaluate the utility of ADC for differentiation of benign and malignant lesions.

RESULTS: Visual characterization of lesions using DWI could differentiate benign and malignant lesions with a sensitivity, specificity and accuracy of 100%, 85% and 95.77% respectively. Mean ADC value of benign lesions was 2 ± 1.05 ($\times 10^{-3} \text{mm}^2/\text{sec}$), malignant lesions was 0.84 ± 0.13 ($\times 10^{-3} \text{mm}^2/\text{sec}$) and the difference was found to be statistically significant (P value < 0.05). At proposed ADC cutoff of 1.12 ($\times 10^{-3} \text{mm}^2/\text{sec}$), area under ROC curve came out to be 0.843 and benign lesions could be differentiated from malignant ones with 100% sensitivity, 80% specificity and 94.36% diagnostic accuracy. The use of normalized ADC using the spleen as reference organ resulted in a more restricted distribution of ADC values compared to conventional ADC measurements.

CONCLUSION: DWI shows good potential for accurate characterization of liver lesions. It should be included in routine MR protocol for hepatic imaging. Some benign lesions can be misclassified as malignant using DWI. Thus, it cannot be used as a stand-alone sequence and should be interpreted in conjunction with conventional and contrast-enhanced MR sequences.

HYPERDENSE WALL-LUMEN SIGN: NEW IMAGING CLUE TO THE DIAGNOSIS OF GANGRENOUS CHOLECYSTITIS

Binit Sureka*¹; Poonam Elhence²; Mahavir Singh Rohda³; Ramkaran Choudhary³; Pushpinder Singh Khera⁴

¹*Diagnostic & Interventional Radiology, All India Institute of Medical Sciences (AIIMS) Jodhpur,* ²*Pathology & Lab MedicinE, All India Institute of Medical Sciences (AIIMS) Jodhpur,* ³*General Surgery, All India Institute of Medical Sciences (AIIMS) Jodhpur,* ⁴*Diagnostic & Interventional Radiology, All India Institute of Medical Sciences (AIIMS) Jodhpur, India*

OBJECTIVE: The purpose of the study was to review unenhanced CT scans of cases with histopathologically confirmed acute gangrenous cholecystitis and acute non-gangrenous cholecystitis. Our hypothesis was that the density (CT Hounsfield units) of both gallbladder wall and bile increased in cases of acute gangrenous cholecystitis due to early ischemia, mucosal necrosis and hemorrhage within the wall and anaerobic bacteria proliferation, suppurative infection and purulent material filling the gallbladder lumen.

MATERIALS & METHODS: We retrospectively reviewed the unenhanced CT scans of surgically proven cases of acute gangrenous and non-gangrenous cholecystitis. 11 cases of pathologically proven acute gangrenous cholecystitis and 11 consecutive cases of surgically proven acute non-gangrenous cholecystitis that underwent CT at our institute were included in the study so as to have 1:1 control. The Hounsfield unit (HU) of the gallbladder wall and intraluminal bile was measured.

RESULTS: The gangrenous cholecystitis group had significantly higher HU values of wall and bile (43.18 ± 14.27 vs 26.82 ± 11.74 and 41.64 ± 12.64 vs 25 ± 13.7 for gangrenous and non-gangrenous group, respectively $p < 0.05$). The unenhanced CT cut-off value within wall for diagnosis of gangrenous cholecystitis was 33.5 HU (sensitivity 81.8%, specificity 81.8%, positive predictive value 81.8%, negative predictive value 81.8%, AUC 86.4, Youden index 63.6% which was statistically significant, $p = 0.004$) and intraluminal bile 32 HU (sensitivity 81.8%, specificity 90.9%, positive predictive value 83.3%, negative predictive value 90%, AUC 84.3, Youden index 74.2% which was statistically significant, $p = 0.006$).

CONCLUSION: We would also like to propose combined hyperdense gallbladder wall-lumen sign for the imaging diagnosis of acute gangrenous cholecystitis.

SPONTANEOUS RUPTURE OF RENAL ANGIOMYOLIPOMA IN A TWIN PREGNANCY : A CASE REPORT

Shobhana Sivandan*¹

¹*Radiology Department, Hospital Tuanku Ja'afar, Seremban, Malaysia*

INTRODUCTION: Renal angiomyolipoma (RAML) is a rare benign tumour which occurs sporadically or in association with tuberous sclerosis or pulmonary lymphangiomyomatosis. The risk of rupture is dramatically increased in pregnancy. Managing a case of ruptured RAML in pregnancy is challenging because only a small number of cases have been reported in the literature.

REPORT: A previously healthy 32 year old woman with twin pregnancy at 16 weeks gestation presented with abdominal pain and lethargy. Physical examination revealed anaemia and a right abdominal mass. Blood investigation showed haemoglobin of 8.5g/dL. In view of her critical condition, an urgent computed tomography (CT) was ordered. The patient and her husband consented for a CT. CT showed a ruptured right renal angiomyolipoma with surrounding haematoma and incidental right segmental renal artery aneurysms. She underwent urgent catheter-directed partial embolisation using PVA to prevent further bleed with the notion to preserve as much renal tissue as possible. Post PVA run images showed other arterial supply at the upper pole. By this time the maximum allowable radiation exposure was attained and the procedure was abandoned. Upon discussion with the primary team, a right nephrectomy was planned for a week later, prior to which a coil embolisation was performed. The patient recovered well.

CONCLUSION: RAML can grow rapidly and become symptomatic during pregnancy, thus becoming the first presentation in such patients. It is our hope that the distinctive features of our case will further enhance the knowledge of the management of this rare tumour during pregnancy.

IMAGING OF SPLENIC ABCCESS WITH ULTRASOUND GRAY SCALE

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Splenic abcess is like abscesses, are localized collections of necrotic inflammatory tissue caused by bacterial, parasitic or fungal. The frequency may be rising due to a rise in the use immunosuppressive agents, higher survival of leukemia patients and high incidence of drug abuse. Splenic abscess is Rare Case and uncommon and carries a high mortality if not diagnosed.

REPORT: We will present our experience with ultrasound gray scale, age 35 years old, man, symptom swelling in region hypochondrium left and pain, fever. Complete blood count will show marked leukocytosis.

CONCLUSION: Ultrasound gray scale for accurate evaluation of the Splenic Abscess the first choice and the others examination with CT Abdominal contrast.

ANTERIOR ABDOMINAL WALL ABSCESS WITH ASCARIS WORMS IN A PATIENT WITH ABDOMINAL TUBERCULOSIS: A MAZE RUNNER

Sheen Urquiza*¹; Andro Reginald L. Licaros¹; Mark Jerome G. Mauricio¹; Dennis Raymond L. Sacdalan¹; Jillian T. Samson¹; Paolo Miguel B. Verayo¹; Imarzen V. Elepano¹

¹*Department Of Radiology, Philippine General Hospital*

INTRODUCTION: Tuberculosis can involve any part of the gastrointestinal tract (GIT) and is the 6th most frequent site of extra-pulmonary tuberculosis. Tuberculous bacteria reach the GIT via hematogenous spread, ingestion of infected sputum, or direct spread from infected contiguous lymph nodes. Gross pathology of GITB may include ulcers, fibrosis, thickening and stricture of bowel walls, lymphadenopathies and omental thickening. Fistulae are rare complications. Studies also revealed increased incidence of parasitic infections in patients with tuberculosis, with Ascariasis being the most common helminthic infection.

REPORT: We report in this study a 15 year old male who presented with an anterior abdominal wall abscess. Fistulogram, upper GI series (UGIS), ultrasound and CT-MRI of the chest and abdomen were done. The different imaging modalities revealed pleural effusion, bowel wall thickening, lymphadenopathies, multiple abscess formation in the abdominal cavity and anterior chest and abdominal wall. The CT and MRI studies revealed sinus tract formation, while the ultrasound and fistulogram revealed serpentine filling defects in the anterior abdominal wall abscess, later found to be Ascaris worms. The MTB/RIF PCR of the anterior abdominal wall abscess was positive for TB.

CONCLUSION: Since co-infection of Ascariasis with Tuberculosis may mimic a wide range of conditions due to its extensive presentation, a thorough work-up with clinical and laboratory examinations, including potentially serological, molecular and multimodality image-based diagnostics are needed in order to aid the management of said disease.

UTERINE LEIOMYOMA POST SURGERY WITH ULTRASOUND

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Uterine Leiomyoma are the most common gynecologic neoplasm, prevalence 20 - 30 % of women of reproductive age. The most frequent symptom of leiomyoma is abnormal uterine bleeding .It is a Rare Case in my country .This bleeding manifest menorrhagia which result in anemia.

REPORT: We will report a woman 45 years old ,infertily,palpable abdominal - pelvic mass.The clinical is variable depending on the size ,location,and number of the tumors. Ultrasound is the first detection for Uterine Leiomyoma ,the others examination for this case is MRI abdomen -Pelvis.

CONCLUSION: Ultrasound is the best examination radiology and then continued with MRI abdomen pelvis pretreatment and post treatment for evaluation of the uterine leiomyoma.

GREATER SCIATIC HERNIA: A CASE REPORT

Mohamad Nazri Munawar Khan*¹; Muhamad Zabidi Ahmad²; Mazedra Murad³

¹Radiology, Universiti Sains Malaysia, ²Radiology, Advance Medical And Dental Institute, Malaysia, ³Radiology, Hospital Seberang Jaya, Malaysia

INTRODUCTION: Sciatic hernia is a rare type of pelvic floor hernia that can cause chronic pelvic pain, sciatica, and intestinal/ureteric obstruction. It is hypothesized to be caused by muscle atrophy adjacent to the sciatic foramen. We report a case of small bowel obstruction secondary to right greater sciatic foramen hernia with concurrent bilateral obturator, Spigelian, and left inguinal hernia; predisposed by ascites and previous hysterectomy.

REPORT: A 76 years-old lady with underlying hypertension and liver cirrhosis presented with a 1-day-history of colicky abdominal pain, vomiting, abdominal distension, and obstipation. She had undergone right inguinal hernia repair and hysterectomy few years earlier. Physical-examination revealed a distended abdomen with a non-reducible swelling over the right inguinal region. Plain abdominal radiograph shows multiple dilated loops of small bowel and absence of rectal gas. Subsequent CT of the abdomen/pelvis revealed small bowel obstruction with transition point adjacent to herniation of small bowel through right greater sciatic foramen. There are also few other fluid-filled hernia sacs suggestive of bilateral obturator, Spigelian, and left inguinal hernia. Emergency laparotomy was performed and intraoperatively, loops of bowels were noted within the bilateral Spigelian and right obturator hernia-sac. Closure of these defects was performed and she had recovered well.

CONCLUSION: Imaging findings suggest a right greater sciatic hernia as the cause of small bowel obstruction. However intraoperative findings showed different hernias. Sciatic herniation was most likely to self-reduce during general anesthesia with development of the other hernia as previously described. Clinicians should be aware of this possibility to prevent catastrophic sequelae.

**MESENTERIC VEIN THROMBOSIS CAUSING BOWEL ISCHEMIA: A
DIAGNOSIS DILEMMA IN TRAUMATIC PATIENT WITH SEAT BELT
SYNDROME WITHOUT SEAT BELT SIGN.**

Mohd Hafizuddin Husin*¹; Hapsah Arifin²; Fadhila Hanapiah³; Mohd Ezane Aziz¹

¹Radiology, Universiti Sains Malaysia, ²Surgery, Hospital Tanah Merah, Malaysia, ³Radiology, Hospital Tanah Merah, Malaysia

INTRODUCTION: Seat belt may reduce the collision impact during road traffic accident. However, upon wearing the seat belt the driver or passenger is susceptible to seat belt syndrome, which is defined bowel injury with present of seat belt sign. Although rare, seat belt sign may absent in seat belt syndrome. Lack of seat belt sign and non-specific findings on CT causes delay of treatment.

REPORT: A 23-year-old female driver presented with abdominal pain after a traffic accident. During the accident, she was wearing seat beat and involved in frontal collision with a pickup track. Upon presentation, the vital signs are stable. Physical examination showed mild tenderness of the lower abdomen with superficial abrasion wound. No seat belt signs on abdomen. Initial CT abdomen reveals grade II splenic injury and moderate free intraperitoneal fluid. There were also mesenteric stranding and suspicious mesenteric vein thrombosis. She was treated conservatively until day 5 post trauma. Laparotomy showed bowel ischaemia involving terminal ileum until descending colon. She underwent bowel resection with primary jejunosigmoid anastomosis.

CONCLUSION: Bowel injury should be suspected in seat-belt-restrained trauma patient who complaints of persistent abdominal. Absence of seat belt sign does not exclude bowel injury. CT findings of bowel injury sometimes not specific and may cause delay of treatment. Although not common, mesenteric vein thrombosis can cause bowel ischaemia and subsequently bowel perforation

GOSSYPIBOMA: A 'PAIN' TO THE PATIENT AND SURGEON

Vatsela Krishnan*¹; Tan Yuan Ying¹; Noor Shahida Mydin Pitchay¹

¹*Radiology, Penang General Hospital, Malaysia*

INTRODUCTION: Gossypiboma refers to a mass of cotton material, usually gauze and sponges, unintentionally left in the body cavity at the end of a surgical operation. Variable manifestations, complications as well as the legalities involved, make the diagnosis difficult.

REPORT: A 38-year-old female complained of severe colicky abdominal pain a day post emergency lower section caesarean section. Clinical examination revealed a soft vague approximately 5 x 5cm mass at the left iliac fossa. Transabdominal ultrasound revealed no obvious free fluid. Patient was taken for an abdominal x-ray, which revealed an ovoid opacity, with 'tread-like' appearance, in the left side of the abdomen. Enhanced computed tomography of the abdomen and pelvis was done subsequently. It revealed a well-defined heterogeneous lesion in left lower abdomen (lumbar and left iliac fossa), which gives rise to a spongiform appearance with adjacent gas bubbles. The wall was enhancing with hyperdense curvilinear metallic structure within. Diagnosis of gossypiboma was made and patient was taken for an exploratory laparotomy for removal of a surgical sponge. No adhesions were seen. The patient subsequently recovered and was discharged well.

CONCLUSION: Gossypiboma is a serious medicolegal issue and prevention is better than cure. A meticulous intraoperative swab count is mandatory. Gossypiboma should be considered in the differential diagnosis of any postoperative patient who presents with symptoms of pain, infection, or a palpable mass. CT is the modality of choice as identifying a sponge on an intraoperative radiograph is difficult.

MISSED OPPORTUNITY OF DIAGNOSING AORTIC DISSECTION IN A PATIENT SUSPECTED RENAL ARTERY STENOSIS : A CASE REPORT

Mohd Noor Akmal Adam*¹; Rayyan Mardhiyah Nik Mohd Kamil¹

¹*Radiology Department, Hospital Segamat, Malaysia*

INTRODUCTION: Ultrasound has been the imaging of choice for many clinical conditions as it is non-invasive and relatively cheaper. Many times, we manage to correctly identify the abnormalities and proceed with other necessary imaging. Coupled with the clinical findings, clinicians would be able to make a better judgment for the management of the patient. Sometimes the imaging led us to a completely different diagnosis and the patient management is steered to a different course. Doppler renal ultrasound is considered a routine outpatient investigation in our centre to rule out renal artery stenosis and when necessary, we will proceed with a renal MRA.

REPORT: Here we report a case where the patient who was initially referred to us for renal artery stenosis had the usual renal Doppler ultrasound done, and then proceeded with renal MRA. However, the imaging revealed that the patient had a concealed abdominal aortic dissection instead.

CONCLUSION: The findings highlighted the importance of thoroughly evaluating other vascular structures once suspicious findings were seen on the indirect method of Doppler renal ultrasound to avoid overlooking a more critical diagnosis.

THE BLEEDING KIDNEY, A CASE OF WUNDERLICH SYNDROME

Noor Aida Mat Daud*¹; Mohan Dass Pathmanathan²

¹*Radiology Department, Hospital Sungai Buloh,* ²*Clinical Research Centre, Hospital Sungai Buloh, Malaysia*

INTRODUCTION: The Wunderlich syndrome, a complication mostly feared from large renal angiomyolipoma is a spontaneous non traumatic renal hemorrhage which is confined to the subcapsular and perirenal space.

REPORT: A 56 year old lady visited the ED due to sudden excruciating right abdominal pain and distension, associated with persistent vomiting and giddiness. Her BP was 120/70 mmHg and PR was 80 bpm. A huge mass palpable at her right sided abdomen. Her initial blood profiles were normal (Hb 12.2g/dl, Urea 6.3, Creatinine 103)

CT abdomen revealed a large, fat-containing mass at right kidney (17.8 x 18 x 71.3 cm) with active bleed, right perinephric hematoma and free fluid, hence the diagnosis of bleeding right renal angiomyolipoma was made. A repeated FBC showed her Hb level dropped to 4.3 g/dL. Diagnostic angiogram demonstrated a pseudo-aneurysm arising from the proximal branch of the inferior right renal segmental artery which was successfully embolized. One month follow-up CT scan showed a smaller mass without new bleed. Patient has been asymptomatic for the past one year and was advised to have right nephrectomy to avoid disease recurrence.

CONCLUSION: Angiomyolipoma being the common etiology of this rare Wunderlich syndrome, is an uncommon benign tumor consisting of mature adipose tissue, thick-walled blood vessels and smooth muscle in different proportions. It is often missed during initial clinical assessment as the cause of acute abdominal pain, hence radiological imaging becomes necessary for diagnosis. Early intervention for a such life threatening disease may save life.

CASE OF AN ABDOMINAL AORTIC ANEURYSM COMPLICATED BY FISTULA TO A RETROAORTIC LEFT RENAL VEIN

Andre Yee Yue Meng*¹

¹*Radiology, Hospital Lahad Datu, Malaysia*

INTRODUCTION: Spontaneous formation of a fistula between the abdominal aorta and left renal vein is a rare clinical entity. Most of the time the fistula involves an anomalous retroaortic left renal vein. Common presentations are abdominal pain and hematuria. In male patients it may be accompanied by a left varicocele. Here we report a case of an aorto-left renal vein fistula with an associated left varicocele.

REPORT: 66 year-old man with underlying HTN and gastritis presented with epigastric pain for 2 days, localised and dull in nature, painful enough to disturb his sleep. There was no associated hematuria. On examination he was alert and comfortable, vital signs were normal. Noted pulsatile, expansile mass was noted per abdomen and he had a mild testicular swelling. CT showed an abdominal aortic aneurysm with an edematous poorly perfused left kidney. It was noted that there was a fistula between the abdominal aorta with a retroaortic left renal vein and a left varicocele.

CONCLUSION: Abdominal aortic aneurysm complicated by fistula with the left renal vein is a rare occurrence and most commonly occurs in concurrently with a retroaortic left renal vein. The aberrant position of this vein, sandwiched between the aorta and vertebra predisposes to chronic trauma due to pulsation of the aorta and eventually fistula formation. Identification of the aberrant retroaortic vein is important as intra-operatively it is at risk of rupture during dissection of the posterior aortic wall. Suspicion should be raised in the event an abdominal aortic aneurysm presents with a left testicular swelling.

EXTRATESTICULAR EPIDERMOID CYST PRESENTING AS A LARGE SCROTAL MASS

Yuet Yu Soon*¹; Malinda Abd Majid¹

¹*Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Epidermoid cysts are rare tumours, which account for 1% of all scrotal tumours. Very rarely, they are intrascrotal but extratesticular. We present a rare case of an intrascrotal extratesticular epidermoid cyst. Our learning objectives are to discuss on differential diagnosis of extratesticular mass and learn the imaging findings of rare occurrence of extratesticular epidermoid cyst.

REPORT: Patient is a middle-aged male, who presented with painless right scrotal swelling for the past 4 years, which is gradually getting larger. He had no constitutional symptoms or history of trauma. Examination revealed a large, soft, boggy scrotal mass with palpable right inguinal lymphadenopathy. Ultrasound showed a paratesticular mass with no increased doppler flow and enlarged right inguinal lymph nodes. Subsequent MRI confirms findings of mildly heterogeneous paratesticular mass with peripheral enhancement and internal septations. Patient underwent excision and pathological findings revealed benign epidermoid cyst. After surgery, patient is well.

CONCLUSION: Extratesticular epidermoid cyst is a rare condition. Ultrasonography is helpful to localize the origin but certain diagnosis such as lipoma may have similar sonographic findings as epidermoid cyst and in this case, lymphadenopathy also raised the possibility of malignancy. MRI is therefore a more useful modality as diagnostic tool of scrotal mass.

A RARE CASE OF PRIMARY BILATERAL ADRENAL NON-HODGKIN'S LYMPHOMA PRESENTING WITH ABDOMINAL PAIN

Norliana Dalila Mohamad Ali*¹; Natasha Mohd Arifin¹; Roqiah Fatmawati Abdul Kadir¹;
Jazlan Jamaluddin²

¹Radiology Department, Universiti Teknologi MARA (UiTM), Malaysia, ² Primary Care Department, Universiti Teknologi MARA (UiTM), Malaysia

INTRODUCTION: Primary adrenal lymphoma is extremely rare accounting for less than 1% on Non-Hodgkin's Lymphomas (NHL), and interestingly 70% of these cases involve bilateral adrenal glands.

REPORT: We describe a case of primary bilateral adrenal NHL in an elderly male presented with a two-week history of persistent severe abdominal pain after being generally unwell for a few weeks. He was initially treated for hypocortisolism, acute cholecystitis and gastritis based on the clinical findings including the blood investigations and oesophagogastroduodenoscopy (OGDS). In view of the persistent abdominal pain, Computed Tomography (CT) was performed and revealed bilateral large adrenal masses which were proven to be diffuse large B-cell lymphoma (DLBCL) from CT-guided biopsy. The patient showed significant improvement on subsequent imaging after receiving six cycles of chemotherapy.

CONCLUSION: Primary DLBCL of bilateral adrenals remains a rare phenomenon and may present with variable general symptoms. Other causes of bilateral adrenal masses should be excluded but primary adrenal lymphoma should be suspected in patients with adrenal insufficiency.

A CASE REPORT OF PRIMARY ABDOMINAL PREGNANCY WITH PLACENTAL BLOOD SUPPLY FROM ILIAC VESSELS

Aileen Joanne Q. Arganza *¹; Ann Josell V.Herrera¹

¹*Department of Radiology, Quezon City General Hospital, Philippines*

INTRODUCTION: Abdominal pregnancy is a life-threatening condition, a form of ectopic pregnancy where the embryo develops outside the uterus. Incidence rate is 1 of 10,000 worldwide. It can be a primary or secondary. Primary abdominal pregnancy is the rarest form of extrauterine gestation. The review of clinical history and pelvic examination correlated with transvaginal ultrasound and magnetic resonance imaging (MRI) is very significant to decrease its mortality. The aim of this report is to present a rare case of a primary abdominal pregnancy confirmed based on Studdiford's criteria.

REPORT: A 23-year old primigravid on her 11 weeks 6/7 days age of gestation sought consult due to vague hypogastric pain. Transvaginal ultrasound and magnetic resonance imaging (MRI) were performed and shows an extrauterine live ensac fetus within the pouch of Douglas associated with hemoperitoneum. The placenta is intimately related to the posterior wall of urinary bladder and posterior uterus. Placental signal voids are seen from the right iliac vessels. Persistence of symptoms and gradual progression of the hemoperitoneum prompt surgical laparotomy. Fetus was removed and the placenta was remained intrabdominally to prevent internal bleeding which may cause hypovolemic shock. No post-operative complications were observed. Follow-up ultrasound showed decreased placental size and eventual resorption.

CONCLUSION: Imaging modalities plays important role in diagnosing and confirming the rare case of primary abdominal pregnancy. Ultrasound is the initial procedure of choice. Plain magnetic resonant imaging examination is for evaluation of more precise location and its relation to maternal abdominal organs.

ARTERIOPORTAL FISTULA WITH GASTRODUODENAL ARTERY ANEURYSM - A RARE COMPLICATION OF CHRONIC PANCREATITIS

Yiaw Yeong Huei*¹; Aida Mastura Mustapha¹

¹*Radiology, Sarawak General Hospital, Malaysia*

INTRODUCTION: Pancreatitis is a global disease involving both developing and developed countries. Lifestyle factors such as heavy drinking or smoking are known as the contributing culprits. Acute pancreatitis is a common gastrointestinal cause of hospital admission. Chronic pancreatitis causes many complications such as pancreatic pseudocysts, arterial pseudoaneurysm and biliary complications. We would like to share a case of arterioportal fistula with gastroduodenal artery aneurysm, a rare complication of the chronic pancreatitis.

REPORT: A chronic young male alcoholic, suffered chronic pancreatitis, needed multiple hospital admissions for years. Follow up studies since 2017 shows ascites, pancreatic pseudocysts with dilated biliary tree and intraductal stones/sludge. In January 2018, repeated multiphase computed tomography (CT) pancreas noted two pseudoaneurysms, the larger one arises from the gastroduodenal artery (GDA), and another smaller pseudoaneurysm at the superior pancreaticoduodenal artery. No surgical intervention was done. However, patient came back a year later, presented with 2 weeks of epigastric pain and nonspecific symptoms (fever and diarrhea). His hemoglobin was dropping in trend, needed packed cell transfusion. Abdominal ultrasound and CT angiography showed arterioportal fistula with GDA pseudoaneurysm. This finding was confirmed on digital subtraction angiography (DSA) of the coeliac trunk. Unfortunately, the large GDA pseudoaneurysm was unable to embolize due to technical difficulty, only done embolization of the inferior pancreaticoduodenal artery.

CONCLUSION: This interesting case has nicely demonstrated that a multidisciplinary comprehensive treatment plan is crucial in the treatment of chronic pancreatitis. Interventional therapy also plays an important role in the management of pancreatitis-related vascular complications.

**MAGNETIC RESONANCE (MR) & ULTRASOUND (US) DETECTION OF
SPONTANEOUS RENAL PELVIS RUPTURE IN THE SETTING OF
HYDRONEPHROSIS DUE TO PELVIURETERIC JUNCTION (PUJ)
OBSTRUCTION**

Muhammad Shoyab*¹

¹*Radiology & Imaging, Al Haramain Hospital Pvt Ltd, Bangladesh*

INTRODUCTION: Spontaneous rupture of renal pelvis is rare, and is mostly attributed to weakening of its wall, as occurs in congenital pelviureteric junction (PUJ) obstruction. The rupture is produced by sudden rise of abdominal pressure, or sudden acceleration-deceleration movements, such as during sports. Consequently, these patients present in young age (in contrast with rupture of pelvis obstructed by stone).

REPORT: Our patient is a 14 years old girl, whose sonogram showed a swollen appendix. Another sonogram showed fluid collection in right lumbar region, interpreted as "suggestive of psoas abscess". Surgery was approached by grid-iron incision, and a swollen appendix was excised and sent for histopathology. The report confirmed acute appendicitis. The surgeon also found a soft retroperitoneal swelling along right iliolumbar region, where he inserted a retroperitoneal drain tube. Analysis of the drained fluid found "mostly polymorphs" (neutrophils). Then, MRI was advised, in order to identify the fluid's source. MRI clearly demonstrates a distended right renal pelvis, with narrowing at pelviureteric junction (PUJ). MRI also shows a 3 mm opening at medial surface of right renal pelvis, with leaked fluid tracking obliquely along anterior surface of right psoas major towards right iliac fossa, apparently forming a thin-walled sinus tract measuring about 10 x 3 cm. A few days later, sonogram was repeated and the pelvic rupture was identified along with other findings.

CONCLUSION: Although contrast-enhanced CT is gold standard imaging for urine extravasation, this case demonstrates that high resolution MRI can also be used, especially in children or patients with renal compromise.

HEPATIC HILAR INFLAMMATORY PSEUDOTUMOR MIMICKING CHOLANGIOCARCINOMA - A RARE ENTITY

Mohammed Shabir*¹

¹VPS Lakeshore Hospital, India

INTRODUCTION: 36 year old female with pain abdomen (evaluated elsewhere):

LFT – Within normal limit except for mildly raised ALT. Tumor markers – Within normal limit. Rest blood parameters within normal limit. USG –Hilar mass infiltrating left lobe with IHBRD. CT done (elsewhere) 2 months back: Heterogeneously enhancing hilar mass infiltrating segment 2,3 and 4 with obliteration of the left hepatic duct causing moderate biliary dilation ; Two weeks later PET-CT (elsewhere) showed PET avid hilar lesion suggesting possibility of malignant etiology. Underwent 3 biopsy including laparoscopic biopsy at the outside center. All pathological reports showed negative for malignancy.

REPORT: Repeat CT taken at our center since all blood values including tumor markers repeated are still within normal level. CT scan suggest possibility of intra hepatic cholangio carcinoma with periportal tumor extension. Since the lesion remains stable since last 2 months of time, we gave second differential as inflammatory pseudo tumor of the biliary tract, with capsular hematoma (post lap). Underwent left hepatectomy.

CONCLUSION: Histopathology: Dilated bile duct with prominent lymphoplasmacytic infiltrate with storiform fibrosis and obliterated venulitis. No evidence of malignancy.

Immunohistochemistry : Consistent with IgG4 cholangiopathy.

INTRABILIARY METASTASIS FROM CARCINOMA RECTUM -A RARE ENTITY

Mohammed Shabir*¹

¹*VPS Lakeshore Hospital, India*

INTRODUCTION: 35 year old, old case of carcinoma rectum, with liver metastasis, post LAR and metastatectomy in 2003. Now with altered LFT and features of obstructive jaundice.

REPORT: USG: Liver shows coarse echotexture. Caudate lobe prominent. Prominent intra hepatic biliary radicles with mild wall thickening and echogenic areas around the biliary radicles AND Periportal lymphnodes. MRI : Mild IHBRD in right and left lobes. Narrowing of right and left hepatic ducts with ductal disconnection. CHD and CBD are also narrowed in upper and mid third. Ill defined T2 hyperintense soft tissue in left hilum extending periportally with ill defined enhancement post contrast.

CONCLUSION: Histopathology - Suspicious for metastasis and drug related cholangiopathy. Immunohistochemistry: intrabiliary metastasis from ca rectum.

IMAGING FEATURES OF PERITONEAL TUBERCULOSIS IN ENDEMIC COUNTRY

Mohamed Ali Touihri*¹; Lassoued Khouloud ²; Balaazi Ahmed ¹; Gargouri Dalila²;
Chammakhi Chiraz¹

¹*Department of Radiology, Hospital Habib Thameur Tunis, ² Department of Gastrology, Hospital Habib Thameur Tunis, Tunisia*

OBJECTIVE: To demonstrate the utility of imaging in diagnosis and outcomes of peritoneal tuberculosis (PT).

MATERIALS & METHOD: In this retrospective study, we analyzed the data of CT scans and abdominal ultrasound (AUS) of patients with PT between 1/2014 and 1/2019 at the department of radiology of Habib Thameur Tunisia.

RESULTS: We reported 58 cases of adult with PT in 5 years. Only 38 were included in this study. 79 % were female. The median age was 49.5 years (26-79 years). Principal clinic presentations were exudative ascites in 100%, fever 49% and abdominal pain 65%. The tuberculosis skin test was above 10 mm in 41% of cases. PT was associated with pulmonary tuberculosis in 5.2%. Thirty-two (84.4%) of patients had CT scans which the diagnosis was guided in 56.5%. In CT scans ascites were present in 100% of cases, thickening of the parietal peritoneum in 71.87%, peritoneal nodules in 22.5% and necrotic lymph node in 37.5%. Follow up was based on AUS which 60% were normal after 9 months of treatment.

CONCLUSION: PT presents a wide spectrum of clinical and imaging findings. Despite that the diagnosis is confirmed only by bacteriology and/or histology tests, it is important that the radiologist recognizes the imaging findings, allowing for the establishment of a more effective strategy to confirm the diagnosis as soon as possible.

ROLE OF MDCT IN PLANNING TREATMENT OF HEPATOCELLULAR CARCINOMA AND IMAGING FINDINGS IN TREATED LESIONS.

Ummara Siddique*¹; Aman Nawaz Khan¹; Khalid Shakeel Babar¹; Wasif Farman¹; Shahjehan Alam¹; Hadia Abid¹; Aruba Nawaz¹; Faria Maqsood¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

LEARNING OBJECTIVE:

- To show the imaging findings of various types of hepatocellular carcinoma.
- To describe role of imaging in treatment planning of HCC.
- To define the role of CT in diagnosing local residual disease or recurrence.

BACKGROUND: CT scan done with dedicated dynamic phase protocol can easily diagnose the presence of HCC by depicting arterial phase enhancement and washout of contrast in venous or delayed phases. CT scan is usually performed on multidetector CT. Development of HCC in cirrhotic liver is multiphase process from regenerative nodule, through dysplastic nodule progressing to HCC focus within dysplastic nodule and develops into a mature HCC.

FINDINGS AND/OR PROCEDURE DETAILS: CT findings in HCC vary depending on type of HCC, which can be infiltrative, well defined, angioinvasive, fat rich, hypovascular or exophytic. Imaging plays a vital role in deciding the treatment option for HCC, whether it is suitable for curative option of treatment like thermal ablation and transplant or palliative option like transarterial embolization. Imaging depicts involvement of biliary tree, nodal disease and extrahepatic disease. In addition, background extent of portal hypertension effects can be assessed. Multidisciplinary meeting and planning is essential to ensure correct pathway. Following treatment, follow up imaging and regular multidisciplinary discussion is adopted.

CONCLUSION: Importance of learning radiological findings is vital in treatment planning of HCC. Familiarity with the imaging findings of HCC, its variant types and extent of disease can be helpful in the differential diagnosis of HCC.

**EXCELLENCE IN DIAGNOSING HEPATIC LESIONS ON MRI:
DISCRIMINATION OF BENIGN LESIONS FROM MALIGNANT LESIONS WITH
HEAVILY AND MODERATELY T2-WEIGHTED FAST SPIN-ECHO IMAGING.**

Ummara Siddique*¹; Aman Nawaz Khan¹; Zamara Sohail¹; Aliya Sharif¹; Aruba Nawaz¹;
Shahjehan Alam¹; Syed Ghulam Ghaus¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

LEARNING OBJECTIVE:

- To describe role of combined use of heavily and moderately T2-weighted images in differentiation of benign from solid malignancies.
- To discuss diagnostic ability of T2-weighted images alongwith dual echo and diffusion weighted sequences.

BACKGROUND: Liver has relatively low signal on T2WIs, whereas most of the hepatic lesions have higher signal than background liver parenchyma (cysts and hemangiomas). The spin echo technique represents the standard for T2 imaging of the liver, mostly based on FSE and SSFSE sequences. FSE are usually acquired with respiratory triggering or gating, navigators, or breath held. SSFSE has a rapid acquisition time (< 1 s/slice) and can be acquired breath-held. The design of this sequence is suitable for acquisition with long echo time (TE) and heavy T2-weighting.

FINDINGS AND/OR PROCEDURE DETAILS: Vast majority of focal liver lesions are hyperintense on T2-weighted images. Some hepatic lesions may appear totally or partially hypointense like with deposition of iron, calcium, or copper, or solid lesions like focal nodular hyperplasia, hepatocellular adenoma, hepatocellular carcinoma, metastases. There is role of value of TE in T2 weighted images. In heavily weighted T2 images or SSFSE with a TE of more than 100, any lesion appearing hyperintense to the surrounding liver parenchyma is benign, like hemangioma, cyst etc. Moderately weighted T2 images with TE value of 80-100 would show slight hyperintensity for a solid malignant lesion.

CONCLUSION: T2 weighted imaging is useful for distinguishing benign from malignant lesion without use of contrast-enhanced images.

PARADUODENAL HERNIA : A RARE ENTITY

Nur Faradisha Azmin*¹; Abd Samad Sakijan²

¹*KPJ Sentosa KL Specialist Hospital, KPJ Healthcare University College, Malaysia,*

²*Radiology, KPJ Sentosa KL Specialist Hospital, Malaysia*

INTRODUCTION: Internal abdominal hernias are rare conditions, accounting for 0.9% of all intestinal obstruction. Paraduodenal hernias are the most frequent, constitute half of all internal abdominal hernias (1,2). Herniation of the small bowel into the left paraduodenal fossa (fossa of Landzert) occurs more frequently which are believed to be the result of malrotation of the midgut during embryonic period (3,4). The clinical presentation varies and remains a diagnostic challenge.

REPORT: A 31 year old man with no known underlying illness, presented with recurrent colicky abdominal pain, in the left lumbar area, suspected for renal stone. Initial diagnostic imaging examination of Computed Tomography (CT) Urography showed ‘clustering of small bowel loops’ in the left upper abdomen. Hence, a contrast-enhanced CT abdomen was performed and demonstrated a very little progress of gastrograffin beyond the 3rd part of the duodenum, and most parts of the small bowel were unopacified. The dilated proximal small bowel seemed to be ‘clustered’ in the left upper abdomen. This raised the suspicion of internal herniation or volvulus. An emergency laparotomy, revealed a large swelling beneath the descending colon enclosed within a separate peritoneal sac in the fossa of Landzert, confirmed the final diagnosis proved to be left paraduodenal hernia.

CONCLUSION: Paraduodenal hernias are extremely rare and difficult to diagnose. It carries significant morbidity and mortality rates.

In our case, CT scan has proved to help in making the correct diagnosis and aided for prompt early surgical intervention which was essential for achieving patient’s cure and prevented complications of bowel ischaemia.

TUMOR VERSUS BLAND THROMBUS: SENSITIVITY, SPECIFICITY AND ACCURACY OF DIFFERENT RADIOLOGICAL CHARACTERISTICS

Mariam Malik*¹; Muhammad Nauman Malik¹, Raheela Aqeel¹, Atif Iqbal Rana¹, Kholood Janjua¹

¹*Department of Radiology, Shifa International Hospital Islamabad, Pakistan*

OBJECTIVE: Characterisation of a portal vein thrombus as bland versus malignant is a crucial deciding factor for management plan of patients with hepatocellular carcinoma as tumor thrombus is a contraindication to liver transplantation. The purpose of our study is to determine CT features that may enable radiologists to noninvasively differentiate tumor from bland thrombus.

MATERIALS & METHODS: Retrospective cross-sectional study conducted in Radiology Department of Shifa International Hospitals Islamabad from January 2017 till January 2019. 226 consecutive patients with hepatocellular carcinoma were included of which 125 had tumor thrombus and 101 had bland thrombus in portal vein. Eight characteristics of thrombus were studied.

RESULTS: Wall adherence was seen in 41.6% in tumor group versus 21.8% in bland group, intrathrombus neovascularity in 56% versus 17.8%, portal vein invasion in 42.4% versus 0%, heterogeneity in 36.8% versus 31.7%, contiguity with tumor in 36.8% versus 0%, and progression of thrombus in 67.2% versus 25%. All patients with tumor thrombus of portal vein had thrombus density more than 52 HU. All described characteristics were statistically significant with p-value <0.0001 except heterogeneity and venous expansion. The presence of a combination of 5 more of these characteristics gave highest AUC of 0.828, sensitivity and specificity of 73.6 and 92.1 with p value <0.0001 to differentiate tumor thrombus from bland.

CONCLUSION: We propose that non-invasive imaging characteristics can aid in differentiation of tumor versus bland thrombus in portal vein with presence of 5 or more characteristics increasing sensitivity, specificity and accuracy of differentiation.

SACCULAR DIVERTICULUM OF INFERIOR VENA CAVA - A CASE REPORT

Mariam Malik*¹; Belqees Yawar Faiz¹

¹*Department of Radiology, Shifa International Hospital Islamabad, Pakistan*

INTRODUCTION: Diverticular aneurysms of IVC are rare. Misdiagnosis and misreporting it as a mass can lead to a fatal consequence of biopsy. Recognition is important since early management can prevent complications such as diverticulitis or rupture.

REPORT: We report 40 years old female patient presenting with abdominal pain. She underwent a triphasic CT that showed an enhancing lesion on portal venous phase with differentials of hepatic mass having atypical enhancement features and MR evaluation was considered. On MR liver dynamic imaging, abnormal signal area was seen in communication with the inferior vena cava showing signal void on T2 and followed the signal of vessels on all sequences. Few collaterals were seen joining inferior vena cava in segment VIII on venous phase images. Targeted Doppler ultrasound of lesion confirmed that given lesion was a diverticulum like projection with a communication with inferior vena cava. Inferior vena cava in this area appeared to be significantly narrowed and stenosed. Same area on MR images showed intraluminal hypointensity raising concern for a concomitant IVC web. Review of triphasic liver study showed the lesion to be in communication with IVC and followed enhancement pattern similar to IVC on all sequences.

CONCLUSION: Lobulated hepatic lesion was not adenoma, hemangioma or any other mass. Findings were infact large diverticulum/ idiopathic saccular aneurysm of inferior vena cava (type 2 as aneurysm associated with interruption of inferior vena cava below the level of hepatic veins by Gradman and Steinberg classification) with high concern of concomitant web.

ACUTE RENAL INFARCTIONS MIMICKING LARGE BOWEL ISCHEMIA WITH UNDERLYING ATRIAL FIBRILLATIONS

Hoe Han Guan*¹; Ng Hui Rou²

¹Radiology Department, Hospital Keningau, Sabah, Malaysia, ²Medical Department, Hospital Tenom, Sabah, Malaysia

INTRODUCTION: Renal infarction is a rare cause of acute abdominal pain. Incidence is rare and numbers vary according to different studies (0.007%).

REPORT: We report 68-year-old gentleman with known history of ischemic heart disease and hypertension presented with generalized acute abdominal pain for 2-day duration which was associated with symptoms of intestinal obstruction. A plain abdominal radiograph performed which showed large bowel loops dilatation without pneumoperitoneum. Patient underwent urgent contrast enhanced CT abdomen showed bilateral renal infarcts, dilated large bowel loops with CT evidence of intramural gas. An ECG found incidentally that the patient was in atrial fibrillation, which was the attributed factor to the renal infarctions. Patient has emergency laparotomy as there was high suspicion of large bowel ischemia based on the high possibility of cardiac emboli causing renal infarcts and bowel ischemia. However, the post operative findings showed no bowel ischemia. Subsequently, patient was treated with anticoagulant and discharged home.

CONCLUSION: Therefore, this case highlights the importance of recognising renal infarcts have to be suspected in the case of acute abdomen and managed appropriately, especially in patients with risk factors like cardiac arrhythmias (specifically atrial fibrillation). It has to be on the differential diagnosis of the admitting physician.

OUTCOME OF ENDOVASCULAR TREATMENT IN ACUTE GI BLEEDING REFERRED TO RMI

Aman Nawaz Khan*¹; Ummara Siddique Umer²; Shahjehan Alam²; Muhammad Abdullah²;
Hadia Abid²

¹*Interventional Radiology, Rehman Medical Institute Peshawar, Pakistan,* ²*Diagnostic Radiology, Rehman Medical Institute, Pakistan*

OBJECTIVE: The purpose of this study was to find the outcome of endovascular treatment in cases of acute GI bleeding due to different aetiologies.

MATERIALS & METHODS: It is prospective evaluation of transarterial embolization done for acute gastrointestinal hemorrhage at radiology department of RMI from March 2015 to October 2019. Total of 10 cases with GI bleed were included, five were female and five were male. Seven patients were with lower GI bleed and Three had upper GI hemorrhage. The patients were treated with superselective transarterial embolization under fluoroscopic guidance at angiography suite. Embolization materials used were coils, particles, gelfoam and amplatzer plugs.

RESULTS: Total ten patients were embolized, seven having lower GI causes and three with upper GI cause. Nine patients had vascular cause of hemorrhage i.e AVMs, angiodysplasia, dieulafoy etc. One patient had a tumoral bleed from duodenal mass. Nine patients were embolized with curative intent, while one patient with bleeding duodenal mass was embolized pre-operatively, just before surgery. Coils of varied sizes were used in all cases. Technical success, immediate clinical success, and late success on follow up of one year was recorded in all cases. Technical success in arresting hemorrhage was achieved in all cases. 0% in hospital mortality was recorded in all cases.

CONCLUSION: We concluded from our results that Endovascular embolization is a management of choice in cases with Acute GI bleeding, after endoscopic attempts have failed/considered inappropriate. Endovascular treatment is a safe and effective technique with a small associated risk of morbidity. Risk of further bleeding is small with vast majority of patients achieving resolution of symptoms.

A RARE CASE OF LARGE INTRACARDIAC THROMBUS COMPLICATED WITH RENAL INFARCTION

Natasha Mohd Arifin*¹; Norliana Dalila Mohamad Ali¹; Roqiah Fatmawati Abdul Kadir¹;
Chan Wai Yee²

¹Radiology, UiTM Faculty of Medicine, Malaysia, ²Radiology, University Malaya Medical Centre, Malaysia

INTRODUCTION: Intracardiac thrombus is the most common non-neoplastic intracardiac mass. Presence of intracardiac thrombus can result in morbidity and death from embolic events. We report a case of a young patient with undiagnosed mitral valve disease and atrial fibrillation presenting with a large left atrial thrombus and renal artery embolism.

REPORT: A 27 years-old foreign gentleman presented with severe abdominal pain. He was noted to have fast atrial fibrillation (AF) in emergency department. Renal function was deranged and plasma lactate dehydrogenase was increased. Chest radiograph showed left atrial enlargement with features of cardiac failure. Contrast enhanced Computed Tomography Angiogram (CTA) abdomen was done for suspected bowel ischaemia in view of persistent abdominal pain. CT revealed large non-enhancing thrombus within a dilated left atrium and left atrial appendage. Evidence of left renal infarction with thrombus at the distal portion of left main renal artery. The right renal artery, coeliac trunk, superior and inferior mesenteric arteries were normal. No evidence of bowel ischemia. Patient was immediately started on anticoagulant with international normalized ratio monitoring. Echocardiogram revealed mitral stenosis and large left atrial wall thrombus extending into the pulmonary vein. Patient's symptoms improved five days after anticoagulation.

CONCLUSION: Large left atrial thrombus is a rare occurrence. It is commonly associated with mitral valve pathology and AF. It is crucial to differentiate it from left atrial myxoma as misinterpretation may lead to an erroneous approach to management. When left atrial thrombus is suspected, anticoagulation is imperative to prevent systemic thromboembolism.

"THE INTERSEX : FEMALE PSEUDOHERMAPHRODITISM" - A CASE REPORT

Anna Fitriana Abdul Rahaman*¹; Malinda Abdul Majid²

¹*Department Of Radiology, Hospital Canselor Tuanku Muhriz, UKM, Malaysia,* ²*Department Of Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Female pseudohermaphroditism is a subtype of developmental sex disorders (DSD) and has been defined as “congenital conditions in which developmental of chromosomal, gonadal, or anatomic sex is atypical”. Female pseudohermaphrodites (46, XX DSD) have a female genotype and two ovaries for gonads, but their external genitalia depicts a variable degree of virilization.

REPORT: A thirty-five-year old female presented with ambiguous genitalia and male phenotype. She had masculine hair distribution, normal female genitalia with short penis and urethral opening. No palpable testes noted clinically. Ultrasound showed normal uterus, cervix and vagina with no clear visualization of both ovaries. MRI revealed normal female reproductive organs. Labia majora was present and a small elongated structure giving rise to micropenis seen; with corpus cavernosum, corpus spongiosum, crus of the corpus cavernosum and glans penis identified at the region of clitoris. Small underdeveloped / maldeveloped scrotal sac was noted in the bilateral inguinal region with no testicular, seminal vesicle or prostate structure visible. Karyotyping result showed 47, XXY consistent with rare XXY/XX mosaicism in a phenotypic male with Klinefelter syndrome.

CONCLUSION: Total laparoscopic hysterectomy and bilateral salphingo-oophorectomy was performed as patient opted to become a male. A histopathological examination of the specimen showed uterus, bilateral ovaries and Fallopian tubes. Patient was then rehabilitated to lead his life as a male.

RENAL RESISTIVE INDEX DATA AS A HEMODYNAMIC PREDICTOR OF RENAL IMPAIRMENT IN PATIENTS WITH LIVER CIRHOSSIS

Alsaba Khan*¹; Kushal B. Gehlot¹; Narendra K Kardam¹

¹*Radiodiagnosis, RNT Medical College, Udaipur Rajasthan, India*

OBJECTIVE: Cirrhosis represents the final common histologic pathway for a wide variety of chronic liver diseases. Interactions between systemic and portal hemodynamics lead to intense renal vasoconstriction and HRS. Renal arterial vasoconstriction may persist for weeks or months before a rise in blood urea nitrogen or serum creatinine values. Methods to diagnose renal disease at an early stage when serum creatinine is normal, are needed.

MATERIALS & METHODS: Patients were divided into 2 groups, containing 32 patients with liver cirrhosis and ascites, 28 patients with liver cirrhosis without ascites, and 30 control subjects. All patients underwent laboratory and abdominal ultrasound examination, including renal Doppler evaluation of intrarenal arteries for measuring resistive index (RI). MELD score of the patient also calculated. The mean RI difference was seen between different groups and control. Correlation was performed between RI and MELD score.

RESULTS: RRI was significantly higher in ascitic patients compared to non-ascitic patients (0.71 vs. 0.65, p value<0.050) and in non-ascitic patients with liver cirrhosis than in control subjects (0.65 vs. 0.61, p value< 0.050). A significant positive correlation was seen between RI and MELD score.

CONCLUSION: Intrarenal RI measurement is a predictor of renal vasoconstriction and detects early renal function impairment in cirrhotic patients. Renal duplex ultrasound is a non-invasive, simple, and easy method to study intra-renal hemodynamics in patients with liver cirrhosis. The RRI increases with the degree of hepatic decompensation.

NON-PUERPERAL INCOMPLETE UTERINE INVERSION SECONDARY TO UTERINE ADENOSARCOMA

Nabillah Mohd Jadi*¹; Soon Yuet Yu²; Malinda Abd Majid²; Sharifah Mastura Sab³

¹Radiology, Hospital Universiti Kebangsaan Malaysia, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia, ³Radiology, Hospital Serdang, Malaysia

INTRODUCTION: Uterine inversion is usually a rare complication of childbirth. However gynaecological cause or non-puerperal uterine inversion is even more rare in occurrence with no definite figure regarding incidence. This case is being highlighted to learn the imaging findings of rare occurrence of non-puerperal incomplete uterine inversion secondary to uterine adenosarcoma. We report a case of incomplete uterine inversion due to a large uterine adenosarcoma in postmenopausal women.

REPORT: Patient is an elderly nulliparous, who presented with postmenopausal per vaginal brownish discharge and constitutional symptoms for 2 months. She also had history of acute urinary retention and was discharged with continuous bladder catheterization. Examination revealed a 20 weeks size abdominal mass. Vaginal examination noted hard irregular fungating mass in vagina with brownish discharge. Examination under anaesthesia (EUA) revealed lobulated mass within the vagina, with difficulty to assess uterus and cervix. Initial biopsy from bedside speculum and EUA revealed inflammatory and infarcted tissue. Magnetic resonance imaging (MRI) showed a pedunculated mass arising from the partially inverted uterus and cervix ballooning into the vaginal cavity. Patient underwent total hysterectomy and bilateral salphingoophorectomy. Histopathological examination showed low-grade adenosarcoma of uterus. After surgery, patient is well.

CONCLUSION: Non-puerperal uterine inversion is a rare condition. Clinical diagnosis of uterine inversion may be difficult. Ultrasonography, has its limitation to determine the exact nature and origin of this mass, especially when it is large. MRI is therefore a useful modality as diagnostic tool of uterine inversion as well as for pre-operative assessment and staging of disease.

CLINICAL PRESENTATION AND OUTCOME OF GALLBLADDER PERFORATION: A CASE SERIES

Siti Soraya Ab Rahman*¹; Norhaslinda Kamiso²; Assyifaa Nik Mazian¹

¹*Radiology Department, Universiti Sains Islam Malaysia, Malaysia,* ²*Radiology Department, Hospital Ampang, Malaysia*

INTRODUCTION: Gallbladder perforation is an uncommon but life-threatening complication of acute cholecystitis. The reported incidence is 2-18%, with a mortality rate of 12–42%. Clinical diagnosis of gallbladder perforation is often difficult, as there are no classical symptoms and signs, and may present similar to those with uncomplicated acute cholecystitis.

REPORT:

Case 1: A 28-year-old lady presented with sudden sharp epigastric pain which radiated to the right hypochondrium, aggravated by movement, and associated with vomiting and fever. Examination revealed right hypochondriac tenderness with localized guarding. Computed tomography (CT) scan showed acute calculous cholecystitis with gallbladder perforation. She was treated with antibiotics and discharged home well.

Case 2: A 70-year-old lady presented with worsening sharp right hypochondriac pain, which was aggravated by movement. Examination revealed guarding over the right hypochondrium with positive Murphy's sign. CT abdomen showed acute acalculous cholecystitis with gallbladder perforation and pericholecystic collections. Percutaneous cholecystostomy was performed and her symptoms improved.

Case 3: A 59-year-old gentleman with locally advanced gastric adenocarcinoma presented with obstructive jaundice secondary to recurrence at the pancreatic head with involvement of the duodenum and common bile duct. Percutaneous transhepatic biliary drainage (PTBD) was performed followed by internalization of PTBD. Six months later, the patient complained of yellowish-greenish discharge from the PTBD catheter. CT abdomen showed perforated gallbladder with pericholecystic collection. He was treated with antibiotics, and referred for palliative care. He later succumbed to his illness.

CONCLUSION: The most probable mechanism of gallbladder perforation is a rise in intraluminal pressure. Risk factors include cholelithiasis, infections, and malignancy.

CHROMOPHOBE RENAL CELL CARCINOMA OR ONCOCYTOMA IN PREGNANCY: RADIOLOGY DIAGNOSTIC DILEMMA

Tan Chen Chong*¹; Nadia Abdul Malik¹; Malinda Abd Majik Md Galib¹; Sharifah Mastura
Syed Abd Bakar²

¹Radiology, HKL, Malaysia, ²Radiology, Serdang Hospital, Malaysia

INTRODUCTION: Urological tumor is rarely diagnosed during pregnancy. This case report highlights the radiological differential of large chromophobe renal cell carcinoma with oncocytoma in a young pregnant patient. Proper radiological assessment and appropriate clinical history from patient are important to achieve the diagnosis although pathological examination of tissue samples is necessary for diagnosing RCC.

REPORT: A 21 years old Malay lady para 1 at 8 weeks of pregnancy presented with right abdominal swelling for 2 months, painless and increasing in size, otherwise no loss of weight and loss of appetite. Sonographic features show renal oncocytoma. However, in view of large size, differential include renal cell carcinoma. Multiphase computerized tomography renal shows large heterogenous enhancing mass arising from the right kidney with central necrosis. Central calcification and central scar also noted. No infiltration to surrounding tissue. No significant abdominal or pelvic lymphadenopathy seen. No local or distant metastasis. Radiological findings such as demarcated margin, central stellate scar, tumour size, intralesional calcification and necrosis are discussed in this report.

CONCLUSION: To distinguishing between large chromophobe renal cell carcinoma and oncocytoma radiological remains difficult and challenge due to overlapping radiological features of renal oncocytoma and RCC. With the given history of rapid growing renal mass in pregnant women and large renal mass with central necrosis, the renal cell carcinoma needs to be considered. Histologic examination remains necessary for establishing either diagnosis

SPLENOGONADAL FUSION SYNDROME: A DIAGNOSTIC QUAGMIRE OF TWO CASES

Seetam Kumar*¹; Kartik Rathi¹; Pradeep Kajal²; Rohtas K Yadav¹

¹*Radio-Diagnosis, Pt Bd Sharma Pgims, Rohtak, India, ²Pediatric Surgery, Pt Bd Sharma Pgims, Rohtak, India*

INTRODUCTION: Splenogonadal fusion syndrome (SFS) is an uncommon entity with the presence of ectopic or accessory splenic tissue in the scrotum. It is of two variant, one is the continuous type where the ectopic scrotal tissue in continuum with parent spleen through a cord of splenic tissue or fibrous band or nodular splenic tissue along with it. The later one being discontinuous type there is ectopic splenic tissue in the scrotum.

REPORT: We came across similar clinical situations in our department. Two adolescents came with the feeling of scrotal mass with on and off pain on that side.

Case-1

18 years' college-going adolescent complaint of difficulty in playing with scrotal mass felt on the right side. He underwent sonography which showed a well-defined hypoechoic lesion with close proximity to the upper pole of the testis with the avid flow on the colour map which then followed up with antibiotics. Later he underwent surgical exploration which on gross and histopathologically proven as splenic tissue.

Case-2

12 years' child having pain during routine work and feeling of mass for a few months. He underwent sonography which showed similar features of the above case. Here MRI abdomen and pelvis were done which showed a well-defined mass at the upper pole of testis similar T1, T2 signal intensity, diffusion restriction with contrast enhancement pattern to splenic tissue. Later patient underwent surgery which had shown discontinuous type SFS.

CONCLUSION: SFS is a rare entity, the awareness avoids unnecessary orchiectomy. MRI has increases likely hood ration of presurgical diagnosis.

SMALL BOWEL ISCHEMIA WITH DIFFERENT ETIOLOGIES AND TREATMENT OUTCOME : 2 CASE REPORTS

Assyifaa Nik Mazian*¹; Siti Soraya Ab Rahman¹; Emelianah Saidi²; Sim Lin Kiat³

¹*Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia (USIM), Malaysia,*

²*Radiology Department, Hospital Ampang, Malaysia,* ³*Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman (UTAR), Malaysia*

INTRODUCTION: Bowel ischemia is defined as reduction in blood flow to the bowel.

There are various causes that can lead to ischemia i.e. vascular occlusion, systemic hypotension, vasculitis and small bowel obstruction. We are presenting two cases of bowel ischemia caused by atherosclerosis and internal herniation. Both have different treatment outcome.

REPORT:

Case 1: Mr YPW, a 55-year-old male with underlying Diabetes Mellitus, Hypertension and End Stage Renal Failure. He was presented with epigastric pain, which was aggravated by movement. No vomiting or abdominal distension. On examination, there was abdominal tenderness. CT scan revealed long segment small bowel ischemia with atherosclerosis of the mesenteric vessels. Intraoperatively, there was long segment small bowel ischemia with perforation. Patient succumbed 2 days after operation due to abdominal sepsis.

Case 2: Mr WKC, a 78-year-old male, presented with severe right iliac fossa pain for 4 days. On examination, the abdomen was distended with generalized tenderness and guarding. CT scan showed dilated small bowel and ischemic small bowel loop at right iliac fossa, with surrounding free fluid. Patient proceeded with exploratory laparotomy with findings of small bowel ischemia with necrotic segment secondary to internal herniation at a mesenteric defect. Limited hemicolectomy was performed. Post operatively patient developed sepsis with sigmoid colon perforation. He was stable under intensive care monitoring.

CONCLUSION: Clinical and CT scan findings are helpful to diagnose bowel ischemia.

Surgery is the mainstay of treatment, thus early detection and diagnosis are crucial. Treatment outcome depends on the degree of ischemia, complications and other comorbidities

IMAGING FINDINGS OF URACHAL ABSCESS: A CASE REPORT

Yi-Fen Wang*¹;

¹*Department of Radiology, Chang-Hua Hospital, Ministry of Health and Welfare, Taiwan*

INTRODUCTION: We present one case of CT imaging findings of urachal abscess.

REPORT: A 27 year-old male suffered from umbilicus erythematous change, pain and discharged for days. He came to our emergent room (ER) for help. At ER, physical examination showed pus drainage from umbilicus and tender over umbilicus. CT showed an urachal abscess with localized fluid and gas collection between the umbilicus and urinary bladder. He was admitted for antibiotic treatment and wound debridement. After therapy, his condition improved and follow-up at out-patient department.

CONCLUSION: The urachus is a fibrous remnant of the allantois, a canal that drains the urinary bladder of the fetus that joins and runs within the umbilical cord. Congenital urachal anomalies result from a failure of the developing urachus to completely obliterate its lumen. We present one case of CT imaging findings of urachal anomalies with abscess formation.

MALIGNANT TRANSFORMATION OF CHRONIC BOWEL DISEASE: WARNING SIGNS

Juliana Fairuz Maktar*¹; Hamzaini Abdul Hamid¹

¹*Radiology, HCTM, PPUKM, Malaysia*

INTRODUCTION: Crohns disease may effect any parts of the digestive tract, and the role of imaging in inflammatory bowel disease (IBD) patients are to assess the extension of the disease, detect complications and evaluate criteria for surgical interventions. Strong association were seen in IBD patients to have malignant transformation of the disease. Small bowel adenocarcinoma is otherwise rare (<1%). It has been reported having relative risks of between 3.4 and 85.5 compared to general population.

REPORT: We reported a case of small bowel adenocarcinoma with underlying Crohns disease.

CONCLUSION: We discussed the challenges, possible pitfalls and ways to recognise the specific radiological feature.

UNCOMMON PRESENTATION OF HEPATIC ARTERIOBILIARY FISTULA WITH SUCCESSFUL EMBOLIZATION : A CASE REPORT

Chong Chia Yin*¹;

¹*Radiology, UKM, Malaysia*

INTRODUCTION: Hepatic arteriovenous fistula is a rare condition which commonly presents with hemobilia and pericatheter bleeding that is self-limiting. Aetiologies of arteriovenous fistula include neovascularization from malignancy, infection, trauma involving liver or iatrogenic procedure.

REPORT: This case report highlights a rare case of hepatic arteriovenous fistula in a patient with underlying pyloric carcinoma post partial gastrectomy and Roux-en-Y procedure. PTBD was done to relieve his obstructive jaundice caused by a distal common bile duct stricture. However patient presented with haematemesis and melaena one month post PTBD. Imaging study and endoscopic examination excluded gastrointestinal haemorrhage. There was persistent hemobilia with blocked biliary drainage catheter. Hepatic angiogram demonstrated opacification of the common bile duct, which confirms a hepatic arteriovenous fistula. It was successfully treated with endovascular embolization using coils.

CONCLUSION: It is important to recognize its features and keeping this differential diagnosis in the setting of upper GI haemorrhage presentation post biliary procedure. Antegrade transarterial embolization is the key management for such cases.

CASE SERIES OF EXTRAPULMONARY TUBERCULOSIS DIAGNOSED IN HOSPITAL TAIPING

Geetha Rakwan*¹; Nurul Akhmar Omar¹

¹*Radiology, Hospital Taiping, Malaysia*

INTRODUCTION: Tuberculosis is one of the top ten causes of death worldwide. In Malaysia, there is an increase in total TB incidence yearly, including extra pulmonary cases. We report a series of extrapulmonary tuberculosis cases diagnosed in Hospital Taiping between the years 2017-2019.

REPORT:

Case 1: 60 y/o lady presented with abdominal pain, fever and cough. Ultrasound and CT abdomen showed soft tissue lesion at the proximal ureter causing mild hydronephrosis. Further test revealed Acid-Fast Bacilli (AFB) smear positive sputum.

Case 2: 54 y/o male presented with headache, left eye blurring of vision and ptosis. CT and MRI of brain and orbit revealed left orbital apex lesion. Further test revealed Quantiferon TB Gold positive.

Case 3: 60 y/o male presented with left flank pain. Ultrasound and CT Abdomen revealed a large splenic lesion. Patient underwent splenectomy and HPE revealed features suspicious of mycobacterial infection.

Case 4: 24 y/o lady presented with multiple enlarged neck lymph nodes. CT revealed multiple lung nodules with mediastinal, abdominal lymph nodes, liver and splenic lesions. MRI of the spine revealed extensive spinal cord lesions with pachymeningitis. HPE of the cervical lymph node suggestive of mycobacterial infection.

Case 5: 67 y/o lady. Right wrist swelling 7 months, numbness and pain. MRI revealed features suggestive of tuberculosis tenosynovitis involving the wrist and hand. HPE revealed granulomatous inflammation.

CONCLUSION: Tuberculosis can manifest in any organs and may mimic many other diseases. A strong clinical suspicion is needed especially in endemic regions for early diagnosis and treatment.

ANALYSIS OF CHEST RADIOGRAPHIC FINDINGS IN NEW CASE PATIENTS WITH CERVICAL CANCER AT OCEAN ROAD CANCER INSTITUTE TANZANIA

Latifa Rajab Abdallah*¹

¹*Radiology And Imaging, Ocean Road Cancer Institute, Tanzania*

OBJECTIVE: Cervical cancer is a disease that affects the uterine cervix, it is largely preventable, but worldwide it is one of the leading causes of cancer deaths in women. The primary cause of cervical pre-cancer and cancer is persistent or chronic infection with one or more of the “high-risk” (or oncogenic) types of human papillomavirus (HPV). HPV is the most common infection acquired during sexual relations, usually early in sexual life. . Women living with HIV are more likely to develop persistent HPV infections at an earlier age and to develop cancer sooner. To determine chest radiographic findings in patients with cervical cancer at Ocean road cancer institute from November, 2018 to March, 2019

MATERIALS AND METHODS: This is a cross-sectional hospital based study in which patients with Cervical Cancer were recruited. An estimated sample size of 400 patients were studied using standardized questionnaires. Data analysis was done using statistical software (SPSS version 23) and statistical level of significance was $p < 0.05$.

RESULTS: In this study number of patients participated was 400. Majority of the patients were between 50-74 years old 225(56.2%) .Of these cases normal chest findings were 372(93%) and with metastasis was 28(7%) with $p > 0.05$. This depicts that metastasis to the chest in patients with cervical cancer is not significant.

CONCLUSION: It is not necessary to include chest radiograph(s) in every patient with cervical cancer especially those with no chest/respiratory symptoms. As we can see in the study majority have normal chest radiographs.

PERFORATED BOWEL LYMPHOMA POST CHEMOTHERAPY: REPORT OF 2 CASES

Man Chin Ham*¹; Assyifaa Nik Mazian²; Siti Soraya Ab Rahman²; Ee Shuan Lim³;
Emelianah Saidil¹; Wan Zainab Hayati Wan Mokhtar¹

¹Radiology, Hospital Ampang, Malaysia, ²Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia (USIM), Malaysia, ³Surgery, Hospital Ampang, Malaysia

INTRODUCTION: Perforation is a known life-threatening complication of gastrointestinal Non-Hodgkin Lymphoma (NHL), either at diagnosis or post chemotherapy. We present two cases of bowel perforation post chemotherapy in resected small bowel NHL and unresected caecal NHL.

REPORT: Case 1: A 55-year-old man with Diffuse Large B-Cell Lymphoma (DLBCL) of terminal ileum post right hemicolectomy with stoma, was electively admitted for chemotherapy. Post-chemotherapy, he complained of worsening right lower abdominal pain and reduced stoma output with blood clots. On examination, there was tenderness and guarding over the right iliac fossa. Abdominal radiograph showed pneumoperitoneum and CT Abdomen revealed perforation at the distal ileum, associated with surrounding collection. He underwent laparotomy, small bowel resection and double-barreled ileostomy. He recovered well post-surgery.

Case 2: A 45-year-old lady with newly diagnosed DLBCL of the caecum presented with progressive abdominal pain, distension and constipation 6-days post chemotherapy. Chest X-ray showed pneumoperitoneum and proceeding CT abdomen revealed faecal peritonitis secondary to caecum perforation with an irregular circumferential wall thickening of the caecum. Emergency limited right hemicolectomy and double-barreled stoma formation was performed. She recovered well post-surgery and returned home well with plan of chemotherapy in the subsequent month.

CONCLUSION: Bowel perforation post-chemotherapy in gastrointestinal lymphoma can occur even after tumour resection. High clinical suspicion, early diagnosis and prompt treatment is essential to decrease the morbidity and mortality.

RARE SUPPLY OF EXOPHYTIC HEPATOCELLULAR CARCINOMA FROM SPLENIC ARTERY COLLATERAL

Mohamad Aizuddin Mohd Nasri*¹; Anis Shafina Mahfudz²

¹*Radiology Department, International Islamic University Malaysia Medical Centre, Malaysia,*

²*Radiology Department, Universiti Teknologi Mara, Malaysia*

INTRODUCTION: Hepatocellular Carcinoma (HCC) is most common primary malignancy of liver and the sixth most common malignancy worldwide. Chemo- embolization is one of the available treatment options. The splenic artery supply of HCC is a rare occurrence. However, in patient who had repeated chemo- embolization procedure, the collateral supply from this uncommon artery can be seen.

REPORT: This is a case of 70 years old gentlemen who underwent 9th Trans Arterial Chemo- Embolization (TACE) of segment IV large exophytic HCC. Multiple TACE was done previously to branches from Gastroduodenal Artery. The intra- procedural Coeliac Axis CT Angiography showed enlarging tumour. Extrahepatic feeder artery is seen arising from collateral of splenic artery branch which mainly supply the posterior inferior portion of the tumour. The branch was successfully cannulated and chemo- embolization done.

CONCLUSION: Rare collateral supply of HCC can be seen in patient who underwent multiple chemo- embolization. Thus, evaluation of tumoral supply pre- embolization could give a better information of the feeder arteries.

FOREIGN BODY INGESTION MIMICKING ACUTE GASTROENTERITIS : AN UNUSUAL CASE IN A MENTALLY-CHALLENGED ADULT

Shazatul Ezanni Samsudin, Ahmad Hadif Zaidin Samsudin, Wan Aireene Wan Ahmed*¹;

¹*Department Of Radiology, School Of Medical Sciences, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia*

INTRODUCTION: Foreign body ingestion is common in children, psychiatric patients and denture wearing elderly. It is often passed out without causing major problems. Rarely, it would cause significant morbidity and mortality. In a mentally healthy adult, based on clinical history, symptoms, and radiographs, diagnosing foreign body ingestion is quite straightforward. However, it might not be the same in cases involving mentally-challenged patient due to the uncertainty in the clinical history and presenting symptoms. This will cause significant delay in diagnosis which will put the patient in a higher risk of developing complications.

REPORT: A 29 year old, deaf and mute adult female patient, presented with 1-week history of fever, diarrhea and vomiting. At time of presentation to emergency department, she was in septicemic shock. Correlating with clinical history, she was empirically treated for severe acute gastroenteritis with compensated metabolic acidosis. Abdominal radiographs showed dilated small bowel loops with huge cecal shadow. Subsequent computed tomography study of the abdomen/pelvis showed generalized bowel wall thickening and dilated rectum with multiple bizarre-shaped foreign bodies within. These indeterminate foreign bodies were completely evacuated. Despite slowly recovering from the grave episode, she succumbed due to hospital acquired infection with persistent severe septicemia.

CONCLUSION: In a mentally-challenged patient, it is very crucial to emphasize wider differentials in the approach of abdominal complaints and foreign body ingestion should be included in the working diagnosis.

MDCT EVALUATION OF RENAL VASCULAR ANATOMY AND VARIANTS AND ITS SURGICAL RELEVANCE IN DONOR KIDNEY EXTRACTION.

Songa Ramya*¹;Vemuri Naga Varaprasad¹

¹Radiology, Global Superspeciality Hospital, India

OBJECTIVE: Renal vasculature is known to show multiple variants. With the evolving trend of laproscopic retrieval of donor kidney, knowing detailed anatomy and variants of renal vessels are important to guide surgeon operating in restricted FOV.

MATERIALS & METHODS: This is retrospective study evaluating 600 living donors who underwent renal angiogram prior to the surgery using 64 slice MDCT from 2015-2020, between the age group of 20-58 years. Images were reconstructed in MIP and 3D volume rendering images in addition to axial 5mm thick slices.

RESULTS: Majority of donors were asymptomatic. Major arterial variants includes supernumerary and early branching arteries, seen in 16% and 21% and 22% and 15% respectively in left and right kidneys. Major and minor venous variants were detected in 56% and 12% (Retroaortic vein-9% and circumaortic vein- 3%) in left kidney and 14% and 3% in right kidneys. Late confluence of the venous trunk was identified in 15% of left kidneys and 9% of right kidneys. Vascular pathologies like renal artery stenosis seen in 30 cases, 4 abdominal aortic aneurysms noted extending into renal artery and 4 vascular compression syndromes noted causing PUJ obstruction and hydronephrosis. Incidental parenchymal and urothelial abnormalities, most commonly cysts and renal calculi, were identified in 15% of the kidneys. Other relevant findings like cortical scars, hydroureteronephrosis, collecting system abnormalities like duplication of collecting system (7 cases) and angiomyolipomas (19 cases) were detected.

CONCLUSION: CT Renal Angiogram provides insight to surgeons regarding detailed anatomy of renal vessels & its variants, parenchymal and collecting system abnormalities.

RARE CASE OF PLUMMER VINSON SYNDROME

Saangeetha Sundara*¹; Sazali Satari¹

¹*Radiology, Hospital Teluk Intan, Malaysia*

INTRODUCTION: Plummer-Vinson syndrome (PVS) is a rare entity characterized by triad of symptoms comprising of microcytic hypochromic anemia, oesophageal strictures, and dysphagia. PVS is commonly found in middle aged women. The pathogenesis of PVS is largely unknown, but it is largely associated with iron deficiency. It has been shown that dysphagia associated with PVS is relieved by iron supplements. Herein, we present a rare case of PVS.

REPORT: A 37-year-old woman presented with complaints of dysphagia and odynophagia. Physical examination revealed conjunctival pallor. Laboratory findings were consistent with iron deficiency and Thalassemia. During Oesophagoduodenoscopy there was difficulty in passing the scope and a superficial tear was noted in the upper esophagus upon withdrawal of scope. Barium swallow test showed a thin mucosal membrane projecting into the lumen of the esophagus at the level of C5 likely causing esophageal stricture. A smooth narrowing was noted in the lateral aspect of cervical esophagus. Partial web is seen suggestive of Cervical-Esophageal Web. The clinical, hematological, and radiographic findings fulfill the triad of PVS.

CONCLUSION: PVS aka Patterson-Brown Kelly syndrome is a rare case and the most probable mechanism is iron deficiency which causes rapid loss of iron-dependent enzymes resulting in web formation. Dysphagia associated with PVS is improved by iron supplements. However, there are cases that did not respond to iron therapy and eventually required endoscopic dilatation or incision. Since the correlation between esophageal webs and latent iron deficiency has not been conclusive it may relapse if iron deficiency recurs. Follow-up is mandatory. PVS is associated with increased risk of upper alimentary tract cancers thus endoscopic surveillance is necessary.

EFFICACY AND SAFETY OF CT-GUIDED DRAINAGE FOR COMPLICATED APPENDICITIS AND FACTORS FOR PREDICTING RECURRENCE AFTER THE DRAINAGE

Sayaka Shirai*¹;

¹*Radiology, Nippon Medical School Hospital, Japan*

OBJECTIVE: Preoperative drainage treatment for complicated appendicitis (CA) is increasing with the increase in interval appendectomy (IA). We assessed the efficacy and safety of computed tomography (CT)-guided drainage and prognostic factors for predicting recurrence after the drainage.

MATERIALS & METHODS: Twenty-six patients with CA who underwent CT-guided drainage between April 2016 and November 2019 were divided into recurrence (R) and non-recurrence (NR) groups. We retrospectively assessed age, sex, presence of diabetes, white blood cell (WBC) count, C-reactive protein (CRP) levels, hospitalization period, presence of IA, abscess diameter, appendicolith location, percutaneous drainage route, technical success rate, and complications.

RESULTS: The R and NR groups included 6 (4 men; mean age, 48.8 years) and 20 (12 men; mean age, 51.6 years) patients, respectively. There was no significant difference between the groups in the age, sex, presence of diabetes, WBC, CRP, hospitalization period, and presence of IA. The average abscess diameter was 103.1 vs 64.5 mm. Appendicolith was present in 10 cases: intraluminal type, 2 vs 1 cases; extraluminal type, 3 vs 4 cases. Transabdominal, transgluteal, transretroperitoneal, and transiliopsoamus approaches were used in 4 vs 6 cases, 0 vs 7 cases, 2 vs 3 cases, and 0 vs 1 case. Technical success rates were 100% vs 85%. Complications were detected in 1 vs 5 cases; no major complications occurred. There was a significant difference in the abscess diameter and appendicolith location ($p < 0.05$).

CONCLUSION: CT-guided drainage for CA is effective and safe. Abscess diameter and appendicolith location are important factors for predicting recurrence after drainage.

**A RARE CASE OF VOLVULUS OF MECKEL'S DIVERTICULUM (MD)
MIMICKING PERFORATED APPENDICITIS IN AN 8 YEAR OLD CHILD: A
DIAGNOSTIC CHALLENGE FOR RADIOLOGISTS.**

Ridhwan Ramli*¹; Zurina Abdul Wahab¹

¹*Radiology, Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, Malaysia*

INTRODUCTION: Only very few cases of volvulus of MD in children have been documented. The presentation often mimics an acute appendicitis and diagnostic imaging to distinguish them can be challenging. The diagnosis of MD is often achieved intraoperatively. This case report aims to emphasise this diagnostic dilemma and discuss imaging clues to prevent misdiagnosis.

REPORT: An 8-year-old child presented with abdominal pain and persistent vomiting for three days. Clinically she was feverish and demonstrated right iliac fossa (RIF) tenderness. Her total white count was $18.8 \times 10^9/L$. Abdominal x-ray showed dilated small bowels with ultrasound demonstrating intra-abdominal free fluid. CT abdomen revealed a pelvic collection with small pneumoperitoneum and free fluid in the RIF, generalised air and fluid-filled dilated small bowels and collapsed caecum. Normal appendix was not visualised. A perforated hollow viscus likely a pelvic appendix with adjacent collection causing intestinal obstruction was the initial impression. Intraoperative diagnosis was volvulus of MD due to a fibrotic band. Appendix was normal. This proves the presence of a diagnostic imaging challenge; 50% of patients with RIF stranding or collection, but non-visualisation of the appendix, end up with diagnosis of appendicitis, but in our case it was otherwise. Imaging clues such as anti-mesenteric location with communication with the bowel and enteritis/colitis changes can assist diagnosing MD.

CONCLUSION: Volvulus of MD in children is very rare and should be a differential in a child with RIF pain. Careful review of imaging is warranted, especially when the appendix appears intact or is not visualised, to help prevent misdiagnosis.

PRIMARY LIVER YOLK SAC GERM CELL TUMOR: A RARE ENTITY IN AN UNFORESEEABLE CLINICAL SCENARIO.

Intan Bazilah Abu Bakar*¹; Aidi Aswadi Halim Lim¹; Mohd Radhwan Abidin¹; Ahmad Razali Md Ralib¹; Radhiana Hassan¹; Azliana Abdul Fuaat²; Junaini Kasian³

¹Radiology, International Islamic University Malaysia, Malaysia, ²Pathology, International Islamic University Malaysia, Malaysia, ³Surgery, International Islamic University Malaysia, Malaysia

INTRODUCTION: Primary liver germ cell tumor (GCT) is extremely rare with only a few cases has been reported previously.

REPORT: A healthy 33-year-old gentleman was presented with abdominal pain post alleged sports injury after a futsal ball knocked his abdomen. He sustained a minor pancreatic injury with American Association for the Surgery of Trauma (AAST) grade 1 revealed by CECT pancreatic protocol. No liver injury or liver lesion. He was then managed conservatively. Since then, he had recurrence presentations of epigastric pain with was treated as pancreatitis and gastritis respectively. However, upon his presentation 10 months post-trauma, the repeated ultrasound HBS showed heterogenous ill-defined liver lesions with segmental portal vein thrombosis which were not seen in the last ultrasound 6 months prior. The findings were confirmed by CECT Liver. An impression of multiple partially liquefied liver abscesses was given correlating with previous traumatic pancreatitis. However, due to a very high and increasing trend of the serial serum alpha-fetoprotein with normal white blood cell levels, the decision was made to biopsy the liver lesion. HPE then revealed to be a GCT (yolk sac tumor). Ultrasound testis and CT thorax were done to look for possible of primary; nevertheless, the results were negative. Thus, the conclusion of primary liver GCT was made. Patient was referred to Hospital Kuala Lumpur for chemotherapy.

CONCLUSION: Despite the rarity of its occurrence, the clinician need to keep a high index of suspicion after integrating the clinical information, biochemical, imaging and histopathology findings.

UNILATERAL SAGITTAL RENAL MALROTATION: A RARE REPORTED CASE OF ASYMPTOMATIC PATIENT

Noorul Adila Muhammad *¹; Ahmad Tarmizi Musa¹

¹*Department Of Radiology, Universiti Sains Malaysia, Health Campus, Malaysia*

INTRODUCTION: Renal malrotation is a rare type of various kind of congenital renal anomalies. It is commonly seen as an incidental finding during imaging or in autopsied cadaver as most patients encountered are asymptomatic.

REPORT: A 67-year-old woman with underlying diabetes mellitus and hypertension was admitted for ruptured liver lesion and treated conservatively. Before the diagnosis, CT mesenteric angiography (CTA) was performed with initial clinical suspicion of bowel ischemia. CTA findings revealed ruptured liver lesion with multifocal liver lesions in the background of cirrhotic liver could represent multifocal hepatoma. Incidental findings of incomplete malrotation of right renal with its hilum facing anteromedially were encountered. Subsequent contrast enhanced CT abdomen showed, both kidneys are well perfused with right kidney is rotated along its sagittal plane and the long axis of the kidney in horizontal plane. The renal hilum and vessels were faced medially. No hydronephrosis or hydroureter noted in bilateral kidneys. Further history, patient has no urinary and renal related symptoms. Other renal-related clinical and biochemical findings were unremarkable.

CONCLUSION: Renal malrotation occur due to derangement in the normal rotation of the kidney along its vertical axis embryologically. However, in our case, the right kidney is sagittaly malrotated, which the kidney rotated along the sagittal plane with the long axis of the kidney in the horizontal plane. Renal malrotation did not have specific complications, but may end up in serious complications such as vascular injury if not properly assessed prior to abdominal surgery.

THREE CASE REPORTS OF ZINNER SYNDROME WITH VARIABLE CLINICAL PRESENTATIONS AND ITS RADIOLOGICAL FEATURES.

Songa Ramya*¹; Vemuri Naga Varaprasad¹

¹*Radiology, Global Superspeciality Hospital, India*

INTRODUCTION: Zinner syndrome is a rare mullerian duct anomaly comprising a triad of unilateral renal agenesis, ipsilateral seminal vesicle obstruction and ipsilateral ejaculatory duct obstruction. Only 200 cases have been reported in the literature. Most patients are asymptomatic until second decade of life or present with nonspecific symptoms such as prostatism, urinary urgency, dysuria, painful ejaculation, and perineal discomfort. Here, we discuss three case reports of Zinner's syndrome presented to our department with variable clinical presentations.

REPORT:

Case 1: 28 year old male patient presented with low backache radiating to thigh. Clinician suspected sciatica and advised MRI lumbar spine and MRI revealed large tubular altered signal intensity lesion (Hypointense on T1WI and T2WI) involving seminal vesicle on left side with ipsilateral renal agenesis.

Case 2: 35 year old male patient presented with pain in lower abdomen on both sides associated with scrotal pain on right side. Ultrasonogram revealed left hydronephrosis, absent right kidney and right pelvic cyst. MR Urogram revealed absent right kidney, large seminal vesicular cyst and left moderate hydronephrosis due to grade IV VUJ reflux, confirmed by micturition urethrogram.

Case 3: 42 year old male patient presented with dysuria and prostatism since 6 months. Ultrasonogram revealed absent right kidney and cystic lesion in right pelvis and provisional diagnosis of ectopic kidney with gross hydronephrosis was made. CT Urogram revealed absent right kidney and retrovesicular and periprostatic seminal vesicular cystic lesion on right side.

CONCLUSION: Zinner's syndrome is a rare mullerian duct anomaly. Most of these patients presents with vague symptoms, imaging alone provides an accurate diagnosis and MRI being the imaging modality of choice.

**LIVER ABSCESS WITH UNDERLYING CHOLEDOCHOLITHIASIS
COMPLICATED WITH BILIARY FISTULA: A RARE COMPLICATION**

Muhd Rifqi Rahim*¹; Khairil Amir Sayuti¹

¹*Radiology, Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Liver abscess is a common disease in Malaysia. The common type of liver abscess in Malaysia mainly amoebic and pyogenic in origin. However, the complication of liver abscess with intra-hepatic duct fistula is rare and mainly has late presentation.

REPORT: We report a case of partially treated multi-focal liver abscesses, presented again a month later, after completion of antimicrobial with painless abdominal distension and early satiety. CT scan revealed lesser sac collection connected with previously seen liver abscess. Urgent ultrasound guided drainage done, with bilious fluid was drained.

CONCLUSION: Biliary fistula secondary to liver abscess is very rare complication. The existing condition such as choledocholithiasis, that will lead to the dilatation of the intrahepatic duct will prone to has fistula if adjacent focal of liver abscess present. Thus, serious measures need to be considered for patient with liver abscess with underlying complete obstruction of the biliary system.

PRIMARY RENAL SOLITARY FIBROUS TUMOUR: A CASE REPORT

Wendy Ng Yin Ling *¹; Malinda Abd Majid Md Galib ¹; Sharifah Mastura Syed Abu Bakar²

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia, ²Radiology Department, Hospital Serdang, Malaysia*

INTRODUCTION: Solitary fibrous tumours are rare spindle cell neoplasms of mesenchymal origin, found in the pleura. Solitary fibrous tumour involving the kidney is an extremely rare entity.

REPORT: In this case, we report a 32-year-old young man who presented with left hypochondriac mass. On examination, there is a large ballotable mass in the left abdomen extending to the midline. Further imaging showed a huge mass arising from the left kidney, which was reported as renal malignancy. Patient subsequently underwent left nephrectomy. Histopathology examination confirmed solitary fibrous tumour of the kidney.

CONCLUSION: This case illustrates the challenges in diagnosing this entity based on radiological finding alone as it can mimics renal cell carcinoma.

ROLE OF SONOSALPINGOGRAPHY IN FEMALE SUBFERTILITY - DIAGNOSTIC OR THERAPEUTIC TOOL?

Rajul Rastogi*¹; Neha¹; Rehana Najam²; Vijai Pratap²

¹Radiodiagnosis, Teerthanker Mahaveer Medical College And Research Center, ²Gynecology, Teerthanker Mahaveer Medical College And Research Center, India

OBJECTIVE: Sonosalpingography (SSG) has long been in radiology as a less commonly used tool for assessing the patency of fallopian tubes in subfertile females. Its significance is undermined by laparoscopic evaluation (LE) of tubal patency as latter also allows simultaneous therapeutic procedures to restore its patency, if the obstruction exists. But LE is invasive and expensive. Hence, we evaluated the role of SSG not only in diagnosis of tubal obstruction but also its role in diagnosing the cause and if possible, relieving the obstruction.

MATERIALS & METHODS: Fifty subfertile females with normal appearing uterus and ovaries on transvaginal ultrasonography were included in our study. SSG was performed to evaluate tubal patency by recording free peritoneal spill. If peritoneal spill was absent bilaterally then the patient underwent laparoscopic evaluation. However, if unilateral or bilateral peritoneal spill was noted, then patient was recruited for assisted reproductive techniques (ART) and the results were correlated with pregnancy.

RESULTS: Out of 50 patients, SSG demonstrated free peritoneal spill at least unilaterally in 46 patients who conceived with ART. In rest of the four patients, with lack of bilateral spill on SSG, two revealed unilateral partial blocks while other two revealed bilateral tubal block. In all patients SSG correctly depicted the site of obstruction. In nine, patient it revealed PID (tubercular) by demonstrating flimsy peritubal adhesions and in 14 patients, higher pressure exerted during SSG restored the patency with sharp abdominal pain.

CONCLUSION: SSG is not only a diagnostic Golden Old Tool but a New Therapeutic Platinum tool.

IMAGING FEATURES OF UTERINE SARCOMA

Sung Bin Park*¹; Hyun Jeong Park¹; Eun Sun Lee¹; Byung Ihn Choi¹

¹Radiology, Chung-Ang University Hospital, Korea

LEARNING OBJECTIVE: The purpose of this presentation is to discuss the clinical features of uterine sarcomas, as well as their imaging appearances and characteristics.

BACKGROUND: Uterine sarcomas are a rare heterogeneous group of tumors of mesenchymal origin, accounting for approximately only 3% to 7% of malignant uterine tumors. They have a wide histopathological spectrum that may display various imaging features, making the preoperative diagnosis challenging.

Findings And/Or Procedure Details: In this presentation, we demonstrate uterine sarcoma. Uterine sarcomas are classified as myometrial origin smooth muscle tumors [leiomyosarcoma and smooth muscle tumor of uncertain malignant potential (STUMP)], endometrial origin endometrial stromal tumors (endometrial stromal sarcoma and undifferentiated sarcoma), and mixed myometrial and endometrial origin smooth muscle and epithelial tumors (carcinosarcoma and adenosarcoma).

The imaging characteristics of uterine sarcoma vary widely. We can ensure that suspicious imaging features of uterine sarcomas, including a large-size, heterogeneous echotexture, central cystic change or necrosis, and hypervascularity, are recognized to facilitate further evaluation.

CONCLUSION: Familiarity with the clinical presentations and imaging features of uterine sarcomas can lead to a more accurate diagnosis and appropriate management.

**EVALUATION OF HEMATURIA IN YOUNG ADULTS USING MDCT
UROGRAPHY: A PROSPECTIVE STUDY IN TERTIARY CARE CENTRE.**

Puneet Gupta*¹

¹*Radiology, ASCOMS, India*

OBJECTIVE: To determine the role of MDCT urography in evaluation of hematuria in young adults and to see whether unenhanced images are sufficient for the diagnosis or not.

MATERIALS & METHODS: Young adults (40 years or less in age) who presented with macroscopic or microscopic hematuria and underwent MDCT urography were included in the study. Detailed history and findings of clinical examination were recorded. Non contrast and contrast enhanced scans were performed and urographic findings were recorded in detail and tabulated. All the CT images were reviewed to determine whether contrast enhanced images were necessary for diagnosis or not.

RESULTS: Mean age of patients was 29 years; 97.5% were males. Abnormal MDCT findings were seen in 65 of 88 examinations (73.9%) and clinically significant cause of hematuria was seen in 43 patients (48.9%). The most common clinically significant findings were renal or ureteric calculi seen in 74% cases (32/43); five cases of malignancy were also seen. Thirty-six (84.0%) of 43 clinically significant causes were evident on non-contrast images. Solitary tiny vesical mass, urinary tract infections, PUJ obstruction and ureteric stricture were detected only on contrast enhanced scans and were not apparent on non-contrast images.

CONCLUSION: Clinically significant cause of hematuria was seen in 48.9 % of Contrast enhanced CT and CT urograms of the young adults. Non contrast images alone were diagnostic in significant proportion of these cases thereby reducing the requirement of additional CT examination and hence radiation exposure in radiosensitive individuals.

COMBINED PANCREATIC INJURY AND DUODENAL TRANSECTION IN BLUNT TRAUMA

Chiew Chea Lau*¹; Mohd Shafie Abdullah¹; Ahmad Hadif Zaidin Samsudin¹

¹Radiology, Universiti Sains Malaysia, Malaysia

INTRODUCTION: Blunt pancreatic and duodenal trauma are rare, accounting to less than 2% of all blunt abdominal injuries. These injuries often occur due to the direct impact to the upper abdomen by steering wheel or the handlebars in road traffic accident. Delayed diagnosis of pancreatic and duodenal injury significantly increases the morbidity and mortality.

REPORT: 17-year-old male presented with abdominal pain after involved in a road traffic accident. The patient was the motorcycle rider and he collided with another motorcycle. Upon arrival in the emergency department, the patient was tachycardia and the abdomen was guarded. Focused Assessment with Sonography for Trauma (FAST) scan revealed free fluid at the Morison pouch. Urgent contrasted CT abdomen and pelvis revealed small bowel wall discontinuity at first and second part of duodenum suggestive of transection with large retroperitoneal haematoma. Pancreatic head and uncinate process were bulky and hypoattenuating. The pancreatic injury was reported as American Association for Surgery of Trauma (AAST) Grade II injury. Pancreatic body and tail were normal. Other injuries include AAST Grade III liver injury, Grade III right renal injury and Grade I splenic injury. Exploratory laparotomy confirmed the CT findings except for pancreatic injury in which the pancreatic head was shattered.

CONCLUSION: Initial imaging finding for pancreatic injury may be normal or subtle within the first 12 hours of injury resulting in underestimation of the severity. Reassessment imaging is beneficial in case of persistent abdominal pain. Management of combined pancreatic and duodenal injury is adjusted based on the diverse combinations of the injury.

CT FEATURES OF IMPENDING RUPTURE OF ABDOMINAL AORTIC ANEURYSM- TWO CASE REPORTS

Pei Hua Lee*¹; Huang Chun Lin¹

¹*Department Of Medical Imaging, China Medical University Hospital, Taiwan (ROC)*

INTRODUCTION: Rupture of abdominal aortic aneurysm (AAA) is a life-threatening situation which cause huge internal bleeding and high mortality. Early diagnosis and recognizing CT sign of impending rupture of AAA is important. The patient can be benefit from a faster preoperative assessment followed by elective surgery.

REPORT: A 83-year-old man suffered from fever for 1 day. Non-enhanced CT scan showed crescent- shape hyperattenuation within the AAA with mild periaortic fat-stranding. Repeated CT scan with contrast medium injection was performed 4 hours later. Similar findings in precontrast image could be noted, but rupture of the AAA with large amount contrast medium extravasation occurred in portal venous phase image. The patient died in the same day.

Another 69-year-old man came to emergency department due to abdominal pain and diarrhea for days. Non-enhanced CT scan showed abdominal aortic aneurysm with crescent- shape hyperattenuation within the aortic wall and tangential calcium sign. Repeated CT scan was performed six days later due to progressive abdominal pain. The image showed AAA rupture with huge retroperitoneal hematoma and contrast leakage. The patient received emergent endovascular aneurysm repair for ruptured aortic aneurysm and followed up at outpatient department afterwards.

CONCLUSION: Important CT signs of impending rupture of AAA include increasing size of aneurysm, hyperattenuating crescent sign, focal discontinuity in circumferential wall calcification, tangential calcium sign, penetrating aortic ulcer and enlargement of the patent lumen. Awareness of the image features is important. Early detection of impending rupture of AAA with elective surgery can save lives before fatal event occur.

A PECULIAR WAY OF PASSING A STONE IN THE INTESTINES: TWO CASE REPORTS OF GALLSTONE ILEUS AND MINI REVIEW OF LITERATURE

Nyin Li Yuen*¹; Kua Chin Hong¹

¹Radiology, Malacca Hospital, Malaysia

INTRODUCTION: Gallstone ileus is a mechanical intestinal obstruction resulting from gallstone impaction in the gastrointestinal tract. It accounts for 0.3% to 0.5% of the patients with cholelithiasis and causes up to 4% of all cases of intestinal obstruction. Gallstone ileus can resemble any cause of the intestinal obstruction, carrying a mortality and morbidity of 7% to 30%. We report two cases of gallstone ileus to describe the clinical features and discuss the salient radiological features.

REPORT:

Case 1: A 57-year-old woman presented with a 4-day history of colicky abdominal pain, bilious vomiting, suprapubic tenderness and no bowel opening. Computed tomography (CT) revealed a cholecysto-duodenal fistula, pneumobilia and a large stone (2.6 cm) at mid-jejunum with small bowel obstruction and perforation. Small bowel resection and gall stone removal was performed with primary anastomosis.

Case 2: A 60-year-old woman presented with abdominal pain, nausea, vomiting and no bowel opening for 3 days. Ryle's tube insertion revealed high output faeculent fluid. CT showed a cholecysto-duodenal fistula, pneumobilia and a 3 cm stone at the distal jejunum with proximal bowel dilatation. Enterotomy and extraction of the gallstone were performed with primary anastomosis.

CONCLUSION: Gallstone ileus can present with typical features of intestinal obstruction. We should be vigilant when it occurs in a patient with symptoms of acute intestinal obstruction and a previous history of large gallstones (>2 cm). The typical radiological features of gallstone ileus are known as Rigler's triad, consisting of pneumobilia, small bowel obstruction and a gallstone in the bowel lumen.

A MULTI-MODALITY APPROACH TO A RARE INTRA-ABDOMINAL MASS: MESENTERIC CYST

Pranav Ajmera*¹

¹*Radiology, Dr D.Y.Patil Medical College, Hospital and Research Centre, DPU, Pune- 411018, India*

INTRODUCTION: Any cystic lesion of the mesentery is labelled as a mesenteric cyst. It has a lining of mesothelial cells or endothelium. These are fairly uncommon lesions with an incidence of about 1 in 11,000 to 1 in 25,000 pediatric admissions. Due to their infrequent presentation, they present a diagnostic and therapeutic challenge to clinicians, world-over. A multi-modality approach utilising ultrasonography and Contrast enhanced-CT (CE-CT) can prove useful.

REPORT: An 8-year-old male child presented with acute onset, diffuse abdominal pain and palpable intra-abdominal mass, and after undergoing ultrasonography and CT, was diagnosed conclusively as a mesenteric cyst. Ultrasonographically, two lesions were visualised, one of them appeared as an encysted turbid fluid collection in the right lumbar region; the other as a dilated, tortuous, intercalated structure. On CT, the first one was labelled definitively as a mesenteric cyst while the other as a possible neoplastic mass. Subsequently, resection and anastomosis of the lesion with adjacent bowel was performed. Histopathological evaluation of the same revealed, abundant dilated lymphatics with abundant lymphatic follicles in various sections of the cystic lesions, suggestive of lymphangioma as the origin of mesenteric cyst.

CONCLUSION: There are no specific signs or symptoms which are pathognomic of the disease. Often asymptomatic in adults, it usually presents as vague abdominal pain in children; the acute abdominal picture seen in this case was due to the excessive distension of the cyst walls. A multi-modality approach encompassing serial USG and CE-CT, as was done in this case, helps diagnose the varied appearances of mesenteric cysts.

A CASE REPORT OF VILLAR'S NODULE : A RARE PRESENTATION OF EXTERNAL ENDOMETRIOSIS

Shamsiah Abdul Hamid*¹; Natasha Mohd Arifin ¹; Nazimah Ab Mumin¹; Paul Ng Hock Oon²; Aqmar Suraya Sulaiman²; Shahrin Iskandar Abdul Wahab³

¹Radiology, Universiti Teknologi Mara, Malaysia, ²Obstetrics And Gynaecology, Pantai Hospital Kuala Lumpur, Malaysia, ³Pantai Premier Pathology, Pantai Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Villar's nodule is umbilical endometriosis without ongoing pelvic endometriosis. Primitive location of this nodule at umbilical level is rare. Its pathogenesis remains unclear. The most common sites for extra-gonadal endometriosis are rectum, colon, peritoneal surfaces, ureter, urinary bladder and lungs. External endometriosis cases involving the subcutaneous tissues, have previously been reported in the vicinity of a previous surgical scar.

REPORT: We report a rare case of umbilical endometriosis in a 45 year old woman with no known history of endometriosis or surgical scar involving the umbilicus. She presented with progressive development of a bluish black shiny lump within the umbilicus, which bleeds coinciding to her menstrual cycles. There was associated cyclical sharp pain and discomfort at peri-umbilical and umbilicus region prior to the onset of bleeding. The diagnosis was confirmed by histology and surgical excision. We present the ultrasound and magnetic resonance imaging (MRI) findings of the Villar's nodule and its histopathology results.

CONCLUSION: Umbilical endometriosis is a rare disease that occurs more commonly in patients with pelvic endometriosis. The tumour, associated with cyclical nature of tumour bleeding in a patient without previous history of endometriosis, strongly suggest diagnosis of Villar's nodule. Ultrasound and MRI appearance can help to diagnose and give reassurance. The treatment is surgical excision and recurrence is rare.

**HEPATIC ARTERY RESISTIVE INDEX (HARI) AND BARD FIBROSIS SCORE:
RISK ASSESSMENT OF ADVANCED LIVER FIBROSIS IN PATIENTS WITH NON-
ALCOHOLIC FATTY LIVER DISEASE (NAFLD)**

Ernie G. Bautista II*¹

¹*Department of Radiology, Quezon City General Hospital, Philippines*

OBJECTIVE: Nonalcoholic fatty liver disease (NAFLD) is a metabolic disorder with a wide clinical continuum of liver diseases that usually progress in a rectilinear fashion. Through this course, they undergo certain hemodynamic changes in the hepatic arterial blood flow. To determine the concordance of Hepatic Artery Resistive Index (HARI) and Bard Fibrosis Score in the assessment of advanced liver fibrosis among patients with NAFLD and across its different disease severity.

MATERIALS AND METHODS: Observational descriptive study design was used. 94 NAFLD patients without a history of excessive alcohol consumption were invited and voluntarily participated in the research investigation. Ultrasound scanning of the liver to include color Doppler parameters and determination of BARD Fibrosis score were done.

RESULTS: The HARI of NAFLD with BARD Fibrosis scores of 1, 2, 3 and 4 has an average index of 0.84, 0.75, 0.54 and 0.52, respectively. There is an unwavering inverse correlation between HARI to BARD Fibrosis scoring system ($r=-0.84$). Across the different severity of NAFLD, grade III has the lowest mean HARI at 0.53 followed by grade II and grade I. Correspondingly, the BARD Fibrosis score showed inverse ranking pattern across the different severity of NAFLD, grade I has the lowest BARD fibrosis score followed by grade II and grade III.

CONCLUSION: The HARI has demonstrated a significant negative correlation with advanced liver fibrosis when correlated with BARD fibrosis score. Thus, this study showed that the conventional Doppler US with hepatic artery indices and laboratory variables can be helpful to detect fibrous tissue accumulation in NAFLD.

A RARE CASE OF ADULT MORGAGNI HERNIA WITH BOWEL ISCHEMIA AND SIGMOID COLON ADENOCARCINOMA

Tan Weijoe*¹; Maninderpal Kaur¹; Anitha Haniffa²

¹*Department of Radiology, Hospital Tengku Ampuan Rahimah, Malaysia,* ²*Department of General Surgery, Hospital Tengku Ampuan Rahimah, Malaysia*

INTRODUCTION: Morgagni's hernia is a rare clinical entity with various manifestations. It is the least common form of congenital diaphragmatic hernia. It usually presents during childhood with respiratory symptoms. Most of the cases in adults are detected incidentally on chest radiographs.

REPORT: A 82-year-old lady presented with epigastric pain for two days associated with vomiting, loss of appetite and weight for three months. Clinically, she had mild tachycardia and generalized abdominal tenderness. Respiratory examination revealed reduced breath sounds over right lower zone with the presence of bowel sounds. Blood investigations revealed mildly elevated serum lactate. Chest radiograph showed tubular air-filled structures occupying the lower right thoracic cavity. Contrast-enhanced computed tomography of the thorax and abdomen revealed proximal bowel dilatation with large bowel loop herniation into the right thoracic cavity via a medial right hemidiaphragmatic defect. Apart from that, the CT showed an irregular circumferential enhancing mass at the junction of the rectosigmoid colon. Intraoperatively, there was a right diaphragmatic hernia with a defect at the medial anterior aspect of right hemidiaphragm. Besides, there was a constricting tumour at the rectosigmoid colon causing gross proximal bowel dilatation. The ascending and transverse colons showed signs of bowel ischaemia. Subtotal colectomy with end ileostomy was performed. Histopathological examination showed poorly differentiated adenocarcinoma of rectosigmoid colon.

CONCLUSION: Adult Morgagni hernia with concomitant rectosigmoid adenocarcinoma is rare. High index of suspicion is crucial when assessing patients with abdominal pain.

A RARE CASE OF BILATERAL CRYPTORCHIDISM WITH BILATERAL SYNCHRONOUS TESTICULAR SEMINOMA

Keshika Koirala*¹; Nirmal Prasad Neupane²

¹*Department of Radiodiagnosis and Imaging, Nepal Medical College Teaching Hospital, Nepal,* ²*Department of Radiodiagnosis and Imaging, Grande International Hospital, Nepal*

INTRODUCTION: Cryptorchidism refers to undescended testis, i.e., absence of testis in the scrotal sac and is a common anomaly of the male genitourinary system. It is a known risk factor for testicular tumour. The most common tumour associated with the undescended testis is seminoma. Occurrence of bilateral synchronous germ cell tumour is rare and the presence of bilateral synchronous germ cell tumour in a patient with cryptorchidism is even rarer.

REPORT: A 29 year old male patient presented with history of vague abdominal pain for the last six months. Contrast CT abdomen showed a large mass in the central abdomen extending from the level of lower pole of right kidney to the suprapubic region. No calcification or fat density was noted within the mass. There was heterogeneous enhancement of the mass noted in the post contrast study. The mass was supplied by the enlarged right gonadal artery. Another oval shaped soft tissue density lesion with heterogeneous enhancement was noted in the left iliac fossa (representing the left testis). There were multiple enlarged lymph nodes noted in the aortocaval and left para-aortic region. Laparotomy with surgical removal of both lesions were done. Histology was suggestive of bilateral testicular seminoma.

CONCLUSION: Bilateral testicular germ cell tumour in a case of bilateral cryptorchidism is a rare occurrence. High index of suspicion and meticulous imaging can lead to early diagnosis of these tumours. Timely and proper management of these lesions can lead to significant decrease in morbidity and mortality associated with these lesions.

IMAGING OF MULTIPLE HEPATOCELLULAR CARCINOMA WITH ULTRASOUND ABDOMINAL

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Hepatocellular carcinoma is a malignancy that predominantly occurs in the setting of cirrhosis liver. This incidence is rising worldwide. Hepatocellular carcinoma differs from most malignancies because it is commonly diagnosed on the basis of imaging features alone, without histologic confirmation. This is the first screening with ultrasound abdominal in my hospital .The others examination radiology are MSCT , MRI abdomen and PET Scan .Population is very much man than women .

REPORT: We will report a man years old had symptom palpation feeling mass in region abdominal upper right . He is has jaundice , loss body physical and sclera eye is jaundice .We do screening first with ultrasound abdominal .This is a rare case ,because many multiple nodul in that liver .We make differential diagnostic with the others lesion liver .

CONCLUSION: Utrasound abdominal is very good for screening this case .And may to make continued staging diagnostic .

ATYPICAL CT FEATURES OF ACUTE APPENDICITIS; A REVIEW OF UNCOMMON IMAGING PRESENTATIONS OF A COMMON PATHOLOGY.

Maria Rauf*¹; Sadaf Irshad Khan¹; Surrayya Bano Zafar¹; Raana Kanwal¹; Rashed Nazir¹

¹Radiology, Shifa International Hospital, Pakistan

LEARNING OBJECTIVE: Acute appendicitis is one of the commonest causes of RIF pain and acute abdomen. Even though appendicitis is commonest cause of acute abdomen, it is still clinically difficult to diagnose due to its varied location. To achieve an accurate diagnosis, radiologists must be familiar with atypical locations and CT appearances of appendicitis.

BACKGROUND: Imaging techniques such as ultrasound and CT offer valuable information regarding diagnosis. Ultrasound however has limited sensitivity. In comparison, CT has greater sensitivity and is superior in detecting the presence and severity of complications, and provide information regarding alternative diagnoses. Base of appendix is located 2 cms below ileocaecal valve. Tip of the appendix may vary in location, being retrocecal in 65% of patients; pelvic in 30%, and extraperitoneal in 5%, situated behind ascending colon, terminal ileum or in subhepatic position. In situs inversus appendix is located on left. Patient may present with symptoms of appendix inflammation or with sequelae of appendicitis.

Findings And/Or Procedure Details: We retrospectively reviewed CT abdomen performed in ER from January 2017 to July 2017 for acute abdomen and documented the atypical clinical and radiological presentations such as bowel obstruction, inflamed Amyand hernia, tubo-ovarian abscess, epigastric and lateral abdominal wall abscess and retroperitoneal fasciitis; all of these attributing to inflamed appendix.

CONCLUSION: Role of CT scan is commendable in timely diagnosis of pathology leading to better patient management and improved clinical outcome. A key learning point for all radiologists remains in accurate visualization of appendix and documenting its integrity, to avoid missing out any atypical presentations.

**AUDIT OF CT LIVER VOLUMETRY / LIVER DYNAMIC; PRE SCAN
PREPARATION IN PROSPECTIVE LIVER DONORS.**

Belqees Yawar Fiaz*¹; Zainab Malik¹; Atif Rana¹; Alishba Zaid Khan¹

¹*Radiology, Shifa International Hospital, Pakistan*

OBJECTIVE: Audit of CT liver volumetry/liver dynamic pre-scan preparation technique, aiming to reduce unnecessary repeat scans, extra contrast and ionising radiation burden.

MATERIALS & METHODS: The first cycle of audit is a retrospective analysis of 50 consecutive CT liver volumetry/ liver dynamic studies of liver donors as pre-transplant workup from February 2018 to May 2018, with patients allowed to take liquids but not solids for 6 hours prior to scan. Liver, hepatic artery and hepatic veins were assessed and need for repeat scan was analyzed due to artifacts from air and liquid interface in duodenum and distal stomach. The second cycle of audit is a retrospective analysis of 50 consecutive patients who underwent CT liver volumetry/liver dynamic studies from June 2018 to September 2018, keeping the patients nil per oral (NPO) for 6 hours prior to scan and the results were compared.

RESULTS: First cycle of audit showed that liquid and air interface in duodenum and distal stomach resulted in artifacts in liver in 24 (48%) scans, difficult visualization of hepatic veins in 15 (30%) and hepatic artery in 11 (22%) scans. 5 (10%) scans were repeated. After implementation of change in protocol remarkable results were obtained and none of the scan showed any artifacts.

CONCLUSION: This study shows that CT liver volumetry/ liver dynamic studies performed keeping the patients NPO for 6 hours prevent them from swallowing air with the liquids. This results in better anatomical delineation without artifacts.

GASTRIC DIEULAFOY: CASE REPORT OF A RARE CAUSE OF UPPER GASTROINTESTINAL BLEED

Fouzia Wazir*¹; Aman Nawaz Khan¹; Ummara Siddique Umer ¹; Shahjehanalām¹; Seemagul¹; Syed Ghulamghaus¹; Hadia Abid¹; Abdullah Safi¹; Kalsoom Nawab¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

INTRODUCTION: A Dieulafoy lesion (DL) is a tortuous, submucosal variant artery in the gastrointestinal tract that penetrates through the mucosa over time and eventually can perforate to cause severe gastrointestinal (GI) bleeding. It is an important etiology of acute GI bleeding because of its propensity to cause massive, life-threatening and recurrent hemorrhage. It is most commonly located in the proximal stomach causing upper GI bleeding. The purpose of this poster is to report on the imaging a gastric dieulfooy lesion in an elderly male treated by transcatheter embolization in our single-center institution.

REPORT: We present a case report of successfully treated gastric dieulafoy at our department. Our patient was a 72 year old male who presented with upper GI bleed and was anemic. CT angiography confirmed gastric dieulafoy and was treated successfully with artery embolization. His anemia recovered and his follow up was uneventful.

CONCLUSION: At our institution, endovascular management of such rare cause of GI bleed showed high technical success, however, a study is needed on a larger number of patients for the exact clinical outcome.

**INTRA-ABDOMINAL EPITHELIOID MALIGNANT PERIPHERAL NERVE
SHEATH TUMOR MASQUERADING AS OVARIAN CARCINOMA - AN
UNFORESEEN DIAGNOSIS!**

Srikiran T K*¹; Satheesh Babu T V¹; Neha Mohan¹; Sangeetha Nayanar²; John Alapatt³;
Nikhila Paulose²

¹*Imageology, Malabar Cancer Center, Thalassery, Kannur, Kerala, India,* ²*Onco-Pathology, Malabar Cancer Center, India,* ³*Surgical Oncology, Malabar Cancer Center, India*

INTRODUCTION: MPNSTs are aggressive soft tissue sarcomas that invariably arise from a peripheral nerve or in the extraneural soft tissues and display nerve sheath differentiation(1). The most common sites being the extremities, trunk, head and neck region and less commonly it involves the retroperitoneum and intra-abdominal organs. To date, little is known about MPNSTs arising from the abdominal cavity. Therefore, the prognosis of and treatments for such tumors are uncertain.

REPORT: We report a case of a 38 year old female who presented with loss of appetite, dyspnea on exertion and abdominal pain. Imaging showed a large intra-abdominal mass with ascites, omental, peritoneal, adnexal, liver surface and sub-diaphragmatic deposits and was reported as disseminated ovarian malignancy, Patient underwent extensive surgery and HPE report confirmed a high grade intra-abdominal sarcoma involving multifocal peritoneal sites. The samples were subjected to an in-depth analysis with extended panels of IHC markers which confirmed an epithelioid malignant peripheral nerve sheath tumor.

CONCLUSION: Malignant peripheral nerve sheath tumors (MPNST) are rare spindle-cell sarcomas derived from Schwann cells or pluripotent cells of the neural crest(2). They account for less than 10% of all soft tissue sarcomas(2). Imaging is routinely performed to assess the extent of the disease and to plan surgical resection. Survival appears to be related to complete tumor resection. It remains uncertain whether chemotherapy and radiotherapy have a positive impact on the survival of patients with MPNSTs.

RENAL METASTASIS FROM COLORECTAL CARCINOMA MIMICKING RENAL CELL CARCINOMA: A CASE REPORT

Chew Lee Lian*¹;

¹*Division of Oncologic Imaging, National Cancer Centre Singapore, Singapore*

INTRODUCTION: Colorectal cancer (CRC) is the third most common cancer worldwide. The most common sites for CRC metastasis include lungs, liver, peritoneum and distant lymph nodes. The kidney is a rarely seen site of distant metastasis in CRC. When renal metastases do occur in CRC, they usually present late and as part of widespread disease.

REPORT: In this case report, we describe a 69-year-old male with history of colon cancer. CT shows a large heterogeneously enhancing left renal mass with tumour thrombus extending into the left renal vein and inferior vena cava. Image guided percutaneous core biopsy was performed in this renal lesion with radiological appearance of a renal cell carcinoma. Histopathological features and immunohistochemical staining of the renal mass showed that it was a distant metastasis from CRC.

CONCLUSION: In rare cases, a renal metastasis may manifest as a solitary renal lesion with intravascular extension and may be hard to differentiate from a renal cell carcinoma. A percutaneous biopsy is necessary to solve this diagnostic problem.

COMPUTED TOMOGRAPHY (CT) IMAGING OF INJURIES FROM BLUNT AND PENETRATING ABDOMINAL TRAUMA.

Pravinkumar Bharde*¹; A Praveenkumar¹; CH Swapna¹

¹*Radiodiagnosis, Kakatiya Medical College, India*

OBJECTIVE: Trauma is the leading cause of death in persons under 45 years of age. Abdominal trauma is conventionally categorized as either blunt type or penetrating type. The principal causes of blunt trauma abdomen are road traffic accident. The prevalence of blunt abdominal trauma is approximately 12-15%, accounts for high mortality rates around 80%. This study is to emphasize the importance of bowel and mesenteric injuries in Blunt/Penetrating abdominal trauma and to illustrate useful tips and tricks in identifying solid organ and vascular injuries on trauma CT.

MATERIALS & METHODS: A prospective study of 53 patients with abdominal trauma(48Blunt/5Penetrating) was carried out in MGM hospital Warangal. MDCT with contrast were performed on GE Bright speed 16 slice CT Scanner. Delayed scan obtained to assess the urinary system in the excretory phase. Various injuries seen on the CT images were grouped based on the injury site and the organs involved.

RESULTS: Of the total 53 patients, maximum(17) were in the age group of 21-30(32.07%) then in 31-40(12) age group. Only 1 patient was above 60 years. Out of 53 patients 41 patients were male and 12 patients were female. The most common organ injured was spleen(18) followed by liver(17),Bowel(15),Anterior abdominal wall(6), Pancreas(1), Kidney(3), Uterus(2),Stomach(1) and Hemoperitoneum without solid organ injury(1).

CONCLUSION: Present study conclude that CT scan is highly sensitive and better diagnostic modality for BAT. CT shown to be accurate for the diagnosis of bowel and mesenteric injuries. CT is diagnostic test of choice in the evaluation of abdominal trauma in hemodynamically stable patients. The rapid identification of life-threatening injuries may increase the chance of survival for patients with trauma.

TRANSPERINEAL MRI-TRUS FUSION BIOPSY: A NEW PARADIGM FOR PROSTATE CANCER

Suzana Ab Hamid*¹; Christopher Lee²; Khairul Asri Mohd Ghani²

¹Radiology, Hospital Pengajar Universiti Putra Malaysia (HPUPM), Malaysia, ²Urology, Hospital Pengajar Universiti Putra Malaysia (HPUPM), Malaysia

LEARNING OBJECTIVE: This e-poster describes the advantages, indications, patient preparation, technique and possible complications of MRI/TRUS (magnetic resonance imaging/transrectal ultrasound) fusion biopsy based on our early experience.

BACKGROUND: The incidence of prostate cancer is in climbing trend globally. In Malaysia, it contributed to 8.8 per cent of all newly diagnosed cancers in 2018. The management of prostate cancer relies mainly on early detection and the accuracy of cancer sites. The current diagnostic standard i.e. TRUS-guided systematic biopsy has been reported to have limitations and poor sensitivity. A new 'targeted' MRI/TRUS fusion biopsy combines the advantages of MRI in targeting the lesion with that of real-time TRUS guidance.

FINDINGS AND/OR PROCEDURE DETAILS: Prostate MRI/ TRUS fusion biopsy

CONCLUSION: With the excellence detection rate for clinically significant prostate cancers, MRI/TRUS fusion biopsy shows an emerging paradigm in the prostate care by providing faster, more accurate and more reliable diagnosis, hence establishing the corresponding prognosis.

**THE VARIANTS OF HEPATOCELLULAR CARCINOMA ON IMAGING; A
PICTORIAL REVIEW.**

Tahira Nishtar *¹; Shamsullah Burki¹; Khalid Shakeel Babar¹; Nosheen Noor¹

¹*Radiology Department, Lady Reading Hospital-Medical Teaching Institute, Pakistan*

LEARNING OBJECTIVE: The aim of this article is to familiarize radiologists with different types and rare forms of HCC highlighting the CT and MR spectrum of atypical appearances.

BACKGROUND: Hepatocellular carcinoma (HCC) is currently the second most common cause of cancer-related deaths globally with expected increase in its incidence. Most cases of HCC are present in middle to low resource countries like Pakistan due to increased burden of viral hepatitis. As it is a common disease; hence different types and rare imaging features are also encountered.

FINDINGS AND/OR PROCEDURE DETAILS: CT and MR liver dynamic are non-invasive and highly accurate tools for diagnosis of HCC. The importance of different features of HCC will be highlighted. The CT and MR features of different variants of HCC will be discussed.

CONCLUSION: The knowledge of different forms and atypical HCC is essential for the general radiologist to avoid unnecessary biopsy in suspected HCCs.

**THE ART AND SCIENCE OF ABDOMINAL RADIOLOGY REPORTING;
LITERATURE REVIEW OF MEASURES TO IMPROVE REPORTING STYLE.**

Tahira Nishtar*¹; Shamsullah Burki¹; Khalid Shakeel Babar¹

¹*Radiology Department, Lady Reading Hospital-Medical Teaching Institute, Pakistan*

LEARNING OBJECTIVE: The aim of this article is to familiarize the radiologist with reporting writing styles and formats, which can help generate a better report positively viewed by the referring physician.

BACKGROUND: The radiological report is the translation of pictures into the words. If it is not clear and concise, it can create problems for both clinicians and patients. There are many styles and patterns of radiology reports. Everyone has their own style and flavor. This article will act as a general guideline for report writing.

FINDINGS AND/OR PROCEDURE DETAILS: There are several points which can change the overall look and quality of a report. Reporting format and style matters a lot. Same information given in different format can change the impact of the report. The information needs to be conveyed in a clear and confident manner, and if possible any further workup or recommendation should be highlighted. The report should be centered and answer the clinical query which is asked by the physician. Alarming and urgent findings must be communicated and mentioned in the report with details. Certain words and phrases should be avoided, while several others need to be adopted to make the report a perfect finished product.

CONCLUSION: The different methods highlighted in the article will help develop better reports and generate a positive impact of radiologist in the management of patient.

ACUTE ABDOMEN - PERFORATED MECKEL DIVERTICULUM

Tan Yuan Ying*¹; Ling Shar Ren¹

¹*Radiology Department, Hospital Seberang Jaya, Malaysia*

INTRODUCTION: Meckel diverticulum(MD) is the most common structural congenital anomaly of the gastrointestinal tract. Complications of MD include inflammation, perforation, haemorrhage, intussusception, volvulus, intestinal obstruction and malignant transformation. Perforated MD, a rare complication but often mimic appendicitis.

REPORT: 19 years old male, presented with generalized abdominal pain, fever, vomiting and diarrhea for 3days. On examination, his was tachycardic with normal blood pressure.

Abdomen was guarding and rigid, predominately at right iliac fossa. Laboratory findings shows raised white blood cells(WBC). Abdominal radiography shows faecal loaded large bowels with prominent bowel loops at left side of the abdomen. Provisional diagnosis of appendicitis/appendicular mass was given. Contrast enhanced computed tomography(CT)abdomen revealed blind ended structure which arising from the terminal ileum with pneumoperitoneum and ascites. Appendix was unremarkable. Features were suggestive of perforated MD. Intraoperatively, small bowel loops examination revealed an inflamed and perforated MD at 25cm proximal to ileocecal valve which perforated at its base. Appendix was slightly inflamed. MD and appendix were resected. Patient was started on antibiotics with uneventful recovery post-operatively. Histopathological examination(HPE) shows perforated MD with gastric mucosa heterotopia; non inflamed appendix.

CONCLUSION: Perforated MD is a rare complication which often mimics perforated appendix on presentation and diagnosis. MD pathology need to be considered even non-visualized or normal appendix is identified in acute abdominal case. However, appendicitis still cannot be rule out. MD is usually indistinguishable from normal loops of small bowel on CT scan. Thus, diagnosis of MD with its complication might be challenging for both clinical and imaging aspect.

ATYPICAL HEPATOCELLULAR CARCINOMA

Hazwani Md Noor*¹; Izazul Husin²

¹*Radiology, University Malaya - Outcampus Hospital Selayang, Malaysia,* ²*Radiology, Hospital Selayang, Malaysia*

INTRODUCTION: Hepatocellular carcinoma (HCC) is the fifth most common cancer and second most frequent cause of cancer related death worldwide. Since HCCs are supplied arterially, the typical CT findings of HCC are hypervascularity in late arterial phase and washout in portovenous and delayed phases. However, HCC may have atypical presentation on radiological imaging which may mimic other diseases.

REPORT: We present a case of patient presenting with features of cholangiocarcinoma on clinical and radiological findings which was proven to be HCC on histopathological examination.

CONCLUSION: Radiological diagnosis of HCC and differentiating it with cholangiocarcinoma remains a challenge. Histopathological diagnosis is recommended. As the surgical management for both disease are totally different, it is very important for radiologists to differentiate them prior to surgery to help in patient's surgical planning.

CONCOMITANT OBTURATOR HERNIA AND SLIDING HIATUS HERNIA IN A PATIENT WITH SMALL BOWEL OBSTRUCTION: CASE REPORT

Koh Hooi Ching*¹; Nur Aisyah Kosnin¹

¹*Radiology, Hospital Seberang Jaya, Malaysia*

INTRODUCTION: Obturator hernia is a rare type of abdominal hernia that causes small bowel obstruction. Clinical diagnosis is often delayed due to its non-specific signs and symptoms with resultant increased morbidity and mortality from bowel ischemia. Sliding hiatus hernia is herniation of part of the stomach and gastroesophageal junction through the oesophageal hiatus. It is often asymptomatic and diagnosed incidentally. Imaging plays an important role in early detection of the abdominal hernias with prompt surgical intervention result in better patient outcome.

REPORT: A 78-year-old female patient presented with a 2-day history of vomiting and abdominal pain. No intraabdominal surgery was performed in the past. Blood result revealed leucocytosis. Chest and abdominal radiographs showed retrocardiac mass and dilated small bowel loops respectively. Computed tomography of abdomen and pelvis with lower thorax disclosed left obturator hernia with small bowel obstruction and a sliding hiatus hernia with intrathoracic herniation of part of the stomach. Patient underwent emergency laparotomy which confirmed the diagnosis. Both obturator hernia site and diaphragmatic defect were repaired. He had an uneventful post-operative period.

CONCLUSION: Concomitant obturator hernia and diaphragmatic hernia is rare and clinical diagnosis is challenging. Obturator hernia should be considered in the differential diagnosis of thin, elderly female with intestinal obstruction. Computed tomography helps in establishing a rapid diagnosis of the abdominal hernias and avoid complications such as bowel ischemia.

A CASE OF ERDHEIM CHESTER DISEASE WITH MULTISYSTEM INVOLVEMENT

Fatimah Ismail*¹; Wendy Ng Yin Ling²; Malinda Abd Majid²; Nuryazmin Yaacob¹

¹Radiology, HUKM, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Erdheim-Chester disease (ECD) is an extremely rare and aggressive form of non-Langerhans cell histiocytosis. ECD usually presents with bone pain in adults aged 40–60. The common sites of involvement are the skeleton, central nervous system, cardiovascular system, lungs, retroperitoneum, and skin. In this case, we report a middle age Malay male with initial central nervous system manifestation and then later develop multisystem involvement with radiological findings of ECD.

REPORT: 40-year-old gentleman with underlying Type II Diabetes, hypertension and congestive cardiac failure. He initially presented with facial swelling, headache, giddiness and unsteady gait for 1 month. MRI of the brain that showed multiple T2/FLAIR at the pons with contrast enhancement with smaller lesions at subcortical white matter at periventricular and corona radiata. The differential diagnosis at this point was demyelinating disease. These findings were unchanged over the period of 1 year. After 8 months from initial presentation, he developed right sided hemiparesis and left cerebellar sign and also shortness of breath. Subsequently a CT revealed a multi systemic involvement including pericardial effusion and enhancement, soft tissue sheathing of the aorta, bronchiectatic changes of the lungs periureteric, perinephric fluid and streakiness and multiple sclerotic bone lesions. An ilium biopsy showed tissue replaced by fibrous tissue. Loosely arranged fibroblast with extensive crust artefact, corresponds to Erdheim-Chester disease.

CONCLUSION: ECD is a rare multi system disorder. A constellation of clinical manifestation, radiological and histological findings are able to guide us to the diagnosis of this disease.

**MISSED CONCOMITANT LEAKING ABDOMINAL AORTIC ANEURYSM IN A
NEWLY DIAGNOSED OESOPHAGEAL ADENOCARCINOMA.**

Mohd Shukry Mohd Khalid*¹; Norazilah Mat Jin²

¹*Department of Radiology, Universiti Teknologi MARA, Malaysia,* ²*Obstetric & Gynaecology, Faculty of Medicine, Universiti Teknologi MARA, Malaysia*

INTRODUCTION: Abdominal aortic aneurysms often give the clinician diagnostic challenges particularly if they leak into the retroperitoneal space. Diagnosis is usually delayed or incidental, sometimes at postmortem. Malignancy is also notorious for its myriad of clinical presentations. Concomitant abdominal aortic aneurysm and carcinoma not only pose difficulty in diagnosis, but also real test in their management. Failure to detect the life-threatening component which requires acute management may lead to misdiagnosis and higher morbidity and mortality.

REPORT: We report a case of 78 year-old man, who presented to the emergency department (ED) with complain of sudden severe pain in the right iliac fossa radiating to the supra-pubic and groin area while at rest. No history of significant trauma or fall prior to the onset of pain. On examination, he was pale but not in shock. There was tenderness at right iliac fossa and lower abdomen, however no pulsatile mass elicited on palpation. His digital rectal examination revealed scanty melanic stool. Urgent OGDS was done and revealed a growth at the distal oesophagus. Subsequently, a CT scan for staging was done and revealed an interesting finding.

CONCLUSION: The importance of early and correct diagnosis in patients with dual pathology and imaging features in this interesting case are discussed.

RED HERRINGS: ALWAYS CORRELATE CLINICALLY

Aidi Aswadi Halim Lim*¹; Siti Nor Suzeana Mustfar¹; Nurul Aini Abdul Halim¹; Low Chooi Leng¹

¹*Department of Radiology, International Islamic University Malaysia, Malaysia*

INTRODUCTION: A 60 year old gentleman with underlying diabetes, hypertension and cholelithiasis; presented with 1 day history of sudden onset severe and generalized abdominal pain, with maximal tenderness at the epigastric region. He also vomited twice, but complaining of no other symptoms of note.

REPORT: His liver function serology was mildly deranged; with alkaline phosphatase of 148 (normal 30-120) and total bilirubin of 46 (5-21). The rest of the blood parameters was unremarkable.

He subsequently underwent an ultrasound abdomen, which revealed a left renal mass. An elongated lobulated mass with peripheral calcification is also detected at porta hepatis region, initially thought to be enlarged matted nodes.

He then underwent an urgent CT renal protocol to further characterize the renal mass. The CT did indeed revealed a left lower pole renal mass, thought to be renal cell carcinoma. The elongated lobulated porta hepatis mass turned out to be a complex fusiform aneurysm of the celiac axis, seen in continuity with fusiform aneurysm of the gastroduodenal artery. A mildly hyperdense fluid layering is also observed at the pelvic region.

On closer scrutiny of the CT, the main culprit of the patient's presentation is revealed. He had a sealed gastric perforation, with a collection observed along the greater curvature of the stomach, conforming to the shape of the stomach.

CONCLUSION: The old adage goes, treat the patient and not the scan. Satisfaction of search error has always been a scourge to radiologists anywhere; so cliché clinical correlation will always be of paramount importance.

A RARE CASE OF PARARENAL MALAKOPLAKIA

Nur Wahida Hussin*¹; Wendy Ng Yin Ling²; Malinda Abd Majid²; Leong Yuh Yang¹;
Norhayati Omar²

¹Radiology, Hospital Canselor Tuanku Muhriz, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Malakoplakia is a rare chronic granulomatous disease which can involve multiple systems, commonly affecting immunocompromised patients. Here is a case report of pararenal malakoplakia in patient with recurrent thymic carcinoma.

REPORT: 58 years old lady, known case of myasthenia gravis with recurrent thymic carcinoma, thymectomy done in 2014. CT scan in December 2019 shows multifocal cystic renal mass with thick enhancing lobulated wall at right kidney. Patient was given 6 cycles of chemotherapy; during which had multiple episodes of neutropenic sepsis. Post chemotherapy CT scan in May 2020 shows larger pararenal mass with progressive local extension. Biopsy done, confirms malakoplakia. Patient was treated with 6 weeks of bactrim. CT scan in October 2020 shows smaller right pararenal mass.

CONCLUSION: Malakoplakia is a rare chronic granulomatous disease with non specific clinical presentation and radiological features. It should be considered as one of the possible differential diagnosis particularly in immunocompromised patients. This can direct patients to minimally invasive procedures such as image guided biopsy to confirm the diagnosis. Malakoplakia is highly treatable disease when detected early.

GROOVE PANCREATITIS IN CHRONIC ALCOHOLIC PATIENT WITH VASCULAR COMPLICATIONS PRESENTING AS SPLENO-PORTAL THROMBOSIS.

Nehal Ahmad*¹; Prabhpreet R Singh¹

¹*Radio-diagnosis, Hamdard Institute of Medical Sciences, India*

INTRODUCTION: Groove pancreatitis, a rare form of chronic pancreatitis. A phenomenon when space between duodenum, pancreatic head and common bile duct are involved area known as pancreatic-duodenal groove. The recognition of imaging findings such as cystic changes of the pancreatic groove and duodenal wall thickening at CT is important to suggest the diagnosis of groove pancreatitis. CECT scan of Abdomen & Pelvis performed spiral on SIEMENS Somatom Emotion 16 Slice CT machine. Contrast Iohexol 350 mg 70 ml intravenous introduced to patient.

REPORT: On CT, there is infiltrating soft tissue lesion in the pancreaticoduodenal groove showing focal enlargement of the pancreatic head parenchyma with fuzzy outline and hypodense parenchymal attenuation, extensive peripancreatic fat stranding in the region of the pancreaticoduodenal groove. Portal vein and its branches not opacified by contrast. The findings are further co-related with lab investigations with increased serum lipase and amylase levels. Findings are suggestive of groove pancreatitis.

CONCLUSION: Since thickening of the duodenal wall, pancreatic head enlargement, CBD stricture and dilatation of pancreatic duct system are common findings the differential diagnosis with pancreatic head neoplasm by means of imaging can be challenging. However, knowledge of the all the GP radiological features may address the radiologist towards the correct diagnosis exactly for the purpose of eliminating avoidable surgical interventions. Thus in certain conditions a radiologist can help prevent a major surgery.

A RARE CASE OF LEMMEL'S SYNDROME

Prabhpreet R Singh*¹; Nehal Ahmad¹

¹*Radio-diagnosis, Hamdard Institute of Medical Sciences, India*

INTRODUCTION: It is uncommon for a duodenal diverticula to become inflamed. Lemmel syndrome occurs when a duodenal diverticulum causes obstructive jaundice due to a mechanical obstruction of the common bile duct. We report a case of a 34 year old female who was a known case of chronic cholecystitis that presented with abdominal pain and vomiting. Lemmel syndrome was suspected on MRCP findings.

REPORT: Multi planar MR Imaging of the abdomen was carried out on Magnetom Essenza DOT 1.5 Tesla 16 Channel system MR machine using body and spine coils. HASTE, TRUFI (Coronal and Axial), T2 FS BLADE, T1FS, IN-OPP and SPACE 3D in axial planes and thick slab in coronal plane were performed. Magnetic resonance cholangiopancreatography (MRCP) is used as a imaging modality to detect the findings and come to a diagnosis.

1. Present scan showed bulky pancreas with peri pancreatic fat stranding and free fluid suggestive of acute interstitial pancreatitis.
2. Dilated CBD/IHBRs with normal distal tapering with prominent papilla .
3. Saccular fluid containing outpouching from medial aspect of second part of duodenum projecting medially suggestive of duodenal diverticulum with subsequent possible compression on CBD/MPD - Lemmel syndrome.

CONCLUSION: Lemmel syndrome is a rare cause of biliary obstruction. Principal etiologies regarding pathogenesis in developing Lemmel syndrome include direct mechanical irritation of periampullary diverticula, dysfunction of the sphincter of Oddi, and mechanical compression of the distal common bile duct. Imaging is critical in diagnosing Lemmel syndrome.

**STREAK GONADS, HYPOPLASTIC SMALL UTERUS HAVING FEMALE
EXTERNAL GENITALIA IN A 18-YEAR-OLD PATIENT: A RARE CLINICAL
ENTITY-SWYER SYNDROME**

Sharmin Akter*¹; Shamsi Ara¹; Abu Taher¹; Golam Fahad²

¹Radiology and Imaging, *Birdem, Bangladesh*, ²Nephrology, *DMCH, Bangladesh*

INTRODUCTION: Swyer syndrome is a pure gonadal dysgenesis associated with 46XY karyotype. Which is characterized by bilateral streak gonads, normally developed mullerian structures, female appearing external genitalia, primary amenorrhea, lack secondary sexual characteristics and hypergonadotropic hypogonadism.

REPORT: An 18-year-old patient was referred to radiology department for sonographic evaluation who has complaints of primary amenorrhea and absence of breast development. On physical examination, height 162 cm, weight 49 kg, BMI 19.08Kg/m², Phenotypically female with masculine body built, Breast development tanner stage I, absent axillary hair, female pattern pubic hair-tanner stage II with female external genitalia and intact vaginal orifice. Her endocrinological assessment revealed Follicle stimulating hormone-116.16 mIU/ml; Luteinizing hormone-28.96mIU/ml; Estradiol 10pgm/ml; Prolactin 240.74mIU/ml; Free T4 13.48pmol/ml; Cortisol-190nmol/L; ACTH-14.40pg/ml; 17 OH progesterone-2.19ng/ml; Testosterone-0.08ng/ml; Anti Mullerian hormone -0.02ng/ml; Serum thyroid stimulating hormone was normal. Ultrasonogram shows small, hypoplastic uterus, length-38.3mm and A-P diameter -7.2 mm with no differentiation between endometrium and myometrium and bilateral streaky gonads without any follicle. Karyotyping revealed 46 XY with no mutation of SRY gene by Fluorescence in situ hybridization. Bilateral gonadectomy was done by laparoscopy and advised hormone replacement therapy with conjugated estrogen. Follow up ultrasonogram after one year revealed improvement of uterus size: length 58.7 mm and A-P diameter-15.4 mm and noticed for menstrual cycles and breast development.

CONCLUSION: Swyer syndrome is very rare disorder of sexual dysgenesis with increased risk of malignancy. Accurate diagnosis, early surgery can reduce mortality and morbidity and experienced normal sexual life by hormone replacement therapy.

**CT CHARACTERISTIC OF RUPTURED ECTOPIC PREGNANCY IN A NEGATIVE
SERUM BETA HCG LADY: A DIAGNOSIS NOT TO BE MISSED**

Ng Chee Guan*¹; Kew TY¹; Zaki FM¹; Zakaria R¹

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia*

INTRODUCTION: Abdominal pain in childbearing aged women is a common presentation in Emergency Department. It is often challenging for the clinician to determine the underlying cause. Ruptured ectopic pregnancy is a gynecological emergency. Occasionally, there are rare ectopic pregnancy cases, which have negative pregnancy hormone (β -HCG). In this situation, CT scan is often requested for prompt and thorough assessment of the abdomen and pelvis.

REPORT: We present a case of ectopic pregnancy with negative pregnancy test. Our patient is a 39-year-old lady who presented with abdominal pain and hypovolemia. Initial bedside ultrasound assessment showed complex ascites. Subsequently, CT abdomen and pelvis revealed hemoperitoneum with rim-enhancing left adnexal cystic lesion. She underwent emergency laparotomy and noted to have ruptured left tubal pregnancy.

CONCLUSION: Radiologists in general need to be aware of some CT features of ruptured ectopic pregnancy particularly in β -HCG negative ectopic pregnancy which could be life threatening.

A RARE OCCURENCE OF JEJUNAL DIVERTICULA IN A 52-YEAR-OLD MAN ON BARIUM MEAL & FOLLOW THROUGH : A CASE REPORT

Khurram Khaliq Bhinder*¹; Zainab Malik¹; Shaista Riaz²; Afaf Arif³; Ameena⁴

¹Radiology, Shifa International Hospital, Pakistan, ²Radiology, McGill University, Canada, ³Radiology, Fatima Jinnah Medical University, Pakistan, ⁴Radiology, Ameerudin Medical College, Pakistan

INTRODUCTION: Jejunal diverticula, small bowel pathology exist with prevalence of 0.5%-1.0% Jejunal diverticula mainly occurs as pulsion diverticula secondary to intestinal dyskinesia . Most of the time these diverticula are asymptomatic but when symptomatic these present with chronic symptoms such as pain, nausea, obstruction and peritonitis. In this article we report a rare case of jejunal diverticula with presentation of severe epigastric pain, nausea, vomiting, abdominal fullness & absolute constipation.

REPORT: Patient 52 years presented with severe epigastric pain, nausea, vomiting, abdominal fullness and absolute constipation for 2 weeks in the OPD of gastroenterology from where he was referred to Department of Surgery. All the systemic exam was normal. Barium follow through revealed dilated proximal jejunal loops in right hypochondrium showing a stricture with proximal dilatation and delayed transit of contrast. Duodenojejunal junction was at its normal position. Provisional diagnosis of jejunal obstruction was based on Barium Study findings, which could be jejunal diverticula or band or stricture. Lateral confirmed on diagnostic laparoscopy, it was followed by exploratory laparotomy and adhesiolysis was done and Roux end to side anastomosis of jejunum was performed.

CONCLUSION: JD are found incidentally on small bowel radiology such as double contrast electrolysis or at surgery as in our case. Even though the jejunal diverticula mostly asymptomatic but can lead to complications like bleeding, diverticulitis, intestinal obstruction and perforation. Hence correct diagnosis can prevent deleterious results.

FEASIBILITY OF 15-MINUTE DELAYED HEPATOBILIARY PHASE IMAGING USING A 30 DEGREE FLIP ANGLE IN GADOXETIC ACID-ENHANCED MRI IN THE DETECTION OF THE FOCAL LIVER LESION IN CIRRHOTIC LIVER

Wanwarang Teerasamit*¹; Pimpakarn Wongpattaranon¹; Voraparee Suvannarerg¹

¹*Radiology, Siriraj Hospital Mahidol University, Thailand*

OBJECTIVE: To compare the lesion-to-liver contrast-to-noise ratio (CNR), contrast ratio (CR) and sensitivity of focal liver lesion (FLL) detection of a 15-minute delayed hepatobiliary phase imaging (HBI) using a 30° flip angle (15min-FA30) in gadoxetic acid-enhanced MRI with those of a standard 20-minute delayed HBI using 25° FA (20min-FA25) in patient with cirrhotic liver, to evaluate feasibility of shorten examination time with maintained image quality.

MATERIALS AND METHODS: 70 FLLs from 62 patients who underwent gadoxetic acid-enhanced MRI with 15min-FA30 and 20min-FA25 HBI were enrolled. Lesion-to-liver CNRs and CRs were compared between the two images groups. Two radiologists independently reviewed the presence of FLLs using a four-point scale and detection sensitivity was calculated.

RESULTS: There was no significant difference in the median CNR of all FLLs on the 15min-FA30 (77.6: IQR; 47.4-133.2) and that of the 20min-FA25 (81.5: IQR; 48.2-140.0). The mean CR of all FLLs on the 15min-FA30 (0.47±0.16) and 20min-FA25 (0.47±0.17) was no significant difference. There was no significant difference in FLLs detection sensitivity for two readers between 15min-FA30 (91.4% and 97.1%) and 20min-FA25 (92.9% and 97.1%)

CONCLUSION: The CNRs, CRs and lesion detection sensitivity of shorten delayed HBI with high FA (15min-FA30) in gadoxetic acid-enhanced MRI are comparable with standard delayed HBI (20min-FA25) in patient with cirrhotic liver. This result indicates that 15min-FA30 can replace 20min-FA25 that help to reduce total examination time.

ADRENAL METASTASES OF OSTEOSARCOMA: CASE REPORT

Ummara Siddique Umer,*¹; Aruba Nawaz Khattak¹; Faria Maqsood¹; Aman Nawaz Khan¹

¹*Radiology, Rehman Medical Institute, Pakistan*

INTRODUCTION: Osteosarcomas are the second most common primary malignant bone neoplasms affecting the younger population, commonly involving the long bones of the body and the pelvic bones in 90% of the cases. The tumor is notorious for its hematogenous spread, mostly involving the lungs. Metastasis to the adrenal gland is highly unusual. Here we report a case of osteosarcoma with adrenal metastasis.

REPORT: An 18 year old female presented to our orthopedic department with complaints of slow growing left distal femur mass over a period of six months. MRI left femur with contrast done in March 2020 showed expansile lesion in metaphysis of left femur extending to epiphysis with heterogeneous contrast enhancement, erosion of distal cortex and large extra osseous soft tissue component. Biopsy confirmed osteogenic sarcoma. She underwent neoadjuvant chemotherapy before presenting for a follow-up 6 months later. Follow-up MRI showed interval worsening. CT chest with contrast showed multiple pulmonary nodules with calcifications. Included sections of abdomen showed calcified 11mm lesion in right suprarenal region abutting right adrenal and diaphragm with mean density of 276 HU.

CONCLUSION: To the best of our knowledge, only four cases of adrenal metastasis from osteosarcoma have been reported so far. 3 of the previous reports have been reported in males while that by Sandip Basu et al and the present study report incidence in females. In previous 3 out of 4 cases, and the present study there have been unilateral adrenal metastasis. Our study, like all the previous studies had associated pulmonary metastasis.

**A CASE REPORT ON PNEUMATOSIS CYSTOIDES COLI WITH
PNEUMOPERITONEUM: A RARE CAUSE OF NONSURGICAL
PNEUMOPERITONEUM**

Cheuk Him Ho*¹; Tsz Wai Yeung¹; Hin Yue Lau¹

¹*Department of Radiology, Tuen Mun Hospital, China*

INTRODUCTION: Spontaneous pneumoperitoneum is traditionally considered as surgical emergency. We presented an incidental finding of pneumatosis cystoides coli with spontaneous pneumoperitoneum on CT, which is a rare cause of nonsurgical pneumoperitoneum. Recognising this condition is important to prevent unnecessary surgical intervention.

REPORT: An 82-year-old woman who had a CT scan for suspected left lower lobe collapse of lung. Incidental finding of pneumatosis cystoides coli with pneumoperitoneum was noted at the imaged abdomen. The patient showed no abdominal symptoms and signs. No surgical intervention was warranted. After extensive clinical and laboratory work up and close clinical observation, no significant abnormality was found. She was discharged and remained symptom-free.

CONCLUSION: Pneumatosis cystoides coli is an uncommon condition characterized by the presence of multiple gas-filled cysts within the colonic wall, and rarely associated with spontaneous pneumoperitoneum. However, failure to recognise this rare condition may need to unnecessary surgical intervention and morbidity. Nonsurgical causes of pneumoperitoneum should be considered when clinical symptoms are minimal, and when fever and leukocytosis are absent. Radiologically, absence of CT findings indicative of peritonitis, such as bowel wall discontinuity, segmental bowel-wall thickening, perivisceral fat stranding and abscesses, is more suggestive of benign causes of pneumoperitoneum. Spontaneous pneumoperitoneum with pneumatosis intestinalis is also less frequently associated with ascites compared to other causes of pneumoperitoneum.

MORPHOLOGY OF NORMAL APPENDICES ON COMPUTED TOMOGRAPHY

Thi Thanh Nhi Nguyen*¹; Trong Binh Le¹; Trong Khoan Le¹; Thanh Thao Nguyen¹

¹*Department of Radiology, Hue University of Medicine and Pharmacy Hospital, Vietnam*

OBJECTIVE: To describe the morphology of normal appendices on computed tomography (CT).

MATERIALS AND METHODS: All patients over 18-year-old who underwent abdominal contrast-enhanced CT for various indications at a single institution from 5/2019 to 7/2020 were enrolled. Exclusion criteria were right lower quadrant pain, fever, colonic wall thickening, history of appendicular disease (chronic appendicitis, appendiceal phlegmon, abscess, mucocele,...). Appendiceal morphology was documented on the venous phase, including maximal outer-to-outer wall diameter, wall thickness, length, intraluminal contents, base and tip locations. Length was measured using curved multiplanar reconstruction technique. All measurements were obtained utilizing 200% magnification.

RESULTS: 186 consecutive patients (102 men and 84 women), mean age 51.6 ± 13.4 , met the inclusion criteria. The mean appendiceal outer-to-outer wall diameter was 6.7 ± 1.3 mm (range, 3.6–11.7 mm), mean length 82.1 ± 24.8 mm, (range, 20.5–138.2 mm), mean wall thickness 2.1 ± 0.4 mm (range, 1.1-3.2mm). Appendiceal diameter between 6-10 mm was seen in 68.8%, >10 mm in 2.7% of patients. Among 186 appendices, 6.5% were completely collapsed, 14% completely air-filled, 8.6% completely fluid-filled. Eleven patients had appendicoliths (5.9%) in which 4 patients had 2 appendicoliths. The most common locations of the appendiceal tip were subcecal and retrocecal (45.2%); appendiceal base was postero-inferiomedial (75.8%). Appendiceal length was positively correlated with body height and negatively correlated with age whereas diameter was positively correlated with BMI ($p < 0.050$).

CONCLUSION: Some of the morphological features of a normal appendix overlap with the values currently used to diagnose appendicitis on computed tomography.

**ATYPICAL CASE OF MAYER-ROKITANSKY-KÜSTER-HAUSER SYNDROME:
UTERINE AGENESIS WITH NORMAL VAGINAL CANAL AND CERVICAL
MORPHOLOGY**

Zul Khairul Azwadi Ismail*¹; Mohd Shafie Abdullah¹; Nur Asma Sapiai¹;

¹*Radiology, Jabatan Radiologi Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome is a malformation of the female genital tract that is due to interrupted embryonic development of the paramesonephric (Mullerian) ducts. MRKH syndrome has significant implications on fertility and sexual intercourse. Accurate and prompt diagnosis is required to allow appropriate clinical and psychological management. Due to its rarity, there is paucity of reported cases of this syndrome in the literature.

REPORT: Herein, we report a variant presentation of this syndrome. A patient presented with primary amenorrhoea and normal secondary sexual development. Assessment by gynaecologist was in keeping with MRKH syndrome. MRI was performed to reveal well-formed vaginal canal and cervix. These features are not typical for MRKH in which only the lower one third of vaginal canal is usually formed. However, the cervix has a blind-end and uterus was not visualised. Blood hormonal parameters showed overall evidence of a female phenotype.

CONCLUSION: This case presents an atypical morphology of MRKH that suggests the possibility of sequential variation in female reproductive system embryogenesis. It also emphasizes the value of MRI in describing the overall structural features of atypical presentation of this rare syndrome.

BRENNER'S TUMOR: CLINICAL, HISTOLOGICAL, AND RADIOLOGICAL FINDINGS

Hoang Anh Thi Van*¹; Van Trung Hoang¹; The Huan Hoang¹; Cong Thao Trinh²;

¹*Department of Radiology, Thien Hanh Hospital, Vietnam,* ²*Department of Radiology, Hue Central Hospital, Vietnam*

LEARNING OBJECTIVE: To present an update on Brenner's tumor (BT) focusing on clinical presentation, histological and radiological findings, and treatment.

BACKGROUND: Ovarian tumors are categorized base on theirs origin, including epithelial tumors, germ cell tumors, sex cord-stromal cell tumors, and metastatic tumors. BT is a rare ovarian neoplasm that originates from transitional epithelial cells surrounded by dense stroma. BT is classified as a borderline tumor if excessive epithelial proliferation was seen in benign BT without stromal invasion or if a usual-type BT has abnormal epithelial cells.

FINDINGS AND/OR PROCEDURE: BTs are mostly asymptomatic. However, they can cause vaginal bleeding, abdominal or pelvic pain, and a palpable pelvic mass. Histological findings can be hyperplastic fibrous substrate alternating with epithelioid cells looked like 'coffee bean' pattern. Ultrasound reveals hypoechoic solid masses that may be difficult to distinguish from other solid ovarian tumors. On CT, calcification can be seen in 85% of cases. The solid component can show enhancement mildly or moderately. On MRI, BT shows a hypointense signal on T2-weighted images because the component is predominantly fibrous. Surgical resections are indicated for most BTs and early diagnosed borderline tumors.

CONCLUSION: BT is a rare tumor in the ovaries and difficult to diagnose. Radiologists must understand this entity to make an accurate diagnosis.

SIGMOID COLON PERFORATIONS DUE TO WILD MANGOSTEEN SEEDS: A FIRST OF ITS KIND IN A PATIENT WITH NO GASTROINTESTINAL DISEASE

Sita Kumari Sandaran Saigaraw*¹; Wan Aireene Wan Ahmed¹ ; Nurul Ain Mat Idris²

¹Radiology Department, Hospital Universiti Sains Malaysia, Malaysia, ²Radiology Department, Hospital Raja Perempuan Zainab II, Malaysia

INTRODUCTION: Ingesting a foreign body is not an uncommon incidence in daily medical practice. Most foreign bodies leading through the gastrointestinal tract causing intestinal obstruction or perforation is erratic . Sandoricum koetjape, also known as wild mangosteen, is a common fruit which grows naturally in the rainforest regions of Southern Asia. We present a rare case of sigmoid colon perforations by wild mangosteen seeds in a 75 year-old toothless man.

REPORT: 73 years old Malay male presented with difficulty to defecate for the past 10 days, presented with sudden onset of abdominal distension and tenderness for 1 day duration. Otherwise, patient denies bloody stools, fever, altered bowel habit, loss of appetite and loss of weight. On examination, abdomen was rigid with generalized tenderness and sluggish bowel sounds. Abdominal X-Ray noted no dilated bowel or signs of pneumoperitoneum. Patient then subjected to emergency contrasted CT Abdomen Pelvis which revealed perforated sigmoid colon with inflammatory changes and multiple foreign body within. Histology of the resected segment of sigmoid colon noted inflammation of the sigmoid colon with perforations and wild mangosteen seeds. No histological evidence of malignancy. On serial clinic follow-up(18 months), patient was keeping up well.

CONCLUSION: The voluntary ingestion of a foreign body causing perforation is not an uncommon presentation to the emergency department. Detailed history taking, such as patient's dietary background and additional diagnostic procedures should be considered especially in cases of acute abdomen in edentulous elderly adults.

**A RARE OCCURRENCE OF HORSESHOE KIDNEY IN A 31-YEAR OLD MALE
PATIENT WITH LUPUS NEPHRITIS: A CASE REPORT**

Zouina Sarfraz*¹; Sameer Saleem Tebha²; Azza Sarfraz³; Khurram Khaliq Bhinder⁴; Sajjad Ali⁵

¹*Department Of Research And Publication, Fatima Jinnah Medical University, Pakistan,*

²*Department Of Neurosurgery And Neurology, Jinnah Medical And Dental College, Pakistan,*

³*Department Of Pediatrics And Child Health, Aga Khan University Hospital, Pakistan,*

⁴*Department Of Radiology, Shifa International, Pakistan,* ⁵*Department Of Medicine, Ziauddin University Hospital, Pakistan*

OBJECTIVE: We describe a 31-year-old-male who presented with an acute flare of SLE, gross hematuria, left lumbar pain, fever, and burning micturition, and had a history of systemic lupus erythematosus, hypertension, myocardial infarction, and weight loss, later diagnosed with horseshoe kidney.

REPORT: Radiological examinations with ultrasound and computed tomography imaging revealed, fusion of the lower poles of the kidneys rotated at the renal hilum forming U-shape, in addition to a definite diagnosis of lupus nephritis. The patient subsequently underwent three sessions of plasmapheresis. The final diagnosis was consistent with a co-morbidity of horseshoe kidney and lupus nephritis in the adult male patient who was discharged and advised regular follow-up.

CONCLUSION: We present a rare case of horseshoe kidney and lupus nephritis in an adult male patient. The diagnosis is often established upon uncovering classical radiological findings on ultrasound, CT, and MRI scans in addition to examination findings and classical symptomatology. Our case emphasizes the need to carefully evaluate presentations of acute SLE in emergency units. We also highlight that patients may have longstanding symptoms that are often times missed on routine testing at secondary or tertiary care hospitals in low and middle-income countries like Pakistan. It is essential to manage patients upon correct radiological diagnosis, and conduct regular medical, extracorporeal therapy, and regular symptomatology follow-ups.

OVARIAN DYSGERMINOMAS: ROLE OF IMAGING IN CORRECT DIAGNOSIS

Palwasha Gul*¹; Pari Gul*¹

¹*Diagnostic Radiology, Bolan Medical Complex Hospital, Pakistan*

INTRODUCTION: Ovarian dysgerminoma (OD) is a germ cell tumor. Dysgerminomas usually affects young patients usually in 2nd and 3rd decades of life. Imaging such as ultrasound, CT and MRI can predict OD owing to its solid nature, internal calcifications and vascularized nature. The treatment of choice is surgical excision. This tumor is also sensitive to radiotherapy and chemotherapy.

REPORT: We report two cases of ovarian dysgerminomas in 23 and 28 years old married females, who presented to radiology department of Bolan Medical Complex Hospital, Pakistan. Presenting feature was large abdominal mass. Ultrasound showed solid lobulated masses with increased vascularity (IOTA 4). Subsequent CE CT (128 slice prime aquilion) showed large solid masses in both patients, one of which showed speckled calcifications and few internal cystic areas. One of the patient also showed enlarged retroperitoneal and posterior mediastinal lymph nodes and ovarian vascular pedicle. Biopsy of both patients revealed OD. Both patients underwent fertility sparing surgery followed by chemotherapy.

CONCLUSION: Ovarian dysgerminoma are uncommon tumors of young age and accurate diagnosis remains a challenge for clinicians. Preoperative imaging would not only stage the tumor but can help in making the correct diagnosis prior to biopsy and surgery. Imaging has vital role in surgical decision-making to distinguish dysgerminoma from other adnexal masses.

EVIDENCE-BASED MOLECULAR IMAGING IN METABOLIC PROFILE FOR LIFE-LONG HEALTH RISK IN OBESITY

Khin Thandar Htun*¹; Chatchanok Udomtanakunchai¹; Montree Tungjai¹; Jie Pan²; Aye Thidar Moe Moe¹; Suchart Kothan¹

¹*Department Of Radiologic Technology, Chiang Mai University, Thailand*, ²*Shandong Provincial Key Laboratory Of Animal Resistant Biology, College Of Life Sciences, Shandong Normal University, China*

OBJECTIVE: Body fat accumulation is associated with a higher risk of developing metabolic syndrome. The distinct body fat depots on specific parts of the anatomy have unique metabolic properties with different regional excessive fat distribution being a disease hazard. This study aimed to elucidate the manner of applying evidence-based molecular imaging in the metabolic profile for determining life-long health risks of obesity.

MATERIALS AND METHODS: A total of 60 (30 normal and 30 overweight/obese group) aged 22.1±1.8 years young adults were studied. The lipid metabolites in the abdomen, liver, and, in serum were detected by magnetic resonance imaging (MRI), proton magnetic resonance spectroscopy (1HMRS), and proton nuclear magnetic resonance (1HNMR), respectively.

RESULTS: A significant metabolic disorder symptom appeared in the overweight/obese group and increased lipid deposition occurred in the abdomen with hepatocytes being statistically significant with 95% CI. Overall, the visceral fat depots had a marked influence on dyslipidemia biomarkers, blood triglyceride ($r=0.600$, $p<.001$), and high-density lipoprotein cholesterol ($r=-0.484$, $p<.001$). Liver fat content is associated with diabetes and are predictors for hemoglobin (HbA1c%; $r=0.380$, $p < .001$). The lipid signals in serum triglyceride gave similar correspondence to biochemical lipid profile indices.

CONCLUSION: This study raises the case for development of a more targeted and analytic molecular imaging technique to be used in clinical practice in order to investigate and dissect metabolite biomarkers for obese risk assessment.

SOLID PSEUDOPAPILLARY NEOPLASM OF THE PANCREAS

Saangeetha Sundara Moorthy Rengathuri*¹; Mathan Raj¹

¹*Radiology, Hospital Teluk Intan, Malaysia*

INTRODUCTION: Solid pseudopapillary neoplasm (SPN) of the pancreas is an uncommon, exocrine tumor with occurrence rate of <2%. It has predilection for young women between 2nd and 3rd decade of life. Despite being a low malignant potential tumor, SPN is a diagnostic dilemma due to its vague clinical presentations, non-specific radiological features and benign histological features, however, surgical resection provides excellent outcome. Thus, multidisciplinary approach is required.

REPORT: A 21 years old presented with vomiting and abdominal pain at right hypochondrium region. Physical examination revealed a mass in the epigastric region. Biochemical and tumor markers were unremarkable. A contrast-enhanced CT thorax/abdomen and pelvis showed a well encapsulated enhancing mass seen at gastrosplenic region measuring 10.6 x 11.7 x 14.0 cm. Few small vessels seen traversing within. This mass displaces the abdominal aorta, SMA and portal vein to the right, however, they remain opacified. The SMV and splenic vein confluence, splenic artery, splenic vein, pancreatic tail and body was not visualized. A diagnosis of pancreatic pseudocyst or gastrointestinal stromal tumor was made. Laparotomy with subtotal pancreatectomy with portal vein reconstruction was done. Intra-operatively, there was body of pancreas tumor with the SMV and splenic vein confluence adherent to the tumor. Middle colic and splenic vessels were ligated. One week post-operatively, patient developed fever, CT revealed minimal fluid collection in the pelvis, with thrombosis of the distal portal vein and splenic infarction with multiple splenic collaterals. Patient was treated conservatively.

CONCLUSION: SPN is a rare disease which has excellent prognosis with surgical resection despite it being an indolent tumor.

**ANTINATAL DIAGNOSIS OF CRANIOPAGUS PARASITICUS BY
ULTRASONOGRAM IN 18 WEEKS OF GESTETIONAL AGE: A RARE ENTITY**

Sharmin Akter*¹; Abu Taher¹; Shamsi Ara¹; Golam Fahad²

¹*Radiology & Imaging, BIRDEM, Bangladesh,* ²*Nephrology, DMCH, Bangladesh*

INTRODUCTION: Craniopagus Parasiticus is a extremely rare condition where parasitic twin head with an maldeveloped body is conjoined to the head of the developed one. The incidence is approximately 4-6 in every 10000000 live births. In this condition, the dominant embryo fully develops, while the other embryo's development is extremely restricted during gestation, is caused by a lack of blood supply to the second twin and fails to separate the single zygote during the second or fourth week of gestation.

REPORT: A 38 years female, 6th gravida with 18 weeks of amenorrhea and prevaginal bleeding for 1 day was referred for sonographic assessment. She had 2 healthy child with history of 3 induced abortion without any significant previous medical or surgical comorbidity. Ultrasound revealed gravid uterus having single gestational sac with two cranium like structure were joined together with the left temporal area of main cranium with single trunk and body. BPD-1 & 2 measured 17.6mm & 17.2mm which corresponds respectively 12 weeks 5 days & 12 weeks 04 day of pregnancy. CRL measures about 43.5mm corresponds to 11 weeks 01 day pregnancy which is much less than period of gestation. Amniotic fluid was less in amount with single placenta posterior. Cardiac pulsation and fetal movement absent. Patient had gone under medical termination advised by obstetrician.

CONCLUSION: Early gestational age evaluation can helps to plan future management and improve the prognosis and survival in this rare condition. Also, to take decision regarding continuation of pregnancy with other associated congenital defects.

AN UNINVITED GUEST; A CASE REPORT OF HEPATIC HYDATID DISEASE.

Osama Anjum*¹; Naveen Vasireddy²; Suresh Babu²

¹*Macclesfield District General Hospital, NWSOR, United Kingdom,* ²*Macclesfield District General Hospital, Macclesfield District General Hospital, United Kingdom*

INTRODUCTION: Hydatidosis is a parasitic zoonosis caused by the tapeworm *Echinococcus granulosus* that is rare in the UK, but increasingly more prevalent in rural areas. We present a case report of recurrent hepatic hydatid disease.

REPORT: A 70 year old woman presented to A&E with acute epigastric pain. She worked on a farm and had a history of previous hydatid cyst removal, decades ago. On examination the abdomen was found to be distended and tender with localised guarding. Imaging was requested to rule out a perforated viscus. CT however revealed a large 15 x 9 x 8cm fluid density cyst with an undulating membrane and abdominal free fluid suspicious for rupture of the cyst into the peritoneal cavity. Overall findings were deemed to be consistent with a recurrence of hepatic hydatid disease. The peritoneal fluid was drained during the admission but soon found to contain bile. Subsequent MRI revealed a dilated CBD and was unable to definitively rule out communication with the small ducts. She was shortly after discharged on albendazole, and is undergoing further monitoring and treatment.

CONCLUSION: Recurrent hydatid disease can have serious complications, including cystobiliary fistula. Awareness and familiarity with its various manifestations is key to accurate recognition and swift treatment.

A RARE CASE OF PERFORATED APPENDICITIS COMPLICATED WITH NECROTIZING FASCIITIS

Muhammad Syazwan Mohd Zain*¹; Azwini Mohamed¹

¹*Radiology, Hospital Kajang, Malaysia*

INTRODUCTION: Acute appendicitis is a common surgical emergency requiring simple intervention if detected early. Delay in treatment can lead to serious complications such as perforation and abscess formation. In this article, we report a rare case of perforated appendicitis complicated with anterior abdominal wall necrotizing fasciitis.

REPORT: A 48 year old woman presented with 4 days history of right iliac fossa pain and lethargy. Vital signs showed low grade fever with disproportionate tachycardia. Physical examination revealed tenderness at right iliac fossa with overlying cellulitis changes. Her blood investigation showed normal white cell count, lactate of 4.4mmol/L with impaired renal function. Upon admission, she was initially diagnosed with right inguinal abscess. A CT abdomen performed on the day after admission revealed presence of air pockets extending from the right iliac fossa to the right pararenal space, with a small collection in the right iliac fossa and associated inflammatory changes of the overlying abdominal wall. Overall findings were suggestive of a perforated retrocaecal appendix with abdominal wall inflammatory changes. An emergency surgery done on the same day revealed a perforated appendix with retroperitoneal collections, and early necrotizing fasciitis changes of the right abdominal wall. Appendectomy and abscess drainage was performed. The patient gradually improved and was discharged well.

CONCLUSION: In conclusion, we reported a rare case of perforated appendicitis complicated with abscess formation and necrotizing fasciitis. We highlighted the crucial role of imaging in coming into early and exact diagnosis. Early surgical intervention significantly reduces the morbidity and mortality rate in such cases.

IMAGING FEATURES OF A GIANT ADRENAL PSEUDOCYST

Tengku Azran Raja Mamat*¹; Chandran Nadarajan¹; Khairil Amir Sayuti¹; Seoparjo Azmel
Mohd Isa²

¹*Radiology, Universiti Sains Malaysia, Malaysia,* ²*Pathology, Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Adrenal pseudocysts are rare, and they have a wide range of differential diagnoses. They can also mimic malignant pathologies. Adrenal pseudocysts have a wide range of imaging features ranging from completely cystic, to mixed cystic and solid lesions. Multimodality assessment is recommended to aid the diagnosis. In cases where CT scans are not definitive, MRI should be performed to characterise the lesions further.

REPORT: We present a case of a giant adrenal pseudocyst, presenting with right hypochondriac pain. In our case, the lesion also showed calcification and enhancing septation. We describe this disease's imaging features on ultrasound and computed tomography (CT) and outline feature to differentiate it from other diagnoses.

CONCLUSION: Adrenal pseudocysts have a wide range of imaging features, and there is a wide range of differential diagnoses, especially in large lesions. Multimodality assessment is recommended as the different imaging modalities' features can help diagnose and differentiate benign adrenal pseudocysts from malignant diseases.

PLASMA CELL NEOPLASM PRESENTING AS GALLBLADDER MASS

Silpa C. Raju*¹; Rajiv C. Raju ²

¹*College of Medicine, University of Illinois College of Medicine, United States,* ²*Department of Radiology and Biomedical Imaging, Yale School of Medicine, United States*

INTRODUCTION: A 66 year-old female was admitted with back pain, lower extremity weakness, and inability to ambulate following a fall at her extended care facility.

REPORT: CT of the abdomen and pelvis demonstrated a 7.0 x 7.5 x 7.0 cm infiltrative, partially necrotic mass along the inferior right hepatic lobe, appearing to originate from the gallbladder. The mass extended to the inferior right hepatic lobe and abutted the adjacent ascending colon.

MRI spine showed an enhancing soft tissue density seen in the spinal canal centered at the level of T11 in the right lateral and dorsal aspect of the spinal canal, resulting in severe spinal canal stenosis and significant cord compression.

Biopsy of the gallbladder mass showed a plasma cell neoplasm.

CONCLUSION: Plasma cell neoplasm may present as a gallbladder mass.

**INVASIVE MODERATELY DIFFERENTIATED ADENOCARCINOMA ARISING
FROM A MUCINOUS CYSTIC NEOPLASM PRESENTING AS A PANCREATIC
REGION MASS**

Silpa C. Raju*¹; Rajiv C. Raju²

¹*College of Medicine, University of Illinois College of Medicine, United States,* ²*Department of Radiology and Biomedical Imaging, Yale School of Medicine, United States*

INTRODUCTION: 35-year-old female who presented to hospital afebrile and in excruciating pelvic and abdominal pain.

REPORT: Initial pelvic ultrasound demonstrated complex fluid. Though ovaries demonstrated unremarkable sonographic appearance, the clinical presumption was that this represented rupture of a hemorrhagic cyst. The patient was taken to the OR for diagnostic laparoscopy. In the OR, fluid was noted to be exudative in nature, without evidence of hemorrhage. Further exploration demonstrated evidence of a large retroperitoneal mass. The decision was made to pursue further imaging rather than biopsy this lesion at this time, due to concern for peritoneal seeding.

CT Imaging demonstrated a large heterogeneous, mixed solid and cystic mass with areas of calcification, which was inseparable from the pancreatic tail, measuring approximately 11.8x8.5x9.8cm. The primary radiologic diagnostic consideration given the location of this tumor and the patient's age was Solid Pseudopapillary Epithelial Neoplasm. However, EUS guided biopsy demonstrated that this lesion represented an adenocarcinoma within the cyst. The patient was later found to have peritoneal carcinomatosis, with right ovarian metastasis versus direct invasion of peritoneal metastases. This lesion usually degenerates from a mucinous cystadenoma, which is a lesion that is seen much more often in the body of the pancreas and in middle-aged females. It does not generally have solid/enhancing components.

CONCLUSION: Adenocarcinoma arising from a mucinous cystic neoplasm can present as a pancreatic region mass in young females.

ADVANCED ABDOMINAL PREGNANCY: A RARITY TO LIFE

Belinda Catherine Shepherdson*¹; Chan Kok Hoe¹; Rozita Mohd Ghazali¹

¹Radiology, Hospital Raja Permaisuri Bainun, Ipoh, Malaysia

INTRODUCTION: Abdominal pregnancy is rare, accounting for approximately 0.1% of all pregnancies¹. It is defined as pregnancy in the peritoneal cavity exclusive of tubal, ovarian, or intraligamentary locations. It can be primarily located in the peritoneal cavity or secondary to a ruptured ectopic pregnancy or tubal abortion². Abdominal pregnancies generally do not get to term, more often than not resulting in non-viable fetus. Abdominal pregnancy at term with a healthy viable fetus is therefore an extremely rare condition; very few of such cases have been reported since it was first known in 1708.

REPORT: A 38 years old lady, G6 P4+1 at 35 weeks and 5 days gestational age was referred following a follow-up antenatal scan which revealed a morbidly adherent placenta. Transvaginal scan then revealed an externally-adhered placenta to the uterus extending to the anterior abdominal wall, with presence of a viable fetus. MRI study confirms an abdominal pregnancy with the placenta implanted onto the outer surface of the uterine fundus, receiving supply from the uterine arteries. An uncomplicated laparotomy resulted in the delivery of a healthy newborn with no physical deformities, and uneventful recovery of the mother.

CONCLUSION: The role of MRI helps not only in delineating the anatomy of the reproductive tract but also in localizing the placenta and its adherence to any surrounding vital organs, including the bowels. The information obtained through magnetic resonance imaging aids in management and surgical planning to improve outcome.

METASTATIC RECTAL LINITIS PLASTICA SECONDARY TO PROSTATE ADENOCARCINOMA: IMAGING FEATURES AND TISSUE DIAGNOSIS.

Ying Ying See*¹; Suzana AH¹; Siti Maisarah Mohd Nasir²

¹Radiology, UPM, Malaysia, ²Nuclear Medicine, IKN, Malaysia

INTRODUCTION: Linitis plastica is a circumferentially infiltrating intramural tumour infiltration in a hollow viscus that results in a rigid constricted organ with thickened walls. Primary linitis plastica most often occurs in the stomach. Secondary rectal linitis plastica (RLP) from prostate cancer is extremely rare. A target sign on T2-weighted imaging and diffusion weighted imaging is characteristic for RLP.

REPORT: A 66-year-old man presented with 3 months history of severe constipation. He never had prostatism symptoms. Digital rectal examination revealed tight rectal stenosis with hard nodular mass. Laboratory investigations showed PSA raised.

MRI rectum demonstrated a long segment circumferential rectal wall thickening. The axial T2W images showed involvement of all layers of rectal wall, with thickened hyperintense mucosa, thinned hypointense submucosa and thickened isointense muscularis propria giving rise to “target sign” appearance. On DWI, the mucosa and muscularis propria showed restricted diffusion while no restriction of submucosa. There was marked gadolinium enhancement. T2W mpMRI prostate very high suspicion right peripheral and transition zone lesions with extraprostatic extension and regional nodal metastasis. Overall PI-RADS category 5.

The PMSA PET-CT showed 68Galium avid disease in the right lobe of prostate gland, rectum and anal canal with multiple abdomino-pelvic involvement.

The histopathology examination revealed metastatic poorly differentiated adenocarcinoma, most suggestive of primary prostate.

CONCLUSION: Prostate cancer with metastatic rectal linitis plastica, stage T4 N1 M1.

MALE INFERTILITY: AN INSIGHT TO THE ROLE OF IMAGING IN ITS DIAGNOSIS

Maria Rauf *¹; Chandra Bai¹; Raana Kanwal¹; Belqees Yawar Faiz¹; Atif Iqbal Rana¹; Salma Gul¹; Madiha Saeed Wahla¹

¹Radiology, Shifa International Hospital, Pakistan

LEARNING OBJECTIVE:

- To demonstrate imaging appearances of the common pathologies resulting in male infertility.
- To understand the role of imaging in diagnosing these pathologies and guiding clinicians towards appropriate management.

BACKGROUND: The diagnostic workup for male infertility is assuming greater importance as approximately 50% infertility cases have male factors implicated. Apart from history, physical examination and laboratory tests, imaging offers a great role to identify the underlying etiology. Therefore, the purpose is to make radiologists aware of imaging appearances of normal and abnormal findings that can be demonstrated on imaging male genital tract, resulting in infertility.

FINDINGS AND/OR PROCEDURE DETAILS: The investigation of infertile male patients is essential in order to identify potentially treatable causes of infertility and to guide therapy. In this educational exhibit we will demonstrate frequently encountered non idiopathic causes resulting in male infertility. These include:

1. Pre-testicular causes: a. Primary hypogonadism, b. Secondary hypogonadism, c. Pituitary tumors
2. Testicular causes: a. Varicocele, b. Testicular atrophy, c. Testicular torsion, d. Orchitis and epididymo-orchitis, e. Microlithiasis, f. Cryptorchidism
3. Post-testicular causes: a. Congenital absence of vas deferens, b. Obstructive causes (post surgical, cystic lesions or post infective etiologies), c. Erectile dysfunction

CONCLUSION: Apart from lab investigations, imaging plays an important role in diagnosing the treatable causes of male infertility and this helps the clinicians to adapt the best method for achieving conception.

VASCULAR ANOMALIES MIMICKING NEOPLASMS IN THE SOLID ABDOMINAL VISCERA

Yi Ting Lim*¹; Xi Zhen Low¹; Peng Wu¹; Mei Chin Lim¹

¹*Department of Diagnostic Imaging, National University Hospital Singapore, Singapore*

LEARNING OBJECTIVE: The purpose of this pictorial review is to acquaint the reader with vascular anomalies in solid abdominal viscera, and to discuss features that help differentiate these lesions from true neoplasms.

BACKGROUND: Vascular anomalies are a heterogeneous group of lesions that are commonly encountered in clinical practice. They can present a diagnostic challenge owing to difficulty in differentiating them from enhancing neoplastic lesions. Compared to vascular anomalies in the extremities, lesions in the abdominal viscera are less common. Visceral lesions are also often asymptomatic and detected incidentally, or present with non-specific symptoms. As such, clinical history is often of limited value in differentiating them from more sinister neoplastic lesions. Many of these vascular anomalies do not require further workup. If suspicion for such a lesion is not raised, the patient may be subjected to inappropriate follow-up, or a biopsy with potentially life-threatening consequences. Since accurate diagnosis is essential for optimal management, accurate interpretation of imaging studies is useful to avoid misdiagnosis and inappropriate management.

FINDINGS AND/OR PROCEDURE DETAILS: We present a case series of vascular anomalies in various solid abdominal viscera, including the pancreas, kidney and adnexa. For each case, we detail the clinical presentation, imaging features, subsequent management and if applicable, histopathology.

CONCLUSION: It is important for the radiologist to be aware of vascular anomalies in the abdominal viscera, and to identify the characteristic features which allow discrimination between vascular lesions and true neoplasms. Failure to suggest this diagnosis can lead to misdiagnosis and inappropriate management.

IRON DEPOSITION PATTERNS IN THALASSEMIA ON 3T MAGNETIC RESONANCE IMAGING

Bala Subashree A*¹; Rashmi Dixit¹; Anju Garg¹; Urmila Jhamb²; S. Sudha³

¹Radiodiagnosis, Maulana Azad Medical College, ²Paediatrics, Maulana Azad Medical College, India, ³Paediatrics, Lok Nayak Hospital, India

OBJECTIVE: To study the patterns of iron deposition in chronically transfused thalassemia patients on MRI.

MATERIALS AND METHODS: 55 thalassemia patients underwent MR examination on a 3T MR scanner (Magnetom Skyra, Siemens, Germany) including T2 weighted(T2W) and T1 VIBE e-dixon sequences.

RESULTS: Signal intensity changes were assessed on T2W, in and opposed phase images in liver, spleen, pancreas, renal cortex, bone marrow and interventricular septum. Iron deposition was recognized by drop in signal intensity on in phase images compared to opposed phase. We attempted to classify iron deposition patterns in thalassemia patients. Reticuloendothelial pattern involved liver, spleen and bone marrow with sparing of pancreas and kidney which is the most common pattern expected in iron overload secondary to multiple transfusions. Mixed deposition pattern revealed involvement of liver along with other organs like spleen, pancreas, kidney or bone marrow. This was the most frequently obtained pattern in our study, probably due to advanced form of the disease. Predominant parenchymal deposition pattern with involvement of liver, pancreas along with bone marrow was also seen, however pure parenchymal pattern with sparing of bone marrow was not seen in any patient. Although no isolated renal deposition pattern was seen, few cases depicted iron deposition in renal cortex and interventricular septum along with other organ involvement. One rare case also showed drop in signal on in phase images in paraspinal muscles.

CONCLUSION: Mixed deposition was the most frequently seen pattern in our study as compared to reticuloendothelial pattern which is the most commonly observed pattern in chronically transfused patients.

IMAGING OF DIVERTICULAE IN GASTRO-INTESTINAL TRACT : PICTORIAL REVIEW

Apurva Javalgi*¹; Aruna R Patil¹

¹*Radiology, Apollo Hospitals, Bangalore, India*

OBJECTIVE: To study various forms of diverticulae in gastrointestinal tract and to understand its pathophysiology, role of imaging and different modalities in its diagnosis and its various complications.

MATERIALS AND METHODS: All the various cases presenting at our tertiary care centre with varied clinical etiology, which in imaging, mainly Computed Tomography, recognised as a diverticulosis, were included in the study. A diverticulum is a bulging sack in any portion of the gastrointestinal tract. The most common site for the formation of diverticula is the large intestine. Diverticula are classified as true or false: true diverticula are composed of all of the intestine's layers, while false diverticula consist of only the mucosa and the submucosa. Diverticula can be also classified as intra- and extraluminal. Intraluminal and Meckel diverticula are congenital, while extraluminal diverticula can be found at many anatomical sites and are denominated duodenal, jejunal, ileal or jejunoileal.

Major complications:

- Diverticulitis, gastrointestinal hemorrhage, gastrointestinal obstruction, acute perforation, pancreatic or biliary disease, intestinal obstruction/ Perforation
- Localized abscess, malabsorption, anemia, volvulus and bacterial overgrowth, malignant transformation

This poster would include the following gastrointestinal diverticulae:

- Esophageal diverticula
- Gastric diverticula
- Duodenal diverticula
- Jejunal and ileal diverticula
- Meckel's diverticula
- Rokitansky-Aschoff sinuses- diverticula in the gallbladder
- Colonic diverticula

RESULTS: The various gastrointestinal diverticulae were analyzed, and also differentiated from its common mimics or differentials.

CONCLUSION: The various forms of diverticulae in gastrointestinal tract and the role of imaging and different modalities in its diagnosis and its various complications were recognized.

REAL-TIME POINT SHEAR WAVE LIVER ELASTOGRAPHY IN HEALTHY ADULTS

Annamalai Vairavan*¹

¹*Radiology Resident, AIIMS, Bhopal, India*

OBJECTIVE: Real-time Point shear wave elastography is a 2D shear wave elastographic method that helps us to estimate the severity of liver fibrosis quantitatively. Tissue stiffness in the liver is dependent on its composition, which is altered by deposition of collagen, hepatocellular carcinoma or metastases. The aim of our current study is to define the normal range of liver stiffness in healthy volunteers.

MATERIALS AND METHODS: A total of 100 healthy volunteers underwent P-SWE elastography to determine the liver stiffness by using convex probe with a frequency of 3-5 MHz. Individuals with diseased liver (hepato-steatosis, CLD, cirrhosis, or focal liver lesions) were excluded from the study. Effects of age & gender on P-SWE values were analyzed.

RESULTS: SWE imaging was successfully performed in 100 healthy volunteers. The mean elasticity value of the liver was determined as 1.13 ± 0.14 m/s (95% CI 1.13 – 1.19 m/s). There was no significant difference in P-SWE values between men and women, age or BMI (18.5-24.9 Kg/m²).

CONCLUSION: In our study, the shear wave velocity of the liver was measured by P-SWE method in normal healthy volunteers. The normal baseline elastographic values of liver was established, above which presence of fibrosis can be suggested. With data validating our findings from larger multicenter studies, P-SWE can eventually replace invasive liver biopsies in near future.

RETROPERITONEAL MALIGNANCY MIMICKING RUPTURED LIVER ABSCESS

Norsarah Shamsudin*¹; Leong Yuh Yang¹

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Malaysia*

INTRODUCTION: Retroperitoneal tumours are sometimes difficult to distinguish preoperatively, from other tumours originating in the adjacent organs, and moreover the qualitative diagnosis is difficult because of their rarity..

REPORT: We present a case of 69 years old lady with non-specific symptom of intermittent fever and constitutional symptom. This report describes a case of retroperitoneal soft tissue sarcoma initially misdiagnosed as a ruptured liver abscess. We reviewed the radiological findings retrospectively, and discuss how to diagnose a confusing retroperitoneal tumour.

CONCLUSION: There are many causes of retroperitoneal masses. Therefore, it is imperative that a detailed patient's history, clinical examination, laboratory investigations and imaging techniques should be conducted for a definitive diagnosis. Soft tissue sarcoma in the retroperitoneum is often a neglected diagnosis which need to be aware by radiologist.

SHEARWAVE ELASTOGRAPHY IMPROVES DIAGNOSTIC VALUES OF TRANSVAGINAL ENDOMETRIAL ULTRASOUND

Barbara Kuok Li Lian*¹

¹*Radiology, PPUM, Malaysia*

OBJECTIVE: Transvaginal ultrasound (TVUS) for endometrial thickness is commonly used to assess endometrium pathologies. However, conventional ultrasound may not be able to distinguish different endometrial pathologies. We assessed if shearwave elastography (SWE) ultrasound could be used to differentiate between benign and malignant endometrial pathologies.

MATERIALS AND METHODS: 117 participants (69 patients and 48 controls) were examined with TVS followed by SWE. The SWE data of the endometrium, i.e. Emean and Emax (kPa) were analyzed and compared to the histopathological findings.

RESULTS: Endometrium SWE in all 15 patients with confirmed endometrial carcinoma showed statistically significant higher Emean and Emax ($p < 0.001$) than the benign endometrial diseases. Using ROC analysis, the cut-off values of Emean and Emax were determined as 83.9 kPa [sensitivity 93.3%, specificity 68.5%, positive predictive value (PPV) 48.1%, negative predictive value (NPV) 95.2%, accuracy 76.8%], and 99.3 kPa [sensitivity 93.3%, specificity 79.6%, PPV 56%, NPV 97.7%, accuracy 86.2%], respectively.

CONCLUSION: Despite a small sample size, the study showed that SWE is a promising diagnostic tool to differentiate between benign and malignant endometrium tissues. The recommended cut-off values for Emean and Emax based on a local population are 83.9 kPa and 99.3 kPa, respectively. However, a larger multi-centre study is needed to further verify these findings.

ANKLE LEIOMYOSARCOMA WITH METASTATIC GALLBLADDER DISEASE

Deivind Kumar Nagalingam*¹; Mohd Shafie Abdullah¹

¹*Radiology, Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: A leiomyosarcoma is a heterogeneous group of smooth muscle neoplasms with an incidence of 1.2 cases per 100,000 person-years. The mortality rate has been reported as high as 50%. However, distant metastasis of uterine or extra-uterine leiomyosarcoma to the gallbladder is extremely rare. We are presenting a case of ankle leiomyosarcoma with gallbladder metastasis as an extremely rare entity of the elderly presented to our tertiary center.

REPORT: 70 years old elderly gentleman presented with left ankle swelling for the past 15 years. Examination revealed a non-mobile or tender 5 x 8cm posterolateral left ankle mass with good vascular pulsation. MRI of the left ankle done and a tru-cut biopsy done revealed leiomyosarcoma. Wide resection of the left ankle tumor done in March 2017.

Histopathological examination of the tumor revealed Leiomyosarcoma FNCLCC staging grade 1 and local radiotherapy of 60Gy (Gray) of 30 cycles done. Surveillance CECT Thorax revealed new gallbladder and lung metastasis on the latest imaging and the patient was subjected to systemic Ifosfamide and Adriamycin and his gallbladder mass were not resected in view of multiorgan involvement..

CONCLUSION: Metastatic leiomyosarcoma tends to spread to various organs. However, metastatic disease to the gallbladder is very rare is due to poor blood supply to the gallbladder. Thus, it is important to screen for unusual metastatic locations for patients, so, appropriate management such as metastasectomy and chemotherapy can be planned. Despite optimum treatment, the mortality rate for this disease has been reported as high as 50%.

LOW-GRADE APPENDICEAL MUCINOUS NEOPLASM MIMICKING APPENDICULAR ABSCESS: A CASE REPORT

Yuen Jiang Keat*¹; Shahizon Azura Mohamed Mukari¹

¹*Radiology, Hospital Universiti Kebangsaan Malaysia, Malaysia*

INTRODUCTION: Low-grade appendiceal mucinous neoplasms (LAMN), is rare mucinous tumors of the appendix with low-grade cytologic atypia. Clinically, LAMN is usually manifested as right iliac fossa pain, mimicking acute appendicitis. Symptoms are more likely if a tumor has perforated and complicated with pseudomyxoma peritonei (PMP). We reported a case of a 65 year-old lady, presented with right iliac fossa pain with evidence of LAMN in imaging and histopathological examination (HPE).

REPORT: A 65 years-old female presented with two weeks history of localized right iliac fossa pain which is progressively worsening, associated with vomiting and abdominal distension. Otherwise there was no fever. The white cell count and C-reactive protein level were raised. Ultrasound abdomen identified an ill-defined heterogeneous hypoechoic mass at right iliac fossa which contained loops of bowel within. Adjacent to the mass there is localized intraperitoneal ascites. CT abdomen further delineated the right iliac fossa mass to be originated from the appendix and has curvilinear wall calcification with focal discontinuity. Impression by imaging was mucinous appendiceal neoplasm with localized PMP. Patient had underwent surgical excision of the appendiceal tumor. HPE impression was low grade mucinous neoplasm of appendix.

CONCLUSION: LAMN is a rare malignancy and often misdiagnosed as seal perforated appendicitis. In imaging, it can be manifested as a soft tissue mass with irregular wall thickening and sometime with mural calcification. Extra-appendiceal mucin and complications such as rupture can be identified as well. Recognition of these characteristic imaging features are crucial to make a prompt diagnosis.

PRIMARY HEPATIC LYMPHOMA : TWO RARE CASE REPORTS AND LITERATURE REVIEW

Tjun Hoe Lui*¹; Nur Yazmin Yaacob²

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia, ²Interventional And Endovascular Unit, Department Of Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia

INTRODUCTION: Primary hepatic lymphoma (PHL) is a rare malignancy. It is difficult to diagnose due to non-specific clinical presentations and imaging findings which can lead to delay in proper treatment. We report two cases of primary hepatic lymphoma and review of literature.

REPORT:

Case 1: 28 years old male with HIV infection has fever, weight loss and lethargy for 2 months. CT showed multiple non-enhancing hypoattenuating liver lesions. Liver biopsy confirmed high grade B-cell lymphoma with concomitant fungal infection. Despite anti-fungal and supportive therapy, he responded poorly and succumbed to the illness.

Case 2: 76 years old lady with Crohn's disease has right hypochondriac pain and fever for 2 weeks. CT showed multiple nonenhancing hypoattenuating liver lesions. Liver biopsy confirmed diffuse large B cell lymphoma. She underwent chemotherapy. Follow-up CT showed resolution of liver lesions.

PHL represents 0.016% non-Hodgkin's lymphomas and 0.4% extranodal lymphomas. The imaging findings of PHL have a wide spectrum. PHL can present as hypoattenuating lesions with no significant mass effect as depicted in both cases. The lack of enhancement is not typical as described in literature. However, in absence of known primary, one should suspect possibility of PHL, especially in patients with immunosuppression. The absence of extrahepatic involvement would favour PHL.

CONCLUSION: It is important to familiarise with the different imaging features of PHL to promote early suspicion. Liver biopsy is nearly always necessary to provide definite diagnosis. Our cases highlight the importance to recognise and establish the diagnosis of PHL early as it responds favourably to chemotherapy, which can improve prognosis.

CHILAITITI'S SYNDROME COMPLICATED BY SMALL BOWEL OBSTRUCTION

Ong Wee Kee*¹; Julian Mohd Ramli¹; Tony Yong Yee Khong²

¹*Radiology Department, Hospital Tengku Ampuan Rahimah, Malaysia, ²Surgery Department, Hospital Tengku Ampuan Rahimah, Malaysia*

INTRODUCTION: Chilaiditi's Sign is a rare radiological finding of interpositioned bowel loops between the liver and right hemidiaphragm, often only detected as incidental findings. Any manifestation of clinical symptoms in regard to this is further termed as Chilaiditi's Syndrome. There is a vast spectrum of presentation of this syndrome, ranging from mild pain to potential morbid conditions. It is important to recognize the possible complications of a seemingly benign and usually asymptomatic condition.

REPORT: We present a case report of a lady with multiple past surgical history, brought to the Emergency Department with signs and symptoms of an acute intestinal obstruction. Imaging studies showed dilated small bowel loops up to the distal ileal loops. The transitional point was noted to be at the region between the right liver lobe and right hemidiaphragm, consistent with Chilaiditi's Syndrome. Emergency laparoscopy was performed by the Surgical team, which revealed dense adhesion bands at adjacent to the right liver lobe causing internal herniation of the small bowels and its obstruction. Subsequently, adhesiolysis was done which relieved the obstruction. The patient recovered and was well upon discharge.

CONCLUSION: Recognition of the wide range of conditions and complications which Chilaiditi's Syndrome presents with can lead clinicians towards a more comprehensive diagnosis and treatment. There is also value in detecting patients who can be more predisposed to this syndrome.

AN EXTREMELY RARE CASE OF URETEROSCIATIC HERNIA

Tan Wen Nian*¹; Farihah Abd Ghani¹

¹*Radiology, Hospital Sungai Buloh, Malaysia*

INTRODUCTION: Ureterosciatic hernia is the rarest form of pelvic floor herniation. They can either be asymptomatic or present with urinary obstructive symptoms. Imaging with computed tomography(CT) or pyelography is essential for diagnosis by demonstrating the course of ureteral herniation.

REPORT: We present a case of 91-year-old gentleman who presented with respiratory symptoms and right lung mass. Patient did not have any urinary symptoms or renal derangement. Further imaging using computed tomography(CT) revealed a horizontally redundant right distal ureter coursing posterolaterally, herniating into the greater sciatic foramen, giving a curlique sign in keeping with an incidental finding of ureterosciatic hernia. As patient was asymptomatic, no further active surgical intervention was offered.

CONCLUSION: Ureterosciatic hernia is an extremely rare form of pelvic floor herniation. Radiologists should be aware of the imaging manifestations as imaging is crucial for diagnosis to ensure appropriate management.

CAESAREAN SCAR ECTOPIC PREGNANCY, DIAGNOSTIC DILEMMA IN DELAYED PRESENTATION

Nyazirah Abdul Wahab*¹; Sook Yin Chua²; Khatijah Abu Bakar²

¹*Radiology Department, Hospital Serdang, Malaysia,* ²*Radiology Department, Hospital Sultanah Aminah, Malaysia*

INTRODUCTION: Ectopic pregnancy in caesarean scar is rare but can cause uterine rupture and severe haemorrhage. The incidence rate is 0.15% in women with previous caesarean section. Early diagnosis by Ultrasonography and Magnetic Resonance Imaging (MRI) enables prompt management and improves outcome.

REPORT: We present two cases of caesarean scar pregnancy (CSP). The first case was diagnosed early in the first trimester while the second case was presented late in second trimester and posed a diagnostic challenge. A 42 years old G7P6 at 10 weeks of gestation with one previous caesarean section, complained of per vagina bleed for 3 weeks. Ultrasound showed empty uterine cavity with a gestational sac at anterior lower uterine wall. Subsequent MRI confirmed the findings. Patient underwent ultrasound guided fetocides injection for termination of pregnancy (TOP) and discharged well. A 31 years old lady G3P2 at 17 weeks of gestation with previous two caesarean sections, showed suspicious ultrasound findings of ectopic pregnancy. MRI showed a fetal sac with thin myometrial wall, suspicion of abnormal septated uterus with possibility of ectopic adherent sac. Decision for hysterotomy and TOP was made. However, hysterectomy was performed due to morbidly adherent placenta and severe haemorrhage. Histopathological examination confirmed CSP.

CONCLUSION:

Ectopic scar pregnancies pose a great risk, thus timely identification are important to avoid significant morbidity and mortality. MRI is useful in diagnosing CSP, however typical findings may not be well appreciated in late presentation. Early diagnosis and prompt treatment play a vital role in preventing complications and improving patient survival.

ROLE OF MAGNETIC RESONANCE IMAGING (MRI) IN DIAGNOSING MAYER-ROKITANSKY-KÜSTER-HAUSER (MRKH) SYNDROME – CASE REPORTS

Fuaza Izzati Bosro*¹; Nyazirah Abdul Wahab¹; Sharifah Mastura Syed Abu Bakar¹; Malinda Abd Majid²

¹*Radiology, Hospital Serdang, Malaysia*, ²*Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is characterized by uterine and vaginal agenesis or hypoplasia with normal ovaries, external genitalia and development of secondary sexual characteristics. The incidence of MRKH syndrome is approximately 1 in 4500 female births with majority are sporadic. It has significant influence on both fertility and psychological health of women. Magnetic resonance imaging (MRI) is the non-invasive imaging modality of choice to detail anatomical evaluation before further surgical intervention for restoration of normal sexual function and possibility of assisted reproductive techniques.

REPORT: We report two cases of MRKH syndrome in patients who underwent MRI. The first case is a 17 years old girl presented with primary amenorrhea. She has appropriate secondary sexual characteristics. The normal uterus is not visualized on ultrasound although bilateral ovaries are present. A pelvic MRI reveals rudimentary uterine buds with absent upper part of vagina and normal cervix. The second case is a 38 years old nulliparous lady who has primary amenorrhea with intention of surgical intervention for restoration of sexual function. She also has appropriate secondary sexual characteristics. The pelvic MRI shows absent of upper 2/3rd of vagina and normal cervix with presence of rudimentary uterine buds. Both ovaries are present and normal.

CONCLUSION: MRI is the most reliable non-invasive imaging modality to provide accurate anatomical details of uterus, vagina and ovaries, as well as associated renal and vertebral anomalies. Adequate MRI assessment aid in counselling, hence as a major tool in diagnosing as well as prognosticating outcome in MRKH patients.

**GENITOURINARY TUBERCULOSIS- ESSENTIAL RADIOLOGICAL IMAGING
FEATURES: AN AID FOR EARLY DIAGNOSIS AND TREATMENT– A CASE
REPORT**

Janice Goh Hui Ling*¹; Chiam WK¹; Soon YY¹; Wendy NYL¹; Malinda AM¹; Tam WL¹;
Khairul Asri MG²

¹*Radiology, Hospital Kuala Lumpur, Malaysia,* ²*Urology, Faculty Of Medicine & Health Sciences, Universiti Putra Malaysia, Malaysia*

INTRODUCTION: Tuberculosis is an infectious disease that is endemic in Malaysia with estimated incidence of 92 cases per 100000 population. While pulmonary tuberculosis is a most common presentation, one fifth of the cases has extrapulmonary manifestation.

Genitourinary tuberculosis (GUTB) comprises of 4.6% of extrapulmonary presentation.

REPORT: We report a case of GUTB of a 44 years old man who initially presented with acute urinary retention associated with recurrent painless haematuria and scrotal swelling for 1 year. Upon further investigation, he was found to have renal impairment and imaging examinations which include ultrasound and CT scan showed left hydrocalycosis, right hydroureteronephrosis secondary to right vesicoureteric junction stricture and cystitis. There were also ultrasound features suggestive of bilateral chronic granulomatous epididymo-orchitis with reactive right hydrocele. Constellations of the findings have raised the suspicion of GUTB which later confirmed by histopathological analysis.

CONCLUSION: The clinical and radiological features of GUTB maybe non-specific. Therefore high degree of suspicion is required, especially in high-risk populations. Although in many cases biopsy or culture specimens are still needed to yield the definitive diagnosis, it is important to understand the spectrum of imaging features of GUTB to aid in making an early diagnosis and prompt treatment.

SPONTANEOUS BLADDER DOME RUPTURE, A RARE ASSOCIATION WITH EXTRAPERITONEAL LEAKAGE.

Siti Nor Suzeana Mustfar*¹; Aidi Aswadi Halim Lim¹

¹*Department of Radiology, International Islamic University Malaysia*

INTRODUCTION: A 67 year old man with known history of bronchial asthma, hypertension, cor pulmonale and dyslipidaemia presented with 2 weeks history of low urinary tract symptoms for 2 weeks associated with abdominal pain, lethargy and constipation. Patient then noted acute urinary retention for 1 day and worsening of abdominal pain prior to his presentation to the emergency department.

REPORT: On examination he was tender on the right iliac fossa region with guarding. His vitals remained stable. His renal function was bad with urea of 44.7 and creatinine of 886 with no previous results to compare as this is his first presentation to our centre.

He then had an ultrasound of the abdomen which revealed fluid at the right iliac fossa region. No renal calculus or ureteric calculus.

Subsequently, he underwent CT Abdomen and Cystogram to rule out collection. The CT showed active contrast leakage from the dome of the urinary bladder into the extraperitoneal region as well as at the right pelviureteric junction region. Small defect at the dome of urinary bladder and the pelviureteric junction are identified. Retrograde pyelogram also confirm similar findings.

CONCLUSION: This is a rare case of spontaneous bladder and ureteric rupture likely secondary to urinary tract infection. Bladder dome rupture usually results in intraperitoneal leakage rather than extraperitoneal leakage as in this case of our patient.

**MATURE OVARIAN TERATOMA MIMICKING SUPERFICIAL ANTERIOR
ABDOMINAL MASS IN PREGNANCY: A DIAGNOSTIC DILEMMA.**

Sakinah Mazlan*¹; Suzana Ab Hamid¹; Nyazirah Abdul Wahab²

¹*Radiology Department, Universiti Putra Malaysia, Malaysia,* ²*Radiology Department, Hospital Serdang, Malaysia*

INTRODUCTION: Mature ovarian teratoma is one of the common benign neoplasms in reproductive age women and can be incidentally discovered during antenatal check-up for pregnancy. We presented a case of mature ovarian teratoma which presented as anterior abdominal mass in pregnancy, mimicking a liposarcoma.

REPORT: A 29-years-old lady, Gravida 2 Para 1 at 36 weeks of gestation complaint of slow-growing painless abdominal lump at umbilical region since 20 weeks of gestation, which was more prominent during uterine contraction. No history of trauma.

On examination, a well-defined 10cm mass at umbilical region noted anterior to the gravid uterus. It is soft in consistency and mobile. Abdominal ultrasound and MRI showed a large well-defined encapsulated fat-containing mass in the left para-midline lower abdomen with non-suppressed area of heterogenicity and irregular thick septations suspicious for liposarcoma. Multidisciplinary discussion was done involving radiology, surgical and O&G team in view of suspicious imaging findings which was disproportionate with the clinical benignity of the mass. Ultrasound guided biopsy yielded lipomatous samples with strands of hair from the heterogenous part of the mass. Primary team decided for Caesarian Section and tumour resection which revealed a right ovarian mass tracking from right iliac fossa towards the anterior part of uterus with sebum-like material leakage into the peritoneum. Histopathological confirmed the mature cystic teratoma from the right ovary. No evidence of malignancy.

CONCLUSION: Mature ovarian teratoma in pregnancy can be displaced anteriorly by the gravid uterus, mimicking an atypical fat-containing tumor, which need a multidisciplinary approach for diagnosis and management.

URETERAL STUMP SYNDROME - A RARE POST NEPHRECTOMY COMPLICATION

Lim Aun Nee*¹; Ahmad Tirmizi Jobli²; Lee Chen Dar¹

¹*Radiology Department, Sarawak General Hospital, Malaysia,* ²*Radiology Department, UNIMAS, Sarawak General Hospital, Malaysia*

INTRODUCTION: Total nephrectomy with partial proximal ureterectomy is the standard therapeutic management for a non-functioning kidney. A ureteral stump is a remaining portion of the distal ureter after this surgery. It can occasionally give rise to a triad of lower quadrant pain, febrile urinary tract infection and hematuria, which is known as the ureteral stump syndrome. One of the rare complications is ureteral stump empyema which only account for 0.8-1.0% of reported incidence. We hereby present one such case.

REPORT: A 52-year-old lady, with a history of left nephrectomy for non-functioning left kidney, presented with abnormal uterine bleeding. During follow up, she was offered hysteroscopy and incidentally noted pyuria during the study. An abdominal ultrasound showed left adnexal cystic mass. Contrast-enhanced CT abdomen and pelvis was performed and revealed dilated left ureteric stump with calculus and surrounding inflammatory changes. There is also heterogenous enhancement within the ureteral stump indicating an empyema formation. Subsequently, she was referred to urology for further assessment of her condition.

CONCLUSION: A ureteral stump usually does not cause any pathological condition in short term after the surgery. However, it could be a risk factor for developing ureteral stump syndrome as it acts as a diverticulum from which the urine cannot be drained effectively. Subsequently, chronic infection and obstruction may occur in months or years later. Empyema of the ureteral stump, which is part of the disease entity, is a rare diagnosis. Thus, clinical suspicion is imperatives for further surgical intervention to relieve patient's symptoms.

AN UNFORTUNATE TWIST - A RARE CASE OF TRANSVERSE COLON VOLVULUS WITH ASSOCIATED CHILAUDITI'S SYNDROME

Mohd Shafiq Azman*¹; Amirah Abdul Wahid¹; Fatimah Hartina Hussin²; Nasibah Mohamad²

¹*Department of Radiology, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia,* ²*Department of Radiology, School of Medical Sciences, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia*

INTRODUCTION: Transverse colon volvulus is the rarest type of spontaneous colonic volvulus with the highest mortality rate of 33%. Its pathogenesis is not completely understood, with few documented risk factors like Chilaiditi's syndrome and redundant colon. The clinical signs are non-specific. Therefore, imaging plays an important role in establishing the diagnosis as it is rarely detected clinically. Computed tomography (CT) is extremely useful in determining the transition point, causes and its complication. Here, we report a case of spontaneous transverse colon volvulus in a healthy adolescent.

REPORT: A 17 year-old girl, presented with a one-week history of abdominal pain and distention. She was hemodynamically stable with normal biochemical parameters. Initial radiograph demonstrated dilated large bowel loops suspicious of bowel obstruction. Emergency abdominal CT scan revealed dilated cecum, ascending and transverse colon with abrupt tapering of distal transverse colon and 'whirl sign' in keeping with transverse colon volvulus. The dilated hepatic flexure and transverse colon are seen interposed between the liver and a raised right hemidiaphragm consistent with Chilaiditi's syndrome. Emergency detorsion, reduction, and decompression were achieved colonoscopically and subsequent preventive elective surgery revealed a dilated redundant transverse colon.

CONCLUSION: Imaging is critical in diagnosing transverse colon volvulus due to its nonspecific clinical manifestations. This case depicts Chilaiditi's syndrome and redundant transverse colon as the associated causative factors. Multiplanar CT imaging is employed to accurately diagnose the site, degree of torsion, cause, and complication of colonic volvulus. Early intervention is imperative in avoiding high complications, morbidity, and mortality rate.

**CASE REPORT : ADULT MIDGUT VOLVULUS – THE DISCLOSURE OF EARLY
HIGH GRADE PRIMARY PERITONEAL SEROUS CARCINOMA**

Nor Fauziah Muhamad Handar*¹; Yamunadevi Arunasalam¹; Norly Salleh²; Laili Suriani Ab
Latip³

¹Radiology, Hospital Segamat, Malaysia, ²Surgery, Hospital Segamat, Malaysia, ³Radiology,
Hospital Pakar Sultanah Fatimah, Malaysia

INTRODUCTION: Midgut volvulus is a surgical emergency regardless of age at presentation, though it is an uncommon cause of acute abdomen in adult population. Plain radiograph mostly is non-specific and sensitivity of demonstrating ‘whirlpool sign’ in ultrasound varies widely. Computed tomography (CT) remains the gold standard of imaging in adult population to ascertain diagnosis, complication, and possible concurrent intrabdominal pathology.

Here we reported a case of adult midgut volvulus with co-incident multiple non-specific peritoneal nodules detected in CT with histopathologically revealed high grade serous peritoneal carcinoma.

REPORT: A 53 years old woman who admitted with worsening epigastric pain, recurrent vomiting, and significant weight loss for 2 months. She was treated as gastritis by general practitioner and partially relieved with antacid. However, her vomiting symptoms worsened on the day of admission. The initial abdominal radiograph was normal. An urgent upper GI endoscopy showed severe small bowel reflux, thus small bowel obstruction was suspected. An urgent contrast-enhanced CT abdomen shows evidence of midgut volvulus, malrotated superior mesenteric vein and artery axis, and multiple ill-defined isodense peritoneal nodules. Surgical correction, appendicectomy, and peritoneal nodules resection performed. Gynecological organs were normal intraoperatively. Histopathology of peritoneal nodules revealed high-grade serous carcinoma likely from peritoneum.

CONCLUSION: Prompt diagnosis of midgut volvulus is crucial as the surgical correction is the mainstay of treatment. Apart from correcting the underlying congenital cause, there is possibility of underlying malignant abdominal disease which may predispose to the volvulus as shown in this case.

“AGGRESSIVE RENAL ANGIOMYOLIPOMATOSIS WITH RENAL VEIN THROMBOSIS IN PATIENT WITH TUBEROUS SCLEROSIS” - A CASE REPORT

Nor Syahida Mohtar Rudin*¹; Nyazirah Abdul Wahab¹; Malinda Abd Majid¹

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Renal angiomyolipoma (AML) is the most common mesenchymal renal tumour with prevalence of 0.1% to 0.3% of the population. About 20% of renal AMLs are associated with phacomatosis syndrome such as Tuberous Sclerosis, Van Hippel Lindau syndrome, Neurofibromatosis Type 1 and Lymphangiomyomatosis. About 55-75% of Tuberous Sclerosis cases are associated with renal AML. Renal AML with malignant characters are not often. Very few cases indicate potential malignant behaviours, including involvement of the regional lymph nodes and renal vein or inferior vena cava invasion. Herein, we report a case of renal AML that demonstrates an unusual aggressive behaviour with pseudoaneurysm and renal vein thrombosis.

RESULTS: We report a case of 29-year-old Chinese lady, known case of Tuberous Sclerosis who initially presented with progressive abdominal distension and recurrent abdominal discomfort. No evidence of renal function derangement. Upon imaging examinations which include ultrasound and CT scan, she was diagnosed as having bilateral large renal AML. She was on annual CT surveillance which initially reveals numerous lipomatous masses within both kidneys with left renal artery pseudoaneurysm. Follow up CT showed tumour extension into the left main renal vein in keeping with renal vein thrombosis.

CONCLUSION: Invasion of the renal vein is a rare but recognized complication of benign AML, and it does not imply malignancy or metastasis. Central location of the tumour and large size of the AML are the contributing factors of renal vein invasion whereby it carries the risk of potentially fatal pulmonary thromboembolism, hence urgent surgical treatment is necessary.

PORTOMESENERIC VENOUS GAS IN ADULT BOWEL ISCHEMIA; THE OMINOUS SIGN IN CT SCAN

Suhaimi Arsad*¹; Fadzillah Md Khadzari²; Ahmad Hadif Zaidin Samsudin³

¹*Department Of Radiology, School Of Medical Sciences, Hospital Universiti Sains Malaysia, Universiti Sains Malaysia, Malaysia,* ²*Radiology, Hospital Sultan Ismail Petra, Malaysia,*

³*Radiology, University Sains Malaysia, Malaysia*

INTRODUCTION: Portal vein gas was first described in children by Wolfe and Evans in 1955 and in adults by Susman and Senturia in 1960. It can be due to iatrogenic or non-iatrogenic causes. Non-iatrogenic portovenous gas is usually associated with intra-abdominal pathology, which is related to high mortality rate, especially with the evidence of bowel ischemia. Majority of the patients are elderly and commonly affected by the bowel ischemia and mesenteric vascular pathology. CT scan is crucial as initial modality in detecting underlying disease that associated with portal vein gas prior to surgical intervention, hence affecting the survival outcome.

REPORT: A 60-year-old man with underlying hypertension and atrial fibrillation, was admitted to our hospital with acute onset of abdominal pain and distention. On physical examination, patient was alert, non-tachypnoeic but in severe pain. Blood pressure in normotensive, heart rate was atrial fibrillation in rate control with good oxygenation. Abdominal examination revealed abdominal distention and generalized tenderness associated with guarding. Per rectal noted malenic stool. Arterial blood gas revealed, metabolic acidosis with high lactate. Other blood investigation was unremarkable. Urgent contrast CT abdomen revealed superior mesenteric artery thrombosis and air within superior mesenteric vein, portal vein and its branches. Surgical resection was done, revealed gangrenous bowel. Patient was survived and able to be discharged.

CONCLUSION: Portomesenteric venous gas is a diagnostic clue in patients presented with acute abdomen, thus the urgent surgical treatment needs to be directed according to the underlying disease. Early detection and intervention may avoid significant mortality to the patient.

COMPLICATIONS OF PANCREATITIS: A PICTORIAL REVIEW

Smily Sharma *¹; Pankaj Sharma¹; Udit Chauhan¹; Poonam Sherwani¹; Venkata Subbaih
Arunachalam¹

¹Radiology, All India Institute of Medical Sciences Rishikesh, India

LEARNING OBJECTIVE: 1. Using a case-based review, to discuss in details imaging of complications of Pancreatitis. 2. To discuss the role of Radiologists in not only accurate diagnosis but also in the management of complications of Pancreatitis

BACKGROUND: Pancreatitis is one of the common diseases encountered in Radiology Department. The devastating nature of complications of Pancreatitis reiterates the need of their accurate recognition and timely management.

FINDINGS AND/OR PROCEDURE DETAILS: CT is of particular importance in evaluation of Complications of Pancreatitis. MRI helps in situations like Duct Disconnection and deranged renal parameters. Collections associated with Pancreatitis range from Acute Peripancreatic fluid collections, Acute Necrotic Collections, Pseudocysts and Walled off Necrosis. Ascites and Pleural Effusion are commonly encountered in Severe Pancreatitis. Of particular importance are Vascular complications like thrombosis of Splenic vein, Portal Vein and/or Superior Mesenteric Vein; Pseudoaneurysms commonly involving Gastroduodenal Artery or Splenic Artery and chronic complications like Cavernoma formation. State of the art CT Angiography helps in accurate evaluation of vascular complications and Interventional Radiologists are the main workforce involved in their management. Using CT Guidance, Radiologists also aid in drainage of infected necrotic Pancreatic Collections. Other rare complications include Emphysematous Pancreatitis, Hemorrhagic collections and Fistula formation with Pleura or Bowel. Representative cases with salient features of these common and uncommon complications of Pancreatitis and their Radiological management are presented in the exhibit.

CONCLUSION: Radiologists not only play important role in diagnosis but are an integral component of Multidisciplinary team involved in treatment of Pancreatitis and its complications.

THE PERFORMANCE OF SHEAR WAVE ELASTOGRAPHY: COMPARISON 2 - DIMENSION AND POINT SHEAR WAVE ELASTOGRAPHY FOR EVALUATION OF LIVER FIBROSIS.

Seksan Chitwiset*¹

¹*Radiology, Rajavithi Hospital, Thailand*

OBJECTIVE: This study was purposed to evaluation the technical performance of 3 technique shear wave elastography including success rate, reliability and correlation of liver stiffness values obtained by three technique.

MATERIALS AND METHODS: This retrospective study included 810 patients who underwent ultrasound examination and additional LS measurement using ElastQ, ELastPQ and LOGIQ™ E9 technique. The ElastQ and ElastPQ technique was performed on the same machine. The performance including applicability, repeatability(CV: coefficient of variation), operation time and LS values of three techniques were compared using Chi-square and the correlation using Spearman correlation coefficient and linear regression analysis.

RESULTS: The three SWE technique LOGIQ™ E9, ElastQ and ElastPQ had low failure rate, high applicability 98.88%, 98.88% and 98.77%, respectively. The performance included success rate, reliability rate of LOGIQ™ E9: 99.37% and 99.25% were better than ElastQ(95% and 94.38%) and also better than ElastPQ technique(70.62% and 70.62%). The performing time of LOGIQ™ E9 was shorter than ElastQ(77.40 and 97.10 second) and point shear wave ElastPQ took longest time than both 2D-SWE techniques (160.2 second). The LS value of three techniques were significant different.

CONCLUSION: Three technique elastography had difference performance success rate, reliability and shorter operation time, 2D-SWE were better than P-SWE and in 2D-SWE LOGIQ™ E9 was better performance higher success rate, reliability and shorter operation time than ElastQ technique.

HEPATOCELLULAR CARCINOMA WITH DE NOVO INTRATUMORAL PSEUDOANEURYSM.

Nur Salsabila Mohd Rosli*¹

¹*Radiology, Hospital Raja Perempuan Zainab II, Kota Bharu, Malaysia*

INTRODUCTION: Intratumoral pseudoaneurysm (ITPA) within hepatocellular carcinomas (HCC) usually arise as postprocedural complications of endovascular therapies or surgical procedures.

RESULTS: 51 y/o gentleman was diagnosed with hepatitis B for 3 years back presented with fever and left hypochondriac pain. Ultrasound abdomen shows liver cirrhosis with portal hypertension and segment III liver lesion, likely of hepatoma. Alpha-fetoprotein level was high, 121522.4 IU/mL. Multiphase CT liver shows an enlargement of the left liver lobe with an exophytic mass arising from the anterior aspect of segment II/III. The mass demonstrates the classic imaging appearance of hepatoma. Two focal areas of contrast pooling within the lesion with patchy washout on portovenous seen arising from a distal branch of left hepatic artery suggestive of intratumoral pseudoaneurysms. In one study of 519 patients with HCC, the incidence of de novo ITPAs occurring in patients with HCC without any prior therapy or intervention was 0.24%.

CONCLUSION: Previously reported cases of pseudoaneurysm within HCC are related to interventional procedures like percutaneous biopsy, radiofrequency ablation, and transarterial chemoembolization. In this patient, the pseudoaneurysm appeared to occur de novo at initial CT assessment for HCC without any prior intervention.

A RECHERCHE PRESENTATION OF PERSISTENT MULLERIAN DUCT SYNDROME DEVELOPING INTO AN ENDODERMAL SINUS TUMOUR.

Aishwarya Jeyakumar*¹; Rajoo Ramachandran¹; P.M.Venkata Sai¹

¹*Radiology, Sri Ramachandra Medical College And Research Institution, India*

INTRODUCTION: The uterus, salpinges and/or the upper part of the vagina, known as Mullerian duct derivatives when present in a phenotypical male human with 46 XY karyotype is Persistent Mullerian Duct Syndrome (PMDS). AMH is either not secreted or is inactive (due to defect in the AMH type II receptor), while testosterone is normally produced and metabolized. Even though external virilisation is complete, the mullerian duct derivatives do not degenerate and are seen side by side with the testes and male excretory ducts.

RESULTS: 28-year-old male presented clinically with lower abdominal pain and abdominal swelling for six months. On clinical examination, localised abdominal pain and palpable mass in pelvis. Lactate dehydrogenase and alpha fetoprotein increased. B- HCG levels normal. USG Abdomen showed rudimentary uterus with a large pelvic mass . CECT abdomen showed a large well defined heterogeneously enhancing mass in pelvis measuring 8.5 x 11.6 x 14 cm , posterior to the urinary bladder and anterior to the rectum, sigmoid colon and above the uterus like structure. Karyotyping showed a phenotypically normal male (46 XY). Histopathology showed an endodermal sinus tumor of the undescended testis.

CONCLUSION: Patients with bilateral undescended testis or unilateral inguinal hernia with contralateral cryptorchid testis or unilateral inguinal hernia with palpable mass above normally descended testis must undergo USG ,CT or MRI and chromosomal analysis suspecting presence of Mullerian duct structures. This is rare case of complicated PMDS which already developed into endodermal sinus tumor of the cryptorchidic testes.

EXTRAUTERINE LEIOMYOMA- ATYPICAL PRESENTATIONS OF A COMMON DISEASE

Wong Siu Chun*¹; Wong Ting¹; Chau Chi Man Gladys¹; Ng Fung Him¹; Ma Ka Fai¹

¹*Department of Radiology, Princess Margaret Hospital, China*

LEARNING OBJECTIVE: To review the spectrum and imaging manifestations of extrauterine leiomyomas.

BACKGROUND: Extrauterine leiomyoma is a rare manifestation of benign leiomyoma with heterogeneous presentations. Their alarming features such as unusual growth pattern, atypical sites, multiplicity and occasional aggressive behavior, can mimic malignant diseases.

FINDINGS AND/OR PROCEDURE DETAILS: This was a pictorial review of six patients with extrauterine leiomyomas in a regional hospital in Hong Kong. All three patients with intravenous leiomyomatosis had history of uterine fibroids, with two underwent prior hysterectomy. Extent of intravenous invasion ranged from pelvic veins, inferior vena cava (IVC) to right ventricle. One of them had synchronous benign metastasizing leiomyoma in right lung. Another one had concomitant disseminated peritoneal leiomyomatosis. A companion case of intravenous iliac veins leiomyosarcoma without coexisting uterine fibroid was included to contrast the two diseases.

Two pathologically proven parasitic broad ligament (lipo)leiomyomas initially got diagnostic dilemma due to their mimicking of ovarian tumours. One resembled a malignant teratoma for its macroscopic fat content from fatty degeneration. Both underwent hysterectomy with bilateral salphingo-oophorectomy.

The final case was a patient with disseminated peritoneal leiomyomatosis. PET/CT and ultrasound showed multiple non-FDG avid peritoneal masses and a submucosal fibroid without ascites, which were unusual for peritoneal carcinomatosis.

CONCLUSION: Thorough understanding of imaging and clinical manifestations for extrauterine leiomyomas, including co-existing uterine fibroids, prior hysterectomy or myomectomy and preferential involvement of pelvic veins and IVC, is pivotal in making a correct diagnosis.

AN EXCEPTIONAL CASE : EXTREME GIGANTOMASTIA IN HIV PATIENT TREATED WITH EFAVIRENZ

Fransisca Rika Andriani*¹; Lies Mardiyana²

¹*Department of Radiology, Airlangga University, Indonesia,* ²*Department of Radiology, Universitas Airlangga, Dr. Soetomo General Hospital, Indonesia*

INTRODUCTION: Gynecomastia histological definition is the benign proliferation of glandular breast tissue. Gynecomastia was recognized as infrequent side effect of antiretroviral treatment in HIV and mostly attributed to efavirens use. There were previous report gynecomastia induced by ARV in prepubertal case, 2.8-2.9% in male adult and 1 case in female adult, but none of these reporting extreme gigantomastia.

REPORT: A 26 years old female came with complaint that her breast getting bigger since 5 months before. Enlargement is symmetrical and painless. She was diagnose with HIV when she pregnant and gave birth 1,5 years ago. She treated with efavirens and 4 months after her breast getting bigger. Physical examination found no discrete palpable mass. Ultrasonography finding there was diffuse glandular and fat symmetrical thickening, diffuse duct ectasia and prominent subcutaneous vascularization with no discrete mass in both breast. Mammography was done in MLO projection with three times spot compression in upper, medial and lower side. Mammography finding breast parenchym extremely dense with no mass nor calcification with conclusion negative malignant finding. Laboratory result, LH, FSH and prolactine is normal. From history, physical examination, imaging and laboratory excluded known causes of gynecomastia and efavirenz was considered as the most likely cause. Efavirens then was replace and 4 months after withdrawal both breast became smaller and more firm.

CONCLUSION: Efavirens induced should be considered in HIV patient with gynecomastia. Ultrasonography and mammography both has difficulties on gigantomastia due to size. Mammography for extreme gynecomastia may be difficult but can be done with split compression in MLO projection.

**CLINICAL AND RADIOLOGICAL MANIFESTATIONS OF MALE BREAST
MALIGNANCY IN A LOCAL ASIAN POPULATION - RETROSPECTIVE
ANALYSIS WITH UTILIZATION OF LATEST BI-RADS LEXICON**

Thomas Wing-Yan Chin*¹; Hailey Hoi-Ching Tsang¹; Janet Wing-Chong Wai¹; Jeffrey
Long-Fung Chiu¹

¹*Department of Radiology and Imaging, Queen Elizabeth Hospital, China*

OBJECTIVE: Male breast cancer is a rare disease lacking studies investigating its imaging features with reference to the latest ACR BI-RADS lexicon. This is the first study examining both the mammographic(MMG)&sonographic(USG) features of male breast cancer in a local Asian population using the latest BI-RADS lexicon,in addition to studying the clinical presentation.

MATERIALS & METHODS: Male breast cancer patients having preoperative imaging from 2007-2019 were included, with MMG &USG images retrospectively reviewed according to the latest BI-RADS lexicon(5th edition,2013).

RESULTS: Twenty-two patients with imaging were included. Median age was 74 years(range,43–95). Twenty-one breast cancers underwent both MMG& USG; & two, USG only. Most cancers were ductal carcinoma(invasive/in-situ)[70%,n=16]. Most cancers presented with a palpable mass(78%[n=18]), half of which had nipple changes. On MMG, 62%(n=13) of cancers showed a mass; 28%(n=6), mass & microcalcifications; & 5%(n=1),microcalcifications only. Masses(n=19) mostly had irregular shape(53%,n=10),indistinct margins(63%,n=12),high density(89%,n=17)& located eccentrically subareolar(52%,n=10). Calcifications(n=8) were mostly fine pleomorphic(62.5%,n=5) but less suspicious punctate ones(25%,n=2) can occur. Most calcifications were regional(62.5%,n=5). Nipple & skin features(67%,n=14) were common. On USG, masses(n=22) mostly had irregular shape(64%,n=14),parallel orientation (77%,n=17),indistinct margins(55%,n=12),hypoechoogenicity(73%,n=16),posterior enhancement(59%,n=13), internal vascularity(50%,n=11)&solid nature(64%,n=14). Metastatic axillary lymph nodes were USG-detected in 13%(n=3) of breast cancers. However, significantly, more lymph node metastases(26%,n=6) were detected on sentinel lymph node biopsy.

CONCLUSION: Most male breast cancers present with irregular eccentrically subareolar masses with nipple changes. However, unlike female breast cancers, benign MMG & USG features are common & should not dissuade from prompt workup & intervention. USG has a role in regional lymph node staging but may not be sufficiently sensitive.

**QUANTITATIVE ADC EVALUATION OF BREAST CARCINOMA:
CORRELATION OF DIFFUSIONAL PROPERTIES WITH TUMOUR GRADES
AND IMMUNOHISTOCHEMICAL SUBTYPES.**

Siti Hafeezah Ramli*¹; Chan Wai Yee¹; Marlina Tanty Ramli Hamid¹; Kartini Rahmat¹

¹Radiology, University Malaya, Malaysia

OBJECTIVE: To investigate the correlation between ADC values with hormone receptor expression, immunohistochemical subtypes, tumour grading and axillary lymph node metastasis of breast cancer patients.

MATERIALS & METHODS: A retrospective study of 114 breast cancer patients who underwent MRI breast from 2016 until 2020 was examined. The MRI breast was done in two different 3.0T MRI machines. The hormone receptor expression, immunohistochemical subtypes, tumour grade and axillary nodal metastasis, were obtained and were correlated with the ADC value.

RESULTS: ER/PR negative and HER-2 positive tumour have higher ADC value. Higher ADC value in HER-2 enriched tumour compared to luminal type tumour with no statistically significant relationship noted. ADC value is unable to determine tumour grade and axillary nodal metastasis.

1. 3.0 Tesla MAGNETOM Prisma® Scanner (Siemens Healthcare)

A significant difference was found between ER, PR, and HER-2 positive and negative tumour with a p-value of 0.047, 0.019 and 0.040, respectively.

2. 3.0 Tesla Signa® HDx MR Systems (GE Healthcare).

The triple-negative tumour has the lowest median ADC value of $0.722 \times 10^{-3} \text{ mm}^2/\text{s}$.

3. Combine both MRI machines.

Statistically significant difference noted between hormone receptor (ER, PR & HER-2) positive and negative tumour and immunohistochemical subtypes. ADC value for HER2-enriched tumour ($0.995 \times 10^{-3} \text{ mm}^2/\text{s}$) was significantly higher than that of Luminal A and B (0.827 & $0.843 \times 10^{-3} \text{ mm}^2/\text{s}$) ($p = 0.005, 0.028$).

CONCLUSION: A statistically significant difference between ADC values with hormone receptors and immunohistochemical subtypes. Tumour grade and axillary lymph node status, were not significant as the ADC values overlapped significantly.

DOES BONE SCINTIGRAPHY STILL HAVE A ROLE IN STAGING OF ADVANCED BREAST CANCER? THE MORECAMBE BAY EXPERIENCE.

Gregory Mataka*¹

¹*Department Of Radiology, University Hospitals Of Morecambe Bay NHS Foundation Trust,
United Kingdom*

Objective: The National Institute for Health and Care Excellence (NICE) recommends using CT or MRI or bone scintigraphy to determine the presence or extent of metastatic bone disease in patients with locally advanced breast cancer. The local staging protocol includes both CT of the Thorax, Abdomen & Pelvis and Bone Scintigraphy. The aim is to determine if bone metastases identified on a Bone scan are also identified on CT.

Materials & Methods: A Retrospective review of imaging by a single Radiologist of all asymptomatic patients who had a Bone Scan and CT scan for staging of locally advanced breast cancer in 2016. Patients who had a Bone Scan and CT performed more than 4 weeks apart or for symptomatic bone pain were excluded.

Results: 96 patients were included in the study. Bone metastases detected by Bone scan were visible on CT in all patients. 6.25% of patients had metastases visible in the field of view of CT but had further metastases in the femur or humerus. There was 100% concordance in excluding the presence of bone metastases.

Conclusion: A staging CT examination was able to detect all bone metastases seen on a Bone scan if lesions were within the field of view of a CT examination. There were no False negative findings on CT. Following this study, a Bone scan will now only be performed if the patient is symptomatic or if bone metastases are detected on CT.

POSITIVE PREDICTIVE VALUES AND PREDICTORS OF MALIGNANCY IN ARCHITECTURAL DISTORTION ON MAMMOGRAPHY

Vanasarin Maitreemit*¹; Voraparee Suvannarerg¹

¹Radiology, Siriraj Hospital Bangkok, Thailand

OBJECTIVE: To evaluate PPV of malignancy on architectural distortion (AD) and to determine associated-architectural distortion findings on mammogram or correlated sonographic features that may indicate likelihood of malignancy.

MATERIALS & METHODS: A retrospective cohort review of AD cases in Siriraj hospital from February 2012 until December 2016. Imaging findings and pathology results were reviewed.

RESULTS: AD cases were appeared in 372 mammography. Cases were excluded: postsurgical change (n=49), associated mass (n = 41), no pathology results (n = 56), or no mammographic images (n=2). Two hundred and twenty four cases of 225 AD were included; the PPV was 52.4% (118/225), DCIS alone was 8.0% (18/225). The most common benign was a sclerosing adenosis (35/225, 15.6%). AD was more likely to represent malignancy on diagnostic mammography than on screening (89.4% vs 44.6%, respectively; p = 0.003). A sonographical mass correlate was more likely to represent malignancy than with absence or non-mass (68.9% vs 27.8%, respectively; p = 0.001). A malignancy likelihood was more found when detected on two-view than on one-view mammography (59.6% vs 29.6%, respectively; p = 0.035).

CONCLUSION: The PPV for malignancy of AD on mammography is 52.4%. Malignancy can be any histologic type, but most are invasive carcinomas rather than in situ carcinomas. AD is more likely to represent malignancy if detect on diagnostic mammography rather than on screening, if there is a sonographical mass correlate, if they are seen on two-view mammography, or if they are associated with asymmetries and asymmetries with calcifications.

UTILITY OF ULTRASOUND AND MAMMOGRAPHY IN DETECTION OF NEGATIVE AXILLARY NODAL METASTASIS IN BREAST CANCER

Anam Khan*¹; Kumail Khandwala¹; Imrana Masroor¹

¹Radiology, Aga Khan University, Pakistan

OBJECTIVE: The objective of our study was to assess the utility of ultrasound and mammography in detection of absence of axillary lymph nodal metastasis in patients of breast cancer, taking histopathology as gold standard.

MATERIALS & METHODS: A cross-sectional study was conducted in Department of Radiology, Aga Khan University Hospital, Karachi for a duration of 23 months. All female patients between 20-95 years of age with known diagnosis of breast cancer with mammographic and ultrasound imaging done at our institute were included. Patients having abnormal lymph nodes on imaging, patients already operated for breast cancer, patients who already underwent axillary lymph node dissection and those without histopathology reports or surgery were excluded.

RESULTS: At surgical pathology, a total of 45 of the included 262 patients (17.2%) had one or more positive lymph nodes. 217 out of 262 patients were found to be true negatives as they had absent metastasis on imaging as well as on histopathology. 45 out of 262 patients were found to be false negatives as they had absent metastasis on imaging, however, they were found to be positive for metastasis on histopathology. The negative predictive value was 82.8%. The patients were stratified into seven groups with age range of 10 years, ranging from 26 to 95 years. A p-value of 0.148 showed statistically insignificant effect of age on diagnosing absence of metastasis by ultrasound and mammography.

CONCLUSION: Ultrasound and mammography even when used in combination cannot safely exclude axillary metastasis thus cannot eliminate the need of sentinel node biopsy.

MAGNETIC RESONANCE IMAGING TEXTURE ANALYSIS OF BREAST CANCER

Ng Bi Yoke*¹; Tang Zi Ying¹; Tan Li Kuo¹; Kartini Rahmat¹; Marlina Tanty Ramli²; Jeannie
H D Wong¹

¹*Department Of Biomedical Imaging, University Of Malaya, Malaysia*, ²*Radiology
Department, University Teknologi Mara, Malaysia*

OBJECTIVE: Application of texture-based radiomics to breast magnetic resonance images (MRI) for predicting and diagnosing breast cancer.

MATERIALS & METHODS: 84 lesions with histopathologically confirmed primary breast cancer were retrospectively evaluated. 3D volumetric breast lesions were segmented from subtracted dynamic contrast-enhanced (DCE) images. The segmented 3D mask (region of interest) was applied to different MRI sequences (T1-weighted, T2-weighted, STIR, DCE Phase 2, subtracted Phase 2) for texture analysis (TA) of the lesion using MATLAB software. TA of contralateral normal breast tissues were also performed for comparison. The texture features were used to analyze and classify immunohistochemical subtypes, histopathological grades and MRI kinetic curves using Kruskal-Wallis test and Random Forest classification. Validation of radiomics model was carried out using leave-one-out-cross-validation.

RESULTS: 215 texture parameters were analyzed. 177 textures features showed statistically significant differences between malignant lesions and normal breast tissues, with phase 2 DCE and subtracted images being the most useful sequences. The number of statistically significant texture features differentiating IHC subtypes, DCE curves and histopathological grades were 25, 9 and 150 respectively. The most useful sequences were T1W to classify IHC, DCE phase 2 for DCE curve, and T2W for histopathological grades. The test accuracies were 71.6% for IHC subtypes, 51.2% for DCE curves and 65.4% for histopathological grades using Random Forest classification.

CONCLUSION: MRI based TA radiomics is feasible to diagnose and classify breast cancer. Prospective validation studies with more data are needed to determine the potential usage of TA on breast cancer MRI in daily clinical practice.

**NEVER ENDING FIGHT OF PATIENTS AGAINST BREAST CANCER :
INCIDENTAL DETECTION OF BREAST CANCER IN PREVIOUS
RADIOLOGICALLY NORMAL CONTRALATERAL BREAST**

Mariam Malik*¹; Zainab Zahur ¹

¹*Department of Radiology, AECH-NORI Islamabad, Pakistan*

OBJECTIVE: We have observed in our clinical practice that there are a significant number of patients presenting with a histopathologically proven cancer in previously normal contralateral breast after being fully treated for ipsilateral biopsy proven cancer. We aim to conduct a retrospective study to determine its frequency.

MATERIALS & METHODS: Retrospective cross-sectional study will be conducted at Nuclear Oncology and Radiology Institute. We will include all patients with biopsy proven breast cancer who have had no metastasis at the time of their presentation on imaging. Included patients were compliant with their cancer treatment and received a complete course of chemotherapy and radiotherapy. All such patients who presented with a breast lump contralaterally after the completion of their treatment will be included. Cases of both ER, PR receptor positive and negative, HER-2 NEU receptor status positive and negative will be included. Included patients may or may not be taking the hormonal treatment.

RESULTS: We will analyze the data on SPSS version 23 using cross-tabs to determine frequency and percentages.

CONCLUSION: Our study will conclude whether or not there is a significant incidence of breast cancer in contralateral breast after completely treated ipsilateral breast carcinoma. Through our results we aim to highlight the importance of follow-up imaging of contralateral breast and how frequently it may be considered. We also aim to increase awareness amongst radiologists of this frequent incidence we have encountered in our setting.

ELIMINATE FALSE NEGATIVE ASSESSMENT IN BREAST SCREENING

Gregory Mataka*¹

¹*Department Of Radiology, University Hospitals Of Morecambe Bay NHS Foundation Trust, United Kingdom*

LEARNING OBJECTIVE: To learn how to manage breast screening detected abnormalities using mammographic techniques, Ultrasound and magnetic resonance imaging. This will focus on the management of small masses, asymmetric densities and microcalcification.

BACKGROUND: A False negative assessment (FNA) occurs if a breast cancer develops at a site that has been previously assessed for a screening detected abnormality. FNA can present either as an interval cancer or a screen detected cancer at the time of the patients next screening round. FNA rates are low but certain measures can be undertaken during assessment to reduce the False negative assessment rate.

FINDINGS AND/OR PROCEDURE DETAILS: The following will be covered in the educational exhibit. The use of at least 2 further mammographic views in the evaluation of a mass or asymmetric density. Ultrasound evaluation of asymmetric densities only visible on single CC or MLO view. Evaluation of large areas of microcalcification. Initiation of Double reading of assessments in patients who have been discharged. Use of MRI in patients with implants. Evaluation of masses less than 7mm in size thought to be cystic in aetiology following ultrasound. Multidisciplinary meeting (MDM) concordance of histology findings with imaging.

CONCLUSION: FNA rates are low but the use of further mammographic views, ultrasound and MDM discussion can help reduce the FNA rate even further.

**PREOPERATIVE TUMOR SIZE MEASUREMENT IN PRIMARY BREAST
CANCER USING MAGNETIC RESONANCE IMAGING, MAMMOGRAPHY, AND
ULTRASONOGRAPHY IN COMPARISON TO HISTOLOGICAL FINDINGS**

Krittarat Chaijiravivat*¹; Narisara Limninar¹; Jirarat Jirarayapong¹

¹Radiology, King Chulalongkorn Memorial Hospital, Thailand

OBJECTIVE: Magnetic Resonance Imaging (MRI) has been widely used in breast cancer staging in terms of tumor size and extents. This study aimed to determine the accuracy of MRI in the measurement of the tumor size in comparison to mammography (MMG) and ultrasonography (USG) with histological examination as the gold standard.

MATERIALS & METHODS: A retrospective study was conducted in 30 Thai women diagnosed with primary breast cancer who underwent preoperative imaging with all MRI, USG and MMG, during the period from December 2017 to September 2018. As an inter-rater reliability test, intraclass correlation coefficient (ICC), Pearson's correlation coefficient and Bland Altman plots were used to explore the degree of correlation and agreement of size as determined by MRI, USG, and MMG with histological examination.

RESULTS: MRI was proven to be more accurate than MMG and USG in determining the longest tumor dimension. ICC of MRI, MMG, and USG with histological size was 0.966, 0.960, and 0.917, respectively. While there was excellent correlation in sizing by MRI and MMG with histological sizing, good to excellent correlation was found under USG. Bland Altman plots illustrated that nearly all plots were distributed within 95% limits of agreement implying good agreement between histology and all three imaging examinations. Size underestimation was discovered in evaluation with all three imaging modalities; however, it was statistically significant only in measurement under USG and MMG.

CONCLUSION: Breast MRI was proven to be the most accurate in determining the longest tumor dimension without statistically significant size underestimation.

PLASMA LIPID PROFILE AND SONOGRAPHIC FEATURES OF CLINICAL GROUPS OF BREAST CANCER BASED ON MOLECULAR SUBTYPES

MARLINA YUSUF, JUHARA HARON, HASNAN JAAFAR

Marlina Yusuf*¹; Juhara Haron ¹; Hasnan Jaafar ²

¹Radiology, Universiti Sains Malaysia, Malaysia, ²Pathology, Universiti Sains Malaysia, Malaysia

OBJECTIVE: To determine the level of plasma lipid profile and sonographic features among different molecular subtype of breast cancer.

MATERIALS & METHODS: A cross sectional study in 33 histopathological proven breast cancer patients in Hospital Universiti Sains Malaysia from June 2017 until June 2018. The fasting plasma lipid profile for triglyceride (TG), total cholesterol (T-Chol), high density lipoprotein (HDL) and low density lipoprotein (LDL) were measured. Histopathological result of molecular subtypes the Estrogen Receptor (ER), Progesterone Receptor (PR), Human Epidermal Growth Factor 2 (HER2) status were identified and were classified into three clinical group. Group I; triple negative (negative ER,PR & HER-2), group II; hormonal receptor negative (negative ER & PR) but positive HER-2 and group III; hormonal receptor positive (positive ER & PR) but negative HER-2. The ultrasound images were analysed for well circumscribed margin of the mass, presence of posterior enhancement, posterior shadowing and calcification.

RESULTS: The mean for triglyceride was 2.25 (SD:0.98), total cholesterol was 5.31(SD:1.34), high density lipoprotein was 1.10 (SD: 0.22) and low density lipoprotein was 3.36 (SD:1.14). No significant difference between mean of plasma lipid among the clinical group ($p>0.050$). No significant association between sonographic features and clinical group except for calcification ($p=0.002$). Presence of calcification was highest in clinical group II and lowest in clinical group III.

CONCLUSION: High level of triglyceride among breast cancer patients in our study but the plasma lipid profile was non-discriminate among clinical group. Calcification was highest among patients with HER-2 positive.

CENTRAL VENOUS STENOSIS - A RARE CAUSE OF UNILATERAL BREAST OEDEMA

Suguna Raman*¹; Nur Safira Abd Isa¹

¹*Radiology, Hospital Tengku Ampuan Rahimah, Klang, Malaysia*

INTRODUCTION:

Central venous stenosis is not always suspected in female patients presenting with unilateral breast oedema. We present a case of left brachiocephalic vein/SVC junction stenosis presenting with isolated left breast swelling and was initially suspected to be an inflammatory breast malignancy.

REPORT:

A 72 year old female presented to Surgical Department for unilateral left breast swelling. She was investigated for breast malignancy and had imaging follow up for almost a year before the diagnosis of central venous stenosis was made. Similar to previous reports, our patient is a haemodialysis patient with an in-dwelling arteriovenous fistula (AVF) on the same side of the breast oedema. She underwent a venoplasty which only slightly improved the stenosis and breast oedema.

CONCLUSION:

We further discuss clinical and radiological strategies to manage similar cases in a timely manner in the future.

MRI BREAST: FEATURES OF MALIGNANT VS BENIGN LESIONS AND CURRENT ADVANCES

Nazimah Ab Mumin*¹; Kartini Rahmat²; Marlina Ramli³

¹Radiology, Universiti Malaya, Universiti Teknologi MARA, Malaysia, ²Biomedical Imaging Department, Universiti Malaya, ³Radiology, Universiti Teknologi MARA, Malaysia

LEARNING OBJECTIVE: To appreciate features of malignant versus benign breast lesions on Magnetic Resonance Imaging (MRI) and be updated on its current advances.

BACKGROUND: Breast MRI is essential in improving cancer detection, lesion characterization and determining therapy response. We present a concise educational tutorial, including pictorial review of malignant and benign breast lesions on MRI with current advances of its application.

FINDINGS AND/OR PROCEDURE DETAILS: Pertinent MRI findings of histopathological proven invasive ductal cancer (IDC), ductal carcinoma in-situ (DCIS), mucinous carcinoma, and angiosarcoma will be discussed. MRI features of benign lesions including fibroadenoma, papillary lesions and benign Phyllodes will also be discussed with highlight on the differentiating characteristics of each lesions.

Approximately two-thirds of cancers manifest as a mass (majority of IDC). The remainders are visible as non-mass enhancement (NME) (majority of DCIS). Typical features of malignant masses are irregular size/margin, heterogeneous/rim enhancement, and show washout. Classic malignant NME are segmental distribution and clumped/clustered ring pattern of internal enhancement.

Features of mucinous carcinoma with high T2 and slow/persistent kinetic enhancement may cause misdiagnosis of a benign lesion. Triple-negative cancer can also have benign appearance. However, their internal enhancement pattern, central necrosis and rim enhancement, can elicit their aggressive nature. Current advancement in breast MRI including abbreviated MRI, DKI, DWI/ADC and artificial intelligence will also be discussed.

CONCLUSION: Diagnosis of breast lesions maybe facilitated by features on MRI. Rapid advancement of MRI technology will further enhance breast MRI utilisation thus making it an indispensable tool in breast cancer management.

**COMPARISON OF DIAGNOSTIC PERFORMANCE BETWEEN MRI AND
ULTRASONOGRAPHY WITH MAMMOGRAPHY IN SURVEILLANCE FOR
LOCAL RECURRENT BREAST CANCER AFTER BREAST CONSERVING
THERAPY**

Minchanat Satja*¹; Somchanin Pipatpajong¹

¹*Diagnostic Radiology, Chulalongkorn Memorial Hospital, Thailand*

OBJECTIVE: This study aims to compare the diagnostic performance of magnetic resonance imaging (MRI) and mammography with ultrasonography for detection of local recurrent breast cancer among female patients with post-breast conserving therapy (post-BCT).

MATERIALS & METHODS: We retrospectively enrolled 190 post-BCT female patients who had undergone post-operative surveillance by MRI and mammography with ultrasonography at King Chulalongkorn Memorial Hospital from January 1st, 2008 to July 1st, 2019. Two researchers reviewed the images from MRI and mammography with ultrasonography, independently. The information including radiological and histopathological data were blinded during the review process. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) was then estimated to reflect the diagnostic performance of the two modalities for detection of local recurrent breast cancer.

RESULTS: Of the 190 patients, 52 of (27.4%) were diagnosed as local recurrent breast cancer. Sensitivity, specificity, PPV and NPV is 98.1%, 92%, 82.3%, 99.2%, respectively for MRI and 88.5%, 62.3%, 46.9%, 93.5%, respectively for mammography with ultrasonography. The findings which can be better evaluated by MRI than by mammography with ultrasonography include post-operative change and benign mass (p-value <0.001), suspicious mass and suspicious calcification found by mammography with ultrasonography (p-value <0.001 and 0.003, respectively).

CONCLUSION: MRI is superior to mammography with ultrasonography for detection of local recurrent breast cancer after BCT. Furthermore, MRI can help clinicians avoid unnecessary biopsy and surgical interventions due to its ability to differentiate post-treatment change from local recurrent breast cancer.

IMAGING OF LESION IN REGION RIGHT AXILLA WITH ULTRASOUND

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Lesion in region axilla may be finding in woman. Density of the lesion can solid and or cystic. Many cases in women had lymphadenopathy node axillary with breast cancer staging advance. That is differentiated diagnostic with axillary cystic hygroma. Examination choice at this case using ultrasound probe linier.

REPORT: We report a rare case 33 years old women. She is not yet married. We could finding palpable mass in a region axilla right. Size lesion is 2 centimetre x 1,9 centimetre x 1,8 cm centimetre. Examination with using ultrasound probe linier .The others examination radiology for this case may be use MRI shoulder and continued histopatology examination.

CONCLUSION: We had finding lesion in region axilla with ultrasound succesful,and we must be differentiated diagnostic with lymphadenopathy node axillary from malignancy breast cancer .

**BILATERAL MAMMARY ANGIOSARCOMA WITH POSSIBLE LEFT ORBITAL
METASTASIS - A CASE REPORT**

Yong Xin Min*¹; Shantini Arasaratnam¹; Ngan Kah Wai¹; Wan Zainab Hayati¹; Yogendren
Letchumanasamy²

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia,* ²*Department Of Nuclear
Medicine, Institut Kanser Negara, Malaysia*

INTRODUCTION:

Angiosarcoma of the breast is a rare entity and can be divided into primary and secondary angiosarcoma, with three histologic grades (low, intermediate and high grade). It has nonspecific imaging features, and diagnosis requires complete excision and thorough pathological examination. Mammary angiosarcoma tends to metastasize to lungs and liver, as well as sites not commonly involved by other sarcomas such as bones, skin, and contralateral breast.

REPORT: A 36 year-old female presented with a six-month history of right breast lump. Subsequent wide local excision confirmed an angiosarcoma. Two years later it was complicated by contralateral breast metastasis. After treatment patient developed a left orbital lesion believed to be metastatic angiosarcoma.

CONCLUSION: Mammary angiosarcoma is rare and carries a high risk for metastasis. Different imaging modalities, each with their roles in patient management plan, are used to help in patient management. Aggressive treatment at initial stage with close follow-up after treatment is important in managing angiosarcoma of the breast.

A CASE REPORT: ROSAI-DORFMAN DISEASE OF THE BREAST

Amornthip Ongchaiwattana*¹; Tikamporn Jitpasutham¹; Jenjeera Prueksadee¹

¹*Departments of Radiology, King Chulalongkorn Memorial Hospital, Thailand*

INTRODUCTION: Rosai-Dorfman disease (sinus histiocytosis with massive lymphadenopathy) of the breast is one of the rare diseases, characterized by benign proliferative disorder of histiocyte. Most occur within lymph nodes whereas the rest involve extranodal sites. Breast involvement is extremely rare and less than 40 cases have been reported in literatures. It is considerable because of radiological findings simulating breast cancer.

REPORT: We report the case of a 59-year-old Thai woman who underwent screening mammography. Her second study revealed a new isoechoic mass with circumscribed margin in subcutaneous layer of the left breast on ultrasonography. Her first biopsy showed chronic inflammation. Follow up mammography the next 14 months found developing asymmetry and ultrasound showed increasing size of the irregular heterogeneous echoic mass with echogenic rim and developing internal vascularity. Her second biopsy resulted in abnormal histiocytes with S-100 protein expression, some of them with emperipolesis (lymphophagocytosis). The final wide excision specimen confirmed the diagnosis of Rosai-Dorfman disease.

CONCLUSION: The imaging findings of Rosai-Dorfman disease can mimic breast cancer so histopathology plays an important role for accurate diagnosis. There are no current standardized guidelines on treatment or follow-up of patients with disease confined to the breast. Due to the limited number of cases, further studies with increased number of cases are needed to determine the best treatment strategy.

DUCTOGRAPHY COMBINED WITH DIGITAL BREAST TOMOSYNTHESIS FOR EVALUATION OF NIPPLE DISCHARGE: A FEASIBILITY STUDY

Danara Suleimenova*¹; Zhamilya Zholdibay²

¹Radiology, Kazakh National Medical University, Divera hospital, Kazakhstan, ²Radiology, Kazakh Research Institute of Oncology and Radiology, Kazakhstan

OBJECTIVE: To evaluate performance of the ductography combined with digital breast tomosynthesis (DBT).

MATERIALS & METHODS: Consenting patients with uniporous spontaneous serous or bloody discharge underwent ductography combined with DBT. All patients underwent discharge cytology and whole-breast hand-held ultrasound before the procedure.

Conventional ductography technique was used for duct cannulation and introduction of contrast media. DBT and digital mammography images were acquired in two standard projections. Breast radiologist with 8 years experience interpreted images. Lesion visibility was assessed using scale of 10. Lesion margin was characterized using scale “not visible, poor, satisfactory, good, excellent”. All patients underwent either core biopsy or lumpectomy with histopathologic evaluation.

RESULTS: A total of nine patients were examined. Three of them presented with unilateral serous discharge, five with unilateral bloody discharge and one with serous discharge from one breast and bloody discharge from another breast.

Breast ultrasound detected abnormalities in six out of nine cases (duct ectasia or intraductal lesion). Ductography combined with digital mammography and DBT was able to detect abnormalities in all nine cases: duct abruption in three cases, filling defect in six cases. In five cases these abnormalities were associated with dilatation of the involved duct. Pathology revealed two malignant (one invasive cancer and one carcinoma in situ) and seven benign lesions. Margin evaluation was better with DBT, and visibility score improved from 7/10 to 9/10 with use of DBT.

CONCLUSION: Ductography combined with DBT is a safe procedure that has same indications as a conventional ductography but provides better margin characterization and improves radiologist confidence.

THE CORRELATION BETWEEN MAMMOGRAM WITH HISTOPATHOLOGY RESULT IN BREAST CANCER PATIENTS

Yolanda Sitompul*¹; Lina Choridah¹

¹Radiology, RS.Dr.Pirngadi Medan, Indonesia

OBJECTIVE: Mammography examination is still the most trusted method and is widely used for breast cancer screening and for the diagnosis of breast cancer. The description of an abnormality or a lesion on mammography reflects the pathological changes that occur in breast anatomy.

MATERIALS & METHODS: This research is a retrospective observational analytic study to determine the morphological picture of breast carcinoma based on mammography examination with histopathological examination results.

RESULTS: The results of this study showed that there was no correlation between age and breast cancer patients' pathology with a significance value of 0.531, did not have a correlation between breast composition with breast cancer patients' pathology with a significance value of 0.105, did not have a correlation between the shape and the breast cancer patient's pathology with a value of significance 0.809, do not have a correlation between the border with hispathology of breast carcinoma patients with a significance value of 0.286, do not have a correlation between the number of lesions with hispathology of breast carcinoma patients with a significance value of 0.778, has a correlation between calcification forms with hispathology of breast carcinoma patients with a significance value of 0.032 and has a correlation between calcification distribution with hispathology of breast carcinoma patients with significant values fish 0.042.

CONCLUSION: The majority of morphological variables with hispathology have no correlation.

SONOELASTOGRAPHY IN EVALUATION OF FIBROCYSTIC BREAST DISEASE

Rajul Rastogi*¹; Neha¹; Satish Pathak¹; Vijai Pratap¹

¹Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Center, India

OBJECTIVE: Fibrocystic breast disease or fibroadenosis is a benign disease characterised clinically by mastalgia, firm palpable regions in the breast and at times a suspicious palpable lump. Mastalgia is characteristically premenstrual and is partially or completely relieved with menstrual flow associated with decreased firmness of breast tissue. For long, high-resolution ultrasonography (HRUS) is being utilised for differentiating benign from malignant breast diseases. Recently, sonoelastography especially acoustic radiation forced impulse (ARFI) imaging is being evaluated for its various applications in breast imaging. Hence, this prospective pilot study aimed to:

- Evaluate role of Sonoelastography in evaluation of fibrocystic breast disease.
- Evaluate role of ARFI in differentiating normal from fibrocystic breast parenchyma.

MATERIALS & METHODS: At least 30 breasts, 15 each with normal and proven fibrocystic disease were evaluated by sonoelastography. Data from virtual touch tissue quantification (VTTQ) was collected from fibroglandular parenchyma in the region of axillary tail and superolateral quadrant of breast in both normal & disease groups. The data obtained from control group was then compared with that from of cases.

RESULTS: Sonoelastography picked up 12 out of 15 cases with elasticity values lower than that of normal breast (usually less than 2m/sec).

CONCLUSION: Sonoelastography is highly accurate allowing confident diagnosis of fibrocystic disease thus obviating need for tissue diagnosis. Given high prevalence and benignity of fibrocystic breast disease and high accuracy of sonoelastography, imaging can be used with in not only reaching the diagnosis but also in monitoring the treatment of disease thus optimising cost and duration of treatment.

CORONAL VIEW IN AUTOMATED BREAST ULTRASOUND (ABUS): THE EXTRA DIMENSION IN BREAST ULTRASOUND - A PICTORIAL REVIEW

Nazimah Ab Mumin*¹; Kartini Rahmat²; Marlina Ramli³; Ng Wei Lin²; Chan Wai Yee¹;
Shamsiah Abdul Hamid³

¹*Biomedical Imaging, Radiology, Universiti Malaya Research Imaging Centre, Universiti Teknologi MARA, Malaysia,* ²*Biomedical Imaging Department, University of Malaya Research Imaging Centre, Malaysia,* ³*Radiology, University Teknologi MARA, Malaysia.*

LEARNING OBJECTIVE: To appreciate the features of benign and malignant lesions in ABUS with digital breast tomosynthesis (DBT) and Magnetic Resonance Imaging (MRI) correlation. To illustrate the usefulness of coronal view in combination with volumetric imaging, with emphasis on benign versus malignant features.

BACKGROUND: In recent studies, ABUS showed comparable results to handheld ultrasound (HHUS) and in some instances, superior than HHUS as an adjunct tool to mammography, especially in dense breasts. ABUS application in diagnostic setting has improved diagnostic efficacy of cancer detection. It can also be used to evaluate multifocality, tumour response to neoadjuvant chemotherapy and second-look ultrasound for MRI detected lesions.

FINDINGS AND/OR PROCEDURE DETAILS: We aim to showcase the ABUS features of benign and malignant lesions including fibroadenoma, cyst, sclerosing adenosis, intraductal papilloma, lobular and ductal carcinoma in situ and invasive ductal carcinoma in the cases done using GE Healthcare Invenia™ ABUS in our tertiary referral center. ABUS distinct features on coronal view including “retraction phenomenon”, “black hole”, “white hole” and “white wall” are characteristics of breast pathology. These findings will be correlated with HHUS, DBT and MRI. As a volumetric imaging, precise tumour location including the distance to the nipple is automatically generated, which contributes to preoperative quality assurance.

CONCLUSION: ABUS is becoming an important adjunct tool not only in screening, but also diagnostic and staging of breast cancer. As this technology is increasingly gaining popularity and importance in breast imaging, up-to-date knowledge and continuous research is crucial to ensure ABUS is applied to its full potential.

COEXISTING TB LYMPHADENITIS AND PRIMARY BREAST CANCER IN AXILLA: A CASE REPORT

Hye-Won Kim *¹; Ji Young Rho¹

¹Radiology, Wonkwang University Hospital, Korea

INTRODUCTION: Coexistence of primary breast cancer and TB lymphadenitis in axilla is very rare. There is a lack of explanation of the relationship, treatment and course of the two diseases because of no sufficient number of cases.

REPORT: A 59 year-old woman who presenting palpable mass in her axilla visited for evaluation. On ultrasonography, multiple enlarged lymph nodes in the right axilla, and additional irregular hypoechoic hypervascular mass was noted. Also it was irregular hyperdense mass with suspicious calcifications on mammography. Breast cancer of the axilla was strongly suggested and pathologically confirmed through US-guided biopsy. This axillary breast cancer was proven 0.9cm luminal A type of high grade invasive ductal carcinoma. Excised suspicious lymph nodes were proven chronic granulomatous inflammation with necrosis, consistent with tuberculosis. There was no evidence of previous or active pulmonary tuberculosis. There was no recurrence for about 1 year after breast cancer surgery and TB treatment.

CONCLUSION: The axillary lymph node enlargement that are found with breast cancer should be avoided with unnecessary lymph nodes dissection with many other possibilities in mind. To do this, fine needle aspiration or biopsy of suspicious lymph nodes is necessary to exclude metastasis.

USEFULNESS OF CONTRAST-ENHANCED ULTRASOUND (CEUS) IN BREAST CANCER PATIENTS

Hye-Won Kim*¹; Ji Young Rho¹

¹Radiology, Wonkwang University Hospital, Korea

LEARNING OBJECTIVE: This exhibition is to introduce breast CEUS and explain the diagnostic and clinical usefulness of CEUS in various breast cancer cases.

BACKGROUND: Contrast-Enhanced Ultrasound (CEUS) is able to assess the microflow of tumors using microbubble contrast agents and provide quantitative qualitative analysis of tumor microvasculature. Recent studies report that hemodynamic features assessment of breast cancer through CEUS is comparable to contrast-enhanced magnetic resonance imaging.

CONTENTS:

1. Introduction of CEUS
2. Methods of CEUS in breast evaluation
3. Analysis of CEUS in breast tumors
4. Features of CEUS in breast cancer
5. Comparison of CEUS and dynamic contrast enhanced MRI of breast cancer
6. Application of CEUS on 2nd look US for evaluation of additional suspicious lesions on preoperative breast MRI
7. CEUS for evaluation of neoadjuvant chemotherapy

CONCLUSION: Understanding of features and characteristics of CEUS in breast cancer will be helpful for accurate diagnosis and appropriate management.

A RARE TYPE OF MRI FEATURES OF METAPLASTIC BREAST CARCINOMA.

Soo Suet Woon*¹; Kartini Rahmat¹; Marlina Tanty Ramli Hamid¹

¹*Department of Radiology, University Malaya Medical Centre, Malaysia*

INTRODUCTION: Metaplastic breast carcinoma is a rare type but often aggressive breast cancer. It is a mixture of malignant mesenchymal and epithelial elements. Some of the carcinomatous epithelium is transformed into a nonglandular growth pattern by process referred to as metaplasia. Metaplastic changes include squamous cell, spindle cell, and heterologous mesenchymal growth patterns.

REPORT: In this educational exhibit, we reviewed the magnetic resonance imaging features of the metaplastic carcinoma of the breast. Hereby, we reported a case of 37 years old lady who presented with left breast lump with histopathological findings of metaplastic breast carcinoma. MRI features of this patient showed that lesion is irregular with spiculations and peripheral heterogenous enhancement. It demonstrates type 3 curve. Centrally it demonstrates high T2W signal in keeping with necrotic centre. This finding is related to the necrotic component of the tumor and may be useful for preoperative diagnosis of metaplastic carcinoma of the breast,

CONCLUSION: MBC is a rare subtype of invasive breast cancer that accounts for less than 1% of all diagnoses. However, it is associated with poor prognostic indicators. Hence MRI findings are essential to help determine the type of breast carcinoma.

**CASE SERIES OF BREAST FILLERS AND HOW THINGS MAY GO WRONG:
RADIOLOGY POINT OF VIEW**

Raihanah Haroon*¹; Vivien Suryani Amru¹; Siti Kamariah Che Mohamed¹; Radhiana Hassan¹

¹*Radiology Department, IIUM, International Islamic University of Malaysia*

INTRODUCTION: Breast augmentation is a procedure opted by women to overcome sagging breast due to breastfeeding or aging as well as small breast size. Recent years have shown the emergence of a variety of injectable materials on market as breast fillers. These injectable breast fillers have swiftly gained popularity among women, considering the minimal invasiveness of the procedure, nullifying the need for terrifying surgery. Little do they know that the procedure may pose detrimental complications, while visualization of breast parenchyma infiltrated by these fillers is also deemed substandard; posing diagnostic challenges. We present a case series of three patients with prior history of hyaluronic acid and collagen breast injections.

REPORT: The first patient is a 37-year-old lady who presented to casualty with worsening shortness of breath, non-productive cough, central chest pain; associated with fever and chills for 2-weeks duration. The second patient is a 34-year-old lady who complained of cough, fever and haemoptysis; associated with shortness of breath for 1-week duration. CT in these cases revealed non thrombotic wedge-shaped peripheral air-space densities. The third patient is a 37-year-old female with right breast pain, swelling and redness for 2-weeks duration. Previous collagen breast injection performed 1 year ago had impeded sonographic visualization of the breast parenchyma. MRI breasts showed multiple non-enhancing round and oval shaped lesions exhibiting fat intensity.

CONCLUSION: Radiologists should be familiar with the potential risks and hazards as well as limitations of imaging posed by breast fillers such that MRI is required as problem-solving tool.

**BILATERAL BREAT HAMARTOMAS IN A YOUNG FEMALE : A CASE REPORT
AND LITERATURE REVIEW OF THE UNDER RECOGNIZED BREAST LESION**

M.H.W. Madahavi Nadeesha Wijayapala*¹; Perera LDRA²;

¹*Department of Radiology, National Hospital of Sri Lanka, Sri Lanka,* ²*Department of Radiology, District General Hospital Kalutara, Sri Lanka*

INTRODUCTION: Breast hamartoma, also known as fibroadenolipoma is a rarely reported benign breast lesion of undefined pathogenesis typically occurring in females >35 years old. B/L breast hamartomas are extremely infrequent. Due to poor awareness of characteristic radiological features, it's often under-diagnosed. Increasing awareness of this entity is of utmost significance as it clinically mimics both benign and malignant breast lesions.

REPORT: A 34 years old woman who had painless lumps in both breasts, which had been progressively growing in size over 5 years duration was evaluated. She did not have risk factors for breast cancer or history of breast trauma. The patient had been investigated for the same complaint 2 years back, with sonography and fine needle aspiration cytology (FNAC), which favored diagnosis of fibroadenoma. Clinical findings also resembled fibroadenomas in the upper outer quadrant of both breasts. Ultrasound revealed well defined solid heterogeneous masses in both breasts raising the possibility of malignancy. However, posterior acoustic shadowing or vascularity was not detected. Mammographically lesions comprised of both fat and soft tissue internal densities and thin capsules producing breast within a breast appearance. Mammographically no suspicious features of malignancy were detected. Complete excisions of breast lesions confirmed histopathological diagnosis of B/L breast hamartomas.

CONCLUSION: Breast hamartomas are benign. Hence when presented with characteristic radiological appearances; additional diagnostic procedures are not required. However, the diagnosis by a single Radiological imaging modality or FNAC is difficult and inadequate. Recognition of imaging features of malignant transformation of breast hamartoma is important.

**ULTRASOUND EVALUATION OF FOCAL ASYMMETRY SEEN ON
MAMMOGRAPHY: CORRELATION WITH HISTOPATHOLOGY OR LONG
TERM FOLLOW-UP**

Pitsiree Bunnag*¹; Jenjeera Prueksadee¹

¹*Radiology Department, King Chulalongkorn Memorial Hospital, Thailand*

OBJECTIVE: To determine diagnostic value of ultrasound for evaluating focal asymmetry in mammography.

MATERIALS AND METHODS: The data was retrospectively collected and searched for mammographic reports coded as focal asymmetry and ill-defined density during January 2015 -May 2019. We examined patient's sonographic imaging whether it correlated to mammography and then reviewed histopathologic result or at least two-year imaging follow-up.

RESULTS: There were 260 patients with focal asymmetry on mammography and available ultrasound examination. The ultrasound study showed no focal abnormality in 162 patients (62%), benign lesion in 83 patients (32%), and suspicious lesions in 15 patients (5.8%). Of 15 patients with suspicious lesions, 2 patients had malignancy and the rest revealed benign pathologic results or stability after two-year follow-up. The sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) of ultrasound for determining focal asymmetry were 100% (95% Confidence Interval (CI) 75.3 – 100%), 65.2% (95% CI 58.9 – 71.1%), 100% (95% CI 97.7-100) and 13.1% (95% CI 7.2%-21.4%), respectively. The percent agreement was analyzed to assess correlation of ultrasound finding with pathologic results or clinical outcome which showed strong agreement (66.92%).

CONCLUSION: Our study revealed that ultrasound had high sensitivity and NPV but low specificity and PPV for evaluating focal asymmetry. However, it is a good diagnostic tool follow mammography. Focal asymmetry without suspicious lesion in ultrasound can be advised to do routine annual mammography instead of a short interval follow-up which helps to reduce patient's concern and unnecessary expense.

A RARE CASE OF SQUAMOUS CELL CARCINOMA OF THE BREAST

Foo See Yun*¹; Aida Widure Mustapha Mohd Mustapha¹

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia

INTRODUCTION: Squamous cell carcinoma (SCC) of the breast is rare, aggressive, hormone receptor negative and has poor prognosis. It can be primary, metaplastic or metastasis in origin. The five years survival rate is 67%. There is no specific mammographic or ultrasound finding of breast SCC. However, malignancy needs to be suspected in a cystic breast lesion with thick wall without any trauma history or infection. We will discuss a case of metaplastic squamous cell carcinoma of the breast and the imaging findings.

REPORT: A 42 years old female, Para 1. presented with right breast lump during self-check. It is rapidly increasing in size with no skin changes or nipple discharge. Her Initial fine needle aspiration cytology (FNAC) is inconclusive but cystectomy and wall curettage showed squamous differentiation. Her mammogram showed mass at right upper outer quadrant with associated overlying skin thickening and few smaller lesions; with enlarged right axillary nodes. Ultrasound noted large thick walled lobulated cystic mass occupying the right upper outer quadrant. After three cycle of chemotherapy, patient had right mastectomy and axillary clearance and the HPE result showed metaplastic SCC.

CONCLUSION: Thick-walled cystic breast lesion has 30% chance of malignancy, the cystic component may not give diagnostic value and so biopsy of the cyst wall is required. Histopathological assessment is the only way to identify the cell types. Whenever a patient presented with rapidly growing breast mass, high density on mammogram and appears cystic on ultrasound, metaplastic breast carcinoma should be included in the differential diagnosis.

IMAGE-GUIDED LOCALIZATION OF IMPALPABLE BREAST LESIONS: A COMPARATIVE ANALYSIS OF MAGSEED AND HOOKWIRE IN AN ASIAN POPULATION

Yang Siyue*¹; Lai Yee Tak Alta¹; Li On Chee Angela¹; Leong Po Wey¹; Kwok Kai Yan¹; Chow Denise Long Yin¹; Li Birgitta Yan Wing¹; Leng Yongmei¹; Fung Brian Wai Him¹; Ho Cheuk Him¹; Wong Yiu Chung¹

¹*Department of Radiology, Tuen Mun Hospital, China*

OBJECTIVE: To compare the performance of Magseed and hookwire localisation of impalpable breast lesions in an Asian population.

MATERIALS AND METHODS: Retrospective review of patients who underwent breast surgery after image-guided Magseed or hookwire insertion in a regional hospital in Hong Kong from January 2020 to January 2021 was conducted. Rates of placement success (defined as target-marker distance <1cm), target detection, marker retrieval and complications were compared.

RESULTS: Choice between Magseed and hookwire was based on clinicoradiological discussion after considering lesion location and scheduling practicability. 22 patients received Magseed and 23 patients received hookwire for preoperative localisation; total 52 lesions (24/52 Magseed, 28/52 hookwire) were marked and excised. Magseeds were placed 0-35 days before surgery (median, 0 day; mean, 16 days; 14/22 same-day operation, 8/22 decoupled operation). Under ultrasound guidance, 66.7% (16/24) and 75.0% (21/28) of the lesions were marked by Magseed and hookwire respectively. Under stereotactic guidance, 33.3% (8/24) and 25.0% (7/28) of the lesions were marked by Magseed and hookwire respectively. Placement success was comparable (95.8% Magseed, 96.4% hookwire, p=1.000). All targets were detected in the first operation and successfully removed intact without complications.

CONCLUSION: Magseed localisation demonstrates effectiveness and safety comparable to conventional hookwire in Asian patients with thinner and denser breasts, with the additional advantage of decoupling localisation and surgery dates. This flexible and efficient workflow is especially essential in maintaining the capacity to support ongoing patient management and treatment amidst the unprecedented scheduling challenges in the COVID-19 pandemic.

A CASE OF SEVERE DRUG INDUCED GYNECOMASTIA

Zhen Pang Chang*¹; Nor Hafizah Abu Hassan¹

¹*Radiology, Hospital Melaka, Malaysia*

Introduction: Gynecomastia is benign glandular tissue enlargement of male breast due to hormonal imbalance between estrogen and testosterone. In adult, it is commonly drug induced and usually reversible after cessation of the drug.

Reports: A 26 year old male with background of retroviral infection and currently on antiviral treatment presented with bilateral enlarged and painful breasts. He self-started on hormonal drugs for breast enhancement 2 years ago for 3-4 months and stopped after being diagnosed with retroviral infection. His breasts gradually enlarged despite cessation of the drugs. He denies any implant or procedure done on breasts. On examination, bilateral huge and inflamed breasts (approximate 15.0cm in diameter), no obvious lump. He was treated as mastitis and given intravenous antibiotic for 3 days and was discharged with a course of oral antibiotic. Ultrasound and MRI were performed. Ultrasound shows diffuse heterogenous soft tissue mass of both breasts. MRI shows enlarged symmetrical breast tissue; T1W: homogenous intermediate signal intensity with fine reticulations, T2W: slightly hypointense multiple homogenous nodules and are not fully suppressed on fat saturated sequences, no significant enhancement post contrast administration. Trucut biopsy was performed due to suspicious of neoplasm and the result is consistent with bilateral gynecomastia.

Conclusion: Adult gynecomastia is commonly drug induced and reversible after cessation of the drug. Neoplasm needs to be considered in patients with retroviral infection with breast mass/lump. This case report represents a rare occurrence of late onset drug induced diffuse gynecomastia.

**MAGNETIC RESONANCE IMAGING AND ULTRASOUND FINDINGS OF
BREAST IMPLANT RUPTURE PRESENTING AS A PAINFUL BREAST
SWELLING- A CASE REPORT.**

Debarpita Datta*¹

¹*Department Of Radiodiagnosis, Medical College Kolkata And Hospital, India*

INTRODUCTION: Silicone-gel-filled breast implants are popularly used for breast augmentation and breast reconstruction following mastectomy. Postoperative complications include hematoma, infection, capsular contracture, silicone granuloma formation, and implant rupture have been reported, and rupture is one of the most common complications of silicone implant augmentation. The gold standard for diagnosing and evaluating implant rupture is magnetic resonance imaging (MRI) but ultrasound is often the first and cheaper modality to start investigation.

RESULTS: A 53-year-old lady presented to the Radiology Department with left sided painful swelling of breast for three months. She had a history of augmentation mammoplasty with silicone implants 10 years prior to presentation for low grade DCIS. She reported reddening of skin around the diffuse swelling of the breast with associated fever. Ultrasound reveals both intracapsular and extracapsular rupture of the silicon implant with extrusion of free silica particles into the surrounding breast parenchyma creating both “snowstorm” and “stepladder” sign. T1 weighted MRI and fat-suppressed T2 weighted MRI reveals free silicone foci and focal contour abnormality of the implant outline and a irregular mass-like lesion which is iso-intense to the silicone inside the implant shell inferior to the implant consistent with silicon granuloma. The outline of the implant was also collapsed with the capsule in-folding to form the “linguine” sign.

CONCLUSION: Chronic leakage of free silicone particles trigger an intense fibrotic reaction forming silicone granuloma giving rise to acute inflamed unilateral swollen breast.

**CHARM IS DECEITFUL, BEAUTY IS VAIN: BREAST POST FILLERS'
COMPLICATIONS - A CASE SERIES.**

Zahurin Ismail*¹; Wan Mezlina Wan Zakaria²; Nurlailly Syakimah³

¹Radiology Department, National Cancer Institute Putrajaya, Malaysia, ²Radiology Department, Hospital Putrajaya, Malaysia, ³Radiology Department, Hospital Serdang, Malaysia

INTRODUCTION: Aesthetic breast augmentation is practised widely in Asia. Fillers like autologous fat, silicone gel, and polyacrylamide gel are injected for uplift and firming. It is administered illegally and associated with complications, such as pain, infection, foreign body reactions and possibly life-threatening. Radiologically, it is challenging to assess for cancer and complications. Mammogram, ultrasound and MRI findings of three patients with complications are discussed.

REPORT: Case 1: 40 year old Chinese lady with unknown type of filler's injection came with pain, fever and pus discharge of right breast. Ultrasound showed well circumscribed collection of mix internal deep to gland tissue suggestive polyacramide gel fillers. Pus aspirated from the right breast. Case 2; 55 year old Malay lady with free silicon injection complaint of hard lump in the right breast. Mammogram showed nodular dense breasts and ultrasound of 'snow storm' appearance. MRI showed multiple granulomas with suspicious mass in the right breast. Case 3: 50 year Malay lady admitted to a private hospital ICU due to sepsis post breast fillers injection. MRI showed irregular deformed right breast. Patient is planned for bilateral mastectomy and delayed reconstruction with silicon implants.

CONCLUSION: Mammogram and ultrasound with fillers injection are difficult to interpret. MRI is the best modality to assess breasts with fillers to look for cancer formation and evaluation of severity of complication for better surgical planning.

**A RARE CASE OF METASTATIC SMALL CELL CARCINOMA OF BREAST
FROM MIXED TYPES OF CERVICAL CARCINOMA.**

Zaitul Azra Mohd Nasir*¹; Nur Asma Sapiai¹; Fairos Abdul Muthalib²; Nurul Ain Mat Idris²

¹Radiology, Universiti Sains Malaysia, Malaysia, ²Radiology, Hospital Raja Perempuan Zainab II, Malaysia

INTRODUCTION: Secondary breast metastases from the extramammary malignancies is a rare condition with an incidence of 0.4% to 1.3% reported in the literature. In this case, the patient has metastatic small cell carcinoma of the breast with the primary source coming from the uterine cervix.

REPORT: A fifty-eight-years-old postmenopausal woman with no known medical illness presented with postmenopausal bleeding. On vaginal examination, there is lobulated mass at anterior and lower part of uterine cervix with contact bleeding. Biopsy was taken and revealed mixed types of squamous cell carcinoma and small cell carcinoma. She underwent chemoradiotherapy and brachytherapy, and later presented with palpable left breast lump three months after the diagnosis. Diagnosis of metastatic small cell carcinoma of breast was confirmed by the biopsy. This patient is planned for another brachytherapy for cervical carcinoma and chemotherapy for metastatic breast carcinoma.

CONCLUSION: Metastatic small cell carcinoma of the breast is extremely rare, especially when the primary site is from the uncommon site such as uterine cervix. Up to this date, due to its rarity, there is no standard therapy for both extrapulmonary and metastatic small cell carcinoma. However, it is important for the early detection of the disease as the management largely differs from the primary breast cancer. In short, the treatment of secondary malignancy of the breast should be directed at the primary disease, and palliative mastectomy should be offered to the patients.

SHEAR WAVE VERSUS ELASTOGRAPHY OF BREAST LESIONS - THE VALUE OF INCORPORATING BOUNDARY TISSUE ASSESSMENT IN SHEAR-WAVE ELASTOGRAPHY

Leong Lester*¹; Tay Wei Ming Ian¹; Moey Hui Ling Tammy¹; Sim Shao Jen¹; Karen Tan¹

¹*Diagnostic Radiology, Singapore General Hospital*

OBJECTIVE: The aim of this study is to determine if incorporating assessment of peripheral stiffness for shear-wave elastography (SWE) can close the gap in diagnostic performance to strain elastography (SE) based on the E/B ratio.

MATERIALS AND METHODS: A total of 101 individual breast masses were evaluated. Patients presenting to the radiology department for ultrasound (US) guided biopsies were invited to undergo US elastographic assessments of the lesions before the biopsy. The masses were evaluated using a single machine (Siemens Acuson S2000). The histopathologic diagnosis was used as the reference standard. The sensitivity, specificity and area under curve (AUC) were obtained for SE and SWE.

RESULTS: The sensitivity and specificity, respectively, was 94.7% (95% CI: 87.6 100) and 81.0% (95% CI: 71.3 90.1) for SE using the E/B ratio. For SWE incorporating assessment of peripheral stiffness, the sensitivity and specificity was 78.9% (95% CI: 66.0 91.9) and 81.0% (95% CI: 71.3 90.1). The AUC for SE was higher (0.878) compared to SWE incorporating assessment of peripheral stiffness (0.799).

CONCLUSION: SE elastography using the E/B ratio yields diagnostic performance which is superior to SWE incorporating assessment of peripheral stiffness.

A CASE OF RARE DESMOID-TYPE FIBROMATOSIS PRESENTED AS A BREAST LUMP

Wan Irfan W Mustapha*¹; Nur Shahida Binti Wahab¹; Radhiana Hassan¹; Raihanah Haroon¹

¹Radiology, International Islamic University Malaysia

INTRODUCTION: Desmoid-type Fibromatosis is a rare type of benign tumor arising from musculoaponeurotic tissues. It can occur anywhere in the body but is most commonly found in the abdomen and limbs.

REPORT: We describe this type of tumor in a 46 years old lady who presented with a right breast lump. Mammography and ultrasound show a solid mass on the lateral part of the right breast and was categorized as a lesion with suspicion of malignancy, BI-RADS 4C. A core biopsy sample was taken and yielded a result of a mesenchymal lesion, following which MRI of the chest wall was performed showing that the mass was actually originating from the pectoralis muscle. It was later resected and confirmed as a Desmoid-type Fibromatosis.

CONCLUSION: This case report explores its appearance on multimodality imaging and the challenges faced in making a radiological diagnosis of a rare soft tissue tumor in its atypical location.

SALIENT FEATURES OF CARDIAC AMYLOIDOSIS IN CARDIAC MRI HOSPITAL SERDANG

Sharipah Intan Syed Abas*¹; Yusri Mohammed¹; Kama Azira¹; T Hurston²; Dalila Adnan²

¹Radiology Department, Hospital Serdang, Malaysia, ²Cardiology, Hospital Serdang, Malaysia

INTRODUCTION: Cardiac amyloidosis (CA) is a rare systemic disorder that requires a heightened clinical suspicion and a systematic diagnostic approach. The gold standard for diagnosis is endomyocardial biopsy, however, with advancements in CMR, there has been significant ability to detect the presence of CA, in particular by using LGE which is sensitive to detect cardiac involvement.

REPORT: We highlight a case of a 53 years old, female, initially presented with complaints of submandibular swelling and associated with a large tongue and voice hoarseness. She has significant loss of appetite and loss of weight x 2 years. Initial ENT examination revealed no significant findings through scope. A CT/MRI of the neck revealed a large tongue but do not show any other findings. She came back 2 months later with symptoms of CCF (NYHA class II-II) with bilateral pedal oedema, skin peeling over both hands and feet and destruction of her toenails. Her ECG shows poor R wave progression. Her CXR shows cardiomegaly with pleural effusion. An abdominal fat biopsy was done which later confirms amyloidosis. A cardiac MRI was done and shows asymmetric thickened myocardial wall, especially at midseptal while the LGE study show diffuse subendocardial with some parts showing transmural LGE pattern. Both pericardial and pleural effusion are prominent.

CONCLUSION: LGE sequence in cardiac MRI is excellent to detect the interstitial amyloid deposition in which in this case ironically depicts both transmural as well as subendocardial LGE patterns; both associated with the worst clinical outcome.

PRE-OPERATIVE ASSESSMENT OF CONGENITAL HEART DISEASE : A PICTORIAL ASSAY

Nusrat Ghafoor*¹; Rokonujjaman (Selim)²

¹*Radiology & Imaging, Ibrahim Cardiac Hospital & Research Institute, ²Pediatric & Adult Congenital Cardiac Surgery, Ibrahim Cardiac Hospital & Research Institute, Dhaka, Bangladesh*

LEARNING OBJECTIVE: Congenital heart disease (CHD) is an important cause of Neonatal and Paediatric mortality & morbidity. CHD is invariably a developmental defect that may occur singly or in combination with other anomalies. Patients with complex congenital heart disease (CHD) have a high incidence of extracardiac vascular and non-vascular malformations. Those additional abnormalities may have an impact on the precise planning of surgical or non-surgical treatment.

BACKGROUND: Accurate diagnosis with detail delineation of extra cardiac, systemic and pulmonary arterial and venous structures are very important in managing these patients, surgical planning or other interventions. Cardiac computed tomography Angiogram (CCTA) is a non-invasive, increasingly popular modality in evaluation of congenital heart diseases (CHD) in children. Despite radiation exposure, (CCTA) is now commonly used for evaluation of the complex CHD, giving information of both intra-cardiac and extra-cardiac anatomy, coronary arteries, and vascular structures. It is important for radiologists to have extensive knowledge of cardiovascular anatomy, physiology, and surgical techniques.

FINDINGS AND/OR PROCEDURE DETAILS: Here, several cases are discussed where Cardiac CT Angiogram played an invaluable role in diagnosing the CHD. We scanned by 128 slice CT scanner, iodinated contrast media 2 ml/kg body weight, 4 phase non-ECG gated Cardiac CT Angiogram. Some patient needed anesthesia/sedation. Post processing multi planner /3-D image reconstruction was done for image analysis.

CONCLUSION: CCTA is an accurate modality & plays a key role for demonstrating the anomalies, extracardiac structures in complex CHD and guiding the surgical team for a proper planning.

ISOLATED INTERRUPTED AORTIC ARCH : A CASE REPORT

Shobhana Sivandan*¹; Caroline Judy Westerhout²

¹*Radiology Department, Hospital Tuanku Ja'afar, Seremban, Malaysia,* ²*Biomedical Imaging, University Malaya Medical Centre, Malaysia*

LEARNING OBJECTIVE: To demonstrate importance of MSCT in the diagnosis of interrupted aortic arch (IAA).

BACKGROUND: Interrupted aortic arch (IAA) is an extremely rare congenital malformation of the aorta which occurs in approximately 3 per million live births. It is defined as complete luminal and anatomical discontinuity between the ascending and descending aorta. Most patients are diagnosed in early childhood, however there are sporadic incidences of survival up to adulthood.

FINDINGS AND/OR PROCEDURE DETAILS: A 25-year-old lady, diagnosed with young hypertension, presented with symptomatic anaemia, fever and right ankle pain and was treated as Rheumatoid arthritis (RF positive). On physical examination, her blood pressure was 162/98mmHg with a normal heart rate. Cardiovascular examination did not reveal any murmur. Echocardiography demonstrated an enlarged ascending aorta. Turbulence was seen after the descending aorta suggesting the possibility of a coarctation of aorta or aortic dissection. The patient was referred for a multislice CT (MSCT) angiography of the thoracic aorta which revealed an enlarged ascending aorta with interruption of the aortic arch distal to the level of the left subclavian artery, with numerous collateral vessels arising from the descending thoracic aorta. No intimal flap to suggest aortic dissection. This case demonstrates the clinical value of MSCT angiography in detection of IAA which was not seen on echocardiography.

CONCLUSION: IAA is rarely encountered in adults. MSCT angiography is a useful diagnostic imaging modality in patients with this congenital anomaly for precise and prompt diagnosis.

MYOCARDIUM VIABILITY IN IMPAIRED LEFT VENTRICULAR EJECTION FRACTION PATIENTS AS EVALUATED USING TC99M-TETROFOSMIN CARDIAC VIABILITY STUDY

Ahmad Zaid Zaniah*¹; Siti Zarina Amir Hassan¹

¹*Nuclear Medicine Department, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: Impaired ejection fraction (EF) $\leq 40\%$ denotes heart failure with reduced EF. However, viable myocardium has been demonstrated in considerable number of severe left ventricular dysfunction patients. Nitrates-enhanced Tc99m-Tetrofosmin cardiac viability study is a feasible relatively uncomplicated procedure providing information pertinent to heart failure management. We aimed to describe clinical profile and myocardium viability/scintigraphy findings of impaired EF patients as demonstrated on Tc99m-Tetrofosmin viability study.

MATERIALS & METHODS: Analysis of patients who underwent cardiac viability study in our centre between July 2014 and August 2018. They received sublingual nitrates (GTN) 15 minutes prior to Tc99m-Tetrofosmin injection. Imaging performed one hour later. Viability evaluation was done using Emory Cardiac Toolbox with 50% perfusion cut-off point. Clinical data and scan findings of impaired EF patients (n=28) were compiled and analysed accordingly. One patient with incomplete information was excluded.

RESULTS: Average age was 55.2 years. Majority were males (n=25) and reported ≥ 3 risk factors (n=24). 13 patients had prior cardiac admission (myocardial infarction, n=8). Viability study demonstrated biventricular dilatation in 6 patients. Mean percentage of previous EF and viability study-calculated EF were 27% and 29% respectively. The overall mean percentage of estimated viable myocardium was 70.6%. Males were associated with lower mean percentage of viable myocardium compared to females (68.2% vs. 100%, $p < 0.050$). Among 21 cases of dilated heart with presence of non-viable lesions, biventricular dilatation was associated with extensive RCA territory involvement ($p < 0.050$).

CONCLUSION: Males were found to have lower mean percentage of viable myocardium. Biventricular dilatation was associated with extensive RCA territory involvement.

CASE OF HETEROTAXY SYNDROME (RIGHT ISOMERISM) WITH COMPLEX CONGENITAL HEART DISEASE.

Pravinkumar Bharde *¹; A. Praveenkumar¹

¹*Radio-Diagnosis, Kakatiya Medical College, India*

INTRODUCTION: Heterotaxy includes a spectrum of malformations involving abnormal right-left axis determination. Presentation with visceral malposition/dysmorphism associated with indeterminate atrial arrangement and vascular anomalies is termed situs ambiguous or heterotaxy. The incidence of heterotaxy is 1 in 5000–7000 live births with congenital heart disease. Heterotaxy is subdivided into right or left isomerism, according to the atrial appendage anatomy. The atrium with a broad-based appendage receiving blood from the IVC, is called the systemic or right atrium. The atrium with a smaller, narrower appendage receiving blood from the pulmonary veins, is the pulmonary or left atrium.

REPORT:

1. Dextrocardia
2. Right sided aortic arch
3. Double SVC
4. Double IVC
5. AVSD (atrioventricular septal defect with common atrium and ventricle - univentricle with right ventricle morphology)
6. Double outlet right ventricle with infundibular stenosis of pulmonary outflow
7. Normal situs of abdominal viscera
8. Normal pulmonary venous drainage into single atrium
9. Bilateral trilobed lungs
10. Bilateral cervical ribs

CONCLUSION: Heterotaxy syndrome is associated with serious congenital heart defects as well as abnormalities in many other organ systems. It is better simply to describe each system in explicit detail. This allows for anticipation of functional abnormalities, as well as any interventions that may be deemed necessary. From the stance of intracardiac lesions, the distinction of right as opposed to left isomerism will permit better comparison between patients, and will point to the need specifically to address the morphology of the atrial appendages. Accurate investigation at right time with appropriate imaging can greatly improve patient outcomes. As cardiac surgical techniques are much advanced with increased patient survival, the need to investigate and address the cardiac system involved.

PATTERNS OF HYPERTROPHIC CARDIOMYOPATHY IN CARDIAC MAGNETIC RESONANCE IMAGING : THE HOSPITAL SERDANG EXPERIENCE

Norain Talib, Sharipah Intan S. Syed Abas*¹; Yusri Mohammed¹; Kama Azira Awang Ramli¹;
Jimmy Woo Sze Yang¹

¹*Department Of Radiology, Hospital Serdang, Malaysia*

LEARNING OBJECTIVE: Non-invasive imaging is principal to the diagnosis of hypertrophic cardiomyopathy (HCM). Cardiovascular magnetic resonance (CMR), being one of the common armamentarium aiming at detailed cardiac assessment primarily in characterising cardiac morphology, function and tissue abnormalities. HCM prognostic factors can be evaluated through the assessment of myocardial wall thickness, systolic function and late gadolinium enhancement.

BACKGROUND: HCM is the most common genetic disease of the heart with a prevalence of 1:500 in the general population. It is an autosomal dominant trait attributed to more than 1000 gene mutations that encode for sarcomere proteins of myocardium. The clinical presentation ranging from asymptomatic mutation carriers to sudden death, commonly known as hypertrophic obstructive cardiomyopathy (HOCM).

FINDINGS AND/OR PROCEDURE DETAILS: We describe a wide phenotypic range of HCM which includes sigmoid septum, reverse contour, mid ventricular, apical, symmetric and asymmetrical hypertrophy commonly encountered in our hospital. The related clinical presentation includes abnormal heart rhythm, syncopal attack or heart failure symptoms. Left ventricle wall thickening with preserved systolic function happened in early HCM. Whereby, late HCM or “burn out phase” presented with dilated thinning wall and poor systolic function. LVOT obstruction, increase myocardial thickness more than 3cm and late gadolinium enhancement are the sign of poor prognosis.

CONCLUSION: Understanding the characteristics and phenotypes of HCM is important for accurate diagnosis and proper treatment of cases. Optimisation of heart failure symptoms are the mainstay in HCM management. Alcohol ablation of myocardium usually offered to HOCM cases in our hospital.

COMPLETE AORTIC ARCH INTERRUPTION: A CASE REPORT

Akshat Agrawal*¹; Ranjan Kumar Sahoo¹; Kamal Kumar Sen¹

¹*Radiodiagnosis, Kalinga Institute Of Medical Sciences, Bhubaneswar, India*

INTRODUCTION: Interrupted aortic arch (IAA) is a rare congenital malformation of the aorta and is defined as a segment of the arcus aorta being atretic. We report here an 11-year-old female patient of IAA not as an isolated anomaly but accompanied by polycystic kidney disease. In the literature, there is only 1 report showing that polycystic kidney disease and IAA occur together.

REPORT: 4 months old female infant was brought to the primary physician with a complaint of growth restriction. She was diagnosed to have a ventricular septal defect (VSD). No definitive treatment was offered at this stage. At the age of 7 years, she was detected to have an associated patent ductus arteriosus (PDA) with an increased Blood Pressure (B.P). There was no central cyanosis or differential cyanosis of the upper and lower limbs. There were no urinary complaints. CT angiography (CTA) revealed aortic arch interruption beyond the origin of the left subclavian artery and multiple cysts of varying sizes in bilateral kidneys. VSD was operated in 2015, but the associated PDA was not corrected as it was the main source supplying the descending aorta. The patient was on regular follow up and didn't have any other symptoms apart from raised B.P.

CONCLUSION: The main prognosis of IAA depends upon associated anomalies and collateral circulation perfusing the rest of the body. Echocardiography, cardiac catheterization, CT angiography, and contrast MRI are the mainstay in the diagnosis of the anomaly along with diagnosing other associations. The definitive management is surgery.

CLINICAL VALUE OF 3D PRINTING IN CARDIOVASCULAR DISEASE

Zhonghua Sun*¹; Yin How Wong²; Chai Hong Yeong²

¹*Medical Radiation Sciences, Curtin University, Australia,* ²*School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, Malaysia*

LEARNING OBJECTIVE: To demonstrate the clinical applications of patient-specific 3D printed models of heart, aorta, coronary and pulmonary arteries in terms of quantitative assessment of model accuracy, depiction of cardiovascular disease and development of optimal computed tomography (CT) scanning protocols.

BACKGROUND: Three-dimensional (3D) printing has been increasingly used in clinical practice with promising reports in the cardiovascular disease. Studies have shown that realistic 3D printed models are able to replicate complex cardiac anatomy and pathology with high accuracy. However, comprehensive assessments of 3D printing in cardiovascular disease with regard to model accuracy, clinical value and optimisation of imaging protocols remain to be determined.

FINDINGS AND/OR PROCEDURE DETAILS: 3D printed models were successfully generated with excellent demonstration of cardiovascular disease. Cardiovascular pathologies such as ventricular septal defect, aortic aneurysm, or aortic dissection can be clearly depicted on 3D printed physical models. Models were found to be highly accurate in replicating anatomical structures and pathologies when compared to the original source CT images with mean differences less than 8%. Low-dose CT protocols of 70 or 80 kVp and high pitch 2.2 or 3.2 are recommended for dose optimization. Calcified plaques were clearly visualized to demonstrate coronary stenosis, while coronary stents were visible within the 3D printed coronary arteries with stent lumen visibility >70%.

CONCLUSION: Patient-specific 3D printed models have potential value to improve clinical practice by simulating surgical procedures and surgical planning. 3D printed models can be used to optimize CT protocols with low radiation dose but acceptable diagnostic images.

CREATION OF PERSONALISED 3D PRINTED CORONARY ARTERY MODELS FOR INVESTIGATION OF OPTIMAL CARDIAC CT IMAGING OF CALCIFIED PLAQUES

Zhonghua Sun*¹;

¹*Medical Radiation Sciences, Curtin University, Australia*

LEARNING OBJECTIVE: This study aims to utilise three-dimensional (3D) printing technique for generation of patient-specific or personalised coronary artery models with simulation of calcification in the coronary arteries. with the objective of developing optimal coronary computed tomography angiography (CCTA) for diagnostic assessment of calcified plaques.

BACKGROUND: Diagnostic value of CCTA is affected to some extent due to presence of heavy calcification, which results in low specificity and positive predictive value due to high false positive rates caused by calcification-related blooming artifacts. Thus, identification of optimal CCTA protocols for visualisation of calcified plaques and assessment of coronary stenosis is clinically important.

FINDINGS AND/OR PROCEDURE DETAILS: CCTA images were used to create normal coronary artery models consisting of right coronary artery, left anterior descending and left circumflex arteries. Coronary artery models were printed using soft and elastic material, TangoPlus, which calcification was used with Verowhite, rigid material. Calcification which was printed with different sizes to simulate 50%, 70% and 90% stenosis was inserted into these coronary arteries and scanned using synchrotron radiation CT with different slice thicknesses ranging from 0.095 to 0.208, 0.302 and 0.491 mm. Results showed the significant impact of spatial resolution on accurate assessment of coronary stenosis in the presence of calcified plaques, with spatial resolution of 0.491 mm leading to significant overestimation of lumen stenosis.

CONCLUSION: This study shows the feasibility of using 3D printed coronary models with simulation of calcification for determining CCTA protocols for accurate assessment of coronary stenosis.

EVALUATION OF AN OPEN-SOURCE SOFTWARE TOOL FOR T2* MAPPING IN QUANTITATIVE MRI

Allen Li*¹; Li Xiao²; Y C Wong¹; D Ngar²

¹Department of Radiology, Tuen Mun Hospital, ²Department of Oncology, Tuen Mun Hospital, Hong Kong, China

OBJECTIVE: Magnetic resonance (MR) imaging technology of cardiac and liver MR T2* mapping are used as indirect methods to measure iron load in myocardium and liver respectively. There are different sources for T2* relaxation time measurement. The purpose of this study was to validate free software for T2* measurement. It is assumed that if similar fitting algorithm is used for the T2* measurement, the free software would be interchangeable with the commercial software used.

MATERIALS & METHODS: Multi-echo gradient-echo technique on the 1.5 T MRI system would be used to measure T2* value of a series of aqueous MnCl₂ phantoms and patients registered as thalassemic patients respectively. T2* obtained from CMRtools was used for reference. T2* values generated from the free software tool were compared with these from CMRtools. Bias and variability were computed using the Bland-Altman analysis.

RESULTS: The correlation coefficients are > 0.99 for both patients and phantoms. The agreement of the T2* calculation were calculated by free software as compared to CMRtools. There were only minimal differences (<3ms and <0.5ms) with a small bias (0.08ms and 0.11ms) for cardiac and liver protocol in patients respectively. All points lie inside the limits of agreement for data from patients. The two methods might be considered to be in agreement and may be used interchangeably.

CONCLUSION: The free software for T2* measurement was evaluated. Bias and variability were found quite low. Our results show that the open source software tools might provide accurate T2* relaxation time measurements as CMRtools does.

CRITICAL STENOSIS AND CORONARY ARTERIOVENOUS FISTULAE IN MIDDLE-AGED WOMEN

Nurul Fathiya*¹; Dian Komaladewi¹; Hilman¹; Undang Ruhimat¹; Atta Kuntara¹; Harry Galuh
N¹

¹*Radiology, Padjajaran University, Indonesia*

INTRODUCTION: Coronary arteriovenous fistulae are a coronary anomaly, presenting in 0.002% of the general population. Their etiology can be congenital or acquired. Coronary artery stenoses that limit blood flow below demand are considered critical with various manifestations of critical flow reduction, such as angina pectoris, development of collateral vessels and segmental wall motion abnormalities.

REPORT: We report a 54-year-old woman complained of worsening shortness of breath in the last 3 months and accompanied by palpitations, chest pain, a burning sensation in the chest, on chest x ray examination and echocardiography there is nothing typical for the disease, cardiac CT is performed Critical stenosis is found in the left main artery and arteriovenous fistula which connects the left main artery (LM) with the pulmonary vein (PV) and the left anterior descending artery (LAD) with the pulmonary vein (PV) and the widening of all heart chambers, ascending aortic dilation and calcification aorta.

CONCLUSION: Three-dimensional volume-rendered CT angiograms facilitate accurate assessment of the complex anatomy of CAFs, including their origin, drainage site, and complexity and the number and size of fistulous tracts. AV fistula is a extremely rare complication especially with critical stenosis of the left main artery. Coronary artery fistula (CAF) is an abnormal communication of the coronary arteries in which venous circuits pass through normal capillaries within the myocardium. It is dangerous to rely solely on coronary angiography to determine critical coronary stenosis, especially those accompanied by AV fistulas, therefore other investigations are necessary.

AORTIC DISEASE ASSESSMENT BY MULTIDETECTOR CT AORTOGRAM

Ummara Siddique*¹; Shahjehan Alam¹; Syed Ghulam Ghaus¹; Saima Rabbani¹; Abida Bibi¹;
Nida Gul¹; Hania Moiz¹; Ali Asghar Sahib¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

LEARNING OBJECTIVE: To evaluate reliability of 128-slice Multidetector computed tomographic (MDCT) angiography in differentiating aortic diseases and for aortic morphologic assessment.

BACKGROUND: MDCT angiography has replaced invasive angiography for evaluation of patients suspected to have aortic disease. Although most aortic disease is associated with atherosclerosis (i.e. aneurysms and dissection), the spectrum of aortic disease is vast and includes various congenital and acquired entities. Radiologists should be familiar with uncommon aortic diseases, which are divided into those that are congenital in origin and acquired disorders, and with their findings at MDCT. Imaging information important to surgeons includes diagnosis, location of lesion and extent of disease.

FINDINGS AND/OR PROCEDURE DETAILS: CT Aortography is performed on a multidetector scanner with a breath-hold of 15 to 20 seconds and 1 or 2 mL/kg of nonionic contrast is given by power injector. Electrocardiographically (ECG)–gated studies are performed, when concern is to assess aortic root. Axial images are obtained from above arch to femoral arteries and reconstructed at 0.5 mm interval. Aortic measurements are made in true short axis projection acquired from double oblique views, from one blood-wall boundary to the other. The types of aortic abnormalities diagnosed on CT include Atherosclerosis, Coarctation, Thoracic aortic aneurysms, Dissections, Diffuse aortic ectasia, Pseudoaneurysms, PDA aneurysms, Interrupted aorta, Right sided aortic arch, Kommerells diverticulum, Aortitis, Midaortic syndrome, AVM and Leriche syndrome. Different anatomical congenital variations can be seen like aberrant subclavian artery, right aortic arch etc.

CONCLUSION: Knowledge of the CT imaging appearances of aortic lesions enables preoperative assessment and post-procedural follow up for detection of complications.

MDCT IMAGING IN ANOMALOUS PULMONARY VENOUS RETURN

Saneesh P S¹; U C Garga¹; Shibani Mehra¹; Yashvant Singh¹

¹Radiodiagnosis, PGIMER & DR.RML Hospital, New Delhi, India

LEARNING OBJECTIVE:

- To analyse the spectrum of anomalous pulmonary venous connection.
- To detect associated cardiac anomalies.

BACKGROUND: In early embryonic period pulmonary venous drainage is through communication between splanchnic venous plexus in respiratory diverticulum and systemic cardinal & umbilico-vitelline veins which is followed by development of definitive pulmonary veins from left atrium. Failure of normal separation process between pulmonary and systemic venous connection leads to anomalous pulmonary venous drainage.

Anomalous pulmonary venous drainage includes total anomalous pulmonary venous return (TAPVR), Partial anomalous pulmonary venous return (PAPVR), sinus venous defect and malposition of septum primum. MDCT is used to assess these complex anomalous venous connections associated with cardiac anomalies because of rapid acquisition, high spatial resolution and availability of data manipulation.

FINDINGS AND/OR PROCEDURE DETAILS: Cross sectional observational study in infants and children diagnosed/clinical suspicious of anomalous pulmonary venous drainage associated with congenital cardiac disease based on ECHO. Image acquisition: Retrospective cardiac imaging in 128 slice Siemens Dual energy scanner. All cases were categorized based on CT imaging into TAPVR, PAPVR, Sinous venosous defect and malposition of septum primum. Associated anomalies like ASD, heterotaxy syndrome and other intra and extra cardiac anomalies were detected in CT. The Commonest pattern in our study was TAPVC.

CONCLUSION: Common anomalous pulmonary venous drainage in our study is TAPVC. CT is excellent imaging modality having high special resolution to detect anomalous connection and associated anomalies. CT imaging having rapid acquisition, no patient sedation needed and widely available but it is inferior to MRI/ECHO in temporal resolution and functional data assessment.

EMBRYOLOGICAL PERSPECTIVE OF FALLOT TETRALOGY AND IMAGING FINDINGS WITH MDCT

Saneesh P S*¹; U C Garga¹; Shibani Mehra¹; Yashvant Singh¹

¹*Radiodiagnosis, PGIMER & DR.RML Hospital, New Delhi, India*

LEARNING OBJECTIVE:

- To study the embryological perspective Tetralogy of Fallot (TOF)
- To analyze the imaging findings in TOF and associated cardiac anomalies.
- Evaluation of post-surgical changes (patency of palliative shunt placement) and long-term complication including pulmonary regurgitation, right ventricular outflow obstruction, conduit stenosis, aortic root dilatation etc.) using MDCT.

BACKGROUND:

Embryology

- TOF is the most common conotruncal anomaly. Anomalies in division of truncus arteriosus by abnormal aortopulmonary spiral septum lead to TOF

Tetralogy of Fallot(TOF)

- Malformation characterized by four constant features: sub-pulmonary infundibular stenosis, right deviation of aortic valve with a biventricular origin of its leaflet and right ventricular hypertrophy

FINDINGS AND/OR PROCEDURE DETAILS: Cross sectional observational study of TOF patients (pre- and post-operative). Study was conducted in tertiary care hospital, ABVIMS and Dr.RML hospital, New Delhi, India. Image acquisition: Retrospective cardiac imaging technique in 128 slice Siemens Dual energy Scanner during the period of June 2018 to December 2019. Cases based review.

CONCLUSION: Multidetector CT having superior spatial and temporal resolution. It has become a valuable modality in evaluating the complex anatomical cardiac and extra cardiac findings. MDCT is usual in evaluation of other associated cardiac and extra cardiac anomalies with will help in the surgical planning.

LOCULATED PERICARDIAL ABSCESS SECONDARY TO HAEMATOGENOUS SPREAD OF STAPHYLOCOCCAL AUREUS INFECTION: A CASE REPORT

Hew Yin Cheng*¹; Norliza Othman¹

¹*Radiology, Hospital Sultanah Aminah, Johor Bahru, Malaysia*

INTRODUCTION: Pericardial abscess is an uncommon entity that is associated with high mortality in this modern antibiotic era. It is a rapidly fatal disease if left untreated. Bacterial pericarditis usually due to contiguous spread from adjacent lung infection or by haematogenous spread from distant infective focus, as in our case. We present a rare case of acute pericardial abscess in a Diabetic adult patient who has bilateral gluteal abscesses caused by *Staphylococcal aureus*.

REPORT: A 46 years old man was presented to our casualty with bilateral lower limb swelling for 1 week, associated with orthopnea and shortness of breath. The chest radiograph showed globular heart with water bottle configuration and right pleural effusion. Transthoracic echocardiography showed massive pericardial effusion with diastolic collapse of the right atrium and ventricle consistent with tamponade. Computed Tomography of the thorax and abdomen demonstrated pericardial abscess, right pleural effusion, gross ascites with rim enhancing collection in the left gluteus medius and left pectineus muscles. Urgent surgical intervention with posterolateral thoracotomy was performed as patient developed cardiac tamponade which then confirmed the diagnosis. Antibiotics were continued for six weeks. The patient made a good postoperative recovery.

CONCLUSION: Pericarditis is a rare but fatal condition in *Staphylococcal* bacteremia. Pericarditis should be highly suspected in patients with cardiac symptoms as well as enlarged heart on chest radiograph. Early diagnosis either from chest CT or even plain film and transthoracic echocardiography may accelerate proper treatment, which will definitely reduce the morbidity and mortality risk.

A RARE CASE OF MALIGNANT CARDIAC MASS- THINK BEYOND SARCOMA

Sandip Kumar Paria*¹; Namrata Pal²; Sunita Dashottar¹

¹*Radiodiagnosis, Command Hospital , Central Command, India,* ²*Radiodiagnosis, King George Medical College, India*

INTRODUCTION: Overall frequency of cardiac tumors is low with a prevalence of 0.02-0.3%. The majority of primary cardiac tumors are benign. Metastatic involvement of the heart is approximately 40 times more prevalent than primary cardiac tumors. The majority of primary malignant tumour being sarcomatous in origin. Angiosarcoma is the commonest primary malignancy of adulthood. Rhabdomyosarcoma is the commonest primary cardiac malignancy of childhood. Leiomyosarcoma and osteosarcoma are quite rare. Metastatic cardiac lymphoma from disseminated disease is relatively common than primary cardiac lymphoma. To our knowledge less than 100 cases have been described in the English-language literature. Here, we extensively studied a case of cardiac lymphoma in terms of clinical manifestations, imaging findings, radiologic-pathologic correlation, differential diagnosis, treatment and prognosis.

REPORT: A 71-year-old diabetic woman presented to our emergency department complaining of dyspnea. On examination, pedal edema was present. Normal heart sounds and vesicular breath sounds were audible. ECG was unremarkable. Echocardiography raised the suspicion of cardiac mass. An ill-defined, infiltrative mass affecting right and left atrium with pericardial thickening and extension along epicardial surfaces is noted on computed tomography. At magnetic resonance imaging, it was an enhancing altered signal intensity mass without involvement of cardiac valves. No necrosis was seen unlike sarcoma. On histopathology and immunohistochemistry, it came out to be diffuse B cell NHL with high proliferative index. Treatment was initiated with anthracycline-based chemotherapy.

CONCLUSION: Extracardiac involvement was very minimal. The prognosis for patients with either primary or secondary lymphomatous heart involvement is usually poor.

INTERRUPTED AORTIC ARCH; A RARE SURVIVOR DIAGNOSED BY COMPUTED TOMOGRAPHY ANGIOGRAPHY.

Nik Abdul Hannan Nik Mohd Noor*¹; Fadzillah Md Khadzari¹

¹*Radiology Department, Hospital Sultan Ismail Petra, Kuala Krai, Malaysia*

INTRODUCTION: Interrupted aortic arch (IAA) is a congenital anomaly that is characterized by complete luminal discontinuity between ascending and descending aorta which affects three per million live births. It is usually associated with other cardiovascular malformations, commonly ventricular septal defect (VSD) and patent ductus arteriosus (PDA). Most cases of IAA are diagnosed in early neonatal or childhood period; nonetheless, few rare cases are only diagnosed during adulthood. Left untreated without surgical correction, death is frequent outcomes attributed to circulatory failure.

REPORT: An 18-year-old male with underlying chronic rheumatic heart disease, who defaulted treatment was admitted to our hospital with heart failure symptoms. Physical examination revealed grade 4/6 pansystolic and ejection systolic murmurs at mitral area and left lower sternal edge, respectively. Echocardiography showed aortic stenosis, mild aortic and tricuspid regurgitation, left ventricular hypertrophy and VSD of eight millimeters. Persistent systemic hypertension accompanied by weak bilateral radial and dorsalis pedis arteries' pulses raised suspicion of coarctation of aorta. He underwent computed tomography angiography (CTA) of the aorta which demonstrated an interrupted aortic arch with a PDA connecting the descending aorta to pulmonary trunk. The interruption is seen just distal to the origin of left subclavian artery, thus confirmed the diagnosis of type A IAA.

CONCLUSION: Early detection of congenital anomalies including IAA and their immediate treatment are made possible by thorough clinical examination of the newborns. Being non-invasive, CTA can demonstrate accurately the morphology of IAA in comparison with traditionally performed catheter angiography providing better visualization for proper surgical planning.

CT ANGIOGRAPHY IN DIAGNOSTICS OF TOTAL ANOMALOUS PULMONARY VENOUS RETURN

Tairkhan Dautov*¹; Babasova G.E¹

¹Radiology, JSC National Research Cardiac Surgery Center, Kazakhstan

OBJECTIVE: To study the capabilities of CT angiography in diagnostics of total anomalous pulmonary venous return (TAPVR).

MATERIALS & METHODS: The study was conducted from October 2011 to December 2019, inclusive, 2140 patients were examined with suspected congenital heart disease and in 81 (3.7%) patients were revealed TAPVR. The patients included 64.2% (52) male and 35.8% (29) female. Ages ranged from 1 day to 28 years.

RESULTS: We analyzed the examination results of 81 patients with TAPVR, in 45 (55.5%) patients were revealed the supracardiac form (type I), in 17 (20.9%) – the intracardiac form (type II), in 11(13.6%) – the infracardiac form (type III), in 8 (9.9%) - the mixed form (type IV). The obstructed type was revealed in 24 (30%) patients. 9 patients with (81.8%) hemodynamically significant obstruction were diagnosed among type III patients. Mostly TAPVR was diagnosed before the age of 1 month - 56 (69%).

According to our observations TAPVR was combined with: ASD in 55 patients (68%), PDA in 31 (38.3%), AVSD in 25 (30.9 %), pulmonary artery atresia 19 (23.5%), VSD in 17(23.5%), TGA in 13(16.1%), «single ventricle» in 12 (14.8%), hypoplastic left heart syndrome in 7(8.6%), PFO in 8 (9.8%), tetralogy of Fallot in 2 (2.5%) and the Heterotoxy syndrome (Aspleny) in 18 (22,2%). CT angiography was characterized by informative parameters in TAPVR diagnostics: sensitivity-95.1%, specificity -99.8%, accuracy-99.7%.

CONCLUSION: CT-angiography is a highly informative and minimally invasive method for diagnostics of TAPVR, in some cases replacing such invasive methods as cardiac catheterization and angiocardiography.

A CASE REPORT OF A 22-YEAR-OLD PATIENT WITH NON-SURGICALLY CORRECTED D-LOOP TRANSPOSITION OF THE GREAT ARTERIES(TGA) WITH ASSOCIATED ANOMALIES

Feliz Pamela P Vasquez*¹

¹*Radiologic Imaging, Manila Med Hospital, Philippines*

INTRODUCTION: Transposition of the great vessels or transposition of the great arteries (TGA) is a lethal congenital anomaly that is characterized by atrioventricular (AV) concordance and ventriculoarterial (VA) discordance. For patients to survive, adequate mixing between the pulmonary and systemic circulations has to occur.

REPORT: We describe the case of a 22 year old female with a complex congenital heart disease who presented with a history of chronic hypoxemia, secondary erythrocytosis and more than 10 years of seizure disorder. Magnetic resonance imaging (MRI) with Gadolinium (Gad) was requested to confirm the diagnosis and evaluate the extent of the associated cardiovascular anomalies. Cardiac MRI revealed D-loop type transposition of the great vessels, large perimembranous type ventricular septal defect (VSD), preductal type coarctation of the aorta and a patent ductus arteriosus (PDA).

CONCLUSION: This report is a demonstration that a patient with transposition of the great arteries can reach adulthood but associated anomalies are vital for survival.

CT-ANGIOCARDIOGRAPHY IN DIAGNOSTICS SINGLE VENTRICLE DEFECT OF HEART

Tairkhan Dautov*¹; Tazhigaliyeva T.M¹; Medetova G.L¹

¹Radiology, JSC National Research Cardiac Surgery Center, Kazakhstan

INTRODUCTION: Explore the CT-angiography possibilities in diagnostics of the single ventricle of the heart (SVH).

MATERIALS & METHODS: Studies were conducted in the National Research Cardiac Surgery Center between October 2011 and December 2019 inclusive retrospectively. 2140 patients with suspected congenital heart disease (CHD) were examined, of whom 144 (6,7%) patients had a SVH, among them females - 65 (45,1%), males - 79 (54,9%).

RESULTS: The results of the studies of 144 patients with a single ventricle was analyzed, in 77 of them (53,5%) – by type of the right ventricular hypoplasia (type A), in 37 (25,7%) - by type of the left ventricular hypoplasia (type B), in 30 (20,8%) - a single ventricle (type C). The combination of the right ventricular hypoplasia type SVH with the pulmonary trunk hypoplasia - 42 (54,5%) of 77, a combination of the left ventricular hypoplasia type SVH with hypoplasia of the ascending aorta - 23 (62,1%) of 37 cases. SVH with other CHDs combination frequency: ASD - 95 (66%), patent ductus arteriosus - 74 (51,4%), transposition of the great arteries – 60 (41,7%), VSD - 69 (47,9%), pulmonary atresia - 30 (20,8%), anomalous pulmonary veins drainage - 27 (18,8%), PVO - 21 (14,6%), double superior vena cava - 18 (12,5%), coarctation of the aorta - 9 (6,3%).

103 (71,5%) patients were operated on, 41 (28,5%) were not operated, of which 109 were positive outcomes (75,7%) and 35 deaths (24,3%).

CONCLUSION: CT-angiocardiology is a highly informative and minimally invasive method for SVH diagnostics.

**PREVALENCE OF OBESITY IS INDEPENDENT OF CIRCLE OF WILLIS
VARIATION IN A YOUNG ONSET HYPERTENSION POPULATION**

Hazrini Abdullah*¹; K Mitrousi²; S Neumann³; N Manghat⁴

¹Radiology, Hospital Sultanah Aminah, Malaysia , ²Cardiology, Bristol Heart Institute, United Kingdom, ³Faculty Of Health Sciences, University Of Bristol, United Kingdom, ⁴Radiology, Bristol Royal Infirmary, United Kingdom

OBJECTIVE: We have documented an increased incidence of Circle of Willis (CoW) variation in young onset hypertensive (YOH) patients which may be a key driver of hypertension as per the ‘selfish brain hypothesis’. It is also known that obesity is associated with hypertension. Whilst eating behaviour, hunger and satiety involves complex neuro-circuitry mechanism; previous studies indicated that food intake is associated with localised changes in cerebral blood flow in specific areas of the brain. We sought to assess if the anatomical CoW variation is a potential contributing factor to obesity in a young onset hypertensive (YOH) population.

MATERIALS & METHODS: This is a single tertiary centre, observational study on YOH population from hypertensive clinic. The presence, absence or hypoplasia of vertebral artery (VA) and posterior communicating artery (PCOM) from time of flight magnetic resonance angiogram of the brain (TOF MRA) was recorded. Patients were grouped into body mass index (BMI) categories to examine for any correlation between the BMI with CoW variation. Binary logistic regression statistical analysis was performed.

RESULTS: Two hundred patients were included. 113 (56.5%) were male and 87 (43.5%) were female. There is no association between VA or PCOM variation with the current BMI, BSA, age, gender or blood pressure of the YOH.

CONCLUSION: There is no correlation between the current patient weight in a YOH population with the anatomical variation of the CoW. Further cohort study may be required to assess if these correlations may become apparent as the patient age increases.

PULMONARY VEIN PSEUDOANEURYSM; A RARE COMPLICATION OF BLUNT CHEST TRAUMA

Rajeev Shamsuddin Perisamy*¹; Mohamad Shahrir Abdul Rahim¹; Sharifah Nor Ashikin Syed Yasin²

¹*Radiology Department, International Islamic University Malaysia Medical Centre, Malaysia,*

²*Radiology Department, Hospital Tengku Ampuan Afzan, Kuantan, Pahang, Malaysia*

INTRODUCTION: Traumatic pulmonary vein pseudoaneurysm is extremely rare especially in the setting of blunt chest trauma. Up to date, less than 5 such cases have been reported in the literature.

REPORT: We report a case of a 25 years old male, an automobile factory worker who had an accident at his workplace. He was found sandwiched by a heavy trolley against a concrete wall. He fainted and collapsed immediately after extraction but prompt resuscitation at the nearest hospital managed to return his spontaneous circulation. He was transferred to the nearest tertiary centre for further management. Chest radiograph shows bilateral lung contusion without any bony fracture. On FAST US, significant pericardial effusion and intra-abdominal free fluid were detected. Urgent pericardiocentesis was performed and about 300ml of blood was drained. This was followed by an urgent CT brain, cervical spine, thorax, abdomen and pelvis. Dilatation with focal outpouching of the right inferior pulmonary vein was detected suggestive of pseudoaneurysm. Besides that, right hemothorax, right lower lobe atelectasis and bilateral lung contusions are also seen in the thorax. No bony fracture or spinal compromise was detected. The patient was then managed in ICU. However no active intervention was planned for the patient due to his poor GCS recovery.

CONCLUSION: Pulmonary vein pseudoaneurysm is an extremely rare complication of blunt chest trauma and should be considered in high impact chest injuries especially when a patient is hemodynamically compromised. Radiology imaging especially CT can play an important role for its early detection.

CT-ANGIOPULMONOGRAPHY IN THE DIAGNOSTICS OF PULMONARY EMBOLISM IN PATIENTS WITH CARDIOVASCULAR DISEASES

Dana Idrissova *¹; Dautov T.B.¹; Bastarbekova L.A.¹; Moldakhanova Zh.A.¹; Gallyamova D.¹

¹Radiology, National Research Cardiac Surgery Center, Kazakhstan

OBJECTIVE: Assessment of CT-angiopulmonography(CTAP) in the diagnostics of pulmonary embolism(PE) in patients with cardiovascular diseases.

MATERIALS & METHODS: The research was conducted in the period from 2011 to 2019. A total number of 470 patients were examined with suspected PE, 211(45%) patients had a PE. Among them: males-123(58,29%), females-88(41,7%), the average age is 49 years.

RESULTS: We carried out a retrospective analysis of the CTAP results in 211 patients with PE with various cardiovascular diseases: ischemic heart disease-33(15,6%), chronic rheumatic heart disease-20(9,47%), ischemic cardiomyopathy-9(4,26%), dilated cardiomyopathy-33(15,63%), arterial hypertension-8(3,79%), CHD-14(6,63%), other cardiovascular diseases-15(7,1%), as well as the main disease was PE in 79(37,44%) patients. 83(39,33%) patients had pulmonary infarct. The frequency of localization of thrombi: trunk-7(1,26%); right main branch of the pulmonary artery-48(8,66%), upper right lobar branch-64(11,55%), middle right lobar branch-61(11,01%), lower right lobar branch-147(26,53%), left main branch of the pulmonary artery is 32(5,77%), the upper left lobar artery is 60(10,83%), the lower left lobe is 135(24,36%). D-dimer value ≤ 0.5 mcg/ml was in 35(18,42%) patients, and D-dimer index > 0.5 mcg/ml was diagnosed in 155(81,57%) patients, in 21(9,95%) patients D-dimer study was not conducted. According to Echo, the ejection fraction is 11-20%-38(18,0%), the ejection fraction is 20-40%-57(27,01%), the ejection fraction is 40-60%-71(33,64%), the ejection fraction is 60% and above - 45(21,32%). The sensitivity of CTAP was $Se=94,2\%$, $Sp=96.4\%$, $Ac=96\%$.

CONCLUSION: Thus, CT-angiopulmonography is a highly informative, less invasive and safe method for diagnostics of PE in patients with cardiovascular diseases, which makes it possible to clearly determine the optimal treatment strategy.

TOLERANCE AND SAFETY OF HIGH DOSE ADENOSINE IN STRESS PERFUSION CARDIAC MAGNETIC RESONANCE IMAGING

Michelle M. Samy*¹; Nor Ashikin Md Sari²; Yang Faridah Abdul Aziz²

¹*Biomedical Imaging, University Of Malaya,* ²*Faculty Of Medicine, University Of Malaya, Malaysia*

OBJECTIVE: To assess the tolerance and safety of high dose adenosine in patients with inadequate haemodynamic response to the standard dose adenosine during stress perfusion cardiac magnetic resonance imaging (CMR).

MATERIALS & METHODS: A total of 125 consecutive patients with known or suspected coronary artery disease underwent CMR at 1.5 Tesla. Prior to scan, patients were screened for contraindications to adenosine. Blood pressure, heart rate, and electrocardiogram were obtained at baseline, during and after stress perfusion. All patients received the standard dose adenosine (140 mcg/kg/min for 2 minutes), the infusion rate was increased up to maximum of 210mcg/kg/min (maximum infusion duration 6 minutes) in patients with inadequate haemodynamic response (deemed as increase heart rate (HR) < 10 bpm or decrease systolic blood pressure (SPB) < 10 mmHg from baseline). Presence of chest pain, dyspnoea, flushing, and headache were recorded. Ejection fraction was measured from short axis images of the heart via software from ReportCARDTM.

RESULTS: Fifty-two patients (42%) were non responders to standard dose adenosine. Following increase of infusion rate, 45 patients (87%) showed adequate haemodynamic response. Two patients (2%) developed transient advanced atrioventricular block during standard adenosine infusion. No scans were abandoned during or after high adenosine infusion. On multivariate analysis, ejection fraction < 59% is the only independent predictor of non-responders to standard dose adenosine.

CONCLUSION: High dose adenosine was safe and well tolerated and was effective in producing adequate haemodynamic response in non-responders. Ejection fraction <59% is an independent predictor of non-responders to standard dose adenosine.

SINGLE CORONARY ARTERY: A CASE REPORT

Wan Irfan W Mustapha*¹; Mubarak Mohd Yusof²

¹Radiology IIUMMC, International Islamic University Malaysia Medical Centre, Malaysia,

²Radiology HTAA, Hospital Tengku Ampuan Afzan, Malaysia

INTRODUCTION: Congenital anomalies of the coronary artery can be divided according to the origin, the course and the termination of the arteries. Most of the patients with these anomalies are asymptomatic. However, they can be presented with shortness of breath, palpitation and even with symptoms of myocardial infarction.

REPORT: We are presenting a case of a man with intermittent chest pain for the past two years. During Percutaneous Coronary Angiography, only a single trunk was able to cannulate with the right coronary artery and left main coronary artery were originated from the trunk. On Computed Tomography Coronary Angiography, the transverse portion of the left main artery has interarterial course between the main pulmonary artery and the ascending aorta before it branches to the left anterior descending artery and left circumflex artery.

CONCLUSION: We have classified this anomaly as Lipton RII-B following the classification proposed by Lipton et.al in 1979.

SUPRACARDIAC TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION IN A SURVIVED PREGNANT YOUNG WOMAN: A RARE CASE REPORT

Elizabeth Angeline*¹; Bambang Satoto¹

¹*Radiology Department, Faculty of Medicine Diponegoro University, Dr. Kariadi General Hospital, Semarang, Indonesia,*

INTRODUCTION: Total Anomalous Pulmonary Venous Connection (TAPVC) is a rare, accounting for 1-2% of congenital heart disease. TAPVC results from persistent connection of pulmonary veins to the right side of the heart. A right-to-left shunt is obligatory for survival. The supracardiac type (type I) accounts for 55% of cases. It involves convergence of all four pulmonary veins behind the heart to form a common vein. This then drains into the left brachiocephalic vein and henceforth into the SVC.

REPORT: A 25-year-old pregnant woman came to the hospital with complaint of breathlessness and fatigue during regular activities since pregnancy. Chest Radiography showed a snowman appearance. Echocardiography was done, showing Supracardiac type TAPVC with large atrial septal defect, right to left shunt with pulmonary hypertension, and mild tricuspid, mitral, and pulmonary regurgitation. Cardiologist suggested for termination pregnancy, but she kept going and gave birth by sectio caesarea. After giving birth, CT angiography was performed, revealing a 3 centimeter ASD, dilated right and left pulmonary veins that connect to Left Inominate Vein and drain to dilated superior vena cava. There is no connection between pulmonary vein and left atria. These findings match the Supracardiac TAPVC. She had done cardiac catheterization and it confirmed the diagnosis.

CONCLUSION: Pregnancy associated with uncorrected TAPVC is extremely rare. Echocardiography is the first and safest modality, but it may fail in complete depiction of some complex feature of TAPVC. CT angiography is a noninvasive and sensitive choice for mapping the pulmonary veins. Contrast-enhanced MRA can be a radiation-free alternative.

A CASE OF COARCTATION OF AORTA WITH LEFT EXTERNAL ILIAC ARTERY THROMBOSIS

Tan Weijoe*¹; Chitra Supramaniam¹

¹*Department of Radiology, Hospital Tengku Ampuan Rahimah, Malaysia*

INTRODUCTION: Coarctation of aorta (CoA) is a narrowing of the aorta, most commonly occurring just beyond the left subclavian artery. It raises upper body blood pressure, causing upper extremity hypertension.

REPORT: A 16 years old boy was followed up for young hypertension. His initial work up for secondary hypertension was unremarkable. However, during one of his outpatient visits, he was noted to have asymmetric blood pressure of the upper and lower extremities. His upper limb blood pressure ranged from 160-169/90-97. His lower limb blood pressure ranged from 113-126/88-98. His electrocardiogram showed sinus rhythm with frequent ventricular premature complexes. However, his chest radiograph and echocardiogram showed no significant abnormality. CT angiography of the aorta showed a short segment narrowing measuring 0.3 cm at the distal aortic arch immediately after the origin of the left subclavian artery. There were associated mild prestenotic dilatation of the left subclavian artery, mild post-stenotic dilatation the descending thoracic aorta. Besides, bilateral intercostal and internal mammary arteries were also dilated. Incidentally, there was a filling defect in the left external iliac artery suggestive of thrombus. The CT findings were consistent with of coarctation of aorta and left external iliac artery thrombosis. The patient is now on warfarin and has been scheduled for surgical repair of CoA.

CONCLUSION: CoA is typically diagnosed in early life but may go undetected. Asymmetric blood pressure in upper and lower extremities is important not to be missed as the features of the condition may not be apparent on initial investigation.

TRIPLE-RULE-OUT CT ANGIOGRAPHY FOR EVALUATION OF ACUTE CHEST PAIN

Shahjehan Alam*¹; Ummara Siddique¹; Seema Gul¹; Syed Ghulam Ghaus¹; Muhammad Asif¹;
Aruba nawaz¹; Aman Nawaz Khan¹; Hadia Abid¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

LEARNING OBJECTIVE:

- Briefly discuss importance of Triple-rule-out computed tomographic (CT) angiography.
- To discuss the indications and patient suitability.
- Role of CT angiography in ruling out aortic, pulmonary and coronary arteries in one scan.
- To present and review CT images of patients with acute chest pain who undergone Triple-rule-out computed tomographic (CT) angiography at our department.

BACKGROUND: Triple-rule-out (TRO) computed tomographic (CT) angiography can provide a cost-effective evaluation of the coronary arteries, aorta, pulmonary arteries, and adjacent thoracic structures for a patient with acute chest pain.

FINDINGS AND/OR PROCEDURE DETAILS: It is most appropriate for the patient who is judged to be at low to intermediate risk for acute coronary syndrome (ACS) and whose symptoms may also be attributed to acute pathologic conditions of the aorta or pulmonary arteries. Although a regular cardiac rhythm remains an important factor in coronary CT image quality, newer multidetector CT scanners with electrocardiographically (ECG) gated imaging can provide high-quality CT studies in patients with a heart rate of up to 80 beats per minute. When performed with appropriate attention to timing and technique, Triple-rule-out CT provides coronary image quality equal to that of dedicated coronary CT angiography and pulmonary arterial images that are free of motion artifact related to cardiac pulsation. It can exclude PE, Aortic dissection and coronary stenosis in a single scan.

CONCLUSION: In an appropriately selected emergency department patient population, TRO CT can safely eliminate the need for further diagnostic testing in over 75% of patients.

DIAGNOSTIC ACCURACY OF CORONARY CT ANGIOGRAPHY

Shahiehan Alam*¹; Ummar Siddique¹; Seema Gul¹; Faria Maqsood¹; Muhammad Abdullah¹;
Wasif Farman¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

INTRODUCTION: The aim of our study was to evaluate the diagnostic accuracy of Multidetector Computed tomography (MDCT) coronary angiography using a 128-slice scanner keeping conventional angiography as gold standard.

MATERIALS & METHODS: This was a retrospective analytic study conducted at Radiology department of Rehman Medical Institute Peshawar. 403 consecutive patients, who undergone CT coronary angiography, were included. Out of these, only 55 underwent conventional angiography. The presence of plaques and extent of stenosis were evaluated in patients and compared with findings of conventional angiography. Patients were divided into two groups: Group A with severe disease (>50% stenosis in any of the coronary vessels) and group B with no severe disease (<50% disease in any of the coronary vessels). The demographic information and coronary artery disease (CAD), risk factors including diabetes mellitus (DM), hypertension, hyperlipidemia and smoking were obtained from the questionnaire. Data was analyzed using SPSS version 15.

RESULTS: Of the 55 patients, CT showed that 44 had significant (>50%) coronary stenosis and 13 (23.6%of total patients) had non-significant (<50%) coronary stenosis. CT showed sensitivity of 95%, Specificity of 73.3%, positive predictive value of 90.5% and negative predictive value of 84.6%. Overall diagnostic accuracy of CT angiography was found to be 89.1% in diagnosing coronary artery stenosis.

CONCLUSION: We conclude from our results that CT coronary angiography has diagnostic accuracy of 89.1 % with a positive predictive value of 90.5%. Thus, showing that CT can be used as a screening examination for coronary vascular disease.

TRUNCUS ARTERIOSUS IN A NEWBORN WITH RIGHT SIDED ARCH AND TRACHEO OESOPHAGEAL FISTULA: A RARE DIAGNOSIS

Smily Sharma*¹; Venkata Subbaih A¹; Rahul Dev¹; Poonam Sherwani¹; Gangotri¹; Shailvi Singhal¹

¹*Radiodiagnosis, All India Institute of Medical Sciences, Rishikesh, India*

INTRODUCTION: Truncus arteriosus is a rare cyanotic congenital cardiac anomaly occurring due to failure of conotruncal septation. A single trunk arises from the heart which supplies both pulmonary and systemic circulation.

REPORT: A 1 day old neonate male (weighing 2.8 kilograms) born by normal term vaginal delivery was referred to our institution with complains of excessive frothing from nose and mouth immediately after birth. On examination, air entry was decreased on right side of thorax. Failure of passage of nasogastric tube raised the suspicion of tracheo-esophageal fistula (TEF) which was confirmed on chest radiograph where curling of nasogastric tube in proximal oesophagus was seen. To look for associated cardiac anomalies, echocardiography was done which showed atrial septal defect (ASD), ventricular septal defect (VSD) and pulmonary atresia. Contrast enhanced Cardiac CT (Siemens Somatom Definition Flash 128 slice CT, Germany) was done which showed origin of single trunk from junction of right and left ventricles in addition to ASD and VSD. Main pulmonary trunk was absent and right sided arch was seen. Right and left pulmonary arteries showed origin from either side of trunk (Type III Collett and Edwards type: the least common type). Area of consolidation was seen in right lung. Type C TEF was seen (proximal oesophageal atresia and distal fistula). Patient was planned for surgical treatment, however he could not survive and succumbed within 1 week of life.

CONCLUSION: Truncus arteriosus is a rare disease associated with other cardiovascular and systemic anomalies and a very high mortality rate if left untreated.

BIOMECHANICAL AND ELECTRICAL PROPERTIES OF THE HEART DURING MILD ANXIETY

Abdullah Mohd Noh*¹; Norhafizah Mohamad Nonudin²; Ayman Ismail Gholam³; Ahmad Ismail
A Gholam³; Amgad Ismaeel Gholam³

¹*Faculty of Health Sciences, University of Selangor, Malaysia,* ²*Sekolah Kebangsaan Seksyen 13
Shah Alam, Ministry of Education, Malaysia,* ³*Health Clinic , Ministry of Health, Saudi Arabia*

OBJECTIVE: The electrical properties of heartbeats may change significantly during certain medical conditions such as anxiety disorder that cause a change in the normal function of the heart. It can be detected through an ECG that records the electrical activities of atriums and ventricles in mV over time.

MATERIALS AND METHODS: A basic device of the ECG system was applied in this study by attaching two electrodes to the inner side of the wrist. The electrical activity of the heart was recorded for a person who was diagnosed with mild anxiety and complains to have feeling like fluttering inside the chest in the middle. A QRS complex wave was given more attention in the analysis of ECG.

RESULTS: The ECG graph showed abnormality and instability in the electrical activity of the heartbeat in the form of the ectopic beat with the missing of a P wave or atrium contraction. The graph also showed a drop in heart electrical potential for ventricles for few heartbeats. It was found that anxiety may cause physiological changes of the heart that cause a person to have an ectopic beat every 13 beats on average and an uncomfortable sensation of heart palpitation.

CONCLUSION: Monitoring electrical properties of heartbeats during anxiety may provide early information regarding any possibility of heart arrhythmias. It can provide some medical information that necessary for any proposed clinical intervention.

**THE ROLE OF CT ANGIOGRAPHY AND ECG IN HEART ARRHYTHMIA
DIAGNOSES AFTER BETA-BLOCKER ADMINISTRATION**

Abdullah Mohd Noh*¹; Norhafizah Mohamad Nonudin²; Ayman Ismail Gholam³; Amgad
Ismaeel Gholam³; Ahmad Ismail A Gholam³

¹*Faculty of Health Sciences, University of Selangor, Malaysia,* ²*Sekolah Kebangsaan Seksyen 13 Shah Alam, Ministry of Education, Malaysia,* ³*Health Clinic, Ministry of Health, Saudi Arabia*

OBJECTIVE: Using modern medical technologies such as ECG systems and CT scan machines in diagnostic procedures of heart arrhythmia may provide reliable clinical results. Sometimes some of them play the main role in the diagnosis of heart disease associated with the early stage of stress.

MATERIALS AND METHODS: In this study, both ECG graph and CT angiogram was analyzed after beta-blocker administration for mild anxiety case. The electrical properties of ECG were evaluated before and after beta-blocker administration while CT angiography was applied after medication's intake.

RESULTS: The angiogram results show no sign of coronary artery disease with zero score of calcium as reported by a cardiologist. The number of ventricular ectopic beats that record by Ambulatory Holter was 26 for 24 hours monitoring time which represents 0.02% of total heartbeats after beta-blocker intake. There are only changes in electrical signals and properties of the heart was observed in the ECG graph that can be explained the effect of beta-blocker on heart arrhythmia diagnosis.

CONCLUSION: The beta-blocker intake was found to be the most effective medication to suppress the ectopic beat that occurs during the early stage of stress. Its symptom reduction was clearly being observed through the ECG graph that showed a more consistent and arithmetic heartbeat.

AN INTERESTING CASE OF 24 YEARS OLD FEMALE WITH DOUBLE OUTLET RIGHT VENTRICLE, A RARE CASE REPORT

Ahmad Rifai*¹; Dian Komala Dewi¹

¹*Radiology, Faculty of Medicine Padjadjaran University - Hasan Sadikin General Hospital Bandung, Indonesia*

INTRODUCTION: Double outlet right ventricle is a complex congenital heart disease, usually classed as a conotruncal anomaly, where both the aorta and pulmonary trunk arise from the morphologically right ventricle, and it encompasses various subtypes. There is almost always a concurrent ventricular septal defect (VSD). Imaging plays a crucial role in the determination and characterization of double outlet right ventricle morphology. Cardiac computed tomography with advanced 3-dimensional postprocessing techniques is essential in defining the anatomy and morphology of double outlet right ventricle.

REPORT: We reported a case of 24 years old female patient, with chief complaint of palpitation and dyspnea on exertion since a week before admission. The patient had a history of shortness of breath, poor weight gain, and cyanosis of the lips and nail beds since she was born, but never went to a health center, she denied any cough, chest pain, fever or decreased weight. In January 2021 we did a Cardiac CT Scan and revealed a double outlet right ventricle and a large perimembranous ventricular septal defect.

CONCLUSION: Double outlet right ventricle is a complex congenital heart disease, usually classed as a conotruncal anomaly, where both the aorta and pulmonary trunk arise from the morphologically right ventricle, and it encompasses various subtypes. Cardiac CT Scan is an essential examination in assessing DORV as well as determination and characterization of double-outlet right ventricle morphology.

A RARE CASE OF MULTIPLE CORONARY ARTERY FISTULA WITH AORTOPULMONARY FISTULA

Ahmad Rifai*¹; Dian Komala Dewi¹; Achmad Triadi Setiawan²

¹Radiology, Faculty of Medicine Padjadjaran University - Hasan Sadikin General Hospital Bandung, Indonesia, ²Cardiology, Faculty of Medicine Padjadjaran University - Hasan Sadikin General Hospital Bandung, Indonesia

INTRODUCTION: Coronary artery fistula is a rare abnormal connection between one or more of the coronary arteries and a cardiac chamber or great vessel. Most patients remain asymptomatic, without significant hemodynamic consequences, especially in the first two decades, and when the size is small. After this age, the frequency of both symptoms and significant hemodynamic consequences increases. Coronary artery fistulas are usually discovered incidentally on conventional invasive angiography, further investigation can be done by Cardiac computed tomography angiography. Three-dimensional volume-rendered CT angiogram can facilitate complete assessment of the coronary artery fistula, including its size, origin, and drainage site.

REPORT: We reported a case of 44 years old male patient, with chief complaint of chest pain and shortness of breath, worsened a week before admission. The patient is a heavy smoker, and had a history of hypertension and type II diabetes mellitus, he denied any cough, fever, or decreased weight. In January 2021 we did a conventional angiography and revealed multiple coronary fistula, and the Cardiac CT Scan revealed there was an aortopulmonary fistula along with multiple coronary fistula.

CONCLUSION: Coronary artery fistula is a rare abnormal connection between one or more of the coronary arteries and a cardiac chamber or great vessel. Cardiac CT Scan has emerged as the non-invasive modality of choice in assessing complex anatomy of the coronary artery fistula.

FLOW ARTEFACT DUE TO POOR CONTRAST MIXING - MIMICKING AORTIC DISSECTION

Anna Fitriana Abdul Rahaman*¹; Shahizon Azura Mukari¹

¹*Department Of Radiology, Hospital Canselor Tuanku Muhriz, UKM, Malaysia*

INTRODUCTION: Aortic dissection is an acute emergency making it essential for early diagnosis as it determines the outcome of patient's management. CT aortography (CTA) with ECG gating has a role in assessing the extent of the mural flap and more importantly to avoid over-diagnosis caused by misinterpretation of motion artefact illustrating a flap. Cardiac gating is becoming the standard procedure for CTA. However there are reported literatures of pitfalls in diagnosing thoracic aortic dissection in CTA.

REPORT: 54 years old gentleman with hypertension, history of perforated viscus secondary to superior mesenteric artery (SMA) thrombosis - multiple recurrent bouts of abdominal pain; complained of severe tearing epigastric pain. Abdomen was soft. Blood pressure was normal. CTA showed layering of contrast at distal part of descending thoracic aorta until abdominal aorta, which was persistently seen in the portovenous and delayed phase giving appearance of dissection. No obvious intimal flap seen. He was diagnosed as Stanford B. Another repeated CTA 9 months later for similar presentation showed homogenous contrast opacification with no intimal flap seen. The inhomogenous contrast opacification with layering fluid-fluid level in the previous CTA is likely due to poor contrast mixing due to low-flow phenomenon causing differential flow and gravitational dispersion of contrast rather than a true aortic dissection.

CONCLUSION: Flow-related artefact is difficult especially in the early phase CT, hence visualising the true & false lumen and intimal flap is important to diagnose aortic dissection. The false lumen is usually larger with delayed enhancement compared to true lumen. In this case, poor contrast streaming artefact with an apparent flap lead to over-diagnosis (Stanford B) which is fortunately a conservative management; making it essential to recognise these pitfalls.

LEFT ATRIAL MYXOMA WITH TUMORAL SUPPLY FROM SA NODAL ARTERY ON CORONARY CT ANGIOGRAPHY

Asma Javed*¹; Atif Rana¹

¹Radiology, Shifa International Hospital, Pakistan

INTRODUCTION: Cardiac myxomas are rare benign tumors of heart, found frequently in left atrium. Before invent of echocardiography, atrial myxoma were discovered in autopsy only. Due to advances in science, it is possible to early diagnose myxoma and also learn about its tumoral , confirming the vascular nature of tumor.

REPORT: A young female presented to emergency department with shortness of breath and chest pain without any underlying co-morbid. Echocardiography showed mitral regurgitation. Plain CT chest showed enlarged left atrium with hyperdense mass. On coronary CT, a hypodense filling defect was noted in left atrium with a large SA nodal branch of RCA running posteriorly between the right atrium and aortic root supplying the mass. Serpiginous area of contrast blush noted within this large mass, consistent with neovascularity. This was further confirmed on catheter angiography. Patient underwent successful surgical excision and vessel ligation. Pathological analysis was consistent with atrial myxoma.

CONCLUSION: Cardiac myxomas are considered highly vascular tumors, however some of the cases may not show tumoral neovascularity. CT coronary angiography is crucial for pre-surgical evaluation of cardiac tumors. Surgical excision should not be delayed to prevent the risk of embolization. In our case, the vascular tumor in left atrium turned out to be myxoma on histopathology with large feeding vessel from SA nodal artery which was ligated. Careful analysis is important for pre-surgical evaluation about the neovascularisation from coronary arteries for ligation of the feeding vessels.

AN INCIDENTALLY DETECTED UNRUPTURED LARGE ABDOMINAL AORTIC ANEURYSM WITH MURAL THROMBOSIS AND CHRONIC HAEMATOMA- A CASE REPORT

Debarpita Datta^{*1}

¹*Department Of Radiodiagnosis, Medical College Kolkata And Hospital, India*

INTRODUCTION: Abdominal aortic aneurysm(AAA) is defined as permanent, focal and irreversible dilatation of abdominal aorta measuring 50% or more than the proximal segment or more than 3cm in maximum diameter. Most of them are asymptomatic and detected incidentally but sometimes take up large size and present with lump in abdomen. Main etiology remains atherosclerosis but other causes include trauma, chronic dissection, infections, vasculitis, connective tissue disorders.

REPORT: A 75 year old man presented with pain in abdomen for 4 months. He was a chronic smoker. On examination, Blood pressure was 108/75 mm of hg and all peripheral pulses felt and a swelling noted in umbilical region (10*5.2 cm). Ultrasound showed dilatation of infra-diaphragmatic aorta with lumen diameter of 5.63 cm with mural thrombosis all around and bilateral common femoral artery stenosis with calcifications. CT abdomen and CT angiography reveals a 10cm*9cm aneurysmal dilatation of infra-renal aorta with lumen narrowing (4.3*4.5cm) with mural thrombosis ,wall calcifications ,hyper-dense crescent sign and focal discontinuation of intimal calcification. A hypodense encysted collection noted in anterior-lateral aspect of the aneurysm most likely chronic haematoma. Bilateral extensive atheromatous wall calcifications noted in iliac and femoral arteries with lumen narrowing. The patient was monitored and operated successfully. Patient was admitted and remains afebrile. Repeat scope done revealed no bulging of the posterior pharyngeal wall. He was discharged without any surgical intervention.

CONCLUSION: Ruptured aortic aneurysm is a catastrophic emergency. Hence prompt diagnosis of impending rupture of aneurysm is beneficial for rapid management. Management options include close surveillance and endovascular repair.

VARIABILITY IN THE SIZE OF PULMONARY NODULES AND MASSES OBTAINED USING THE LUNG WINDOW AND MEDIASTINAL WINDOW OF THE COMPUTED TOMOGRAPHY SCAN

Danlen C. Masangya^{*1}; Jarold P. Pauig¹

¹*Radiology, UP-Philippine General Hospital, Philippines*

OBJECTIVE: Accurate measurement of the size and doubling time of a pulmonary nodule is essential to predict its malignant potential and for cancer staging purposes. This study aimed to determine if there is variability in the measurements of the sizes of pulmonary nodules obtained using the lung and mediastinal windows of computed tomography scans.

MATERIALS & METHODS: A total of 132 patients with chest CT scans from the period of June to December 2014 were selected via stratified random sampling. Size measurements were taken in the preset lung and mediastinal windows using the ruler tool of the Philips Intellispace Portal program. Patient demographics and the imaging characteristics of the masses (margins, attenuation, presence of adjacent atelectasis, pleural/mediastinal attachment) were also tabulated. The mean difference, standard deviation, and Pearson correlation values were computed to determine the correlation between the measurements obtained using the two windows. Correlation between the inherent imaging appearance of the nodule and variability in their sizes taken using two different windows was also established.

RESULTS: There was excellent correlation between the measurements obtained using the lung and mediastinal windows for both anteroposterior (Pearson's correlation coefficient 0.995) and mediolateral (0.988) dimensions. However, for lesions which exhibit ground-glass attenuation (0.716) and for small nodules (0.901), a marginal discrepancy was noted.

CONCLUSION: There is negligible variability between measurements of pulmonary nodules and masses obtained using the lung and mediastinal windows in the sample population. It may be prudent to indicate the specific window used in size measurement for follow-up purposes, especially for ground-glass nodules.

**HYPOPLASTIC RIGHT UPPER LOBE IN AN ASYMPTOMATIC 28-YEAR OLD
FEMALE: A CASE REPORT**

Sheen Urquiza*¹; Romelito Jose G. Galsim¹

¹*Department Of Radiology, Philippine General Hospital, Philippines*

INTRODUCTION: Pulmonary hypoplasia is a rare congenital abnormality where there is decrease in the number or size of airways, vessels and alveoli amidst an unremarkable gross lung morphology. Presentation varies from just only an abnormal radiographic finding in an otherwise asymptomatic adult to signs of respiratory distress during early neonatal period.

REPORT: We describe in this study a case of a 28-year old female who came to the UP-PGH Health Service for annual examination. Chest x-ray revealed findings compatible with a hypoplastic right lung and chest CT-Scan confirmed the presence of hypoplasia of the right upper lobe with a solitary right pulmonary vein.

CONCLUSION: Plain chest radiographs of pulmonary hypoplasia usually show reduced lung volume, approximation of the ipsilateral ribs, elevation of the hemidiaphragm and ipsilateral shift of the mediastinum with compensatory hyper-aeration of the contralateral lung. Chest CT-scan may be the most conclusive examination to diagnose congenital anomalies of the lung and associated vascular abnormalities when chest radiographs are non-diagnostic. This report stresses the importance of a high index of suspicion for these cases in order to adequately use appropriate imaging modalities to diagnose congenital lung abnormalities.

ADULT NON TRAUMATIC LEFT DIAPHRAGMATIC HERNIA MISTAKEN AS LEFT PLEURAL EFFUSION : A CASE REPORT

Rayyan Mardhiyah Nik Mohd Kamel*¹; Mohd Noor Akmal Adam¹

¹*Radiology Department, Hospital Segamat, Malaysia*

INTRODUCTION: Diaphragmatic hernia is part of a thoracic hernia defined as herniation of intra-abdominal contents ie stomach, colon, spleen and omentum through the diaphragmatic defect or orifice into the thoracic cavity. The cause can be divided into two of which commonly congenital or acquired as a result of traumatic diaphragmatic rupture. Non traumatic diaphragmatic hernia is rarely seen in adults.

REPORT: Diaphragmatic hernia is commonly congenital and occurrence in adults is usually as a result of a blunt or penetrating trauma. This case report is highlighting a case of adult onset diaphragmatic hernia in the absence of trauma masquerading as an effusion. Here we will be discussing the overview of the disease and its diagnostic pitfalls.

CONCLUSION: In conclusion, it is possible that adult non traumatic diaphragmatic hernia be eventually symptomatic after a period of latency. Diaphragmatic hernia became symptomatic secondary to past trauma and after a long delay which can be exacerbated by physical activity. Clinical and radiograph interpretations are misleading especially in an unexpected case like ours. High index of suspicion of diaphragmatic hernia with help of related investigation can lead to early diagnosis and treatment.

PYOPNEUMOTHORAX : A RARE CASE

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Pyopneumothorax is may be thought of a variant of a thoracic empyema with containing components although the etiology may be different. Pathology of causes is thoracentesis, thoracic trauma, bronchopleural fistula, oesophagopleural fistula. Examination for detection pyopneumothorax with plain radiograph chest x ray PA view erect, ultrasound chest, and CT chest without contrast. This is a Rare case in my country.

REPORT: We want report a case, a man young, smoker with symptom cough, chest pain, fever and breathing difficult.

CONCLUSION: Plain chest radiograph may be the first detection for diagnostic pyopneumothorax. The others examination with using CT Chest without contrast and ultrasound chest. May be differential diagnosis is peripheral lung abscess.

CASE SERIES PARTIAL ANOMALOUS PULMONARY VENOUS RETURN: A RARE ANATOMIC VARIANT

Nur Fathihah*¹; Ahmad Razali Md Ralib Md Raghil¹; Mah Sin Yeat²

¹Radiology, National Islamic University of Malaysia, Malaysia , ²Radiology, Hospital Tengku Ampuan Afzan, Malaysia

INTRODUCTION: Partial anomalous pulmonary venous return (PAPVR) is a rare congenital anomaly in which some of the pulmonary vein (at least one) either drains into systemic circulation or directly into the right atrium. The spectrum of clinical presentation is wide . Although most patients are asymptomatic, some can present with non-specific symptoms. We present 2 cases of PAPVR to highlight the different clinical presentations and its clinical relevance.

REPORT: This case report shows dilated left upper lobe pulmonary vein draining into the into the left brachiocephalic vein in a 24 years old pregnant lady who underwent a computed tomography pulmonary angiography to investigate the cause of pulmonary hypertension.

The second case is a 47 years old end stage renal failure patient who underwent left IJC insertion for venous access. Malposition of left internal jugular catheter detected in chest radiograph. Computed tomography angiography of the thorax revealed enlarged left superior pulmonary veins which drains directly into the left brachiocephalic vein. The tip of the catheter lies within the dilated left superior pulmonary vein.

CONCLUSION: These cases emphasize the importance of recognizing developmental anomalies, its implication in the clinical setting and proper imaging required for correct diagnosis.

IMAGING FEATURES OF UNDIAGNOSED CONGENITAL DIAPHRAGMATIC HERNIA WITH ADULT PRESENTATION.

Hema Kaliparumal*¹; Rofiah Ali¹; Khariah Mat Nor²

¹*Radiology Department, Hospital Sungai Buloh, Malaysia,* ²*Radiology, Faculty Of Medicine, UiTM Sungai Buloh, Malaysia*

INTRODUCTION: Congenital diaphragmatic hernia (CDH) is a major malformation typically found in babies and rarely in adults. It is defined by the presence of an orifice in the diaphragm, more often on the left postero-lateral, that permits the herniation of abdominal contents into the thoracic cavity. This case series aims to provide information on the presentation, imaging features and the outcome of three adults with late presentation of CDH. The diagnosis was based on clinical history and were confirmed by radiological investigation and surgery.

REPORT: We describe three cases of congenital diaphragmatic hernia with adult presentation. The first two cases involves a 24-year and a 28-year-old male, presented with gastric outlet obstruction symptoms and signs. The CT thorax and abdomen showed large herniation of abdominal contents into the left hemi-thorax via a large left peritoneal defect. The third case describes a large bowel herniation through the anterior diaphragmatic defect into the right hemi-thorax in a 64-year-old woman who presented with recurrent aspiration pneumonia. In all cases, there were no previous history of trauma or surgical intervention which may have caused a diaphragmatic defect. The management and outcome of these patients will be described.

CONCLUSION: Adult patients with congenital diaphragmatic hernias will have of a wide variety of symptoms and signs, making diagnosis difficult. Radiological investigations are required for early diagnosis and fast recognition of its life-threatening complications.

ISOLATED UNILATERAL PROXIMAL INTERRUPTION OF THE PULMONARY ARTERY - INCIDENTALLY FOUND IN ADULTHOOD

Hoe Han Guan*¹; Ng Hui Rou²

¹*Radiology Department, Hospital Keningau, Sabah, Malaysia*, ²*Medical Department, Hospital Tenom, Sabah, Malaysia*

INTRODUCTION: Unilateral absence of pulmonary artery (UAPA) or proximal interruption of pulmonary artery (PA) is a rare entity due to a malformation of the sixth aortic arch. It is commonly associated with other congenital cardiovascular anomalies. However, less frequently, this condition may occur as an isolated finding, and some patients are completely asymptomatic.

REPORT: We report a rare case of 43-year-old previously healthy female presented with exertional dyspnea and wheezing of 3-day duration. A chest radiograph showed a reduced left lung volume, left retrocardiac opacity and a prominent PA. Chest CT scan showed atretic left PA truncated at the hilum, diffuse alveolar opacity within the hypoplastic left lung, dilated right heart, enlarged right PA and pulmonary trunk. An echocardiogram showed dilated right heart chambers, normal biventricular function, and PA hypertension (PAH). UAPA can either present in infancy with congestive heart failure and pulmonary hypertension (PH) or remain asymptomatic until adulthood depending on the presence of coexisting anomalies. Recurrent pulmonary infections, hemoptysis, limited effort tolerance, or incidental finding during chest radiography are the common presentations in adults. Our patient presented with the most common symptoms associated with UAPA, i.e. PH, exertional dyspnea and a pulmonary infection.

CONCLUSION: Clinicians should be aware of the possibility of undiagnosed cases of UAPA in patients through a chest radiograph that suggests the diagnosis. Confirmation of the diagnosis and anatomic details can be discerned by CT scanning. Workup for coexisting cardiovascular conditions is important as early diagnosis might prevent complications of PH.

BOERHAAVE'S SYNDROME

Fatt Yang Chew*¹

¹*Medical Imaging, China Medical University Hospital, Taiwan (ROC)*

INTRODUCTION: Boerhaave syndrome is a rare condition that commonly misdiagnosed and potentially life-threatening clinical situations if not promptly treated. It was first introduced by the eminent Dutch physician Dr. Herman Boerhaave with his incisive observation through an autopsy of his patient, Grand Admiral of the Netherlands, Baron Jan van Wassenaer, who died in 1723 as a result of esophageal rupture. Boerhaave syndrome was believed to be caused by a sudden rise in intraluminal esophageal pressure that induced esophageal rupture.

REPORT: A 46-year-old man with an initial presentation of excruciating pain over upper abdomen after violent vomiting. On physical examination, there was rigidity and diffuse tenderness in left upper quadrant of abdomen accompanied with rebound tenderness and guarding on deep palpation. The following chest radiograph illustrates widening of the mediastinum with a Naclerio V's sign. Chest computed tomography eventually confirmed the occurrence of esophageal rupture by revealing pneumomediastinum and hydropneumothorax. The diagnosis of Boerhaave syndrome was made. The patient underwent surgery and was doing well at a follow-up visit two months after the presentation.

CONCLUSION: This case highlights the importance of considering esophageal etiologies of post emetic epigastralgia. In addition, this article will review the specific clinical and imaging manifestations of this disease for better management. As a result, it is essential to know the advantages and limitations of the available imaging modalities to optimize the applications for the evaluation of a patient with esophageal rupture. Eventually, appropriate management could be initiated with the earlier and precise diagnosis for a better prognosis.

**AN UNUSUAL CASE OF PULMONARY CRYPTOCOCCOSIS IN AN
IMMUNOCOMPETENT FEMALE PATIENT WHO HAVE CO-EXISTING
RECURRENT CRYPTOCOCCAL MENINGITIS**

Hoe Han Guan*¹; Ng Hui Rou²

¹*Radiology Department, Hospital Keningau, Sabah, Malaysia, ²Medical Department, Hospital Tenom, Sabah, Malaysia*

INTRODUCTION: Cryptococcosis is caused by encapsulated fungi *Cryptococcus neoformans* and *Cryptococcus gattii*. Though inhalation commonly causes innocuous colonisation, it may cause meningitis or disseminated disease via haematogenous spread. Cryptococcosis occurs most commonly in immunocompromised patients including those with malignancy, acquired immune deficiency syndrome, organ transplantations, immunosuppressive chemotherapies or dialysis. However, cryptococcosis can occur as pulmonary nodules in immunocompetent patients.

REPORT: Here we present a unique case report of a 56-year-old immunocompetent woman who have unresolved recurrent cryptococcal meningitis, presented with severe headache and fitting episodes in addition to her respiratory symptoms: shortness of breath and productive cough. Initial chest radiograph showed patchy alveolar opacities in both lung fields. A chest computed tomography scan revealed multiple clustered of centrilobular nodules arranged in periphery seen in both lung fields with cavitation of nodules in right upper lobe. She was seronegative for human immunodeficiency virus and was not receiving immunosuppressive therapy of any kind. Positive cryptococcal antigen test for her CSF and blood serum confirming *Cryptococcus*, requiring treatment with amphotericin, flucytosine, and fluconazole. Patient's CNS and respiratory symptoms improved with resolving lung opacities on serial chest radiographs after completed intensive phase of treatment.

CONCLUSION: This case highlights the rarely studied presentation of symptomatic disseminated pulmonary cryptococcosis in an immunocompetent patient who have concurrent CNS cryptococcosis.

PRIMARY LUNG SARCOMA, RARE TYPE OF PRIMARY LUNG TUMOR: A CASE REPORT

Punitha Mohanan*¹; Mohd Naim Yaakob¹; Zurina Abdul Wahab¹

¹*Radiology, Hospital Tuanku Ampuan Najihah, Malaysia*

INTRODUCTION: This is a case of a 62 years old gentleman, ex smoker presented with one month of chronic cough and hemoptysis. Examination revealed acute respiratory distress with bronchial breathing over right apex. Chest X-ray showed right upper zone opacity.

REPORT: Full body computed tomography revealed right upper lobe mass highly suspicious of malignancy with subcarinal and ipsilateral right hilar necrotic nodes, T3N2M0. Right upper lobe endoscopic bronchial biopsy was suggestive of sarcoma. Patient was referred to CTC, however multi-disciplinary discussion was needed with IKN as the tumour was large and near to the right bronchus and great vessels. Unfortunately, over time, patient's condition deteriorated and passed away.

CONCLUSION: Primary lung sarcoma is a very rare malignant tumor, accounting for less than 0.5% of all lung tumors. The common presenting complaints are dyspnea(42%), chest pain(39%), cough(32%) and hemoptysis(22%).The symptoms are usually limited but due to the aggressive nature of tumor, invasion of mediastinum, heart and chest wall may occur. Radiologically, it commonly presents as a lung mass and mediastinal shift may occur in an extremely large mass. CT scan helps to evaluate the borders and content of lung mass. Sputum examination and bronchoscopy are of low yield because tumor usually spreads through parenchyma and rarely invades bronchial wall. Due to rarity of disease and little data about the presentation and treatment of these tumors, no guideline regarding management of lung sarcoma is available. Surgical resection through either lobectomy or pneumonectomy is considered the treatment of choice.

THE DEVELOPMENT AND EVALUATION OF FLIPPED CLASSROOM OF ULTRASOUND DETECTION ACUPUNCTURE

Mark Hou*¹; Ying-Ling Chen²

¹*Department of Chinese Medicine, Changhua Christian Hospital, Taiwan (ROC),* ²*Department of Chinese Medicine, China Medical University, Taiwan (ROC)*

OBJECTIVE: Flipped classroom had been widely used in education. Acupuncture need to adopt it to increase the self-directed learning of students as well. Ultrasound detection acupuncture (UDA) performed an ultrasound to ensure the safe needling depth before acupuncture to reduce pneumothorax. The study intended to develop a flipped classroom for UDA.

MATERIALS & METHODS: First, we made a specific ultrasound for acupuncture (UFA) as a teaching tool. UFA used M mode to measure the depth of the lung by identifying the Seashore sign. We applied UFA on 3 acupoints near the chest of health and COPD subjects to validate its effect. Then we setup flipped classroom of UDA by using Facebook and Youtube. We recruit 20 students and 20 interns to take the course and pre/post-tests were performed. Statistical analysis and group interviews were used to evaluate the efficacy of the course.

RESULTS: The result of the first part showed that the content validity index of UFA on three acupoints were 0.8, 0.9 and 0.8 respectively. UFA was developed successfully by demonstrating a safe needling depth of the lung.

CONCLUSION: UFA is good to establish the Flipped classroom of UDA in the next part of the study.

STATE OF THE ART OF PULMONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY IN PREGNANCY

Charbel Saade*¹

¹*Department of Radiology, University of Canberra, Australia*

LEARNING OBJECTIVE: The aim of this paper is to evaluate contrast media (CM) bolus geometry and opacification patterns in the pulmonary arteries with particular focus on patient, scanner and safety considerations in pregnant patients

BACKGROUND: Pulmonary embolism is a major complication of pregnancy and responsible for 2% to 14% of all maternal deaths worldwide and is the leading cause of maternal mortality in developed countries. Pregnancy could be considered as an example of Virchow's triad: Hypercoagulability, Venous stasis, and vascular damage. As such, reported maternal and fetal radiation exposure doses were well below the safety threshold. However, careful selection of CT scan parameters coupled with contrast media delivery is still lacking.

FINDINGS AND/OR PROCEDURE DETAILS: The rapid evolution of computed tomography (CT) technology has seen this imaging modality challenge conventional pulmonary angiography and ventilation-perfusion scan (VQ) in the evaluation of thromboembolism. Increases in spatial and temporal resolutions have enabled pulmonary CTA to become the modality of choice when evaluating the vascular tree as an alternative in the diagnostic algorithm for acute chest pain. However, these new technologic improvements in scanner technology have imposed new challenges for the optimization of CM delivery and image acquisition strategies.

CONCLUSION: Understanding basic CM-imaging principles is essential for designing optimal injection protocols according to each specific clinical scenario, independently of scanner technology when imaging pregnant patients.

**DOUBLE ARCH OF AORTA WITH DOMINANT RIGHT ARCH AND VARIANT OF
SEPARATE ORIGIN OF LEFT VERTEBRAL ARTERY IN ASYMPTOMATIC
ELDERLY PATIENT**

Nur Mastura Nazarudin, Shantini Devi Muniandy, Sazali Satari*¹;

¹*Radiology, Hospital Teluk Intan, Malaysia*

INTRODUCTION: Double arch of aorta(DAA) is a rare congenital vascular malformation. However, it is the common type of complete vascular rings. Symptoms usually involve tracheal and esophageal compression and usually appears in the early life. A left vertebral artery(LVA) originating directly from the aortic arch is the second most common supra-aortic branching anomaly. Variation in the origin of the left vertebral artery was seen, arising directly from the left arch of aorta. We present a case report in which asymptomatic DAA and separate origin of left vertebral artery are discovered incidentally through contrast enhanced computed tomography(CT) of the chest in adulthood.

REPORT: A 85-year-old woman with multiple co-morbidities presented to our hospital with complaints of cough and abdominal pain. Patient was treated as pneumonia and achalasia cardia. Chest X-ray showed mediastinal widening suspicious of a mass. Contrast enhanced CT of the chest displayed right and left aortic arches arising from the ascending aorta. The larger right arch gave origin to the right common carotid artery and the right subclavian artery, while the smaller left arch gave origin to the left vertebral artery, left subclavian artery and left common carotid artery. The trachea and the dilated esophagus were completely encircled by the two arches. No abnormal compression of the trachea or the esophagus was observed in this patient.

CONCLUSION: DAA with variant of separate origin of left vertebral artery was discovered incidentally following imaging investigation of a mediastinal widening. Although the trachea and esophagus are encased by the anomalous DAA, patient remains asymptomatic. Contrast enhanced CT of the chest is essential in diagnosing vascular ring and variant arterial anomalies.

**STERNAL CLEFT ASSOCIATED WITH LARGE VESSEL ANOMALIES: A RARE
CAUSE OF YOUNG STROKE**

Lim Ru Woei*¹; Koa AJ²; Teh Yong Sim¹; Lee Chung Yuen¹

¹*Radiology, Pusat Jantung Sarawak, Malaysia*, ²*Radiology, Universiti Malaysia Sarawak, Malaysia*

INTRODUCTION: Sternal cleft associated with large vessel anomalies: a rare cause of young stroke.

REPORT: Sternal cleft is a rare congenital malformation due to partial or total failure of sternal fusion. While rare, sternal defects have a strong association with congenital vascular anomalies such as aortic coarctation. We report a case of a young adult previously no known medical illness, presented with recurrent strokes. CTA aorta, cerebral and carotid shows aortic coarctation with aneurysm of left subclavian artery; as well as evidence of sternal cleft. This patient is subsequently referred to National Heart Centre and planned for TEVAR procedure.

CONCLUSION: Isolated sternal cleft without associated anomaly is rare. As reported in our case, with evidence of underlying sternal cleft further work up which include a CT angiography of aorta, cerebral and carotid is indicated especially when a young patient is presented with unexplained recurrent strokes. Cardiothoracic consultation is recommended for further management of sternal cleft.

CHEST IMAGING: DIAGNOSTIC VALUE OF ULTRASOUND IN DETECTING CENTRAL VEIN OBSTRUCTION

Aie Wei Tan*¹; Muhamad Asyraf Jamaluddin¹; Aun Kee Chong¹

¹*Radiology, Hospital Besar Melaka, Malaysia*

OBJECTIVE: This prospective study was performed to evaluate the diagnostic value of ultrasound in detecting central vein obstruction, as compared to venography. Venography is an invasive diagnostic test that uses contrast material and radiation in the diagnosis of central vein obstruction, which poses some risks such as contrast nephropathy with contrast injection and radiation exposure. On the other hand, ultrasonography examination, being non-invasive, easy to perform and radiation free could be a good alternative tool as compared to venography in the assessment of central veins.

MATERIALS & METHODS: The patients who referred to radiology department for central venogram to rule out central vein thrombosis were recruited by convenient sampling. Patients were first assessed by ultrasound followed by venography. Sonographic examination was performed using linear probe, where the proximal part of the internal jugular vein was examined. The proximal internal jugular vein was assessed for its respiratory phasicity, absent of venous flow and absent of phasicity of flow with respiration. Normal and abnormal findings from both ultrasound and venography were compared.

RESULTS: There are total of 60 cases collected for period 8/8/17- 5/10/18. Data is collected for analyzed using SPSS software. Overall diagnostic value of color Doppler ultrasound has a sensitivity of 76.9%, specificity of 97.9%, positive predictive value of 90.9% and negative predictive value of 93.9%.

CONCLUSION: In conclusion, color Doppler ultrasound could be a good alternative and reliable tool for detecting central venous obstruction.

HRCT PATTERNS OF INTERSTITIAL LUNG DISEASE IN PSORIASIS

Roqiah Fatmawati Abdul Kadir*¹; Bushra Johari¹; Mohammad Hanafiah Kreeh¹

¹*Radiology Department, Universiti Teknologi Mara (UiTM), Malaysia*

LEARNING OBJECTIVE: To demonstrate different interstitial lung disease manifestations and patterns in patient with psoriasis.

BACKGROUND: Psoriasis commonly presents with chronic inflammatory dermatological manifestations, or psoriatic arthritis. Whilst it has been commonly associated with diabetes mellitus, hypertension, obesity and dyslipidemia, recent emerging studies have shown association between psoriasis and Interstitial Lung Disease (ILD).

FINDINGS AND/OR PROCEDURE DETAILS: Four patients who were diagnosed with psoriasis, had high resolution computed tomography (HRCT) performed for respiratory complaints. The four patients show different ILD patterns, two of which with Usual Interstitial Pneumonia (UIP)-like pattern, the remainder showing non-specific interstitial pneumonia (NSIP) / Organizing Pneumonia (OP)-like pattern and indeterminate pattern respectively.

CONCLUSION: These findings correspond to previous case series of psoriasis and ILD, which showed multiple different patterns of HRCT findings. Further prospective studies are needed to determine the association of ILD and psoriasis.

DIFFUSE PLEURAL METASTASES FROM ADENOID CYSTIC CARCINOMA

Rozalina Johari*¹; Vithya Visalatchi Sanmugasiva¹; Sri Arun Manickaam²; Haryati Husin³

¹*Radiology, Hospital Segamat, Malaysia,* ²*Anaesthesia, Hospital Kuala Lumpur, Malaysia*

³*Pathology, Hospital Pakar Sultanah Fatimah, Malaysia*

INTRODUCTION: Adenoid cystic carcinoma is an uncommon form of malignancy that only accounts for 1% of all head and neck malignancies and 10% of all tumors of the salivary glands. There are three major variants based on their histological patterns, which are cribriform, tubular and solid. It is known for its long clinical course, local recurrence and late distant metastasis involving lungs, bone and liver. Pleura is a rare site for metastasis of this malignancy.

REPORT: A 66-year-old lady presented with right chest pain. 9 years prior to this, she had excision of a benign tumour at the left neck region. Clinically, she had reduced air entry at the right lower zone. CECT neck & thorax revealed diffuse enhancing nodular pleural thickening on the right and evidence of submandibular gland excision. CT guided biopsy was performed. Histopathological examination showed malignant cells arranged in solid lobules with small ducts, uniform basaloid cell with hyperchromatic angular nuclei with underlying hyalinized stroma with mucinous and myxoid features. It also tested positive for CK 7, S100 and CD 117 and negative for CK 20 and p63. Final conclusion of the histopathological examination was metastatic adenoid cystic carcinoma.

CONCLUSION: Adenoid cystic carcinoma rarely comes to clinical attention as metastatic pleural lesion. The findings of pleural metastases from malignancy of salivary gland tumour was confirmed with histopathological examination. This case supports the current literature of aggressive long term behavior of this tumour with incidences of distant metastases almost a decade after its first presentation.

THE BUBBLY LUNG - DIFFERENTIALS & APPROACH TO DIAGNOSIS

Puneet Gupta*¹

¹*Radiology, ASCOMS, India*

LEARNING OBJECTIVE: Cystic lung diseases are one of the commonest presentations in radiological practice & they include true cystic lesions & cyst-like lesions or mimickers. There is an exhaustive list of differentials of cystic lesions, but the prime concern is differentiation of true cystic lesions from the mimickers. “BUBBLY LUNG” refers to lungs having multiple cyst-like lesions, & the presentation describes an approach towards simulators of cystic lung diseases.

BACKGROUND: True Pulmonary cystic disease should be differentiated from other simulating entities (like emphysema, bronchiectasis and honeycombing) & the various causes of pulmonary cavities (malignant, infectious, inflammatory, vascular, traumatic) because of the differing prognostic implications.

FINDINGS AND/OR PROCEDURE DETAILS: “BUBBLY LUNG” refers to lungs having multiple cyst-like lesions, & the presentation describes an approach towards simulators of cystic lung diseases.

CONCLUSION: True cystic lung disease should be differentiated from mimickers, the mimickers are more commonly encountered in practice. Heterogenous imaging appearance, morphology, distribution of cysts, number, location of cysts & other ancillary HRCT features should be considered. Clinical inputs & knowledge of the associated pulmonary and extra-pulmonary disease patterns may lead to the correct diagnosis

**POCUS FOR ACUPUNCTURIST: A TRAINING PROGRAM OF ULTRASOUND
DETECTION ACUPUNCTURE**

Ying-Ling Chen*¹; Mark C. Hou²; Kai-Wen Chuan²

¹*Department Of Chinese Medicine, China Medical University, Taiwan (ROC),* ²*Department Of Chinese Medicine, Changhua Christian Hospital, Taiwan (ROC)*

LEARNING OBJECTIVE: This study established a Ultrasound detection acupuncture (UDA) training program and recruited trainees in the hospital to validate the effectiveness of the program.

BACKGROUND: UDA was a new clinical skill of acupuncture. In order to avoid the complication of pneumothorax while needling, ultrasound was introduced to measure the safe needle depth to improve patient safety. UDA was a good practice for POCUS of acupuncture as well.

FINDINGS AND PROCEDURES: The trainees attended an eight-hour course and practiced their UDA skills on an acupuncture simulator model ASM21. Pre- and post-test data were analyzed using the Mann-Whitney U test and Fisher's exact test. In total, 16 trainees completed the course. Kendall's coefficient for the program was 0.82, and the average CVI was 0.98, showing good reliability and validity. Trainees exhibited significant improvement in terms of reduction of the incidence of pneumothorax after completing the course ($P < 0.050$). Acquisition of ultrasound skills significantly reduced the incidence of pneumothorax ($P < 0.001$). Feedback from interviews showed that use of ultrasound to measure the safe needle depth may improve the mastery of acupuncture point GB21 and reduce the fear of causing pneumothorax.

CONCLUSION: The UDA program demonstrated good teaching results and could be used as a basis for the development of the POCUS acupuncture in future.

RADIOLOGICAL ILD PATTERNS ON HRCT BY NON-THORACIC VERSUS THORACIC RADIOLOGIST: A SINGLE CENTRE EXPERIENCE

Roqiah Fatmawati Abdul Kadir*¹; Mohammad Hanafiah¹; Bushra Johari¹; Hazlenah Hanafiah²

¹*Radiology Department, Universiti Teknologi Mara (UiTM),* ²*Statistics Unit, Faculty Of Computer And Mathematical Sciences, Universiti Teknologi Mara (UiTM), Malaysia*

OBJECTIVE: Interstitial lung disease (ILD) is a heterogeneous group of condition denoted by inflammation and / or fibrosis. Thoracic radiology as sub-interest is only recently gained attention in Malaysia. Most of the ILD patterns were diagnosed by general radiologists or radiologists of other sub-speciality. We seek to re-review the radiological ILD patterns on HRCT by a thoracic radiologist and compare with previous reports by non-thoracic radiologists at our centre.

MATERIALS & METHODS: All patients who had thoracic CT scan performed within a period of 5 years were searched for ILD cases using relevant keywords. Only those reported by general radiologist were included. The ILD patterns were categorised into UIP, NSIP, mixed NSIP/OP, OP, HP and the rest were grouped as ‘others’ (primary radiological pattern diagnosis). The cases were re-reviewed by thoracic radiologist (blinded to previous report) using the same categories. Correlation was made with the demographic information, connective tissue disease and smoking history.

RESULTS: A total of 96 ILD cases [age; 63.3 years old (mean), 26-91yrs old (range), 20.8% male] were analysed. There was only fair agreement between thoracic and non-thoracic radiologists ($\kappa= 0.29$). Significant correlation between NSIP and CTD (p-value 0.001) as well as female (p value 0.003) when compared with other radiological ILD patterns.

CONCLUSION: Reporting ILD is challenging with low interobserver agreement between thoracic and non-thoracic radiologists. Input from thoracic radiologist in ILD multidisciplinary team discussion is imperative in diagnosis and management of ILD.

ORTNER SYNDROME (CARDIO VOCAL HOARSENESS) - A RADIOLOGICAL DIAGNOSIS.

Lee Shien Low*¹; Caroline Judy Westerhout¹

¹*Department of Biomedical Imaging, University of Malaya, Malaysia*

INTRODUCTION: We present a case of a man with sudden onset of hoarseness of voice secondary to isolated left vocal cord paralysis.

REPORT: A 68-year-old male with underlying diabetes mellitus, hypertension and ischaemic heart disease presented to the ENT team with intermittent hoarseness of voice over one month. Physical examination was normal. Indirect laryngoscope revealed left vocal cord paresis and a normal fully mobile right vocal cord with no phonatory gap.

Chest radiography revealed no lung lesion or enlarged mediastinal structure. Contrast-enhanced computed tomography of the neck to the thorax (Siemens Somatome AS, Germany) revealed a saccular aneurysm arising from the inferomedial wall of the descending thoracic aorta, occupying the aortopulmonary window and subaortic arch space – Ortner syndrome. Endovascular repair was performed with collaboration of the interventional radiologist and vascular surgeon. Post stenting angiogram showed no endoleak and good patency of graft and left subclavian artery. This procedure was complicated by acute left upper limb ischaemia secondary to left brachial artery embolism. Immediate embolectomy successfully evacuated fresh blood clots along the brachial artery. The patient recovered without any further complications and minimal residual hoarseness of voice at three months follow-up.

CONCLUSION: If isolated vocal cord palsy cannot be explained with pathologies in ENT examination, radiological evaluation should take place to identify cardiovascular cause especially if patient has a history of cardiovascular disease. This case successfully demonstrates that minimally invasive endovascular graft can be used in treatment of isolated vocal cord palsy secondary to thoracic aortic aneurysm with excellent initial and short-term results.

**THYMOMA: A RADIOLOGICAL REVIEW ALONG THE WHO CLASSIFICATION
AND MASAOKA-KOGA STAGING SYSTEM**

Ji Young Rho*¹; Sooyeon Jeong¹; Hyewon Kim¹

¹*Radiology, Wonkwang University School Of Medicine, Korea*

LEARNING OBJECTIVE: To review the radiologic findings of thymoma classified according to the current World Health Organization (WHO) histologic classification and clinical Masaoka-Koga staging system, and to help the clinical preoperative staging.

BACKGROUND: Thymoma is the most common primary neoplasm of the anterior mediastinum. CT and / or MR imaging are useful screening methods for identifying thymoma and preparing for surgery. However, imaging findings alone do not accurately reflect WHO classification, so reviewing the imaging finding that reflect Masaoka staging can help with preoperative preparation.

FINDINGS AND/OR PROCEDURE DETAILS: CT images of thymoma subtypes according to WHO classification in thymoma patients diagnosed by operation or biopsy were compared with the Masaoka staging system, and additional MRI and PET / CT findings were reviewed.

CONCLUSION: Through various radiological reviews along the WHO classification and Masaoka staging system, Radiologists should be familiar with imaging findings of thymoma and will help to make more accurate clinical staging.

IMAGING EVALUATION OF LINES, TUBES AND MEDICAL DEVICES: PROPER POSITION AND COMMON COMPLICATION

Lee Pei Hua, Chew Fatt Yang*¹;

¹*Department of Medical Imaging, China Medical University Hospital, Taiwan (ROC)*

LEARNING OBJECTIVE: To demonstrate the proper placement and possible complications of the lines, tubes, and medical devices that frequently used in patients.

BACKGROUND: A variety of lines, tubes, and medical devices are increasingly used in patients of different clinical settings including intensive care unit (ICU), general ward, emergency setting, and outpatient service. Image is always obtained after the placement of a specific medical device, and the radiologist is frequently requested to evaluate the location and the complication of the inserted lines, tubes and medical devices. Therefore, a radiologist needs to be familiar with the proper position and the possible complications of the commonly used medical devices.

FINDINGS AND/OR PROCEDURE DETAILS: Radiographs and CT help ensure optimal placement of lines, tubes, and medical devices and assess for the possible complications. The images of the proper location of central venous catheters, feeding tubes, tracheal tubes, intercostal drainage tubes, Swan-Ganz catheter, intra-aortic balloon pump, pacemakers, and extracorporeal membrane oxygenation (ECMO) circuit, as well as their complications, will be demonstrated. The common complications that might be found through the image are malposition, kinking, looping, knotting, and fragmentation of the catheter and lines.

CONCLUSION: Recognition of correct position of the line, tubes and medical devices is vital to prevent adverse outcomes and prompt potentially life-saving intervention.

CHEST RADIOGRAPHIC FEATURES OF PULMONARY TUBERCULOSIS(PTB) IN PATIENTS WITH UNDERLYING HIV

Mahalatchumi Subramaniam*¹; Nur Safira Abd Isa²; Mohamed Asnawi Soroni²; Anusha Shunmugarajoo³; Anushya Vijayanathan⁴

¹Radiology, Hospital Sungai Buloh, Malaysia, ²Radiology, Hospital Tengku Ampuan Rahimah, Malaysia, ³Medical, Hospital Tengku Ampuan Rahimah, Malaysia, ⁴Biomedical Imaging, University Of Malaya, Malaysia

OBJECTIVE: To characterize the differences in chest radiograph (CXR) findings among patients with pulmonary tuberculosis (PTB) and human immunodeficiency virus [HIV] co-infection.

MATERIALS & METHODS: A retrospective study was conducted with 200 PTB patients who are above 18 years old and had initial CXR, laboratory confirmation of HIV status, CD4 T-lymphocytes count and sputum AFB results. These patients were sub-divided into four groups: Group 1(smear +, HIV+), Group 2 (smear+, HIV-), Group 3 (smear -, HIV+) and Group 4 (smear-, HIV-). Two radiologists analysed the chest radiographs on standard image viewing box and filled a data collection sheet which was later analysed using SPSS.

RESULTS: Mean age was significantly higher among Group 3 patients (50.4 years old). All patients in Group 3 had abnormal CXR with consolidation, higher proportion of multifocal pattern (55.8%), mixed type consolidation (59.7%) and bilateral lung predominance (70.1%). Almost 98% patients with no cavities were reported in Group 2.

CONCLUSION: All four groups have differing CXR features but there's still some overlap in their radiographic findings. Lung cavitations which were not commonly seen in smear negative PTB group regardless of their HIV status can be used to build a predictive model in the future and possibly be used to do away with sputum AFB and proceed straight with sputum culture.

TO CHARACTERIZE THE MDCT FINDINGS OF BRONCHIAL- PULMONARY ARTERY FISTULA.

Shahjehan Alam*¹; Ummara Siddique¹; Aman Nawaz Khan¹; Syed Ghulam Ghaus¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

INTRODUCTION: Bronchial-pulmonary arterial fistula is a very rare vascular malformation complicated with racemose hemangioma. 20-year-old male with shortness of breath and echocardiographic findings of pulmonary hypertension was investigated using 128-slice Multidetector Computed tomography (MDCT) scanner in the Radiology department. Images of entire chest and upper abdomen were taken in pulmonary artery phase. 0.5mm reconstructed images in soft tissue window were viewed on Toshiba's vitrea workstation in axial, coronal and sagittal planes.

REPORT : We report a case of a 20-year-old male with Bronchial-pulmonary arterial fistula and primary racemose hemangioma. CTPA showed bronchial artery to pulmonary artery fistula of the right upper lobe near hilar level. Bronchial arteries showed convolution and dilation, were connected with pulmonary artery, suggesting the presence of primary racemose hemangioma. There was resultant retrograde filling of descending aorta confirming right to left shunt.

CONCLUSION: 128 slice MDCT with its high resolution and multiplanar imaging plays an instrumental role in diagnosing pulmonary vascular anomalies. Establishment of non-invasive treatment strategy for bronchial-pulmonary artery fistula is urgently required.

HEMOPTYSIS - DO NOT MISS BLEEDING GIANT BULLA.

Yap Teck Chong*¹; Wan Aireene Wan Ahmed¹; Chandran Nadarajan¹

¹*Radiology, Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Hemoptysis is defined as expectoration of blood, originating from the lower respiratory tract, and it is a potentially life-threatening condition that warrants an urgent evaluation of lung parenchyma, airway, and vasculature, so that the proper management and treatment can be carried out. The causes of hemoptysis are varied. This case is presented because spontaneous bleeding into the pre-existing bulla is a rare clinical event.

REPORT: A 55-years-old patient with underlying treated pulmonary tuberculosis, who presented with coughing and a large-volume of hemoptysis. On arrival to the emergency department, the patient was tachycardia and hypotensive. Blood investigation showed dropped in hemoglobin level, with no coagulopathy. Chest radiograph showed large bulla with cicatrization atelectasis on the left lung. CT showed a large bulla predominantly filled with fluid and minimal air-pockets within the left apical region. Associated with prominent left bronchial artery and adjacent intercostal arteries. Digital subtraction angiography (DSA) confirmed region of active bleeding is at the bulla region. Owing to his significant hemoptysis, the patient underwent bronchial artery embolization (BAE), and the hemoptysis was resolved after the BAE.

CONCLUSION: Hemoptysis especially moderate to severe hemoptysis usually required urgent treatment. Rare and unusual clinical presentation like this case - spontaneous pulmonary hemorrhage into a pre-existing bulla, without any trauma history or coagulopathy, this highlights the importance of history-taking and urgent investigation in deciding the management, and of course a multidisciplinary approach towards patients' care.

**TUBERCULOSIS RATHER THAN INTERSTITIAL LUNG DISEASE, THE
COMMONEST RADIOLOGICAL FINDING ON HIGH RESOLUTION COMPUTED
TOMOGRAPHY IN A LOCAL COMMUNITY**

Tahira Nishtar, Nosheen Noor*¹

¹*Radiology Department, Lady Reading Hospital, Pakistan*

OBJECTIVE: To determine the common radiological findings and diagnosis on HRCT in our community.

MATERIALS & METHODS: This retrospective observational study was carried out in Department of Radiology, Peshawar from 1st January 2014 to 31st December 2014. 101 consecutive cases of HRCT done in the specified period were retrospectively analyzed. Standardized proforma was designed for data collection. All patients who were referred by clinicians for HRCT were included in the study. HRCT was done using standard protocols of 2mm slice thickness, non-contrast, and pulmonary window on single slice CT scanner. Reporting was done by one senior radiologist. Radiological findings and diagnoses were analyzed using latest SPSS version.

RESULTS: Commonest radiological findings were consolidation (33.6%) and fibrosis (27.7%). Cavitation was seen in 14.8% and bronchiectasis in 13.8% of cases. Commonest radiological diagnosis based on these findings was inflammatory lung disease-tuberculosis (56.4%). Second common diagnosis was infective pneumonia (19.8%).

CONCLUSION: Although HRCT is the modality of choice for interstitial lung disease, but radiological manifestations of tuberculosis and its sequelae was found the most common radiological diagnosis in our study due to high prevalence of disease in the community.

**PRIMARY MEDIASTINAL EXTRA-OSSEOUS EWING'S SARCOMA - CASE REPORT
AND REVIEW OF LITERATURE**

Ravindar Kashyap*¹; Ramkumar G¹; Swathi Kiran¹

¹*Radiodiagnosis, Jipmer, India*

INTRODUCTION: Extraskkeletal sites of Ewing's sarcomas (EES) such as chest wall, lower extremities, retroperitoneum and paravertebral region have been observed in about 15% of cases. Primary mediastinal extraskkeletal Ewing's sarcoma (EES) is quite rare. To the best of our knowledge, only five cases have been reported.

REPORT: A 50-year-old female presented with chest pain on and off for 6 months. General examination was unremarkable. Biochemical and hematological investigations were within normal limits. Local examination revealed tracheal shift towards left side. Chest X-ray showed an anterior mediastinal mass on the right side. Contrast enhanced CT showed a heterogeneously enhancing soft tissue density lesion with non enhancing central areas in the anterior mediastinum extending to the neck causing tracheal shift towards left side. Few heterogeneously enhancing left axillary nodes were noted. Avid FDG uptake was noted in the primary lesion and few mediastinal nodes. No distant metastasis was noted. CT guided biopsy of the lesion revealed small round cell tumour with CD 99 positivity suggestive of Ewing's sarcoma. Patient was started on chemotherapy and is on follow up.

CONCLUSION: Primary mediastinal Ewing's sarcoma is extremely rare to the best of our knowledge, only six such cases have previously been reported. Given the paucity of data, there is consequently no optimal treatment strategy available. The present study describes a relatively rare case of primary mediastinal EES/PNET that could not be resected. Knowledge of such rare cases might help in planning aggressive treatment modalities.

ASSESSING MULTIPLE PULMONARY EMBOLISM WITH VIRTUAL MULTISLICE CT INTRAVASCULAR ENDOSCOPY IN A MIDDLE-AGED MALE PATIENT

Freedy Laisto Panusunan Tambunan*¹; Dian Komaladewi¹; Harry Galuh Nugraha¹

¹*Radiology, Padjajaran University, Hasan Sadikin Hospital, Indonesia*

INTRODUCTION: CT scan Pulmonary angiography (CTPA) is the imaging modality of choice in suspected acute pulmonary embolism (PE)[1]. Computed Tomography Virtual Angioscopy (CTVA) is an image-processing technique that uses datasets from CT angiography to provide endoluminal views of blood vessel. Incorporation of CTVA in the diagnostic work-up of aortic diseases could improve the clinical value and efficiency of multidetector computed tomography angiography (MDCTA)[2].

REPORT: We reported a 61-year-old man with a fever of $\pm 39^{\circ}\text{C}$ since 2 months and showing symptoms of acute and / or chronic shortness of breath and diagnosed with suspected pulmonary thromboembolism in the ER at Hasan Sadikin Hospital, Bandung using CT 128 slice scan and injection of iodine contrast media range from 50 to 75 mL, using a bolus tracing technique and a threshold of 160 HU to 250 HU in the main pulmonary artery. The image was reconstructed with 1 mm slice thickness in the mediastinal and parenchymal windows, then the CT pulmonary angiography (CTPA) image data set was reconstructed into a Computed Tomography Virtual Angioscopy (CTVA) image.

CONCLUSION: MDCTA image was combined with the CTVA reconstruction image shows embolus / vegetation in the pulmonary artery, accompanied by additional findings of wedge-shaped peripheral areas in the lungs, the findings may represent an infarction and mitral valve prolapse, pericardial effusion is also present. CTVA yields extra findings and improves diagnostic efficiency of MDCTA, especially in pulmonary embolism.

COVID-19 CHEST X-RAY SEVERITY SCORE.

Samuel Conyngham*¹; Nandula Dayan Dantanarayana¹; Kim-Son Nguyen¹

¹*Radiology Department, Westmead Hospital, Australia*

OBJECTIVE: COVID 19 is a global pandemic affecting most countries including Australia. Prognostication and assessment of disease severity on the basis of initial chest radiography (CXR) findings may be useful. Our aim was to assess whether initial CXR findings can predict hospitalization and intubation in patients that are RT-PCR SARS-CoV-2 positive in a large tertiary hospital in Sydney Australia (Westmead adults hospital).

MATERIALS AND METHODS: All patients with RT-PCR SARS-CoV-2 positive were identified and their first CXR was analyzed by two senior radiology registrars (and adjudicated by a radiology consultant), splitting the frontal CXR into 6 zones and creating a severity score based on the number of lung zones that contain airspace opacities. The electronic notes for each patient were reviewed to establish which patients were hospitalized and which were intubated. The results were then analyzed to assess the utility of the CXR severity score for prognostication.

RESULTS: In total, 215 patients were identified as RT-PCR SARS-CoV-2 positive. 143 of these had a CXR. If a severity score of ≥ 2 was used to predict hospitalization – this was 100% specific with 100% PPV but with 50% sensitivity and 64% NPV. If a severity score of ≥ 3 was used to predict intubation – this was 86% sensitive, 87% specific with a 43% PPV and 98% NPV.

CONCLUSION: Initial CXR evaluation may be useful to assess risk of hospitalization and intubation in Australian COVID-19 patients. Further studies with larger patient cohorts are required.

ROLE OF CT SCAN IN PERSISTENT PNEUMOTHORAX IN PULMONARY TUBERCULOSIS PATIENT DUE TO PARENCHYMAL PLEURAL FISTULA

Victor Christian*¹; Nadia A. P. Panisutia¹; Elizabeth Angeline¹; Bambang Satoto¹

¹*Radiology, Diponegoro University-Rsup Kariadi, Indonesia*

INTRODUCTION: Parenchymal pleural fistula means the connection between distal airway dan pleural space. It remains a severe complication of lung disease that leads to prolonged hospital admission, necessitate operative procedure, and increase patient mortality rate. Identification of this fistula may be challenging and requires repeat imaging, bronchoscopy, or even open exploration.

REPORT: A 24-years-old female presented with progressive chest pain, productive cough, and fever. She had received anti-tuberculosis treatment two times in 2017 and 2018. Chest X-Ray shows left pneumothorax and chest tuberculosis patten. A chest tube inserted, and a serial Chest X-Ray taken showing no sign of pneumothorax reduction after 1-month of tube placement. Chest CT scans after one-month admission reveals a tree-in-bud pattern in the whole lung segment also a connection between the pleural cavity and branch of the left superior bronchus.

CONCLUSION: CT Scan helps to confirm the tuberculosis pattern and left pneumothorax that already found in Chest X-Ray with more information like the affected lung segments. The most crucial finding that can only be found in CT was the parenchymal fistula that explains persistent pneumothorax etiology which will directly affect patient treatment. Also, CT scans are reliable noninvasive imaging modalities and widely available that provide information for presurgical planning and post-treatment surveillance.

ASSOCIATION OF INCREASED D DIMER WITH CT PULMONARY EMBOLISM IN SARS-COV-2

Doni Noviartha Prasetyarto*¹; Dian Komaladewi¹

¹*Radiology, Padjajaran University, Hasan Sadikin Hospital, Indonesia*

INTRODUCTION: An early and effective predictor of clinical outcome is needed for risk stratification of Covid-19 patients. D-dimers at admission greater than 2.0 µg / mL (fourfold increase) could effectively predict hospital mortality in patients with Covid-19, which indicates D-dimers could be an early marker and help to improve the management of Covid-19 patients.[1]

REPORT: A 53-year-old man with a fever for 7 days which was preceded by sudden shortness of breath and a dry cough, when he was taken to the hospital. The presence of SARS-COV-2 infection coincided with the suspected pulmonary embolism, then various examinations were carried out including the D-dimer examination, there was a slight increase of 2.8 µg / mL on CT pulmonary angiography found partial and total occlusion in the right lobar branch and a supportive imaging of Covid 19. After several days of treatment later died with various other organ complications

CONCLUSION: Viral pneumonia can be complicated by acute pulmonary embolism.[2] Disturbed coagulation function has been reported in patients infected with SARS-CoV-2 more than healthy controls.[3] In patients with COVID-19 infection and risk factors, contrast thorax computer-tomography scan will help to notice coagulation disorders that may occur without D-dimer elevation. Therefore, an understanding of the frequency of pulmonary embolism and the relationship between D-dimer levels and the degree of pulmonary artery obstruction may aid in the diagnosis and management of this disease in COVID patients [4].

A RARE CASE OF CHEST WALL SCHWANNOMA

Nehal Ahmad*¹; Shashwat Priyadarshi¹; Prabhpreet R Singh¹

¹*Radio-diagnosis, Hamdard Institute of Medical Sciences, India*

INTRODUCTION: Peripheral Nerve Sheath Tumours arise from outer covering of the nerve, outside the CNS. They are broadly divided in 2 major categories ; Benign & Malignant. Benign PNST mainly include schwannoma & neurofibroma. Malignant PNST are called as the cell of origin in these lesions are unknown. Both benign and malignant PNST are associated with neurofibromatosis. Our case of schwannoma mainly affects the patients in the age group of 20-40 years. The sites commonly involved are spinal & sympathetic roots of head & neck as well as nerves of upper and lower extremities Our case is atypical as it being seen in anterior chest wall in the intramuscular plane. Microscopically, the tumor is composed primarily of Schwann cells.

REPORT: Images were obtained through various radiological imaging modalities. Multiplanar MR images, NCCT scan and Ultrasonography of the patient were taken MRI Findings A well circumscribed soft tissue intensity lesion within the intramuscular plane of pectoralis minor muscle on right side projecting into the subcutaneous tissue most likely suggestive of benign soft tissue tumour -Schwannoma. USG findings: well-defined hypoechoic solid mass between the intermuscular plane showing internal heterogeneity Computed Tomography: a well-defined, rounded, soft tissue density lesion between the right pectoralis minor muscle.

CONCLUSION: Our rare case and its imaging findings can help a radiologist suspect a Peripheral Nerve Sheath Tumour for early detection and disease management.

INNOMINATE ARTERY MYCOTIC ANEURYSM - AN OVERLOOKED ENTITY ON CHEST RADIOGRAPH

Vengkatarao Ramanaidu*¹; Suraya Abdul Aziz¹; Aida-Widure Mustapha M¹

¹*Radiology, Hospital Canselor Tuanku Muhriz, Malaysia*

INTRODUCTION: Generally, innominate artery also known as brachiocephalic trunk aneurysm (IAA) is a rare entity which represent only 0.003% of all aneurysms. Even rarer is a mycotic aneurysm of the artery.

REPORT: We report a case of large mycotic IAA in an elderly patient with infective endocarditis and background of end stage renal failure (ESRF) on regular hemodialysis. Patient initially presented with non-cardiogenic fluid overload with superimposed Healthcare Associated Pneumonia (HAP). Patient progressively developed tracheal compression symptoms. Serial chest radiographs findings showed sudden onset right upper mediastinal lobulated opacity which was persistent and was thought to be a loculated pleural effusion. A CECT thorax showed large bilobed mycotic aneurysm of IAA with surrounding soft tissue density. Patient condition further deteriorated and unfortunately patient succumbed intra-operatively due to multifactorial.

CONCLUSION: In an immunocompromised patient with systemic infection, a rapidly appearing lobulated mediastinal opacity on chest radiograph should alarm us on mycotic aneurysm. On cross-sectional imaging, saccular aneurysms, especially those with lobulated contour, rapid development, adjacent soft tissue, stranding and with or without fluid in an unusual location are highly suspicious for a mycotic aneurysm. Even though it is a rare condition, their early identification can be treated with good outcomes.

DIAGNOSTIC VALIDITY OF CHEST-XRAY IN DIAGNOSING PULMONARY TUBERCULOSIS WITH RESPECT TO GENEXPERT AND THE RADIOLOGIC FINDINGS CORRELATED WITH GENEXPERT RESULTS.

Maria Christina Tabitha P. Balaccua*¹

¹*Radiology, Dr. Jose Natalio Rodriguez Memorial Hospital and Sanitarium, Philippines*

OBJECTIVE: PTB is the sixth leading cause of morbidity and mortality in the Philippines. Part of the technical aspect of DOTS strategy involves case detection, which is crucial in decreasing the communicability period of a patient, which would in turn decrease the transmission rate of the disease. Screening for PTB includes doing a chest radiograph on a patient. While molecular based methods such as GeneXpert, are already being explored as confirmatory test. This study aims to determine the diagnostic validity of CXR in diagnosing PTB and the common CXR findings that are significantly correlated with GeneXpert results.

MATERIALS AND METHODS: The study is a retrospective analytical study in which 286 subjects were divided into two groups based on their GeneXpert results. The two groups were then further divided based on whether they were diagnosed with PTB on CXR. CXR findings for each group were tabulated based on frequency of parenchymal opacity characteristics, presence of cavitation, pleural effusion, bronchiectasis and atelectasis. Sensitivity, specificity, positive and negative predictive values, and likelihood ratio positive and negative of CXR was computed with GeneXpert used as a gold standard.

RESULTS: Chest X-ray has a sensitivity of 86.4% and a specificity of 38% in diagnosing PTB. Reticular and nodular opacities, and cavitation are significantly associated with positive GeneXpert PTB diagnosis (p-value of <0.001). Cavitation has a highest positive predictive value (86%), followed by nodular opacities (44%), and by reticular opacities (31%).

CONCLUSION: CXR is an adequate screening test for PTB due to its high sensitivity but should be used with a confirmatory test.

LESSON LEARNT FROM UNUSUAL INITIAL EXTRA-RENAL MANIFESTATION OF AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE

Lim Aun Nee*¹; Yew Ting Ting²

¹Radiology, Sarawak General Hospital, Malaysia , ²Radiology, University Sarawak Malaysia, Malaysia

INTRODUCTION: Autosomal-dominant polycystic kidney disease (ADPKD) is a systemic disorder which is characterized by multiple cysts growth, progressive renal enlargement, and development of renal failure. It also exhibits extra-renal complications including hepatic, pancreatic and splenic cysts, intracranial and aortic aneurysms, cardiac valvular abnormalities and colonic diverticula. Arterial aneurysms and dissections are rare complications. It is even rarer for ADPKD patient to present with thoracic aortic dissection as initial presentation. We present one such case.

REPORT: A 46-year-old gentleman, who was previously well, presented to the emergency department with sudden tearing chest pain, radiating to the back. There were no associated symptoms. On examination, he was afebrile and normotensive. Chest radiograph revealed mediastinum widening with prominent aortic arch contour. Beside echocardiogram showed intimal flap at the aortic arch. CT angiogram of thoracoabdominal aorta demonstrated revealed long segment aortic arch dissection until abdominal aortic bifurcation, bilateral enlarged kidneys with multiple renal and liver cysts, consistent with ADPKD. He was subsequently referred to cardiothoracic team and was managed medically.

CONCLUSION: Autosomal dominant polycystic kidney disease is characterized by bilateral renal cysts and other extra-renal manifestations, including cardiovascular disorders. However, among all vascular manifestations, only few cases of thoracic aortic dissection have been reported. Therefore, it is important to have the clinical suspicion as the risk of cardiac arrest and sudden death is high. Early identification of the disease and effective treatment is imperatives to slow the progression of renal failure and prevent such cardiovascular complications.

QUALITY CONTROL OF DIGITAL RADIOGRAPHY SYSTEMS FOR GENERAL RADIOGRAPHY

Noriah Jamal*¹; Aminah Mohamed²; Faezah Harun³; Shantini Arasatnam³

¹*Faculty of Health & Medical Sciences, Taylor's University, Malaysia,* ²*Medical Physics, University Malaya Medical Centre, Malaysia,* ³*Radiology Department, Hospital Kuala Lumpur, Malaysia*

OBJECTIVE: For general radiography, x-ray images were first recorded digitally with cassette-based storage-phosphor image plates in 1980. Today, manufacturers provide a variety of digital imaging opportunities based on various detector and readout technologies. Optimization of patient dose and image quality is of primary concern in the field of diagnostic imaging, including general radiography. It is recognized that comprehensive Quality Assurance programs, including acceptance and Quality Control (QC) testing of diagnostic imaging equipment are a vital component of the optimization process. Ultimately, QC is performed to ensure that the clinical image quality is adequate and does not deteriorate and adversely affect clinical decision. Presently, most QC testing of digital radiography systems is carried out using either qualitative or utilizes relatively simple quantitative analysis. However, digital radiography systems also provide the opportunity for quantitative analysis, thus removing subjectivity of testing.

MATERIALS AND METHODS: The paper aims at presenting methods for performing QC testing of digital radiography system for general radiography including tests on Detector Dose Indicator, Signal Transfer Properties, Threshold Contrast Detail Detectability, Variation of Noise with Detector Air Kerma, Signal to Noise Ratio, Limiting Spatial Resolution and Square Wave Contrast Transfer Function.

RESULTS: It is important to ensure that the digital detector maintains its performance and produces images free of artifacts and defects.

CONCLUSION: These tests can be undertaken using test tools generally available to the medical physics unit of the hospital.

**CASE SERIES OF PNEUMOMEDIASTINUM IN COVID-19 PNEUMONIA: A
COMPLICATION TO PONDER**

Nurul Nabila Mortadza*¹; Mahalatchumi Subramaniam¹; Aida Abdul Aziz¹; Fatimah Moosa²

¹*Radiology, Hospital Sungai Buloh, Malaysia, ²Biomedical Imaging, University Malaya Medical Centre, Malaysia*

INTRODUCTION: Novel coronavirus disease (COVID-19) is a highly infectious pandemic worldwide, with an incidence of more than 10 million cases since it was first diagnosed in 2019. Spontaneous pneumomediastinum is a relatively uncommon complication noted among the patients diagnosed with COVID-19. We report a case series of 7 patients who presented between March 2020 and January 2021 in Hospital Sungai Buloh.

REPORT: The mean age was 59.7 ± 15.27 years (\pm SD), with a range of 29 to 75 years and showed a male predilection. Five of these patients have underlying co-morbidities like diabetes and hypertension and 3 were smokers. All of our patients require oxygen supplementation, either invasive or non-invasive ventilation of variable oxygen requirement. These patients are stage 4 and above (stage 4, n4 and stage 5, n3). Their clinical presentations varied from cough, fever and dyspnea to headache and ageusia (loss of taste). All the seven patients underwent computed tomography (CT) scan and was found to have pneumomediastinum with two of them having concurrent pneumothorax. In general, pneumomediastinum is usually self-limiting and treated conservatively. However, three of our patients succumbed to their illness, two successfully discharged and two more patients are still undergoing treatment but show positive prognosis.

CONCLUSION: These case series show that pneumomediastinum in COVID-19 pneumonia does not occur only in intubated patient, thus relationship between the disease itself causing pneumomediastinum is yet to be revealed. Although pneumomediastinum can be self-limiting, identification of this complication is important as its shown to be detrimental in our case series.

CASE REPORT: PRIMARY ANTERIOR MEDIASTINAL YOLK SAC TUMOR

Danielle I. Santos*¹

¹*Radiology, Institute Of Radiology, St.Luke's Medical Center - Global City, Philippines*

INTRODUCTION: A yolk sac tumor (YST) is a subtype of Germ cell tumor (GCT). GCTs commonly occur in the gonads. However, in 1-5% of cases, GCTs may arise from outside the gonads and are termed extragonadal germ cell tumors (EGGCT). The mediastinum is the most common site of EGGCTs in adults.

REPORT: This is a case of a 24 year-old male who presented with a widened mediastinal shadow on a posteroanterior view chest radiograph during a routine physical examination. Considerations included lymphadenopathy, a mediastinal mass or a posterior pulmonary parenchymal mass. Further investigation with non-contrast low-dose chest computed tomography (CT) scan revealed a lobulated soft tissue mass of about 13 cm at the left prevascular to visceral compartments. The primary consideration was a lymphoma. Positron Emission Tomography (PET)-CT scan demonstrated a hypermetabolic, soft tissue mediastinal mass extending to left lung with associated hypermetabolic lymph nodes. No abnormal uptake was evident in the gonads. Percutaneous fine needle aspiration biopsy of the mass under CT scan guidance together with immunohistochemical staining supported the diagnosis of a primitive germ cell tumor with yolk sac features. A markedly elevated serum alpha-fetoprotein further reinforced the diagnosis. The patient underwent multiple cycles of chemotherapy and subsequent chest CT scans showed interval regression in size of the mass.

CONCLUSION: The mediastinum is the second most common site affected by GCTs. In adults, approximately 10-15% of mediastinal tumors are primary GCTs. Thus, it is important to include GCTs in the differential diagnosis of anterior mediastinal tumors.

AN INCIDENTAL FINDING OF ABERRANT TORTUOSITY OF BRACHIOCEPHALIC TRUNK IN GERIATRIC

Karina Solikha Nurmalita*¹; Irma Hassan Hikmat¹; Hari Soekersi¹

¹*Radiology, Padjadjaran University-Hasan Sadikin General Hospital, Indonesia*

INTRODUCTION: An aberrant tortuosity of brachiocephalic trunk is one of vascular anomalies in the aortic arch branches.¹ The incidence increases with age and mostly asymptomatic². In younger population and geriatric it may have serious respiratory symptoms.^{3,4} Alterations of embryogenesis in developmental aortic arch and its branches in first week of foetal life may lead to anatomical anomalies or variations.^{4,5} Multi Detector Computed Tomography (MDCT) angiography is the gold standard for assessing vascular anomalies, replacing conventional angiography.⁶ The purpose is to report an incidental findings of aberrant tortuosity of brachiocephalic trunk in an 83 years old man with geriatric generalized weakness as chief complaint.

REPORT: An 83 years old man with generalized weakness of elderly as chief complaint was referred to our hospital. He had no serious respiratory symptoms, dysphagia or any symptoms of superior vena cava syndrome. His physical examination and ECG were unremarkable. There was medical history of uncontrolled hypertension and laboratory findings was anemia. Chest x-ray demonstrated a well-defined opacification with cardiac density and obtuse angle that arise from right superior mediastinum. Thoracic Contrast Enhanced Computed Tomography (CECT) revealed an aberrant tortuosity of brachiocephalic trunk originated from aortic arch, crossing the trachea transversely, and kinking from right mediastinum toward the apex. He was given symptomatic treatment. There was no surgical intervention for this patient.

CONCLUSION: In this report, we presented an incidental findings of asymptomatic aberrant tortuosity of brachiocephalic trunk in an 83 years old man with geriatric generalized weakness and anemia.

COMMON COUGH TURNS OUT TO BE A RARE MALIGNANCY- A CASE REPORT

Nikhita Gaddam*¹; Nln Moorthy¹; Praveen Kumar M¹

¹*Radio-Diagnosis, Apollo Institute Of Medical Sciences And Research, India*

INTRODUCTION: Primary pulmonary sarcomatoid carcinoma is a type of non small cell lung carcinoma. Seen in ages above 60 years. It is an extremely rare biphasic tumour with most cases having advanced local and distant metastatic disease. It accounts for 0.1% to 0.4% of lung malignancies. Specific subgroups that have been classified under sarcomatoid carcinomas of the lungs include pleomorphic carcinoma, spindle cell carcinoma, giant cell carcinoma, carcinosarcoma , pulmonary blastoma.

REPORT: A 60 year old female presented with left side chest pain ,productive cough, shortness of breath since 4 months duration. CT scout image showed non homogenous opacity of left hemithorax with blunting of left costophrenic angle. Axial sections of contrast enhanced CT in mediastinal window showed a peripherally situated mass in the left lung. The lesion showed peripheral enhancement with central non enhancing areas with loss of fat planes with chest wall and mediastinal invasion.

CONCLUSION: Primary sarcomatoid carcinomas of the lung refer to a heterogenous group of rare and poorly differentiated types of non-small cell lung carcinomas (NSCLC). Overall prognosis with multimodality treatment even in early stages is worse compared to other types of non small cell lung cancer.

**A NEAR MISS: EXTENSIVE IMPENDING RUPTURE AORTIC DISSECTION IN A
RELATIVELY HEALTHY PATIENT, AN INTERESTING CASE REPORT**

Ahmad Rifai*¹; Dian Komala Dewi¹; Indah Novianty²

¹*Radiology, Faculty of Medicine Padjadjaran University - Hasan Sadikin General Hospital Bandung, Indonesia,* ²*Primary Health Care, Cijagra Baru Primary Health Care, Indonesia*

INTRODUCTION: Aortic dissection is the most common form of acute aortic syndrome, it occurs when blood enters the medial layer of the aortic wall through a tear or penetrating ulcer in the intima and tracks along the media, forming a false lumen filled with blood within the wall. It often has a fatal outcome and complication, thus early diagnosis and treatment are essential for improved prognosis. Multidetector computed-tomography, is widely available, fast, and with its high sensitivity and specificity, is the most frequently used imaging modality for the diagnosis of aortic dissection.

REPORT: We reported a case of 65 years old male patient, with chief complaint of mild chest pain since 2 months ago and worsened a week before admission, accompanied by shortness of breath, and dyspnea on exertion. The patient had a history of hypertension since 15 years ago and took antihypertensive drugs irregularly, he denied any cough, fever, or decreased weight. In October 2020, he underwent an abdominal Ultrasonography and diagnosed with aortic dissection. In December 2020 we did an Aortic CT Scan and revealed dilatation of the aortic arc extending to the left common iliac artery with impending rupture aortic dissection at the proximal descending aorta.

CONCLUSION: Aortic dissection is the most common form of acute aortic syndrome, and often has a fatal outcome. Aortic CT Scan is an essential examination in assessing aortic dissection as well as determination of the extension of the dissection and presence of any associated complications.

**PRIMARY UNDIFFERENTIATED PLEOMORPHIC SARCOMA OF LUNG :
SPECTRUM IMAGING THROUGH TREATMENT**

Devi Kusumawardani*¹; Irma Hassan Hikmat¹; Harry Galuh Nugraha¹; Bethy Suryawathy
Hernowo¹

¹*Radiology, Rs Hasan Sadikin, Indonesia*

INTRODUCTION: Primary undifferentiated pleomorphic sarcoma is a rare sarcoma, it is a sarcoma with uncertain origin arising mostly in soft tissue and bone, when it comes in lung it's usually a metastases. The definite diagnosis is getting by histologic and immunohistochemistry examination. Here we present a case with a spectrum imaging from the first encounter until after therapy.

REPORT: A 39 years old woman, came to the hospital with chief complain intermittent hemoptysis for about 2 weeks, no fever, no history of tuberculosis before. Chest xray showed mediastinal mass superiorly to the left hilus, CT scan of the thorax revealed mass on left lung, characterized by round, smooth surface, with calcification with size about 10 x 8 x 6 cm. The patient then performed a resection of the lung mass, with pathology result undifferentiated pleomorphic sarcoma, followed by 30 cycles of radiotherapy. Six months after the last radiotherapy, the patient complained of intermittent shortness of breath, then a chest CT scan was performed at 9 months after the last radiotherapy, revealed fibrosis around the resected area.

CONCLUSION: Primary treatment of primary undifferentiated pleomorphic sarcoma of lung is surgical resection. In this case Radiotherapy role as an adjuvant treatment. The CT scan before therapy showed big mass, and CT scan after surgical resection and radiotherapy showed that no residual tumor, but theres some fibrosis as an adverse effect from radiotherapy.

A RARE CONTRAST INFLUX INTO THORACIC DUCT DURING COMPUTED TOMOGRAPHY SCAN

Chia Fui Pin*¹; Mohd Ezane Aziz¹; Nasibah Mohamad¹

¹*Radiology, Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Thoracic duct is a large lymphatic drainage from 75% of human body. It is not opacified with contrast media during Computed tomography (CT) scan in normal condition. Here, we demonstrate a case with rare complication of contrast influx into thoracic duct due to ostial valve incompetence.

REPORT: 43 years old woman, presented with rapid growing pelvic mass for four months duration. On examination, an abdominopelvic mass is palpable. Magnetic Resonance Imaging of pelvic showed a huge ovarian mass. CT thorax, abdomen and pelvis were done for disease staging. Total of 100ml Iopamirol and 50ml normal saline with flow rate 3ml/sec given on left hand. During the scan, dense contrast enhancement with a valvular appearance seen at left infraclavicular region, adjacent to left subclavian vein and left internal jugular vein. These findings are compatible with thoracic duct contrast influx. She does not experience chest discomfort or left arm swelling after the scan; therefore, she was managed conservatively. Chest radiograph on the next day was normal. She underwent abdominopelvic mass excision surgery the following week. Histopathology examination confirmed ovarian fibroma.

Till today, influx of contrast into thoracic duct has not been reported. It was incidentally discovered in our case during CT scan for pelvic tumor staging. Documented sequelae of this complication are thoracic duct rupture and chylothorax. Therefore, left upper limb contrast injection should be avoided in such patient in future.

CONCLUSION: It is essential to recognise the influx of contrast into thoracic duct to avoid potential complications.

**X-RAY PATTERNS OF COVID -19 IN PATIENTS PRESENTING TO LADY READING
HOSPITAL, PESHAWAR, PAKISTAN**

Tahira Nishtar*¹; Nosheen Noor¹; Shandana Latif Khan¹

¹*Radiology Department, Lady Reading Hospital, MTI, Pakistan*

OBJECTIVE: To determine the pattern of COVID 19 on chest radiograph in patients presenting to Lady Reading Hospital, Peshawar, Pakistan.

MATERIALS AND METHODS: This prospective observational study was conducted on 178 consecutive swab positive COVID-19 patients presenting to Lady Reading Hospital, Peshawar, Pakistan from 15th March to 15th June 2020. Patients of all ages and both genders were included. Chest X-rays performed by portable X-ray unit were viewed for different patterns by two consultant radiologists independently and results were analyzed using IBM SPSS 20.

REPORT: Out of 178 patients 134 were male. Common radiographic patterns observed were predominant ground glass haze without or with reticulation (44.9 % and 21.9% respectively) and predominant consolidation either alone or in combination with ground glass haze and reticulation (24% collectively). Peripheral distribution pattern was seen in 68.5% of patients with bilateral findings in 84.3% of patients. The patterns were further categorized according to pulmonary zonal demarcation with changes most commonly involving four zones (33.1%).

CONCLUSION: Portable chest radiography is an essential supporting tool for assessing different patterns in COVID-19 infection. The most common pattern observed is alveolar opacities with predominant peripheral distribution either unilateral or more frequently bilateral, starting from the lower and mid zones extending to the upper zones and becoming diffuse with disease progression.

HOARSENESS AS INITIAL FINDING OF HUGE AORTIC ARCH ANEURYSM MIMICKING A LEFT MEDIASTINAL MASS

Karina Solikha Nurmalita*¹; Undang Ruhimat¹

¹*Radiology, Padjadjaran University-Hasan Sadikin General Hospital, Indonesia*

INTRODUCTION: Mediastinal masses have a various causes and related to normal and abnormal structures of thoracic aorta or its branches, includes thoracic aortic aneurysms (TAAs) that can be misinterpreted as representing neoplasms. The incidence of TAAs was estimated at least 5-10 per 100,000 person-years and increased in part to aging and smoking population. Unruptured TAAs mostly asymptomatic, in some cases maybe symptomatic related to local mass. Hoarseness as vocal cord palsy resulting from aortic aneurysm is a rare entity.

REPORT: We presented a 68 years old man with hoarseness and cough as chief complaint admitted as outpatient in Pulmonology Department. There was no chest pain, shortness of breath or previous medical intervention. He was a heavy smokers and has medical history of hypertension. The physical examination and laboratory findings were unremarkable. Chest x-ray image depicting a well-defined, smooth margin round configuration opacity with an obtuse angle that arise from left superior mediastinum, there was no silhouette sign. Contrast Enhanced Computed Tomography (CECT) scan was performed and revealed a huge aortic arch aneurysm with large internal thrombus, suggesting a compression of the left recurrent laryngeal nerve and mimicking a left superior mediastinal mass with thoracic aortic and brachiocephalic trunk tortuosity as additional findings. The patient was scheduled to referred to Thoracic and cardiovascular surgery department to get further treatment.

CONCLUSION: We presented hoarseness as initial finding of huge aortic arch aneurysms, mimicking a left superior mediastinal mass in a 68 years old man with history of smoking and hypertension.

MALPOSITION OF THE CENTRAL VENOUS CATHETER IN THE ACCESSORY HEMIAZYGOS VEIN

Kah Lai Choong*¹; Muhammad Amin Tunai Shamsidi²

¹Radiology Department, Hospital Shah Alam, Malaysia, ²Radiology, Hospital Miri, Malaysia

LEARNING OBJECTIVE: Chest radiographs are routinely performed post central venous catheter insertion to confirm tip position. One of the rare causes of catheter malposition is anomalous venous route.

BACKGROUND: Central venous catheters are cannulation devices used to access to the central venous circulation. When internal jugular vein (IJV) is chosen as insertion site, the correct placement for its tip is within the superior vena cava (SVC). The frequency of accidental azygos vein cannulation during central venous catheterization was reported to be 0.7–1.2%. Our case represents a rare variant of venous system in which the accessory hemiazygos vein is connected with the left brachiocephalic vein via the left superior intercostal vein.

FINDINGS AND/OR PROCEDURE DETAILS: In our case, central venous catheter was inserted uneventfully for haemodialysis access in a 63-year-old patient through the left IJV. Post-procedural chest radiograph showed catheter along the left side of the thoracic spine. Its tip was projected over the 8th thoracic (T8) vertebra, raising the possibility of aortic injury. CECT thorax confirmed the catheter being inserted into the left IJV. Instead of coursing into the SVC, it coursed postero-medially into the accessory hemiazygos vein via the left superior intercostal vein. It then traversed inferiorly along the left posterior mediastinum, tip at T8 level. No aortic injury seen.

CONCLUSION: Knowledge of normal venous variant is important in interpreting chest radiograph post central venous catheter insertion. CECT is indicated if there is suspicion of complication or catheter tip is seen at unusual location.

ARE WE OVER-REPORTING PULMONARY EDEMA AS INDETERMINATE COVID-19 PNEUMONIA ON HRCT? AN INTER-DEPARTMENTAL OBSERVATION

Asma Javed*¹; Belqees Yawar Faiz¹; Sameeha Ismail¹; Chandra Bai¹

¹*Radiology, Shifa International Hospital, Pakistan*

LEARNING OBJECTIVE: To learn about the coinciding features of pulmonary edema and COVID-19 pneumonia on High Resolution Computerized Tomography (HRCT).

BACKGROUND: COVID pneumonia and pulmonary edema both affect lung parenchyma in a similar way given the fact that air in alveoli is replaced by fluid in both of these conditions. There is an overlap of some of the changes in lung parenchyma caused by these two entities, like ground-glass opacities and septal thickening. We observed these similarities and tried to hypothesize that pulmonary edema should be labeled as atypical and not indeterminate COVID-19 pneumonia.

FINDINGS AND/OR PROCEDURE DETAILS: We analyzed HRCT of 59 patients on Picture Archiving System (PACS) who were reported as indeterminate pulmonary edema with underlying co-morbidities like ischemic heart disease or renal failure. These were also RT-PCR negative. The similarity of ground glass opacities was noticed, however in pulmonary edema patients, additional features like cardiomegaly, septal thickening, central congestion, consolidation, pleural effusion and lymphadenopathy were seen. These according to RSNA classification of COVID-19 pneumonia falls under atypical category of COVID. Results were achieved using SPSS 21.

CONCLUSION: Our analysis led us to conclusion, that during this on-going pandemic situation we should be aware of the overlap features of CT Chest findings observed in pulmonary edema. The cases with predominant CT findings of pulmonary edema should be classified as atypical more willingly than indeterminate. This knowledge and its application are important, given re-emergence of COVID positive cases in many parts of the world, including Pakistan.

**IMPORTANCE OF MDCT BRONCHIAL ARTERY ANGIOGRAPHY IN THE
MANAGEMENT OF PATIENTS WITH HEMOPTYSIS SECONDARY TO
TUBERCULOSIS INFECTION: A CASE SERIES**

Hance Rommel Panizales *¹; Angelico Rome Andaya¹; Dennis C. Villanueva¹; Precious Joy
Katherine C. Alpañó¹ ; Angelito G. Tingcungco¹; Zeus S Bernardo¹

¹*Radiology, St. Luke's Medical Center - Global City, Philippines*

INTRODUCTION: Hemoptysis is a potential life-threatening symptom which is brought about by a myriad of causes. Tuberculosis, which is prevalent in the Philippines, is a common cause of hemoptysis. The advent of multidetector CT angiography enables identification of the cause and site of the hemoptysis and demonstration of the variability of bronchial anatomy. Performing pre-procedural MDCT imaging allows appropriate treatment planning to facilitate ease of conventional angiography and catheter-directed embolization. The end-benefits are higher success rate, shorter procedural time and significantly less radiation exposure for patients and interventionalists.

REPORT: This is a case series of three patients with history of TB infection presenting with sudden massive hemoptysis who underwent successful embolization.

CONCLUSION: MDCT bronchial angiography plays an important role in the diagnosis and eventual embolization treatment of a TB sequela such as hemoptysis.

CARDIOVOCAL SYNDROME CAUSED BY CONCURRENT AORTIC ARCH ANEURYSM AND PULMONARY ARTERY DILATATION

Cheong Kang Wei*¹; Chandran Nadarajan²; Intan Zariza Hussain²

¹*Department of Radiology, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia*, ²*Department of Radiology, Hospital Sibul, Sarawak, Malaysia*,

INTRODUCTION: Cardiovascular syndrome is defined as hoarseness resulting from compression of left recurrent laryngeal nerve by a cardiovascular etiology. It was initially described as secondary to left atrial enlargement and mitral valve disease. Other uncommon mediastinal vascular causes have been recently described.

REPORT: We present a case of cardiovascular syndrome caused by disease progression in a 70-year-old male who had a concurrent aortic arch aneurysm and pulmonary artery dilatation. He initially presented with central chest pain radiating to the back in August 2017. Computed-tomography angiography (CTA) showed an aortic arch aneurysm with diameter of 5.0cm and dilated pulmonary artery measuring 4.1cm. Subsequently, he developed hoarseness of voice in early 2018. Flexiscope done by otorhinolaryngology team showed left vocal cord palsy. In view of no neck swelling or cervical lymphadenopathy, worsening of the aortic arch aneurysm was suspected as a cause of his left recurrent laryngeal nerve palsy. Hence, computed-tomography angiography (CTA) was repeated in February 2018, which revealed worsening of both the aortic arch aneurysm with diameter of 6.7cm and dilated pulmonary artery, measuring 4.5cm. This patient eventually passed away in October 2018 due to a leaking aortic aneurysm.

CONCLUSION: Although neoplastic or inflammatory lesions are more common causes of recurrent laryngeal nerve palsy, clinicians should consider the aorta and vascular structures of the mediastinum as uncommon but potentially life-threatening causes of laryngeal nerve compression in patients presenting with hoarseness. Early CTA thorax in these patients allows detection of cardiovascular syndrome, which could be potentially life saving with early intervention.

**PRIMARY CHEST WALL LYMPHOMA MIMICKING COLD ABSCESS - A CASE
REPORT**

Nabillah Mohd Jadi*¹; Erica Wong Yee Hing¹; Rizuana Iqbal Hussain¹

¹*Radiology Department, Hospital Universiti Kebangsaan Malaysia*

INTRODUCTION: Lymphoma and Tuberculosis are commonly being misdiagnosed due to the similarities in radiology manifestations. Being a keen eye in the region of tuberculosis endemic country, one should consider a diagnosis of tuberculosis particularly in atypical site of skeletal inflammation. We reported a case of primary chest wall lymphoma that mimics appearance of cold abscess in cross sectional and sonographic images.

REPORT: Patient is a 57 years old gentleman, presented with painless anterior chest wall swelling associated with loss of appetite and loss of weight for 2 months, which gradually increased in size. He denied history of fever or contact with patient with tuberculosis. On examination, the anterior chest wall swelling predominantly at upper chest wall, firm in consistency and no skin erythema. No lymphadenopathy or hepatosplenomegaly palpable. Contrast enhanced CT thorax with complementary ultrasound revealed ill-defined soft tissue thickening in upper chest wall with associated central hypodensity. There is associated overlying skin thickening and fat streakiness extending to retrosternal region. Biopsy of the chest wall revealed primary diffuse large B cell lymphoma. PET CT scan revealed secondary renal involvement. Chemotherapy was commenced and patient responded well.

CONCLUSION: Lymphoma is a great mimicker. Primary chest wall lymphoma is a rare entity. Manifestation of primary chest wall lymphoma on cross sectional imaging as subcutaneous collection is even uncommon. In developing country, one often encounter diagnostic dilemma between lymphoma and tuberculosis. Tissue diagnosis is helpful in making diagnosis and PET CT scan is a good imaging tool for staging.

ORGANIZING PNEUMONIA PATTERN IN COVID-19 INFECTION: A CASE SERIES

Siti Rohani Mohd Yakop*¹

¹*Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Secondary organizing pneumonia (OP) commonly results in response to lung insult from infections, drugs or autoimmunity. Organizing pneumonia pattern frequently reported on Computed Tomography (CT) scan of patients with COVID-19 pneumonia. This article reports 3 cases of COVID-19 infection in Hospital Kuala Lumpur, Malaysia, presented with respiratory symptoms and distress, requiring ventilation. The patients aged between 49 to 58 years old with multiple co-morbidities. These patients had CT Pulmonary Angiography (CTPA) and High Resolution CT (HRCT) Thorax done between Day22 to Day30 of their illness with CT features of COVID-19 related organizing pneumonia.

REPORT: CTPA and HRCT Thorax were done for various indications such as worsening respiratory distress, tachycardia and non-improving serial chest radiographs changes. All 3 patients showed features of organizing pneumonia pattern in their CTs: bilateral peripheral and sub-pleural peri-lobular densities and reticulations that extends to peri-bronchial distribution, traction bronchiolectasis, peripheral consolidations and bilateral ground glass opacities with interlobular septal thickening (crazy paving pattern), with extensive lung involvement affecting predominantly the lower lobes. The CTPA was negative for pulmonary artery thrombosis. All patients clinically recovered following initiation of steroid therapy after the CT scans.

CONCLUSION: Radiological features of organizing pneumonia are often pronounced at later course of illness (in these cases on Day 22-30 of illness). The lung involvements are extensive in severe stage of disease. Identification of these radiological features and estimation of the degree of involvement in the lungs on CT helps on management decision of steroid therapy.

**WHERE IS THE MISSING CHICKEN BONE ? A CASE OF FOREIGN BODY
BRONCHIECTASIS.**

Nur Fathihah Ahmad*¹; Nur Farhanah¹; Raihanah Haroon¹

¹*Radiology, International Islamic University Of Malaysia, Malaysia*

INTRODUCTION: Foreign body aspiration is an uncommon cause of bronchiectasis in adults. While an obstructive foreign body is readily identified following clinical history of aspiration, there are reports in literature where the dislodged foreign body is neglected by fully conscious adults. Prolonged endobronchial retention of foreign body will eventually lead to recurrent infection and subsequent bronchiectasis.

REPORT: Here we describe a patient with a retained chicken bone for 10 years who presented with worsening symptoms of bronchiectasis for 1 month. A chicken bone was discovered in the right lower lobe bronchus along with localized cystic bronchiectasis at the middle and lower lobes as well as superimposed lung infection.

CONCLUSION: Patient was subsequently subjected for removal of foreign body using rigid bronchoscopy.

**DWI N MRS IN ESOPHAGEAL DYSPHAGIA : A NOVEL MNEMONIC BASED
APPROACH**

Meghanaa Jayakumar*¹

¹*Radiodiagnosi, AMD Centre of Imaging Sciences, India*

LEARNING OBJECTIVE:

- To discuss the spectrum of conditions presenting as structural esophageal dysphagia with the aid of a novel mnemonic “DWI N MRS”
- To illustrate the relevant characteristics of such lesions with focus on MDCT imaging.

BACKGROUND: Dysphagia which refers to a clinical syndrome defined by a difficulty in swallowing is a result of structural and functional pathologies that affect the pharynx and esophagus. While Barium swallow is the initial imaging modality recommended in most patients presenting with dysphagia, MDCT allows for anatomical assessment of the esophagus in its entirety, simultaneously providing a global perspective of the surrounding structures thus aiding in detection, localisation and diagnosis of both intrinsic and extrinsic pathologies.

FINDINGS AND/OR PROCEDURE DETAILS: A novel mnemonic to remember the various conditions causing structural esophageal dysphagia is introduced “DWI ‘N’ MRS” which stands for Diverticula, Webs, Infection, Neoplasia, Mediastinal, Ring(vascular), Strictures for use by radiologists when studying or interpreting cases. MDCT images of these entities are presented from cases studied at our institute. Important findings, both clinical and radiological are discussed.

CONCLUSION: Esophageal dysphagia is a common presenting complaint in day-to-day practice. Therefore, it is important for the radiologist to have diagnostic keys like the novel mnemonic put forth that allows them to become familiar and remember the most frequent entities to assist in the clinical approach of patients.

CHALLENGING CHEST WALL LESIONS : A LAYERED IMAGING APPROACH

Meghanaa Jayakumar*¹

¹*Radiodiagnosis, AMD Centre of Imaging Sciences, India*

LEARNING OBJECTIVE: To review spectrum of pathologies presenting as chest wall masses using a structured radiologic approach focusing on MDCT imaging findings.

BACKGROUNDS: The thoracic wall is an anatomically complex and functionally critical structure comprising of multiple elements. On MDCT imaging, the chest wall can be divided into three layers: a superficial layer of skin and subcutaneous fat; an intermediate layer containing the shoulder girdle and pectoralis muscles; and a deep layer including the sternum, ribs, intercostal space, spine, fascia, and parietal pleura. Lesions may arise from any of these layers and their components including the vessels and nerves that course through them. While chest radiography and ultrasound are the initial modalities used, MDCT is the workhorse of diagnostic imaging for chest wall lesions.

FINDINGS AND/OR PROCEDURE DETAILS: MDCT images of patients reporting with chest wall masses to our department were reviewed retrospectively and selected cases presented using a novel approach based on layer of origin. The cases highlighted include lesions of neoplastic, infective(tubercular, hydatid), traumatic(hematoma)and vascular origin. MDCT findings of both benign and malignant pathologies (Askins tumor, liposarcoma, metastases) affecting the chest wall are also described.

CONCLUSION: It is important for the radiologist to be aware of the wide range of etiologies presenting as chest wall masses in order to make an accurate diagnosis. The layer-based imaging approach presented in this exhibit aids in easier diagnosis of and further treatment planning for these lesions.

SPONTANEOUS PNEUMOMEDIASTINUM, PNEUMOTHORAX AND SURGICAL EMPHYSEMA IN COVID 19 PATIENTS

Akshat Agrawal*¹; Kamal Kumar Sen¹; Gitanjali Satpathy¹; Humsheer Sethi¹; Ajay Sharawat¹

¹*Radiodiagnosis, Kalinga Institute Of Medical Sciences, Bhubaneswar, India*

LEARNING OBJECTIVE: Presentation of spontaneous pneumomediastinum, pneumothorax and surgical emphysema in COVID 19 patients and their increased incidence in COVID 19 patients who are either intubated or put on non-invasive ventilation.

BACKGROUND: We describe four cases which presented with suspected symptoms of COVID 19 and were diagnosed with pneumomediastinum, pneumothorax and surgical emphysema which would have been missed if not for CT scan performed at the time of admission. While subcutaneous emphysema and spontaneous pneumomediastinum have been observed in a variety of viral pneumonias as a complication of mechanical ventilation, the development of these conditions in non-intubated patients suggests an alternative aetiology.

FINDINGS AND/OR PROCEDURE DETAILS : 0.43% of patients developing pneumothorax, pneumomediastinum or surgical emphysema with intubation related barotrauma being attributed as the aetiology to 80% cases while 20% cases were designated spontaneous, as a sequela of COVID 19. COVID induced fragility of the alveolar system could be one of the important factors to be taken into consideration causing air tracing via Macklin phenomenon.

CONCLUSION: A susceptible trachea in combination with altered immune status, emergency intubation, frequent proning and high positive end-expiratory pressure can lead to an increase in the occurrence of pneumomediastinum and surgical emphysema. Other factors involve a large turnover of the COVID 19 patients, the paucity of skilled health workers, long working hours and fear of infection amongst the medical fraternity add up to the risk of complications. Regular follow-up with inflammatory marker levels and CT post-admission especially in a refractory case can prove to be a boon for the patient.

**BILATERAL MASSIVE HYDATID PULMONARY EMBOLISM: A RARE
OCCURRENCE**

Palwasha Gul*¹

¹*Diagnostic Radiology, Bolan Medical Complex Hospital, Pakistan*

INTRODUCTION: Hydatid cyst (HC) is a common parasitic infection frequently affecting liver and lungs. Even if it is a benign parasitic disease, it can lead to serious complications.

Hydatid pulmonary embolism is a very rare complication caused by rupture of a cardiac HC or pulmonary cyst involving pulmonary artery directly. It can also occur as a rupture of a hepatic HC or the release of daughter cysts in hepatic veins or inferior vena cava as in our case. Cysts present in pulmonary arteries can be asymptomatic since they grow slowly within the pulmonary artery, as perfusion is maintained via the bronchial arteries.

RESULTS: We present an extremely rare case of 46 years old male who presented with dyspnea and cough. He had raised JVP with pulmonary arterial hypertension on echocardiography. He underwent CT Pulmonary angiogram at Bolan Medical Complex Hospital, Quetta, Pakistan. His CT scan showed hepatic hydatid cysts with calcifications and extension into right hepatic vein. Multiple cystic linear filling defects were noted in bilateral lobar and segmental pulmonary arteries which were consistent with hydatid pulmonary embolism. Dilated main pulmonary arteries, right atrium, superior & inferior vena cava and right IJV was noted, findings were consistent with right heart strain. Lungs showed bilateral mosaic perfusion with atelectatic bands.

CONCLUSION: Hepatic and pulmonary hydatid disease is common entity however its extension into pulmonary vessels is extremely rare. Despite being uncommon cause of pulmonary embolism it can be diagnosed with CTPA, which is the gold standard.

IMAGING OF CELLULITIS LIP WITH EXAMINATION ULTRASOUND LIP

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Cellulitis is an acute infection of the dermis and subcutaneous tissue. Symptom include pain,erythema,edema, and warmth. This is a Rare Case in my country.

REPORT: We will report this case a symptom swelling of the lower limb and limphangitis. A man 35 years old .Increased skin temperature ,skin erythema,fevers additional symptom . We used ultrasound gray scale with probe linier to detection celulitis lip. We also can be differentiated diagnotic with abcess lip. May be detection with ultrasound gray scale probe linier .

CONCLUSION: Ultrasound is the first modality imaging for diagnostic cellulitis lip with probe linier. The others radiologic examination is CT Scan Lip.

A CASE OF MASSIVE THORACIC AORTIC ANEURYSM WITH RUPTURE IN A YOUNG MALE PATIENT.

Pravinkumar Bharde*¹; A. Praveenkumar¹

¹*Radio-Diagnosis, Kakatiya Medical College, India*

INTRODUCTION: An aneurysm is defined as dilatation of the aorta >150% of its normal diameter. For thoracic aorta, a diameter >3.5cm is considered as dilated and >4.5cm as aneurysmal. Incidence of 5.9 cases per 100,000 person-year with most detected incidentally. Rupture and dissection are commonly associated life threatening complication, with mortality 3.5 per 100,000person. Thoracic aortic aneurysms (TAAs) can be broadly divided into true aneurysms and false aneurysms (pseudoaneurysms). Multidetector computed tomographic (CT) angiography is routinely performed for the diagnosis and evaluation of thoracic aortic aneurysms (TAAs), having essentially replaced diagnostic angiography.

REPORT: Massive descending thoracic aortic aneurysm(FUSIFORM) with rupture causing massive left hemothorax and hemomediastinum. Neck morphology: Neck length and angle:12mm, 130degree, with aortic tortuosity index 51.12 and mural thrombus ratio 0.255. Common femoral and iliac arteries outer diameters are 8.5mm and 9mm respectively.

CONCLUSION: Thoracic aortic aneurysm is localized or diffuse dilation of thoracic aorta involving all layers of aorta, where as pseudoaneurysm involve the adventitia. Aneurysm development is multifactorial in nature, with both genetic predisposition and environmental factors activating together to initiate a cascade of arterial wall degeneration. Most common affected is ascending aorta and most common cause is atherosclerosis. Aneurysm reaching 7cm in descending thoracic aorta carries substantial risk of rupture, dissection and death. This necessitates the need for early intervention on basis of CT angiography findings either Endovascular stent placement or Thoracotomy with grafting.

BAILING OUT A RARE MISHAP: EMBOLIZATION OF AN ACCIDENTALLY CUT CHEMOPORT CATHETER TO THE HEART

Muhammad Aminuddin Ashari*¹; Yuen Jiang Keat¹; Melisa Lim Seer Yee²

¹*Radiology Department, Hospital Canselor Tuanku Muhriz, Pusat Perubatan UKM, Malaysia,* ²*Radiology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Chemoports provide central venous access, preventing repeated peripheral venous cannulations for chemotherapy drug delivery. Approximately 5% of catheters become infected, which necessitates its removal. Accidental incision of the catheter while removing a chemoport is extremely rare, resulting in potentially fatal dysrhythmias and iatrogenic pulmonary embolism.

REPORT: Herein is a case of 40-year-old lady with left breast carcinoma who was scheduled for removal of an infected chemoport inserted 3 weeks prior. The patient initially complained of chills and rigors with pus discharge from the right anterior chest wall scar. While dissecting the skin and subcutaneous tissue, the catheter was accidentally cut near its hub. Check fluoroscopy confirmed the catheter fragment had dislodged in the right heart. The catheter was successfully retrieved using a combination of a pigtail catheter and gooseneck snare via a 10Fr sheath inserted in the right common femoral vein. The patient did not suffer any serious adverse events and was discharged home on the same day.

CONCLUSION: The minimally invasive techniques described in this case can prove to be very useful in retrieving fractured or dislodged catheter fragments from the heart, hence, avoiding open-heart surgery or life-threatening complications.

INTRAMURAL HAEMATOMA OF THE THORACIC AORTA WITH IMPENDING RUPTUR AORTA DESCENDEN DAN AORTA ABDOMINALIS

Freeddy Tambunan*¹; Dian Komaladewi¹; Undang Ruhimat¹

¹*Radiology Departement, Radiology Department, Faculty Of Medicine Padjadjaran University- Hasan Sadikin General Hospital, Indonesia*

INTRODUCTION: Aortic intramural haematoma (IMH) is a rare but potentially lethal disease of the aorta. A variant form of classic aortic dissection, has been accepted as an increasingly recognised and potentially fatal entity of acute aortic syndrome (AAS). Intramural haematoma (IMH) belongs to "acute aortic syndrome" followed by penetrating atherosclerotic ulcer (PAU) and the classical acute aortic dissection.

REPORT: A 67-year-old woman came to the hospital emergency room with complaints of shortness of breath, palpitations and hypertension accompanied by chest pain, 2 years ago the patient felt the same but the patient did not go to the hospital. Examination showed high blood pressure of 200/180 mmHg, echocardiography obtained widening descending aortic to upper abdominal aorta with disecton and thrombus in false lumen, then an angiographic CT scan was obtained to obtain saccular-fusiform aneurysm intramural aortic hematoma accompanied by impending rupture of the descending aortic descendent and abdominal aorta, Aortitis, Cardiomegaly with minimal pericardium effusion, Bilateral pleural effusion mainly left, Atherosclerosis aorta. At present the initial medical therapy in patients with type B (descending aorta) and β -blockers protect by reducing aortic wall pressure and systolic arterial blood pressure.

CONCLUSION: Imaging findings that affect prognosis should be reported and include Stanford type, maximal aortic diameter, IMH thickness, and presence of an ulcerlike projection. Intramural hematoma (IMH) represents an emergency condition. Blood in IMH collects at a superficial location, close to the adventitia. Consequently, these patients have high rates of periaortic hematoma, pericardial effusion, and rupture in the mediastinum.

OUTCOME OF ENDOVASCULAR EMBOLIZATION IN CASE OF ACUTE BLEEDING REFERRED TO RMI

Aman Nawaz Khan*¹; Ummara Siddique Umer²; Shahjehan Alam²; Hadia Abid²

¹*Interventional Radiology, Rehman Medical Institute Peshawar, Pakistan,* ²*Diagnostic Radiology, Rehman Medical Institute, Pakistan*

OBJECTIVE: The purpose of this study is to review clinical outcome in patients referred to the Department of Interventional Radiology for the management of acute hemorrhage along with indications, source of hemorrhage and method of embolization.

MATERIALS & METHODS: 29 patients with acute bleeding referred to interventional radiology from Dec 2015 to Octobers 2019, were included in the study. All patients were treated with Transarterial embolization under image guidance in our Angio suite. Embolization materials used were coils, particles, gelfoam and amplatzer plugs. In all cases completion angiography post embolization was performed to assess adequacy of procedure to arrest hemorrhage. Clinical indications, investigations to find the source, method of embolization and the outcome were outlined and analyzed. The patients were followed up for one year to evaluate the efficacy in the long run.

RESULTS: Total of 29 patients were selected, male =18, female=11). Clinical indications included visceral bleeding (n=9), Gastrointestinal bleed (n=8), Hematuria (n=7), epistaxis (n=1), gum bleeding (n=1), ear bleeding (n=1), hemoptysis(n=1) and local knee hematoma (n=1). Embolization materials used were coils, particles, gelfoam and amplatzer plugs. Multiple embolic materials were used in majority of patients and in few single material was used. Technical success and immediate hemostasis achieved in all cases.

CONCLUSION: We conclude from our results that in all cases technical and hemostatic success achieved. Emergency arterial embolization is a life-saving treatment. The indications are varied, with a very high success rate. It is the 1st line of management in acute haemorrhage in majority of cases as being highly accurate and effective with minimal access trauma.

**AUDIT TO ASSESS ADEQUATE CONTRAST ENHANCEMENT IN CT
PULMONARY ANGIOGRAMS (CTPA) IN PATIENTS PRESENTING WITH
ACUTE ONSET SHORTNESS OF BREATH**

Ummara Siddique Umer*¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

OBJECTIVE: The aim of the audit is to evaluate the adequacy of the CT angiograms done for diagnosis of pulmonary embolism.

MATERIALS & METHODS: This audit was done in the Radiology department with the permission of the ethical committee. CTPA performed on 128 row CT scanner were retrospectively selected from the PACS. Randomly 100 cases were selected, who underwent CTPA for suspicion of pulmonary embolism. In each study different parameters were observed like age, gender, HU of the main pulmonary trunk, and the final diagnosis. A circular region of interest (ROI) was measured in the largest axial image of the main pulmonary artery with a diameter covering approximately 50% of the vessel. According to Royal college of Radiology (RCR), the minimum enhancement of main pulmonary trunk should be 211HU. Above than 211 is considered satisfactory and below 211HU as not satisfactory.

RESULTS: Of all the scans evaluated, in 12% of cases the enhancement of pulmonary trunk was below 211 HU, hence were labelled unsatisfactory scans. 88% (n=88) were as per acceptable standard. The results revealed that 60% patients were female and rest were male. The maximum patients (n=38) were in the age category between 41-60 years . Acute pulmonary embolism was diagnosed in 15 cases.

CONCLUSION: Audit results show that 88% CTPA examinations were satisfactory. Rest of the unsatisfactory pulmonary artery opacification was likely due to technical factors and should be addressed before re-audit. We will plan a re-audit to assess and address the causes of unsatisfactory CTPA at RMI.

**ULTRASOUND AND COMPUTERIZED TOMOGRAPHIC ANGIOGRAPHY (CTA)
EVALUATION OF SIMULTANEOUS IATROGENIC PSEUDOANEURYSMS AND
ARTERIOVENOUS (AV) FISTULAS RELATED TO TRANSFEMORAL
CATHETERIZATION FOR DIALYSIS ACCESS**

Quek Choon Yee*¹

¹*Radiology Department, Hospital Pakar Sultanah Fatimah Muar, Malaysia*

INTRODUCTION: The transfemoral vascular approach is used to gain for mode of vascular access in various medical settings including temporary dialysis access or other endovascular interventions. However, due to inadequate access or anatomical variability, various complications including pseudoaneurysm, arteriovenous fistula (AVF), hematoma, or thrombosis, can occur after transfemoral vascular interventions. We are reporting a case of radiographic evaluation for iatrogenic pseudoaneurysm and AVF between the right superficial femoral artery and right femoral vein following femoral catheterization for temporary haemodialysis access. Ultrasound and computerized tomographic angiography (CTA) are used as non-invasive modality for early detection of dual vascular complications in this case.

REPORT: We present a case reporting patient presented with simultaneous pseudoaneurysm in association with AVF as one of the rare complications post-femoral catheterization for vascular access. The case report examines the images findings from ultrasound and CTA in detection of dual pathologies. Duplex ultrasound, which consists of gray-scale and color Doppler ultrasound, remained an excellent and effective non-invasive modality that provides anatomic and hemodynamic information of vascular complications. However, in view of ultrasonography has limited utility for evaluating patients with a poor echo window in some cases, angiography will also provide detection of other vascular complications with accurate anatomical delineation.

CONCLUSION: Ultrasound and computerized tomographic angiography (CTA) are useful for the evaluation of femoral puncture-related vascular complication such as pseudoaneurysm, AVF and hematoma. Early detection of the radiographic characteristic of transfemoral vascular complication could prompt proper management and improvement in patient outcome.

CASE REPORT : INCARCERATED OMENTAL HERNIA AS UNTWISTABLE CAUSE OF TESTICULAR ISCHEMIA

Rayyan Mardhiyah Nik Mohd Kamel*¹; Ahmad Azam Anwar¹; Nor Fauziah Muhamad Handar¹

¹*Radiology, Hospital Segamat, Malaysia*

INTRODUCTION: Acute scrotal pain is a common presentation in the emergency department and prompt diagnosis of testicular torsion from doppler sonography is vital to ensure the viability and salvageability of the testis. Absent of testicular doppler due to an incarcerated omental hernia is an unusual presentation and was not considered in the initial evaluation due to lack of evidence from physical examination.

REPORT: A 16-year-old boy presented to our hospital with sudden onset of testicular pain without history of fever or trauma. Physical examination showed right iliac fossa tenderness and ipsilateral inguinoscrotal swelling with negative cough test. Doppler ultrasound showed absence vascular flow of right testis with echogenic structure in right inguinal region. This case was more challenging as no bowel structures identified on ultrasound. The patient underwent emergency surgery which revealed incarcerated omental hernia, reversible right testicular ischemia with absence spermatic cord twist. In this case, we emphasized the occurrence of testicular ischemia due to vascular compromise by incarcerated inguinal hernia containing omentum.

CONCLUSION: Since incarcerated omental hernia is a surgical emergency, this condition need to be contemplated in the presence of inguinal swelling and absence of testicular flow during ultrasound examination.

BLEEDING COMPLICATIONS IN ANTICOAGULATED PATIENTS: PICTORIAL REVIEW OF IMAGING FINDINGS

Timothy Shao Ern Tan*¹; Sook Chuei Wendy Cheong¹; Tien Jin Tan¹

¹*Department of Radiology, Changi General Hospital, Singapore*

LEARNING OBJECTIVE: To describe and illustrate the imaging features of bleeding complications that can occur in patients receiving anticoagulation such as Warfarin and new generation direct oral anticoagulants (DOACs).

BACKGROUND: Warfarin and more recently, DOACs such as Rivaroxaban and Dabigatran, are used extensively for the therapeutic and prophylactic management of thromboembolism. The most significant complication of anticoagulant therapy is bleeding, which can occur spontaneously and may present in unusual ways. This was once considered a rare complication of anticoagulation, but is now being reported with increasing frequency, and its incidence is predicted to rise further as a result of the wide use of long-term anticoagulation in the aging population.

FINDINGS AND/OR PROCEDURE DETAILS: Multiphasic computed tomography (CT) is the choice imaging modality for detecting the site of active intracranial or intraperitoneal/retroperitoneal haemorrhage, guiding subsequent direct catheter angiography for the purpose of embolisation therapy in selected cases, and in the imaging follow up of such bleeding complications. Ultrasound or MRI may be used when suspected bleeding complications arising from the use of anticoagulation involve the peripheral extremities. The bleeding complications of anticoagulation occurring intracranially, as well as within the chest/abdominal wall, intra-abdominal viscera, retroperitoneum and the peripheral extremities, are illustrated using multi-modality imaging.

CONCLUSION: Bleeding complications should be vigilantly searched for on imaging in any patient receiving anticoagulation therapy who present with relevant clinical features, and particularly if their INR is excessively prolonged. Awareness of the wide spectrum of imaging features concerning bleeding manifestations induced by anti-coagulation enables timely execution of appropriate interventions.

RENAL ARTERY THROMBOSIS; A RARE SEQUELAE OF BLUNT ABDOMINAL TRAUMA

Nur Wahida Hussin*¹

¹*Radiology, Hospital Canselor Tuanku Muhriz, Malaysia*

INTRODUCTION: Renal injury is seen in 10% of abdominal trauma cases. Renal artery thrombosis, however, rarely occurs following blunt abdominal trauma and is a form of severe renal injury.

REPORT: Here is a case of a patient involved in a motorvehicle accident and complained of acute left flank pain. Physical examination revealed a tender left hypochondrium. No gross hematuria upon Foley's catheterization. Urinalysis shows microscopic hematuria. Contrast-enhanced CT abdomen was performed to look for intra-abdominal injuries. CT scan revealed patchy enhancement of the left kidney with thrombus in the main left renal artery extending into its segmental branches. In addition, there are also injuries to the spleen and left adrenal as well as multiple left rib fractures. Patient was treated conservatively and discharged well.

CONCLUSION: There is great importance in recognizing blunt renal artery thrombosis as these patients may require close follow up, as a number of them may develop complication of hypertension.

AN OVARIAN VEIN THROMBOSIS CAUSING ACUTE ABDOMEN IN POST PARTUM PYREXIA : A RARE ENTITY

Ahmad Azam Anwar*¹; Rusli Zaim¹

¹*Radiology, Hospital Segamat, Malaysia*

INTRODUCTION: Postpartum ovarian vein thrombosis (OVT) is rare that may mimic a surgical abdomen with serious complication. The clinical findings of OVT are nonspecific with number of incident 1 in 5800 vaginal deliveries, Postpartum OVT, which is a clinically difficultly diagnosed entity, must be one of the differential diagnosis in cases of postpartum acute abdomen and fever. OVT can be accurately diagnosed by appropriate noninvasive radiologic modalities before starting early therapy with anticoagulants and intravenous antibiotics.

REPORT:40 years old post partum woman presented to our hospital for right iliac fossa pain and low grade fever. Physical examination showed tenderness at right iliac fossa with likely presentation of mass which shown in ultrasound as heterogenous mass before proceed to CT examination. CT examination revealed an heterogenous hypodense mass at the right adnexal region.

CONCLUSION: In this paper, we review the clinical presentation and imaging findings of a case with postpartum ovarian vein thrombosis that had been diagnosed by ultrasonography (US) & computed tomography (CT).

PERFORATED TRANSVERSE COLON BY ACCIDENTAL FISH BONE INGESTION: A FISHY AND RARE ENTITY

Belinda Shepherdson, Subashini Subramaniam*¹; Rozita Mohd Ghazali¹

¹*Diagnostics Imaging, Hospital Raja Permaisuri Bainun, Malaysia*

INTRODUCTION: Majority of foreign bodies ingested passes through the gastrointestinal tract uneventfully. Although the usual site is at level of ileum and ileocaecal junction, bowel perforation as a complication by ingested foreign body is rare ; let alone large bowel perforation by ingested fish bone.

REPORT: Herein, we report a young man 33 years of age who complained of non-specific abdominal pain for two weeks, predominantly at the epigastrium to the mid-abdominal region. Pre-operative ultrasound and abdominal computed tomography (CT) scan showed ill-defined mass-like lesion in the mid-abdomen containing a linear foreign body. Laparotomy revealed an inflammatory mass containing the 6cm long fish bone, in relation to the site of the perforated transverse colon, walled off by the omentum with surrounding adhesions.

CONCLUSION: The diagnosis of foreign body perforation can mimic a wide range of diseases and pose a clinical challenge. Fish bones are usually radiolucent on plain radiograph. The capability of CT helps to improve diagnostic accuracy, localize site of pathology as well as aid in appropriate surgical management and in pre-operative planning.

ROLE OF RADIOLOGIC EXAMINATION IN URINARY BLADDER HERNIATION

Victor Christian*¹; Elizabeth Angeline¹; Nadia A. P. Panisutia¹; Titik Yulastuti¹

¹Radiology, Diponegoro University-RSUP Kariadi, Indonesia

INTRODUCTION: Herniation of the urinary bladder means a protrusion of some part of the bladder through the abdominal wall or pelvic floor which relatively uncommon case. 1-3% of all inguinal hernias involve the bladder. Clinical symptoms alone can interchange this condition with other diagnose like cutaneous abscess especially at a chronic stage.

REPORT: A 62-years-old male presented to the emergency department with swelling at the right-side groin from 1 week before admission. He has a history of right inguinal operation three times due to an inguinal bowel herniation in 2018. He needs to strive during urination with a weak urinary flow. From the physical examination, the groin swell is tender and warm. Blood tests show increases in white blood cell level. The initial clinical diagnose for this patient was an inguinal abscess. An abdominal CT scan was performed and shows incisional hernia of the urinary bladder through the medial inguinal defect, bladder stone in the herniated bladder, cystitis, and cellulitis. Hernioplasty was performed for the herniated bladder.

CONCLUSION: Tenderness and warm palpation groin swell in this patient can mislead the physician to diagnose this condition as abscess who has distinct management with bladder herniation. CT scan helps to identify the content inside swell, evaluate inguinal canal defect, can also explain causes of the infection-like sign which is due to cellulitis area surrounding the hernia. Therefore, radiological diagnostic might be crucial for establishing diagnosis dan evaluating its complication that improves overall patient treatment and outcome.

FOURNIER'S GANGRENE: UPDATE IN DIAGNOSIS AND MANAGEMENT

Hoang Anh Thi Van*¹; Van Trung Hoang¹; The Huan Hoang¹; Cong Thao Trinh²

¹*Department of Radiology, Thien Hanh Hospital, Vietnam,* ²*Department of Radiology, Hue Central Hospital, Vietnam*

LEARNING OBJECTIVE: To present Fournier's gangrene (FG) overview, focusing on diagnosis and management.

BACKGROUND: FG is a fulminant progressing necrotic infection involving the perineal, perianal, and genital regions that can constitute a life-threatening statement with multiple organ failures. FG is generally secondary to the genitourinary tract, lower gastrointestinal tract, or skin infections affiliated with local trauma, urinary tract damage, or pelvic interventions. This infection can be caused by mixtures of aerobic, anaerobic bacteria, fungi, or viruses and typically detected in men with diabetes mellitus or chronic alcohol misuse.

FINDINGS AND/OR PROCEDURE DETAILS: Clinical presentation of FG includes perineal or scrotal pain, swelling, hyperemia, pruritus, crepitus from soft tissue gas, and systemically unwellness. Bedside ultrasound can be carried promptly to assume for subcutaneous gas besides other manifestations related to possible etiologies like scrotal skin thickening and peritesticular fluid. CT images can reveal subcutaneous emphysema (a hallmark of FG, resulting from gas-forming bacteria or necrotic) and inflammation signs (soft-tissue thickening, fluid collection, surrounded fat stranding). Broad-spectrum antibiotics and urgent surgical debridement of necrotic tissue are the fundamental treatment of FG.

CONCLUSION: FG is a rare emergency disease with a high mortality rate and should be diagnosed promptly based on the clinical and radiological features for proper treatments.

**THE LATERAL CRESCENT SIGN OF DIRECT INGUINAL HERNIAS
DIFFERENTIATES FROM INDIRECT INGUINAL HERNIAS AND FEMORAL
HERNIAS**

Van Trung Hoang*¹; The Huan Hoang¹; Hoang Anh Thi Van¹; Vichit Chansomphou²; Thanh Nhi Thi Nguyen³; Cong Thao Trinh⁴; Hong Vu Thi Le⁵

¹*Department of Radiology, Thien Hanh Hospital, Vietnam,* ²*Department of Radiology, Savannakhet Medical-Diagnostic Center, Laos,* ³*Department of Radiology, Hue University of Medicine and Pharmacy Hospital, Vietnam,* ⁴*Department of Radiology, Hue Central Hospital, Vietnam,* ⁵*Department of Radiology, Vinmec Da Nang International Hospital, Vietnam*

LEARNING OBJECTIVE: The lateral crescent sign and differentiate types of inguinal femoral hernias.

BACKGROUND: Differentiation of direct inguinal hernias, indirect inguinal hernias, and femoral hernias is often challenging in clinical examination and diagnostic imaging. Direct inguinal hernias protrude through the Hesselbach triangle above the inguinal ligament and medial to the course of the inferior epigastric vessels. Indirect inguinal hernias protrude posterolateral and superior to the course of the inferior epigastric vessels, lateral to the Hesselbach triangle, enter the inguinal canal, and maybe into the scrotum. Femoral hernias protrude inferior to the course of the inferior epigastric vessels and medial to the common femoral vein.

FINDINGS AND/OR PROCEDURE DETAILS: Herniated omentum or viscera causing compression and lateral displacement of the inguinal canal contents (testicular vessels, vas deferens, nerve branches, or round ligament) form a semicircle of tissue that resembles a crescent moon seen lateral to the hernia. This sign is usually observed in the early stages of direct inguinal hernia. As it progresses, the inguinal canal contents are tightened, and the crescent-like shape tends to disappear.

CONCLUSION: The lateral crescent sign is easily identified on axial computed tomography images and is useful in diagnosing early direct inguinal hernias. This sign can help the radiologist better assist the clinician in correctly analyzing the hernias of the inguinal femoral area.

**CARDIOPULMONARY RESUSCITATION INJURIES: TYPE AND INCIDENCE
WITH COMPUTED TOMOGRAPHY IN RETURN-OF-SPONTANEOUS-
CIRCULATION PATIENTS**

Fumie Sugihara*¹; Jun Watari²; Sayaka Shirai¹; Shin-ichiro Kumita¹

¹Radiology, Nippon Medical School, Japan, ²Radiology, Zama General Hospital, Japan

OBJECTIVE: The type and incidence of cardiopulmonary resuscitation (CPR)-related injuries are insufficiently assessed. Hence, we examined the type and incidence of CPR injury using computed tomography (CT) in return-of-spontaneous-circulation (ROSC) patients.

MATERIALS & METHODS: We retrospectively evaluated 242 ROSC patients with non-traumatic and non-acute type A aortic dissection who underwent manual CPR from January 2015 to May 2018. Patients were divided into out-of-hospital (OHCA) and in-hospital (IHCA) cardiac arrest groups. CPR administration time, CPR injury type, and incidence were assessed.

RESULTS: The OHCA and IHCA groups included 189 (127 men; mean age, 69.2 years) and 53 (35 men; mean age, 68.3 years) patients, respectively. Average CPR time was 19.5 and 12.8 minutes, respectively. CPA injuries were observed in 111 (58.7%) and 24 (45.3%) cases, respectively. Rib fractures were observed in 49.2% and 39.6% (the average number of rib fractures was 2.2 and 2.1), respectively. Sternal fractures (21.7% and 15.1%); mediastinal hematoma (23.8% and 3.8%); pneumothorax (4.2% and 3.8%); hemothorax (1.6% and 3.8%); and mediastinal emphysema (1.1% and 3.8%) were observed in the OHCA and IHCA groups, respectively. OHCA group showed subcutaneous emphysema, subcutaneous hematoma, and hemopericardial effusion in 3 (1.6%), 1 (0.5%), 1 (0.5%) cases, respectively. Significant difference occurred in CPR time and mediastinal hematoma ($p < 0.010$).

CONCLUSION: CPR-related injuries are common on CT. Among OHCA cases, CPR was performed for a long time, possibly resulting in mediastinal hematoma. Radiologists need to be careful about these injuries while reviewing postmortem CT images.

PROGRESSIVE INTRAOCULAR RETINOBLASTOMA: A MULTIPLE CASE STUDY IN SAIFUL ANWAR HOSPITAL MALANG-INDONESIA

Reginald Maleachi*¹; Yuyun Yueniwati²

¹*Radiology Department Faculty of Medicine, Universitas Brawijaya, Indonesia,* ²*Radiology, Universitas Brawijaya, Indonesia*

INTRODUCTION: Retinoblastoma is the most common pediatric intraocular disease in daily radiology practice. Nowadays, radiologist has an important role to determine extension of the disease and to evaluate post treatment of retinoblastoma, which is important to predict the prognosis of the patient. Prognosis in retinoblastoma depends on the staging of the retinoblastoma.

REPORT: The first case, male, 2 year old. CT Scan and MRI showed right eye retinoblastoma with a progressive growth, in the right optic nerve, also in suprasella, parasella, cerebellar pontine angle and frontal lobe region. The second case, male, 3 year old, CT Scan and MRI showed trilateral retinoblastoma with a progressive growth in the left optic nerve and invasion of orbita muscle, and multiple dural distant metastatic process. The third case, female, 4 year old, CT Scan and MRI showed trilateral retinoblastoma, also with progressive growth and extension in the right optic nerve. All of these cases, showed the late-stage of retinoblastoma and already started with chemotherapy, but have progressive growth disease with poor prognosis. Retinoblastoma has many extensions into intraocular or extraocular, prognosis is known to be worse. All of these patient already started chemotherapy when retinoblastoma had extension into the optic nerve. In follow-up imaging in these cases, all retinoblastomas show deterioration of the disease.

CONCLUSION: Retinoblastoma has poor prognosis after has intraocular or extraocular extension. Besides diagnosis, it is important for the radiologist to rule out extension features in the first imaging before starting chemotherapy, to determine their prognosis. MRI is best to detect its extension.

ARE WE MISSING SOMETHING? TONSILLAR LYMPHOMA PRESENTING AS HUGE RIGHT NECK ABSCESS

Noor Hafifah Jamian*¹; Rayyan Mardhiyah Nik M. Kamel¹; Nik Azrizie Muhamed²; Laili Suriani Ab Latip³

¹Radiology Department, Hospital Segamat, Malaysia, ²Otorhinolaryngology Department, Hospital Segamat, Malaysia, ³Radiology Department, Hospital Pakar Sultanah Fatimah Muar, Malaysia

INTRODUCTION: This case study reports a case of localised extra nodal NHL of the tonsil which is relatively rare with the large neck abscess masking the importance of the malignancy within the associated right tonsillar hypertrophy.

REPORT: A 48 year old female presented with gradually enlarging right neck swelling associated with acute episode of dysphagia and fever. Laryngoscope showed medialization of right tonsil and right neck collection on ultrasound. CECT neck was done to assess deeper extension of this collection and to rule out any parapharyngeal mass causing medialisation of the tonsil. CT showed huge superficial neck abscess and cervical lymphadenopathies with incidental findings of unilateral hypertrophy of the tonsil resulting in narrowing of the oropharynx lumen. Hence incision and drainage was performed which drained pus. Patient was then discharged well. However, on follow up clinic, patient complaint of persistent odynophagia with similar scope findings. Tonsillectomy was then performed and HPE confirmed diffuse large B cell lymphoma of the tonsil.

CONCLUSION: Possible tumoral etiology should be considered in any tonsillar hypertrophy. The huge right neck abscess could be due to underlying immunocompromised state with diabetes mellitus. Radiologist usually confronted lymphoma only in two situations which usually for staging and monitoring the disease. The 1st diagnosis is usually diagnosed by HPE. Therefore, the acute-stage tonsillectomy enables early diagnosis.

IMAGING OF THYROID NODULE WITH ULTRASOUND THYROID

Hendra Saragih*¹

¹ *Petala Bumi Hospital, Indonesia*

INTRODUCTION: Thyroid nodule is an unusual growth of thyroid cells in the thyroid gland. Sometimes the thyroid begins to grow causing one or more nodules to form. This is not known why this happen. Risk factors for developing thyroid nodule include family history, age, gender, and radiation exposure. Condition affect more women than men. This is a rare case in my country.

REPORT: We want report a patient man, younger, had symptom feel swelling in region neck left, tremor, weight loss, difficult swallowing, and nervousness. We can detection with ultrasound thyroid probe linier and we may be differentiated diagnostic with the others diseases before doing surgery oncology.

CONCLUSION: Ultrasound linier used for to see thyroid nodule and may differentiated diagnostic.

**LEONTIASIS OSSEA: UNIQUE IMAGING FINDINGS OF
HYPERPARATHYROIDISM**

Maria Crispina Cu Corral*¹; Irene S. Bandong¹

¹*Pediatric Radiology, St. Luke's Medical Center-Quezon City, Philippines*

INTRODUCTION: Brown tumors, also called osteitis fibrosa cystica are relatively rare non neoplastic osteolytic lesions of bones that appear in an advanced stage of hyperparathyroidism.

REPORT: We present a case of a 32 y/o, Filipino female, who is a known case of chronic renal failure with a chief complaint of an enlarging non tender hard palate mass. Blood chemistry revealed increased levels of parathyroid hormones (PTH), with multi -modality imaging demonstrating signs of hyperparathyroidism. The patient underwent thyroidectomy and parathyroidectomy, post-operative PTH assays were done and demonstrated decreasing hormone levels, the patient was subsequently discharged.

CONCLUSION: This paper describes the classical feature of advanced primary hyperparathyroidism and its successful treatment.

ORTNER'S SYNDROME : CARDIOVOCAL CAUSE OF HOARSENESS - A CASE SERIES

Cheong Kang Wei*¹; Intan Zariza Hussain¹; Isaac Tan²; Heng Pek Ser²

¹Radiology, Hospital Sibul, Malaysia, ²Department Of Otorhinolaryngology, Hospital Sibul, Malaysia

INTRODUCTION: Ortner's syndrome is a rare cause of hoarseness, resulting from compression of the left recurrent laryngeal nerve by a cardiovascular etiology. It was initially described secondary to left atrial enlargement and mitral valve disease. Other mediastinal vascular causes have now been recently described.

REPORT: We reported a series of three cases of Ortner's syndrome which manifested with hoarseness as an early presenting symptom prior to worsening or onset of cardiovascular conditions. The three cases revealed different causes – namely (1)enlarging aortic arch aneurysm with expanding intramural hematoma and concurrent pulmonary artery dilatation, (2)silent pulmonary embolism in interstitial lung disease causing pulmonary hypertension and (3)cardiomegaly with pericardial effusion and pulmonary arterial hypertension. A thorough history and physical examination did not reveal the underlying cause of hoarseness. In these cases, the causes of hoarseness were diagnosed on contrast computed tomography (CECT) or CT angiogram (CTA) thorax. These patients were diagnosed with cardiovocal hoarseness and received prompt treatment. The first patient refused surgery and eventually succumbed to his disease. The second patient; with cardiomegaly; with pulmonary embolism had improvement in his voice one year after receiving anticoagulant therapy. The third patient, received treatment for heart failure and on 4-months follow up showed improvement of voice as well as resolved left vocal cord paresis.

CONCLUSION: Although neoplastic or inflammatory lesions are more common causes of recurrent laryngeal nerve palsy, clinicians should consider the heart and vascular structures of the mediastinum as plausible causative factor of laryngeal nerve compression in patients presenting with hoarseness.

IMAGING FEATURES OF INVASIVE OTITIS EXTERNA (IOE)

Mohamed Ali Touihri*¹; Ammar Mohamed Anas²; Mbarek Chiraz²; Chammakhi Chiraz¹

¹*Department of Radiology, Hospital Habib Thameur Tunis, ²Department of ORL, Hospital Habib Thameur Tunis, Tunisia*

OBJECTIVE: Illustrate CT findings that can help in the diagnosis and complication of invasive otitis externa (IOE)

MATERIALS & METHODS: In this retrospective study, we analyzed the data of CT scans and MRI of cases diagnosed with IOE between 01/2014 and 09/2019 at the department of radiology of Habib Thameur Tunisia.

RESULTS: We reported 15 cases of adults with IOE in 5 years. 46.6 % were female. The median age was 64 years (46-88 years). Principal clinic presentations were unremitting otalgia, otorrhea, headache and decreased oral intake secondary to trismus. All patients are urgently diagnosed with CT showing mucous thickening and bony erosion of the external auditory canal. 100% of subjects had diabetes. Nine patients out of 15 had an extension of the disease toward the petrous apex, deep soft tissue spaces of the face and neck, intracranial organs, middle ear, and large blood vessels MRI was realized with only four patients to complete extension and follow-up.

CONCLUSION: Invasive otitis externa (IOE) is a rare infection of the temporal bone primarily affecting elderly patients and diabetics or immunocompromised individuals, which may have dismal prognosis if treatment is not prompt and adequate. Both CT and MRI have a complementary role in detecting and demonstrating the extensiveness of the lesion involving the petrous bone, tympanic cavity and mastoid bone.

OUTCOME OF THYROID FNAC

Fouzia Wazir*¹; Aman Nawaz Khan¹, Ummara Siddique Umer¹, ShahjehanAlam¹,
Seemagul², Syed Ghulam Ghaus¹, Hadia Abid¹, Abdullah Safi², KalsoomNawab²

¹Radiology Department, Rehman Medical Institute Peshawar, Pakistan, ²Radiology Department, Rehman Medical Institute, Pakistan

OBJECTIVE: To evaluate the efficacy of FNAC in suspected malignant thyroid nodules.

Materials & Methods: This is a prospective cross sectional descriptive study of 226 patients (186 female and 40 male) conducted at Radiology department of Rehman Medical institute Peshawar. The age of patients range from 15 to 85 years. The duration of study was from September 2015 to September 2018. All included patients had atleast one thyroid nodule. FNAC was performed after taking detailed history, thorough examination, relevant investigation and informed consent. Biopsy and surgery was later performed in patients with suspicion of malignancy. The statistical analysis was performed using Microsoft excel 2007.

RESULTS: Most of the patients presented in 4th and 5th decade of life. Out of 226 patients, 6% patients (n=14) were diagnosed with malignancy i.e Bethesda category IV/3f, category V/4 and category VI/5. 80% patients (n=181) were diagnosed with benign thyroid lesions i.e Bethesda category I & II / 2 whereas 4.4% (n=10) had atypical Bethesda category III / 3a lesion. 4.4% patients (n=10) had inflammatory thyroid nodule and 4.8% patients (n=11) were inconclusive.

CONCLUSION: We conclude from our results that only 6% malignant cases were confirmed with FNAC whereas rest of the large number of patients were benign. This shows poor role of FNAC in diagnosing thyroid malignancy.

A RARE CASE OF CONGENITAL EXTERNAL CAROTID ARTERY-EXTERNAL JUGULAR VEIN ARTERIOVENOUS FISTULA: CASE REPORT

Geetha Rakwan*¹; Siti Hajar¹; Nurul Akhmar¹

¹*Radiology, Hospital Taiping, Malaysia*

INTRODUCTION: Carotid-jugular arteriovenous fistulas are rare. They are usually acquired, secondary to trauma, iatrogenic, or complication of severe neck infections. Congenital carotid-jugular fistulas are much less common than acquired arteriovenous fistulas. We report a case of congenital/spontaneous external carotid artery-external jugular vein arteriovenous fistula.

REPORT: 15 years old girl with no known medical illness. Having left sided neck swelling since childhood, slowly increasing in size. Although initially painless, she started to experience pain at the area of swelling for past 1 year, associated with occasional headache. She denied any previous history of trauma, infection or cannulation on the neck. On examination of the neck, there was a pulsatile swelling at the left upper/posterior triangle measuring 3x3 cm. Carotid bruit was felt with audible thrill. No neurological deficit. Ultrasound neck followed by CTA carotid was performed which revealed significantly dilated and tortuous left ECA and left EJV. The left ICA was normal in caliber. There is an arteriovenous fistulous communication seen between the left EJV and distal part of ECA. The right CCA, ICA and ECA were normal in caliber. Patient was subsequently referred to vascular surgeon for surgical intervention.

CONCLUSION: Carotid-jugular arteriovenous fistulas are rare, with congenital or spontaneous causes rarer than the acquired one. Some congenital / spontaneous fistulas are associated with connective tissue disorders. Common symptoms includes pulsatile neck mass. If left untreated, complications includes cardiac failure, atrial fibrillation, rupture or thromboembolism.

JUVENILE OSSIFYING FIBROMA: A RARE CASE REPORT IN THE PHILIPPINES

Danilee May Flor Abanil*¹

¹*Radiology, Quezon City General Hospital, Philippines*

INTRODUCTION: Juvenile ossifying fibroma (JOF) is a rare pathologic lesion primarily involving the maxillofacial bones. It has a global incidence rate of 2% of all oral tumors among children aged 5 to 15 years. Due to limited peer-reviewed clinical case, incidence rate in Southeast Asia is not well documented.

REPORT: The author presents a case of 2 year old male, who initially came to our institution because of a rapidly growing mass in the right mandible. Skull X-ray, Facial CT scan and MRI imaging studies were done revealing an expansile, well-defined mass with mineralized bone matrix originating from the body of right mandible with extension to the contralateral alveolar region. The lesion expands the bony cortex with no apparent erosion or lytic changes. Radiologic diagnosis of Juvenile ossifying fibroma was made through correlation of clinical history, physical examination and imaging characteristics. The patient was advised for excision biopsy which yielded a histologic diagnosis of ossifying fibroma. Patient underwent surgical resection of the lesion and tolerated the procedure without any complication.

CONCLUSION: JOF and other benign fibro-osseous lesions have great similarities in terms of their clinical features, imaging characteristics, and pathology. Therefore, a systematic understanding of the disease process can enable clinicians and radiologists to perform an accurate diagnosis, develop a reasonable treatment plan, and predict the prognosis.

ROLE OF MDCT IN EVALUATION OF JAW LESIONS

Bishwanath Sahu*¹; Puneet Gupta²

¹Radiology, Lady Hardinge Medical Colleg, India, ²Radiology, ASCOMS, India

OBJECTIVE: To study the imaging features of jaw lesions on Multidetector Computed Tomography (MDCT) and correlate with cytohistopathological findings/clinical follow up. **Materials & Methods:** After excluding 15 cases of maxillofacial trauma, a total of 32 cases were included in the study. CT scan was performed on a Philips Brilliance 40 slice MDCT scanner. Axial scans were viewed at 1-2 mm thickness in bone and soft tissue algorithm. In addition the images were processed using multiplanar reconstructions (MPR) and VRT (Volume Rendered Techniques).

RESULTS: Of the 32 cases, 22(68.75%) patients had benign lesions and 10(31.25%) patients had malignant lesions. Of the 22 benign lesions, the most common lesion was ameloblastoma(7, 21.88%). Other benign lesions were 2(6.25%) dentigerous cysts, 1(3.13%) aneurysmal bone cyst, 1(3.13%) odontogenic myxoma, 2(6.25%) odontogenic fibroma, 1(3.13%) keratocystic odontogenic tumor, 1(3.13%) tubercular osteomyelitis, 1(3.13%) osteoradionecrosis, 2(6.25%) ossifying fibroma, 3(9.38%) central giant cell granuloma and 1(3.13%) Langerhans cell histiocytosis. Out of 10 malignant lesions, the most common was squamous cell carcinoma of oral cavity invading the jaw (7, 21.88%). Other malignant lesions were 1(3.13%) ameloblastic carcinoma, 1(3.13%) osteosarcoma and 1(3.13%) Ewing's sarcoma. Involvement of mandible (84.38%) was more common than involvement of maxilla(15.63%).

CONCLUSION: MDCT is excellent for the evaluation of jaw lesions- with a diagnostic accuracy of 90.63% in our study.

BIFID MANDIBULAR CONDYLE AND TMJ ANKYLOSIS

Puneet Gupta*¹

¹*Radiology, ASCOMS, India*

LEARNING OBJECTIVE: To study presence of bifid mandibular condyle in unsuspected cases as well as in setting of temporo-mandibular joint ankylosis by use of computed tomography.

BACKGROUND: To assess bifid configuration of mandibular condyle in symptomatic and asymptomatic patients. To study association between temporo-mandibular joint ankylosis and bifid condyle. To evaluate orientation of the bifid condylar process and corroborate with history of trauma.

FINDINGS AND/OR PROCEDURE DETAILS: A study of ten separate patients, including children and adults, was carried out using 40 slice computed tomography machine (Philips). Detailed clinical history was obtained from symptomatic patients, followed by CT scan of the temporo-mandibular joints in high-resolution protocol. Bifid condylar process can present in an asymptomatic patient or in association with temporo-mandibular joint ankylosis. In majority of cases, the cause of latter is acquired bifid condyle secondary to trauma. Few symptomatic patients, even in absence of traumatic episode, seem to have eventual dissolution of an innocuous developmental variant into a sinister joint deformity.

CONCLUSION: Bifid mandibular condyles are usually incidental finding, especially in unsuspected patients scanned for variety of other reasons. Symptomatic cases with joint ankylosis often have had a traumatic event during childhood leading to acquired condylar anomaly. In a small subset of patients with ankylosed temporo-mandibular joint, bifid condyle is seen in absence of any significant history of trauma. This signifies subsequent deterioration of an insignificant anomaly into a life-changing deformity.

A SUBTLE DISEASE OF TEMPOROMANDIBULAR JOINT SEPTIC ARTHRITIS

Nursofia Diana Azmi*¹; Nasibah Mohamad¹; Nor Adibah Razali¹; Ahmad Kamal Tarmizi
Zamli Zamdi²

¹Radiology, Hospital Kuala Lipis, Malaysia, ²Oro-Maxillo Facial Surgery, Hospital Kuala Lipis, Malaysia

INTRODUCTION: Septic arthritis of temporomandibular joint (TMJ) is a rare occurrence. Patient usually present with pain, fever, facial swelling or loss of TMJ function. The etiologies can be secondary to local extension of infection or haematogenous dissemination of systemic infection. We presented a case of atypical presentation of TMJ septic arthritis.

REPORT: A 46-year-old Malay female with underlying hypertension and hypercholesterolemia presented with limited mouth opening for one month with pain and facial swelling. She denied fever or trauma. White blood count (WBC) was normal with unremarkable orthopantomogram (Figure 1). Thus, locked jaw diagnosis was concluded. Arthrocentesis of left TMJ was done. The interincisal distance improved (21mm to 36mm). Patient was discharged well but symptoms recur after 8 days. Progressive left facial swelling with yellowish discharge from inner cheek. Interincisal distance reduced to 15mm. She was still afebrile with normal WBC but elevated C-reactive protein. Contrast enhanced computed tomography brain showed collection surrounding the left condylar process with erosion and subluxation (Figure 2). Intraoperative findings, localised pus with unhealthy capsule and left condylar head erosion. Wound debridement and left condylectomy done (Figure 3). Pus and tissue culture showed no growth. Patient was discharged well.

CONCLUSION: TMJ septic arthritis requires rapid and aggressive treatment as it can lead to permanent destruction. The pitfall of diagnosis is the rarity of the case and overlapping clinical findings with other inflammatory diseases. Thus, high clinical suspicion and timely diagnosis is crucial to minimize the risk of ankylosis, impaired joint mobility and fibrosis.

**ANATOMIC VARIANTS OF THE COMPUTED TOMOGRAPHY PARANASAL
SINUSES: IT'S IMPLICATION IN FUNCTIONAL ENDOSCOPIC SINUS SURGERY
(F.E.S.S)**

Nur Faradisha Azmin*¹; Mohammad Bakri Mustafa²; Abd Samad Sakijan³; Lokman Saim⁴;
Roqiah Fatmawati Abdul Kadir⁵; Nazimah Ab Mumin⁵

¹*KPJ Kajang Specialist Hospital, KPJ Healthcare University College, Malaysia,* ²*Radiology, KPJ Kajang Specialist Hospital, Malaysia,* ³*Radiology, KPJ Sentosa KL Specialist Hospital, Malaysia,* ⁴*Otorhinolaryngology (ENT), KPJ Healthcare University College, Malaysia,* ⁵*Radiology, UiTM, Malaysia*

OBJECTIVE: To identify the important anatomical variants of the paranasal sinuses(PNS) and their prevalence in the pre-operative for FESS. To evaluate these variants in association with the minimal and clinically significant radiologic evidence of rhinosinusitis.

MATERIALS & METHODS: Retrospective observational descriptive cross-sectional study. 198 unenhanced CT PNS evaluated for sinusitis at KPJ Kajang Specialist Hospital from 2016 to 2018. Variants includes deviation of nasal septum(DNS), uncinata process(UC) attachment, Middle turbinate(MT)concha, agger nasi(AN)cell, Haller cell, frontal recess cells(FC), pneumatization of crista galli(CG) and variable depth of the olfactory pit(Keros classification). The prevalences were compared between two categories of patients having minimal to no apparent obstruction and clinically significant obstruction on the CT. Mucosal thickening of 1 mm or more in the sinus cavity wall was taken as clinically significant rhinosinusitis. Chi Square test and Fisher Exact statistical test were used to determine two associations.

RESULTS: Age range between 16 to 69 years old,mean of 36.85 ± 11.95 years. The most common variant was AN cell(96.9%), followed by DNS(84.8%) and presence of MT concha(80.8%). Statistically significant association in the prevalence of Keros Type I, DNS, pneumatized CG, FC3, superior attachment of UC to lamina papyracea and presence of bilateral Keros Type II between patients with minimal and clinically significant radiologic evidence of rhinosinusitis.

CONCLUSION: Understanding of anatomical variants in the analysis of CT PNS is important as it serves as an adjunct tool for pre-operative plan for FESS, to alleviate the anatomic or pathologic obstruction as well as avoiding the possible iatrogenic complication for an optimal treatment.

POSTCONTRAST T1GRE OR T2FLAIR - WHICH IS BETTER AND WHERE?

Rajul Rastogi*¹; Neha¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Center, India*

OBJECTIVE: Usually pre and postcontrast T1-gradient recalled echo (T1GRE) scans are compared to assess lesion vascularity, internal necrosis or breach in blood brain barrier. However, post-gadolinium enhancement is also seen on T2-fluid attenuated inversion recovery (T2FLAIR) images because of T2- prolongation effect of various lesions and T1-shortening effect of gadolinium acting in synergism. Hence, we share our experience on postcontrast-T2FLAIR images versus postcontrast- T1GRE images in variety of brain pathologies.

MATERIALS & METHODS: Twenty patients with clinical suspicion of brain pathologies were randomly selected & their non-contrast and postcontrast MRI brain examinations were performed. Non-contrast and postcontrast 3D-T1GRE and 3D-T2FLAIR images on 1.5Tesla MRI scanner with a high-resolution image matrix were used to make diagnosis

RESULTS: Postcontrast-T1GRE images are superior to postcontrast-T2FLAIR images in:

- delineating degenerating cysts of cysticerci,
- demonstrating internal air and perilesional edema in patients with pyogenic abscess
- determining the extent of meningeal enhancement especially in sulcal spaces (especially in tubercular meningitis) and dural sinuses due to presence of luminal signal void of sinus lumen on T2FLAIR images,
- determining the nature of internal contents and number of lesions in cases of tuberculoma with an additional advantage of demonstrating edema,
- determining the nature of internal contents and mural characteristics in cases of intracranial tumors.
- postcontrast-T2FLAIR images may obviate the need for noncontrast-T2FLAIR images.

CONCLUSION: Postcontrast-T2FLAIR images may be routinely used as an additional tool to postcontrast-T1GRE scans in MRI examination of a variety of brain pathological conditions as it provides additional clinically useful information that may be helpful in management and predicting prognosis.

ODONTOGENIC CYST IN THE MAXILLARY SINUS CAUSING NASOLACRIMAL DUCT OBSTRUCTION

Alex Lim *¹; Tan Kheok Choon¹; Lim Dwee Shion¹

¹*Radiology Department, Hospital Sultan Ismail, Malaysia*

INTRODUCTION: The most common odontogenic cyst containing an impacted or unerupted tooth is usually a dentigerous cyst. They are usually asymptomatic and usually discovered during routine radiographic examination or because of infection. However, they may present as a large palpable mass causing sinus expansion and resultant mass effect. Dentigerous cyst presenting with epiphora due to naso-lacrimal duct obstruction is rare.

REPORT: 38-year-old female presented with epiphora, left nasal blockage, left facial pain and facial swelling. Scope showed inferior nasal turbinate hypertrophy and medialization of maxillary wall. Left eye syringing (Jones 2 Test) showed nasolacrimal duct obstruction. Patient was planned for a left eye dacryocystogram. However, CT paranasal sinus was done instead which showed an odontogenic lesion associated with an unerupted tooth suggestive of a dentigerous cyst. There is also expansion of the left maxillary sinus causing mass effect and narrowing of the nasolacrimal duct.

CONCLUSION: Large maxillary odontogenic cyst can cause mass effect and cause ophthalmologic and nasal symptoms to develop due to mechanical obstruction. It should be considered a differential diagnosis for patients who present with facial swelling, epiphora and nasal obstruction.

ATYPICAL CLINICAL AND RADIOLOGICAL PRESENTATION OF MALIGNANT LYMPHOID NEOPLASM: A CASE REPORT

Qistina Muhamad*¹; Azua Mohd Khairy¹; Norazalina Mohd Songib¹; Sundrarajan Naidu Ramasamy²

¹Radiology, Hospital Sultan Ismail, Johor, Malaysia, ²Dental and Maxillofacial Surgery, Hospital Sultan Ismail, Johor, Malaysia

INTRODUCTION: Malignant lymphomas cover a range of very heterogeneous conditions, particularly in terms of their forms of clinical and radiological presentation.

REPORT: This is a case of a 14-year-old girl presented with left buccal space collection for 2 weeks, suspected for abscess secondary to odontogenic infection. CT scan revealed not only osteomyelitic appearance of the mandible underlying the abscess, but also multiple areas of osteomyelitic changes and collections involving contralateral submasseteric space, breast, scapula, multiple bones and muscles which raises the suspicion of infective or inflammatory osteomyelitis. There were also lung and pleural based lesions. Pus and blood culture and sensitivity shows no growth. TB and melioidosis work up were also negative. Tissue HPE from the wall of left buccal collections suggests malignant lymphoid neoplasm.

CONCLUSION: It is important to include malignancy as one of the differential diagnosis of sporadic or systemic infection in young healthy patients.

A RARE CASE OF CONGENITAL NASAL PYRIFORM APERTURE STENOSIS WITH SOLITARY MEDIAN MAXILLARY CENTRAL INCISOR

Tan Weijoe*¹; Kasturi Nair¹

¹*Department of Radiology, Hospital Tengku Ampuan Rahimah, Malaysia*

INTRODUCTION: Congenital nasal pyriform aperture stenosis is a rare and potentially lethal form of airway obstruction in newborns. It may present as an isolated malformation or may be associated with other cranial-facial anomalies.

REPORT: A 7-day old baby boy was born premature at 35 weeks' gestation. Antenatally, the mother had polyhydramnios and impaired glucose tolerance. He was treated for severe transient tachypnea of new born at birth. On day 1 of life, there was difficulty in inserting the nasal suction tube. Flexible rhinoscopy was performed. The ENT surgeon was able to visualize the nasal cavity but was unable to insert the scope beyond 1.5cm due to resistance. An HRCT parasanasal sinuses was performed on day 8 of life, showing narrowing of the pyriform aperture nasal airway with the narrowest point measuring 3.9mm (less than 11 mm). There was also abnormal thickening and medial angulation of nasal processes of maxillae noted. Besides, there was associated abnormal dentition with presence of solitary median maxillary central incisor. Coalescence of the middle and apical turn of the left cochlear with absent bony modiolus was also seen. There was no CT evidence of choanal stenosis. A diagnosis of congenital nasal pyriform aperture stenosis was made. Bilateral nasal dilatation was done by the ENT team. Intraoperatively, bilateral inferior nasal turbinates were boggy. There was bowing of nasal septum anteriorly. Both choanae were patent.

CONCLUSION: Congenital nasal pyriform aperture stenosis is rare and potentially fatal if missed. Immediate recognition and appropriate therapy are crucial.

SYSTEMATIC APPROACH TO COMPUTED TOMOGRAPHY IN THE ASSESSMENT OF VOCAL CORD PALSY

Hafizah Mahayidin*¹; Amali Ahmad¹

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia*

LEARNING OBJECTIVE: To systematically review the course of the vagus and recurrent laryngeal nerves and describe some of the common pathologies that occur at various levels along the course of these nerves that can lead to vocal cord palsy.

BACKGROUND: Vocal cord palsy can be identified or suspected on computed tomography (CT) in symptomatic or asymptomatic patients. Contrast enhanced CT from the skull base to the aortopulmonary window is a powerful adjunct to clinical and laryngoscopy assessment in identifying the underlying cause of vocal cord palsy. Although the vagus and recurrent laryngeal nerves are not readily demonstrated on CT, the expected course of these nerves have been described on various literature and can be easily evaluated on CT for evidence pathologies or previous surgery/trauma.

FINDINGS AND/OR PROCEDURE DETAILS: Pictorial description of laryngeal and hypopharyngeal CT changes in vocal cord palsy. Annotated CT images of the course of the vagus and recurrent laryngeal nerves from the brainstem to the larynx. Common pathologies at the level of posterior cranial fossa, skull base, neck (descending course of vagus nerves), thoracic inlet, superior mediastinum and neck (ascending course of recurrent laryngeal nerves) that can result in vocal cord palsy.

CONCLUSION: Understanding the course of the vagus and recurrent laryngeal nerves as well as knowledge about the pathologies that commonly occur at various levels of the nerves course is integral to the reporting radiologist in the evaluation of vocal cord palsy.

CASTLEMAN DISEASE INVOLVING PAROTID GLAND: A RARE ENTITY

Puneet Gupta*¹

¹*Radiology, ASCOMS, India*

INTRODUCTION: Castleman's disease also known as angiofollicular lymph node hyperplasia is rare entity which is characterized by lymph nodal hyperplasia and is a benign disorder. Although it can affect any part of the body which contains lymph nodes, the commonest site is the mediastinum followed by the head and neck. We here discuss an interesting case with unicentric castleman disease presenting as left parotid swelling in a 19-year-old man which was painless and had persisted for almost 8 months.

REPORT: Ultrasonography shows oval shaped hypoechoic mass almost completely replacing the parotid tissue. Color Doppler revealed peripheral vascularity which showed arterial waveform. Computed tomography scan showed a well margined, homogeneously enhancing lesion in left parotid gland involving both the superficial and deep lobes. The patient underwent total parotidectomy with preservation of the facial nerve. Histologic of the specimen showed castleman disease of hyaline-vascular variety.

CONCLUSION: Mediastinum is the most common location followed by head and neck which is the second most common site for these lesions. Involvement of salivary glands and in particular the parotid gland is extremely rare. The treatment of choice for unicentric lesions is excision of the mass. If excision is complete, recurrence is uncommon. The multicentric form has a poor prognosis and warrants aggressive therapy. Due to the multisystem involvement of multicentric castleman disease, treatments may require surgery plus chemotherapy

DEVELOPMENTAL VARIANT OF THE THYROID CARTILAGE MIMICKING SUSPICIOUS NODULES

Timothy Shao Ern Tan*¹; Sarat Kumar Sanamandra¹

¹*Department of Diagnostic Radiology, Singapore General Hospital, Singapore*

INTRODUCTION: The thyroid cartilage is not routinely assessed on neck sonography. However, it may undergo developmental changes which can mimic pathology. The thyroid cartilage is formed by two lateral hyaline laminae joining ventrally to form a V-shaped cartilaginous sling. From its embryological development, it undergoes multiple processes of mineralisation and ossification starting in the posteroinferior lamina, secondary to micro-traumatism by the extra-laryngeal musculature, resulting in progressive calcification. In some cases, this process does not evolve completely, and the thyroid cartilage may show cyst-like cavities, especially anteriorly. These are usually incidentally discovered on imaging studies and may be symmetrical, affecting both thyroid laminae, mainly described in adolescents. The differential diagnosis of these cyst-like changes in the thyroid cartilage includes degenerative thyroid cartilage cysts, post-traumatic or post-radiotherapy cysts, chondromas, chondrosarcomas or metastases.

REPORT: A previously well 30-year-old man presenting with clinical and biochemical (Serum T4: 34.2pmol/L, Thyroid stimulating hormone: <0.010MU/L, TSH receptor antibodies: 14.50IU/L) features of hyperthyroidism was referred for sonographic evaluation of his thyroid gland. No palpable neck lump was felt on examination. Sonography revealed a normal appearing thyroid gland with no focal lesion or abnormal vascularity evident. Several small subcentimetre well-defined focal oval hypoechoic dilatations were however noted in both laminae of thyroid cartilage without any associated abnormal vascularity or discrete calcification. No enlarged cervical lymph nodes were detected. Overall features were consistent with cystic change in the thyroid cartilage, a developmental variant.

CONCLUSION: Knowledge and recognition of this rare anatomical variant is essential to avoid misdiagnosis and further unnecessary examinations.

ACCURACY OF VOI DETERMINATION WITH CBCT IN PERIODONTITIS DUE TO PSYCHOLOGICAL STRESS

Baby Prabowo*¹; Arif Rachman²; Ani Melani Maskoen³; Arief Budiarto⁴; Fourier⁵; Arni Diana Fitri⁶

¹Military Dentistr, Padjajaran University, Indonesia, ²Department of Cell Biology and Biomolecular/ Faculty of Medicine, Indonesian Defense University, Indonesia, ³Department of Oral Biology, Faculty of Dentistry, Padjadjaran University, Indonesia, ⁴Molecular Genetic Laboratory, Faculty of Medicine, Padjadjaran University, Indonesia, ⁵Earth Physics and Complex Systems, Faculty of Mathematics and Natural Science, Institut Teknologi Bandung, Indonesia, ⁶Veterinary Teaching Hospital, IPB University, Indonesia

OBJECTIVE: The main etiological factor of periodontal disease is bacteria which substantially protect the human oral cavity. The most common periodontal diseases are gingivitis and periodontitis, the main characteristic of which is inflammation. Psychological stress causes periodontitis resulting in a widening of the periodontal ligament which will form a gap which will be analyzed by VOI with CBCT.

MATERIALS AND METHODS: Treatment of male wistar for 5 months with moderate running and fear of predators and decaputations on day 1 and 5 for CBCT testing and VOI analysis on the left maxilla.

RESULTS: Cortisol is a steroid hormone whose levels can be affected by physical stress, emotional stress, and illness. Psychological stress is the cause of periodontal disease. To investigate the accuracy and reproducibility of landmarks and measurements marked on images obtained from CBCT. 3D imaging visualization on CBCT to analyze and determine VOI by determining 4 components, namely TV, BV / TV, TS, and BS / TV. The moderate running group showed an increase in VOI by 94% and the fear group for predators by 18%, this is when compared to the control group who had VOI of -0.65%. This VOI determination can analyze the affected areas of psychological stress that cause periodontitis. The accuracy of CBCT is still possible in determining VOI from periodontitis caused by psychological stress.

CONCLUSION: The CBCT determination of VOI in maxillary periodontitis is very accurate for the psychological consequences of stress.

**FREQUENCY OF BONE INVOLVEMENT IN ORAL CAVITY SQUAMOUS CELL
CARCINOMA USING MULTISLICE COMPUTED TOMOGRAPHY AS A
MODALITY OF CHOICE.**

Urooj Kanwal*¹; Shaista Shoukat¹; Shazia Kadri¹; Tariq Mahmood¹

¹*Radiology Department, Jinnah Post Graduate Medical Centre, Pakistan*

OBJECTIVE: Squamous cell carcinoma of oral cavity stands at the 11th most common malignancy in the world. At present, Pakistan is second most commonly affected country in the world. Its incidence is related to tobacco chewing in various forms. Our main objective was to determine the frequency of bone invasion using Multislice Computed Tomography as a modality of choice in oral cavity squamous cell carcinoma patients at the time of first presentation, as bone erosion and distant nodal metastasis are adverse prognostic determinants and changes the regimen of treatment overall.

MATERIALS AND METHODS: A prospective study done at Radiology department JPMC over a period of 6 months from 01-07-2020 to 31-12-2020. All biopsy proven new patients presented to our department for pre-treatment scan with the history of pan, gutka, naswar and tobacco addiction were included. Post-surgical and post chemo-radiation treated patients were excluded.

RESULTS: Age range of patients varies from 26 to 65 years with the mean age of 50.3 years. Out of total 80 patients, 54 (67%) were males and 26 (32%) were females with male to female ratio is 2 : 1. Out of 80 patients 43 (54%) showed bone erosion at the time of first presentation while 37 (46%) did not show any at first pre-treatment scan. MDCT using bone algorithm has sensitivity of 90% while specificity of 95% in diagnosing bone erosion.

CONCLUSION: Multi-slice CT reconstructed with bone algorithm is accurate in detection of bony invasion in oral cavity squamous cell carcinoma.

RECURRENT RESPIRATORY PAPILOMA IN SUNDANESE YOUNG FEMALE

Setia Dewi Sartika Tambun*¹; Harry Galuh Nugraha²; R Ayu Hardianti Saputri³

¹Radiology Department, University Of Padjadjaran, Indonesia, ²Division of Pediatric, Radiology Department, Universitas Padjadjaran, Indonesia, ³Bronchoesophagology Division of Otorhinolaryngology Head & Neck Surgery Department, Faculty of Medicine Universitas Padjadjaran, Indonesia

INTRODUCTION: Recurrent respiratory papillomatosis (also known as laryngotracheal papillomatosis) is a rare entity associated with human papillomavirus (HPV). This disease is characterized by multiple papillomas seen in upper airways, usually on the vocal cords. Downward extension of lesions to trachea, main bronchi, and lungs is very rare. Helical computed tomography (CT) is highly accurate for the identification and characterization of focal or diffuse airway narrowing caused by nodular vegetant lesions.

REPORT: A 13 years old girl with chronic dyspnea as chief complaint was referred to our hospital with no serious respiratory symptoms. She also had laryngo-tracheal papillomatosis and undergone serial endoscopic resection since her 5 years old. Chest x-ray demonstrated a multiple cavitary lesions, some with air fluid level, were found in both lung fields caused by suspected tracheobronchial papilloma with lung involvement. Chest-CT showing multiple cavitary in some of all segments in both lung lobes which compared to the previous CT, it increasing and total tracheal occlusion.

CONCLUSION: In this report, we presented a recurrent respiratory papillomatosis which extend in trachea and lung parenchym. Multiple nodular and cavitary lesions in the lung are the typical presentation for pulmonary papillomatosis. A sustainable investigation and endoscopic procedures may help us diagnose and give appropriate treatment needed.

LOW-FLOW ARTERIO-VEINOUS MALFORMATION OF EAR LOBULE- A CASE REPORT.

Debarpita Datta*¹

¹*Department Of Radiodiagnosis, Medical College Kolkata And Hospital, India*

INTRODUCTION: Arteriovenous malformation or AVM is an abnormal connection between arteries and veins, bypassing the capillary system. They can be associated with hereditary syndromes but are generally errors of vascular morphogenesis. This vascular anomaly is widely known because of its occurrence in the central nervous system, but can appear in any location. AVM of ear lobule is a rare entity. They are generally asymptomatic but can lead to bleeding ulceration and severe pain.

REPORT: A 26-year-old male presented with a history of swelling and skin discolouration in the lobule of the left ear with increase in size over the last 1 year. There had been no episodes of bleeding. The patient also complained of disturbing tinnitus and headache. The swelling was soft, non-compressible, non-tender, pulsatile with a thrill with a continuous bruit.

Ultrasonography showed multiple dilated anechoic lesions in B-mode, while spectral Doppler revealed low velocity low-resistance arterial pattern. Further a CT was done which revealed multiple dilated vascular channels in left external ear with formation of nidus. An axial angiogram showed the feeding vessels were posterior auricular artery communicating with external jugular vein. Digital Subtraction Angiography revealed similar findings.

CONCLUSION: These are almost always present at birth, manifest late in life. We emphasize the role of colour Doppler sonography, Angiography In the management of such cases. Embolization followed by a wide excision and repair during the same procedure is the treatment of choice.

RHABDOMYOSARCOMA OF THE NASAL CAVITY INITIALLY DIAGNOSED AS CHRONIC SINUSITIS

Mannem Roopa*¹; Nln Moorthy¹; Sudhanshu Tonpe¹

¹*Radio-Diagnosis, Apollo Medical College, Jubilee Hills, India*

INTRODUCTION: Soft tissue sarcomas are rarely occurring heterogeneous tumours derived from embryonic mesoderm. They are primarily pediatric malignancies, but contribute to 1% of all adult malignancies. Sarcomas account for only 1% to 2% of all head and neck malignancy. The rhabdomyosarcoma (RMS) subtype is even more rare in adults, representing less than 1% of all malignant solid tumors in adults. One of the most common sites is the head and neck region. Here we describe a rare case report of non-metastatic rhabdomyosarcoma of the nasal cavity in an adult woman who presented with several months of unilateral sinus and ophthalmic symptoms.

REPORT: A 47 year old female presented with right unilateral nasal obstruction, headache, proptosis of right eye and orbital pain for 6 months. Naso-endoscopy revealed a fleshy, irregular mass occupying the right nasal cavity. CT of paranasal sinuses showed a large hypodense mass arising from right nasal cavity infiltrating into ipsilateral maxillary antrum and ethmoidal sinus with orbital extension. On MRI, a heterogeneously enhancing hypo-isointense soft tissue mass is seen in right nasal cavity with intracranial extension into right frontal lobe. CT Chest was unremarkable for metastasis. On biopsy, a diagnosis of rhabdomyosarcoma was made. A combination of chemotherapy and radiotherapy was initiated to the right middle face.

CONCLUSION: Rhabdomyosarcoma of nasal cavity and paranasal sinus in adults is extremely rare. It should be included in differential diagnosis and treated aggressively to improve prognosis and survival rate. Metastasis needs to be ruled out at the time of diagnosis.

A RARE CASE OF INFRATEMPORAL SCHWANNOMA

Noor Khairiah Kamaludin*¹; Eamy Che Ibrahim¹

¹*Radiology Department, Hospital Ampang, Malaysia*

INTRODUCTION: Schwannomas are benign, slow-growing, epineurium-encapsulated neoplasms arising from Schwann cells that comprise myelin-sheaths surrounding peripheral nerves. The occurrence of schwannomas in head and neck region is about 25%–48%, and percentage of intraoral schwannomas is merely 1%. The infratemporal-fossa is one of the least common anatomical sites for schwannomas.

REPORT: 32 yo gentleman, presented to ENT-clinic with swelling over right preauricular-region for past 8 months, which is slowly-increasing in size. No history of fever or trauma.

CT brain in axial sections showed 2.5 x 1.5 cm heterogeneously enhancing cystic lesion at the right temporal region, extending medially to infratemporal fossa. MRI brain revealed an enhancing well-circumscribed mixed solid-cystic intramuscular lesion at right temporal region extending into posterolateral aspect of right infratemporal fossa measuring 1.7 x 3.1 cm in axial section. As the lesion appeared well-encapsulated, complete surgical excision was done. Histopathology-examination revealed diagnosis of Schwannoma.

CONCLUSION: Although approximately 25-40% of all schwannomas occur in head and neck region, the incidence of ancient schwannoma in this region is very rare. Ancient schwannoma usually present as submucosal swellings with higher female predilection. A review reveals that only nine cases of intraoral ancient schwannoma has been reported with five in the floor of mouth and one each in posterior maxillary mucobuccal fold, anterior maxillary vestibule, and posterior mandibular vestibule and upper lip. We have presented a unique case of ancient schwannoma of infratemporal-fossa to stress the rarity of lesion and the importance of not ruling out neurogenic tumors in diagnosis of head and neck lesions.

**A COMPREHENSIVE PICTORIAL ESSAY OF ORBITAL MASS LESIONS BY 3
TESLA MAGNETIC RESONANCE IMAGING - LOOKING THROUGH ORBIT
BEYOND THE FUNDOSCOPY**

Shriram Mate*¹; Shilpa Domkundwar¹; Varsha Rathi¹; Vidya Desai²

¹Radiology, Grant Medical College Mumbai, India, ²Radiology, Indira Gandhi Government Medical College Nagpur, India

LEARNING OBJECTIVE:

- Review the orbital anatomy on MRI to compartmentalize orbital mass lesions.
- Highlight imaging features which helps in differentiating between benign and malignant lesions.
- Discuss the imaging characteristics of common and/or rare orbital mass lesions by using high field strength 3 Tesla MRI.

BACKGROUND: Orbital lesions form a wide range of pathologies that pose challenges in diagnosis, management and treatment. The soft tissue detail provided by Magnetic Resonance Imaging (MRI) allows for better lesion characterization. MRI therefore plays a crucial role, especially in cases where history and clinical evaluation are inconclusive. Imaging features of these lesions often reflect their tissue composition.

FINDINGS AND/OR PROCEDURE DETAILS: We have demonstrated orbital mass lesions from the patients who presented in the department of radiology since 2017 by using high fields strength 3 Tesla scanner. MRI imaging plays a valuable role in diagnosis of benign and malignant lesions, supplementing ophthalmologic examination and providing information beyond what can be seen at fundoscopy. A general approach should consider the anatomic compartment of involvement. MRI features of the important orbital mass lesions like retroorbital and choroidal hemangioma, melanoma, retinoblastoma, dermoid, optic nerve glioma, optic nerve sheath meningioma, neurofibroma, retroorbital arteriovenous malformation, metastasis have been discussed.

CONCLUSION: MRI offers high accuracy in characterization of orbital mass lesions and in delineating their extent in the orbit. Knowledge of orbital anatomy is essential. This pictorial review aims to provide radiologists a summary of the key imaging features which will help to differentiate benign and malignant lesions.

CARCINOMA EX PLEOMORPHIC ADENOMA OF THE NASAL CAVITY

Michelle Castillo*¹; Gabriel Martin Ilustre²; Timothy Carl Uy³; Johanna Patricia Canal¹;
Christine Joy Arquiza²; Karen B. Damian³

¹*Radiology, Philippine General Hospital, ²Otorhinolaryngology, Philippine General Hospital,*

³*Pathology, Philippine General Hospital, Philippines*

INTRODUCTION: Carcinoma Ex Pleomorphic Adenoma (CXPA) is the malignant transformation of the epithelial or myoepithelial components of a pre-existing primary or recurrent pleomorphic adenoma. CXPA accounts for 3.6% of all salivary gland tumors and 12% of all salivary gland malignancies¹. Occurring predominantly in the major salivary glands, CXPA in the minor salivary glands is a rare occurrence, comprising only 2.6% of all minor salivary gland neoplasms.

REPORT: We present a case of Carcinoma Ex Pleomorphic Adenoma arising from the left nasal cavity. A 31-year old male presented with 6 months' duration gradually progressive nasal obstruction and rhinorrhea of the left nasal cavity. Clinically, he was found to have a mass arising from the left nasal cavity extending into the hard palate. The tumor was locally aggressive causing lateral bulging of the left nasal dorsum and the nasal septum contralaterally. Bilateral subtotal maxillectomy via mid facial degloving and application of surgical obturator was done followed by post-operative radiotherapy. On final histopathology, the mass was diagnosed to be Carcinoma Ex Pleomorphic Adenoma. No recurrence has been observed 24 months post-operation (19 months post-radiation).

CONCLUSION: Due to the limited number of long-term follow-up cases, it is difficult to ascertain whether sinonasal CXPAs present with similar prognoses and behavior as CXPAs arising in other locations. Diagnostics may be used to characterize the origin of the tumor and guide preoperative planning. Further studies and long-term follow-up are recommended to determine the overall survival and to assess local control benefits for this type of tumor.

PARAPHARYNGEAL EXTRAOSSEOUS EWING'S SACROMA

Teoh Kar Choon*¹; Rizuana Iqbal Hussain¹; Amali Ahmad²

¹Radiology, UKM, Malaysia, ²Radiology, HKL, Malaysia

INTRODUCTION: Ewing's Sarcoma (ES) is an aggressive, round cell malignant tumour which occurs primarily in the any location of bones or soft tissues. Approximately 15% of ES is extraosseous sites. Common locations are at torso, paravertebral regions, limbs, retroperitoneum, and head and neck region. Common head and neck EES are at the orbit, nasal cavities and paranasal sinuses. As for parapharyngeal space EES is even rarer, as there are total of 4 cases that were published till date. Here, we report a case of EES occurring in the parapharyngeal space.

REPORT: A 23 years old female presented with left posterior auricle swelling for 5 months, progressively increasing in size with mild tenderness and mild dysphagia due to pain. Contrast enhanced CT showed post styloid left parapharyngeal space mass with mild heterogenous enhancement. No suspicious cervical lymph node was noted. MRI shows T2 hyperintense to muscle, T1 isointense to muscle and mild heterogeneous enhancement. No flow void signal within. No area of cystic changes within. The mass displaced ICA, ECA and styloid process laterally, splaying of the ICA and ECA and engulfed the ICA at some parts. Tissue biopsy proven Ewing's sarcoma.

CONCLUSION: Parapharyngeal soft tissue sarcoma is an extremely rare malignant tumour. It is difficult to diagnose sarcoma solely based on imaging. The definite diagnosis is based on tissue biopsy. By understanding the anatomy of the parapharyngeal space and pattern of displacement of fat and carotid artery with combination of imaging characteristics of the mass, one can narrow down the differential diagnosis.

ECTOPIC MOLAR TOOTH IN MAXILLARY SINUS: A RARE REPORTED CASE OF ASYMPTOMATIC PATIENT

Othman Puteh*¹; Mohd Shafie Abdullah¹

¹*Radiology, Universiti Sains Malaysia, Health Campus, Malaysia*

INTRODUCTION: Ectopic third molar tooth eruption in non-dental site is a rare phenomenon. Few cases has been seen at mandibular and nasal region less likely maxillary sinus. It is commonly seen as an incidental finding during imaging.

REPORT: A 26 year-old man with no known medical illness was admitted for attack of seizure for investigation. CT brain was performed to rule out any intracranial cause such as hemorrhage or brain lesion. CT brain findings revealed no acute intracranial hemorrhage or any suspicious brain lesion. Incidental findings of soft tissue density with tooth like structure was seen in the left maxillary sinus. No bony defect or erosion seen at the left maxillary bone. Other paransal sinuses were well aerated. Upon further history, patient has no sinusitis, facial pain, rhinorhea, and nasal disturbance. Other clinical and biochemical findings were unremarkable.

CONCLUSION: During odontogenesis, any disruption or interruption can cause ectopic tooth development. Ectopic tooth within the dentate region of jaws are well documented. However, only few have been reported occur in maxillary sinus. The symptoms related to the ectopic maxillary sinus tooth include sinusitis, nasal discharge and orbital floor elevation. In this case, patient is asymptomatic. Ectopic maxillary sinus tooth may lead to the development of dentigerous cyst which can end up in serious complication such as ameloblastoma and carcinoma if not properly managed.

PROPTOSIS IN A CHILD WITH LEARNING DISABILITY : LESSON LEARNT

Abdul Qayyum*¹; Yew Ting Ting¹; Lim Aunee²

¹Radiology, UNIMAS, Malaysia, ²Radiology, Sarawak General Hospital, Malaysia

INTRODUCTION: Scurvy is a disease that caused by severe vitamin C deficiency, which nowadays more in children with dietary and neurodevelopmental disability. Reported case of proptosis due to spontaneous orbital hemorrhage is rare as initial manifestation of scurvy.

REPORT: Here we reported a case of 7 years old girl with learning disability, presented to the emergency department with rapidly progressive right eye swelling. Otherwise, no prior trauma or fever. She had history of gingivitis and easy bleeding during dental visit. Funduscopy was unremarkable. Initial clinical diagnosis was orbital cellulitis. CT orbit showed collection at the right orbital roof. Subsequently MRI orbit confirmed the multiple hematoma in right superior orbit extra conal space. She has no typical skeletal features of scurvy on radiographs. The child had endoscopic transnasal orbital decompression and blood clot evacuation done and was given high dose of vitamin C. She responded well and discharged home. Follow up MRI six months later shows resolved orbital hematoma.

CONCLUSION: It is important to remember that scurvy can presents atypically and clinician need to keep it as a differential diagnosis in a young child with bleeding history and presented with proptosis.

ACUTE CALFICIC TENDITIS OF THE LONGUS COLLI MUSCLE: THE UNDERDIAGNOSED CAUSE OF NECK PAIN

Muhammad Zahid Abdul Muien*¹; Shahizon Azura Mohamed Mukari²

¹*Jabatan Perubatan, Universiti Malaysia Sabah, Malaysia,* ²*Jabatan Radiologi, Universiti Kebangsaan Malaysia, Malaysia*

INTRODUCTION: Acute neck pain in afebrile patient is rather common. Radiographically, with presence of prevertebral soft tissue thickening, cautious approach for more sinister provisional diagnosis should be considered. However, the diagnosis of acute calcific tendinitis should always be differential in the aid of imaging to avoid unnecessary invasive procedure.

REPORT: A gentleman presented with sudden onset of neck pain for 1 day with dysphagia and odynophagia. He remains comfortable in emergency department. Clinically there was no neck swelling and no palpable cervical nodes. Throat examination reveal no abnormal bulging. Cervical radiograph revealed thickened prevertebral soft tissue. Flexible scope was done bedside by ENT team and showed normal mucosa with thickening of the pharyngeal wall. Supraglottic was normal and airway are patent. Contrast enhanced CT revealed prevertebral soft tissue thickening with fluid density in the retropharyngeal region with mean attenuation of 14HU from the level of C1 to the C6 vertebra. No marked wall enhancement or air locules within. Focus of calcification at the attachment of longus colli muscle. Patient was admitted and remains afebrile. Repeat scope done revealed no bulging of the posterior pharyngeal wall. He was discharged without any surgical intervention.

CONCLUSION: Neck pain is one of the commonest complaint in emergency and trauma department. Correlating between clinical and imaging is important for clinician and to help raise awareness of the acute calcific tendinitis in a non-septic patient. Recognizing the features of the disease with absent of wall enhancement, absent of cervical lymph nodes and presence of calcification are pathognomonic of the disease.

REVISITING SINONASAL MASSES: A PICTORIAL REVIEW

Smily Sharma*¹; Venkata Subbaih Arunachalam¹; Pankaj Sharma¹; Poonam Sherwani¹;
Anjum Syed¹

¹Radiology, All India Institute of Medical Sciences Rishikesh, India

LEARNING OBJECTIVE:

- To revisit the imaging features of Sino-nasal masses using a case-based approach
- To review the advances in imaging including DWI imaging to classify benign and malignant sino-nasal Tumors

BACKGROUND: Sino-nasal masses encompass a myriad of benign and malignant etiologies affecting the nasal cavity and paranasal sinuses. An in-depth discussion of the imaging features including nuances in imaging of Sino Nasal Masses is presented in the exhibit.

FINDINGS AND/OR PROCEDURE DETAILS: Sino-nasal masses usually have non-specific imaging characteristics. Certain morphological features like remodeling of the adjacent bony structures rather than destruction or absence versus presence of perineural extension can help differentiate benign and malignant masses. CT provides an accurate assessment of bone erosions and destruction whereas MRI acts an excellent tool to assess perineural extension. However, further research into Diffusion weighted MRI imaging provides an insight to differentiate high and low-grade neoplasms using ADC values. Certain specific features like hyperintensity on T1 Weighted imaging in Melanoma, Cerebriform pattern in Inverted Papilloma etc. should be known to a reporting Radiologist to suggest the appropriate diagnosis. Using a case-based review, the generalized as well as salient features of common and uncommon Sino-nasal masses like Sino-nasal Polyposis, Inverted Papilloma, Esthesioneuroblastoma, Nasopharyngeal Lymphoma, Sino-nasal Melanoma, Sino-nasal NUT Carcinoma, Sino Nasal Undifferentiated Carcinoma (SNUC) , Sino-nasal Hemangioma, Sino-nasal Rhabdomyosarcoma are discussed thoroughly in the exhibit.

CONCLUSION: The detailed knowledge about Sino-nasal masses can help Radiologists provide an accurate diagnosis and help in their timely management.

**THE FACTORS BEHIND THE INCREASING TREND IN THE USE OF
DIAGNOSTIC IMAGING IN THE PHILIPPINE GENERAL HOSPITAL FROM THE
RADIOLOGISTS' POINT OF VIEW**

Danlen C. Masangya*¹; Johanna Patricia A. Cañal¹

¹*Radiology, UP-Philippine General Hospital, Philippines*

OBJECTIVE: There has been an increasing trend in the use of diagnostic imaging in the clinical setting. This study aims to obtain the perspective of radiologists on the increasing demand for and possible perceived utility of radiologic examinations in the UP-Philippine General Hospital (UP-PGH).

MATERIALS & METHODS: This is a descriptive study wherein information was collected using a questionnaire adapted from the parent study. The radiologists were asked to rate the frequency of potential causes of increased demand for diagnostic imaging, their level of participation in the decision making of requesting physicians, and their perceived role in patient care using five-point scales. Responses were analyzed and ranked using the Likert scoring system, and grouped and ranked using Factor Analysis.

RESULTS: The latent factors that influence the increasing trend in the use of diagnostic imaging in the UP-PGH are, in order of decreasing significance: 1) lack of communication between radiologists and requesting physicians regarding appropriate use of diagnostic imaging; 2) patient demand for health assurance and fascination with technology; 3) demand for efficiency from radiologists; and 4) patient and physician insistence on proceeding with the examination.

CONCLUSION: According to the respondents, the most important causes of increased volume of radiologic examinations are the lack of communication between radiologists and requesting physicians, and the availability of new imaging technology. These can be addressed by maintaining a healthy relationship between the clinician and radiologist, as well as with the formulation of hospital policies that will ensure the appropriate allocation of limited resources.

SIMPLE AND COST-EFFECTIVE MEDICAL IMAGING SOLUTION SETUP IN COMBINATION WITH CLOUD TECHNOLOGY AS AN ALTERNATIVE TO CONVENTIONAL RIS-PACS

Lee Su Ann*¹; Edward Tan²; Wee Sixun²

¹*Department of Radiology, Quantum Medical Imaging, Singapore,* ²*Department of Information Technology, DCM Medical System, Malaysia*

LEARNING OBJECTIVE: This poster aims to

- illustrate a simple, relatively low-cost but robust medical imaging solution ('The Envelope') as an alternative to conventional RIS-PACS
- demonstrate the practicality of this setup at a few reference sites and
- highlight the advantages of this system versus conventional RIS-PACS

BACKGROUND: Conventional RIS-PACS systems are expensive, bulky and require extensive security setup. 'The Envelope' was developed to liberate such constraints. This is achieved by combining selected hardware, PACS storage repository and cloud technology, creating an affordable yet powerful solution for medical image archiving and communication.

FINDINGS AND/OR PROCEDURE DETAILS: DICOM images from modalities are transmitted to a local DICOM repository (Osirix MD) via port 11118. Images are then automatically forwarded to a gateway (Ambra) through port 104. HL7 messages if present, are parsed via port 12000. For external transmission via WAN connection, port 443 with TLS 1.2 end-to-end encryption are utilised to ensure integrity and privacy. Subsequently, images are further processed and stored via Ambra's patent split-merge technology. A registered user would then login to Ambra via a secured channel. At the backend, Ambra would combine anonymised DICOM data with respective metatags in its computer memory and transmit via encrypted means to the user's browser.

CONCLUSION: Recent advances in technology has enabled a RIS-PACS setup to be less complex and easily accessible without compromise of security and privacy. This decreases setup cost, time and space. RIS-PACS administrators and decision makers should therefore consider this alternative, which has been proven functional and practical.

BURNOUT: PREVALENCE AND ASSOCIATED FACTORS AMONG RADIOLOGY RESIDENTS IN THE PHILIPPINES

Rene Edward Samonte*¹; Stella Esther G. Cua¹

¹*Radiology, De La Salle University Medical Center, Philippines*

OBJECTIVE: Burnout is a state of mental and physical exhaustion related to work or caregiving activities. Increased attention is given to burnout among resident physicians because of the negative consequences associated with it. The author has not encountered any local published data on burnout rates among Radiology residents. Aim of the Investigation: To identify the prevalence rate of burnout among Radiology residents in the Philippines and the demographic and program-related factors associated with it.

MATERIALS & METHODS: This was a cross-sectional survey among 100 randomly selected residents during the scientific meetings of the Philippine College of Radiology-Residency Council. A 34-item survey, including four demographic and eight program-related questions and the 22-item validated Maslach Burnout Inventory- Health Services Survey- was administered. Emotional Exhaustion (EE), depersonalization (DP), and personal accomplishment (PA) scores were calculated using published normative data. Multiple logistic regression analyses were performed to identify predictors.

RESULTS: There were 87 responses. High EE, high DP and low PA scores were reported by 48%, 39% and 55% of respondents, respectively. The type of institution (government facility) where the resident is training ($p= 0.041$) correlated with high EE, male gender was a risk factor using the DP scale ($p = 0.048$), and relationship status (being single) correlated with low PA ($p = 0.012$).

CONCLUSIONS: High burnout prevalence was observed among Radiology residents in the Philippines. The predictors for burnout are gender, relationship status and the type of institution. Single, males and training in government institutions were more likely to experience burnout.

AUDIT TO ASSESS THE QUALITY OF RADIOLOGY MDT INPUT.

Aruba Nawaz Khattak*¹; Ummara Umer¹; Aman Nawaz Khan Ustrana¹; Faria Maqsood¹;
Zammara Sohail¹

¹Radiology, Rehman Medical Institute., Pakistan

OBJECTIVE: The purpose was to assess the quality of radiology input in the MDTM, whether the clinical question of the referrer was answered and whether radiology input in the MDTM led to any discrepancies.

MATERIALS & METHODS: A hospital-based descriptive prospective study was conducted at Rehman Medical Institute Peshawar from May to August 2019 over a span of 4 months, where weekly recordings were made of the MDTMs. A non-probability sampling technique was followed. The MDTMs were broadly categorized into two groups. Group A for Breast MDT where the MDT lead was a Breast Surgeon. Group B was for Liver MDT where the lead for MDT was an Interventional radiologist currently working at RMI. A total of 36 hours of MDTMs with 50 cases were followed (34 females, 16 males). Data was assessed based on the weightage of the say of the lead radiologist in the final decision made by the MDTM. The results of the meeting were gauged by a close-ended questionnaire devised by the researcher beforehand.

RESULTS: In 96 percent of cases, the final verdict was based on radiological input. 4 percent of cases had discrepancies.

CONCLUSION: According to our study of the 50 cases, only 2 cases reported a discrepancy in the view of radiologist versus the MDTM lead in devising a management plan. These discrepancies arose in the breast MDTM where the decision was based on oncological grounds. In all the cases the clinical questions of the referrer were answered.

SAFETY OF IOPROMIDE (ULTRAVIST) IN PATIENTS UNDERGOING COMPUTED TOMOGRAPHY EXAMINATION: A REVISIT

Sharanjeet Kaur Kartar Singh*¹

¹*Radiology, University Malaya Medical Centre, Malaysia*

OBJECTIVE: To investigate the safety of low osmolar, non-ionic contrast agent (Iopromide) in patients undergoing contrast-enhanced Computed Tomography (CECT) of thorax, abdomen and pelvis (TAP) in University Malaya Medical Centre (UMMC). Occurrence of drug reaction and the effect of CECT on serum creatinine (SCr) level were investigated. The relationship between obesity (based on CT volume) and ADR was also explored.

MATERIALS & METHODS: The cross-sectional study involved 330 patients that included in- and out- patients. All of these patients were given Iopromide during the CECT TAP and ADR was assessed in each patient within 48 hours. Pre- and post-procedure SCr was evaluated in all patients. Body fat was also measured based on CT volume.

RESULTS: There were 7 patients who developed mild ADR, 2 moderate and none developed severe ADR. Hypertension was a significant predictor of ADR (OR of 12.9, 95% CI 3-61) and $p=0.001$. There was an association between ADR and increased SCr where a significant number of subjects with ADR was found to have increased SCr (OR of 12.1, 95% CI 2-65) and $p=0.021$. Indians were more likely to develop increased SCr ($p=0.047$). There was no significant correlation between ADR with demographics. There was also no significant correlation between increased SCr with co-morbidities and timeline of SCr post procedure. No association seen between BMI, visceral and subcutaneous fat with ADR.

CONCLUSION: This study showed that hypertension was the main predictor for ADR and also patients with ADR were at higher risk of developing increased SCr post procedure.

WHAT GETS MEASURED, GETS BETTER MANAGED: A DESCRIPTIVE ANALYSIS OF LICENSED ZAMBIAN RADIOLOGICAL RESOURCES

Chitani Mbewe*¹; Pascalina Chanda-Kapata²; Veronica Sunkutu-Sichizya³; Nason Lambwe⁴; Nataliya Yakovlyeva⁵; Masauso Chirwa⁶; Birhanu T. Ayele⁷; Richard Denys Pitcher⁸

¹Radiology, Stellenbosch University, Tygerberg Academic Hospital, South Africa, ²Public Health and Research, Ministry of Health (MOH), Zambia, Zambia, ³Radiology Department, University Teaching Hospital (UTH), Zambia, ⁴Nuclear Medicine Unit of the Radiology Department, Ministry of Health (MOH), Zambia, Zambia, ⁵Department of Radiology, Copperbelt University (CBU) and Ndola Teaching Hospital, Zambia, ⁶Department of Social Sciences and Research, University of Zambia (UNZA), Zambia, ⁷Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa, ⁸Radiology Department, Stellenbosch University, Tygerberg Academic Hospital, South Africa

OBJECTIVE: Estimates indicate that two-thirds of the world's population lack adequate access to basic medical imaging services integral to universal health coverage (UHC). Furthermore, sparse country-level radiological resource statistics exist and there is scant appreciation of how such data reflect healthcare access. The World Health Organisation posits that one X-ray and ultrasound unit for every 50,000 people will meet 90% of global imaging demands. This study aimed to conduct a comprehensive review of licensed Zambian radiological equipment and human resources.

MATERIALS & METHODS: An audit of licensed imaging resources, using the national updated Radiation Protection Authority and Health Professions Council of Zambia databases. Resources were quantified as units or personnel per million people, stratified by imaging modality, profession, province and healthcare sector, then compared with published Southern African data.

RESULTS: Over half of all equipment (153/283 units, 54%) and almost two thirds of all radiation workers (556/913, 61%) are in two of ten provinces, serving one third of the population (5.49/16.4, 33.5%). Three-quarters of the national equipment inventory (212/283 units, 75%) and nearly ninety percent of registered radiation workers (800/913, 88%) are in the public sector, serving 96% of the population. Southern African country-level public-sector imaging resources principally reflect national per capita healthcare spending.

CONCLUSION: To achieve equitable imaging access pivotal for UHC, Zambia will need a more homogeneous distribution of specialised radiological resources tailored to remedy disparities between healthcare sectors and provincial regions. Analyses of licenced radiology resources at country level can serve as a benchmark for medium-term radiological planning.

AVOIDING RADON INHALATION IN RADIOLOGY DEPARTMENT

Abdullah Mohd Noh*¹; Nordin Ayoub¹; Siti Zurina Mat Noor¹; Norhafizah Zahari¹;
Mardhiyati Mohd Yunus¹

¹*Health Sciences Department, University Selangor, Malaysia*

OBJECTIVE: Most of the x-ray rooms are design to avoid any possibility of x-ray radiation to penetrate its wall. The rooms usually have no windows and its walls are totally coated by barium plaster. There is the possibility for radon to be accumulated inside these rooms. Long staying in the room that has a high amount of radon may cause significant health effects. The World Health Organization (WHO) reported that radon is the main cause of lung cancer for non-smoker persons.

MATERIALS & METHODS: In this study, short term measurement was applied to monitor the concentration of radon inside general x-ray and mammography rooms at the Medical Imaging Department in University Selangor (UNISEL). The amount of radon was monitored hourly through a passive diffusion chamber and detected by using Alpha Spectrometry.

RESULTS: The test results showed that each room has a different graph and the amount of radon accumulation. Their maximum reading of Radon concentration was recorded 338 Bq/m³ and 150 Bq/m³ respectively. Its concentration was higher during the weekend's time when the door is totally closed and dissipates gradually on the next working day to a healthy level below 100 Bq/m³ when the door is open for the whole working day.

CONCLUSION: It is strongly recommended to monitor the radon in these rooms to avoid inhalation of this type of natural radioactive gas and protect our body from unnecessary naturally occurring radiation beside man-made radiation.

DEEP LEARNING IN MEDICAL IMAGING - A BIT OF DEMYSTIFICATION

Li Kuo Tan*¹; Jeannie Hsiu Ding Wong¹; Raja Rizal Azman Raja Aman¹

¹*Biomedical Imaging, University of Malaya, Malaysia*

LEARNING OBJECTIVE: For practitioners in the field of medical imaging to gain basic understanding about the technique of deep learning (DL); to understand its basic premise, approach, and implementation.

BACKGROUND: Artificial intelligence (AI) – specifically DL – has exploded in popularity in the past five years, demonstrating paradigm-shift levels of performance in various fields including medical imaging. It is likely to bring about significant changes to clinical practice as its adoption increases. Compared to traditional AI techniques, DL makes almost no assumptions about the specific means of solving a problem; using only stacked layers of simple equations trained on data to derive a solution. This flexibility largely explains why DL is generalizable to many problem domains.

FINDINGS AND/OR PROCEDURE DETAILS: To utilize DL, practitioners have to (1) define their problem numerically, both for the input (e.g. image or lab result) and desired output (e.g. probability of disease outcome), and (2) collect large quantities of data for training and testing. The actual DL frameworks are of comparatively minor importance; the field has settled on a few design variants for each class of problems (e.g. “U-nets” for image segmentation). In DL, the data is what matters.

CONCLUSION: DL is an AI technique where computers are trained to solve a problem by iterating millions of times over a set of training examples. If a practitioner can define their problem’s inputs and desired outputs numerically and collect large quantities of example data, then DL is relatively easy to implement and will likely give good results.

**AUDIT TO ESTIMATE THE PROPORTION OF RADIOLOGY REPORTS
CHANGED DURING DOUBLE READING OF IMAGES AND TO ASSESS THEIR
POTENTIAL CLINICAL IMPACT.**

Aruba Nawaz Khattak*¹; Ummara Siddique Umer¹; Aman Nawaz Ustrana¹; Hania Moiz¹;
Seema Gul¹; Shahjehan Alam¹; Aliya Sharif¹

¹Radiology, Rehman Medical Institute, Pakistan

OBJECTIVE: To estimate the proportion of radiology reports that were changed during double reading of images and to assess the potential clinical impact of these changes.

MATERIALS & METHODS:

Study type: Cross sectional observational retrospective.

Survey analysis: 1500 reports were randomly selected retrospectively (CT, MR, X ray, Ultrasound, Mammograms) between January 2018 and June 2019.

Data analysis:

- Rate of double reading.
- Work hours consumed by double reading.
- Clinical importance of changes to radiology reports, that was estimated retrospectively.

RESULTS: A mean double reading rate of 19% (n = 285) was observed. Maximum double reading was done for MRI followed by CT, X ray, Ultrasound and mammograms. Double reading resulted in up to 25% increase in the time consumed for reporting. When done by a sub specialist (like in coronary CT, musculoskeletal MRI), double reading almost invariably changed the initial report to a higher degree. Chest radiologists and sonologists made more clinically important changes than other second readers. Changes were made less frequently with CT abdomen. The severity of clinically important findings in double read radiology images was increased in 30% of the cases.

CONCLUSION: Double reading has a major impact on workflow and output directly by consuming work hours. The rates of clinically important changes to radiology reports following double reading indicate that some quality assurance of radiological interpretation is warranted.

A COMPENDIUM OF CLASSIC MACHINE LEARNING VIS A VIS DEEP LEARNING ALGORITHMS IN IMAGING APPLICATIONS.

Pranav Ajmera*¹

¹Radiology, Dr D.Y.Patil Medical College, Hospital and Research Centre, DPU, Pune-411018, India

LEARNING OBJECTIVE:

- Explain to our readers what and how of machine learning(ML) and deep learning(DL) algorithms.
- Compare the performance and pros/cons of each.
- To give an overview of the application of these algorithms.

BACKGROUND: Artificial intelligence (AI) is the technique which enables the machine to emulate human behaviour, a subset of which is machine learning. On being provided with sample data– also known as “training data”, ML algorithms automatically build a mathematical model without being specifically trained to. Deep learning is a subset of ML in AI, that has networks capable of utilizing unstructured data that is to say, of unsupervised learning, also known as a deep neural network (DNN). In this exhibit, we will give a comparative analysis of the performance, pros, cons of some of the commonly used classical ML classifiers to the deep learning Convolutional Neural Network (CNN).

FINDINGS AND/OR PROCEDURE DETAILS: A feature common to any study using ML is to have separate data-sets both for training and for subsequent testing. The sequence of steps includes data gathering, data pre-processing, choosing a suitable model, training and then testing it. The process of fine tuning continues even after. There are many differences between classical ML algorithms and DL algorithms right from pre-processing of data to the time requirements.

CONCLUSION:

- Classical ML requires our active participation in selection and dimensionality reduction to arrive at decent results whereas with DL, these processes are automated.
- Familiarity with the upside and downside of each ML approach can help select the optimal algorithm for a given research question or clinical application.

RADIATION AWARENESS AMONGST RADIATION WORKERS IN DIAGNOSTIC RADIOLOGY DEPARTMENT OF A PUBLIC SECTOR HOSPITAL IN KPK

Tahira Nishtar*¹

¹*Radiology Department, Lady Reading Hospital, MTI, Peshawar KPK, Pakistan*

OBJECTIVE: To determine the level of improvement amongst radiation workers regarding knowledge of ionizing radiations and principles of radiation protection both for staff and patients while performing routine diagnostic procedures after attending a dedicated refresher course on radiation awareness and protection.

MATERIALS & METHODS: Forty six (38 male and 08 female) radiation workers participated in this refresher course and have filled the pre- and post-session performance on basics of ionizing radiations, cellular interaction /radio-biology, biological effects of ionizing radiation, radiation protection principles and strategies to minimize patient dose which lasts for one month.

RESULTS: Mean scores of all radiation workers in pre-session assessment was 39.35% which improved to 61.95% after attending the dedicated course designed with a mean difference of 22.6%. The female radiation workers awareness level improvement was higher (pre: 36.25%, post: 59.38%) than male workers (pre: 40.0%, post: 62.5%). The workers having intermediate and higher qualification did better (pre: 38.42%, post: 61.45%) than the ones who have only metric (pre: 43.75%, post: 64.38%) and workers having relevant diploma in radiology scored better (pre: 42.86%, post: 65.48%) than the workers who have not done relevant diploma (pre: 37.0%, post: 59.0%).

CONCLUSION: The awareness amongst radiation workers can be improved by consistently conducting sessions on radiation protection and updating them time to time about the new developments and researches in their field to boost their skills and it can be achieved with the coordination & cooperation of hospital & regulatory bodies and through concurrent efforts and planning.

IDEAL PRACTICE FOR AVOIDING RADON ACCUMULATION IN X-RAY ROOM

Abdullah Mohd Noh*¹; Nordin Ayoub¹; Siti Zurina Mat Noor¹; Norhafizah Zahari¹;
Mardhiyati Mohd Yunus¹

¹*Health Sciences, University Selangor, Malaysia*

OBJECTIVE: Monitoring the concentration level of radon inside any building may provide critical and meaningful information regarding its accumulation and dissipation. The high amount of radon inhalation may cause significant unwanted long health effects such as lung cancer as reported by the World Health Organization (WHO).

MATERIALS AND METHODS: In this study, the concentration level of radon was monitored weekly inside the room that was being identified to have high radon concentration levels such as the x-ray room in the Medical Imaging Laboratory of the University Selangor. The amount of radon was recorded daily for seven sequence days including weekends through a passive diffusion chamber using Alpha Spectrometry devices.

RESULTS: The test results showed that there is high radon accumulation exceed a healthy level of 100 Bq/m³ inside few tested rooms. These rooms have a different graph of radon accumulation and dissipation. Its concentration was higher in the x-ray room during the weekend days and dissipates gradually on the next working day to a healthy level in the evening. It was noticed that opening the room's door after a weekend break may reduce the high amount of radon accumulation on the next day and keep the door be opened all time including weekends may prevent the process of radon accumulation inside that room.

CONCLUSION: It is most recommended to keep the door of the x-ray room to be opened all the time except for clinical procedure in order to avoid the high potential of radon accumulation and its possible harm to human lung.

RADIOLOGISTS' PERCEPTION ON TELERADIOLOGY PRACTICE TOWARDS QUALITY HEALTHCARE IN THE PHILIPPINES

Jerik V. Yumol*¹; FR. Jerry R. Manlangit¹

¹*Graduate School, University of Santo Tomas, Philippines*

OBJECTIVE: Teleradiology is a relatively new concept in the Philippines. To know the perception of Filipino radiologists regarding the implications of teleradiology in the Philippines are important in order to develop a better quality healthcare system in the country. The main purpose of this study is to know the perceptions of Filipino radiologists on teleradiology practice, particularly on its value, challenges, and useful strategies to improve quality health care in the Philippines.

MATERIALS AND METHODS: This quantitative-descriptive study was conducted among members of the Philippine College of Radiology (PCR) by answering a survey questionnaire adapted from the study in the United States (US) by Rosenkrantz in 2019, from September 26 to October 2, 2020. One-way ANOVA was used to compare the perceptions of Filipino radiologists across different PCR chapters.

RESULT: There are 360 participants, 51% male and 49% female with a mean age of 43. There is no significant difference among the perceptions of Filipino radiologists on teleradiology practice across the different PCR chapters regarding its value to the practice, how challenging the practice of teleradiology is, and useful strategies for improvement, as indicated by F-values > 0.05.

CONCLUSION: The perceptions of Filipino radiologists on teleradiology practice, particularly on its value, challenges, and useful strategies to improve towards quality health care in the Philippines across the different chapters of PCR are the same.

COMPARISON OF MACHINE LEARNING ALGORITHMS FOR CLASSIFICATION OF MAMMOGRAPHIC MASSES

Silpa C. Raju*¹; Rajiv C. Raju²

¹*College of Medicine, University of Illinois College of Medicine, United States,* ²*Department of Radiology and Biomedical Imaging, Yale School of Medicine, United States*

OBJECTIVE: To compare the performance of 14 machine learning classification algorithms for classifying mammographic masses as benign or malignant.

MATERIALS AND METHODS: Our study used a dataset of 829 cases of masses found on full field digital mammography that were pathologically confirmed as benign or malignant at Institute of Radiology of the University Erlangen-Nuremberg between 2003 and 2006. Each case that was used had four predictive attributes (mass margins, mass shape, mass radiodensity, and patient age) and a classification attribute (benign vs. malignant). Performance of the algorithms was measured using correct classification rate, Area Under the Receiver Operator Curve (AUC), and Kappa statistic. Stratified ten-fold cross validation allowed for the use of one dataset for both training and testing of the classifier. Weka machine learning platform was used for all analyses. ZeroR was used as the control algorithm.

RESULTS: The highest performing algorithm was ClassificationViaRegression, with a correct classification rate of 80.7%, AUC of 0.860 and Kappa of 0.615. The control algorithm, ZeroR, had 51.5% correct classification, AUC of 0.496 and Kappa of 0. Algorithms BayesNet, Logistic, MultilayerPerceptron, and NaiveBayes also had performance measures comparable to ClassificationViaRegression. The worst performing non-control algorithm was VotedPerception with 72.9% correct classification, AUC of 0.779, and Kappa of 0.463. RandomTree, IBk, OneR, and RandomCommittee also had similarly low performance. SGD, SimpleLogistic, SMO, and Bagging performed slightly less well than the best algorithms.

CONCLUSION: ClassificationViaRegression was the best performing machine learning algorithm for this task in this dataset, but several algorithms showed similarly high performance.

USING MACHINE LEARNING IN RADIOLOGY: AN INTRODUCTION FOR THE NON-PROGRAMMER

Silpa C. Raju*¹; Rajiv C. Raju²

¹College of Medicine, University of Illinois College of Medicine, United States, ²Department of Radiology and Biomedical Imaging, Yale School of Medicine, United States

LEARNING OBJECTIVE: Introduce machine learning principles to those with no programming experience.

BACKGROUND: Machine learning and data mining techniques have proven to be extremely powerful tools to in many fields, including medical imaging. Freely available software packages such as WEKA now make advanced machine learning techniques accessible to the non-programmer clinician. If clinicians learn the basic principles of machine learning, they will be better equipped to identify problems that can be solved with machine learning techniques. This can lead to more fruitful collaboration between clinicians and machine learning experts.

FINDINGS AND/OR PROCEDURE DETAILS: The fundamental task of machine learning will be defined and explained. General features of problems which are best suited to machine learning methods will be discussed. Using a concrete example of a Computer Aided Diagnosis system and a real-world dataset, an example of machine learning will be illustrated using the freely available multi-platform WEKA software package. Methods to evaluate the performance of machine learning algorithms such as the Receiver Operator Curve and Kappa Statistic will be explained and illustrated. The stratified tenfold cross-validation method will be illustrated. Internet links to the WEKA software and related resources will be provided.

CONCLUSION: After viewing this exhibit, the clinician should have a basic understanding of what machine learning is and what sorts of problems can be approached with machine learning methods. The clinician will also be able to experiment and explore machine learning using the WEKA software and understand how to evaluate the effectiveness of a machine learning system.

BURNOUT: JOB RESOURCES AND JOB DEMANDS ASSOCIATED WITH LOW PERSONAL ACCOMPLISHMENT AMONG RADIOLOGY RESIDENTS IN THE PHILIPPINES

Rene Edward Samonte*¹; Marie Rhiamar Sauler-Gomez¹

¹*Radiology, De La Salle University Medical Center, Philippines*

INTRODUCTION: Burnout is a state of mental and physical exhaustion related to work or caregiving activities. Burnout occurs when job demands exceed job resources. Job demands-resources (JD-R) Theory of Organizational Psychology and Behavior states that job demands include work overload, role ambiguity, role conflict, and job insecurity, while job resources include autonomy, social support from colleagues, performance feedback and supervisory coaching. The main purpose is to identify the statements on Job Demands and Resources associated with a low personal accomplishment among Radiology residents in the Philippines.

METHODOLOGY: A 34-item online survey was administered in July 2020 to Philippine Radiology residents -an 8-item Likert-type questions from the Maslach Burnout Inventory-Human Services Survey (Medical Personnel), 19 job demands-resources questions and 7 demographic and program-related questions. Multiple statistical analyses were made.

RESULTS: “The skills and knowledge that I am building are important and helpful to society” (p=0.020), “I am excited about my career when I think about my long-term impact as a radiologist” (p=0.002) and “I am comfortable in my current role as a resident” (p=0.013) all positively correlated with Personal Accomplishment.

CONCLUSION: Philippine Radiology residents score higher in Personal Accomplishment when they feel that the skills and knowledge they are building are important to society; they feel excited about their career and long-term impact as radiologists; and they are comfortable in their role as residents. Supporting opportunities that reinforce their contribution to society, establishing career guidance mentorship, and improving feedback mechanism regarding their training may improve residents’ sense of Personal Accomplishment.

MOBILE APP DEVELOPMENT FOR CLINICAL REFERRAL GUIDELINES IN RADIOLOGY

Francis Tang*¹; K Y Kwok¹; Y C Wong¹; Lilian Leong¹; C K Law¹

¹*Education Committee, Hong Kong College of Radiologists, China*

OBJECTIVE: Medical algorithms can sometimes be presented in two-dimensional flowcharts where all available pathways can be followed respectively to reach a specific clinical management endpoint. This project aims to produce a mobile app to provide user-interactivity for such clinical algorithms.

MATERIALS AND METHODS: The Hong Kong College of Radiologists published the second edition of her clinical referral guidelines in 2017. These guidelines comprise 64 chapters to include 11 organ systems. Each guideline consists of an algorithm (a decision tree or flowchart), a set of associated remarks and references. A project had started in early 2019 to attempt to reformat the original paper or PDF version of the guidelines to render them more accessible on a mobile phone and at the same time providing interactivity at each decision node of a radiological algorithm so that a user can choose from all the clinical options to iron out a specific pathway to reach a referral endpoint. All the user's chosen nodes are recorded on screen for easy checking in case any changes are necessary. The original PDF guideline can also be retrieved for visual comparison though somewhat limited by the small screen of most phones.

RESULTS: Interested readers can install from the links below. Apple App Store link: <https://apps.apple.com/hk/app/hkcr-referral-guidelines/id1542372117?l=en> Google Play Store link: <https://play.google.com/store/apps/details?id=org.hkcr.guideline>

CONCLUSION: Provision of point-and-click on choices at decision nodes of a set of clinical referral guidelines in radiology has been implemented with a mobile app enhancing the original paper or PDF version by acting as its interactive pocket-sized companion in the clinic.

**DEVELOPMENT OF PSYCHOSOCIAL ONCOLOGY AND SUPPORTIVE CARE
(PSOSC) GUIDELINES FOR RADIATION THERAPIST (RTTS) AND ITS
FEASIBILITY: A SYSTEMATIC REVIEW**

Nor Aniza Azmi*¹; Nur Athirah Khamsani¹; Farah Wahida Zambahari¹; Chan Caryn Mei Hsien¹; Ahmad Syahmiuddin Shamsuddin¹; Amelia Anak Rejos¹, Zul Iskandar Johari¹

¹*Diagnostic Imaging and Radiotherapy, Universiti Kebangsaan Malaysia, Malaysia*

OBJECTIVE: This study focused on comparison of the PSOSC guidelines from various countries and possible feasibility to be adapted in the Radiotherapy department and to recommend some improvements to be used in development of PSOSC guideline for RTTS.

MATERIALS AND METHODS: This systematic review was conducted based on standard guideline of PRISMA. The literature search was performed via PubMed and Wiley Online Library databases. Duplicated articles and guidelines were removed. The full-text papers retrieved and reviewed using guideline extraction criteria to identify the psychological and social effects or problems covered by the guidelines.

RESULTS: The search strategy from databases identified 6171 guidelines with 1070 duplicates. Total 57 guidelines have been screened full text and 9 were removed. Only guidelines covering the management for psychological and social effects have been selected. About 41.7 % of the guidelines have discussed anxiety, distress and depression. Total of 37.5% recommend the management of psychological and social effects in sexual health/dysfunction and less than 20% of guidelines in cognitive dysfunction/disorder, and spiritual/religious concern and patient(s) experience the body changes. About 33.3% have touched issues regarding pain and symptoms management and about 22.9% of the total guidelines recommend communication issues.

CONCLUSION: This study has compared the guidelines regarding PSOSC for RTTs from eight countries and its feasibility to be adapted in the RT department in Malaysia have been screened using systematic review and recommendations for improvement in current practice have been developed to help RTTs to expand their understanding and skills.

**ARTIFICIAL INTELLIGENCE IN AUTOMATED TRIAGING OF CHEST X-RAY
DURING COVID 19 PANDEMIC: OUR EARLY EXPERIENCE ON EARLY
ADOPTER IN MALAYSIA**

Ezamin Abdul Rahim*¹; Mohd Khairil Anwar Ramli¹

¹*Radiology, UPM, Malaysia*

LEARNING OBJECTIVE: This was a pilot study to determine the technology adoption rate of a new automated artificial intelligence (AI) system called “Putralytica” after a webinar promoting the AI system

BACKGROUND: Chest X-Ray being the commonest imaging examination performed and the commonest medical imaging examination backlogs in the medical fraternity. We develop an artificial intelligence triaging system called “Putralytica” based on Convolutional Neural Network that can reliably triage normal from abnormal chest X-ray. Early adopters are essential to provide feedback to help the innovators refine and promote the product. The early adopter is defined as the second cohort of individual or entity who start early using a new technology.

FINDINGS AND/OR PROCEDURE DETAILS: The newly developed AI system was introduced during a local but with nationwide view distribution virtual webinar entitled “Artificial Intelligence: Can it help in diagnosing Tuberculosis?”. The viewer of the particular seminar at the time of this manuscript was written was 7128. The login user details were rising from 22 users (prior to introduction) to up to 231 users within 3 months. The adoption rate was 90.4% based on Product Adoption Rate formula ($\text{New Users} \div \text{Total Users} \times 100\%$). The main limitation of this study was the formula only measure system activation rate but not measuring utilization per users.

CONCLUSION: The technology adoption rate of automated Chest X-Ray “Putralytica” was relatively higher than expected in a post-introductory lecture of a local widely distributed single webinar.

STRUCTURED OR PROSE REPORT? A SURVEY ON THE PREFERENCES OF REFERRING CLINICIANS ON THE STYLE AND CONTENT OF RADIOLOGY REPORTS

Kamille Comilang-Martinez*¹

¹*Radiology, Davao Doctors Hospital, Philippines*

OBJECTIVE: The ideal format for the radiology report has not been established. This study aimed to determine preferences of referring clinicians on the format and content of radiology reports. It described clinicians' satisfaction with current radiology reports, identified preferred report inclusions, the style and content best preferred in a routine ultrasound with normal and abnormal findings, and stat ultrasound with abnormal findings; and determined if any difference exists among the preferences of clinicians from different specializations.

MATERIALS AND METHODS: This was a questionnaire-based descriptive correlational study. Residents and consultants from Internal Medicine, Surgery, Pediatrics, and Obstetrics and Gynecology in a tertiary hospital were the respondents. Mean, standard deviation, frequency, and percentage were used. The Kruskal-Wallis, Wilcoxon rank, and Mann-Whitney tests were used to check the significant differences of various populations.

RESULTS: Ninety-nine of 136 respondents participated in the study. Majority were satisfied with the current radiology reports (rated 8/10). An impression (94.95%), recommendation for further imaging (93.94%), and sizes of the structures imaged (92.93%) were the most important report inclusions. Respondents preferred detailed itemized report most, then the detailed prose report, moderate itemized report, and moderate prose report. No significant difference was noted for the preference of itemized over prose reports and among the clinicians' preferences despite coming from different specializations.

CONCLUSION: Clinicians preferred a detailed report. Structured detailed reporting was the best preferred. There was no significant difference in itemized over prose reporting, suggesting that overall completeness is valued over report style.

INTRACRANIAL HEMORRHAGE DETECTION IN CT SCAN USING ARTIFICIAL INTELLIGENCE

Anas Tharek*¹; Ahmad Sobri Muda¹; Aqilah Basseri Huddin²; Azzam Baseri Huddin¹

¹*Radiology Department, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia,* ²*Electrical, Electronic and System Engineering, UKM, Malaysia*

OBJECTIVE: Missed detection of intracranial haemorrhage in Head CT scan has significantly impacted patient morbidity and mortality. Early detection of intracranial haemorrhage enable patient to received appropriate treatment which in result give a better outcome. The advancement of computer science in artificial intelligence will help to aid the doctor in the detection of haemorrhage in head CT scan. We develop an algorithm model capable of detecting intracranial haemorrhage in head CT scan.

MATERIALS AND METHODS: This was a cross-sectional study using secondary data, in which the 200 data were collected from picture archiving communication system (PACS) in Hospital Serdang and HPUPM. The primary data will be anonymized and will be coded to secondary data. The data is divided into train, validation, and test sample. The algorithm model is trained using deep learning via Jupyter Notebook platform. To analyze the algorithm model performance, we are using confusion matrix to measure the accuracy, sensitivity, specificity, precision, and F1 score.

RESULTS: From 162 training data, 80 samples show true positive, 80 samples show true negative, 2 samples show false positive, and 0 samples show false negative. This algorithm model shows high sensitivity (1.000), high specificity (0.9591), high precision (0.9591), and high accuracy (0.9791) with F1 score of 0.9791.

CONCLUSION: We have proved that deep learning by using CNN enables us to create an accurate classifier that can differentiate between head CT scan with haemorrhage and without haemorrhage.

ARTIFICIAL INTELLIGENCE EVALUATION OF INTRACEREBRAL HAEMORRHAGE IN COMPUTED TOMOGRAPHY

Azzam Baseri Huddin*¹; Ahmad Sobri Muda¹; Wan Mimi Diyana Wan Zaki²; Aqilah Baseri
Huddin²; Anas Tharek¹

¹Radiology Department, UPM, Malaysia, ²Kejuruteraan dan Alam Bina, UKM, Malaysia

OBJECTIVE: AI-based techniques can be used to localize and measure the intracerebral hemorrhage (ICH) in computed tomography (CT). This study aims to develop an automated detection algorithm with higher sensitivity in ICH evaluation in comparison to the conventional method. This indirectly influences the patient's prognosis by reducing the risk of delay or misdiagnosis.

MATERIALS AND METHODS: Selected 50 CT brain images with primary ICH were used for three different measurement approaches 1) conventional Kothari-method, 2) AI-based method and 3) manually by radiologist marking, which is the ground truth. In the automated system, a convolutional neural network (CNN) is used to localize the ICH, followed by a thresholding technique to segment the ICH, and finally, the measurements are computed. The segmentation performance is measured using the Dice similarity coefficient. The automated ICH measurements are compared against the ground truth (automated-ground truth). Concurrently, the ICH measurements calculated using the conventional method are also compared against the ground truth (conventional-ground truth). The t-test analysis is performed between the sum squared error (SSE) of ICH measurements from the automated-ground truth and the conventional-ground truth.

RESULTS: The mean volumetric Dice similarity coefficients for the automated segmentation algorithm when tested against the ground truth is 0.859 ± 0.135 . The t-test analysis of the SSE between conventional-ground truth (median=5.45, SD=3.96) and automated-ground truth (median=0.73, SD=0.78) achieved p-value < 0.001 ($p=5.10E-9$).

CONCLUSION: The automated AI-based algorithm significantly improved the ICH surface area measurement from CT brain with higher accuracy and efficiency in comparison to the conventional method.

LOW DOSE CT GUIDED BIOPSIES- OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL

Mariam Malik*¹; Afshan Fayyaz¹

¹*Department of Radiology, Combined Military Hospital, Rawalpindi, Pakistan*

OBJECTIVE: To compare low dose CT Fluoroscopy(CTF) versus standard dose CT guided biopsy procedures in terms of diagnostic accuracy, intervention time and number of needle passes required for biopsy to be completed.

MATERIALS & METHODS: This retrospective study was conducted in CMH Rawalpindi from April 2013 to April 2014. 65 consecutive undergoing CT guided biopsies of lung, bone and muscle lesions under low dose CTF were compared with 60 patients from March 2012 to March 2013 who underwent biopsies at standard dose.

RESULTS: Needle passes for low dose protocol was 3 to 6 in low dose against 6 to 8 for standard dose (p value<0.05), DLP of 130 – 386.9 mGy*cm against 1270 – 1976 mGy*cm (p value< 0.05), intervention time for completion of biopsies 5 to 13 minutes versus 30 to 50 minutes (p value< 0.05) respective.

CONCLUSION: Biopsies performed under low dose CTF have 85% reduction in radiation dose, fewer number of needle passes and overall shorter intervention time.

ANALYSIS OF MECHANICAL THROMBECTOMY FOR ELDERLY PATIENTS IN OUR HOSPITAL

Takashi Matsumoto*¹; Gaku Matsumoto¹; Yuta Kawashima¹; Kazuki Hagiwara¹; Fumiaki Iwase¹

¹*Emergency And Critical Care Medical Center, Yamanashi Prefectural Central Hospital, Japan*

OBJECTIVE: The effectiveness of mechanical thrombectomy (MT) for ischemic stroke is obvious. Large registries also suggested that there were treatment limitations for severe and elderly cases. We are actively treating severe elderly patients, and we think it is important to evaluate the results of our treatment. The purpose of this study was to clarify the efficacy and safety of MT for the elderly.

MATERIALS & METHODS: We divided patients into the elderly group (over and equal to 80 years old) and the non-aged group (under 80 years old), analyzed in terms of the characteristics, treatment details, effectiveness, and safety of MT in our institution.

RESULTS: There was no difference in neurological severity and targeted arteries in two groups, but the proportion of cardiogenic emboli was higher in the elderly group (100%/71%, $p=0.043$), and the severity was slightly higher in the non-aged group (NIHSS 18/23). Regarding the time course, the non-aged group tended to be faster from onset to arrival at the hospital (99 minutes/74 minutes), but the reperfusion time was not different between the two groups (254 minutes/248 minutes). Defining the modified Rankin Scale ≤ 2 at 3 months after treatment as good outcome, we couldn't find difference between the two groups (41%/43%).

CONCLUSION: There were differences in patient background, MT is effective for elderly people over 80 years old.

A CASE REPORT OF SPONTANEOUS FRACTURE GUIDEWIRE, POST PLEURAL PROCEDURAL COMPLICATIONS

Mohd Azaad A Hamid*¹; Ahmad Hadif Zaidin¹

¹*Radiology, Hospital University Sains Malaysia, Malaysia*

INTRODUCTION: Incidence of pleural effusion has doubled over the past decade, most patients will require hospital admission for intercostal pleural drainage whilst one-year mortality is approximately 20 percent. Tube thoracostomy is a common procedure in which catheter is placed through the chest wall into the pleural cavity to drain out air or fluid.

REPORT: 44 years old male presented with chronic cough, progressive dyspnea and chest discomfort. He found to have right pneumonia with bilateral pleural effusion. Completed antibiotic, however his symptom were not improving. He had difficulty in breathing and required oxygen support to maintain saturation. Serial chest radiographs showed worsening of right pleural effusion with consolidative changes. Intraprocedural, there were difficulties with the pigtail catheter drainage insertion and placement because of the effusion is surrounded by adjacent lung consolidation. During removal of the flexible tip guidewire, unfortunately we notice end tip were fracture, even though fluid draining out freely through the catheter and clinically patient improving. Post-procedure bedside thoracic ultrasound and chest radiograph visible of fractured guidewire approximately 3.5cm in length within the right pleural space. Fracture guidewire then removed by snaring method performed under ultrasound guidance and manage to pull out through the catheter without complications.

CONCLUSION: Several factor contribute to fracture guidewire occurs mostly as a result of improper placement of the guidewire and catheter and being adhered to the consolidative lung tissue. The force applied during removal, resulting in stretching of the wire, which eventually leads to fracture.

RENAL ARTERY EMBOLIZATION FOR RENAL HEMORRHAGE AND IMPENDING HEMORRHAGE

Aman Nawaz Khan*¹

¹Radiology, Rehman Medical Institute, Pakistan

OBJECTIVE: To review the effectiveness of therapeutic trans-arterial embolization in controlling renal hemorrhagic emergencies irrespective of the cause of emergencies.

MATERIALS & METHODS: 10 vascular angiographies were performed in 10 patients (8 males and 2 females, age ranging from 15-70 years old) who were referred with hemorrhagic urological emergencies to the interventional radiology suite of Rehman Medical Institute Peshawar from July 2015 to December 2018. Embolization was performed with coils, polyvinyl alcohol particles and gel foam according to the clinical indication. Data on clinical indication, technique, site and type of bleeding lesions were obtained from a retrospective review of medical records. Success rate, clinical outcome and complications of the procedure were analyzed.

RESULTS: Indications of procedure including renal artery pseudo-aneurysm (3 patients), angiomyolipoma (3 patients), residual renal tumor (1 patient), renal cell carcinoma (1 patient), renal injury due to RTA (1 patient) and severe arterial stenosis (1 patient). Following renal artery embolization, complete hemostasis was achieved in all ten patients. All examinations were negative for active extravasation on post-embolization angiogram. There were no immediate or late serious complications.

CONCLUSION: Trans-arterial renal Emergency embolization is a safe, effective, minimally invasive treatment for renal hemorrhage. Because of the diversified arteriographic presentation of acute renal hemorrhage, proper selection of the embolic agent is a key to successful hemostasis.

ORTNER'S SYNDROME: THORACIC ANEURYSM PRESENTING WITH VOCAL CORD PALSY.

Khoirul Hadi Abd Aziz*¹; Ng Wei Lin¹

¹*Biomedical Imaging, University Of Malaya, Malaysia*

INTRODUCTION: Hoarseness of voice is a common presentation in a patient with vocal cord palsy and normally is unilateral. The most common cause is iatrogenic during surgery especially post thyroidectomy, follow by malignancy, infection and vascular pathology. Ortner syndrome or cardiovocal syndrome is a rare condition, described as hoarseness of voice secondary to recurrent laryngeal nerve palsy as the result of vascular abnormality along its course. The pathophysiology is due to compression or stretching of recurrent laryngeal nerve by neighbouring structures.

REPORT: A 69 years old man presented to the ENT clinic with history of hoarseness of voice for 5 months. No neck swelling, fever, chest pain or any constitutional symptoms. A diagnosis of left vocal cord palsy was done via direct laryngoscope. No lesion was seen on laryngoscope. A contrast enhanced computer tomography(CT) of the neck and upper thorax revealed an aneurysmal dilatation of the descending aorta with perivascular hematoma extending to the Aorto-Pulmonary window. The aneurysm was along the course of the left recurrent laryngeal nerve thus causing the hoarseness of voice. Patient was managed conservatively by cardiothoracic team.

CONCLUSION: This case illustrates that vocal cord palsy can be the first manifestation of thoracic aortic aneurysm also known as Ortner's Syndrome in the absence of cardiovascular symptoms. Hence, proper assessment needs to be done to identify the aetiology by analysing the whole course of vagus nerve as well as the recurrent laryngeal nerve on CT scan.

ACUTE DISSECTING MID BASILAR ARTERY ANEURYSM IN PEDIATRIC PATIENT TREATED WITH PARENT ARTERY OCCLUSION

Khairul Azmi*¹; Fadhli Mohamed Sani¹; Chan Kin Wong¹; Mohd Salahuddin Kamaruddin¹;
Nur Adura Yaakub¹; Norshazriman Sulaiman¹; Eric Chung¹; Ng Wei Lin¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia,*

INTRODUCTION: Pediatric basilar artery aneurysms (BA) are rare and pose significant challenges to the treating physician. Their 5-year morbidity–mortality is high, described as 80%, and rupture of BA is associated with a poor prognosis and high mortality rate within the first 48 hours. Acute and chronic dissecting aneurysms of the basilar trunk are known to have severe morbidity and 20% to 30% mortality. The management of these conditions requires a detailed understanding of the pathology and a multi-disciplinary approach in order to institute the correct treatment strategy. Treatment decisions are often complicated by an unpredictable clinical course and controversies on treatment strategy (deconstructive versus reconstructive).

REPORT: We presented a rare case of 11 year boy presented with sudden onset of left hemiparesis, vomiting and severe headache. Urgent MRI and diagnostic cerebral angiogram confirm the finding of acute dissecting mid basilar artery aneurysm with mass effect and adjacent acute pontine infarct. Multidisciplinary discussion of this case was made available for the best treatment options. The decision is made to treat this patient with parent artery occlusion at the origin of dissection segment after evaluation the collateral patent from both anterior and posterior circulation. The patient improve significantly and discharge well with MRS score 1 and follow up MRI show stable occlusion of the aneurysm.

CONCLUSION: How to select suitable endovascular treatment for acute dissecting basilar artery aneurysm is still a question. For this case, the decision to sacrifice vessel distal to the origin of the AICA maybe the most correct treatment.

RADIATION DOSE TO THE PATIENT'S EYE LENS THROUGH NEURO-INTERVENTIONAL RADIOLOGY PROCEDURES: WHAT EVERY INTERVENTIONAL RADIOLOGIST AND RADIOGRAPHER SHOULD KNOW

Mohammad Javad Safari*¹; Jeannie Hsiu Ding Wong²; Kwan Hoong Ng²

¹*Faculty of Physics, Ludwig-Maximilians- Universität München, Malaysia,* ²*Biomedical Imaging, University of Malaya, Malaysia*

LEARNING OBJECTIVE:

- Overview of current statements and recommendations on radiation dose limits for the lens of the eye.
- Review the literature concerning radiation dose received by the patient's eye lens during neuro-interventional procedures.
- Discuss the causes of high eye dose levels in fluoroscopic-guided interventional procedures and techniques to reduce radiation exposure to the patient without compromising the quality of diagnostic and/or treatment.

BACKGROUND: Fluoroscopic-guided interventional radiology procedures are generally regarded as beneficial, however long radiation exposure during these procedures exposes patients to the potential for tissue reactions. One of the organs at risk is the eye lens as it is one of the most radiosensitive organs. Familiarity with the factors leading to cataract formation and awareness of the means to mitigate the over-exposure problems are crucial for the interventional radiologists and radiographers.

FINDINGS AND/OR PROCEDURE DETAILS: We will review guidelines and recommendations on organ doses limits and methods for radiation dose reduction during fluoroscopic-guided interventional procedures. Latest developments in fluoroscopy technology and dose reduction techniques will be reviewed. The effect of various exposure parameters (e.g. frame rate, tube angle, imaging magnification) and accuracy of indirect dose measurement techniques (e.g. air kerma, kerma-area product (KAP)) will be explained.

CONCLUSION: Interventional radiologists and radiographers should have sound knowledge of radiation protection of patients and radiation risks. This will ensure radiation dose optimization to reduce the patient dose as well as scattered dose to the operators.

ENDOVASCULAR TREATMENT FOR INTRACRANIAL DURAL ARTERIOVENOUS FISTULA WITH LIQUID EMBOLIC AGENTS

Khairul Azmi Abd Kadir*¹; Muhammad Zulhelmi Ahmad¹; Fadhli Mohamed Sani¹; Chan Kin Wong¹; Mohd Salahuddin Kamaruddin¹; Nur Adura Yaakub¹; Norshazriman Sulaiman¹; Eric Chung¹; Ng Wei Lin¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia*

OBJECTIVE: Intracranial dural arteriovenous fistula (DAVF) are condition when there is abnormal arteriovenous communication in the dura. Patients might come with variable symptoms from asymptomatic to haemorrhagic symptoms. Treatment of this condition are depending various patient's factor. Endovascular embolization is currently the mainstay treatment for this condition. In this study, we will review the outcome of patients who underwent this treatment.

MATERIALS & METHODS: This retrospective study reviewed 10 patients who were diagnosed with dural arteriovenous fistula from 2009 to 2019. Clinical information was extracted from medical records, radiographic data, complications and follow-up records. Demographic and clinical data, angiographic features of the dural arteriovenous fistulas, procedural parameters, complications, treatment success, follow-up imaging, and clinical outcome were assessed.

RESULTS: From 10 subjects, there were 6 men and 4 women included, presenting symptoms were haemorrhagic with neurological deficits in 6 patients (60%), non-haemorrhagic neurologic defects (NHNDs) in 4 patients (40%). There were 9 patients who received trans-arterial embolization, 1 patient had failed Trans-arterial approach and then switched to Transvenous approach and had partial embolization with 50% nidus remaining. One patient had post-embolization intracranial bleed and died. The 8 other patients (80%) had complete obliteration of the fistula.

CONCLUSION: Endovascular embolization has been proved an effective and safe method treating these complex cerebrovascular conditions with the integration of advanced endovascular devices, embolic materials and angiography.

EARLY EXPERIENCE IN ENDOVASCULAR THERAPY FOR ACUTE ISCHAEMIC STROKE WITHOUT GENERAL ANAESTHESIA

Khairul Azmi Abdul Kadir*¹; Chan Kin Wong¹; Fadhli Mohamed Sani¹; Mohd Salahuddin Kamaruddin¹; Nur Adura Yaakup¹; Eric Chung¹; Ng Wei Lin¹

¹*Biomedical Imaging, University Malaya Medical Centre, Malaysia*

OBJECTIVE: Acute ischaemic stroke patients requires timely restoration of cerebral perfusion to minimize damage and salvage ischaemic brain tissue prior to infarction. Endovascular therapies are the first line treatment for large vessel occlusion patients. General anaesthesia is preferred initially, however local anaesthesia & sedation is now the new mainstay of patient control in view of shorter time to treatment initiation, reduced risk of intraoperative hypotension, reduced risk of postoperative respiratory complications and allows quicker neurologic assessment post endovascular therapy.

MATERIALS & METHODS: All 14 patients that are eligible and underwent endovascular therapy for large vessel acute ischaemic stroke in 2019 are recruited into this study. The thrombuses are retrieved using either A Direct Aspiration First Pass Technique (ADAPT) or stent retriever. All patients were sedated and given local anaesthesia by the on-duty neurologist.

RESULTS: Mean age is 63 years (range from 37 to 79). 10 (71.4%) of the large vessel occluders involves the MCA (M1 or M2), 3 involves the terminal ICA (21.4%) and 1 involves the right vertebral artery (7.1%). Endovascular therapy - total of 7 (50%) are done using ADAPT only, 3 (21.4%) using combination of ADAPT/retriever and 4 (28.6%) solely on stent retrievers. Endovascular therapy is successful in 12 cases (85.7%) and failed in 2 (14.3%) despite combination technique. No procedure related complications recorded.

CONCLUSION: From our early experience, endovascular treatments in acute ischaemic stroke without general anaesthesia shows favourable results with no procedure related complications recorded in all cases.

**SUCCESSFUL EMERGENT ENDOVASCULAR MECHANICAL
THROMBECTOMY (EMT) FOR LIFE THREATENING CEREBRAL VENOUS
THROMBOSIS (CVST) IN COMA.**

Khairul Azmi Abdul Kadir*¹; Lau Kar Foo²; Toh Tsun Haw²; Sharon Tai Mei Ling²; Fadhli Mohamed Sani¹; Chan Kin Wong¹; Mohd Salahuddin Kamaruddin¹; Nur Adura Yaakub¹; Norshazriman Sulaiman¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia,*

²*Department Of Medicine, University Malaya Medical Centre, Malaysia,*

INTRODUCTION: Cerebral venous sinus thrombosis (CVST) is a relatively uncommon cause of stroke in adults. The clinical course of CVST is also highly variable. In particular, coma has been noted as a predictor of poor outcome. The standard treatment for CVST in adults is systemic anticoagulation, which can lead to recanalization. Endovascular mechanical thrombectomy (EMT) is considered as possibly indicated in the event of failure to respond to anticoagulation or a comatose state. However, the role of endovascular therapy is unclear. Here, we describe a case of successful emergent EMT of life-threatening CVST in comatose state that recovered after mechanical thrombectomy (MT).

REPORT: 32 years old lady, post partum 10 months with no previous medical illness presented with complaint of having severe headache with progressive deterioration of her consciousness requiring intubation and ventilatory support. CT scan of the brain shows diffused CVST with cerebral edema. Her condition deteriorated despite early treatment of anticoagulant with cerebral hemorrhage and worsening intracranial hypertension and thus was referred for mechanical thrombectomy. Emergent EMT was performed for CVST using a combination technique of stent-retriever and direct aspiration thrombectomy (“Solumbra” technique) with good recovery post procedure. She was extubated 4 days’ post thrombectomy and was discharged well with warfarin.

CONCLUSION: Patients with life threatening cerebral venous thrombosis and in comatose state warrants endovascular mechanical thrombectomy as soon as possible.

MALEFICIENT'S HORN LIKE APPEARANCE MYXOMATOUS SACCCULAR ANEURYSM OF THE RIGHT MIDDLE CEREBRAL ARTERY: AN EVIL CAUSED BY THE ATRIAL MYXOMA.

Khoirul Hadi Abd Aziz*¹; Chan Kin Wong¹; Fadhli Mohamed Sani¹; Mohd Salahuddin Kamaruddin¹; Khairul Azmi Abd Kadir¹; Nur Adura Yaakub¹; Norshazriman Sulaiman¹

¹*Department of Biomedical Imaging, University Malaya Medical Centre, Malaysia,*

INTRODUCTION: Atrial myxoma is a benign cardiac tumour which tend to cause peripheral embolism. Normally, the diagnosis was made either as a sequel of embolization phenomenon in the brain or due to local effect within the heart. Systemic embolization to the brain is normally associated with stroke, however aneurysm is also reported but rare. In this patient, the development of multiple cerebral aneurysms occurred after 9 years of operation.

REPORT: This is a case of 53 years old lady with previous history of stroke on 2011. She regained full neurological resolution after 1 year of rehabilitation. Echocardiogram done after 1 month noted left atrial myxoma and confirmed by CT pulmonary artery. The mass is successfully operated, and patient recovered very well after that.

She presented again 8 years later with stroke like symptoms. Otherwise no weakness, nausea or vomiting and no constitutional symptoms. Noo neurological deficit on clinical examination. CT scan and MRI of the brain with Cerebral Angiogram showed 2 fusiform aneurysms located at the distal M1 segment of right MCA and P2 segment of left PCA. Case was discussed in Neurology conference with primary team and decided for conservative management.

CONCLUSION: Atrial myxoma is a benign tumour, the consequences of the tumour embolized must be taken seriously which may lead to stroke or myxomatous aneurysm of the cerebral arteries.

OBTURATOR HERNIA : A RARE CAUSE OF SMALL BOWEL OBSTRUCTION DIAGNOSED ON CT

Noor Zulaika Rusli*¹; Asiah Zulkifly Apandi¹; Zurina Abdul Wahab¹

¹*Radiology Department, Hospital Tuanku Ampuan Najihah, Malaysia*

INTRODUCTION: Obturator hernia is one of the rare forms of abdominal hernia, which is commonly an unsuspected cause of intestinal obstruction. Obturator hernia is defined as a viscus herniation through the obturator canal, which contains the obturator nerve and vessels. The canal is bounded superiorly and laterally by the pubic bone and inferiorly by the obturator membrane. The clinical symptoms are often vague and non-specific, such as abdominal pain, vomiting, nausea and constipation. Compression of the obturator nerve by the hernial sac produces the pathognomonic Howship-Romberg sign, which is seen in 15-50% of obturator hernia cases. An early diagnosis is crucial to prevent complications. Surgery is the only mode of treatment. Laparotomy via midline incision was performed for this case as it offered better exposure and facilitated bowel resection. The mortality rate for patients with obturator hernias is high, ranges from 12% to 70%.

REPORT: 92-year-old lady complaining of abdominal discomfort, vomiting and absent bowel motion. There was no evidence of hernia upon examination. Abdominal x-ray showed generalized small bowel dilatation. CECT abdomen was performed, demonstrated herniation of a fluid-filled small bowel loop through the right obturator foramen. Thus a diagnosis of right-sided obturator hernia was made and urgent laparotomy was performed. Intraoperatively, a knuckle of small bowel was found herniated through the right obturator canal. Short segment of small bowel was resected and anastomosed. The recovery period was uneventful.

CONCLUSION: CT is the most accurate imaging modality for pre-operative diagnosis. Early diagnosis and surgical intervention are essential to yield a better outcome.

INTRA-PROCEDURAL COELIAC ARTERIO-PORTOGRAPHY COMPUTED TOMOGRAPHY (ICAP-CT) FOR TRANSARTERIAL CHEMOEMBOLIZATION (TACE): A MALAYSIAN EARLY EXPERIENCE

Anis Shafina Mahfudz*¹; Andarias Yangkat²; Izazul Hussin²; Mohd Rizal Roslan²

¹Department of Radiology, Universiti Teknologi MARA, Malaysia, ²Department of Radiology, Hospital Selayang, Malaysia

LEARNING OBJECTIVE:

- Review advantages of hybrid angiography-computed tomography (CT) technology in interventional radiology.
- Review usage of CT arterio-portography (CTAP) and CT hepatic arteriography (CTHA) for the detection of hepatocellular carcinoma (HCC).
- Describe intra-procedural coeliac arterio-portography computed tomography (iCAP-CT) techniques and its advantages.

BACKGROUND: Hybrid angiography-computed tomography (CT) system sees the integration of an angiography unit with a CT scanner that has been aligned using a common patient table. This hybrid setup enables interventional radiologists to perform conventional fluoroscopy, digital subtraction angiography and CT scanning for a patient without the need for multiple patient transfers thus minimizing risk of infection, catheter displacement and time loss in between. CT arterio-portography (CTAP) and CT hepatic arteriography (CTHA) is considered the most sensitive modality for the detection of hepatocellular carcinoma (HCC). For the CTAP and CTHA imaging, dual cannulation of the superior mesenteric artery and hepatic artery is required, which prolongs procedure time particularly where some institutions perform bilateral femoral artery punctures for cannulation and image acquisition. Furthermore, performing a CTHA after CTAP becomes delayed as it requires selective cannulation of the hepatic artery using a microcatheter.

FINDINGS AND/OR PROCEDURE DETAILS: We describe the usage of intra-procedural coeliac arterio-portography computed tomography (iCAP-CT) prior to performing transarterial chemoembolization (TACE) for patients with hepatocellular carcinoma. Once iCAP-CT is performed, three-dimensional (3D) reconstruction of the hepatic vasculature and multimodality fusion imaging is performed.

CONCLUSION: iCAP-CT technique is a novel technique which reduces TACE procedural time, radiation and contrast exposure whilst improving intra-procedural tumour visualization and localization.

**ENDOVASCULAR TREATMENT OF CAVERNOUS SINUS DURAL
ARTERIOVENOUS FISTULA VIA RADIAL ARTERY AND MEDIAN CUBITAL
VEIN**

Tan Wen Nian*¹; Arvin Rajadurai¹; Dhayal Balakrishnan²

¹Radiology, Hospital Sungai Buloh, Malaysia, ²Radiology, Sarawak General Hospital, Malaysia

INTRODUCTION: Carotid cavernous fistulas(CCF) are pathological arteriovenous shunts where blood from the carotid artery flow into the cavernous sinus. The current mainstay of therapy is endovascular treatment which can be performed via transarterial access, transvenous access or both.

REPORT: We present a case of 75-year-old gentleman who presented with right eye redness, pain and diplopia. His clinical examination revealed an injected and proptosed right eye with a 6th cranial nerve palsy and high intraocular pressure. Diagnosis of type D CCF was confirmed via digital subtraction angiography. He was treated with embolisation using trans-radial artery access for angiographic runs and a median cubital vein access navigating into the facial vein, superior ophthalmic vein and finally cavernous sinus for coil deployment. This technique completely avoids the conventional technique of a femoral approach and confines all access to the arm. Therefore, there are less risks and complications associated with an arm access, improves patients comfort and mobility post procedure.

CONCLUSION: Transradial artery and cubital vein access allows for a safe and convenient alternative technique using the arm as compared with conventional transfemoral approach for treatment of Carotid cavernous fistulas(CCF).

ADRENAL VENOUS SAMPLING: A PRACTICAL GUIDE

Masaki Katsura*¹; Jiro Sato¹; Masaaki Akahane²; Osamu Abe¹

¹Radiology, Graduate School of Medicine, The University of Tokyo, Japan, ²Radiology, School of Medicine, International University of Health and Welfare, Japan

LEARNING OBJECTIVE: By viewing this educational exhibit, the viewers will be able to (1) describe the anatomical variations of the adrenal veins; (2) describe the detailed procedure steps of adrenal venous sampling (AVS); (3) understand the “Do's & Don'ts” for a reliable specimen collection; and (4) explain how to interpret the sampling results.

BACKGROUND: Primary aldosteronism (PA) is a group of disorders in which aldosterone production is inappropriately high. PA is more common than previously thought and has been increasingly recognized as a cause of secondary hypertension. The majority of PA cases are caused by either unilateral aldosterone-producing adenoma or bilateral adrenal hyperplasia. Differentiation of the underlying condition is crucial for the treatment of patients with PA because unilateral disease can be cured by laparoscopic adrenalectomy, while cases of bilateral aldosterone secretion will be medically treated with mineralocorticoid receptor antagonists.

FINDINGS AND/OR PROCEDURE DETAILS: The role of AVS in PA is to localize the source of aldosterone excess, and determine surgical vs. medical management of PA. The following topics will be discussed in this exhibit: anatomy and variations, pre-procedural imaging, medications to be avoided prior to sampling, procedure steps, technical tips and troubleshooting, how to interpret the results, and complications.

CONCLUSION: Although AVS largely contributes to the definitive diagnosis and treatment planning in PA, AVS is a technically demanding interventional procedure even in experienced institutions. This educational exhibit is expected to be a practical guide to improve AVS success rates.

EFFECT OF MUSIC ON ANXIETY AND PAIN DURING ULTRASOUND GUIDED CORE NEEDLE BREAST BIOPSY: A RANDOMIZED CONTROLLED TRIAL

Mustafa Emre Akin*¹

¹*Department of Radiology, Ankara Yıldırım Bayazıt University Faculty of Medicine, Yenimahalle Training and Research Hospital, Turkey*

OBJECTIVE: Interventions to reduce anxiety are important for high quality health services during ultrasound guided core needle breast biopsy (UGBB). The purpose of this study was to evaluate the effect of music intervention on anxiety and pain levels of patients undergoing UGBB.

MATERIALS AND METHODS: In a prospective randomized-controlled design, patients who will undergo UGBB were invited to the study and randomized into the intervention group who received standard care with classical music intervention before and during the biopsy procedure, and the control group who received only standard care. The Spielberger State-Trait Anxiety Inventory and the Visual Analogue Scale were used for measuring anxiety and pain levels after the procedure. One-way multivariate analysis of variance test was used to find the effect of the music intervention on patient anxiety and pain.

RESULTS: There were 31 (48.4%) patients in the intervention group, 33 (51.6%) in the control group that were similar in terms of sociodemographic characteristics and trait anxiety levels. The patients in the music intervention group had significantly lower state anxiety levels (42.3 ± 6.5) than the control group (46.2 ± 4.5) with the mean difference of 3.8 (95%CI: 1.0-6.6, $p=0.008$). The mean difference of pain levels measured was 6.0 (95%CI: 2.2-14.2) and not statistically significant between intervention and control groups (19.6 ± 15.0 and 25.5 ± 17.6 , $p=0.150$).

CONCLUSION: Music reduced anxiety, but not pain during UGBB. The results especially imply to low and middle-income countries where low cost and easily implemented interventions are needed to address patient anxiety during breast biopsy procedures.

HAEMATOSPERMIA AND POST-COITAL HAEMATURIA SECONDARY TO TRAUMATIC ARTERIO-VEIN FISTULA (AVF)

Tan Tiong Keat*¹; Rozman Zakaria¹

¹Radiology, PPUKM, Malaysia

INTRODUCTION: Haematospermia is defined as macroscopically presence of blood in the semen. Regardless of the age of blood, haematospermia is most often caused by inflammatory or infectious disorders and follows a benign, self-limiting course. However, in males over 40 years of age, a more serious pathology might need to be considered and to investigate further. Intervention radiology is now playing a crucial role as diagnostic and therapeutic purpose in this kind of case.

REPORT: 51-year-old gentleman presented with painless haematuria with acute urinary retention, which needs of catheterization and bladder irrigation. There was history of haematospermia associated with post-coital haematuria for 2 years. Cystoscopic examination showed normal bladder mucosa, no growth within. Computed tomography (CT) multiphase of pelvis revealed minimal enhancement at the base of penis in arterial phase, with close proximity with the adjacent distal right internal pudendal artery, and increased contrast pooling was noted in portal venous and delayed phase. No abnormal vessels noted surrounding both kidneys or at the pelvis. Hence, diagnostic and therapeutic angiography of right internal pudendal artery was performed, showing arterial fistula at the distal branch of right internal pudendal artery. Embolization was done selectively at that particular distal branch and subsequently, the symptoms were totally resolved.

CONCLUSION: CT multiphase pelvis is helpful to screen for the etiology of haematuria and haematospermia, such as renal arteriovenous malformation or abnormal vessels at the pelvic region. Both diagnostic angiogram and embolization are proven to be helpful to relieve the symptoms clinically.

PYELOVENOUS FISTULA-RARE BUT SIGNIFICANT COMPLICATION OF PERCUTANEOUS NEPHROSTOMY

Chin Yunci*¹; Teoh Jia Qing¹; Chia Kok King¹; Chan Ping Kiat¹

¹*Radiology, Hosp Sultanah Bahiyah, Malaysia*

INTRODUCTION: Pyelovenous fistula is a communication between the pelvicalyceal system and venous system mostly due to traumatic renal injury and intraoperative iatrogenic injuries. We report a rare case of pyelovenous fistula following percutaneous nephrostomy resulting in urosepsis and haematuria.

REPORT: A 36 years old gentleman with left obstructive uropathy secondary to locally advanced rectal carcinoma underwent upsizing of the nephrostomy tube for lifelong nephrostomy. During the second upsizing of the nephrostomy catheter, antegrade pyelogram showed communication between the urinary tract and venous sinus tributaries (left cardinal vein) to the common iliac vein and subsequently draining into inferior vena cava, indicating pyelovenous fistula. Later, patient developed hematuria and urosepsis which was treated with intravenous antibiotics.

CONCLUSION: Although percutaneous nephrostomy is usually a safe and effective procedure, complications such as pyelovenous fistula formation should not be overlooked. We hypothesized that the formation of fistula could have occurred during the substitution manoeuvres. Prompt diagnosis and appropriate management is crucial to limit the impact of the complication.

CASE-BASED ILLUSTRATION OF IMAGING FINDINGS OF TUBEROUS SCLEROSIS COMPLEX (TSC) AND EMERGENCY INTERVENTIONAL TREATMENT OF ASSOCIATED LIFE-THREATENING RENAL BLEED.

Jamshaid Anwar*¹; Asma Javed¹; Belqees Yawar Faiz¹; Khurram Khaliq Bhinder¹

¹Radiology, Shifa International Hospital, Pakistan

LEARNING OBJECTIVE:

- TSC imaging findings and risk for renal bleeding.
- The overall role of Interventional Radiology (IR) in TSC management, particularly for renal embolisation.

BACKGROUND: Tuberous Sclerosis Complex- LymphAngioMyomatosis (TSC- LAM) is a rare autosomal dominant condition with multisystem hamartomas and/ or tumours. These patients commonly have Renal AngioMyoLipomas (AMLs) and rarely exhibit interlobar renal artery aneurysms, both of which may predispose them to renal bleeding. This poster demonstrates neurological, pulmonary, renal and skeletal imaging findings. It also discusses how to tackle a renal bleed in these patients and touches upon ablation for small renal tumours.

FINDINGS AND/OR PROCEDURE DETAILS: A young female with known TSC-LAM presented with an acute right renal bleed on a background of intermittent haematuria. She was tachycardic and anaemic with a dropping haemoglobin (6.2 g/dl). Plain CT as well as CT renal angiography and Digital Subtraction Angiographic imaging demonstrated multisystem TSC-LAM findings and specifically an acute right renal bleed, massive bilateral AMLs and multiple interlobar and distal renal artery aneurysms. Urology referred the patient for emergency nephron-sparing embolisation. The massive right sided AMLs were embolized with 500 to 700 micron PVA particles. Subsequently the, likely culprit, right interlobar renal artery aneurysm as well as other renal artery distribution aneurysms greater than 5mm in diameter were coiled.

CONCLUSION: TSC-LAM has characteristic imaging findings and these patients are at high risk of renal bleeding. Prompt imaging must be done to specify bleeding etiology and site. Interventional Radiology has a crucial role in prevention and treatment of renal bleeding.

ACQUISITION PROTOCOL CBCT IN ACUTE STROKE AND NEUROVASCULAR INTERVENTION: OUR EARLY EXPERIENCE

Mohammad Mudzakir Zainal Alam*¹; Mohd Khairul Fazwan Mohd Yusof¹; Muhammad Izzuddin Zaini¹; Mohd Naim Mohd Yaakob¹; Mohd Fandi Al Khafiz Kamis¹; Ezamin Abd Rahim¹; Ahmad Sobri Muda¹

¹*Department of Radiology, University Putra Malaysia Teaching Hospital, Malaysia*

LEARNING OBJECTIVE: Cone Beam Computed Tomography (CBCT) is an alternative imaging method which can be used for imaging of acute stroke and neurovascular pathologies such as large vessel occlusion (LVO) and intracranial atherosclerotic disease (ICAD)

BACKGROUND: CBCT of 15 patients who presented with acute stroke; underwent thrombectomy has been assessed. CBCT pre-thrombectomy done as a baseline while post CBCT is to assess any bleed or new infarct after thrombectomy. CBCT was performed with bi-plane angiographic system. Images were acquired using 20.7 seconds, 30 frames per second. The acquired data will be transferred to an interventional workstation (IW). VasoCT, which is the high resolution CBCT, was performed in 16 patients. The optimal injection protocol achieved with dilution of 20% normal saline and 80 % contrast. The injection rate of 0.5ml/s for a total volume of 16 ml with 12 second delay of arrival time using power injector.

FINDINGS AND/OR PROCEDURE DETAILS: XperCT pre and post thrombectomy significantly give added value for interventional radiologist to justify the outcome for thrombectomy procedure. The dose for both pre and post Xper CT is lower compared to the repeated normal plain CT. For image quality, four radiologists were satisfied and agreed they can assess for bleed in the CT brain images produced by XperCT. The contrast dilution and long delay protocols in VasoCT give optimal visualisation of collaterals and perforators.

CONCLUSION: Acquisition protocol of CBCT gives added information in acute stroke and neurovascular intervention patient management. It helps in better decision making to treat and manage the patient.

**DIRECT PERCUTANEOUS LIPIODOL LYMPHANGIOGRAPHY IN CHYLOUS
LEAKAGE POST MASTECTOMY WITH SUCCESSFUL EMBOLISATION: A
CASE REPORT**

Mohd Naim Mohd Yaakob*¹; Ezamin Abdul Rahim¹; Mohd Fandi Al Khafiz Kamis¹;
Muhammad Syafeeq Faiz Md Noh¹; Ridzuan Abdul Rahim²; Nik Azuan Nik Ismail³; Mohd
Hady Shukri As⁴

¹Radiology, Universiti Putra Malaysia, Malaysia, ²Radiology, National Cancer Institute, Malaysia, ³Radiology, Universiti Kebangsaan Malaysia, Malaysia, ⁴Surgery, Universiti Putra Malaysia, Malaysia

INTRODUCTION: We presented a case of high output chylous leakage post right mastectomy and axillary clearance, which underwent lymphangiogram using Lipiodol and successfully embolized.

REPORT: A 79-year-old, female who was diagnosed with breast cancer underwent right mastectomy and axillary clearance for right breast carcinoma. A drain was placed at the mastectomy site at day 1 post-surgery. Approximately after 4 hours of the patient's meal, the drainage in the right drain was observed to have changed to a milky discharge. Clinically and biochemically, the milky discharge was confirmed as chyle. Pure 10 mls (1 vile) prepared in the 10 cc syringe. Under local anaesthesia, total of 5 mls of Lipiodol was injected under ultrasound guidance into the lymph nodes at the bilateral inguinal regions, (2.5 mls on each side) at the rate of 1 ml/minute. Dissemination of lipiodol was monitored under fluroscopy. The remaining 5 mls Lipiodol was injected into the right axillary collection. The injected Lipiodol was seen propagated into the lymphatic channel. Compressing bandage placed at the surgical site to give tamponade effect. In terms of the chylous leakage, the output started to reduce 48 hours post procedure. The output was initially reaching about 500 mls/day, mainly hemoerous. The drain finally reached 30 mls/24hours at day 7 post procedure. Repeated ultrasound at the surgical site showed small complex of peritubal collection which was managed conservatively.

CONCLUSION: Lymphangiogram and embolization is one recognized effective treatment should conservative management failed and surgical intervention is not suitable.

**OUTCOME AND SAFETY OF SELECTIVE INTERNAL RADIATION THERAPY
(SIRT) USING YTTRIUM-90 MICROSPHERES FOR THE TREATMENT OF
UNRESECTABLE PRIMARY AND SECONDARY HEPATIC TUMOURS : A
SINGLE-INSTITUTION EXPERIENCE**

Tjun Hoe Lui*¹; Nur Yazmin Yaacob²; Thanuja Mahaletchumy³

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia (PPUKM), ²Interventional And Endovascular Unit, Department of Radiology, PPUKM, ³Molecular Imaging and Nuclear Medicine, PPUKM, Malaysia

OBJECTIVE: Selective internal radiation therapy (SIRT) with Yttrium-90 (Y-90) is a treatment option for unresectable primary or secondary tumors of the liver and many studies have demonstrated the improvement in survival. This study aimed to assess the survival outcome and toxicity of patients following treatment with selective internal radiation therapy.

MATERIALS AND METHODS: The data of eighteen patients who underwent SIRT with Y-90 in a single institution were analyzed retrospectively. Survival was analyzed by Kaplan-Meier curve and log-rank tests while toxicities were evaluated and described.

RESULTS: The 1-year overall survival (OS) for patients treated with SIRT was 46.7% (9/15 patients). The median OS was 10 months (range 3-47 months). Sixteen patients reported at least one adverse event. Majority of adverse events were Grade 1 and 2 (84.7%) which include nausea, vomiting, abdominal pain and anorexia. Two patients developed severe adverse events (Grade 3). Two patients died of hepatic failure that was possibly treatment-related. One patient developed radioembolization-induced liver disease (REILD). Five patients reported Grade 3 or 4 laboratory toxicities. Child-Pugh classifications, liver function test, prior and subsequent transarterial treatment were associated with toxicities grading.

CONCLUSION: In conclusion, SIRT is a safe and well-tolerated procedure with a modest overall survival (OS). The adverse events are usually mild. REILD is a rare but potentially fatal adverse event, therefore patient selection is utmost important. SIRT can be considered as a first line treatment for unresectable or inoperable liver cancers. Further randomized controlled trials need to be conducted to determine patients who will benefit the most from SIRT.

**ASSISTANT INTERVENTIONIST WORKFLOW EFFICIENCY IN ACUTE
STROKE THROMBECTOMY: EARLY EXPERIENCE IN A TEACHING
HOSPITAL**

Nazhirah Azmi*¹; Nurul Hidayatul Syazwani Yaacob¹; Wan Nur Asilah Wan Zakaria¹;
Ahmad Sobri Muda¹; Ahmad Syahmi Mohd Saufi¹; Muhammad Nabeel Mohd Yusof¹; Aika
Daniel Muhammad Azian¹; Ahmad Faiz Izuddin Abdul Razak¹

¹*Radiology, University Putra Malaysia Teaching Hospital, Malaysia*

LEARNING OBJECTIVE: To evaluate the efficiency of workflow arrangement in reducing time delays for thrombectomy in acute ischemic stroke.

BACKGROUND: Thrombectomy is a procedure for patient with acute ischemic stroke due to large vessel occlusion. Rapid activation of team member including assistant interventionists (AI) such as paramedics, nurses and radiographers, is crucial to ensure flow restoration can be achieved as soon as possible. Optimal workflow plays a very important role in a thrombectomy procedure.

FINDING AND/OR PROCEDURE DETAILS: Early activation of the team with clear workflow improve decision to puncture time. The average door to puncture time however still poor as the delay mainly due to financial related disruption. Our centre uses MRI as the first-line imaging tool for acute stroke. Once decision for thrombectomy achieved from multi-disciplinary team, patient will be passed over by emergency department personnel to AI. The passing over process will take place when patient in the MRI. Consent will be obtained from patient's relative by medical officer. Second AI will start preparing necessary equipment in the angiography suite. After MRI, patient will be immediately transferred to the angiography suite. Minimum of three functional AI which include nurses and paramedics are required. They are responsible for monitoring patient's vital signs, preparing and handling of sterile equipment, and circulating personnel. Third person also need to assist intubation if required.

CONCLUSION: Clear workflow and time optimization is crucial for the efficiency of thrombectomy. Task distribution among AIs should be emphasize as it helps in reducing time for effective treatment plan.

SPLENIC ARTERY PSEUDOANEURYSM SECONDARY TO NECROTISING PANCREATITIS: SUCCESSFUL TRANSCATHETER EMBOLIZATION

Fatin Syahirah Sulaiman*¹; Nasibah Mohamad¹; Norhafizah Ehsan²; Izazul Hussin²

¹*Department of Radiology, Universiti Sains Malaysia, Malaysia,* ²*Interventional Radiology Unit, Hospital Selayang, Malaysia*

INTRODUCTION: Splenic artery pseudoaneurysm is a rare occurrence. Majority of the cases are detected incidentally from imaging. Enzymatic autodigestion of arterial wall caused by pancreatitis is the common etiology of a pseudoaneurysm. Unruptured pseudoaneurysm is silent; however, some patients may experience hematemesis or melena. Ruptured pseudoaneurysm carries high mortality rates of 90% if left untreated; hence immediate diagnosis and treatment are crucial.

REPORT: A 59-year-old man was a chronic alcoholic drinker, presented with acute epigastric pain and worsening Glasgow-Imrie score within 48 hours of admission. Computed tomography (CT) abdomen confirmed the diagnosis of acute necrotizing pancreatitis with peripancreatic collections. The peripancreatic collections were drained by the interventional radiology (IR) team under CT guidance. The patient was discharged well subsequently; however, readmitted again due to melena, bloody drainage fluids, and symptomatic anemia. The hemoglobin level is 6.9g/dL. CT angiogram (CTA) abdomen revealed unruptured splenic artery pseudoaneurysm arising from the upper pole branch of the splenic artery. Selective splenic angiogram confirmed the diagnosis. IR team proceed with embolization using 10% histoacryl glue mixed with lipiodol. Post embolization angiogram showed non-opacification of the main splenic artery and the pseudoaneurysm indicating a successful procedure. Patient tolerated the procedures well. Follow-up CECT abdomen confirmed resolution of splenic artery pseudoaneurysm with 40% viable splenic parenchyma at upper and lower pole. The patient was well throughout interval follow-up.

CONCLUSION: This case illustrates immediate and accurate diagnosis of splenic artery pseudoaneurysm resulting in optimal patient outcome. Concerning this, endovascular embolization is the preferred method as opposed to surgery.

STUCK CUFFED CATHETER : NOT AS SIMPLE AS IT SEEMS

Abdul Qayyum*¹; Dhayal Balakrishnan²; Zakhirati Zainol Abidin²

¹Radiology, UNIMAS, Malaysia, ²Radiology, Hospital Umum Sarawak, Malaysia

INTRODUCTION: Tunneled cuffed catheter needs to be removed once it has become dysfunctional or infected. Removal or exchange of cuffed catheters, especially those left for a long period of time can be risky and difficult.

REPORT: Here we present a case of a 67 years old lady with end stage renal failure, electively admitted for exchange of her dysfunctional left neck cuffed catheter which was inserted 5 years ago. During the procedure, withdrawal of catheter was difficult despite the cuff having been released from the exit site. An incision was also made at previous neck puncture site in order to dissect the fibrous tissue, however was futile. Subsequently, a contrast enhanced CT was performed which showed the catheter traversing the superior mediastinum diagonally and entering the central vein at the distal left brachiocephalic vein and subsequently superior vena cava. Superior vena cava appeared small in calibre with linear pericatheter hypodensity, which may indicate pericatheter fibrin sheath and/or superior vena cava stenosis. Procedure was abandoned with suggestion to refer to Cardiothoracic team for surgical removal.

CONCLUSION: It is important to keep in mind, that cuffed catheter removal procedure especially those that have been in situ for a prolonged period of time may be challenging and an unexpected malposition such as in this case, may further complicate the procedure and would warrant unconventional management with multi-disciplinary team involvement.

**SELECTIVE INTERNAL RADIATION THERAPY (SIRT) USING YTTRIUM-90 TO
TREAT UNRESECTABLE LIVER METASTASES FROM NEUROENDOCRINE
TUMOUR AND IGF-2-SECRETING TUMOUR : A REPORT OF 3 CASES**

Tjun Hoe Luj*¹; Nur Yazmin Yaacob²

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia, ²Interventional And Endovascular Unit, Department Of Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia

INTRODUCTION: Neuroendocrine tumour (NET) liver metastases generally have poor prognosis and are often unresectable during time of diagnosis despite surgery being the preferred treatment. Low-grade fibromyxoid sarcoma (LGFMS) is a rare soft tissue tumour with potential for recurrence and distant metastasis. Chemotherapy resulted in poor survival rates. Sarcomas can produce IGF-2 causing hypoglycemia. The hormone released by NET and LGFMS may disrupt patients' quality of life. Selective internal radiation therapy (SIRT) is an option as salvage therapy for unresectable liver metastases and achieve symptomatic control. We present three cases of unresectable liver metastases treated with SIRT with primary from NET (2 cases) and IGF-2-secreting LGFMS respectively.

RESULTS:

Case 1: 78 years-old male with altered bowel habits and abdominal pain, diagnosed as atypical lung carcinoid with liver metastasis.

Case 2: 37 years-old male with loss of appetite and lethargy, diagnosed as duodenal NET with liver metastasis.

Case 3: 33 years-old female with recurrent hypoglycemia, diagnosed as pelvic LGFMS with liver metastasis.

All patients underwent SIRT. Post-SIRT, there were mild symptoms which resolved with symptomatic treatment. No severe adverse events. The overall survival was 35-47 months. They have since remained asymptomatic and relieved of tumour burden.

CONCLUSION: Our study demonstrates that SIRT is safe and effective as salvage therapy for unresectable liver metastases from NET and LGFMS. The tumour response rates were remarkable especially for NET liver metastases. There was good survival outcome with no significant adverse events and good control of hormonal symptoms. Further studies are needed to establish the potential benefits of SIRT in such patients.

**CRYPTOGENIC STROKE ASSOCIATED WITH MECHANICAL
THROMBECTOMY FOR PULMONARY EMBOLISM IN A PATIENT WITH
PATENT FORAMEN OVALE.**

Hooi Lam Tan*¹; See Khim Sim²

¹Radiology, Hospital Canselor Tuanku Muhriz, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Mechanical thrombectomy has been developed as an effective method of treatment for pulmonary embolism (PE) as it offers immediate thrombus removal. It reduces thrombus burden, prevents thrombolysis-associated complications and shortens post-procedural critical care. However, reported complications associated with mechanical thrombectomy in patients with patent foramen ovale are limited.

REPORT: We herein report a case of worsening cryptogenic stroke post mechanical thrombectomy for PE in a patient with patent foramen ovale which was diagnosed angiographically during mechanical thrombectomy. A 66 year – old lady was admitted for massive PE with left lower limb deep vein thrombosis (DVT) and recent stroke, the diagnosis of which were confirmed on CT pulmonary angiogram (CTPA) and CT brain. Patent foramen ovale was found incidentally when the pulmonary vein was cannulated in the process of mechanical thrombectomy as demonstrated on pulmonary venogram. The procedure was successful with no complications encountered throughout. However, her level of consciousness dropped the following day post procedure, and a repeated CT brain showed acute infarcts involving bilateral middle cerebral artery (MCA) territories and midbrain. Her condition unfortunately deteriorated further and she expired shortly after.

CONCLUSION: Cryptogenic stroke as a complication of mechanical thrombectomy for PE in patients with patent foramen ovale has been rarely reported. Despite its rarity, this case raise questions about the need for ruling out patent foramen ovale in patients undergoing mechanical thrombectomy and assessing the risks of thrombectomy in patients with patent foramen ovale.

**FACTORS AFFECTING RESPONSE TO TRANSARTERIAL
CHEMOEMBOLIZATION IN HEPATOCELLULAR CARCINOMA(HCC)
TREATMENT**

Liew Yuan Hwen*¹; Nur Adura Yaakup¹; Norshazriman Sulaiman¹; Chan Wai Yee¹; Mohd Rizal Roslan²

¹*Biomedical Imaging, University Malaya Medical Center, Malaysia,* ²*Radiology, Hospital Selayang, Malaysia*

INTRODUCTION: Varying response to Transarterial Chemoembolization (TACE) in Hepatocellular carcinoma (HCC) treatment has been reported. This study aimed to identify factors affecting objective response to TACE to help better HCC treatment stratifications.

MATERIALS AND METHODS: A retrospective study of 100 HCC patients who underwent TACE in University Malaya Medical Centre (UMMC) and Hospital Selayang from 2014-2020. Patients demographics, clinical profile, laboratory results, imaging characteristics, and TACE agents used were collected from Picture Archiving and Communication System (PACS) and Electronic Medical Records (EMR). The response to TACE was assessed on follow up imaging based on Modified Response Evaluation Criteria in Solid Tumour (mRECIST).

RESULTS: Overall Objective Response to TACE was 34% (Complete Response = 12%; Partial Response = 22%). Multivariate logistic regression analysis revealed Hepatitis B [odds ratio (OR) 16.48; 95% confidence interval (CI) 2.20, 123.40], Hepatitis C (OR 20.66; 95% CI 1.45, 265.42), smaller lesion size (OR 0.60; 95% CI 0.41, 0.87), homogenous enhancement (OR 127.40; 95% CI 10.39, 1561.63), heterogenous enhancement with septation (OR 9.49, 95% CI 1.31, 68.65), single lesion (OR 8.96, 95% CI 1.53, 52.48), and larger feeding hepatic arterial diameter (OR 7.50, 95% CI 1.88, 30.00) as significant predictors of Objective Response to TACE ($p < 0.050$).

CONCLUSION: Uninodularity, smaller target lesion size, enhancement characteristics, Hepatitis B/C status, and a larger target hepatic artery were significant predictors of Objective Response to TACE. These factors can be used as guidance for TACE decision making in HCC patients.

**ROLE OF FDG PET/CT IN DIAGNOSIS OF LARGE VESSEL VASCULITIS IN
CASES OF FUO**

Rajeev Kumar *¹; Pokhraj Suthar²; Anurag Jain¹; Amit Sharma¹; KP Solanki¹

¹Nuclear medicine, Army hospital R&R New Delhi, India, ²Radiology, Sterling cancer hospital, India

INTRODUCTION: The aim of poster presentation to highlight the importance of FDG-PET/CT scan to diagnose FUO cases specially in large cell vasculitis. We are presenting two case of fever of unknown origin reported to us after all intelligent investigation.

REPORT:

Case 1: 72 year old male presented with low grade intermittent fever of 02 months duration, associated with prodromal symptoms like body ache, malaise & episodic diffuse headache. All investigations were within normal limits except rising ESR and progressively decreasing hemoglobin values..

Case 2: 78 yrs old male presented with low to moderate grade fever for 3 months associated with intermittent chills and generalized weakness with easy fatigability. There was positive history of cough, altered bowel habit with history of weight loss. All investigations were within normal limits except raised ESR and low hemoglobin values.

In both the cases PET-CT reveals increased uptake in a linear fashion along the aorta & its branches with symmetric homogenous moderately increased FDG uptake (SUV max3.6) diffusely in the large and medium sized arteries - suggestive of large vessel vasculitis. Patient was treated with hydrosteroids and immunosuppression therapy. Followup scan showed good response.

CONCLUSION: PET/CT scanning is an exciting modality for the evaluation in case of FUO due to large-vessel vasculitis. During the workup of FUO, when other modalities are of no help, FDG PET/CT will prove beneficial in clinching the diagnosis of Vasculitis and further management of the patient including response evaluation.

VISION LOSS- AN UNUSUAL PRESENTATION OF LUNG CARCINOMA

Akshat Agrawal*¹; Khushi Agrawal²; Matuli Das²; Manmat Das²; Kamal Kumar Sen¹

¹Radiodiagnosis, Kalinga Institute Of Medical Sciences, Bhubaneswar, ²Ophthalmology, Kalinga Institute Of Medical Sciences, Bhubaneswar, India

INTRODUCTION: Once considered a rare entity, choroidal metastases are now the most common intraocular malignancy in the adult population. In a review of patients dying from the malignancy, 8% displayed choroidal metastases on autopsy. Most ocular metastases, however, go undetected unless they affect the vision or cause proptosis. Choroidal metastases tend to become apparent late in the course of malignancy and are associated with disseminated disease and poor prognosis.

REPORT: A 63-year-old male presented with painless, progressive loss of vision in the right eye for 6 months. There were no known comorbidities. Right eye visual acuity perception of light and left eye 6/6, N6. On fundus examination, choroidal mass and exudative retinal detachment(RD) in the right eye was seen. Thereafter, the chest radiograph revealed left lower lobe mass which on biopsy was proven to be adenocarcinoma. MRI brain showed choroid metastasis with RD in the right eye along with cerebral and cerebellar metastases. PET scan showed lung primary and disseminated metastases to the right choroid, brain, liver, pancreas, adrenals, and bones.

CONCLUSION: 9–11% of patients present with no symptoms and lesions may be found on routine ocular examination thus making regular eye screening mandatory in all cases of metastasis. With increasing treatments available leading to longer survival rates for cancer patients, metastases have the potential to become more prevalent. Effective control of these lesions is imperative. Systemic chemotherapy allows tumor control in some cases, while focal therapy is advised in tumors causing visual loss or is unresponsive to systemic treatment.

**DETECTION OF ADDITIONAL SUSPICIOUS FOCUS OF INFECTION AND
DISEASE EXTENSION SEEN ON BONE SCAN IN A RARE CASE OF ADULT
NON-TRAUMATIC SKULL VAULT OSTEOMYELITIS**

Ahmad Zaid Zanial*¹; Nadiah Abd Razak¹; Nur Liyana Bujang¹

¹*Nuclear Medicine Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Bone scan is sensitive in evaluating skeletal diseases. Cranial osteomyelitis is a rare infection involving either skull vault or skull base. We report a case of non-traumatic skull vault osteomyelitis to demonstrate the promising role of bone scan in the peri-surgical management and its ability to detect additional focus of infection and disease extension.

REPORT: A 29 years-old male with uncontrolled diabetes mellitus presented with progressive non-traumatic scalp abscesses for three months. Contrasted CT brain (2.7.2019) revealed scalp lesions at left fronto-temporo-parietal and right parieto-occipital regions with bony destructions. Neurosurgery team requested for bone scan as part of pre-operative assessment. Whole-body bone scan with single photon emission computed tomography/computerised tomography (SPECT/CT) of skull (15.7.2019) demonstrated unexpectedly another focus of increased tracer uptake at greater wing of left sphenoid with corresponding sclerotic changes in addition to the intense tracer uptake involving left fronto-temporo-parietal bones and right parieto-occipital bones with tracer uptake extending to adjacent left occipital bone. Left craniectomy, debridement and drainage of occipital abscess done on 18.7.2019. Histopathology examination showed features of osteomyelitis with chronic granulomatous muscle inflammation. Pus culture grew *Burkholderia pseudomallei*. He was accordingly prescribed with intravenous Ceftazidime for six weeks. In view of extensive skull vault osteomyelitic changes and additional suspicious focus at left sphenoid on bone scan, he would require careful assessment of disease resolution and follow-up.

CONCLUSION: We illustrated the potential role of bone scan in managing non-traumatic skull vault osteomyelitis and its ability to demonstrate disease extension and additional suspicious focus of infection.

DIAGNOSTIC ACCURACY OF LUMBAR SPINE BONE MINERAL DENSITY (BMD) MEASUREMENTS VIA QUANTITATIVE COMPUTED TOMOGRAPHY (QCT) IN THE ASSESSMENT OF OSTEOPOROSIS IN FILIPINO WOMEN DIAGNOSED WITH BREAST CANCER USING DUAL-ENERGY X-RAY ABSORPTIOMETRY (DXA) AS GOLD STANDARD

Angela Krista Pedroso*¹; Irene S. Bandong¹; Raquel Marie R. Cabatu²

¹*Institute of Radiology, St. Luke's Medical Center Quezon City, Philippines,* ²*Department of Nuclear Medicine, St. Luke's Medical Center Quezon City, Philippines*

OBJECTIVE: Breast cancer and its adjuvant chemotherapy are significant risk factors for osteoporosis. While dual-energy x-ray absorptiometry (DXA) remains the gold standard in the diagnosis of osteoporosis, quantitative computed tomography (QCT) may be used for opportunistic screening. This study aims to determine the accuracy of QCT, in terms of sensitivity and specificity, in detecting osteoporosis among breast cancer patients using DXA as gold standard, and to determine the prevalence of osteopenia and osteoporosis using DXA and QCT.

MATERIALS & METHODS: This is a cross-sectional analytic study of 76 Filipino women with breast cancer who underwent DXA and whole abdomen CT scans no more than 1 year apart in our institution from 2012 to 2018. CT scans were retrieved from PACS. QCT measurements were made using the BMD analysis software in the Philips Extended Brilliance Workspace post-processing system.

RESULTS: Out of 76 selected patients, 92% were menopausal women with mean age of 58.9 (SD 8.7) years, 69.7% had IDCA and 94.7% had mastectomy. Majority had normal BMD (44.7%), 34.2% had osteopenia and 21.1% had osteoporosis based on DXA. Among menopausal women, QCT has 90% (95% CI: 55.5-99.8) sensitivity, 63.6% (95% CI: 30.1 - 89.1) specificity, 69.2% (95% CI: 50.1 - 83.5) PPV, 87.5 (95% CI: 50.8-97.9) NPV, 2.5 (95% CI: 1.1-5.6) LR(+) and 0.16 (95% CI: 0.02-1.06) LR (-).

CONCLUSION: This study showed 21.1% of Filipino women with breast cancer had osteoporosis and 34.2% had osteopenia. QCT had 90% sensitivity and 63.6% specificity in detecting osteoporosis among menopausal Filipino women with breast cancer.

NOT SO 'LOVE'LY SURPRISE. INCIDENTAL FINDING OF LARGE BLADDER DIVERTICULUM ON TC99M-MDP BONE SCINTIGRAPHY.

Muhammad Adib Abdul Onny*¹; Muhammad Azizul Mohd Daud¹; Ezma Yanis Mohd Mahidin¹; Syed Ejaz Shamim¹; Hazlin Hashim²; Norazlina Mat Nawi¹; Wan Fatimah Wan Sohaimi¹

¹*Department Of Nuclear Medicine, Radiotherapy & Oncology, Hospital Universiti Sains Malaysia (HUSM), Malaysia, ²Advance Medical & Dental Institute, Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Bone scintigraphy is an important imaging modality in the workup of malignancy, especially in assessing bone metastasis. Although Tc99m-Methyl-Diphosphonate(MDP) bone scintigraphy is sensitive and fairly specific in detecting osteoblastic bone metastasis, various non-osseous radiotracer uptake could occasionally be seen during routine bone scintigraphy procedure.

REPORT: We present an interesting case of a 61-year-old, gentleman, presented with abdominal distention and intestinal obstruction, later diagnosed with moderately-differentiated adenocarcinoma of the colon, pT3N0/Duke-C2. Pre-operative CT showed a suspicious sclerotic lesion at T11 vertebra. Bone scintigraphy with Tc99m-MDP was performed and interestingly on the 3-hour anterior/posterior planar whole-body images, a large 'love-shaped' area of tracer accumulation was seen occupying the abdominopelvic region. No abnormal tracer uptake was seen along the vertebra. SPECT/CT acquisition revealed radiotracer accumulation within the large bladder diverticulum. A pelvic CT and MRI confirmed diagnosis of bladder diverticulum likely arising from the right lateral wall of the bladder.

CONCLUSION: Bladder diverticulum is a rare condition, described as the out-pouching of the mucosa and submucosa of the bladder. It can be congenital or acquired as in this case, possibly due to earlier intervention and surgery. The accumulation of Tc99m-MDP within the bladder and diverticulum is considered physiological. However large unusual accumulation such as this may obscure pathological uptake on the underlying bones. Technological advancement with SPECT/CT improves diagnostic performance of bone scintigraphy due to better anatomical correlation as well as increased in sensitivity and accuracy of detecting pathological lesion which would have otherwise been obstructed by abnormal tracer accumulation.

153 SM LABELLED MICROPARTICLES AS A POTENTIAL REPLACEMENT FOR 90 Y IN HEPATIC RADIOEMBOLIZATION

Nurul Asykin*¹; Chai Hong Yeong²; A. C. Perkins³; Kwan Hoong Ng⁴

¹*School of Physics, Universiti Sains Malaysia, Malaysia,* ²*Faculty of Health & Medical Sciences, Taylor's University, Malaysia,* ³*Division of Radiological and Imaging Sciences, University of Nottingham, United Kingdom,* ⁴*Biomedical Imaging, University of Malaya, Malaysia*

LEARNING OBJECTIVE: To introduce physicians and physicists to an alternative theranostic radionuclide, ¹⁵³Sm, to replace ⁹⁰Y for hepatic radioembolization.

BACKGROUND: Unlike ⁹⁰Y (a pure emitter), ¹⁵³Sm emits both α and β radiations, beneficial for both therapy and diagnostic (theranostic) purposes. The presence of radiation provides accurate information on the microparticles biodistribution within the patient's body following intraarterial administration.

FINDINGS AND/OR PROCEDURE DETAILS: Preliminary dosimetric studies were performed using Geant4 Monte Carlo simulation toolkit. A therapeutic absorbed dose to tumour of 120 Gy has been simulated on various treatment scenarios, i.e. with various percentage of tumour involvement (TI) (10%, 30%, 50%, 70%), tumour to normal tissue ratio (T/N) (1, 2.5, 5, 7.5, 10), and lung shunting (LS) (0%, 5%, 10%, 15%, 20%; with no reduction in the administered activity for LS > 10%). ¹⁵³Sm was able to deliver absorbed dose to tumour comparable to ⁹⁰Y, with less than 1 Gy absorbed dose to other organs. This study had proven the safety and feasibility of hepatic radioembolization using ¹⁵³Sm. Laboratory production of ¹⁵³Sm using commercial Samarium (III) Chloride Hexahydrate salt has also been done via neutron activation, ¹⁵²Sm(n, γ) ¹⁵³Sm. Therapeutic activity of 3 GBq has been achieved from 6 h irradiation inside the TRIGA Puspati nuclear reactor (Malaysian Nuclear Agency). Biocompatible polymeric microparticles to be labelled with ¹⁵³Sm is currently being developed.

CONCLUSION: Microparticles labelled with ¹⁵³Sm has a promising potential as a theranostic radionuclide to replace ⁹⁰Y for hepatic radioembolization.

A RARE CASE OF CUTANEOUS T-CELL LYMPHOMA

Wai Keong Cheah*¹; Norlisah Mohd Ramli¹

¹*Biomedical Imaging, University of Malaya (UM), Malaysia*

INTRODUCTION: T-cell lymphoma is an uncommon malignancy predominantly affecting male children and young adults, with less than 20% having cutaneous involvement. We present a rare case of cutaneous T-cell lymphoma (CTCL).

REPORT: A 12 year old boy with underlying T-cell lymphoma in remission for the past 2 years, presented with symptoms of intermittent fever, loss of appetite and weight with associated cutaneous/subcutaneous nodules in the left breast, right forearm and right shin, which did not resolve despite multiple courses of antibiotics. Examination revealed palpable cutaneous nodules. Biochemical profile was only positive for deranged liver enzymes. PET-CT scan demonstrated that the cutaneous/subcutaneous streakiness showed hypermetabolic activities involving the thoracic, abdominal, pelvic and right arm regions, with highest activity in the posterior thoracic subcutaneous tissue (SUV_{max}4.7/DS5). Hypermetabolic ground glass changes in the mesenteric soft tissue was noted in keeping with mesenteric panniculitis. He was then referred to the paediatric dermatology team. Skin biopsy was performed with HPE showing lobular subcutaneous panniculitis in keeping with recurrent subcutaneous panniculitis-like T-cell lymphoma. He was started on chemotherapy but succumbed to the disease.

CONCLUSION: Cutaneous involvement in T-cell lymphoma is rarely isolated, as patients usually have bone marrow, mediastinal, lymph node or extranodal involvement. Cutaneous involvement is associated with poor prognosis, with the only cure being stem cell transplantation. This case highlights the role of PET-CT in the diagnosis of cutaneous T-cell lymphoma.

IN VIVO COMPARISON OF VOI DETERMINATION ON MAXILLARY BONE REGENERATION ORTHODONTIC TREATMENT: CBCT VERSUS MICRO-CT

Sudarmono*¹; Sunardhi Widyaputra²; Suhardjo Sitam³; Inne Suherna⁴; Fourier D.E. Latief^{5,6}; Arni Diana Fitri⁷; Arif Rachman^{8,9}

¹Doctoral Program in Military Dentistry Science, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, ²Department of Oral Biology, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, ³Department of Radiology, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, ⁴Department of Pedodontist, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, ⁵Earth Physics and Complex Systems, Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung, Bandung, Indonesia, ⁶Micro-CT Laboratory, Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung, Bandung, Indonesia, ⁷Veterinary Teaching Hospital, IPB University, Bogor, Indonesia, ⁸Department of Cell Biology and Biomolecular, Faculty of Medicine, Indonesian Defense University, Bogor, Indonesia, ⁹Department of Dental and Oral Medicine, Faculty of Medicine, Indonesian Defense University, Bogor, Indonesia

OBJECTIVE: The main problem after orthodontic treatment is relapse, side effects associated with OTM are root resorption, bone loss and gingival inflammation which impairs long-term stability during orthodontic treatment. OTM creates a gap causing relapse after orthodontic treatment. Regenerate bone in order to prevent relapse after orthodontic treatment. VOI measurement by 3D imaging CBCT or Micro-CT in vivo.

MATERIALS AND METHODS: In vivo tests were carried out on 6 wistar rats aged 5 months and performed 10 gf maxillary M1 withdrawal with 0.010 inch NiTi and 8 mm close coil spring, maxillary separation was carried out by CBCT and Micro-CT tests.

RESULTS: The tensile force of the orthodontic device in the area of compression and tension is characteristic of tooth movement causing changes in remodeling. Alveolar bone displacement can occur when tooth roots move through the alveolar cortical bone occurring during OTM. The images obtained were marked measurements on samples from CBCT and Micro-CT aimed at investigating the accuracy and reproducibility of landmarks. CBCT resolution 0.0131 μm / pixel and Micro-CT 5.7 μm / pixel, Micro-CT can determine VOI boundaries. Comparison of VOI from CBCT and Micro-CT showed VOI CBCT 9.99% and VOI Micro-CT 22.22%. The details produced by 3D visualization from Micro-CT are more detailed and clear than CBCT, so VOI can be determined easily with more accurate results.

CONCLUSION: Detailed, clear, and accurate 3D Micro-CT visualization in the determination of VOI versus CBCT.

**EXPECTING THE UNEXPECTED. A CASE OF RIGHT-TO-LEFT SHUNT
SECONDARY TO EISENMENGER SYNDROME DUE TO ATRIAL SEPTAL
DEFECT ON LUNG V/Q SCINTIGRAPHY IN A PATIENT WITH HISTORY OF
PULMONARY THROMBOEMBOLISM.**

Muhammad Adib Abdul Onny*¹; Anthony Louis Anak Kindu¹; Lim Jin Lee²; Ng Chen
Siew¹; Mahayuddin Manap³

¹*Nuclear Medicine Department, Institut Kanser Negara, Ministry Of Health, Malaysia, Malaysia,* ²*Respiratory Medicine Department, Hospital Sultanah Aminah, Johor Bahru, Malaysia,* ³*Advance Medical & Dental Institute, Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Lung ventilation and perfusion(V/Q) scintigraphy is the modality of choice for the assessment of chronic thromboembolic pulmonary hypertension(CTEPH) owing to its high sensitivity when compared to computed tomography pulmonary angiogram(CTPA). In addition, sequelae of pulmonary artery hypertension(PAH) needed to be assessed and may manifest as extra-pulmonary radiotracer uptake on lung V/Q.

REPORT: A 35-year-old, lady, diagnosed with thromboembolism of the right and left lower lobe pulmonary arteries for which she was treated with anticoagulant therapy, warfarin. She had a history of prolonged used of oral contraceptive pills. CTPA done 5-months later showed resolution of the thromboembolism but dilated pulmonary arteries suggestive of PAH. Transthoracic echocardiography showed elevated pulmonary artery systolic pressure with an unremarkable atrial-septal-defect(ASD). However, despite prolonged course of anticoagulant therapy, she remained hypoxic and required oxygen supplementation hence CTEPH was suspected. A 2-day lung V/Q was performed with intravenous 99mTc-macroalbumin-aggregate (99mTc-MAA) and aerosolized 99mTc-DTPA used for perfusion and ventilation studies respectively. Lung V/Q showed several mismatched defects in the right upper and middle lobes. Interestingly, increased tracer uptake was also seen at the thyroid gland, kidneys and brain parenchyma. The overall findings were suggestive of right-to-left shunting likely due to Eisenmenger Syndrome secondary to PAH caused by the combination of ASD and chronic-thromboembolism. She was started on Sildenafil with endothelin receptor antagonist along with warfarin.

CONCLUSION: This case highlights the importance of recognizing extra-pulmonary radiotracer uptake pattern in lung V/Q. Accurate findings may lead to precise diagnosis and in turn, lead to an appropriate treatment approach.

**BASELINE DATASET FOR GASTRIC EMPTYING STUDY BASED ON
MALAYSIAN LOCAL DIET - PILOT STUDY**

Haniff Shazwan Muhd Safwan Selvam*¹; Teik Hin Tan¹; Mohd Afandi Azman¹; Yee Lian
Ng¹

¹*Nuclear Medicine Centre, Sunway Medical Centre, Malaysia*

INTRODUCTION: Gastric emptying (GE) scintigraphy is a procedure to evaluate patient with altered gastric motility. In this study, patient is given a 'selected' meal mixed with low dose radioactive tracer. The ideal meal for GE study should be the 'common' local diet that reflects the true diet of Malaysian. The current meal used in Malaysia's GE study is based on Western diet, using egg sandwich. The aim of this study is to explore and create a baseline GE dataset based on Malaysian local diet, which is Nasi Lemak (NL).

MATERIALS & METHODS: Fifteen subjects were recruited and served with 1 mCi of Tc-99m DTPA combined with NL after fasting >4 hours and stopping medications that altered gastric emptying for 3 days. Anterior and posterior abdominal post static SPECT images were acquired at 10, 30, 60, 120, 180 and 240 minutes after meal consumption. Region of interest (ROI) in stomach were drawn to calculate geometric mean. Time-activity curve was generated to determine food retention over time. Baseline was created using one standard deviation (SD).

RESULTS: The percentage of activity retention in the stomach is 100 %, 64.2 % (± 11.3), 37.6 % (± 37.6), 13.9 % (± 6.2), 4.3 % (± 4.0), 1.7 % (± 1.5) at post image 10, 30, 60, 120, 180 and 240 minutes respectively. Mean value of goodness of fit R² of exponential fitting was found to be 0.982, indicate a good fit.

CONCLUSION: Baseline GE dataset of NL has been created. Future large population-based study is needed to validate this preliminary results.

**DETECTION OF SYNCHRONOUS PHOSPHATURIC MESENCHYMAL TUMOUR
BY 'EXTENDED' WHOLE-BODY GA68-DOTATATE PET-CT IN TUMOUR-
INDUCED OSTEOMALACIA: A CASE REPORT.**

Teik Hin Tan*¹; Ew-Jun Chen¹; Ming Tsuey Chew²; Ping Ching Chye³; Ming Wong⁴

¹*Nuclear Medicine Centre, Sunway Medical Centre, Malaysia,* ²*School Of Healthcare and Medical Sciences, Sunway University, Malaysia,* ³*Orthopaedic Oncology, Sunway Medical Centre, Malaysia,* ⁴*Internal Medicine and Endocrinology, Sunway Medical Centre, Malaysia*

INTRODUCTION: Tumour-induced osteomalacia (TIO) is a rare paraneoplastic syndrome that manifests as chronic hypophosphataemia, non-specific bone pain and muscle weakness. It is generally caused by phosphaturic mesenchymal tumour (PMT), which is uncommonly associated with synchronous tumours. Localisation of the tumour is important because complete excision typically results in reversal of symptoms. However, diagnosis is often delayed for several years due to the rarity, indolent growing nature and non-specific symptoms of the disease, often resulting in an overlook by clinicians during assessments.

REPORT: The patient initially presented with hypophosphataemia and generalised skeletal pain with multiple atraumatic fractures. Despite being treated with oral medication, the condition and symptoms progressively worsened. Blood tests revealed serum calcium levels at the upper limit and extremely low inorganic phosphate levels. Two synchronous PMTs from two different sites were detected by 'extended' whole-body Gallium-68-DOTA-Tyr3-octreotate (Ga68-DOTATATE) PET-CT. Both PMTs were resected based on our Ga68-DOTATATE PET-CT findings, which resulted in both serum calcium and inorganic phosphate levels returning within normal ranges, along with complete resolution of symptoms, leading to a remission of the disease.

CONCLUSION: Early detection and diagnosis of PMT neoplasm is crucial, as complete surgical resection of this tumour is the only definitive treatment currently known. The high diagnostic accuracy of Ga68-DOTATATE PET-CT should be the primary imaging modality for full evaluation of this disease. Upon excision, this curable disease will result in complete resolution of symptoms and blood parameters, leading to remission of the disease which significantly improves the patient's quality of life.

**THE DIAGNOSTIC VALUE OF HEPATOBILIARY SCINTIGRAPHY FOR
CHOLEDOCHAL CYSTS IN THE ERA OF MAGNETIC RESONANCE IMAGING
WITH CHOLANGIOPANCREATOGRAPHY AND HEPATIC CONTRAST AGENT:
A CASE REPORT AND REVIEW**

Tak Kwong Chan*¹; W H Luk²; F H Ng²; Rois Chan²; W H Cheung³

¹*Nuclear Medicine, Queen Elizabeth Hospital, China,* ²*Radiology, Princess Margaret Hospital, China,* ³*Surgery, Princess Margaret Hospital, China*

INTRODUCTION: Choledochal cysts (CC) represent cystic dilatations of the intra- or extrahepatic biliary tract. The diagnosis of CC may not always be straightforward particularly for the intrahepatic subtype. Whereas the gold standard for diagnosing CC is endoscopic retrograde cholangiopancreatography (ERCP), magnetic resonance cholangiopancreatography (MRCP) is commonly used as primary diagnostic tool for delineation of biliary pathologies including CC.

RESULTS: We report a case of cystic hepatic lesion near the confluence. MRCP shows direct communication between the lesion and the biliary tract, raising suspicion of CC. 99mTc-hepatic iminodiacetic acid scintigraphy (HIDA scan) was subsequently performed, showing no tracer uptake in the concerned hepatic lesion on planar and SPECT/CT images even though there is visualisation of gallbladder and transit of tracer into the intestine. Overall scintigraphic findings can confidently exclude a choledochal cyst.

CONCLUSION: Previous literature review showed MRCP has overall sensitivity of 96-100% for detection of CC and specificity of 90%. The classic appearance of CC on HIDA scan is early photopenia with delayed fill-in. But they may also show early uptake within 1 hour or never show any uptake due to biliary obstruction. To avoid false positive findings of CC on MRCP, the use of MR hepatobiliary contrast agent (such as Primovist or Eovist) may be considered. Given that HIDA scan allows serial imaging for up to 24 hours, as CC may show delayed or no fill-in of hepatobiliary agent, the use of HIDA scintigraphy appears to be a better modality than MR hepatobiliary contrast agent.

DETECTION SOFT TISSUE MASSES USED ULTRASOUND HAND : SOLID OR CYSTIC A RARE CASE

Hendra Saragih*¹

¹*Petala Bumi Hospital, Indonesia*

INTRODUCTION: Common soft tissue masses of hand include ganglia, giant cell tumor of tendon sheath, lipoma, nerve sheath tumor, glomus tumor, and hemangioma. High resolution ultrasonography hand and magnetic resonance imaging (MRI). This is very principle role characterisation of these masses. And correlation with pathological diagnosis was also important for detection this disease.

REPORT: We want report any patient a boy younger 18 years old had symptom pain ,swelling in region hand finger three location metacarpal left manus . This is size small measurement mass, and shape round . Before a boy had activity in his extracurricular school . They play doing tug of war in his school together. After finishing play tug of war three month future ,he had felt swelling pain in region finger 3 hand left . The right of hand is normally. He comes to hospital with his parent (mother) check to doctor specialist orthopedy.

CONCLUSION: Ultrasound hand successful for diagnostic soft tissue masses and to looking for solid or cystic . The others examination are conventional radiograph , and MRI extremity superior hand . We can make differential diagnostic also.

CORRELATION OF CLINICAL, MRI AND ARTHROSCOPIC FINDINGS IN DIAGNOSING LIGAMENT INJURIES OF THE ANKLE JOINT

Suraini Mohamad Saini*¹; Khaulah Karimah Azni¹; Norafida Bahari¹; Hasyma Abu Hassan¹;

Ezamin Abdul Rahim¹

¹*Imaging Department, Universiti Putra Malaysia*

OBJECTIVE: An ankle injury has been one of the commonest joints injured especially in sports which contribute to significant morbidity and time lost from work. The aim of the study is to determine the accuracy of clinical findings and magnetic resonance imaging (MRI) in relation to surgical findings in patients presenting with chronic ankle pain and/or instability.

MATERIALS & METHODS: MRI images and surgical reports were performed for all patients from 2015 until 2018 who underwent arthroscopic treatment of chronic ankle instability at two different institutions. Forty-two (42) patients met inclusion criteria. However, only 20 patients underwent surgery. Surgical findings were considered as a gold standard.

RESULTS: MRI showed 100% sensitivity for the diagnosis of Anterior Talo-Fibular Ligament(ATFL) and 85.7 % sensitivity for the diagnosis of calcaneofibular ligament(CFL) tears. Specificity was low particularly for CFL tears. High accuracy of clinical tests particularly tenderness on palpation and anterior drawer test (ADT) which showed high sensitivity in diagnosing ATFL tear. The most frequently injured ligament at the ankle was ATFL (76.2% on MRI, 77.8% on surgery), followed by CFL (76.2% on MRI, 52.4% on surgery), deltoid tear (52.4% on MRI and 4.8% on surgery) and Posterior Talo-Fibular Ligament(PTFL) tear (50% on MRI, none described on surgery).

CONCLUSION: MRI has high sensitivity and positive predictive value in diagnosing ATFL and CFL. However, the specificity is low. ADT and tenderness on palpation accurately denote ATFL injury with high sensitivity and positive predictive value. Clinical correlation based on tenderness and ADT is important when reporting MRI to avoid overdiagnosis.

MORPHOLOGICAL OF THE ARTICULAR CARTILAGE THICKNESS OF THE KNEE USING 3 TESLA MRI IN NORMAL YOUNG ADULT

Suraini Mohamad Saini*¹; Idris Ibrahim¹; Subapriya Suppiah¹; Fathinul Fikri Ahmad Saad¹

¹*Imaging Department, Universiti Putra Malaysia*

OBJECTIVE: Aim of this study is to measure cartilage thickness and to determine the association between gender, body mass index (BMI) and knee joint compartment using magnetic resonance imaging (MRI) in normal young adult. The purpose of this study of cartilage thickness is as a baseline measurement for the cartilage treatment.

MATERIALS & METHODS: Thirty subjects of a normal young adult from age of 18 to 40 year undergone imaging on bilateral knee joint using standard MRI Knee Joint protocol including proton density-weighted sequences. The 3.0T Siemen Magnetic Resonance Imaging machine was used. Cartilage thickness was then measured by two qualified radiologists. The association of cartilage thickness among BMI groups, genders and side of knee compartment were obtained.

RESULTS: Based on gender, the average cartilage thickness of male was larger than female in all compartment (right femoral cartilage (male: 2.78mm, female: 2.63mm). While, according to knee joint compartment, medial cartilage thickness was thinner than lateral cartilage (medial compartment (right: 2.61mm, left:2.67mm); lateral compartment (right: 2.69mm, left: 2.725mm) and patellofemoral compartment have the thickest average cartilage thickness (right: 4.2mm, left: 4.2mm). For body mass index, the underweight category yields the greatest average cartilage thickness (3.14mm) while normal weight (3.04mm), overweight (2.85mm) and obesity (2.94mm).

CONCLUSION: This study demonstrates that male has greater average cartilage thickness than female, medial compartment has thinner average cartilage thickness than lateral compartment and underweight category have the greatest average cartilage thickness among all other BMI groups.

**PARALABRAL CYST VS CYSTIC HYGROMA OF THE SHOULDER CAUSING
SUPRASCAPULAR NERVE COMPRESSION. A CASE REPORT**

Ezamin Abdul Rahim*¹; Arifaizad Abdullah²; Faridah Hanim Mohamed¹; Suraini Mohamad
Saini¹

¹*Imaging Department, Universiti Putra Malaysia, ²Orthopaedic, KPJ Seremban, Malaysia*

INTRODUCTION: Paralabral cyst or intraarticular ganglion cysts of the shoulder are infrequently occur. Radiologically, it is almost impossible to differentiate between the paralabral cysts and cystic hygroma of the shoulder. Paralabral cyst is a collection synovial fluid due to labral pathology, while cystic hygroma is a collection of lymphatic fluid due to lymphatic malformation. Cyst aspiration and excision will give diagnostic value to distinguish.

REPORT: A 30-year-old male complaining of right shoulder pain and weakness for 1 year which is progressively increased in size. He also complained of having on and off numbness of the right upper limb.

Magnetic resonance imaging (MRI) of the right shoulder which revealed a huge multilobulated well capsulated cystic mass at the paralabrum, insinuating in between the infraspinatus, supraspinatus and subscapularis muscles with no communication with the joint space . The mass exhibits homogenously hypointense of T1WI, hyperintense on T2WI and no enhancement on post contrast. No enhancing T2 hypointense lesion within to suggest solid component. The supraspinatus and infraspinatus muscles are reduced in bulk with diffuse T2 hyperintense signals of the muscles noted indicating atrophy due to suprascapular nerve compression. MRI also showed tear of the labrum.

CONCLUSION: Radiologically, the paralabral cysts and cystic hygroma of the shoulder cannot be differentiated. However, both may result in nerve compression (suprascapular and axillary nerve), rotator cuff muscles atrophy and joint instability when it become too large. The treatment for the symptomatic patients is similar which include arthroscopic drainage of the cyst or surgical excision.

POPLITEAL NEUROFIBROMA MIMICKING BAKER CYST

Suraini Mohamad Saini*¹; Idris Ibrahim¹; Norafida Bahari¹; Laila Mastura Ahmad Apandi¹;
Suzana Ab. Hamid¹

¹*Imaging department, Universiti Putra Malaysia, Malaysia*

INTRODUCTION: Most frequent benign tumors of peripheral nerves are derived from Schwann cells of the nerve sheath. Although it is the most frequent peripheral nerves tumor, it presents very rarely in unusual location.

REPORT: A 67-year-old man presented to the outpatient clinic of the orthopedic department with complaints of posterior knee swelling for 1 month associated with non-radiating pain. On physical examination 3x4cm mobile, the solid mass was palpable at the posterior of the knee. On ultrasound imaging (Figure 1), there is a hypoechoic lesion seen in the intramuscular layer of the right popliteal fossa. It measures 2.4cm x 2.9cm x 8.3cm (AP x W x CC). No colour Doppler signal within this lesion. No demonstrable communication with the adjacent right knee joint space. MRI showed well defined fusiform lesion arising from the neurovascular bundle measuring 2.0cm x 2.0cm x 3.3cm (AP x W x CC). It appears hypointense on T1WI, mixed signal intensity on T2WI and PD FS and shows avid peripheral enhancement in post gadolinium sequences. It tracks along with neurovascular bundle of the posterior thigh and knee with enhancement noted along with the structures predominantly proximal to the lesion.

CONCLUSION: A popliteal or baker cyst is a very common finding in popliteal region but bear in mind that benign and malignant pathology may serve as well. MRI is a recommended investigation for differentials while histopathology serves as confirmation.

**ASSESSMENT OF LIPID IN MULTIFIDUS MUSCLE, GASTROCNEMIUS, SOLEUS,
AND TIBIALIS ANTERIOR OF OBESE, OVERWEIGHT, AND NORMAL WEIGHT
YOUNG ADULTS BY PROTON NUCLEAR MAGNETIC RESONANCE
SPECTROSCOPY TECHNIQUE**

Thanaporn Petcharoen*¹; Nattacha Chamta¹; Supak Kosicharoen²; Khin Thandar Htun²; Suchart Kothan²

¹*Department of Radiologic Technology, Faculty of Associated Medical Sciences, Chiang Mai University, Thailand,* ²*Department of Radiologic Technology, Chiang Mai University, Thailand*

OBJECTIVE: Proton magnetic resonance spectroscopy (1HMRS) is a non-invasive technique which can analyze important metabolites accumulated in skeletal muscle. The main purposes of this study were to examine the relationship between four muscles (multifidus, gastrocnemius, soleus, and tibialis anterior muscles) with blood biomarkers such as Fasting glucose (FG), Cholesterol (Cho), Triglyceride (Tri), High-density lipoprotein (HDL), Low-density lipoprotein (LDL), Glycated hemoglobin (HbA1c), Alanine aminotransferase (ALT) and biometric parameters Body mass index (BMI), Waist circumference (WC), Hip circumference (HC), Waist hip ratio (W/H).

MATERIALS AND METHODS: This study examined the relationship between three groups classified by BMI. In addition, a study from 70 participants (29 male, 41 female, 23.1±1.5 years old; range, 20–28 years old).

Two radiologists and neuroradiologist evaluate the DWI (b1000 + ADC) and SWI (SWI sequences) to determine if there is haemorrhage seen on DWI or SWI.

REPORT: The results show that both blood biomarkers and biometric parameters show no correlation with multifidus muscle. However, gastrocnemius muscles are correlated with biometric parameters and HDL, and soleus has a correlation with biometric parameters, TG, HDL, FG, HbA1c, and ALT. Furthermore, the tibialis anterior has correlation with biometric parameters, FG, and HDL. Among the three groups it was found that the control group has the lowest lipids content in all four muscles, and that the overweight group has the most lipids content in gastrocnemius and tibialis anterior. Lastly, the obesity group has the most lipids content in multifidus muscles and soleus muscles.

CONCLUSION: Soleus and Tibialis anterior are the appropriate muscles which can be studied for accumulation of lipids content.

UNUSUAL PRESENTATION OF PRIMARY OSTEOSARCOMA OF THE SPINE IN AN ADOLESCENT

Nadia Fareeda*¹; Hazwan Amzar Khairul Annuar²

¹*Biomedical Imaging, University Malaya Medical Centre, Malaysia,* ²*Radiology, Ministry of Health, Malaysia*

INTRODUCTION: Primary osteosarcoma is a rare entity accounting for 3.7 - 14.5% of primary spinal tumours.

REPORT: A 12 year old girl with Beta Thalassemia major post bone marrow transplant presented with progressive bilateral lower limb weakness and numbness over a few days. Symptoms were preceded by a fall with post traumatic back pain. Examination confirmed asymmetric lower limb weakness, left worse than right, with sensory loss from T6 dermatome downwards and urinary incontinence. The anal tone was intact. No midline bony spinal tenderness or swelling. The serum alkaline phosphatase and lactate dehydrogenase were elevated. The MRI revealed T2W/TIRM hyperintense and T1W hypointense signal changes at the T5 to T7 vertebral bodies with paravertebral soft tissue thickening extending into bilateral neural foramen and epidural space and spinal cord edema. No vertebral fracture seen. Minimal blooming artefacts noted at the posterior epidural space. Intraoperatively, the extradural tumour was noted to be solid with encasement of the right T5 nerve root. Post surgery, the spinal cord and nerve roots were tumour free. Histopathological examination showed chondroblastic subtype osteosarcoma (FNCLCC grade 2). Significant improvement of bilateral lower limb power with resolution of sensory loss and urinary symptoms noted post surgery. Spinal lymphoma, primary bone tumour and post-traumatic changes were initially considered as differentials in view of MRI findings and clinical history.

CONCLUSION: Primary spinal osteosarcoma is an uncommon disease in a rare location with an insidious presentation. Imaging can provide useful information in establishing differentials however histopathological examination is pivotal in confirming diagnosis.

**MULTIFOCAL SKELETAL TUBERCULOSIS MIMICKING SECONDARY LYTIC
BONE METASTASIS: THE GREAT MIMICKER**

Ahmad Farid Zulkifle*¹; Mohammad Khairul Awang²

¹Radiology, National University of Malaysia (UKM), Malaysia, ²Radiology, Kuala Lumpur Hospital (HKL), Malaysia

INTRODUCTION: Lytic bone lesion can cause by benign, malignant or infective process. Tuberculosis (TB) is one of the infective causes that can represent as lytic lesion. Because of its non-specific clinical presentation and radiological appearance as well as low index of suspicion among clinicians, this may result in delay in diagnosis and treatment. Delay in diagnosis and treatment in this curable disease may cause high morbidity and difficult in management.

REPORT: We present a case of 63 year old immunocompetent lady presenting with paraplegia. Further examination and investigation revealed compression fracture of T7 vertebral body with spinal cord compression and multiple destructive lytic bone lesions with soft tissue component in the left ilium and sacrum. A differential diagnosis of secondary bone metastasis was initially given. Computed Tomography (CT) scan showed no possible primary tumor. Patient undergo posterior instrumentation and spinal fusion surgery and bone specimen from T7 vertebra body revealed TB with Ziehl–Neelsen staining positive for acid-fast bacilli. CT guided biopsy from the lytic bone lesion in left ilium shows chronic granulomatous inflammation and no malignant cells. She was diagnosed as a case of primary bone tuberculosis and was commenced on antitubercular therapy.

CONCLUSION: The occurrence of multifocal primary skeletal tuberculosis in immunocompetent patients is rare. We emphasise to include TB as a differential diagnosis of primary cause of lytic bone lesions, even in the absence of pulmonary symptoms or risk factors of TB infection.

SIGNIFICANCE OF 3-DIMENSIONAL FAST IMAGING EMPLOYING STEADY-STATE ACQUISITION IN COMPARISON TO PROTON DENSITY SEQUENCES IN MRI DIAGNOSIS OF ANTERIOR, POSTERIOR CRUCIATE LIGAMENTS AND MENISCAL TEARS

Mohamad Safwan Zainuddin*¹; Faizatul Izza¹

¹*Biomedical Imaging, Universiti Malaya Medical Centre, Malaysia*

OBJECTIVE: To compare the diagnostic performance of FIESTA sequence in relation to PD sequence with arthroscopy findings taken as a “gold-standard” reference in patients with ACL, PCL and meniscal injury.

MATERIALS & METHODS: Operative arthroscopic findings were reviewed and taken as gold-standard in diagnosis of ACL, PCL or meniscal tear. The reader was blinded to the arthroscopic findings and subsequent retrospective review of MRI findings on sagittal PD sequence to determine the presence of ACL, PCL or meniscal tear. A similar review was done based on sagittal 3DFIESTA sequence images. The sensitivity, specificity, accuracy NPV and PPV of each sequence were analysed. These values were subsequently compared to determine the sequence with better diagnostic performance.

RESULTS: Diagnosis made based on PD sequence resulted in a higher number of accurate diagnosis of the medial meniscus and PCL tears however the difference was not significant (p-values 0.1 to 0.5). The PD sequence showed better sensitivity and NPV in diagnosis of medial meniscal tear (p-value <0.05). There was no significant difference in diagnostic performance comparing both PD and 3DFIESTA sequence in term of sensitivity, specificity, accuracy, NPV and PPV for ACL, PCL and lateral meniscal tears diagnosis.

CONCLUSION: The diagnostic performance of 3DFIESTA sequence is lower compared to PD in the diagnosis of medial meniscal tear. Therefore, 3DFIESTA sequence is unable to replace conventional sequence (PD sequence) for evaluation of knee ligament or meniscal pathology. Thus whenever there are discrepancies of findings on PD and 3DFIESTA sequences, the final diagnosis should be based on PD sequence.

MULTIPLE SPINAL LESIONS: A DIAGNOSTIC MIMICKER

Nurdillah Idris*¹; Syazarina Sharis Osman¹

¹*Department of Radiology, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Malaysia*

INTRODUCTION: Intradural extramedullary (IDEM) tumors are the most commonly observed intraspinal tumors, comprising over 60% of tumors found within the spinal canal and the vast majority of these lesions are benign lesion. IDEM metastases are rare, but if occurs, it commonly manifest as leptomeningeal disease, secondary to drop lesions from intracranial metastasis from adenocarcinoma of the lung, prostate cancer, breast cancer, melanoma, or rarely, as result from lymphoma. Purely non-neurogenic origin of IDEM metastases is rare.

REPORT: We describe a patient with previous history of treated colon cancer, presented with progressive neurological deficit and imaging showed multiple intradural extramedullary and osseous lesions at cervical and thoracolumbar spine. With the previous known primary and multiplicity of the lesions, diagnosis of spinal metastasis was made. He underwent laminectomy with histological diagnosis of schwannoma.

CONCLUSION: This case report reinforces that intradural extramedullary metastasis is still rare, even in a known primary. We also highlight the diagnostic dilemma in this case and the importance of detecting subtle imaging findings, which may be helpful to differentiate between metastatic disease and second primary tumor.

SECONDARY TUMORAL CALCINOSIS MASQUERADING PRIMARY BONE TUMOUR

Vithiya Sanmuganathan*¹; Chew Chee Keong¹; Rozita Mohd Ghazali¹

¹*Radiology Department, Hospital Raja Permaisuri Bainun, Malaysia*

INTRODUCTION: Secondary tumoral calcinosis is a rare diagnosis that is associated with abnormal calcium and phosphate metabolism, more commonly seen in patients with end stage renal disease. On conventional radiographs, computer tomography and magnetic resonance images, secondary tumoral calcinosis will appear as multilayered lobulated calcified masses around large joints without destruction of the underlying bones.

REPORT: We report a case of a 37 years old lady with underlying end stage renal disease complicated with secondary tumoral calcinosis of the left 1st rib showing unusual destruction of this bone. The patient was initially being worked up for primary malignancy due to unexplained persistent hypercalcemia. A whole-body computer tomography was done as part of the work up which showed a large lobulated, well-demarcated mass like calcifications involving the left 1st rib with bone erosion. She was asymptomatic and showed no clinical manifestation of joint or skin swelling. Considered differential diagnosis at the time was primary bone tumour or secondary tumoral calcinosis. Thru cut biopsy of this lesion was performed and revealed diagnosis of metastatic calcinosis. This patient opted for no further intervention due to the lack of clinical symptoms.

CONCLUSION: We are presenting this case to highlight that secondary tumoral calcinosis may present with bony destruction and radiologists should be aware of these appearances to avoiding unnecessary invasive procedures such as biopsy of these lesions.

MR IMAGING OF THE SCAPHOLUNATE LIGAMENT - NORMAL ANATOMY AND CLINICAL EXAMPLES

Kenneth Sheah*¹; Selvam Sekar¹; Colin Sheah²; Ryan Sheah²; Lim Beng Hai³

¹Radiology, Orthopaedic And Hand MRI, Singapore, ²Catholic High School, Singapore, ³Hand Surgery, Charms, Singapore

LEARNING OBJECTIVE: Knowledge of the MR imaging appearances of the scapholunate ligament and common patterns of carpal instability allows more precise diagnosis in cases of wrist pain.

BACKGROUND: The scapholunate ligament is a critical stabiliser of the wrist. Disruption of this ligament may result in carpal instability and pain. The most common causes of scapholunate instability are fractures of the scaphoid, scapholunate dissociation, and radiocarpal arthritis. Scapholunate instability can be diagnosed on static MRI scan by direct visualisation of ligament tear or widening of the scapholunate ligament. There may be associated injuries such as scaphoid fracture, proximal pole avascular necrosis, scaphoid tubercle contusion, ganglion cyst, synovitis, radiocarpal osteoarthritis and intercalated segmental instability.

FINDINGS AND/OR PROCEDURE DETAILS: 65 consecutive MRI scans of the wrist were retrospectively reviewed for scapholunate ligament pathology. Proton density sequences with and without fat saturation, as well as a novel high resolution intermediate weighted sequence with ulnar deviation in the evaluation of wrist pain. Scan images are obtained on a 1.5T extremity magnet (GE Healthcare, Milwaukee, WI).

CONCLUSION: Disruption of the scapholunate ligament is a major cause of wrist pain and accounts for a high proportion of indications for hand surgery. Accurate diagnosis of ligament tears and associated co-morbidities are important in staging and reducing intra-operative exploration time.

MINI-AUDIT OF TECHNICAL ADEQUACY OF MAGNETIC RESONANCE IMAGING OF THE SHOULDER

Colin Sheah*¹; Ryan Sheah¹; Selvam Sekar²; Suprajo Amat²; Titus²; Kenneth Sheah²

¹*Catholic High School, Singapore*, ²*Radiology, Orthopaedic And Hand MRI, Singapore*

LEARNING OBJECTIVE: This is a mini audit of a single institution multi-centres MRI facility located at geographically distinct areas. The authors recognise the need for standardised protocols and performance of MRI of the shoulder at both centres. The aim of the mini audit was to establish the adequacy of MRI shoulder and identify areas for improvement.

BACKGROUND: Retrospective review of 30 randomly chosen MRI shoulder scans performed at both centres from 2018 through 2019 was performed. Images were examined by an experienced team of radiographers to identify imaging inconsistencies and perform root cause analysis.

FINDINGS AND/OR PROCEDURE DETAILS: Imaging inconsistencies identified included flipped images in 3 cases, internally rotated shoulders and movement artefact in 7 cases. Suggestions for improvement and successful results of the mini audit are provided in this presentation.

CONCLUSION: A mini audit is useful in maintenance of image quality across different imaging sites. We present our findings for quality improvement in this poster.

EXTRAOSSEOUS MASS PRESENTING AS PELVIC MASS

Wan Ahmad Firdaus Wan Chek*¹; Anithaa Tangaperumal¹; Paramendra V
Tharumakunasingam¹

¹*Department Of Radiology, Sabah Women And Children's Hospital, Malaysia*

INTRODUCTION: Extraosseous Ewing sarcomas (EESs) are rare tumours originating from soft tissues. Their clinical picture depends mainly on the primary site of the sarcoma. EES is generally found in patients between 20 months and 30 years of age, 85% of the time. Only 10% extraosseous Ewing Sarcoma are pelvic in origin.

REPORT: 19 year old nulliparous, initially presented with abdominal mass and migrating lower limb pain. It is associated with constitutional symptom for 3 months. On examination abdominal mass of 22 weeks , firm in consistency and limited mobility. Her biochemical markers show raised LDH and CA 125. Patient was clinically treated as pelvic mass suspected ovarian in origin. Thus contrasted CT Thorax, Abdomen and Pelvis was performed.

Imaging findings noted a large heterogeneously enhancing solid cystic abdomino-pelvis mass arising from pouch of Douglas with extensive local infiltration extending till the inguinal region. No fat component or internal calcification seen within. There is also nodal, liver, lung and bone metastases.

Ultrasound guided biopsy done on 16th October 2019 and the histopathological examination revealed small round cell tumour, likely Ewing Sarcoma.

CONCLUSION: Although rare, extraosseous Ewing Sarcoma should be considered in young adults presenting with a large heterogeneous pelvic mass . Evidence of internal hemorrhage and cystic necrosis, along with the lack of calcification and nodal metastases, may help indicate the diagnosis. In order to confirm the diagnosis, histopathology and immunohistochemistry analysis are mandatory.

**ASSESSMENT OF CORRELATION BETWEEN COBB'S ANGLE AND PELVIC
TILTING ON STANDING WHOLE SPINE RADIOGRAPHS IN SRI LANKA**

A L Abeyweera*¹; P Sathyatha²

¹Radiology Department, Nawaloka Hospital Plc, Colombo – 02, Sri Lanka, ²Department of Radiography and Radiotherapy, General Sir John Kotelawala Defence University, Sri Lanka

OBJECTIVE: Scoliosis is a three-dimensional deformity of the spine and rib cage. It may develop as a single primary curve (C shape) or as two curves (S shape). Commonly Scoliosis occurs in thoracolumbar area but it can occur in thoracic or lumbar area. This deformity is measured using Cobb's angle. Unequal pelvic level is one of symptom in Scoliosis. The aim of this study was assessment of correlation between Cobb's angle and distant between pelvic levels.

MATERIALS & METHODS: This was a quantitative cross-sectional study, which included the data from 131 whole spine standing radiographs. The data were collected from Nawaloka Hospital PLC Colombo – 02. Radiographs were taken when the patient is in the standing position. The Cobb's angle and hip level distance were measured manually. Further, measured data were categorized into three groups according to Cobb's angle, Normal (Cobb's angle <10), Low grade (Cobb's Angle 10 to 19) and High grade (Cobb's angle \geq 20). Pearson correlation coefficient were used to find the significance.

RESULTS: There is moderate positive correlation in normal group, small negative correlation in high grade group and there is no correlation low grade group.

CONCLUSION: There is significant correlation in pelvic tilting with normal and high grade scoliosis patient and there is no correlation with low grade group.

SURGICAL SITE INFECTION OF TOTAL HIP REPLACEMENT AND ROLE OF DUAL RADIONUCLIDE IMAGING STUDIES IN EVALUATING TREATMENT RESPONSE

Ahmad Zaid Zaniah*¹; Boey Ching Yeen¹; Siti Zarina Amir Hassan¹

¹*Nuclear Medicine Department, Hospital Kuala Lumpur, Malaysia*

LEARNING OBJECTIVE: Recognising the role and scintigraphy findings of dual radionuclide imaging studies using triple-phase bone scan and besilesomab monoclonal antibody labelled scan in evaluating chronic musculoskeletal infection.

BACKGROUND: A 63 years-old male underwent total hip replacement in 2008 for left femoral neck fracture. However, he presented with infected implant in late 2018. Explantation surgery to remove the prosthesis was done in February 2019. He developed post-operative collection at surgical site requiring joint washout and insertion of antibiotic-loaded cement spacer in March 2019. He was prescribed with prolonged course of ciprofloxacin and clindamycin antibiotics completed in November 2019. Biochemical parameters showed improvement with no apparent clinical signs of ongoing infection. Orthopaedic team planned for re-implantation arthroplasty.

FINDINGS AND/OR PROCEDURE DETAILS: Dual 99mTechnitium-based imaging studies were offered to accurately assess the patient and treatment response in view of disease chronicity with no prior scintigraphy for baseline comparison. Triple-phase bone scan (20.1.2020) demonstrated subtle tracer accumulation at left hip during blood flow and pool phases with mildly increased tracer uptake at left trochanteric region on delayed-phase images. Besilesomab scan with single photon emission computed tomography-computerised tomography (SPECT-CT) of pelvis (22.1.2020) showed diffuse faint tracer accumulation at the trochanter extending distally to mid-shaft of displaced left femur likely due to altered marrow activity or reactive changes. No abnormal increased tracer uptake seen elsewhere to suggest focus of infection.

CONCLUSION: Correlation between both radionuclide imaging studies indicated favourable findings with no obvious scintigraphy evidences of significant residual ongoing infection at the left hip.

MEDIAL THIGH PAIN IN YOUNG ATHLETE: MR IMAGING FINDINGS

Nurul Fathiah Khalid*¹; Lily Lim²; Hamzaini AH¹

¹Radiology Department, PPUKM, Malaysia, ²Radiology Department, HKL, Malaysia

INTRODUCTION: There are multiple contributory factors for medial thigh pain, whereby stress related injuries is a consideration. Previous literature has described stress related injuries of femoral neck and bony pelvis, however is far less common in the femoral shaft. We would like to present the imaging findings of adductor avulsion insertion syndrome as a cause of thigh pain.

REPORT: 15 years old cross country runner man presented with history of left mid thigh pain for the past 6 months of no diurnal variation, relieved with rest. On plain radiograph shows no significant findings. He was treated conservatively however pain persisted during subsequent follow up and exacerbated only by exercise. MRI showed thin rim of periosteal high signal intensity posteromedial aspect of proximal left thigh on T2W fat saturated sequence. There is associated intramedullary and adjacent cortex high signal intensity. No associated soft tissue mass. He was subjected to rest and symptoms improved. Subsequent CT imaging depicts smooth periosteal reaction along the posteromedial aspect of proximal left thigh. Thus, adductor avulsion insertion syndrome is a favored diagnosis.

CONCLUSION: Adductor avulsion insertion syndrome is a diagnosis of choice hence the awareness of its appearance on MR imaging is crucial as it can mimic neoplastic features. Unnecessary biopsy then can be prevented. Short term follow up is recommended after instituting treatment to exclude other possible differentials, especially if symptoms persist. Early recognition of this condition will also help to prevent further osseous damage leading to frank fracture.

TUMOUR-TO-TUMOUR METASTASIS (TTM)

Nurul Aida Selamat*¹; Suryasmi Duski²

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia,* ²*Department Of Orthopaedics, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Presence of two histologically distinct tumours at one location is a rare phenomenon termed as tumour-to-tumour metastasis (TTM). The most common metastatic donor neoplasms are lung and breast cancers. This is a case report of a patient who was diagnosed with adenocarcinoma of the lung that metastasized into a pre-existing right gluteal lipomatous tumour.

REPORT: A 60-years-old lady who presented with 3 years history of dry cough and back pain. Serial plain radiographic and computed tomography (CT) examinations of the thorax demonstrated a progressively enlarging left upper lobe cavitating lung lesion. A histopathological examination of specimen obtained via image-guided biopsy of the lung lesion was proven to be an adenocarcinoma. The staging CT examination of her thorax, abdomen and pelvis regions prior to starting chemotherapy regime demonstrated a circumscribed intermuscular lipomatous tumour within the right deep gluteal region. Follow-up post chemotherapy CT examination seven months later demonstrated two enhancing soft-tissue nodules within the right gluteal lipomatous tumour, and these nodules were further evaluated with a magnetic resonance imaging (MRI) examination. Histopathological examination of specimen obtained through image-guided biopsy of these enhancing nodules confirmed the diagnosis of tumour-to-tumour metastasis.

CONCLUSION: We have to be aware that unusual, complex patterns within benign soft-tissue or bone tumours may be a reflection of unexpected conditions, such as insufficiency injury, malignant transformation or secondary metastatic disease, as exemplified by our case report. It also highlights the value of reviewing previous radiological imaging findings in such cases.

PRIMARY SPINDLE CELL SARCOMA OF BONE: IMAGING FEATURES IN 37 PATIENTS

Nurul Aida Selamat*¹; Asif Saifuddin²

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia,* ²*Radiology Department, Royal National Orthopaedic Hospital Stanmore, United Kingdom*

OBJECTIVE: To determine clinical and imaging features of primary spindle cell sarcoma of bone (1° SCSB).

MATERIALS & METHODS: Retrospective review of patients with histologically proven diagnosis of 1° SCSB between January 2007 and September 2018. Data collected including age, sex, site of lesion, radiographic features and magnetic resonance imaging (MRI) findings.

RESULTS: 37 patients were included (males = 20, females = 17; mean age 48 years, range 10 - 85 years). Thirty-two lesions (86.5%) arose in the long bones, in which 27 (73.0%) involved the lower limbs while 4 cases (10.8%) arose in flat bones and 1 (2.7%) in the spine. Radiographs were available in 30 cases (81.1%), in which 5 cases (16.7%) showed a non-aggressive pattern of bone destruction while 25 cases (83.3%) showed an aggressive pattern of bone destruction. Matrix mineralisation seen in only 1 case, while 8 cases demonstrated cortical destruction. MRI demonstrated non-specific signal characteristics of solid soft-tissue mass, with only 2 cases demonstrating small internal cystic components manifest as fluid levels. The mean length of marrow involvement was 100.4 mm (range 15 - 253 mm). Skip metastases in the same long bone seen in 4 (10.8%), and extra-osseous mass was demonstrated in 32 cases (86.5%). Lung metastases were diagnosed during staging of the disease in 9 (24.3%) patients.

CONCLUSION: 1° SCSB should be considered in adult patients presenting with an aggressive lytic lesion without matrix mineralisation, especially cases involving long bones with large intramedullary and extra-osseous solid soft-tissue components.

TWO CASE REPORTS OF LIPOFIBROMATOUS HAMARTOMA OF MEDIAN AND ULNAR NERVES ASSOCIATED WITH MACRODACTYLY AND THEIR MRI FEATURES.

Vemuri Naga Vara Prasad*¹; Songa Ramya¹

¹*Radiology, Global Superspeciality Hospital, India*

INTRODUCTION: Lipofibromatous hamartoma (LFH) of the nerve is a rare benign congenital lesion, which accounts for less than 1% of the benign soft tissue tumors. It often presents in 2nd or 3rd decade. It is frequently associated with macrodactyly in approximately 20 to 66% of the cases. We describe USG and MRI features of two cases of LFH associated with macrodactyly. One case involving median nerve alone while other case involving median and ulnar nerves.

REPORT:

Case:1

A 35 year male patient presented with slowly growing painless mass lesion in volar aspect of distal forearm and wrist with enlarged middle and ring fingers on left side since 20 years. Ultrasonography revealed hyperechoic mass lesion with multiple linear hypoechoic areas along the course of median nerve with no significant internal vascularity. MRI was done to know extent of lesion, it revealed bulky median nerve and its digital branches involving middle and ring fingers with multiple cord like structures within hypertrophied fat along with infiltration of subcutaneous tissue in middle finger.

Case:2

A 28 year male patient presented with slowly enlarging, painless mass in volar aspect of distal forearm and wrist, associated with macrodactyly since birth, however, developed carpal and cubital tunnel syndrome since 5 months. MRI revealed diffuse hypointense areas in T2WI (fibrosis) along fatty infiltration of median nerve and its branches. In addition to median nerve, ulnar nerve showed same features at elbow (cubital fossa).

CONCLUSION:

LFH of the nerve is a rare benign lesion associated with macrodactyly in few cases. MRI appearance of LFH precludes the need for histological diagnosis.

LUMBAR DISC DEGENERATIVE DISEASE AND LUMBAR STENOSIS: A CORRELATION BETWEEN THE MRI FINDINGS AND DISABILITY AMONG THE LOW BACK PAIN PATIENTS USING OSWESTRY DISABILITY INDEX IN HOSPITAL SERDANG, MALAYSIA

Rozi Mahmud*¹; Suraini Mohamad Saini²; Faridah Hanim Mohamed²

¹*Center For Diagnostic Nuclear Imaging, Universiti Putra Malaysia,* ²*Imaging Department, Universiti Putra Malaysia*

OBJECTIVE: Low back pain is a very common illness. Numerous studies have been conducted to look for the cause. However, none of the studies has proven the presence of a significant association between MRI findings and patients' symptomatology.

MATERIALS & METHODS: This study conducted in Hospital Serdang from January 2016 until December 2018. The secondary data were extracted from the Hospital Information System (eHIS), Reporting Information System (RIS) and Picture Archiving and Communication System (PACS) which include age, race, gender, Oswestry Disability Index score, presence of disc prolapsed and measurement of the spinal canal (AP and CSA).

RESULTS: About 104 patients were included in this study. The common age group is the 30 - 39 years old, with female patients is predominant. From the Oswestry Disability Index (ODI), pain intensity is the most disturbing factor while standing is the most aggravating factor of the pain. It has shown that there is no association between the MRI findings (disc prolapsed and lumbar stenosis) with the disability of the patients (ODI score). There is a significant correlation between the disc prolapsed and the age of the patients. This result is similar to previous studies.

CONCLUSION: No correlation between the MRI findings of disc degeneration and lumbar stenosis with the patients' disabilities. These could be due to structural and anatomical variance among patients. Nevertheless, MRI is still the most accepted modality performed in low back pain patients to assess the pathologies and to give additional information regarding the source of the pain.

MRI BILATERAL THIGH IN QUANTIFYING OBESITY AND SARCOPENIA IN ELDERLY AND ITS RELATION TO FALL AND FALL-RELATED OUTCOMES

Vijeya Priyan Subramaniam*¹

¹*Biomedical Imaging, University Malaya Medical Center, Malaysia*

OBJECTIVE: Falls affect one in four individuals aged 65 years and above annually, while the prevalence of obesity is increasing in this age group. Thus, both posing a significant public health issue in Malaysia and worldwide. Obesity may precipitate sarcopenia, hence increasing the risk of fall. With the advent magnetic resonance imaging (MRI) technique, more accurate measures of body fat and lean body mass are now available. This study will determine the appropriate indices for excess body fat in older persons, methods of evaluating muscle loss in older persons with excess body fat, how excess body fat is related to increased risk of falls, and more specifically how muscle volume and quality influences falls outcomes.

MATERIALS & METHODS: A total of 80 individuals age between 60-80 years of age with no contraindications to MRI scans are selected. These patients then subjected to MRI of bilateral thigh as well as other tests. Muscle, subcutaneous fat, and intramuscular fat were automatically segmented using MRI machine learning based segmentation method. The muscle and fat at cross-sectional area at 50% femur length and middle third of both thighs are segmented and measured.

RESULTS: Both fallers and non-fallers individuals with BMI<25 have almost similar mean of BMI, WHR and WC but slightly lower body fat-to-muscle ratio noted among the fallers($p=0.097$). Higher body fat-to-muscle ratio seen as the age advances($p=0.092$).

CONCLUSION: MRI is more sensitive to measure body fat and muscle mass in elderly people compared to other methods. Sarcopenia increases as age increases.

MRI KNEE ASSOCIATION OF PERIPHERAL VERTICAL MENISCAL TEARS WITH ANTERIOR CRUCIATE LIGAMENT TEARS

Ummar Siddique*¹; Shahjehan Alam¹; Seema Gul¹; Syed Ghulam Ghaus¹; Muhammad Asif¹

¹*Radiology Department, Rehman Medical Institute Peshawar, Pakistan*

OBJECTIVE: The purpose of this article is to describe prevalence of peripheral vertical medial meniscal tear and its association with anterior cruciate ligament (ACL) tears as compared to other types of meniscal tears.

MATERIALS & METHODS: The cross-sectional study was conducted at Radiology department of Rehman Medical Institute Peshawar from June 2018 to December 2019. Following Institutional Review Board approval, a retrospective review of 100 knee MR examinations with imaging diagnoses of ACL tear was performed to assess the location and morphology of the meniscal tear and to assess the status of the ACL. ACL tear was assessed on Coronal PD and meniscal injuries were assessed on PD FATSAT in both coronal and sagittal planes.

RESULTS: 40% peripheral vertical meniscal tears were identified, all of whom had ACL tears and one with chronic ACL deficiency causing anterior tibial translation. The difference in the prevalence of vertical type meniscal ACL tear with ACL tear (40%) compared with the prevalence of other meniscal tears association with ACL tear was statistically not significant ($P > 0.001$).

CONCLUSION: We concluded from our results that peripheral vertical meniscal tears, particularly when involving the posterior horn, are associated with ACL tear. The finding of this type of tear on knee MR imaging should prompt close inspection of the ACL for evidence of acute or chronic injury, and its presence may help make the diagnosis of ACL tear in equivocal cases.

DIRECT MR ARTHROGRAM OF THE SHOULDER: HOW WE DO IT.

Muhammad Tahir*¹; Maliha Fansur¹

¹*Department of Radiology, Healthpoint Hospital, United Arab Emirates*

LEARNING OBJECTIVE:

- Demonstrate CT guided puncture technique for MR arthrogram
- Describe indications and contraindications
- Demonstrate optimization of radiation dose
- Demonstrate spectrum of pathology at our institution

BACKGROUND: The shoulder joint inherent instability is well known. Direct MR arthrography of the shoulder is considered as an investigation of choice for shoulder instability especially in postoperative shoulders. In Direct MR arthrography, the distension of the shoulder joint capsule enhances the accuracy of diagnosis as the glenoid labrum, articular cartilage, glenohumeral ligaments, articular surface of rotator cuff and long head of biceps tendon are better visualized. Intra articular contrast for arthrography can be injected under ultrasound, fluoroscopy and CT guidance.

FINDINGS AND/OR PROCEDURE DETAILS: We describe a CT guided needle placement technique that is feasible, more accurate and has less complications with special emphasis on optimization of radiation dose.

CONCLUSION: Direct MR arthrography enhances the diagnostic accuracy of shoulder pathology through better visualization of the intra-articular structures. CT guided intra-articular contrast injection is an alternative feasible technique to ultrasound and fluoroscopy guided puncture.

**ASSESSMENT OF SEVERITY OF CARPAL TUNNEL SYNDROME WITH
ULTRASONOGRAPHY: VALUE OF MEDIAN NERVE CROSS-SECTIONAL AREA IN
RELATION TO DISEASE SEVERITY ON NERVE CONDUCTION STUDIES**

Aliya Ahmed^{*1}; Ghazala Malik²; Hassan Imtiaz³; Ramish Riaz²; Muzhar Badsha³; Shahla
Zameer²

¹*Diagnostic Radiology department, Pakistan Institute of Medical Sciences Islamabad(PIMS),
Pakistan,* ²*Radiology, PIMS, Pakistan,* ³*Neurology, PIMS, Pakistan*

OBJECTIVE: Clinical features are enough for establishing the diagnosis of carpal tunnel syndrome. Nerve conduction studies give quantitative information regarding median nerve function therefore good at predicting outcome of intervention. Ultrasound being easily available, cost effective and real time is a promising modality for diagnosis and grading carpal tunnel syndrome.

MATERIALS & METHODS: This correlational study conducted in Neurology and Radiology Department of Pakistan Institute of Medical Sciences, Islamabad from January 2018 to January 2019. Total 50 patients with 85 wrists involved were included in the study. The Patients with positive nerve conduction study were included. Patient with h/o wrist trauma were not included. Detailed history & clinical features were recorded. All patients with positive result on nerve conduction studies underwent ultrasound examinations. Fifty control wrists were also included to establish the normal median nerve cross sectional area value in our study population. Results were recorded. Data was analyzed and appropriate statistical tests were applied by using SPSS v20.

RESULTS: Mean cross sectional area of median nerve for controls was 6.34 ± 1.23 . Mean cross sectional area of median nerve for mild CTS was 8.05 ± 1.72 , moderate CTS was 11.15 ± 2.32 , severe was 17.49 ± 4.93 . Strong correlation was found between ($r=0.76$, $P\text{-value} < 0.0001$) between increased cross-sectional area on Ultrasonography and severity of CTS on NCS. Other finding on Ultrasonography included flattening in 4 and fluid in 10 affected wrists.

CONCLUSION: Increased cross-sectional area on Ultrasonography and severity of carpal tunnel syndrome on nerve conduction studies are very strongly correlated.

**A CASE REPORT : GIANT CELL TUMOR WITH SECONDARY ANEURYSMAL
BONE CYST OF FEMUR**

Agnes Wanda Suwanto*¹; Irma Darinafitri¹

¹*Radiology Department, Medical Faculty of Brawijaya University, Indonesia*

INTRODUCTION: Giant cell tumor or osteoclastoma is generally a benign, cystic components that represent the presence of an aneurysmal bone cyst (ABC) occur in 14 % of GCT . GCTs with a prominent ABC component may demonstrate more aggressive imaging findings.

REPORT: A 30-year-old woman presented to the emergency department with knee pain as a chief complain accompanied with enlargement of right knee without history of prior surgery or trauma to his left knee. The radiograph demonstrated mass with lytic lesions centered in the metaphysis with cortical thinning and expansile remodeling, a narrow zone of transition in the distal meta-epiphyseal region of the right femur, suspected osteosarcoma. MRI revealed Marrow mass replacement visible on the distal os right femur, solid with multiloculated cystic component heterogeneous iso-hypointense T1WI, hyperintense T2WI / PD-FS, partially restricted DWI on solid, blooming SWI, strongly strengthening the solid after adding contrast, firm boundary, firm boundary, edge T2WI / PD-FS hyperintense lobulated, involving epiphyseal-metaphysical-diaphysis.

CONCLUSION: Cystic solid aggressive mass with hemorrhagic components in epiphyse-metaphyse-diaphyte 1 / 3rd distal right femur filling the right intraarticular tibiofemoral joint right and right patelofemoral joint, supporting the picture of Giant Cell Tumor with secondary ABC.

The majority of GCTs occur in skeletally mature patients between 20 and 50 years of age, and the most common location is the meta-epiphyseal region around the knee. These cystic areas may depict variable signal intensity, depending on their contents such as liquefaction, variable stages of hemorrhage, and necrosis.

THE UTILITY OF MULTIMODALITY IMAGING IN EVALUATING ATYPICAL SPINAL TUBERCULOSIS

Timothy Shao Ern Tan*¹; Rameysh Danovani Mahmood¹

¹*Department of Radiology, Changi General Hospital, Singapore*

INTRODUCTION: Spinal tuberculosis in its classical form is often easily detected on imaging by destruction of contiguous vertebral bodies and intervertebral discs, followed by paraspinal/psoas abscess formation, vertebral collapse and progressive kyphosis frequently affecting the thoracolumbar junction. Atypical forms are however uncommon, and can often mimic other pathologies such as malignancy. We discuss the diagnostic challenges in a case of spinal tuberculosis with atypical features resembling neoplastic processes and highlight the utility of multimodality imaging evaluation.

REPORT: A previously well 50-year-old woman presents with 2-months of worsening cough and back pain which did not improve with broad-spectrum antibiotics. Clinical examination was unremarkable apart from focal tenderness at the thoracic spinal region. Initial laboratory investigations revealed leukocytosis and raised C-reactive protein. A chest radiograph was performed, revealing thoracic paravertebral soft-tissue swelling. Further CT and MRI work-up showed a destructive T8–T10 paravertebral mass with associated vertebral abnormalities causing mild cord compression, along with multiple pulmonary and hepatic nodules, overall suspicious for metastatic malignancy. The mass was subsequently sampled and drained under CT guidance, demonstrating caseating granulomata with acid-fast bacilli, thus confirming the diagnosis of spinal tuberculosis. The patient was started on antituberculous therapy with significant clinical and radiological improvement on follow-up.

CONCLUSION: This case highlights the reliability of multimodality imaging in distinguishing atypical spinal tuberculosis from important mimics, assessing for associated complications, extra-skeletal disease and guiding histopathological tissue sampling and therapeutic abscess drainage. Hence, radiologists play an important role in alerting clinicians to atypical presentations to ensure early diagnosis and timely management.

EWING SARCOMA WITH SKIP LESION: A RARE PRESENTATION

Sharmila Arrumugam*¹; Noor Khairiah A. Karim¹; Juhara Haron¹

¹*Radiology, Hospital Universiti Sains Malaysia*

INTRODUCTION: Ewings sarcoma is the second commonest primary bone malignancy amongst children. They present with painful swelling. A skip lesion is a focus of neoplasm within the host bone separated by an interval of normal bone from the lesion. As the clinical presentation is non specific, imaging is helpful for diagnosis. Herein, we describe a case of the left knee Ewings sarcoma with rare presentation of skip lesions.

REPORT: An eleven year old girl presented with painful left knee swelling. She denied history of trauma. Clinical examination revealed left knee swelling with restricted movements. Her serum alkaline phosphatase and lactate dehydrogenase were raised, and the rest of blood parameters were within normal range. Her knee radiograph revealed findings consistent of an aggressive bone lesion, evidenced by eccentrically placed permeative lesion at metadiaphysis of proximal left tibia with cortical destruction, periosteal reaction and soft tissue swelling. Magnetic Resonance Imaging (MRI) knee showed heterogenous enhancing solid lesion at the metadiaphyseal of proximal left tibia with extension to the epiphysis. Cortical break with bony expansion and soft tissue component were demonstrated. At distal femur, there were lesions with similar intensity to the mentioned lesion, representing skip lesion. Her biopsy result was consistent with Ewings sarcoma

CONCLUSION: Clinical, imaging findings, and histopathology correlation are needed to achieve a diagnosis. Presence of skip lesions alter the conventional treatment of local excision and chemotherapy, and this gives potential implication in terms of prognosis.

INCIDENTAL FINDINGS ON MRI OF SACROILIAC JOINTS

Aasma Nudrat Zafar*¹; Saqib Qayyum Ahmad²

¹*Diagnostic Radiology, Foundation University Medical College And Fauji Foundation Hospital, Pakistan* , ²*Pathology, Bahria International Hospital, Pakistan*

OBJECTIVE: Sacroiliitis or inflammation of sacroiliac joints (SIJ) can occur in multiple diseases. In asymptomatic patients, it is difficult to evaluate on clinical examination only . Many other pelvic and low spinal diseases can mimic sacroiliitis . Magnetic resonance imaging (MRI) is the modality of choice for its diagnosis. Careful scrutiny of extra-articular tissues in MRI scan can incidentally reveal important information at no additional cost. This study aims to investigate the frequency, distribution and nature of these incidental findings.

MATERIALS AND METHODS: This study was carried out at Radiology department of Fauji Foundation Hospital, Rawalpindi from January 2018 to September 2020. All patients undergoing MRI of SIJ were included except those who could not lie down supine in MR gantry. Data regarding age, sex, MRI findings related to SIJ and extra-articular tissues were recorded.

RESULT: Of 254 patients, 139 (54.72%) were diagnosed with sacroiliitis. Out of these 139, 55 subjects (39.56%) showed at least one incidental extra-articular pathology. Of 115 patients with normal SIJ, 48 (41.73%) had incidental extra-articular findings. Overall a total of 103 out of 254 patients (40.55%) belonging to both groups showed incidental extra articular lesions. Commonest finding seen in patients with extra-articular pathology was lower lumbar degenerative disc disease in 54/103(52.42%) patients, followed by genitourinary, osseous, soft tissue pathologies and transitional vertebra that were seen in 20/103(19.41%), 11/103(10.67%), 11/103(10.67%) and 7/103 (6.79%) subjects respectively.

CONCLUSION: Incidental features on MRI of SIJ are common and must be reported, as these can have important clinical implications.

**MRI DIAGNOSIS OF AVASCULAR NECROSIS - A CASE REPORT OF MULLER
WEISS SYNDROME**

Aasma Nudrat Zafar*¹; Ishtiaq Ahmed Qureshi²; Umar Islam³; Saerah Iffat Zafar⁴; Noureen
Tassadaq⁵

¹*Diagnostic Radiology, Foundation University Medical College And Fauji Foundation Hospital, Pakistan*, ²*Radiology, Jinnah Hospital, Pakistan*, ³*Radiology, Fauji Foundation Hospital, Pakistan*, ⁴*Radiology, Armed Forces Institute Of Radiology, Pakistan*, ⁵*Rehab Medicine, Fauji Foundation Hospital, Pakistan.*

INTRODUCTION: Early diagnosis of avascular necrosis (AVN) of tarsal navicular is critical to prevent bone damage and deformity. Magnetic resonance imaging (MRI) carries 95% accuracy for its detection. We present a case with advanced AVN.

REPORT: A 56-year-old male was referred for plain MRI right ankle . He had twisting injury in his teenage after which he used to develop swelling and pain at mid part of dorsum of foot. Symptoms showed increased intensity for past two months. Plain radiograph showed early degenerative joint disease at ankle and small joints of foot. There was no fracture or soft tissue swelling. MRI showed trace joint effusion with partially collapsed navicular laterally. Intraosseous edema signal was noted across both sides of talonavicular joint and in anterior half of calcaneus. Talonavicular joint space was reduced with mild cortical irregularity, subarticular cystic areas and marginal osteophytes. Diagnosis of post traumatic avascular necrosis of navicular (Muller-Weiss syndrome) with secondary osteoarthritic changes at talonavicular joint was made. CT scan showed thinned sclerosed navicular in lateral half. Mild erosions, osteophytes and joint space reduction were better visualized. Patient initially improved with physiotherapy sessions. Surgery was not advised.

CONCLUSION: MRI is pivotal in early diagnosis of avascular necrosis to prevent permanent bone loss.

RECURRENT GIANT CELL TUMOR OF TENDON SHEATH

Albert Alfonso*¹

¹*Radiology, Hasanuddin University, Indonesia*

INTRODUCTION: GCTTS is also known as tenosynovial giant cell tumor. These tumors often occur in patients aged 30-50 years, with a peak incidence at the age of 40-50 years and are very rarely found in patients aged under 10 years or over 60 years. GCTTS occurs most commonly in the tendon sheaths of the feet and hands, presents with pain and swelling and may present joint effusions and impaired movement of the joints. GCTTS is diagnosed by X-ray and MRI. There is a transition zone between normal bone and soft tissue mass. Lesions are usually eccentric, expansive in nature so that the cortex becomes thin.

REPORT: A 29-year-old woman with recurring lumps on her left ring finger since 2 years underwent 2 operations. By X-ray and MRI examination, it was found that soft tissue tendon tumor flexor digitorum profundus digiti IV manus sinistra was suggestive of Giant Cell Tumor. Histopathology confirmed a giant cell tumour originating from the tendon sheath.

CONCLUSION: GCTTS is a rare case but important to be diagnosed and treatment. MRI imaging is the best choice of radiological examination to diagnose GCTTS.

**ASEPTIC LYMPHOCYTE DOMINATED VASCULITIS-ASSOCIATED LESIONS
SECONDARY TO METAL ON METAL HIP PROSTHESIS**

Chung Siok Li*¹; Eelco Boorsma¹; Simon Spencer²

¹*Radiological Sciences, Queen Elizabeth the Queen Mother Hospital, United Kingdom,*

²*Radiology, William Harvey Hospital, United Kingdom*

LEARNING OBJECTIVE: To evaluate the diagnostic performance of a thyroid ultrasound computer-aided diagnosis (CAD) software in comparison with computer-assisted subjective analysis for thyroid nodule differentiation.

BACKGROUND: The term AVLAL is synonymous and interchangeable with ARMD, pseudo tumours and metallosis which occurs in metal-on-metal prostheses. Essentially, this soft tissue mass can present in a spectrum of imaging findings and can lead to debilitating destruction. It is postulated that the condition occurs because of a type IV delayed hypersensitivity related to shedding of metal ions secondary to excessive wear especially in high loading joints.

FINDINGS AND/OR PROCEDURE DETAILS: CR can help exclude periprosthetic loosening and infection. However, CR has a low sensitivity in excluding AVLAL. Radiologists need to be aware of the range of imaging findings from postoperative findings to infection and ALVAL. Currently, there is no universal grading system but we can stratify findings to aid management. The key finding is that it is periprosthetic. Imaging findings are dependent on lesion type which can be predominantly cystic or solid. The lesion is typically contiguous with the femoral component and confined by a thick ragged capsule. The Anderson staging system can be used to grade AVLAL lesions into mild, moderate or severe.

CONCLUSION: Early identification of AMRD is important in guiding management.

**FGF23-RELATED HYPOPHOSPHATEMIC OSTEOMALACIA: CURRENT VIEWS ON
ETIOPATHOGENESIS, DIAGNOSTIC MODALITIES, AND THERAPEUTIC
OPTIONS**

Masaki Katsura*¹; Jiro Sato¹; Masaaki Akahane²; Osamu Abe¹

¹Radiology, Graduate School of Medicine, The University of Tokyo, Japan, ²Radiology, School of Medicine, International University of Health and Welfare, Japan

LEARNING OBJECTIVE: By viewing this educational exhibit, the viewers will be able to

- describe the pathophysiological actions of fibroblast-growth factor 23 (FGF23) on phosphate homeostasis
- recognize the clinical and biochemical profile of patients with FGF23-related hypophosphatemic osteomalacia
- describe a stepwise diagnostic approach for localizing FGF23-producing tumors
- discuss the role of functional imaging and venous sampling and acknowledge their pitfalls and limitations

BACKGROUND: FGF23 is a hormone that regulates phosphate metabolism, and excessive FGF23 activity causes hypophosphatemic osteomalacia. The major acquired form of FGF23-related hypophosphatemic osteomalacia is tumor-induced osteomalacia, which is caused by an ectopic overproduction of FGF23 from a mesenchymal tumor.

FINDINGS AND/OR PROCEDURE DETAILS: Complete surgical removal of the ectopic FGF23-producing tumor is the current standard of care and is the only definitive therapy of FGF23-related hypophosphatemic osteomalacia. However, pre-surgical localization of FGF23-producing tumors can be quite challenging, because these tumors are typically small, slow growing and can arise in bone and soft tissue of almost any part of the whole body. Therefore, a stepwise diagnostic approach is suggested for localizing FGF23-producing tumors, which utilizes functional imaging (somatostatin receptor imaging and/or 18FDG-PET), followed by anatomical imaging (CT and/or MR) and venous sampling.

CONCLUSION: Identification of FGF23-producing tumor as the responsible lesion for osteomalacia is crucial because complete excision of the tumor leads to resolution of the osteomalacia. Radiologists play a profound role in the diagnosis and treatment planning of FGF23-related hypophosphatemic osteomalacia.

**“DOT IN CIRCLE” SIGN, A CHARACTERISTIC MRI SIGN FOR SOFT TISSUE
MYCETOMA**

Chiam Wooi Kee*¹; Suraya Aziz¹; Maizatul Jamny Mahmood²

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Mycetoma is a chronic localized suppurative granulomatous disease of soft tissue that cause by true fungal (eumycetoma) and bacteria (actinomycetoma). This condition was often misdiagnosed as neoplasm which lead to delayed in management. Early diagnosis is essential to avoid deformity and disability. Although definitive diagnosis could be achieved by histology and microbiological cultures. However, these investigations is invasive and time consuming. Multiple literature described MRI sign of “dot in circle” which is high specific for mycetoma. We present a case of histological proven mycetoma of left knee with characteristic “dot in circle” sign.

REPORT: 61 years old gentleman with progressive left knee swelling and pain for 3 years. Initial MRI of left knee was reported as left knee soft tissue inflammation. The patient was referred to tertiary referral centre for further investigation, in view of possible malignancy. MRI thus reviewed again, was reported as enhancing infiltrative extraarticular subcutaneous soft tissue lesion at left knee joint with adjacent muscle involvement. Multiple hyperintense T2W/STIR lesions with central hypointensity and peripheral hypointensity rim suggestive of “dot in circle” sign. No adjacent bony signal changes. The MRI findings raise suspicion of chronic inflammatory lesion secondary to fungal infection. Excision biopsy done and HPE shows chronic granulomatous inflammation with fungal infection and the fungal C&S - isolated *Fusarium* sp.

CONCLUSION: The awareness of the typical “Dot in circle” sign in soft tissue lesion is important for early diagnosis of mycetoma, able to use to distinguish mycetoma with other lesions.

RARE OCCURRENCE OF ARTHROGRYPOSIS MULTIPLEX CONGENITA IN A 26-YEAR-OLD PREGNANT FEMALE: A CASE REPORT AND REVIEW OF LITERATURE

Khurram Khaliq Bhinder*¹; Shaista Riaz²; Zainab Malik¹

¹Radiology, Shifa International Hospital, Pakistan, ²Radiology, McGill University, Canada

INTRODUCTION: Arthrogyposis multiplex congenita (AMC) refers to the development of multiple joint contractures affecting two or more areas of the body prior to birth. This disease affects joint prenatally. A permanent position either fixed in a bent or straight leads to a contracture. This contracture eventually results in muscular atrophy. The severity of this disease depends upon the number of joints involved.

REPORT: A G2P1+0 married for 3 years to her cousin visited a private hospital for routine antenatal scan. Previous pregnancy was uneventful via SVD. Unaware of her pregnancy, she took piroxicam, movax and bisleri for typhoid. Patient had family history of hydrocephalus. Obstetric scan revealed single alive intrauterine pregnancy with breech extended presentation and longitudinal lie. Placenta was fundal posterior. Amniotic fluid was just adequate. Mildly dilated lateral ventricles up to 12mm were noted. Pulmonary hypoplasia with narrowing of chest cavity. No movement with reduced muscle mass was seen in all the limbs (figure#1). Hip joint was fixed and flexed with extended knee joint. Features were suggestive of arthrogyposis multiplex congenita. BPD 5.7cm, HC 23.9cm, FL 4.5cm, FAC 15.2cm. EFW 518gm (+10%). GA based on measurements 24+wks. Placental maturity grade 1. Foetal bradycardia 60bpm observed for 3 min. The patient was referred to gynaecologist for abortion.

CONCLUSION: Single alive intrauterine pregnancy of 24+wks with features suggestive of arthrogyposis multiplex congenita. Contraction of infection and concomitant use of category C drugs as well as genetic non-syndromic associations appear to be the culprits in this patient.

**CASE OF AN UNUSUAL CAUSE OF LOW BACK PAIN - BERTOLOTTI SYNDROME
WITH TUBERCULOUS SACROILIITIS.**

Sharllina Prasad*¹; Farihah Abd Ghani¹; Manorekha Supramani¹

¹*Radiology Department, Hospital Sungai Buloh, Malaysia*

INTRODUCTION: Bertolotti syndrome (BS) is an association between lumbosacral transitional vertebrae (LSTV) and low back pain. In patients with underlying BS who presents with significant low back pain, a diagnosis of BS solely should not be made. Other associated causes must be investigated along with radiological imaging.

REPORT: We report a case of a 26-year-old female who presented with severe low back pain for 2 months causing immobility, refractory to analgesics. Examination revealed tenderness over the paravertebral and left sacroiliac joint. Lumbosacral radiograph showed LSTV with enlarged left L5 transverse process and left iliac pseudo-articulation. Left sacroiliac joint appeared widened and irregular. Non-enhanced CT scan showed additional extensive lytic bony changes with background degenerative changes at the left sacroiliac joint and pseudo-articulation site with adjacent bulky muscles and fat stranding. Correlating CT findings with patient's clinical and biochemical profile, infective sacroiliitis with collection was suspected and hence proceeded with MRI. MRI showed multiloculated rim enhancing collections within the pseudo-arthrosis and left sacroiliac joint with adjacent marrow edema and intramuscular collections extending into the left L5/S1 neural foramen. CT guided biopsy and drainage of left sacroiliac joint collection was then performed. Culture and sensitivity of the sample showed Mycobacterium tuberculosis complex. Thereafter, anti-tuberculous regime was commenced. Patient showed excellent improvement to date.

CONCLUSION: Bertolotti syndrome refractory to analgesics should raise suspicion of concurrent pathology particularly infection, possibly due to long term biomechanical disruption at the pseudo-articulation site. Role of imaging is essential in the diagnosis of this case aiding in early treatment.

OVERVIEW OF GENERALIZED LYMPHATIC ANOMALY

Hoang Anh Thi Van*¹; Van Trung Hoang¹; The Huan Hoang¹; Cong Thao Trinh²

¹*Department of Radiology, Thien Hanh Hospital, Vietnam,* ²*Department of Radiology, Hue Central Hospital, Vietnam*

LEARNING OBJECTIVE: To present generalized lymphatic anomaly (GLA), such as terminology, pathological features, clinical presentation, radiological findings, management, and prognostic.

BACKGROUND: GLA is a congenital benign neoplasm but not an inherited disorder characterized by diffuse proliferation and dilation of lymph vessels. GLA represents embryologic remnants that fail to connect with normal lymph channels or arise from lymph sacs sequestered during development. GLA is common in infants and children but can occur at any age.

FINDINGS AND/OR PROCEDURE DETAILS: GLA is frequently associated with other lymphatic anomalies and can involve individual organ or multiple organs where lymphatics are found. GLA is a current term that replaces the ‘lymphangiomas’ or ‘lymphangiomatosis’ term. The term 'generalized' means the entity involving multiple organ systems. Clinical features depend on the location and extent of organ involvement. Radiologically, most GLAs showed as sharply defined, multiloculated, septa, non-enhanced cystic lesions with clear fluid, blood, or pus inside. Surgical excision has been recommended for localized GLA, even though there is no specific treatment for GLAs. Other palliative procedures can be medical therapy with interferon-alpha, draining the pleural effusions, or symptomatic treatment. Biotherapies and upregulation of tyrosine kinase are being further researched.

CONCLUSION: GLA is a rare entity that the prognosis depends on the severity of the disease. Diagnosis is based on clinical, radiological, and histological findings.

PERIOSTEAL CHONDROMA OF TIBIA IN PEDIATRICS

Lakshmi Renuka Malireddy*¹; N L N Moorthy¹; Shrithi Bhui¹

¹*Radio Diagnosis, Apollo Institute Of Medical Sciences And Research, India*

INTRODUCTION: The majority of the cortical lesions of tibia have a cartilaginous origin , osteochondroma being the most frequent . However in this report , another rare tumor the periosteal chondroma , a benign cartilage tumour, most commonly seen in the metaphyses of long tubular bone which may be mistaken clinically and histologically for other and more common tumors in this location

REPORT: A 12 year old male presented with a painless firm subcutaneous swelling over left knee since 6 months with no history of trauma. Plain radiograph revealed eccentric cortical lesion in the antero-lateral aspect of proximal tibial metaphysis with stippled calcifications and underlying cortical sclerosis . No significant periosteal reaction . Further on evaluation with CT showed cortical erosion along its superior margins with no extension into the joint space . MRI demonstrated the lesion arising from the anterior cortex/periosteum with intermediate T1W and hyperintense T2W signal intensity without intramedullary extension . No soft tissue component . Histopathological examination confirmed the diagnosis as periosteal chondroma..

CONCLUSION: A variable overlap existed in the imaging appearances of chondroid tumors stressing the importance of a proper clinico-radiological and histopathological diagnosis to prevent overtreatment of a benign lesion . Since its differentiation with malignant lesion may be extremely difficult , complete excision of the lesion leads to permanent cure.

**SCAPULOTHORACIC DISSOCIATION: A DEVASTATING BUT EASILY
OVERLOOKED DIAGNOSIS IN THE POLYTRAUMA PATIENT: A CASE REPORT**

Hoi Ming Kwok*¹; Eugene Sean Lo¹; Nin Yuan Pan¹; Rois L.S. Chan¹; Siu Chun Wong¹; Lik
Fai Cheng¹; Ka Fai Ma¹

¹*Radiology, Princess Margaret Hospital, Hong Kong (SAR)*

INTRODUCTION: Scapulothoracic dissociation (SD) is a spectrum of severe musculoskeletal and neurovascular injuries characterized by complete disruption of scapulothoracic articulation with lateral scapular displacement. Diagnosis based on scapula index on a standard, non-rotated chest radiograph is impractical in the urgent trauma setting. SD can be easily missed in a polytrauma setting with multiple injuries. Reporting a case of SD from a young adult involved in a road traffic accident with polytrauma, we discuss the limitations and highlight the caveats of the current suggested diagnostic approaches and the crucial role diagnostic and interventional radiologists play in the diagnosis, management, and prognostication.

REPORT: A 23-year-old motorcyclist involved in a road traffic accident was admitted to the Emergency Department with stable vitals but an absent left brachial pulse. Significantly rotated supine chest radiograph on admission render measurement of scapulothoracic index infeasible. Urgent trauma CT revealed laterally displaced left scapula with comminuted fracture and dislocated left acromioclavicular joint. CT angiogram showed a focal non-opacifying segment of the left mid subclavian artery with delayed faint opacification of distal branches. These suggest left SD with acute limb ischemia on top of multiple concomitant injuries. Urgent digital subtraction angiography confirmed left subclavian artery focal dissection with thrombosis. Successful stenting was performed salvaging the acute ischemic upper limb. MRI of left brachial plexus later revealed high-grade brachial plexus injury, together with electromyographic and clinical findings compatible with left brachial plexopathy.

CONCLUSION: SD is both a limb- and a life-threatening injury not to be missed in the polytrauma patient.

CHRONIC PATELLOFEMORAL INSTABILITY - ANATOMICAL VARIANTS, MRI CONSIDERATIONS AND WILL DIFFERING KNEE FLEXION/EXTENSION ON MRI AFFECT OUR REPORTING?

Fung, Brian Wai Him*¹; Li, On Chee Angela¹; Chong, Wing Ho Kenneth¹; Yu, Chun Hung Kevin¹; Yang, Siyue¹

¹*Department of Radiology, Tuen Mun Hospital, Hong Kong (SAR)*

LEARNING OBJECTIVE: This educational exhibit provides a review of anatomical considerations and standardised MRI measurements for evaluating chronic patello-femoral instability (CPFI). Imaging features of typical associated injuries, complications, and updated management techniques will be discussed. We will also explore how different degrees of knee flexion/extension on MRI may affect our measurements and evaluation of this condition.

BACKGROUND: Recurrent patellar dislocations tend to occur with anatomical variants/risk factors that affect patellar stability, such as patella alta, trochlear dysplasia, increased tibial tubercle -trochlear groove (TTTG) distance, femoral anteversion and ligamentous laxity. MRI is useful for assessing such variants/risk factors, for visualising the extent of injury and for guiding tailored management. Surgical correction of anatomical variants may help reduce the risk of CPFI.

FINDING AND/OR PROCEDURE: We provide a pictorial review of normal anatomy and variants, with description on how to accurately perform measurements including inclination angle, facet ratio, trochlear depth, Insall-Salvati ratio, TTTG distance. Latest management techniques are discussed. We also performed MRI with knee in various degrees of flexion for changes in standard measurements. We found slight changes in the measurements involving patella alta and TTTG distance, but no significant change to the overall ratios that would affect diagnosis.

CONCLUSION: Understanding the typical injuries, anatomical variants and measurement techniques are essential for Radiologist in evaluating CPFI on MRI. Changes to degrees of knee flexion during MRI should not significantly alter our evaluation. Understanding treatment options will help provide a more tailored and useful report for our referring surgeons.

**RADIOLOGY APPROACH FOR EARLY DIAGNOSIS AND EVALUATION OF
TENOSINOVIAL GIANT CELL TUMOR MALIGNANCY: A CASE REPORT**

Aswin Gunawan Christanto*¹; Undang Ruhimat²

¹Radiology, Padjajaran University, Indonesia , ²Radiology, Hasan Sadikin General Hospital, Indonesia

INTRODUCTION: Tenosynovial Giant Cell Tumour (TSGCT) is the most common soft tissue tumor in hand and wrist after ganglion cyst. Generally, It was a localized benign tumour. We report a lung metasized tenosynovial giant cell tumor as it never found before.

RESULTS: A 56 years old woman came with dyspnoea since eight months ago. She had an enlarged and pain mass on the right palm to the wrist. She had performed soft tissue tumor surgery on her right middle finger four years ago with the result was TSGCT. Preprocedural imaging and intraoperative finding showed a local well circumsised mass. In addition, plain thorax imaging showed there was a metastasis lesion with pleural effusion without any other tumors besides on her right hand in radiology examination

CONCLUSION: Malignant form of TSGCCT imaging could show a localized mass. Nevertheless, recurrent mass should be considered as malignant and routine periodic imaging evaluation of distant metastasis should be performed.

A RARE CASE REPORT OF PLEXIFORM NEUROFIBROMA OVER DORSUM OF FOOT IN A PATIENT WITH NEUROFIBROMATOSIS TYPE 1.

Pragati Jadhav*¹; Bhawana Sonawane¹; Anagha Deshpande¹; Sunita Bhutada¹

¹*Department Of Radiodiagnosis, Indira Gandhi Govt Medical College, Nagpur, Maharashtra, India*

INTRODUCTION: Plexiform neurofibromas represent an uncommon variant (30%) of neurofibromatosis type 1 (NF-1) in which neurofibromas arise from multiple nerves as bulging and deforming masses involving connective tissue and skin folds. These occur most commonly in Craniomaxillofacial region. These lesions can transform to malignant peripheral nerve sheath tumor (MPNST). Treatment options are limited with surgery being the primary option for progressive lesions causing significant morbidity. Trials have evaluated with other treatment approaches, including the use of antihistamines, maturation agents, and antiangiogenic agents.

REPORT: We represent a case of 15 year old female with plexiform neurofibroma, occurring at unusual site like dorsum of foot. Patient evaluated with 3 T Siemens Magnetom Skyra MRI scanner and found out to be an altered signal intensity lesion measured 7.3 x 11.8 x 3.8 cm over dorsum of right foot. It appeared isointense on T1WI, hyperintense on T2WI and showing heterogenous post contrast enhancement. It was seen involving subcutaneous and intramuscular plane of dorsum of right foot with significant erosions of adjacent metatarsals.

CONCLUSION: The use of innovative neuroimaging techniques and other outcome measures may greatly improve the design of trials and evaluation of potential effective agents. Evaluation of clinical trials is challenging because of unpredictable nature of plexiform neurofibromas and difficulties in measuring objective responses. MRI being the modality of choice for determining the soft tissue lesions, it can be used for determining the extent and involvement of adjacent structures. Response to treatment and Malignant transformation can also be monitored with imaging.

**COMPARATIVE EVALUATION OF HIGH-RESOLUTION ULTRASONOGRAPHY
(HRUS) AND MAGNETIC RESONANCE IMAGING (MRI) IN PAINFUL WRIST
JOINT**

Rajul Rastogi*¹; Abhishek Kumar Singh¹; Neha¹; Vijai Pratap¹

¹*Radiodiagnosis, Teerthanker Mahaveer Medical College and Research Center, India*

INTRODUCTION / PURPOSE: Wrist joint is a commonly used joint in day-to-day activities and hence its pathologies are the cause of significant morbidity in cases of painful wrist. Though magnetic resonance imaging (MRI) is the usual imaging investigation preferred for evaluation of painful wrist joint but its inherent limitations in form of high cost, limited availability, higher scan time and lack of comparison with contralateral side has prompted us to design a study comparing the role of HRUS with MRI in such cases

METHODOLOGY: Forty patients of painful wrist joint were evaluated with HRUS & MRI. The two imaging modalities were compared not only in the detection of various findings related to painful wrist joint as joint effusion, synovitis, synovial hypertrophy, tenosynovitis, rice bodies, bone erosions, etc. but also in diagnosing the final group of disease. Appropriate statistical tests were then used to analyze the results

RESULTS: Our study revealed that HRUS is similar to MRI in detection of joint effusion, synovitis, synovial hypertrophy, tenosynovitis, rice bodies, etc. but is very poor in detection of bony pathologies especially marrow edema or chronic fractures. In our study, HRUS was equivalent to MRI in the final diagnosis in 67.5% cases, was inferior to MRI in 30% cases and was superior to MRI in 2.5%.

CONCLUSION: Since HRUS has a high accuracy in detecting the pathologies in cases of painful wrist joint, it should be used as the first imaging modality. Patients with equivocal diagnosis or requiring surgical planning may, however, be subjected to MRI.

MELORHEOSTOSIS : THE DRIPPING MOLTEN WAX BONE

Wan Irfan W Mustapha*¹; Muhammad Ridhuan Iskandar¹; Siti Kamariah Che Mohamed¹

¹*Radiology, International Islamic University Malaysia, Malaysia*

INTRODUCTION: Melorheostosis is a rare and progressive benign hyperostotic disease characterized by thickening or widening the peripheral bone's outer layers rarely involving the axial skeleton. It is a skeletal disorder that gives rise to the appearance of dripping wax. The precise cause is still unclear, and due to its broad differential diagnosis, the diagnosis is always tricky.

REPORT: We reported the case of a 31 years old female presented to an orthopedic clinic with a chronic history of pain and swelling of the left little finger. Radiological evaluation using X-ray and magnetic resonance imaging (MRI) reveals features consistent with that of melorheostosis.

CONCLUSION: Identification of this entity by clinicians can avoid unnecessary investigations and biopsy.

EVALUATION OF THE INSALL-SALVATI RATIO AMONG VIETNAMESE POPULATIONS: APPLICATION FOR DIAGNOSIS OF PATELLAR MALPOSITION ?

Hoang Di Thu Le*¹; Thanh Thao Nguyen¹

¹*Department of Radiology, Hue University of Medicine and Pharmacy, Vietnam*

OBJECTIVE: Abnormal patellar height is associated with anterior knee pain and several conditions that affect the patellofemoral joint. The purpose of this study is to determine the incidence of patella alta and patella baja and the applicability of normal range of Insall-Salvati ratio in Vietnamese populations.

MATERIALS AND METHODS: A magnetic resonance imaging review of 455 Vietnamese knees was performed. The ratio of patellar tendon length(TL) and the patellar length(PL) - the Insall-Salvati ratio-was measured, using sagittal T1-weighted images.

RESULTS: The overall mean TL/PL ratio was 1,02 (standard deviation, 0,15). No significant differences in TL/PL ratio were observed between the genders. The frequencies of patella alta (ratio, >1,32) and patella baja (ratio, <0,73) were 0,9% and 2,4%, respectively.

CONCLUSION: The Insall-Salvati is less applicable to Vietnamese populations in which high flexion activities such as kneeling, sitting cross-legged are customs. According to our measurement, the normal range of the ratio among Vietnamese populations be 0,73 to 1,32.

**ANOMALOUS ORIGIN OF DORSALIS PEDIS ARTERY FROM THE PERONEAL
ARTERY: A CASE SERIES.**

Yogambigai Balakrishnan*¹; Izzatul Aini Mohamad Idris¹; Wan Najwa Zaini Wan Mohamed¹

¹*Radiology, Hospital Queen Elizabeth 2, Malaysia*

INTRODUCTION: Anatomical variations in the dorsalis pedis artery has been reported prior to this day. However, the variant in origin of the dorsalis pedis artery remains unusual. We report two cases of anomalous origin of the dorsalis pedis artery from the common peroneal artery, in which the first case was an incidental finding in a patient with peripheral arterial disease, and the second case was an incidental finding in a post trauma patient.

REPORT: The first patient presented with a left big toe wound for 1 month, which is noted to have a left big toe gangrene with absent posterior tibial artery pulse and weak dorsalis pedis artery pulse on examination. Meanwhile the second patient presented with compartment syndrome of the right leg following an alleged motor vehicle accident, and noted to have weak dorsalis pedis artery and posterior tibial artery pulses on examination. Both the patients had subsequent computed tomography angiogram of the lower limb arteries, which demonstrated severe peripheral arterial disease in the first patient and no evidence of arterial injury in the second patient, along with incidental finding of anomalous origin of dorsalis pedis artery from the peroneal artery.

CONCLUSION: Variations in origin of the dorsalis pedis artery is unusual. Knowledge of such variations are important for radiologists for an accurate interpretation of imaging, and for surgeons operating at this region for optimal surgical treatment and to avoid iatrogenic vascular injuries.

A RARE CASE OF ADULT RHABDOMYOSARCOMA WITH RARE SECONDARY INVOLVEMENT.

Nur Salsabila Mohd Rosli*¹; Zaihan Awang¹

¹*Radiology, Hospital Raja Perempuan Zainab II, Kota Bharu, Malaysia*

INTRODUCTION: Rhabdomyosarcoma is a rare soft tissue sarcoma in an adult population, about 3% compared to 50 % of overall childhood soft tissue sarcoma. Rhabdomyosarcoma can arise almost anywhere in the body, highly aggressive, rapidly growing sarcoma, and disseminates early in its course.

REPORT: 32 y/o lady with no past medical illness presented with a history of progressive bilateral lower limbs weakness for 4 days before admission. She had right lower back swelling for 3 months, increasing in size with non-radiating pain.

On local examination, right posterior chest wall swelling, firm in consistency, mobile in all directions with no overlying skin changes.

Ultrasound of the right posterior chest wall reveals an intramuscular lesion of undetermined cause. Plain radiograph shows T7 compression fracture, lung nodules, and paraspinal masses likely of metastases. CT thorax until pelvis shows lung, pleural, nodal, and bone metastases. Soft tissue masses are seen in the right latissimus dorsi and the smaller lesion at the right 5th and 6th intercostal space. MRI shows multilevel thoracic spine marrow edema associated with paraspinal, prevertebral, and extradural soft tissue masses. The extradural mass compresses the spinal cord and obliterates the exit foramina bilaterally. HPE result of latissimus dorsi is consistent with rhabdomyosarcoma.

CONCLUSION: Rhabdomyosarcoma is a rare disease with no specific imaging finding to make a radiologist think of it as a differential diagnosis. We report a case of rhabdomyosarcoma with multiple sites of metastases with rare involvement to the paravertebral, epidural, and pleural regions.

**FOCAL LESIONS OF HAND AND WRIST: A SMOOTH MR ROADMAP FOR
IMAGING THE LUMPY BUMPY HAND**

Meghanaa Jayakumar*¹

¹*Radiodiagnosis, AMD Centre of Imaging Sciences, India*

LEARNING OBJECTIVE: To briefly review role of MR imaging in pathologies presenting as masses of the hand/wrist and highlight key imaging characteristics that pinpoint diagnosis.

BACKGROUND: Focal masses and pseudomasses of the hand and wrist, which are frequently encountered entities, pose a clinical dilemma due to non-specific presentation and require imaging to facilitate appropriate management. Plain radiography demonstrates calcification while ultrasound assesses whether the lesion is solid/cystic. MRI is the modality of choice as it can accurately determine the nature of the lesion, enhancement pattern and exact location in relation to surrounding tissues given its high contrast and spatial resolution.

FINDINGS AND/OR PROCEDURE DETAILS: Standard pulse sequences were performed with small field-of-view and high-resolution matrix using necessary orthogonal planes on a 1.5 T Siemens scanner. MR imaging findings of diverse etiologies including neoplastic, infective/inflammatory, degenerative presenting as masses and pseudomasses of the hand/wrist region are described using a simple sequence-based approach. Benign masses are categorised based on content into cystic, fat containing and fat free solid lesions. Common swellings like ganglia, GCTTS and lipomas have typical MR imaging features which are highlighted. Role of MRI in narrowing the differentials is also discussed.

CONCLUSION: The radiologists should be familiar with various lesions and potential mimics which present as lumps and bumps of the hand as they are routinely encountered. In many circumstances, a specific diagnosis can be made on MRI by taking into account lesion location and signal characteristics.

DEVELOPMENT OF AN IN-HOUSE PROTOCOL FOR THE QUALITY ASSURANCE OF DIGITAL BREAST TOMOSYNTHESIS SYSTEM BY ADOPTING DIFFERENT INTERNATIONAL STANDARDS

Celina Li*¹

¹*Clinical Oncology, Tuen Mun Hospital, Hong Kong (SAR)*

OBJECTIVE: In recent years, more digital breast tomosynthesis (DBT) systems become available on the market. The use of DBT with conventional two-dimensional (2-D) full-field digital mammography (FFDM) in breast cancer diagnosis is expected to increase substantially. Therefore, a reliable quality assurance (QA) program is required for DBT to have an accurate diagnosis.

MATERIALS & METHODS: Published protocols including the 2018 ACR Digital Mammography Quality Control Manual (ACR2018), European Breast Tomosynthesis Quality Control Protocol version 1.03 (EUREF1.03) and NHS Breast Screening Programme Equipment Report 1407 (NHSBSP1407) were reviewed and compared.

RESULTS: All of the protocols were similar in terms of test items, but with different levels of details and action limits. Average glandular dose (AGD) test in EUREF1.03 and z-resolution test in ACR2018 were adopted in our QA program for the following reason respectively: (i) Compared with ACR2018 which only provided the limiting value of AGD for a standard compressed breast thickness (CBT) at 42Mm, EUREF1.03 provided limiting values of AGD for CBT from 21mm to 90mm. This is especially important for Asian women whose CBT tends to be smaller than standard; and (ii) Inter-plane resolution was regarded as a baseline measurement in all three protocols. The presence of small-sized spheres to quantify artefact spread in terms of full width at half maximum in our ACR DM phantom for FFDM QA test already fulfilled this purpose.

CONCLUSION: A QA program according to in-house requirements is developed for DBT after taken reference to the published protocols.

COMPARISON OF ABSORBED DOSE OF ORGANS AND EFFECTIVE DOSE IN INTERVENTIONAL PROCEDURE USING MCNP

Cheol-Ha Baek*¹; Dong-Hee Han²; Jong-Hun Won²; Seung-Jae Lee³

¹*Department Of Radiological Science, Kangwon National University, Korea,* ² *Department Of Health Medical Science, Kangwon National University, Korea,* ³ *Department Of Radiological Science, Dongseo University, Korea*

OBJECTIVE: In this study, the Monte Carlo simulation was used to evaluate the absorbed dose and effective dose of organs of the doctor for the penetration rate according to the lead equivalence thickness of the radiation shielding devices.

MATERIALS & METHODS: The dose to be exposed by the doctor during the interventional procedure with continuous radiation exposure was calculated. Through simulation, the procedural conditions and geometry of Transarterial Chemoembolization were implemented. High-Definition Reference Korean Man and Woman phantom, developed in 2008 and 2014, are located in the doctor location and lead equivalence of 0-0.50 mmPb(interval 0.05) is applied. Dose calculations used the NDD(k) indirect radiation dose calculation method to calculate the absorbed and effective dose for each organ.

RESULTS: Calculations showed relatively high absorbed doses from bone surfaces and muscles uniformly distributed throughout the phantom, and from the small intestine, colon and bladder, which are located close to the table height. In the relatively distant esophagus, heart, etc., low absorbed dose and high error were shown, which resulted in fluid values due to the higher error and standard deviation due to the fewer number of photons absorbed in the organs as a scattered radiation. The effective dose was found to decrease as lead equivalent increased, and the lower the tube voltage, the more rapid the change.

CONCLUSION: Overall, this study confirmed that the effective dose is at a somewhat constant point with a shielding rate of about 90% from the lead equivalent 0.25 mmPb used primarily in medical field.

OPTICALLY STIMULATED LUMINESCENT DOSIMETRY FOR DIAGNOSTIC X-RAY BEAMS AND PATIENT DOSIMETRY

Jeannie Wong*¹; Kwan Hoong Ng¹

¹*Department of Biomedical Imaging, University of Malaya, Malaysia*

OBJECTIVE: Radiographic examinations and procedures in diagnostic imaging usually involve delivery of a fairly low radiation dose to patient. Radiation dosimetry in kilovoltage (kV) photon beams are usually performed using large ion chamber and phantoms. However, these are not suitable for in vivo patient dosimetry. Optically stimulated luminescent dosimeter (OSLD) has recently gained popularity to be used for personal and in vivo dosimetry, much alike the conventional thermoluminescence dosimeters (TLDs). However, one need to understand the limitation of the system and quantify the uncertainties related to the measurements.

MATERIALS & METHODS: An Al₂O₃:C based OSLD system, nanoDot® dosemeter was characterised for kV beams. Element correction factors (ECFs) of the OSLDs were established and tested for reproducibility. Application of the OSLD or patient and occupational dose monitoring will also be presented.

RESULTS: The OSLD system was characterise in terms of energy dependence, reproducibility of the ECFs in various radiation dose levels and conditions. We found that user-defined ECFs were significantly different from manufactured sensitivity values. Changing X-ray beams did not affect the ECFs' reproducibility, but the entrance surface dose of <0.4 mGy could degrade the reproducibility of the ECFs.

CONCLUSION: Applying user-defined ECFs could reduce the uncertainty of dose measurements. There is a need to have in place suitable, calibrated in vivo dosimetry systems to complement existing dose estimation methods. The OSLD is suitable to be used for in-vivo patient dosimetry and for the monitoring of eye lens doses of interventional radiologists.

EFFECTIVENESS OF LEAD APRON: HOW PROTECTIVE ARE THE APRONS AGAINST IONIZING RADIATION?

Siti Zubaidah Ismail*¹; Sharizan Shaharruddin¹

¹*Medical Physics Unit, University Of Malaya Medical Centre, Malaysia*

LEARNING OBJECTIVE: The aim of the study was to evaluate how protective the lead apron against ionizing radiation.

BACKGROUND: Radiation Protective Equipment (RPE) is used to reduce radiation exposure to radiation worker. RPE utilized by the radiation workers must be periodically evaluated for any damage.

FINDINGS AND/OR PROCEDURE DETAILS: All aprons in the hospital have been collected and identified by the identification number as well as date of the most recent inspection and due date for the next inspection. Lead aprons were examined physically for gross defects such as tears, perforations, and thinning creases. Each of lead apron was taken to evaluate for any internal defect using fluoroscopy with manual setting and low technique factor. For leakage assessment in 2019, 33 out of 63 aprons were rejected in operation theatre unit. 45% of aprons at Radiology department had been destroyed due to cracks, holes and tears.

CONCLUSION: The evaluation of the aprons should be monitored in terms of safety and protection, and periodic control is also required. It is good to be recommended as yearly basis quality control. Some may inspect more frequently based upon use of the lead aprons. It was found that all of these aprons radiation permeability was higher than normal level. All the aprons that found insufficient as RPE and failed the leakage test based on rejection criteria should be removed immediately from the service area and the lead materials of apron should be disposed properly.

DEVisING REAL-TIME RADIOLUMINESCENCE DOSIMETRY SYSTEM FOR MEGAVOLTAGE (MV) PHOTON

Janatul Madinah Wahabi*¹; Jeannie Wong Hsiu Ding¹; Ung Ngie Min²; Ghafour Amouzad
Mahdiraji³

¹*Department of Biomedical Imaging, Universiti of Malaya,* ²*Clinical Oncology Unit, University of Malaya, Malaysia,* ³*Electrical Engineering Unit, Taylor's University Lakeside Campus, Malaysia*

OBJECTIVE: Radioluminescence (RL) dosimetry has been one of the options to determine the accuracy of radiotherapy beam. When ionising radiation strikes a scintillating material, light photons will be produced and counted. Hence relationship between ionising radiation and light signal can be established. This study explored the RL dosimetry principle by assembling a basic single point RL dosimetry system and verify the functionality of the assembled system in megavoltage (MV) photon range.

MATERIALS & METHODS: The system consists of photomultiplier (PMT), a counter and a power supply. The sensor was made out of blue emitting plastic scintillator with 1mm diameter and 3mm length. The light signal generated was carried to the PMT by using Poly (methyl methacrylate) (PMMA) fibre optics of 1mm diameter. Two sets of fibre optics cables were prepared to eliminate Cerenkov noise by means of parallel subtraction. Multiple doses of MV photon were delivered by using Linear Accelerator (LINAC) and the measured doses were analysed using Matlab.

RESULTS: The system was able to perform dose measurement in MV photon range and pure signals generated by the plastic scintillator were extracted. Parallel subtraction method had successfully eliminated the contribution of Cerenkov noise. The dose measured was also within 2 % of delivered dose.

CONCLUSION: The RL dosimetry system was assembled and able to perform accurate dose measurement in MV photon range. Further development and verification of the system will be carried out to study the characteristics of the system.

**MEDICAL PHYSICS POSTGRADUATE PROGRAMME - MASTER OF MEDICAL
PHYSICS AT UNIVERSITY OF MALAYA**

Azlan Che Ahmad*¹; Jeannie Hsiu Ding Wong¹; Muhammad Shahrin Nizam Damanhuri¹; Li
Kuo Tan¹; Ngie Min Ung²; Kwan Hoong Ng¹

¹*Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, ²Clinical
Oncology Unit, Faculty of Medicine, University of Malaya, Malaysia*

LEARNING OBJECTIVE: We present the postgraduate training programme for medical physicists in Malaysia, with emphasis on the Master of Medical Physics programme at the University of Malaya.

BACKGROUND: In 1998 the University of Malaya (UM) launched the Master of Medical Physics (MMedPhys) programme to meet this growing need for qualified medical physicists to manage and monitor the medical usage of radiation in Malaysia. This programme was housed under the Faculty of Medicine. Since then, over 130 students have graduated from this programme. The UM MMedPhys programme is currently the only master programme accredited by the Institute of Physics and Engineering in Medicine (IPEM) outside the United Kingdom and British Isle.

FINDINGS AND/OR PROCEDURE DETAILS: The MMedPhys programme has recently undergone a new curriculum review in 2018. The new curriculum was launched in the 2019/2020 academic session. Here we present the new curriculum, noting the change in the curriculum to address the clinical needs and changing landscape of medical physics in the country while maintaining standards required by the IPEM, UK.

CONCLUSION: The UM MMedPhys programme has been running for 20 years producing medical physicists and leaders in the medical physics field. With the new curriculum, it should only strengthen the quality of the medical physics graduates both within and outside of the country.

**QUALITY CHECKS OF MOLYBDENUM BREAKTHROUGH TEST IN
MOLYBDENUM-99/TECHNETIUM-99M GENERATORS: 6 YEARS EXPERIENCE
AT SINDH INSTITUTE OF UROLOGY 7 TRANSPLANTATION(SIUT)**

Syed Muhammad Araiz*¹; Akhtar Ahmad²; Syed Rashid-Ul- Amin²

¹*Nuclear Medicine and Molecular Imaging, Sindh Institute of Urology and Transplantation Karachi (SIUT), Pakistan,* ²*Department of Nuclear Medicine and Molecular Imaging, Sindh Institute of Urology and Transplantation Karachi (SIUT), PAKISTAN*

OBJECTIVE: The objective of our study is to ensure and checks the molybdenum breakthrough test within the limits of European Pharmacopeia & American Pharmacopeia & to improve the imaging quality and reduction in radiation dose to the patients as a part of Good Medical Practice.

MATERIALS & METHODS: The Molybdenum-99 breakthrough Test to check the impurity in Technetium-99m elute for 192 generators was studied during the year 2014-2019. The generators received in (SIUT) facilitate from Eczacibasi.Monrol, Turkey. For moly,there are two protocols being used worldwide. European pharmacopeia declares the allowed activity of Molly in 99mTc elute to be less than 1 μCi of 99Mo for every mCi of 99mTc, while American Pharmacopeia set the limits to be less than 0.15 $\mu\text{Ci}/\text{mCi}$. .The measurements were made using dose calibrator CRC-15 (CAPINTEC Inc, USA) & a standard canister at the time of first elution.

RESULTS: From January 12, 2014 to December 30, 2019, First elutions were performed when generator was received. Through the elution of time most of the generators eluted have shown very low value of Moly assay test (0.000 $\mu\text{Ci} / \text{mCi}$) which is very less as compared to limit proposed in American Pharmacopeia (0.15 $\mu\text{Ci} / \text{mCi}$) and European Pharmacopeia(1 $\mu\text{Ci} / \text{mCi}$) which provides an evidence of safe medical practices.

CONCLUSION: European & American pharmacopeia set limits on molybdenum contents present in 99mTc elution based on the sensitivity of dose calibrators & to keep the dose as low as possible and for good imaging in diagnostic tests.

**ASSESSMENT OF PERSONNEL DOSIMETER PRACTISE IN NUCLEAR
MEDICINE/PET-CT IN SINDH INSTITUTE OF UROLOGY &
TRANSPLANTATION (SIUT)**

Syed Muhammad Araiz*; khter Ahmed¹; Syed Rashid-Ul- Amin¹

¹*Department of Nuclear Medicine and Molecular Imaging, Sindh Institute of Urology and Transplantation (SIUT), Pakistan*

OBJECTIVE: The purpose of this study is to assess the amount of radiation dose of workers exposed by personnel dosimeter of Optically stimulated luminescence dosimeters (OSLDs) and Thermoluminescence dosimeters (TLDs) within annual limit 20mSv in diagnostic Nuclear Medicine and PET-CT at SIUT.

MATERIALS & METHODS: To detect the worker radiation doses, the radiation workers of SIUT had been issued TLDs and OSLDs. In this study, Workers were using TLDs badges in the year of 2017 and then in 2018 and 2019 worker using OSLDs. The readings were analyzed annually to the dose limit and recommendations were made. The annual dose readings of occupationally exposed personnel to the national and international dose limit (20 mSv/year).

RESULTS: The results show that annual doses of workers using TLDs in the year of 2017 are ranging of 0.5mSv to 1.69mSv, the annual doses of workers using OSLDs in the year of 2018 are ranging of 0.11mSv to 0.706mSv and the annual doses of workers using OSLDs in the year of 2019 are ranging of 0.037mSv to 0.486mSv were recorded.

CONCLUSION: The radiation doses received by personnel workers dosimeter according to acceptable limits of 20mSv of Pakistan Nuclear Regulatory Authority (PNRA) and International regulatory bodies and decreases gradually with years due to improvement of Radiation awareness and training of our workers and improve our primary and secondary shielding.

FABRICATION OF BISMUTH MICROPARTICLES-LOADED POLYMER COMPOSITE FOR ADDITIVE MANUFACTURING OF RADIATION SHIELDING

Adam Effendi Ashaari*¹; Hui Leng Choo¹; Yin How Wong²; Chai Hong Yeong²

¹*School of Computer Science and Engineering, Taylor's University,* ²*School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, Malaysia*

OBJECTIVE: Lead-based radiation shielding is being replaced by non-toxic alternatives specifically bismuth-based compounds that share similar radiation attenuation properties as lead. Material extrusion additive manufacturing, commonly known as fused deposition modelling, is targeted as a viable option to fabricate medical equipment with customizable geometry and radiation attenuation properties using filler-based polymer composite filaments. This study aimed to study the feasibility of using a bismuth (Bi) and polyactic acid (PLA) composite material to fabricate customizable radiation shields through material extrusion additive manufacturing.

MATERIALS & METHODS: The effects of Bi powder concentration in the Bi-PLA composite material and sample thickness on the radiation attenuation ability of the radiation shield were studied. Samples containing 10 to 50 wt% of Bi powder and thicknesses up to 7 mm were printed from Bi-PLA filaments using a material extrusion printer. The filaments were prepared by mixing Bi powder in a PLA matrix and extruded using a single screw extruder.

RESULTS: Bi-PLA samples up to 50 wt% Bi content and thickness up to 7mm have been successfully fabricated using in-house material extruder and 3D printer. The radiation shielding properties of the Bi-PLA composite will be studied through radiation tests of controlled exposure to X-ray and gamma ray radiation (results are pending at the time of this submission).

CONCLUSION: A novel 3D printing filament made of Bi-PLA (50:50) composite material has been successfully fabricated. The filament can be used to print customized radiation shielding designs as a substitute to conventional lead-based materials.

DEVELOPMENT OF A TISSUE-EQUIVALENT ABDOMINAL PHANTOM FOR CT-GUIDED BIOPSY TRAINING

Chai Hong Yeong*¹; Aina Qistina¹; Jason Ng²; Alan Goh³; Peng Loon Cheah⁴; Norshazriman Sulaiman⁴; Eric Chung⁴; Mohd Kamil Mohd Fabell⁴; Basri Johan Jeet Abdullah⁴

¹*School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, Malaysia,*
²*NDR, Medical Technology, Singapore,* ³*NDR, Medical Technology, Malaysia,* ⁴*Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Malaysia*

OBJECTIVE: Image-guided biopsy has become an indispensable tool in personalized cancer care. The procedure requires extensive knowledge and skills. This study aimed to develop a cost-effective, tissue-equivalent abdominal phantom for CT-guided biopsy training.

MATERIALS & METHODS: A phantom mimicking the design of the standard CIRS abdominal phantom was developed. It was made of soft tissue equivalent resin and 3 mm opaque silicone skin. Twelve lesions (5–12 mm diameter) were positioned in different locations in the phantom. Nine interventional radiologists and residents with different years of experience (1-5, 6-10, >10 years) were recruited to perform CT-guided biopsy on each lesion using a 18G tru-cut biopsy needle. The biopsy time and total radiation exposure (DLP, mGy) for each lesion were recorded and compared using ANOVA test. The participants were then asked to rate the usefulness of the phantom for training purposes (1-5: Not useful-Very useful).

RESULTS: Statistically significant difference ($p < 0.050$) was observed in term of biopsy time between groups of participants but no significant difference was found in term of radiation exposure. Radiologists with 6-10 years of experience spent the least time, followed by >10 years and 1-5 years groups. The average score for the usefulness of the phantom was 4.4 ± 0.5 .

CONCLUSION: A cost-effective, tissue equivalent abdominal phantom containing 12 lesions was developed for CT-guided biopsy training. Nine participants gave an average score of 4.4 out of 5.0 for the usefulness of the phantom for biopsy training purposes.

DETECTION OF ORTHOPEDIC IMPLANTS AND IN VITRO OBJECTS USING HAND-HELD METAL DETECTOR

Rizwan Khan*¹; Khairil Amir Sayuti²

¹Radiology, HUSM, India, ²Radiology, HUSM, Malaysia

OBJECTIVE: To assess diagnostic accuracy of HHMD in detecting orthopedic implants within patients and in vitro objects.

MATERIALS AND METHODS: Study was conducted in two phases. In first phase one hundred and eighty orthopedic patients present in orthopedic clinic for follow up, were scanned by HHMD. In second phase, one hundred and eighty four in vitro objects placed on usual locations on volunteer. Sensitivity set by manufacturer of HHMD was used for scanning. Implants details were taken from patient's operative notes.

RESULTS: Of the 180 implants in orthopedic patients who were screened, 148 (82.2%) were trauma hardware, including intramedullary nails, plates, screws, and K wires, and 32(17.8%) were arthroplasty implants. One hundred seventy-five (97.2%) of the 180 implants were detected by the metal detector. Overall rate of detection was 100% for arthroplasty implants and 100% for plates. 60% of K wires were detected. Overall detection rate was 98.4% for implants in lower extremity, 93.6% for those in upper extremity, and 100% for those in the spine. 100% of titanium and 95.5% of stainless steel orthopedic implants were detected. Overall sensitivity, specificity and accuracy of handheld metal detector in detecting metallic objects was found to be 96.3%, 73.2% and 84.8%.

CONCLUSION: Total joint prostheses, nails, and plates will routinely detected by HHMD, whereas screws and wires are detected less. As compared to stainless steel orthopedic implants, titanium implants are more likely to be detected. HHMD is found to be less accurate for screening patients before MRI scanning.

THE IVY SIGN IN ADULT MOYAMOYA DISEASE

Nurul Hafidzah Rahim*¹; Hilwati Hashim²; Norzaini Rose Mohd Zain¹

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia,* ²*Faculty Of Medicine, Universiti Teknologi Mara (UiTM), Sungai Buloh, Malaysia*

LEARNING OBJECTIVE: Moyamoya disease is an idiopathic cerebrovascular occlusive disorder characterized by progressive stenosis of the distal internal carotid arteries and by collateral vessel formation. The leptomeningeal Ivy sign observed on post contrast T1-weighted and FLAIR images are a characteristic finding in Moyamoya disease. This sign signifies the formation of leptomeningeal collateral development and increased numbers of pial vascular networks in association with the progressive steno-occlusive disease of the distal internal carotid arteries.

BACKGROUND: We presented a case of a young gentleman who presented with new onset headache associated with right-sided body weakness.

FINDINGS AND/OR PROCEDURE DETAILS: Initial CT brain depicted intraventricular hemorrhage. Subsequent DSA demonstrated the characteristic angiographic pattern puff-of-smoke which is diagnostic of Moyamoya disease. Diffuse leptomeningeal ivy sign was exhibited on MRI.

CONCLUSION: Ivy sign in Moyamoya disease may be under recognized and should not be confused with other leptomeningeal abnormalities. Recognizing Ivy sign as part of Moyamoya disease will avoid misdiagnosis, confusion with other differential diagnosis and eliminate potential unnecessary investigations.

SPINAL MUCORMYCOSIS - A DIAGNOSTIC CHALLENGE FOR RADIOLOGIST

Teo Han Liang*¹; Shahizon Azura Mohamed Mukari¹; Tan Hui Jan²; Jegan Thanabalan³

¹*Department of Radiology, Kebangsaan Malaysia Medical Centre, Malaysia,* ²*Department of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Malaysia,* ³*Department of Surgery, Universiti Kebangsaan Malaysia Medical Centre, Malaysia*

INTRODUCTION: Due to high sensitivity to detect epidural lesion, MRI is increasingly utilized to assess causes of lower limb weakness especially when the central cause has been excluded. Infective epidural lesion is one of the causes of myelopathy or radiculopathy. However, when there is the presence of an epidural lesion in an immunocompromised patient, the broader differential should be considered, especially fungal in origin.

REPORT: Hereby we report a rare case of thoracic spine epidural mucormycosis in a 39 years old diabetic patient, who presented with bilateral lower limb weakness.

CONCLUSION: This case highlights the radiological challenges to diagnose an epidural lesion with atypical MRI findings of fungal infection.

CHANGES IN VERTEBRAL BODY HEIGHT AND SPINAL CANAL DIAMETER DUE TO AGING AND BMI

Nomuundari Ganbat*¹

¹*Radiology, Mungunguur Hospital, Mongolia*

OBJECTIVE: The spine contains numbers of structures, responsible for maintaining its mobility, flexibility and stability. These normal structures change during lifetime due to aging. The purpose of our study is to determine how spinal canal diameter (SCD) and vertebral body height (VBH) change with age and BMI.

MATERIALS & METHODS: This is a retrospective study including 127 patients undergone whole spine MRI on 1.5T magnet from January 2017 to October 2018. We have chosen patients aged from 30-79 which was divided into 4 age groups. We reviewed whole spine axial and sagittal MRIs of 127 patients, from which 22 patients were excluded due to bone lesions, fracture, and spinal severe stenosis at the chosen levels. We have compared the demographic parameters such as age, gender, weight, height and BMI with SCD (sagittal) and VBH (sagittal) at C4, C5, T5, T6, L4, L5 levels due to most and least flexible parts. We also evaluated all parameters with age groups and between groups.

RESULTS: VB height is significantly correlated with aging at C4(11.6mm vs 9.0mm, $p=0.030$), C5(9.6mm vs 9.2mm, $p=0.010$), L4(23.4mm vs 20.5mm, $p=0.020$) and L5(24.3mm vs 22.3mm, $p=0.030$) levels, while not correlated with BMI. SC diameter is significantly correlated with aging at C4(12.2mm vs 12.5mm, $p=0.008$), C5(12.5mm vs 13.6mm, $p=0.010$), and T5(13.8mm vs 15.7mm, $p=0.010$) levels, significantly correlated with BMI at T5(13.8mm vs 15.7mm, $p=0.040$) and L4(12.9mm vs 14.0mm, $p=0.040$) levels.

CONCLUSION: The mid-VBH decreased with aging while SCD doesn't significantly change with aging.

GLIOBLASTOMA SINGLE LESION METAEXTRAAXIAL VS MULTIPLE LESION : A MULTIPLE CASE STUDY IN SAIFUL ANWAR HOSPITAL MALANG-INDONESIA

Avelino Meol*¹; Yuyun Yueniwati¹; Andina Wirathmawati²

¹*Radiology department, Universitas Brawijaya Malang, Indonesia,* ²*Neurology department, Universitas Brawijaya Malang, Indonesia*

INTRODUCTION: Glioblastoma is aggressive primary malignant brain tumor. The radiologist describes the characterize, determines the extension and evaluates post treatment. In this report, we describe two patients with glioblastoma which have single with metastatic process to extracranial, and the other one with multiple lesion. From epidemiology of glioblastoma, Primary glioblastomas are the majority of cases (>90 %) and affect mostly the elderly. Secondary glioblastomas are manifest in younger patients, and progression from low-grade diffuse astrocytoma or anaplastic astrocytoma.

REPORT: First case, woman 37 YO with chronic progressive right hemiparesis diagnosed with brain tumor since two years ago based on CT. After that, head MRI evaluation was found cystic encephalomalacia in the left frontotemporal lobe with solid mass within, possibly residual mass. In the evaluation, the patient also had mass lesion in the left neck region. FNAB biopsy mass in the left neck region found metastatic lesion. Immunohistochemical examination revealed Glial Fibrillary Acidic Protein and neuron-specific enolase, so it has concluded as glioblastoma metastasis. Second case, women 52 YO with gradual DOC, right hemiparesis, dysarthria. Head MRI, showed multiple mass lesion in brain. DWI showed restricted diffusion with increased ratio cho/cr suspected with malignancy. Histopathology examination showed astrocytoma grade II.

CONCLUSION: We present two rare cases of single with metastatic process to extracranial and multiple lesion of glioblastoma in young patients, suggested with secondary glioblastoma. As usual, secondary glioblastoma showed good prognosis, but our cases showed secondary glioblastoma with poor prognosis.

ATTEMPT TO MEASURE SIMPLE T1 VALUES OF NEONATAL BRAINS BY MODIFIED T1 MAPPING

Keisuke Dasai*¹

¹*Department of Radiology, Saiseikai Yokohamashi Tobu Hospital, Japan*

OBJECTIVE: The neonatal brain is incompletely myelinated and has more water content than the adult brain, resulting in extended T1/T2 values. It is therefore necessary to optimize T1-weighted imaging conditions in order to obtain higher contrast. However, the T1 values of neonatal brains, there are few reports because it is difficult to measure due to the time constraints. Therefore, we created a modified T1-MAP protocol that significantly reduces time requirements.

MATERIALS & METHODS: We performed scanning for neonates whose parents provided informed consent using the modified T1-MAP by measuring the T1 values of brain gray matter and white matter. Myelination generally begins at approximately 3–4 months of age; therefore, we examined changes in T1 values for 37 infants before and after this typical period of myelination.

RESULTS: Overall, white matter had larger T1 values until 15 weeks of age, and gray matter had larger T1 values after 15 weeks of age. The average T1 values for white and gray matter up to and including 15 weeks of age were 1980 ms and 1653 ms. After 15 weeks of age, the average T1 values for white and gray matter were 1190 ms and 1473 ms.

CONCLUSION: Using this method it was possible to measure the T1 value of the neonatal brain easily (Scan time is 80 seconds). Applying the modified T1-MAP protocol to other anatomical structures or tissues could demonstrate this to be a revolutionary tool for measuring T1 values.

CENTRAL NERVOUS SYSTEM TUBERCULOSIS: LITERATURE REVIEW FOR IMAGING MODALITIES AND PROTOCOLS

Shahmeer khan*¹; Muhammad Awais¹; Muhammad Wasay²; Ayesha Shoukat³; Shaheer Khan⁴
¹Radiology, The Aga Khan University, ²Neurology, The Aga Khan University, Pakistan, ³Pharmacology, Karachi Institute Of Medical Sciences, Pakistan, ⁴Medicine, Baqai University, Pakistan

LEARNING OBJECTIVE:

- To enumerate the imaging features of various manifestations of tuberculosis in central nervous system on various medical imaging modalities.
- To learn the role of various imaging modalities in imaging of patients with suspicion / diagnosis on CNS TB
- To describe the features differentiating clinically closely mimicking disorder of central nervous system.
- To learn about recent advances and guidelines on imaging of central nervous system

BACKGROUND: Tuberculosis is an endemic global infectious disorder with burden of 10 million new cases each year. 30 high burden countries, mostly Asian, with poor socioeconomic conditions of their population make up 87 % of total cases. Prevalence of CNS involvement amongst them is 1 % and is associated with poor outcome. Despite poor outcome, there is scarcity of data available to suggest the imaging protocols and recent guidelines on when to use what tool when it comes to medical imaging.

FINDINGS AND/OR PROCEDURE DETAILS: Basic Screening tools such as Chest X ray, fluoroscopy are used for screening purposes as well as guiding procedures to obtain tissue / fluid sample for definitive diagnosis. MRI is superior to CT scan when diagnosing and determining the complications of CNS tuberculosis, with advanced MR techniques including angiography, venography, spectroscopy and radiomics adding substantial targeted information in ambiguous cases.

CONCLUSION: CNS involvement in tuberculosis results in devastating outcome. Diverse presentation presents with a challenge in deciding course of imaging. Plain radiography and CT scan can help as a modality for screening while conventional MR can help in further characterization.

RARE CASE OF SINONASAL TRACT EWING SARCOMA

Shafora Bibi Samri*¹; Nur Asma Sapiai¹; Wan Aireene Wan Ahmed¹

¹*Department of Radiology, Hospital Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia*

INTRODUCTION: Ewing sarcoma is a malignant small cell tumor that generally arises in the long bones of the extremities. Sinonasal tract is extremely rare site for this type of tumor. The complex anatomy of this region and the rare occurrence of these tumors pose diagnostic challenging radiologically and histologically.

REPORT: A 45 year old female presented with 1 month history of right sided progressive nasal obstruction, hyposmia, intermittent epistaxis and right eye blur vision. Nasal endoscope shows large vascular polypoid mass completely filling right nasal cavity. CT scan shows an enhancing soft tissue mass involving entire right nasal cavity, maxillary antrum and extending posteriorly till nasopharynx. There is adjacent bony erosion and tumor spread into anterior cranial fossa and right orbit. The patient underwent debulking surgery of the mass and intraoperatively the tumor arised superiorly near to right sphenothmoidal recess and occupying whole right nasal cavity. Microscopic analysis shows diffuse uniform small round cells with mitotic figure. Immunohistochemically, the tumor cells were strongly positive for CD99 and FLI-1. Postoperatively, the patient was treated with combined chemotherapy and radiotherapy. After 1 year, the patient is well alive with partial response to chemotherapy.

CONCLUSION: ES in the sinonasal tract is very rare occurrence , that lead to latter detection of the tumor. Although the diagnosis of the disease is quite challenging, clinician and radiologist awareness of this disease in combination with wide feasibility of histopathological examination, immunohistochemical and cytogenetic analysis will be greatly help in diagnosing ES. In our case, histopathological and immunohistochemical analysis already lead to the diagnosis of the patient.

CHIASMAL HERNIATION INTO EMPTY SELLA

Nur Fathihah*¹; Mohd Nazri Mohd Nasir²

¹Radiology, National Islamic University of Malaysia, Malaysia , ²Radiology, Hospital Sultanah Nur Zahirah, Malaysia

INTRODUCTION: Chiasmal herniation into empty sella is an unusual complication of pharmacological and surgical treatment of pituitary adenoma due to deficiency of the diaphragma sella. We report two cases of chiasmal herniation to highlight different clinical presentation and imaging features.

REPORT: The first case is a 62 years old with with pituitary macroadenoma who develop chiasmal herniation after he underwent medical and surgical treatment. The second case highlights chiasmal herniation that was misdiagnosed as residual pituitary tumour in a patient with prolactinoma.

CONCLUSION: These cases are presented to emphasis the unusual presentation of chiasmal herniation and to highlight that lack of knowledge regarding the radiographic features may lead to misdiagnosis.

**CLINICAL RELATIONSHIP ANTERIOR INFERIOR CEREBELLAR ARTERY
LOOPING: A SERIAL CASE**

Agnes Wanda Suwanto*¹; Yuyun Yueniwati¹

¹*Radiology, Medical Faculty of Brawijaya University, Indonesia*

INTRODUCTION: Tinnitus is a common disorder, and the etiology remains mostly unclear. Tinnitus, a symptom characterized by paroxysmal attacks of staccato sounds, has been thought to be caused by neurovascular compression of the cochlear nerve, but the correlation between radiologic evidence of neurovascular compression of the cochlear nerve and symptom presentation has not been thoroughly investigated. The purpose of this study was to investigate radiologic evidence of the vascular loop and compression of the vestibulocochlear nerve at the cerebellopontine angle in patients with the clinical manifestation.

REPORT: Forties years old female dan two sixties years old man referred to radiologic department with central vertigo as chief complain, with tinnitus and hearing loss. All the patient goes through head MRI with kontras with result AICA looping with different classification based on Chavda classification. This study comparing to the anatomic relation between the vascular loop and the internal auditory canal and the presence of neurovascular compression syndrome.

CONCLUSION: MR imaging correctly shows the anatomic relationships of the vestibulocochlear nerve, its vascular compression cannot be attributed as an etiological factor for tinnitus. On this study, there is significant the anatomic type of vascular loop, the vascular contact, and clinical manifestation.

ACUTE BILATERAL MEDIAL MEDULLARY INFARCTION - A RARE ENTITY

Dian Noriza Eddy Suryono*¹; Norlisah Mohd Ramli²

¹Radiology, Sabah Women and Children Hospital, Malaysia, ²Biomedical Imaging Department, University Malaya Medical Centre, Malaysia

INTRODUCTION: Medial medullary infarction is a rare type of stroke, represents <1% of brainstem stroke. Bilateral medial medullary infarction is rarely reported and clinical diagnosis without neuroimaging is very difficult.

REPORT: A 59-year-old lady presented with two-day history of sudden onset giddiness followed by bilateral lower limb weakness and slurring of speech. Clinical examination revealed reduced power of bilateral upper and lower limbs, loss of gag reflex with no palatal movement. No facial asymmetry. Blood investigations were normal. CT brain showed multiple chronic infarcts in basal ganglia and frontal lobes. Patient had reduced consciousness level and CT brain was repeated which showed ill-defined hypodensity at the left posterior parietal lobe suggestive of acute infarction. Patient progressed to having pseudobulbar palsy and repeat CT/ CTA brain showed ill-defined hypodensity at anterior medulla, thought to be attributed to beam hardening artefact in the posterior fossa. The left vertebral artery is diseased with calcified plaques at V2/V3 junction. Clinical suspicion of brainstem stroke was raised. MRI/ MRA brain showed lesion in bilateral medial medullary region demonstrating T1 hypointensity, T2/FLAIR hyperintensity and restricted diffusion on DWI/ ADC suggestive of acute bilateral medial medullary infarction. MRA revealed hypoplastic right vertebral artery with mild stenosis of the left vertebral artery.

CONCLUSION: The subtle imaging findings of bilateral medial medullary infarct create challenge for both radiologist and neurologist to establish early diagnosis. MRI with DWI sequence is the best imaging modality with MRA brain to look for vertebral artery atherosclerosis which is the main cause.

MRI FEATURES OF JAPANESE ENCEPHALITIS

Thoo Foong Shi*¹; Noriza Zainol Abidin²; Muhammad Zabidi Ahmad³

¹Radiology, Hospital Universiti Sains Malaysia, Malaysia, ²Radiology, Hospital Sultan Abdul Halim, Malaysia, ³Radiology, Institut Perubatan & Pergigian Termaju, Malaysia

INTRODUCTION: Japanese encephalitis (JE) is first reported in Japan in 1871. JE is found worldwide, especially in Asia, western Pacific and northern Australia. Presentation varies from nonspecific mild form of febrile illness to aseptic meningitis to severe encephalitis.

REPORT: A 26-year-old young man, presented to the hospital with complaints of fever, chills, rigors and altered behaviour for three days. On physical examination, the patient appeared confused. The motor system revealed stiffness and hyperreflexia of all four limbs. There was also nuchal rigidity. Plain CT Brain was performed on day 1 of admission revealed generalized cerebral oedema. Contrasted CT Brain was then proceeded, showed no focal enhancing brain parenchymal lesion or abnormal meningeal enhancement. Subsequently, MRI Brain was performed, revealed high T2 and FLAIR signal intensities at both thalami, both centrum semiovale, both frontotemporal gyrus and right frontal parasagittal gyrus. These lesions exhibited high signal intensities on DWI which were associated with low ADC, suggesting cytotoxic oedema. Based on the clinical and MRI brain findings, JE was suspected and blood sample was positive for JE IgG. Patient was treated with antiviral and supportive measures in intensive care unit. Patient was subsequently succumbed to death on day 25 of admission.

CONCLUSION: Treatment of JE is focused on supportive and symptomatic care as there is no specific treatment has been found to benefit the patient with JE. Among patients who develop encephalitis, 20- 30% die. Neuroimaging plays a crucial role in the diagnosis as MRI can demonstrate brain signal abnormality and reinforce clinical suspicion of encephalitis.

SPINAL DYSRAPHISM: IMAGING SIGNS OF CROSS-SECTIONAL IMAGING

T Seetam Kumar*¹; Rohtas K Yadav¹

¹*Radio-Diagnosis, PT BD Sharma PGIMS, Rohtak, India*

LEARNING OBJECTIVE:

- To review the embryology development of spinal cord and its pathologies
- Illustration of clinic-radiological classification of spinal dysraphism

BACKGROUND: Spinal cord development and its embryological knowledge are important for a better understanding of various pathologies. Spinal dysraphism is a group of congenital anomalies leading to various malformation of the spinal cord and the spine. The basic defect occurring during early embryological stages (gastrulation, primary neurulation, secondary neurulation) of spinal development.

FINDINGS AND/OR PROCEDURE DETAILS: Sonography and radiography are the basic primary modality for any spinal anomalies. However, MRI is the best modality for evaluating spinal cord anomaly and spaces and CT assists in the evaluation of the spine specifically. According to their clinical-radiological features, the anomalies can be broadly classified into open and closed spinal dysraphism. The open category includes myelocele, myelomeningocele, hemimyelocele and hemimyelomeningocele. The closed category can again be subdivided into two categories - with or without subcutaneous mass. Examples of those with subcutaneous mass include lipomyelocele, lipomyelomeningocele, meningocele, myelocystocele and etc. The closed category without subcutaneous mass include various simple patterns like intradural lipoma, filar lipoma, and dermal sinus, etc. and the complex pattern includes diastematomyelia, neurenteric cyst, caudal regression, and segmental spinal dysgenesis, etc.

CONCLUSION: Spinal dysraphism is the result of the defective closure of the neural tube in early embryogenesis. Few spinal dysraphism may cause progressive neurological deterioration culminating in the socioeconomic and emotional toll to the family and society worldwide. Hence, early intervention and detection of pathology are necessary.

A RARE CASE OF BICKERSTAFF'S ENCEPHALITIS

Mohd Azaad A Hamid*¹

¹*Radiology, Universiti Sains Malaysia*

INTRODUCTION: Bickerstaff's brainstem encephalitis (BBE) is a rare post-infectious neurological disease characterized by the association of external ophthalmoplegia, ataxia, lower limb areflexia, extensor plantar response and disturbance of consciousness (drowsiness, stupor or coma). The pathophysiology of the condition is not yet fully understood but is associated with an autoimmune mechanism triggered by an antecedent infection.

REPORT: A 7 years old girl with history of fever and headache of 3 days. She had bilateral lower limb weakness for a week. Denied neck stiffness or photo phobia. Power of bilateral lower limb is 3/5, tendon reflexes were brisk and positive Babinski but no clonus. Next day child started to have rapid breathing, reduced consciousness and less active. CT brain shows hypodensities with fairly involvement of brainstem, bilateral lentiform nuclei and internal capsule. No leptomeningeal enhancement on contrast study. The diagnosis is supported by MRI brain which shows multiple abnormal T2/Flair high signal at bilateral lentiform nuclei, bilateral caudate nuclei, dorsal midbrain and pons.

CONCLUSION: The main clinical features of the patients with BBE were characterized as disturbance of consciousness. On the other hand, Guillain-Barré syndrome (GBS) may cause rapidly progressive flaccid paralysis without disturb consciousness. Miller Fisher syndrome (MFS) patients were areflexic, in keeping with a peripheral nerve aetiology, whereas BBE was characterized by altered consciousness and hyperreflexia. However, some said the wide clinical spectrum of MFS, BBE, and GBS may overlap each other. A definitive treatment for BBE has yet to be found, yet deaths have been reported in BBE.

CRANIAL POLYNEUROPATHY SECONDARY TO VERTEBROBASILAR DOLICHOECTASIA

Tay Poh Sen*¹; Noor Aida Mat Daud²; Hilwati Hashim³

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia,* ²*Radiology Department, Hospital Sungai Buloh, Malaysia,* ³*Radiology Department, Faculty of Medicine, University Teknologi Mara, Malaysia*

INTRODUCTION: Vertebrobasilar Dolichoectasia (VBD) is a condition characterized by elongation, dilatation and tortuosity of the vertebrobasilar system. It is usually asymptomatic but rarely, it can present with cranial nerve compression symptoms. We present a patient with trigeminal neuralgia and hypoglossal nerve palsy due to compression by VBD.

REPORT: A 50-year-old male with history of diabetes mellitus, hypertension and coronary heart disease presented with 3 months history of paroxysmal right sided facial and jaw pain. A dental visit revealed dental caries, which was thought to be causing the pain. However, despite tooth extraction, the pain persisted with a pain score of 10/10. He was prescribed Gabapentin and Carbamazepine which partially controlled the pain. The pain was sharp in nature affecting the right hemifacial region, predominantly the right lower jaw (trigeminal nerve distribution). It was precipitated by touch, brushing teeth and exposure to cold air. Cranial nerves examination revealed right sided tongue atrophy and slight deviation. The other cranial nerves were intact. MRI Brain showed a dilated and tortuous vertebrobasilar artery compressing the right trigeminal, facial, vestibulocochlear and hypoglossal nerves. CT cerebral angiogram confirmed the dolichoectasia. He is currently waiting for microvascular decompression surgery.

CONCLUSION: Unusual combination of cranial nerve compression symptoms can be caused by VBD. Neuroimaging plays an important role in diagnosing this condition so that further treatment can be provided.

DIFFERENTIATION OF FUNGAL BRAIN ABSCESES FROM GLIOMAS USING ADVANCED MR IMAGING TECHNIQUES

Fatima Mubarak*¹

¹*Radiology, Aga Khan University Hospital, Pakistan*

OBJECTIVE: To differentiate fungal brain abscess from grade IV glioblastoma on the basis of mean ADC values.

MATERIALS & METHODS: A retrospective study of 90 patients (47 male and 43 female; age range from 10-70 years) with aggressive grade IV brain lesion and fungal abscess was conducted. The mean ADC value and standard deviation of glioblastoma and fungal abscesses were calculated. The Levene's Test for Equality of Variances was applied. The analysis of data was done to test statistically the significant differences between glioblastoma and fungal brain abscess. To compare between the two groups, independent Student's T-test was used. Receiver operating characteristic (ROC) curve was used to determine the cut-off point with highest accuracy that was used to differentiate high grade neoplasm from fungal infection. The $p < 0.001$ was considered significant at 95% confidence interval. The statistical analysis of data was done using SPSS® v. 19 .

RESULTS: When an ADC value of $1006.500 \times 0.001 \text{ mm}^2/\text{s}$ used as a threshold value for differentiating fungal abscess from glioblastoma, the best result was obtained with an accuracy of 100%, sensitivity of 100%, specificity of 100%, negative predictive value of 0%, positive predictive value of 0% and area under the curve of 1. There was a significant difference in the ADC value between fungal brain abscess and glioblastoma ($p < 0.001$).

CONCLUSION: We concluded that ADC value is a non-invasive promising imaging parameter that can be used for differentiation of fungal abscess and glioblastoma on preoperative scan.

PRIMARY MALIGNANT MELANOMA OF BRAINSTEM MEDULLA MIMICKING AS CAVERNOMA - CASE REPORT

Fatima Mubarak*¹

¹*Radiology, Aga Khan University Hospital, Pakistan*

INTRODUCTION: Primary malignant melanoma of central nervous system is very rare and accounts for 0.07% of all brain tumors . It has very low incidence, estimated at 0.9 per 10 million inhabitants . Primary CNS melanoma arises from melanocytes which have been developed from melanoblasts in the neural crest. Melanoma of brainstem is difficult to diagnose and distinguish from cavernoma radiographically. Clinical picture is same but treatment and clinical management of these two diseases differ significantly. We report the case of malignant melanoma mimicking as craniocervical junction cavernoma.

REPORT: 40 Years old male with no known comorbid presented with complain of vertigo, dizziness and headache for 1 month. On CNS Examination: GCS 15/15, with no neurological deficit. Rest of the clinical examination was unremarkable and routine laboratory tests were normal. CT and MRI scan of brain with contrast were performed. On plain CT there was pear shaped hyperdense lesion at medulla oblongata of brainstem. Focal area of increased hyperdensity was seen in left posterolateral aspect of the lesion suggestive of focal hemorrhage. On MRI, the lesion was hyperintense on T1- weighted images and predominantly hypointense with mottled hyperintensity on T2-weighted images. No diffusion restriction is seen. Areas of susceptibility dropout were noted along the left posterolateral aspect of the lesion representing hemorrhage. Lesion showed diffuse enhancement on postcontrast images. Appearance of lesion raised the possibility of craniocervical cavernoma with focal hemorrhage.

CONCLUSION: Awareness of the unusual presence of melanoma within the brain stem is important and the possibility of presence of Malignant melanoma must be considered when above described MR images depicted. The final diagnosis, however, is based on the results of pathologic examination.

TUBEROUS SCLEROSIS COMPLEX (TSC) IN THE BRAIN - A PICTORIAL REVIEW

Tay Poh Sen*¹

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia*

LEARNING OBJECTIVE: This pictorial review demonstrates the spectrum of neuroimaging findings in tuberous sclerosis complex (TSC) in different ages of the brain, which include fetal imaging. The imaging characteristics and the clinical implications of these pathologies will be discussed.

BACKGROUND: TSC is an autosomal dominant neurocutaneous disorder. It is a multisystemic disorder and characterized by a variety of hamartomatous lesions in various organs. Central nervous system is commonly affected in TSC and patients can present with epilepsy and mental retardation which is incapacitating. Radiological images were selected from confirmed TSC cases from St George's Hospital.

FINDINGS AND/OR PROCEDURE DETAILS: Cortical tubers are developmental abnormalities of the cerebral cortex which are responsible for many of the neurologic manifestation of TSC. Subependymal nodules are hamartomatous change in the subependymal tissue. Some of these nodules may progress into Subependymal Giant Cell Astrocytoma (SEGA) and cause obstructive hydrocephalus. White matter abnormalities of TSC include radial bands and cystic lesions. Radial bands represent altered development along the migratory pathways of neurons. White matter cystic lesions are rare and usually located at the deep white matter. Other than intracranial abnormalities, patients of TSC will typically demonstrate some osseous lesion in the calvarial.

CONCLUSION: TSC can have a wide variety of imaging findings in the brain and neuroimaging plays an important role in the diagnosis and management of TSC. This review does not only show the constellation of neuroimaging findings in TSC, it also demonstrates the radiological findings in unmyelinated brain which can aid early diagnosis.

**DIFFUSION-WEIGHTED MAGNETIC RESONANCE IMAGING MAY BE USEFUL IN
DIFFERENTIATING FUNGAL ABSCESS FROM MALIGNANT INTRACRANIAL
LESION: CASE REPORT**

Fatima Mubarak*¹

¹*Radiology, Aga Khan University, Pakistan*

INTRODUCTION: In neurosurgical practice, an essential component of the diagnostics is the use of relevant radiological imaging modality in order to localize and diagnose an intracranial lesion. Among the various diagnostic tests available, this paper will discuss the role of diffusion-weighted magnetic resonance. Diffusion-weighted imaging (DWI) has a well-defined role in differentiating between important intracranial lesions, namely, brain abscess, arachnoid cyst, cystic/necrotic tumor, and epidermoid tumor. Quantitative analysis allows one to clearly delineate vascular, inflammatory, metabolic, infectious, and nonvascular disorders.

REPORT: 28-year-old male presented to the neurosurgery clinic with complaints of headache and left-sided weakness for 2 weeks. Neurological examination was intact. Magnetic resonance imaging (MRI) scan showed a large infiltrating heterogeneous mass involving the right parietal lobe. On further reviewing, there was homogenous diffusion restriction in the center of lesion. In addition, its aggressive behavior confirmed it to be a fungal abscess.

CONCLUSION: Correctly identifying an infectious versus tumor etiology is important. Research has been carried out to employ diffusion-weighted imaging (DWI) in differentiating the variable radiological findings. The role of DWI in diagnosing bacterial abscess is more commonly seen in comparison to fungal abscess. DWI has a high diagnostic potential, but more works need to be done

METHANOL ENCEPHALOPATHY - A SPECTRUM OF PLAIN CT BRAIN FINDINGS

Vithiya Sanmuganathan*¹; Rozita Mohd Ghazali¹

¹*Radiology Department, Hospital Raja Permaisuri Bainun, Ipoh, Malaysia*

INTRODUCTION: Methanol intoxication is uncommon, usually presenting after suicidal or accidental oral ingestion of methanol containing agents leading to development of serious neurological symptoms including methanol encephalopathy. Both computer topography (CT) and Magnetic Resonance Imaging (MRI) can be used as imaging tools to show the characteristic imaging findings of bilateral putaminal necrosis or hemorrhage with possible involvement of the optic nerves, other parts of basal ganglia, subcortical white matter and cerebellum.

REPORT: In May 2019, there was a cluster of methanol poisoning cases in the state of Perak due to consumption of fake alcoholic beverages. Three such patients were treated in our hospital and these patients all underwent plain CT brain imaging as part of their work up which showed a variety of different imaging features.

CONCLUSION: We are presenting this case report to highlight that CT being the main work horse in most hospital worldwide can be used as an effective imaging tool to identify the variable imaging appearances of methanol encephalopathy.

VENTRAL CORD SYNDROME, DIAGNOSTIC CHALLENGE: A CASE REPORT

Nur Asma Sapiai*¹; Nur Haneefa Ahmad¹

¹*Radiology, Universiti Sains Malaysia*

INTRODUCTION: Ventral cord syndrome (VCS) is caused by any condition that leads to infarction of the ventral two-thirds of the spinal cord.

REPORT: A thirteen-years-old, female, no known medical illness, complaint of sudden onset of neck pain, progressive numbness of bilateral upper and lower limbs and occipital headache. Subsequently, she developed of loss of consciousness and quadriplegia. Her GCS was low. Neurological examination revealed power 0/5 for both upper and lower limbs, hypotonia and hyporeflexia. Most cranial nerve were intact. She had left vocal cord immobility, weak gag reflex and tongue deviation to the right side. Urgent neuroimaging showed no significant abnormality. Initial clinical diagnosis is medial medullary syndrome. Repeated MRI brain and cervical done in a week, showed abnormal signal intensity at anteromedial aspect of medulla oblongata extending inferiorly till anterior part spinal cord of C4/C5 level. It involves both grey and white matter with heterogenous patchy enhancement. These findings suggestive of ventral cord syndrome(VCS).

CONCLUSION: This case is presented due to its rarity and diagnostic challenge. VCS is subtype of incomplete spinal cord syndrome. It encompasses lesion that involve the anterior two-thirds of the cord and spare the dorsal columns. The most common cause is spinal cord ischemia or infarction which then the most common etiology is idiopathic. The pathognomonic presentation is weakness of all four limbs, dissociated anaesthesia along with bladder involvement. The MRI findings include T2 and FLAIR hyperintensity involving the anterior part of the spinal cord and a classical owl eye's appearance in axial cut.

"THALAMIC INFARCT VS THALAMIC GLIOMA; A DIAGNOSTIC CHALLENGE"

Nur Asma Sapiai*¹; Nur Nazleen Said Mogutham²

¹Radiology, Universiti Sains Malaysia, ²Neurosurgical Universiti Sains Malaysia

INTRODUCTION: The thalamus acts as a relay system for both motor and sensory pathways.

The thalamus can be affected by various pathologies including infarct and neoplasm.

REPORT: A60-year-old female presented with complaint of right lower limb tingling sensation, started at right foot which progressively spread upwards. No weakness but she had gait imbalance. Glasgow Coma Scale is 15/15. She had reduced sensation in both right upper and lower limb and over left side of face. MRI brain showed a non-contrast enhanced ill-defined lesion at bilateral thalami and left basal ganglia extending to the left superior cerebral peduncle in midbrain, with no mass effect. Diffusion imaging shows T2 shine through. Initial diagnosis was bilateral thalamic infarct. However, she returned with altered behavior and previously seen ill-defined lesion increased in size especially on left side. There was heterogenous enhancement of the left thalamic region extending to the left lateral periventricular region. She was started on dexamethasone and proceeded with burrhole and IGS-guided biopsy of lesion for tissue diagnosis. Intraoperatively, the lesion was yellowish, soft tumour with moderate vascularity. Frozen section showed presence of increased cellularity, pleomorphism of nucleus, high mitotic rate, suggestive of high grade glioma. Histopathology report confirmed that the lesion was glioblastoma. In view of deteriorating condition of patient and poor prognosis associated with the pathology, palliative approach would be the best choice.

CONCLUSION: This report discusses the similarities between thalamic infarct and glioblastoma pathologies on imaging which can be tricky in finalizing diagnosis as well as treatment plans.

CASE OF ISOLATED CORTICAL VEIN THROMBOSIS

Andre Yee Yue Meng*¹

¹*Radiology, Hospital Lahad Datu, Malaysia*

INTRODUCTION: Isolated cortical vein thrombosis is the clinical entity of thrombosis of one or more cortical veins in the absence of thrombosis in the dural sinuses or cerebral veins. It is a very rare disease and is difficult to diagnose clinically or radiologically.

REPORT: A 57 year old lady with underlying hypertension and diabetes presented with the complaint of aphasia and altered sensorium for the past 2 days. She was also unable to get up from bed and could not recognise her family members. There was no associated fever, neck stiffness or history of trauma. Vital signs were stable, GCS was 11. Right nasolabial fold was lost and motor power of the right upper and lower limb was 3/5. Laboratory investigations were unremarkable. Plain CT revealed dense cortical veins at the left frontotemporal region with an associated left frontoparietal intraparenchymal bleed. CTA did not show any arteriovenous malformations, dural sinus fistulas or aneurysms. CT venogram revealed that the dense cortical veins that were seen on plain CT were poorly enhancing when compared to the veins in the contralateral side.

CONCLUSION: Isolated cortical vein thrombosis is a confounding clinical entity. However if not diagnosed and treated in a timely manner will cause irreversible intraparenchymal damage. High index of clinical suspicion and careful scrutiny of imaging studies are essential in confirming this diagnosis.

**CORRELATION OF MILD SPONDYLOLISTHESIS' GRADE BY MEYEDERING
WITH LIGAMENTUM FLAVUM THICKENING BASED ON LUMBOSACRAL MRI
EXAMINATION IN PATIENTS WITH LOW BACK PAIN**

Yuyun Yueniwati*¹; Junus Asiu Bulu Baan²

¹*Radiology Department, Universitas Brawijaya Malang Indonesia,* ²*Radiology Department, Hasanuddin University Makassar, India*

OBJECTIVE: To investigate the correlation between mild spondylolisthesis' grade according to Meyerding with ligamentum flavum thickening based on lumbosacral MRI examination in patients with low back pain.

MATERIALS & METHODS: The research was conducted in the Radiology Department Dr. Wahidin Sudirohusodo Hospital, Makassar. This research design used the Spearman's diagnostic test. The total samples comprised 39 patients with lumbosacral spondylolisthesis. Lumbosacral MRI examination was conducted in order to evaluate the degree of spondylolisthesis and to measure the thickness of ligamentum flavum. The collected data were analyzed with Spearman's correlation test.

RESULTS: The results indicated that there was a significant correlation ($p < 0.050$) between the spondylolisthesis' mild grade and ligamentum flavum thickening.

CONCLUSION: Lumbosacral MRI was the primary modality in evaluating spondylolisthesis' grade and to measure ligamentum flavum thickness.

EVOLUTION OF SUBACUTE ARTERY OF PERCHERON INFARCTION - A CASE REPORT

Nabillah Mohd Jadi*¹; Hairuddin Achmad Sankala²; Nor Zaini Rose Mohd Zain²

¹Radiology, Hospital Universiti Kebangsaan Malaysia, Malaysia, ²Radiology, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Artery of Percheron infarction is uncommon variant of posterior circulation infarct and can present with wide clinical manifestations. We report a case of subacute artery of Percheron infarct with associated aneurysm at the P1 segment of left PCA. This case highlight the typical imaging finding of artery of Percheron infarct and the importance to recognize the clinical symptoms as well as pathomorphology of the disease to ensure the patients get early and prompt treatment.

REPORT: Patient is a 43-year old gentleman who initially presented with bilateral eye diplopia and lethargy for two weeks and initial imaging shows lesions at bilateral thalami extending to rostral part of midbrain. Anticoagulant was not commenced at that particular of time in view of no clinical or radiological suspicion. Seven weeks after the initial symptom, he developed somnolence and a repeated MRI shows acute infarct of the left thalamus with smaller right thalamus lesion. Diagnosis of artery of Percheron infarction was made in view of classical presentation and territorial distribution although no demonstrable of classical artery of Percheron on imaging. CTA brain shows aneurysm at the P1 segment of left PCA. After commencement of anticoagulant, his symptoms remain similar with no worsening of functional impairment.

CONCLUSION: Although it is uncommon, with classical presentation, the typical radiological findings of artery of Percheron infarct should be suspected by clinician and radiologist in order to prevent delay in diagnosis and treatment.

BILATERAL HIPPOCAMPAL BRIGHT SPOTS: TRANSIENT GLOBAL AMNESIA - A CASE SERIES

Srikiran T K*¹; Sunitha Robert²; Robert Mathew²; Geena Benjamin²; Shivaprakash B Hiremath²
¹*Imageology, Malabar Cancer Center, Thalassery, Kannur, Kerala, India*, ²*Neurology, Pushpagiri Institute Of Medical Sciences And Research Centre, Thiruvalla, Kerala, India*

INTRODUCTION: Transient global amnesia (TGA) is clinically defined as sudden onset anterograde amnesia with preserved alertness, attention, and personal identity, which occurs during a period of no more than 24 hours with no long-term sequelae(1,2). It is usually accompanied by repetitive questioning and partial retrograde amnesia. The incidence of TGA has been reported to be 5–11 per 100,000 persons per annum(3,4). The exact cause is still unknown.

REPORT: We report a case of a 64-year-old gentleman who presented with sudden onset of memory loss. He would forget what he had told a few minutes before and would ask the same question or repeat the same statement. The event lasted for 18 hours after which he made a complete recovery. He had amnesia for the event. The patient had unaccustomed physical exertion the prior evening. The clinical diagnosis of Transient global amnesia (TGA) was made. MRI scan of the brain after 72 hours showed punctuate hyperintense lesions on DWI in bilateral hippocampal regions.

CONCLUSION: TGA is a benign neurological disorder as the patient recovers completely with just a residual amnesic gap. It cannot be equated to and treated as a stroke, although the occurrence of punctuate diffusion restriction in TGA has produced a debate over the possibility of a cerebrovascular etiology. Higher rates of lesion detection on MRI might be achieved with repeated scanning at later time intervals, dedicated protocols, or higher field strengths. Once the clinical diagnosis of TGA is established, all the patient needs is reassurance.

HEMORRHAGIC STROKE ON DWI; MRI AS THE FIRST LINE NEUROIMAGING FOR ACUTE STROKE

Mohd Fandi Al-Khafiz Kamis*¹; Azril Ishak¹; Norafida Bahari¹; Mohd Naim Mohd Yaakob¹;
Ezamin Abdul Rahim¹; Ahmad Sobri Muda¹

¹Radiology, Hospital Pengajar UPM, Malaysia

OBJECTIVE:

- To evaluate the usefulness of DWI in identifying haemorrhage in acute stroke
- To compare the sensitivity of DWI to SWI in detecting haemorrhage in acute stroke MRI
- To support MRI as an option for first line neuroimaging in acute stroke
- To highlight the effectiveness of MRI detecting haemorrhagic stroke without delaying the management of acute stroke

MATERIALS AND METHODS: We retrospectively reviewed all hemorrhagic stroke cases who had MRI as the first line neuroimaging, together with non-hemorrhagic stroke, in a double-blind manner. Two radiologists and neuroradiologist evaluate the DWI (b1000 + ADC) and SWI (SWI sequences) to determine if there is haemorrhage seen on DWI or SWI.

RESULTS: A total of 139 cases presented as acute stroke in 2020. All cases had MRI as the first line neuroimaging except for 2 cases. There were 19 stroke mimics, 104 ischemic and 14 hemorrhagic stroke. All 14 cases demonstrate central hyperintensities with rim of hypointensities on DWI (b1000) with corresponding low ADC values. All 14 cases showed MRI changes in keeping with haemorrhage on SWI. The 4 cases who had CT performed showed hyperdensities in keeping with haemorrhage.

CONCLUSION: DWI is able to assist with identification of hemorrhagic stroke, thus MRI as the first line neuroimaging for acute stroke did not delay the diagnosis of hemorrhagic stroke. DWI and SWI are to validate presence of haemorrhage. MRI as the first line neuroimaging for acute stroke did not hinder the detection of intracranial haemorrhage. DWI as the first sequence in MRI for acute stroke did not delay diagnosis of hemorrhagic stroke.

HEMORRHAGIC HERPES ENCEPHALITIS MASKING AS MIDDLE CEREBRAL ARTERY TERRITORY INFARCT

Rayyan Mardhiyah Nik Mohd Kamel*¹

¹*Radiology, Hospital Ampang, Malaysia*

INTRODUCTION: Herpes Simplex Encephalitis is a CNS virus caused by HSV-1 or HSV-2 virus which usually affecting the temporal lobe and limbic system. Delay in diagnosing herpes simplex encephalitis should be avoided as it is associated with high mortality and morbidity and significant neurological sequelae.

REPORT: Here we present a case of Herpes Simplex Virus (HSV) encephalitis of a 40 year-old male foreigner presented with fitting episode and loss of consciousness. His initial stage of Computed Tomography (CT) brain shows subtle non specific findings subsequently mimicking acute stroke with dense middle cerebral artery sign suspicion of acute thrombosis and haemorrhagic transformation on second CT examination. Leading diagnosis of Herpes encephalitis subsequently made based on high clinical suspicion and Magnetic Resonance Imaging (MRI) image findings which eventually confirmed by positive serum marker of Ig-G HSV-1 .

CONCLUSION: This case highlighting the needs to raise the index of suspicion of HSV-1 encephalitis among general radiologists given the young age, correct clinical symptoms and radiological setting and absence of significant cardiovascular risk factor.

DUPLICATION OF PITUITARY GLAND PLUS SYNDROME

Fatima Mubarak*¹; Raima Zakaria¹

¹Radiology, Aga Khan University Hospital, Pakistan

LEARNING OBJECTIVE: Understand the embryological, anatomical and pathological association of syndromic entities.

BACKGROUND: Pituitary gland duplication is a rare entity. When it is associated with other blastogenic defects, it is known as Pituitary gland plus syndrome. It is mainly a craniofacial developmental anomaly which happens during the process of blastogenesis. The postulated etiologies are incomplete twinning, teratogens, syndrome of median cleft face and splitting of the notochord.

FINDINGS AND/OR PROCEDURE DETAILS:

- Clinical presentation
 - Can present at any stage of life due to variable midline abnormalities. Can present with endocrine abnormalities, seizures (hamartomas), facial anomalies and chemical meningitis due to ruptured dermoid. They can also present with skeletal abnormalities such as cleft palate, scoliosis or short stature.
- Key diagnostic features
 - Duplicated sella, oropharyngeal tumours, vertebral malformations, agenesis or hypoplasia of the corpus callosum, duplicate odontoid process, absent olfactory bulbs/tracts, tubomammillary fusion and fenestrated basilar artery.
- Differential diagnosis
 - Duplicated sella is diagnostic. The associated anomalies with plus syndrome are increasingly reported in literature.
- Treatment
 - Resection of dermoid and conservative management for the chemical meningitis. Pharmacological treatment, if any hormonal issues. Skeletal corrections, for deformities if compromising.

CONCLUSION: Imaging plays a pivotal role in diagnosis of the underlying associations.

DECODING REGION-SPECIFIC CORTICAL COMPLEXITY WITH MULTI-SCALE MORPHOMETRIC ANALYSIS

Hanna Lu*¹

¹*Psychiatry, The Chinese University of Hong Kong (SAR)*

OBJECTIVE: Quantitative Magnetic Resonance Imaging (MRI) analysis has greatly contributed to quantify age-related anatomical changes. However, little is known about the regional cortical complexity in the context of brain atrophy. We aimed to examine the age-related changes of the cortical complexity of bilateral dorsolateral prefrontal cortex (DLPFC).

MATERIALS & METHODS: Six hundred and eleven right-handed cognitively normal adults (aged from 18 to 88 years) drawn from the Cambridge Centre for Ageing and Neuroscience (Cam-CAN) were divided into four age groups: young, middle-aged, young-old and old-old. Surface-based morphometry was addressed to decode the cortical complexity with multi-scale measurements including cortical thickness (mm), surface area (mm²), grey matter volume (mm³) and cortical folding.

RESULTS: Advancing age was associated with reduced grey matter volume, white matter volume and pial surface area of bilateral DLPFC but correlated with increased cortical thickness and GI. Volumetric measures, CSF volume in particular, showed better performance to discriminate young-old adults from old-old adults; while cortical thickness and GI can differentiate young-old adults from middle-aged adults and old-old adults.

CONCLUSION: This is the first demonstration that chronological age has a pronounced and differential effect on the cortical complexity of bilateral DLPFC. Our findings suggest that surface-based measures of cortical region, thickness and gyrification in particular, could be considered as valuable imaging markers for the studies of aging brain and neurodegenerative diseases.

AN UNUSUAL CASE OF STROKE IN PERIPARTUM

Dimple Bhatia*¹

¹*Radiology, Christian Medical College, India*

INTRODUCTION: Imaging analysis of unusual cause of stroke in peripartum.

REPORT: A 25 year old female patient presented with multiple episodes of GTCS in the immediate post-partum period. Antenatal period was uneventful. Blood pressure recordings were normal. Axial plain CT Brain images showed multifocal acute infarcts in left frontal lobe, left parietal lobe and bilateral cerebellar hemispheres . Grey scale ultrasound images showed long segment, diffuse, homogenous, hyperechoic circumferential thickening of the wall of bilateral common carotid arteries giving the typical ‘Macaroni sign’ which is highly specific for Takayasu arteritis with echogenic thrombus within. CT neck and brain angiogram revealed diffuse wall thickening and near total occlusion of major branches of arch of aorta . Higher sections of neck showed circumferential, enhancing wall thickening of bilateral CCAs with significant luminal narrowing.

CONCLUSION: Takayasu arteritis is rare but one of the important differential diagnosis in peripartum stroke. Multimodality imaging with USG, Doppler & CT angiogram helps to pin down the diagnosis.

MAGNETIC RESONANCE IMAGING EVALUATION OF SELLAR AND JUXTASELLAR MASSES AND THEIR HISTOPATHOLOGICAL CORRELATION

Gobardhan Thapa*¹; Roshna Giri²

¹Radiology, Karnali province hospital, Nepal, ²Ophthalmology, Birat Eye Hospital, Biratnagar, Nepal

OBJECTIVE: The tumors of the sellar and juxtaseellar region arise from the pituitary gland and those from the surrounding structures. Magnetic Resonance Imaging (MRI), owing to its multiplanar capabilities and high contrast resolution is the best and imaging modality of choice for assessment of sellar and juxtaseellar tumors.

MATERIALS & METHODS: This was a hospital based cross-sectional observational study done in the Department of Radiodiagnosis of National Academy of Medical Sciences, Bir hospital, Kathmandu from December 2017 to December 2018. The objective of the study was to study the various tumors in sellar and juxtaseellar region with MR imaging and correlate them histopathologically.

RESULTS: The most common indication for the imaging was visual disturbances in 25 cases (48.1%) followed by headache in 23 cases. Out of 52 cases, 44.2% of the cases were in the age group of 40-60 years. There were 30 females (57.7%) and 22 males (42.3%) indicating an overall female predominance. The lesions were predominantly sellar with juxtaseellar extension (78.8% cases). Most common MR diagnosis was pituitary adenoma (63.5%). In histopathological examination, there were 63.5% of pituitary adenomas while the second most common were the meningiomas consisting of 21.2% cases. The sensitivity, specificity, positive predictive value, and negative predictive value of MRI for diagnosis of macroadenoma were 94%, 89.5%, 94%, and 89.5% respectively and that for sellar and juxtaseellar meningioma were 91%, 100, 100%, and 97.6% respectively.

CONCLUSION: MRI is the modality of choice for diagnosing and characterizing sellar and juxtaseellar masses with high sensitivity and specificity.

MRI - APPARENT DIFFUSION COEFFICIENT (ADC) IN DEFINING STAGES OF CEREBRAL INFARCTION

Mohammed Shabir*¹

¹VPS Lakeshore Hospital, India

OBJECTIVE: To study the ADC changes in hyperacute, acute and subacute ischemic stroke with time and space, and to provide the evidence in defining the acute /subacute infarction. Diffusion-weighted magnetic resonance (DWMR) imaging provides image contrast that is superior to what is provided by conventional MR techniques. It is particularly sensitive for detection of hyperacute/acute ischemic stroke.

MATERIALS & METHODS: Prospective study of 170 cases with clinical diagnosis of cerebral infarction were imaged with both conventional MRI (1.5T) and diffusion weighted imaging. The ADC values from the center of the lesion were calculated. Cases with hemorrhagic stroke were excluded in this study.

RESULTS: Out of 170 cases of ischemic strokes, 22 were hyperacute, 65 acute, and 83 subacute infarcts. The average ADC values in hyperacute and acute infarctions were less compared to normal values and increased progressively to become "pseudo normal" in approximately 8 to 14 days. Further, ADC values became greater than normal in chronic stages.

CONCLUSION: The ADC values in infarction evolves with time. The evolution rules with time can be helpful to decide the clinical stage and to guide the clinician regarding treatment and judging the prognosis.

A VANISHING TUMOUR: SPONTANEOUS INVOLUTION OF A LARGE PITUITARY MACROADENOMA

Ummara Siddique*¹; Ali Asghar Sahib¹; Seema Gul¹; Syed Ghulam Ghaus¹; Shahjehan Alam¹;
Muhammad Asif¹; Muhammad Abdullah¹; Faria Maqsood¹

¹*Radiology Department, Rehman Medical Institute, Peshawar, Pakistan*

INTRODUCTION: Pituitary macroadenomas are pituitary adenomas more than 10mm in diameter. These can be functional or non-functional and in latter case can be diagnosed as incidentalomas on imaging. The large pituitary lesions are more likely to produce hypopituitarism and with suprasellar extension, can cause compression on the optic chiasma resulting in visual field defect. These tumours may also invade the cavernous sinus leading to cranial nerve palsies. These are managed as surgically mostly when symptomatic presenting with signs of bitemporal hemianopia, sign of increase intracranial pressure and also as symptoms of endocrine dysfunction. The objective of this case presentation is to discuss spontaneous resolution of a pituitary macroadenoma with resultant secondary empty sella. Etiology, pituitary function, and imaging discussed.

REPORT: A 35-year-old woman was referred for MRI Dynamic Pituitary with vomiting, headache and amenorrhea. MRI showed a large macroadenoma (1.6cm) causing mass effect on optic chiasma, involvement of cavernous sinus and right internal carotid artery. Her prolactin levels were normal. She did not get any surgery done. After 2 years she presented to her physician with 1 month history of severe headache and vomiting. Re-MRI done showed a complete empty sella with intrasellar herniation of optic chiasma and optic nerves. There was no sign of the large pituitary mass.

CONCLUSION: In our patient the natural fate of large pituitary tumor was that it spontaneously involuted and resulted in an empty sella. In this case, secondary empty sella was associated with herniation of optic nerves and optic chiasma.

**A RARE CASE OF VEIN OF GALEN MALFORMATION WITH CHANGES OF
CHRONIC VENOUS HYPERTENSION IN ADULT FEMALE PATIENT.**

Mariam Malik*¹; Belqees Yawar Faiz¹; Muhammad Yousaf Chaudery¹; Atif Iqbal Rana ¹

¹*Department of Radiology, Shifa International Hospital Islamabad, Pakistan*

INTRODUCTION: Adult presentation of Vein of Galen Malformation (VOGM) is rare. Even more rare is patient remaining asymptomatic until adulthood. We report a 40 years old female patient with longstanding headaches and left eye proptosis of 1 year duration. Non-contrast CT brain followed by Cerebral angiography was done for evaluation.

REPORT: CT brain showed innumerable gyriform calcifications along cortical margins at grey white matter junctions in bilateral cerebral hemispheres with tortuous calcified vessels in right temporal lobe. There was tortuous dilated vein of Galen with other additional dilated cortical veins, dilated left transverse and left sigmoid sinus visible on non contrast scan. CTA brain revealed arterio-venous malformation in right para-atrial region in postero-medial temporal lobe with large feeders from both anterior and posterior circulations. Tortuous dilated channels were seen communicating with superior and inferior sagittal, and straight sinus along with large dilated veins along tentorium. There were additional large dilated cortical veins, tortuous dilated veins in left para-cavernous region with dilated left cavernous sinus. There were multiple dilated tortuous channels in left orbit with dilated ophthalmic vein. Multiple aneurysmal appearing and dilated arterial circulation vessels were seen. Consequent white matter ischemia with volume loss and dystrophic vascular calcification were noted as a sequela of long-standing aneurysm and consequent venous hypertension.

CONCLUSION: Persistent elevated venous pressure compounded by obstruction of CSF flow in lying position by dilated vein of Galen resulted in postural symptoms in our patient. Rarity of VGOM presenting in prior asymptomatic adult makes this case unique.

PROMINENT CORTICAL VEIN SIGN ON SUSCEPTIBILITY-WEIGHTED IMAGING (SWI) IN LARGE VESSEL OCCLUSION DURING HYPERACUTE STROKE AS AN INDIRECT MARKER TO EVALUATE ISCHEMIC PENUMBRA.

Mohd Fandi Al-Khafiz Kamis*¹; Azlin Tasnim Che Osman²; Mohd Naim Mohd Yaakob²;
Ezamin Abdul Rahim²; Ahmad Sobri Muda²

¹Radiology, Hospital Pengajar UPM, Malaysia, ²Radiology, UPM, Malaysia

OBJECTIVE: Susceptibility-weighted imaging (SWI) is sensitive to detect presence of deoxyhemoglobin within cortical and medullary vein during acute stroke. The prominent vein sign (PVS) in hyperacute stroke indicates compromised cerebral perfusion. We aimed to evaluate presence of PVS in large and distal arterial occlusion.

MATERIALS AND METHODS: We select all acute stroke cases presented within thrombolysis and thrombectomy window who had MRI scan done less than 12 hours from stroke onset. Presence of large and distal vessel occlusion were determined by Magnetic Resonant Angiogram (MRA) and relative cerebral flow were assessed by arterial spin labelling (ASL) perfusion scan. The presence of PVS were graded independently by two radiologists and one neuroradiologist. The correlations between PVS and perfusion markers were determined.

RESULTS: There are total of 137 cases presented as acute stroke triggering acute stroke red code in 2020. All cases had MRI as the first line neuroimaging. Out of 137 cases, 16 (11.7%) patients received intravenous thrombolysis (IVT), 6 (4.4%) had mechanical thrombectomy (MT) and 7 (5.1%) had combined IVT and MT. The pattern of PVS were seen among 29 cases of large and distal arterial occlusion with fair interobserver agreement for grading of PVS within the area of compromised cerebral perfusion.

CONCLUSION: There is a correlation between the presence of prominent cortical vein sign (PVS) within the area of compromised perfusion in cases of large and distal arterial occlusion in hyperacute stroke.

CALCIFIED CORTICAL GYRATION POST CEREBRAL INFARCTION IN NORMOCALCEMIC PATIENT: CASE REPORT

Nur Salsabila Mohd Rosli*¹; Nicqeshen Nair Balachanthren¹; Woo Xiang Ling²

¹Radiology, Hospital Sibu, Malaysia, ²Neurosurgery, Hospital Sibu, Malaysia

INTRODUCTION: Calcified cortical gyration was reported before in cerebral infarct patients with underlying hyperparathyroidism and elevated serum calcium. However, in our case calcified cortical gyration was developed in normocalcemic patient.

REPORT: 49y/o gentleman underlying hypertension presented with reduced conscious level. He was brought by a family member to a local hospital with GCS of E1V2M1 and BP 163/109. The plain CT brain revealed right frontal intraparenchymal and subarachnoid hemorrhage. CT angiography of brain revealed left distal anterior cerebral artery(ACA) saccular aneurysm. The aneurysm was clipped and on the day 5th post operation, the patient developed right-sided body weakness. CT brain showed acute left parietal parasagittal and corpus callosum infarcts. The patient's condition was complicated with acute kidney injury required hemodialysis secondary to rhabdomyolysis. Follow-up CT brain on day 14, revealed cortical gyration dense calcification at the previous area of infarction. Serum calcium was normal throughout admission but serum phosphate was elevated due to acute renal injury.

CONCLUSION: Calcification of cerebral infarcts is a very rare occurrence. In different reported cases, parenchymal calcifications are typically discovered few months to years after the acute stroke and patients typically presented with post-stroke seizure. An aggravating factor was identified due to parathyroid disease and chronic kidney disease. In our patient, calcified cortical gyration was a finding on relative short time follow-up imaging. We postulate that this condition was aggravated by hemodialysis. However, given our patient just had temporary renal replacement therapy direct correlation between hemodialysis and development of brain calcinosis is unexplained.

**CYTOMEGALOVIRUS TRANVERSE MYELITIS WITH BRAINSTEM
INVOLVEMENT IN PATIENT WITH HIV; CASE REPORT.**

Nur Salsabila Mohd Rosli*¹; Se To Wei Li¹

¹*Radiology, Hospital Sibul, Malaysia*

INTRODUCTION: Immunocompromised patients infected with HIV will develop neurological related illness throughout their life usually later in the advanced stage of the disease. Besides, human immunodeficiency virus (HIV) itself affects the central nervous system, patients with low CD4 count are also at risk of multiple opportunistic infections. The brain is more common to get infected with this opportunistic infection compared to the spinal cord.

REPORT: We report a case of acute transverse myelitis(TM) secondary to cytomegalovirus(CMV) infection at the initial presentation of HIV related illness. The patient presented with rapid progressive ascending body weakness. Her clinical picture, magnetic resonance finding, and cerebrospinal fluid analysis were compatible with acute TM. MRI of the spinal cord revealed the presence of inflammation signal changes involved cervical, thoracic as well as the lower part of the brain stem. The patient was given methylprednisolone and a few cycles of plasma paresis. CMV polymerase chain reaction(PCR) was positive in the cerebral spinal fluid. Ganciclovir was not started as CMV PCR was available later.

CONCLUSION: Usual spinal cord involvement in TM is at the thoracic level and some extension to the cervical cord. None reported extension to the brain stem as in our patient. This may explain the guarded diagnosis in our patient as she succumbs to death following respiratory failure. Delayed in the result of CMV PCR due to our local laboratory setting, in which investigation only performed at another tertiary center. Empirical treatment should commence earlier but in many instances, severe CMV-induced end-organ disease will progress despite treatment.

DIAGNOSTIC CHALLENGE IN A CASE OF NEUROLYMPHOMATOSIS

Radhiana Hassan*¹; Siti Kamariah Che Mohamed¹; Mohd Radhwan Abidin¹; Mohamed Saufi Awang²; Muhamad Azamin Anuar³; Azliana Abdul Fuaat⁴; Azian Abd Aziz¹

¹*Department Of Radiology, International Islamic University Malaysia (IIUM),* ²*Department Of Surgery, IIUM, Malaysia,* ³*Department Of Paediatric, IIUM, Malaysia,* ⁴*Department Of Pathology, IIUM, Malaysia*

INTRODUCTION: Neurolymphomatosis is a rare manifestation of lymphoma characterized by infiltration of cranial and peripheral nerves and roots by malignant lymphocytes.

REPORT: We report a case of neurolymphomatosis involving the lower spinal nerve roots and cranial nerves in a 13 years old boy. The patient has underlying juvenile idiopathic arthritis and under the care of a paediatrician and a rheumatologist. He presented with acute lower limb weakness and back pain. MRI of the spine showed intradural extramedullary mass in the lower thoracic region extending to lumbar spine. MRI brain also showed some abnormality at sella region. Differential diagnosis of PNET and ependymoma were given. Consultation for second opinion suggested germ cell tumour with drop metastasis. Two days after admission there was worsening of symptoms and signs. Power of both lower limbs were 0/5. Laminectomy was done. Intraoperative findings showed extensive oedematous spinal nerve roots thought to be due to venous thrombosis. Nerve root biopsy was done. The diagnostic challenge also faced by pathologist. It was expressed due to steroid given causing alteration of phenotypic markers of lymphocytes. Final diagnosis of lymphoblastic lymphoma was made. Patient succumbs 20 days after operation due to multiple complications and septicaemia.

CONCLUSION: The diagnosis of neurolymphomatosis remains challenging due to its non-specific symptoms and signs. It requires integration of clinical information, imaging findings and histopathologic examination of involved nerves or non-neural tissue and cerebrospinal fluid analysis to avoid delay in diagnosis and successful therapy.

**CONGENITAL ABSENCE OF THE RIGHT INTERNAL CAROTID ARTERY
PRESENTING AS INTERMITTENT LOSS OF CONSCIOUSNESS**

Maria Christina Tabitha Balaccua*¹

¹*Radiology, Dr Jose N. Rodriguez Memorial Hospital, Philippines*

INTRODUCTION: Congenital absence of the internal carotid artery encompasses agenesis, aplasia, and hypoplasia. It is a rare anomaly that occurs in less than 0.01% of the population and with 37 reported cases as of 2016. In most cases patients are asymptomatic due to the presence of collateral circulation most commonly through the circle of Willis. Reported symptoms include headache, dizziness, and other TIA like symptoms. Patients with this condition are prone to develop cerebral aneurysms.

REPORT: The author presents a case of a 67 year old male with a history of intermittent loss of consciousness. Patient has an unremarkable neurologic physical examination. Plain cranial MRI showed no evidence of acute territorial infarcts, bleed, or mass lesions, however there was loss of flow-void along the course of the right internal carotid artery. Follow-up MRA confirmed absence of the right internal carotid artery.

CONCLUSION: Congenital absence of the internal carotid artery could present as episodic loss of consciousness. MRA is helpful in demonstrating the loss of flow-voids along the course of the internal carotid and in ruling out the presence of intracerebral aneurysms.

**PINEAL APOPLEXY WITH ACUTE TRANSIENT SENSORY SYMPTOMS: CASE
REPORT**

Nur Asma Sapiai*¹; Aiman Asyraf Ahmad Sukari²

¹Radiology, Universiti Sains Malaysia, ²Neurosurgical, Universiti Sains Malaysia

INTRODUCTION: Pineal apoplexy is an uncommon clinical diagnose in the Malaysian population, probably due to it being underreported. Clinical suspicion is difficult due to its ill-defined symptoms. In addition, it is associated with multiple different pathologies.

REPORT: We present a case of pineal apoplexy related with vascular malformation and review the literature to compare other clinical and radiological findings to our case. The presentation of pineal apoplexy is not straight forward and can present with a variety of symptoms. We report a case of pineal apoplexy who presented with a sudden onset headache and transient sensory loss of the right upper limb. Biopsy was not feasible as intra-operatively the lesion was vascular and high risk of haemorrhage. Pineal apoplexy commonly presents with headache but other accompanying features vary from eye symptoms to progressive neurological deterioration. Pineal apoplexy is a common complication of a multitude types of pineal lesion. Timing of MRI is important in helping determine the age of hemorrhage in pineal apoplexies. Combination of history of headache with other neurological symptoms and radiological findings are important in recognizing pineal apoplexies.

CONCLUSION: Although pineal apoplexy may be considered rare, radiological evaluation combined with clinical history of a sudden onset of headache with or without a sudden clinical deterioration or neurological deficit, and especially with presence of any form of eye signs remains an invaluable tool for diagnosis pituitary apoplexy and its underlying cause.

AZYGOS ANTERIOR CEREBRAL ARTERY WITH ASSOCIATED SACCCULAR ANEURYSM AND PIAL ARTERIOVENOUS MALFORMATION: A CASE REPORT

Gerard G. Viterbo *¹; Cindy Pearl J. Sotalbo¹; Jeffrey P. Apo¹; Renato M. Carlos¹

¹*Radiology, University of the Philippines - Philippine General Hospital*

INTRODUCTION: Azygous anterior cerebral artery is a rare anatomic variant of the anterior circulation, accounting only 0.2-4% of the population. Instead of two A2 segments, a single midline A2 trunk is seen supplying the bilateral anterior cerebral arteries. This may be associated with other conditions such as neuronal migration anomalies, aneurysm formation and other malformations, with only few reported cases. In this report, we are presented with a case of azygos anterior cerebral artery associated with two vascular anomalies namely a flow-related saccular aneurysm and a pial-based arteriovenous malformation.

REPORT: A 44 year old male presented with 3 week history of intermittent headache. Eventual sudden onset of decrease in sensorium and other neurologic deficits prompted consult. On work-up plain cranial CT scan, acute parenchymal and subarachnoid hemorrhages were observed. CT angiogram and conventional cranial angiogram (DSA) were subsequently done revealing fusion of the A1 segments of the bilateral anterior cerebral arteries into a single A2 trunk (azygos) with a flow-related saccular aneurysm observed along its mid to distal portion. An associated modest-sized tangle of vessels, representing a pial arteriovenous malformation, was also noted in the right frontoparietal region supplied mainly by branches of the right anterior cerebral artery with early venous drainage into the superior sagittal sinus.

CONCLUSION: In evaluation of anatomic variants such as azygos anterior cerebral artery, imaging such as CT angiography and conventional digital subtraction angiography (DSA) will aid in diagnostic confirmation, detection of other associated vascular anomalies and planning of possible definitive management.

**MULTIPLE INTRACRANIAL DOLICHOECTATIC AND LEFT GIANT ANEURYSMS
PRESENTING AS LEFT ABDUCENS NERVE PALSY IN A YOUNG PATIENT.**

Seah Shiao-Chin*¹; Norhanani Hj Md Tap¹; Laili Suriani Ab Latip¹

¹*Radiology, Hospital Pakar Sultanah Fatimah, Malaysia*

INTRODUCTION: Intracranial artery dolichoectasia is a rare arteriopathy characterized by arterial dilatation, elongation and tortuosity. It can progress to dolichoectatic or fusiform aneurysms. Advancement in aneurysm size leads to giant aneurysms, which are mostly of saccular type. Multiple bilateral intracranial carotid artery coexisting dolichoectatic and saccular aneurysms are rare, challenging to treat and poses detrimental risks of rupture, which can cause high morbidity and mortality. Radiological examinations such as computed tomography, magnetic resonance imaging or angiography confirms the diagnosis and aids in treatment decisions and intervention. However, their presentation varies from being asymptomatic to symptoms related to mass effect, ischaemic stroke or severe subarachnoid haemorrhage causing death.

REPORT: A 26-year-old man, active smoker with no known medical illness, presented with left squint, diplopia and headache. Computed tomography angiography of the brain showed elongated and tortuous dilatation of bilateral petrous and left internal carotid arteries, indicating diffuse dolichoectatic aneurysms of anterior circulation with coexisting bilateral saccular cavernous internal carotid artery aneurysms, giant and thrombosed on the left. Unfortunately, he was deemed not suitable for invasive intervention and the risk of surgical complications such as bleeding and thrombosis outweighs its benefits. Anticoagulant therapy was commenced with plan of yearly imaging surveillance of the brain.

CONCLUSION: Complete systemic evaluation in patients presented with abducens nerve palsy can reveal underlying life-threatening condition. Knowledge on such rare cases are essential for accurate diagnosis and treatment planning. Radiological imaging plays an important role in both the diagnosis and intervention of this condition to decrease overall mortality and morbidity.

**ROLE OF MR SPECTROSCOPY IN THE ASSESSMENT OF GLIOBLASTOMA
MULTIFORME MIMICKING MENINGIOMA : REPORT OF 3 CASES AND
LITERATURE REVIEW**

Dina Mustikasari Amrullah*¹; S. A. Utomo¹

¹*Departement of Radiology, Faculty of Medicine, Airlangga University- Dr. Soetomo General Academic Hospital, Surabaya, Indonesia*

INTRODUCTION: Glioblastoma is the most common malignant primary tumor of central nervous system. Glioblastoma can mimic various pathologies include meningioma. We present 3 cases glioblastoma mimicking meningioma preoperatively, intraoperative suggest extraaxial mass but final pathologic diagnosis was glioblastoma.

REPORT: Case 1 a woman 58th, decrease of consciousness 4 hours before hospitalized, headache 5 months. Brain magnetic resonance imaging (MRI) demonstrated a heterogenous-enhancing suprasellar mass with cerebrospinal fluid (CSF) cleft sign and dural tail, got feeding from A1 right ACA. Case 2 a man 51th yo headache for 3 months, brain MRI found a heterogenous-enhancing mass broad dural contact at left parieto-occipital convexity with dural tail, CSF cleft sign, displacement arachnoid vessel, got feeding from M3 left MCA. Man 20th yo complain headache since 2 months, blurry left eye, hearing loss left ear since 5 months. MRI show heterogenous mass at left temporal convexity, CSF cleft sign, displacement arachnoid vessel, got feeding from a. meningica media and M2 from left MCA. MR spectroscopy of these cases were a high lipid lactat and no increased of alanine which indicated for glioblastoma multiforme should highly considered as the preoperative diagnosis. Craniotomy for these cases found extraaxial mass attached to dural suggest for meningioma, pathology revealed glioblastoma.

CONCLUSION: Glioblastoma can mimic meningioma on MRI with dural tail sign, CSF cleft sign, broad dural contact, and MRA (magnetic resonance angiography). These features can contribute to diagnostic confusion. MR spectroscopy can provide more information for preoperative diagnosis radiologically to distinguish glioblastoma and meningioma.

MYXOMATOUS CEREBRAL ANEURYSMS - A RARE SEQUELAE OF CARDIAC ATRIAL MYXOMA

Vidhyah Sivakumar*¹; Norlisah Ramli¹

¹*Biomedical Imaging, University Malaya Medical Centre, Malaysia*

INTRODUCTION: Cardiac myxoma is the most common primary benign tumour of mesenchymal origin in the heart, most frequently occurring in the left atrium. Patients present with a variety of neurological complications including the more common cerebral embolus with stroke manifestations and other rarer entities like cerebral aneurysms, myxomatous metastasis and cerebral cavernous malformations. We report a patient who presented with multiple cerebral aneurysms seven years after successful resection of an atrial myxoma.

REPORT: A 52 year-old lady with a history of left atrial myxoma resection in 2011 presented to the emergency department with a chief complaint of right upper limb numbness which was spontaneously resolving. There had been a history of similar intermittent numbness for the past 6 months with occasional headaches. Plain CT brain demonstrated a hyperdense tubular lesion with peripheral calcifications in the right Sylvian fissure along the right middle cerebral artery (MCA) region. Similar lesion was demonstrated in the region of the left posterior cerebral artery (PCA). MR angiography of the brain revealed fusiform aneurysmal dilatations of M2 segment of the right MCA and P2b segment of the left PCA. Distally, both vessels were preserved. A conventional cerebral angiogram confirmed the presence of multifocal fusiform aneurysmal dilatations. On subsequent follow-up, the patient was asymptomatic and opted for conservative management.

CONCLUSION: Cerebral myxomatous aneurysms may present several years after resection of the primary cardiac tumour. Fusiform aneurysms are often stable; hence conservative management with adequate clinical and radiological follow-up is a sensible approach.

DTI - CONNECTING THE DOTS - WHITE MATTER TRACT ANATOMY

R.K.Praveen Kumar*¹

¹*Department of Radiodiagnosis, AIIMS Bhopal, India*

LEARNING OBJECTIVE:

- Basic principle of diffusion tensor imaging
- White matter tract normal anatomy and functions.
- Normal orientation of white matter tracts using DTI images.
- Patterns of fibres tract destruction in tumors and demyelination.

BACKGROUND: This educational exhibit will discuss normal anatomy of the white matter tract mapped using diffusion tensor imaging (DTI). Diffusion tensor imaging is a magnetic resonance (MR) imaging technique that can be used to characterize the anisotropy and orientational properties of the diffusion process of water molecules. Orientation based color coding is a visualization approach in which the image brightness represents diffusion anisotropy, while a red-green-blue color scheme indicates tract orientation. White matter tracts in the brain, also known as white matter fibers, are classified into three categories 1) projection fibers, 2) association fibers and 3) commissural fibers.

FINDINGS AND/OR PROCEDURE DETAILS: Color fractional anisotropy images and fiber tractography can be used to understand the location of normal white matter tracts, infiltration and distortion of tracts, and the relationship between lesions and surrounding pathways.

CONCLUSION: Understanding the normal orientation of white matter tracts is important in order to recognise the fibre affected in disease like tumors and demyelination.

MRI FINDINGS OF DIABETIC STRIATOPATHY

Emmanuel Mamuri*¹

¹Radiology, Dr. Jose N. Rodriguez Memorial Medical Center, Philippines

INTRODUCTION: Diabetic striatopathy is a disease characterized by continuous unilateral involuntary and non-rhythmic movements of one or both limbs in poorly controlled diabetic patient. Imaging findings are relatively helpful in the diagnosis of this life-threatening disorder. Early recognition with treatment is in favor of good prognosis. In this case report, we aim to present the neuroimaging findings of a patient with hemiballism associated with nonketotic hyperglycemia.

REPORT: A 74-year-old woman presented with history of gradually progressing involuntary left arm movement. Patient is a known hypertensive for 8 years and with type 2 diabetes mellitus for 3 years but is non-compliant with her medications. Three months prior to consult, patient experience an involuntary twitching of her left arm. The symptoms progressed and became ballistic in character hence consult and noted to have elevated capillary blood glucose level hence was started with medications. A cranial MRI scan was performed, demonstrating T1WI hyperintensities are seen in the right lentiform nucleus and head of right caudate nucleus. The patient was then given additional insulin injection for the control of diabetes mellitus which alleviated the symptom.

CONCLUSION: A 74-year-old female with diabetic striatopathy due to poor compliance and control of hyperglycemia. Though rare, the symptom is treatable with good prognosis. Majority of case reports in the current medical literature have demonstrated that most patients have complete recovery from their hemichorea-hemiballism after adequate control of hyperglycemia. Imaging features may allow the interpreting radiologist to first suggest the correct clinical diagnosis and expedite timely and appropriate patient care.

INTRACRANIAL AND CRANIAL VENOUS ANOMALIES IN PATIENT WITH ORBITAL LYMPHATICOVENOUS MALFORMATION

Hafizah Mahayidin*¹; Amali Ahmad¹

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Orbital venous and lymphaticovenous malformations are rare vascular malformations. Like other vascular malformations of the head and neck, it has been linked with increased prevalence of intracranial vascular anomaly most commonly cerebral developmental venous anomaly (DVA). Other forms of intracranial and cranial vascular anomalies have been reported, but not as frequent.

REPORT: A 13-year old girl with right orbital lymphaticovenous malformation was referred to our institution following a hemorrhagic event that resulted in sudden enlargement of the orbital lymphaticovenous malformation. An MRI of the head was performed and she was found to have concurrent cerebral DVA, persistent falcine sinus and intradiploic venous varices. The cerebral DVA was associated with mild focal atrophy of the right occipital lobe and perivascular white matter changes.

CONCLUSION: This case highlights the importance of recognizing the association of between orbital venous malformation and intracranial and cranial venous anomalies. Although the intracranial and cranial venous anomalies rarely result in hemorrhagic or thrombotic complications, their presence may affect patients treatment options and future management.

CASE REPORT OF PNEUMOCOCCAL BRAIN ABSCESS: A RARE ENTITY.

Lim Wei Chia*¹; Siti Salwa Mohamad Zaini¹; Kartikasalwah Abd Latif¹

¹*Radiology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Streptococcus pneumoniae brain abscess is a very uncommon condition with high mortality and morbidity rate. It is commonly seen in patients with risk factors such as alcoholism, diabetes mellitus and human immunodeficiency virus infection. Headache is the commonest presentation with focal neurological deficits. Here, we report a case of pneumococcal meningitis complicated by brain abscess and bilateral sensorineural hearing loss in an immunocompetent adult.

REPORT: A fifty-four years' old immunocompetent gentleman with no known medical illness presented with fever and headache and was treated as pneumococcal meningitis complicated by brain abscess and hearing loss. Blood culture was positive for Streptococcus pneumoniae and MRI findings revealed meningitis with cerebral abscess. The patient was treated with intravenous ceftriaxone and had recovered well with treatment. Subsequent MRI follow-up showed resolution of the lesions.

CONCLUSION: Streptococcus pneumoniae is one of the common aetiologies of bacterial meningitis, however brain abscess formation as a complication of pneumococcal meningitis is still extremely uncommon. The diagnosis might not be obvious in CT. Hence gadolinium enhanced MRI is encouraged if there is high index of suspicion. As in our patient, his MRI demonstrated lesions compatible with radiological features of brain abscess and his blood culture yielded Streptococcus pneumoniae. Pneumococcal brain abscess has high mortality rate and poor long-term outcome with persistent neurological sequelae. Early diagnosis is important for prompt treatment.

ATYPICAL UREMIC ENCEPHALOPATHY

Divya Desai*¹; Arnab Marik²

¹Radio-Diagnosis, D Y Patil University School Of Medicine, Navi Mumbai, India, ²Radio-Diagnosis, M.G.M New Bombay Hospital, Vashi, India

LEARNING OBJECTIVE: To identify atypical presentation of uremic encephalopathy on basis of MRI findings.

BACKGROUND: A 20 years old male presented with unconsciousness. On clinical examination and detailed evaluation etiology was not apparent. Patient was suspected to have encephalopathy on imaging. Patient had history of ayurvedic drug intake. Patient was found to have elevated blood urea nitrogen (BUN) (59.2 mg/dL), creatinine (5.3mg/dL), and parathyroid hormone (193 pg/mL) levels, and a mild decrease in the serum calcium level (6.5 mg/dL).

FINDINGS AND/OR PROCEDURE DETAILS: Uremic encephalopathy is typically seen in patients with diabetes. The typical MRI findings including bilateral vasogenic or cytotoxic edema at cerebral cortex or basal ganglia. Cortical involvement can cause reversible posterior leukoencephalopathy syndrome. Involvement of basal ganglia is rare, typically occurring in uremic-diabetic patient. Atypical type of uremic encephalopathy is rarest and involves WM. It typically occurs in non-diabetic uremic patient with very high serum urea levels and a variety of neurologic symptoms. Moreover non- diabetic uremic encephalopathy shows unique and atypical imaging findings.

CONCLUSION: Non diabetic patients with uremic encephalopathy present with atypical clinical presentation and show atypical imaging findings and their knowledge can lead to early diagnosis and expedited treatment which can provide complete neurological and radiological recovery.

CEREBROTENDINOUS XANTHOMATOSIS: CASE REPORT OF A RARE GENETIC DISORDER

Ong Li Xin*¹; Yik Weng Fai¹; Chew Chee Keong¹; Noor Khairiah A. Karim²

¹*Radiology Department, Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia*, ²*Regenerative Medicine Cluster, Imaging Unit, Advanced Medical And Dental Institute, Universiti Sains Malaysia, Bertam, Kepala Batas, Pulau Pinang, Malaysia*

INTRODUCTION: Cerebrotendinous xanthomathosis (CTX) is a rare genetic disorder occurring at second or third decades of life whereby deposition of cholestenol causes many clinical symptoms such as juvenile cataracts, intellectual disability with progressive neurological deficit and bilateral Achilles tendon xanthomas. Diagnosis of this disease may be difficult as the biochemical investigations are usually normal. Herein, we present a case of CTX in a 37-year-old female, illustrating the clinical features of this rare scenario and the importance of radiological assessment as well as histopathological evaluation in making the diagnosis, thus avoiding delays of treatment and allowing appropriate management of these patients.

REPORT: A 37-year-old lady presented with worsening limbs weakness and unsteady gait for one month, and slurring of speech with swallowing difficulty for a week duration. Neurological examination revealed power of grade 4 in bilateral upper limbs and grade 2 in bilateral lower limbs. Bilateral Achilles tendons were bulky with nodularity felt on palpation. Magnetic resonance imaging of the brain showed cerebral and cerebellar atrophy with hyperintense lesions noted at bilateral cerebral hemispheres, cerebellum and brainstem. Ultrasonography of Achilles tendons demonstrated thickened bilateral tendons. The diagnosis of Achilles tendon xanthomas was confirmed via histopathological examination. Hence, final diagnosis of CTX was established based on the clinical, imaging and histopathological findings.

CONCLUSION: Early diagnosis of CTX is important as this is a treatable disease. Screening of the rest of the family member is also crucial to help improve the quality of life and delay the progression of the disease.

NEUROSYPHILIS : PRESENTED AS ACUTE ISCHEMIC STROKE

Zubair Ahmad Sharifuddin*¹, Siti Salwa Mohamad Zaini², Kartikasalwah Abd Latif²

¹*Radiology Department, Hospital Canselor Tuanku Muhriz UKM, Malaysia,* ²*Radiology Department, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Neurosyphilis results from infection of the central nervous system by the sexually transmitted *Treponema pallidum*. The incident had decline after the introduction of Penicillin, however recently the trend has increased especially in association with HIV patient. Clinical presentation is very varied and depends on the stage of the disease and corresponding area of the affected central nervous system; thus making it a great mimicker of many diseases.

REPORT: A case of 36 years old gentlemen with no comorbid. He presented with sudden onset of speech difficulty, dull constant headache and right facial asymmetry. CT brain showed acute left MCA territory infarct with M1 segment thrombosis and reconstitution of distal left MCA. MRI showed multifocal multiages infarcts and stenosis of M1 segment of left MCA. The serum HIV, VDRL and TPPA were positive. CSF was also positive for VDRL. Patient made full recovery after benzylpenicillin.

CONCLUSION: Meningovascular syphilis is one of the early presentations of neurosyphilis. It happens when the disease infiltrates the blood vessels of the subarachnoid space resulting in arteritis and ultimately leading to ischemic stroke as presented in this case. A stroke in the distribution of MCA territory is the most common presentation. In the right clinical context, a positive CSF VDRL test is diagnostic of neurosyphilis. Neurological involvement of syphilis occurs in less than 10% of untreated patients. However prognosis is generally good, provided the disease is early detected and appropriate treatment is promptly initiated.

INTRASPHEOID MYCOTIC ANEURYSM OF THE INTERNAL CAROTID ARTERY - AN IMPORTANT DIFFERENTIAL DIAGNOSIS FOR EPISTAXIS

Phuar Ai Ping*¹; Noor Aida Mat Daud¹; Norhafizah Ehsan¹; Zulkifli Zaki Abdul Ghani¹

¹*Radiology Department, Hospital Sungai Buloh, Malaysia*

INTRODUCTION: Aneurysms involving the cavernous segment of internal carotid artery may occur secondary to head trauma, surgery or infection. These aneurysms can rarely erode into the sphenoid sinus and rupture causing massive epistaxis.

REPORT: A 44-year-old gentleman with no known medical illness presented with worsening of headache and fever for two weeks. One week prior to this, he developed right periorbital redness when he was accidentally hit by a foreign object in the right lower eyelid. Computed Tomography (CT) of the brain demonstrated prominent right cavernous sinus with defect in the posterolateral wall of right sphenoid sinus. In the ward, he had an episode of massive epistaxis which stopped with nasal packing. Magnetic Resonance Imaging (MRI) of the brain revealed a saccular lesion with flow voids in the cavernous segment of right internal carotid artery (ICA) which erodes medially into the right sphenoid sinus, thickened enhancing dura and right fronto-parietal chronic infarcts. These findings raised the suspicion for right intrasphenoid cavernous mycotic aneurysm with right cerebral septic infarcts. Subsequent cerebral angiogram confirmed the presence of right cavernous ICA aneurysm. Cultures of the blood and cerebrospinal fluid specimens were negative, and patient was treated conservatively with antibiotics. Follow up cerebral angiogram one month later showed significant regression of the aneurysm.

CONCLUSION: Although intrasphenoid mycotic aneurysm of the ICA is a rare finding, it must be considered in patients with epistaxis because of relatively high mortality rate if left untreated and the potential for disastrous consequences if biopsy was performed.

RARE CASE OF SPINAL INTRAMEDULLARY TUBERCULOMA: THE IMAGING DIAGNOSIS

Jun Ee Tan*¹; A Yee¹; HH Fatimah¹

¹*Department Of Radiology, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia*

INTRODUCTION: Intramedullary spinal tuberculosis is exceedingly rare, albeit central nervous system being one of the commonest site of extrapulmonary tuberculosis. We hereby report a rare case of intramedullary tuberculoma, diagnosed radiologically and had exhibited clinical and radiological resolution with anti-TB.

REPORT: Our patient is a 40 year-old gentleman with history of treated pulmonary tuberculosis, now presented with acute flaccid paralysis with impaired sensation T6 downwards and urinary retention. There were no trauma, nor history of fever, cough, constitutional symptoms. Initial investigations only yielded a mild leucocytosis. An urgent MRI spine was requested with the working diagnosis of transverse myelitis. MRI spine and brain revealed an encapsulated intramedullary lesion which returns hypointense signal on T2/STIR, with diffuse cord oedema and expansion. The lesion is slightly hyperintense to the spinal cord on T1 weighted fat saturation sequences. Rim enhancement noted on fat saturated post contrast enhanced sequences. Brain MRI revealed a small rim enhancing lesion within the right frontal lobe which returns hypointense signal on FLAIR with no restricted diffusion and perilesional edema. He was being treated with anti-TB agents, and was able to ambulate 2 weeks into treatment. Reassessment imaging also showed reducing sizes of intramedullary and frontal lobe lesions with reducing cord edema.

CONCLUSION: Intramedullary tuberculosis could be a great mimicker of various intramedullary pathologies. Tuberculomas as compared to intramedullary tumours typically show rim enhancement with sharp margins and diffuse cord edema. MR imaging provides valuable information for assessing intramedullary lesions, thus expediting treatment.

CONCURRENT INTRACRANIAL SCHWANNOMA AND AN ANGIOGRAPHICALLY OCCULT CEREBRAL ANEURYSM: A CASE-REPORT

Yong Xin Min*¹; Norzaini Rose Mohd Zain¹; Sarawana Chelwan Muniandy¹; Thinesh Kumaran Jayaraman²

¹*Department Of Radiology, Hospital Kuala Lumpur, Malaysia* , ²*Department Of Neurosurgery, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Co-existence of intracranial tumour and cerebral aneurysm is rare, and the previously reported cases include meningioma, glioma, pituitary adenoma, etc. There are hypotheses postulating causal relationships between these two pathologies.

REPORT: A 46-year-old female presented with worsening of right eye vision and multiple cranial nerves palsy. Preoperative CT and MRI brain revealed an extra-axial mass with solid-cystic and haemorrhagic components with “onion-skin” appearance on T2WI that demonstrates strong wall enhancement in the right middle cranial fossa. Right pterional craniotomy and excision of subfrontal-temporal lesion was performed. Intraoperatively there was a ruptured aneurysm within the mass. Subsequent histopathology examination concluded a schwannoma and also a thrombosed vascular lesion.

CONCLUSION: We report this uncommon case of intracranial schwannoma concurrent with a cerebral aneurysm. From the literature review, the causal relationship between intracranial neoplasm and aneurysm has not been established. This rare dual pathology may pose a diagnostic challenge, and in certain clinical settings of atypical haemorrhagic tumour, angiography is typically done to rule out aneurysm. Nevertheless, a completely thrombosed aneurysm may be angiographically occult and this is where MRI may be superior in raising the suspicion of an aneurysm.

CENTRAL NEUROCYTOMA - AN AGGRESSIVELY BENIGN TUMOUR

Akshat Agrawal*¹; Khushi Agrawal²; Ajay Sharawat¹; Ranjan Kumar Sahoo¹; Kamal Kumar Sen¹

¹Radiodiagnosis, Kalinga Institute Of Medical Sciences, Bhubaneswar, India, ²Ophthalmology, Kalinga Institute Of Medical Sciences, Bhubaneswar, India

INTRODUCTION: Central neurocytomas are rare intraventricular tumors comprising about 0.5% of all brain tumors. Initially thought to be well-differentiated benign tumors the observations have come to a turning point with many tumors showing recurrence and aggressive behavior, the origin being distinct from ganglion cell tumor and neuroblastoma

REPORT: A 36-year-old male presented with complaints of headache from one month associated with bilateral upper and lower limb weakness along with tingling sensation present over lower limbs. There was no history of trauma, seizures, loss of consciousness, or a known history of chronic illness. On examination, bilateral plantar reflex showed dorsiflexion and there was reduced power in bilateral lower limbs. MRI brain showed T1 hypointense, T2W/FLAIR hyperintense non enhancing lobulated predominantly solid mass with susceptibility change and no diffusion restriction causing dilatation of bilateral lateral ventricles and compression of 3rd ventricle and midbrain. Small foci of calcifications were also noted. In spectroscopy elevated Choline/NAA ratio was obtained. CT done subsequent to drain placement, correlated with the MRI findings.

CONCLUSION: The majority of the reported cases have been situated in the septum pellucidum or the walls of the lateral ventricles. Central neurocytomas have a favorable prognosis, but in some cases, the clinical course can be more aggressive. Histological features of anaplasia do not predict biologic behavior. Complete excision is often impossible because of the location of the tumor, radiotherapy seems a sensible approach although as yet there is no objective proof that radiotherapy improves survival.

A NON BENIGN PRESENTATION OF A BENIGN LESION

Zhen Pang Chang*¹; Masiyati Jamil¹; Nor Hafizah Abu Hassan¹

¹*Radiology, Melaka Hospital, Malaysia*

INTRODUCTION: Non dysraphic intramedullary spinal cord lipomas are rare and account for less than 1% of all spinal cord lesions. Their clinical symptoms typically consist of progressive spastic myelopathy and may also mimic any other spinal lesions.

REPORT: A 38 year old female, without history of spinal dysraphism presented with acute onset of flaccid quadriplegia. Magnetic resonance imaging (MRI) demonstrated a large intramedullary lesion involving cervical and thoracic spine (C6-T6). The lesion was hyperintense on T1 and T2 sequences and was suppressed on fat suppression sequences, suggestive of a lipoma. Despite debulking of the lesion, patient did not show significant improvement neurologically.

CONCLUSION: Intramedullary spinal lipomas are rare, more so in those without spinal dysraphism. MRI remains the mainstay diagnostic modality of neuroradiology and fat suppression sequences are mandatory. Intramedullary spinal lipoma should be in the differential diagnosis of intramedullary spinal neoplasm.

MDCT ANGIOGRAPHY CHARACTERISTICS OF INTRACRANIAL ANEURYSMS IN PATIENTS SUSPECTED WITH SUB-ARACHNOID HEMORRHAGE.

Vemuri Naga Vara Prasad*¹; Songa Ramya¹

¹Radiology, Global Superspeciality Hospital, India

OBJECTIVE: To describe the MDCTA characteristics of intracranial aneurysms in patients suspected with subarachnoid hemorrhage (SAH) from a tertiary hospital in South India and its importance in identifying and management of unusual aneurysms.

MATERIALS & METHODS: This is a retrospective review of 550 patients who underwent MDCT angiography at 0.625mm detector width from 2011 to 2020. One radiologist reviewed the images using a workstation. Images were reconstructed in MIP and 3D volume rendering images in addition to axial 5mm thick slices.

RESULTS: Patients presented with headache (78%), seizures (20%), focal neurological deficit (35%) loss of consciousness (28%) and other symptoms (4%) with overlap symptoms. SAH seen in 82% cases, infarcts in 7% cases and intraparenchymal hemorrhage in 10%. CTA was positive for aneurysm in 515 patients. 56% of patients were female. The most common locations of the aneurysm were ACOM (44%), MCA (28%), ICA(17%) and ACA(9.5%). Other locations included PCOM(0.1%),distal MCA (0.1%), basilar artery (<0.1%), vertebral artery (<0.1%) and PICA (<0.1%). Single aneurysm was seen in 94%, two in 4% and three in 2%. Two patients had more than 3 aneurysms. Morphologically, 82% were saccular aneurysms and 18% were fusiform and 10% were lobulated. Kissing aneurysms were seen in 2 patients. The size varied from 1-10mm in 35%, 11–20mm in 39%, 21-25mm in 12.5% and >25mm(giant aneurysms) in 13.5%. Bone erosions seen in 7 cases and thrombosed aneurysms in 11 cases. Five patients had additional AVMs.

CONCLUSION: The pattern of intracranial aneurysms in patients suspected of SAH from South India is described. This pattern is similar to that described in western population.

A CASE OF INTRA-PARENCHYMAL BLEED WITH INCIDENTAL FINDINGS OF MIDDLE CEREBRAL ARTERY FENESTRATION

Siti Fitriwati Khazis Ismail, Chandran Nadarajan, Juhara Haron*¹

¹*Radiology Department, Universiti Sains Malaysia*

INTRODUCTION: The cerebral arterial system is divided into anterior and posterior arterial circulation. Multiple vascular variants could arise along this complex cerebral arterial system. One of the variants is the middle cerebral artery (MCA) fenestration. It has a reported incidence of 0.1- 4.4% in general populations. It is postulated to occur due to abnormal vasculogenesis among which is either early bifurcation of the temporo-polar artery or a prominence of the lenticulo-striate artery

REPORT: Our 23 year old male patient was referred from a neighboring district hospital. He was found unconscious. The patient had a history of a congenital heart disease which was repaired at three years old. Computed tomography (CT) brain showed a large intraparenchymal hemorrhage at the left fronto-parietal region with intraventricular extension and local mass effect. It was associated with adjacent subarachnoid hemorrhage and cerebral edema. CT angiography showed separation of the M1 segment of the left MCA into 2 separate and parallel channel which later re-fused prior to the origin of M2 segment. No aneurysm or arteriovenous malformation. This findings were reconfirmed on the digital subtraction angiography (DSA) done subsequently. Patient underwent decompression craniectomy and clot evacuation

CONCLUSION: Most patient with MCA fenestration is asymptomatic. The variant will be diagnosed accidentally while the person is undergoing imaging for some other causes. For fenestration, it is best visualized on 3D angiography by CT or DSA. Some of the patient who was diagnosed with fenestration are associated with saccular aneurysm or cerebral ischemia that can cause an intra-parenchymal bleed.

DETECTION OF ALZHEIMER'S DISEASE USING STATISTICAL LIKELIHOOD RATIO OBSERVER

Xiaoming Zheng*¹

¹*Dentistry And Health Sciences, Charles Sturt University, Australia*

OBJECTIVE: To present a decision support tool for the detection of Alzheimer's disease based on MRI T1 weighted images and the Hippocampus volumes calculated by the FreeSurfer software.

MATERIALS & METHODS: 600 T1 weighted healthy MRI images were downloaded from the brain-development.org (IXI dataset) and 46 Alzheimer's patients T1 weighted MRI images were downloaded from the XNAT (the MIRIAD dataset). The FreeSurfer software from MIT was employed to segment and calculate the volumes of anatomical regions of the brain. The volumes of individual's hippocampus were used to construct the probability density functions of healthy and Alzheimer diseased patients. The joint probability density functions were used by the statistical likelihood observer for the identification of diseased patients.

RESULTS: The joint probability density functions show that the mean hippocampus volume of the healthy patients is 8528 mm³ with a standard deviation of 744 mm³. The mean hippocampus volume of Alzheimer's patients is 5860 mm³ with a standard deviation of 971 mm³. Alzheimer's mean volume of the hippocampus is much smaller than that of the healthy patients. Alzheimer' images from the IDA image & data archive (the ADNI data set) and the normal control patients from the MIRIAD data set were tested by the statistical likelihood observer. An estimated area under the curve Az=0.985 was achieved.

CONCLUSION: The statistical likelihood ratio observer is a useful tool in the detection of Alzheimer' disease. Further work is to detect the developmental stages of Alzheimer' disease.

NEURORADIOLOGY DIAGNOSTIC AND INTERVENTIONAL ANGIOGRAPHY RADIATION EXPOSURE AT HOSPITAL SUNGAI BULOH MALAYSIA

Wan Nur Ain Wan Ghazali*¹; Faizal Mohamed²; Nur Ratasha Alia Md. Rosli²; Irman Abdul Rahman²; Zulkifli Zaki Abdul Ghani¹; Norafatin Khalid¹; Mohammad Azwin Abdul Karim³

¹Radiology Department, Hospital Sungai Buloh, Malaysia, ²Nuclear Technology Research Centre, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, ³Radiology Department, Hospital Ampang, Malaysia

OBJECTIVE: Extended exposure time due to the complexity of the neurological system is a contributing factor for imposing high radiation exposure to patients during neuroradiology-angiography (NA) procedure. A majority of patients experienced deterministic effects post procedure. This study aims in evaluating the integrity of embedded Dose Area Product (DAP) meter, observing tissue alteration of patient post procedure while also developing the local diagnostic reference level (DRL) specifically for NA.

MATERIALS & METHODS: The integrity of the modality embedded DAP meter was assessed via calibration with multimeter. The patient radiation dose data (n=206) were collected retrospectively for all NA procedure conducted at Hospital Sungai Buloh Malaysia in 2018. The bivariate and univariate statistical method were used to develop the local DRL. Whereas the tissue alteration of patient post irradiation (doses > 3Gy) was evaluated through macroscopic observation

RESULTS: The DAP values had a deviation equivalent to 7.30 % and 5.90 % for plane 1 and plane 2 of the biplane modality respectively, lower than the standard value. The local DRL values developed are approximately 8.279 mGym² and 23.316 mGym², for diagnostic and interventional neuroradiology respectively, whereby it is higher than the general national DRL by 59.21 % and 168.00 %. Nevertheless, there were no apparent tissue alteration observed on patients.

CONCLUSION: The requisite of a correction factor for displayed DAP values were not required. Furthermore, through this study, the local DRL for neuroradiology procedure was developed with additional insights that the procedure did not impose any observable deterministic effects on patients.

BODY FAT MASS AND BONE MINERAL DENSITY IN PARKINSON'S DISEASE

Ng Yi-De*¹; Norlisah Mohd Ramli ¹; Mohammad Nazri Md Shah¹; Raja Rizal Azman Raja Aman¹; Lim Shen-Yang²; Tan Ai Huey²; Kavita Sugumaran¹; Yong Voon Wei²; Tan Yan Jing²;
Choo Xing Yan²

¹*Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Kuala Lumpur,*

²*Division of Neurology and the Mah Pooi Soo & Tan Chin Nam Centre for Parkinson's & Related Disorders, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

OBJECTIVE: Parkinson's Disease (PD) is a neurodegenerative disease with unintentional weight loss and fracture as common clinical problems. Studies had demonstrated PD patients mostly had body fat and BMD reduction, but current literature is limited, and some had given contradicting results. Our main objective is to examine the body composition in PD patients focusing on body fat mass and bone mineral density.

MATERIALS & METHODS: Selected subjects underwent a Dual-Energy X-ray absorptiometry scan for body composition and bone mineral density (BMD), subsequently trabecular bone score (TBS) will be derived from the spine BMD.

RESULTS: Compared to control group, PD patients have significantly lower weight, BMI, regional fat percentage, regional fat mass, android/gynoid ratio, visceral adipose tissue (VAT) mass & volume, subcutaneous adipose tissue mass, and Z-score of total & radius BMD ($p < 0.050$). The weight loss in the PD patient group predominantly is from fat mass. The rest of the regional BMD and TBS is statistically non-significant in both groups. When correlating the VAT mass with BMD/TBS, there is a moderate positive correlation between VAT mass and all regional BMD as well as TBS in both groups (correlation coefficient: 0.229-0.531).

CONCLUSION: PD patient has significant weight loss compared to the control group, which mostly contributed by fat loss as demonstrated in this study. The positive correlation of VAT mass with regional bone mineral density/TBS could be due to underlying nutritional status. However, VAT may have some protective effect over bone demineralization in the elderly.

RAPID DETERIORATION OF A FEBRILE CHILD - A CASE REVIEW

Ng Yi-De*¹; Norlisah Mohd Ramli¹

¹*Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

INTRODUCTION: Acute encephalopathy occurs worldwide most prevalent in East Asia, and is the most serious complication of pediatric viral infections with high mortality rate. Many survivors are left with motor and intellectual disabilities, and some with epilepsy.

REPORT: In this case report, a child who develop acute onset fever and seizure with altered mental status and rapidly deteriorated upon admission, requiring ventilation support and subsequently deceased. Cerebrospinal fluid analysis shows high protein content with no bacterial growth and neuroimaging shows characteristic imaging findings consistent with acute necrotizing encephalopathy.

CONCLUSION: In Malaysia, acute necrotizing encephalopathy is not uncommon, and early diagnosis with blood investigations, cerebrospinal fluid analysis and imaging correlation may help in management of patient with prompt initiation of appropriate treatment.

**DIFFERENT IMAGING FEATURES OF PILOCYTIC ASTROCYTOMA:
CORRELATION WITH TUMOR LOCATION AND HISTOPATHOLOGY. CASE
SERIES**

Adnan Naeem*¹

¹*Diagnostic Radiology, Aga Khan University Hospital, Karachi, Pakistan*

LEARNING OBJECTIVE: To describe the imaging features of pilocytic astrocytoma and to correlate these imaging features with tumor location and to describe its histopathology: CASE SERIES

BACKGROUND: Pilocytic astrocytoma is the most common CNS tumor in children and adolescence and accounts for 15.5% of all cases. According to WHO classification, it is considered as low grade, WHO grade I CNS tumor. It can arise from anywhere throughout central nervous system, however, it most commonly arises from cerebellum, with second most common location being optic chiasm. Other less common location includes brain stem, hypothalamus, cerebral hemispheres and spinal cord. Imaging features typically consist of well-defined usually cystic lesion with solid enhancing nodular component but these features may vary.

FINDINGS AND/OR PROCEDURE DETAILS: In this study, we describe the five cases of histopathologically proven pilocytic astrocytoma of different regions of central nervous system. Three of these are seen in children below 16 years and two cases are of adult of age 22 and 23 respectively. Histopathology of these cases is also described. Locations of these five lesions includes cerebellum, suprasellar region and optic chiasm, cerebral hemisphere, brain stem and fourth ventricle.

CONCLUSION: Pilocytic astrocytoma has a wide spectrum of neuroradiological presentations. Besides its classical appearance as low-grade glioma, a more atypical/aggressive presentation makes the diagnosis challenging. The best method to achieve the pre-operative diagnosis is the combination of morphological and non-morphological MR features as well as site base approach of this tumor.

**COMPARISON OF PHASE CONTRAST AND TIME OF FLIGHT (TOF) MR
CEREBRAL VENOGRAPHY IN THE DEPICTION OF NORMAL INTRACRANIAL
VENOUS ANATOMY IN 3T MR**

Intan Bazilah Abu Bakar*¹; Radhiana Hassan¹; Jamalludin Ab Rahman²

¹Radiology, *International Islamic University Malaysia*, ²Community Medicine, *International Islamic University Malaysia*

OBJECTIVE: Our primary aim is to compare the cerebral veins conspicuity using phase-contrast (PC) MRV and TOF MRV in 3T MR. We also aim to compare the artefactual flow void between these techniques.

MATERIALS & METHODS: A total of 31 healthy volunteers with age group between 18-35-year-old and no contraindication to MRI were recruited in the study. They were imaged on 3 Tesla MR using a standardized parameter for PC and TOF MRV with the addition of routine MRI brain sequences. All MRV source images were post-processed using the maximum (pixel) intensity projection (MIP) images which were then reviewed by a neuroradiologist. The intracranial venous system was divided into 7 vessels groups which include superior sagittal sinus, inferior sagittal sinus, straight sinus, transverse sinus, sigmoid sinus, internal cerebral vein and vein of Galen. A neuroradiologist determine whether the named veins could be identified at PC or TOF MRV and later assessed for any presence of flow void artifact in each vein.

RESULTS: PC MRV showed better vessels conspicuity than TOF MRV in the assessment of superior sagittal sinus and internal cerebral veins ($P < 0.050$) with no significant difference in other veins. It is also superior to TOF MRV with lesser evidence of flow void artifact in superior sagittal sinus ($P = 0.001$) and transverse sinus ($P = 0.002$).

CONCLUSION: PC MRV is a better tool than TOF MRV for assessing the intracranial cerebral veins and should be utilized more in the future for better accuracy of diagnosis.

CEREBRAL VENOUS SINUS THROMBOSIS: A UNICENTRE CASE SERIES REVIEW IN MALAYSIA.

Ahmad Hadif Zaidin Samsudin*¹; Nur Asma Sapiai¹; Mohd Shafie Abdullah¹

¹*Department of Radiology, School of Medical Sciences, Universiti Sains Malaysia*

OBJECTIVE: Despite being rare, cerebral venous sinus thrombosis (CVST) is slightly more common in poor countries. However, the disease can have multiple and non-specific presentations, which pose diagnostic challenge to clinicians and radiologists alike. We reviewed cases that were positive for CVST in our hospital.

MATERIALS & METHODS: All patients that was positive for CVST from 2013 until 2015 were included in this study. Data from the PACS system and hospital records were reviewed.

RESULTS: The study composed of 7 female and 4 male patients, age ranges from 26 to 42 years old. Headache is the commonest presentation (72%, n=8), followed by seizure (63%, n=7) and limb weakness (45%, n=5). Less common presentation includes coma, nystagmus, squint, photophobia and vertigo (9%, n=1). Superior sagittal sinus is the commonest location involved (63%, n=7), followed by transverse sinus (45%, n=5), straight sinus (45%, n=5), sigmoid sinus (45%, n=5) and inferior sagittal sinus (18%, n=2). All affected sinus appear dilated with filling defect seen on venography. Hyperdensity within the sinus, known as ‘dense sign’ was seen in 5 patients (45%). Intracranial hemorrhage was seen in 4 patients (36%) and venous infarction was seen in 3 patients (27%).

CONCLUSION: Patient with CVST can present with non-specific clinical presentation. The presence of dilated sinus with ‘dense sign’ on plain CT brain should prompt further venography examination. Early diagnosis is imperative because it is treatable, thus preventing disease progression.

CHARACTERIZATION OF ALAR LIGAMENT ON 3.0T MRI: A CROSS-SECTIONAL STUDY IN IIUM MEDICAL CENTRE, KUANTAN

Rajhanah Haroon*¹; Siti Kamariah Che Mohamed¹; Karimah Hanim Abd. Aziz²

¹Radiology Department, International Islamic University of Malaysia, ²Public Health, International Islamic University of Malaysia

INTRODUCTION: The main purpose of the study is to compare the normal anatomy of alar ligament on MRI between male and female. The specific objectives are to assess the prevalence of alar ligament visualized on MRI, to describe its characteristics in term of its course, shape and signal homogeneity and to find differences in alar ligament signal intensity between male and female. This study also aims to determine the association between the heights of respondents with alar ligament signal intensity and dimensions.

MATERIALS & METHODS: 50 healthy volunteers were studied on 3.0T MR scanner Siemens Magnetom Spectra using 2-mm proton density, T2 and fat-suppression sequences. Alar ligament is depicted in 3 planes and the visualization and variability of the ligament courses, shapes and signal intensity characteristics were determined. The alar ligament dimensions were also measured.

RESULTS: Alar ligament was best depicted in coronal plane, followed by sagittal and axial planes. The orientations were laterally ascending in most of the subjects (60%), predominantly oval in shaped (54%) and 67% showed inhomogenous signal. No significant difference of alar ligament signal intensity between male and female respondents. No significant association was found between the heights of the respondents with alar ligament signal intensity and dimensions.

CONCLUSION: Employing a 3.0T MR scanner, the alar ligament is best portrayed on coronal plane, followed by sagittal and axial planes. However, tremendous variability of alar ligament as depicted in our data shows that caution needs to be exercised when evaluating alar ligament, especially during circumstances of injury.

DIFFUSE CEREBROSPINAL FLUID ENHANCEMENT FOLLOWING GADOLINIUM-BASED CONTRAST ADMINISTRATION: A CASE REPORT OF A RARE OCCURENCE.

Mohamad Akram Ruslan*¹; Aidi Aswadi Halim Lim¹; Azian Abd Aziz¹

¹*Department of Radiology, International Islamic University Malaysia Medical Centre, Malaysia*

INTRODUCTION: We present a case of a 13 year old teenager with known case of central nervous system embryonal tumour (WHO grade IV). He initially presented with progressive visual loss over 2 months duration. An MRI brain done following presentation revealed extensive pachymeningeal enhancement. Follow up MRI brain done 2 months later subsequently shown formation of multiple cystic lesions, initially thought to be multiple cerebral abscesses. However histopathological analysis of the lesions instead demonstrated presence of the CNS embryonal tumour. The patient then underwent MRI spine to assess for any drop metastases.

REPORT: An initial MRI brain done revealed only extensive pachymeningeal enhancement. Follow up MRI brain done 2 months later subsequently shown formation of numerous cystic brain lesions, initially thought to be multiple cerebral abscesses. However the histopathological analysis of the cerebral lesions instead demonstrated presence of a high grade CNS embryonal tumour. The patient then underwent MRI of the spine to assess for any presence of drop metastases. The MRI spine indeed shown numerous intramedullary cystic lesions. However the conundrum arises when the cerebrospinal fluid returned marked T1 hyperintense signal following gadolinium administration, not seen in the previous MRs. Our literature review shown that this is a rather rare phenomenon, which could be attributed to a few factors; amongst which are disruption of the blood-CSF barrier, increased dosage, impaired renal function and delayed imaging.

CONCLUSION: Given the underlying condition, the most plausible explanation for the occurrence in our patient is breakdown of blood-CSF barrier. He did not suffer clinical features of gadolinium neurotoxicity.

PARACLINOID ANEURYSMS ARE FREQUENTLY FOUND IN YOUNG FEMALE.

Reo Kawaguchi*¹; Tomotaka Ohshima²; Naoki Matsuo¹; Shigeru Miyachi¹

¹*The Department of Neurological Surgery, Aichi Medical University, Japan,* ²*Neuroendovascular Therapy Center, Aichi Medical University, Japan*

OBJECTIVE: Unruptured aneurysms are found in senior generation in brain check-up, However, we often encounter the young patients especially with paraclinoid aneurysms. We retrospectively reviewed our aneurysm cases and studied the difference of generations by the location of aneurysms.

MATERIALS & METHODS: We treated 1,566 patients with cerebral aneurysms treated with endovascular surgery from 2004 through 2018. We reviewed their demographic and clinical data including age, gender, laterality, size, and the location of the aneurysms. We excluded 53 cases because of the lack of the profile data. The location of aneurysms was divided as follows: ICA, Acom, distal ACA, MCA, BA and PICA aneurysm. The ICA aneurysms were further divided into three; cavernous, supraclinoid and paraclinoid portions including cave, SHA ophthalmic artery and anterior wall aneurysms.

RESULTS: Gender differences tended to be predominant in women (an average of 72%), particularly in cavernous aneurysms (87%). The mean age of the patients with the paraclinoid aneurysm was 56.5 years old for and about 6 years younger than the other site aneurysms. The mean age of the patients with IC-SHA aneurysm was 54.4 years old, and the proportion of young people aged 50 years or younger was 40% (P<0.05).

CONCLUSION: The paraclinoid aneurysms is likely to be diagnosed at an early age. Their special situation may be related to the congenital vessel wall vulnerability due to the fragility during embryogenesis. One of the factors may be the drastic change with anastomosis, movement, and involution of the ophthalmic artery in the embryonic stage.

MALEFICIENT'S HORN' LIKE APPEARANCE MYXOMATOUS FUSIFORM ANEURYSM OF THE RIGHT MIDDLE CEREBRAL ARTERY CAUSED BY ATRIAL MYXOMA

Khoirul Hadi Aziz*¹; Khairul Azmi Kadir¹

¹*Biomedical Imaging, University Of Malaya, Malaysia*

INTRODUCTION: Atrial myxoma is the most common neoplasm of the heart which consist of 50% of the total cases reported and tend to seed peripherally after operation(1). When the dissemination occurred in the brain, patient normally presented with stroke symptoms due to tumour embolism. However, cerebral aneurysm due to metastatic deposit after atrial myxoma incision is rare.

REPORT: A case of 53 years old lady with previous history of left atrial myxoma post incision 8 years ago with no echocardiogram evidence of recurrence. Presented with intermittent right upper limb numbness associated with headache. CT brain showed hyperdense tubular structures at the right sylvian fissure and left ambient fissure with multiple calcifications in the brain. MRI brain demonstrated multiple fusiform aneurysm involving right MCA and left PCA. Cerebral angiogram revealed Malefient's horn like appearance myxomatous fusiform aneurysm at the distal M1 segment of right MCA and PCA. Decision made for conservative management as the aneurysm have no neck and not suitable for coiling or clipping.

CONCLUSION: Though atrial myxoma is a benign tumour, it can disseminate to the brain causing cerebral artery aneurysm despite no evidence of recurrence after operation.

A RARE COMPLICATION TUBERCULOUS MENINGITIS IN YOUNG PATIENT.

Nur Shida Ahmad*¹; Chandran Nadarajan¹

¹*Radiology, Hospital Universiti Sains Malaysia, Malaysia*

INTRODUCTION: Central nervous system (CNS) tuberculosis (TB) has a high mortality rate. TB meningitis is a common type of CNS TB. The most common complication of TB meningitis is hydrocephalus and infarct. Intracranial haemorrhage is a rare complication of TB meningitis. Most of the previously reported case involves old and immunocompromised patients. There is limited case report found involving the young and non-immunocompromised patient.

REPORT: A 14-year-old, previously healthy girl with no significant medical history initially presented with clinical symptoms of bilateral lower limb weakness. A history of fever and headache preceded the presenting complaint by a week. Initial computed tomography of the brain showed generalise cerebral oedema with communicating hydrocephalus. She was treated as bacterial meningitis complicated with communicating hydrocephalus. During the stay, the patient's condition deteriorated. Lumbar puncture was performed and external ventricular drainage was successfully inserted. Cerebrospinal fluid analysis for TB polymerase chain reaction (PCR) was positive. She was treated as TB Meningitis and anti-TB regiment were initiated. However, her condition deteriorated six days post-initiation of anti-TB drugs. The patient developed a septicemic shock with thrombocytopenia. Subsequent brain imaging showed extensive intraventricular haemorrhage with bilateral basal ganglia, subdural, and subarachnoid haemorrhage. Despite of on treatment, patient passed away on the next day.

CONCLUSION: TB meningitis has a poor outcome which could lead to death. Early diagnosis and immediate treatment are important to reduce the mortality rate. Future improvement of neuroimaging by using MRI is essential in early detection of TB meningitis.

ARNOLD CHIARI MALFORMATION TYPE I PRESENTING AS UNILATERAL VOCAL CORD PARALYSIS IN AN ADULT

Alex Lim*¹; Lim Dwee Shion¹

¹*Radiology Department, Hospital Sultan Ismail, Malaysia*

INTRODUCTION: Arnold Chiari malformation type 1 is herniation of the cerebellar tonsils through the foramen magnum into the cervical spinal canal. Vocal cord paralysis is most commonly due to neurologic dysfunction of the recurrent laryngeal nerve or vagus nerve. They can rarely be caused by lesions at the brainstem. Vocal cord paralysis as a result of Arnold Chiari malformation with syringomyelia and syringobulbia is rare and the vast majority are reported in pediatric population.

REPORT: A 44-year-old female teacher presented with hoarseness of voice and flex scope revealed right vocal cord paralysis. A contrasted enhanced CT computed tomography (CECT) Neck and thorax was requested to investigate the cause of the vocal cord paralysis which revealed right vocal cord palsy with no other significant findings. However, patient symptoms persisted and on follow up she revealed that she has occasional neck pain with radiculopathy. An MRI was ordered to exclude prolapsed intervertebral disc. MRI revealed Arnold Chiari malformation Type 1 with syringomyelia and syringobulbia. Spinal cord oedema at the medulla oblongata and cervicomedullary junction was also noted.

CONCLUSION: Arnold Chiari Malformation needs to be considered as a possible cause of unilateral vocal cord palsy especially if patient also presents with neck pain and radiculopathy.

**AUDIT INTO THE APPROPRIATENESS OF CT HEAD REQUESTING IN THE
EMERGENCY DEPARTMENT.**

Aruba Nawaz Khattak*¹; Ummara Siddique Umer¹; Aman Nawaz Ustrana¹; Faria Maqsood¹;
Muhammad Abdullah¹

¹*Radiology, Rehman Medical Institute, Pakistan*

OBJECTIVE: To review the appropriate use of CT imaging in the emergency department (ED) and assess compliance with the National Institute for Health and Care Excellence (NICE) head injury clinical guidelines.

MATERIALS & METHODS: Indicator: Scanned imaging request forms during the audit cycle. Target: 100% concordance with the guidelines. Charts were reviewed for the last 100 patients to receive a CT scan following a request from the ED at Rehman Medical Institute Peshawar between 1 January 2018 and September 2019. The NICE clinical guideline 176 on head injury was used as the standard of care. This data was used to perform a retrospective audit to assess patients who satisfied NICE criteria to qualify for a CT scan.

RESULTS: 100 patients were included. The maximum number of age of referrals being between 51-60 years old (included ages being 1-90) and 70% of them were males. For suspected brain injuries at least one of the NICE criteria was fulfilled by all the 84 patients referred with a history of head injury with 3 or more criteria in 16 patients. Immediate change in management of 80% patients occurred.

CONCLUSION: Having guidelines in place in the ED and adopting CT imaging as initial screening modality following injury may reduce time to definitive care and improve resource implications.

**SYMMETRICAL HAEMORRHAGIC CEREBRAL INFARCTION IN A YOUNG
PATIENT: A CASE OF VENOUS SINUS THROMBOSIS**

Keshika Koirala*¹; Nirmal Prasad Neupane*²

¹*Department of Radiodiagnosis and Imaging, Nepal Medical College Teaching Hospital, Nepal,*

²*Department of Radiodiagnosis and Imaging, Grande International Hospital, Nepal*

INTRODUCTION: Cerebral venous thrombosis refers to the occlusion of the intracranial venous channels. Occlusion of the cerebral venous channels can be isolated to the dural sinuses or can occur in combination with the cortical vein thrombosis. It is a relatively common neurological disorder that predominantly affects young female patients of child bearing age group. Diagnosing it early is important because it is reversible with appropriate medical care.

REPORT: A 26 year old female was brought to the emergency department with the chief complaint of severe headache and altered consciousness. Non contrast CT head of the patient showed bilaterally symmetrical hypodense areas in the frontal lobes. There was intermixed patchy hyperdensity suggestive of haemorrhage noted in bilateral frontal lobes. With the suspicion of venous infarction, MRI brain with MR venography was carried out. MRI brain showed T1 iso, T2 and FLAIR high signal intensity areas in bilateral frontal lobes with patchy areas of diffusion restriction. In susceptibility weighted imaging, there were areas of blooming in bilateral frontal lobes indicative of the haemorrhagic component. MR venography showed loss of signal with irregularity in the anterior and middle aspect of superior sagittal sinus suggestive of sagittal sinus thrombosis.

CONCLUSION: In a young patient with symmetrical cortical/ subcortical infarction, possibility of cerebral venous thrombosis should always be considered. These infarctions are likely to have haemorrhagic component and it should be sought for during imaging. Since this condition is reversible, early diagnosis by proper imaging can be life saving for the patient.

EVALUATION OF FAT-SAT SEQUENCE IN 3T MRI FOR THE DETECTION OF LIPID USING SINGLE VOXEL SPECTROSCOPY

Norlisah Ramli*¹; Khairunnisa Abdul Rashid¹; Seow Poh Choo¹; Tan Li Kuo¹; Kartini Rahmat¹;

Yew Ying Rong¹

¹*Biomedical Imaging, Universiti Malaya Medical Center, Malaysia*

OBJECTIVE: Fat-Sat sequence is a fat suppression technique used in MRI to suppress signal from adipose tissue, which has been widely used in abdominal imaging but not so in the imaging intracranial lesions. The increased presence of lipids in intracranial tumours had been associated with higher grade lesions. We investigate the viability of using the Fat-Sat sequences to quantify lipids in these tumours.

MATERIALS & METHODS: An array of lipid-containing phantoms was constructed using a soluble lipid solution (SMOF Lipid20%), which was diluted to predetermined concentrations ranging from 1% to 20%. This phantom was then scanned in a 3Tesla Siemens MAGNETOM MRI scanner to obtain images in T1W, T1 FatSat as well as MR spectroscopy (MRS). The MRS data was processed using LC Model software to quantify lipid concentration at 1.3ppm. The signal loss ratio[SLR] was calculated by comparing the T1W with T1Fat-Sat signal intensities. The signal loss ratio and MRS results were plotted against the known phantom lipid concentration and then each other. Correlation (R2) and statistical significant tests were performed on each data set.

RESULTS: The MRS data processed by the LCModel software ($R^2 = 0.95$, $p < 0.001$) as well as the SLR from the Fat-Sat sequence ($R^2 = 0.98$, $p < 0.001$) both strongly correlated with the lipid concentration. When the MRS data and SLR were plotted against each other there is also a strong correlation between both data sets ($R^2 = 0.93$, $p < 0.001$).

CONCLUSION: T1Fat-Sat quantification of lipids may be useful and applicable in the evaluation of intracranial tumours.

HEMORRHAGIC POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN A PATIENT WITH SECONDARY THROMBOTIC THROMBOCYTOPENIC PURPURA (TTP) PRESENTED WITH BILATERAL EYE CORTICAL BLINDNESS DURING PUERPERIUM

Sin Tein See*¹

¹*Radiology, Hospital Pakar Sultanah Fatimah, Malaysia*

INTRODUCTION: Posterior reversible encephalopathy syndrome (PRES) is a syndrome with characteristic clinical and radiological findings. This condition could be complicated with intracranial hemorrhages. The patient reported in our case was diagnosed with acquired thrombotic thrombocytopenic purpura (TTP) presented with typical clinical symptoms and radiological findings distinctive of PRES complicated with intraparenchymal hemorrhage during post-partum period.

REPORT: Patient is a 48-year-old lady, para 2+1, with underlying uncontrolled hypertension and diabetes mellitus. She was presented with incomplete miscarriage at 7 week period of amenorrhea requiring urgent dilatation and curettage. Following operation, she had sudden onset of bilateral eye vision loss, persistent headache and multiple episodes of vomiting. Her blood pressure was high and fundoscopic findings showed no papilloedema or diabetic retinopathy. Full blood count showed anaemia and thrombocytopenia with peripheral blood film suggestive of microangiopathy hemolytic anemia and thrombotic thrombocytopenic purpura. Non-contrast computed tomography (CT) showed intraparenchymal haemorrhages with perilesional edema at bilateral occipital, right posterior parietal and right temporal lobes with mass effect. Subarachnoid hemorrhage (SAH) seen at left vertex, left parietal and left temporal region as well. No cerebral sinus thrombosis, aneurysm or arteriovenous malformation on contrast study. Follow up scan after 5 days showed resolution of SAH with no significant change of intraparenchymal hemorrhages. No permanent neurological damage persists after 2-month follow-up.

CONCLUSION: PRES has a favourable clinical course and is reversible when the cause is eliminated. In this case, timely recognition of patient's symptoms and characteristic imaging findings aid us in getting an early diagnosis.

THE SHRINKING BRAIN: VOXEL-BASED MORPHOMETRY REVEALS EFFECTS OF PROBLEMATIC INSTAGRAM USE AMONG YOUNG ADULTS IN UNIVERSITY PUTRA MALAYSIA

Aida Abdul Rashid*¹; Mazlyfarina Mohamad²; Ahmad Nazlim Yusoff²; Nisha Syed Nasser³; Subapriya Suppiah³

¹Radiology Department, University Putra Malaysia, ²Diagnostic Imaging & Radiotherapy, University Kebangsaan Malaysia, ³Centre of Diagnostic Nuclear Imaging, University Putra Malaysia

OBJECTIVE: Problematic Instagram use (PIGU) shares similarities with Internet addictions, which has been associated with grey matter density (GMD) abnormalities in the regions of the brain related to the default mode network (DMN), salience network (SN) and executive control network (ECN). The aim of this study is to compare the differences in GMD of brain areas related to these networks among PSU and healthy controls (HC), and to correlate GMD with severity of PSU and psychosocial parameters.

MATERIALS & METHODS: Simple random sampling was used to recruit subjects for MRI from a Phase 1 cross-sectional study in a Malaysian university. Smartphone-Addiction- Scale-Malay version (SAS-M), modified Instagram-Addiction-Test (IGAT), Barrett's impulsivity test (BIS-11), and DASS-21 questionnaires were used to evaluate the subjects (PIGU:SAS-M score ≥ 98 , HC: score < 98). SPM VBM toolbox was used to measure GMD.

RESULTS: Total of 40 subjects [20 PIGU, SAS-M score 98 -179 (129.45 ± 25.35), 20 HC, SAS-M score 46 - 90(69.15 ± 14.13)] were analysed. PIGU had significantly higher depression and impulsivity scores than HC ($p < 0.050$). Paired t-test for contrast of PIGU>HC, noted significant smaller GMD in the right insula and right precentral gyrus ($p < 0.050$, corrected FWE).

CONCLUSION: Reduced insular and precentral gyrus GMD in PIGU is similar to online gaming addiction, which are related to the salience network and default mode network as in most resting state fMRI related study and can potentially act as a surrogate biomarker of the severity of this type of addiction. PIGU is also associated with impaired psychosocial behaviours.

**CASE SERIES: MRI FEATURES OF HYPERTROPHIC OLIVARY
DEGENERATION(HOD)**

Chai Jia-Ning*¹; Shahizon Azura Mohamed Mukari¹

¹*Radiology Department, Hospital Universiti Kebangsaan Malaysia*

LEARNING OBJECTIVE: We described various MRI findings of hypertrophic olivary degeneration in 5 of our patients and discussed pathophysiology of hypertrophic olivary degeneration.

BACKGROUND: Hypertrophic olivary degeneration is a rare transneuronal degeneration following dento-rubro-olivary pathway (also known as Guillian-Mollaret Triangle) disturbance. Various pathology has been described leading to the development of this rare condition, which include haemorrhage, infarction, tumour, trauma, surgery and even demyelination. Palatal tremor is the distinct clinical examination findings of the condition. However, majority of patients are asymptomatic. Typically, MRI shows T2-hyperintense signal of the inferior olivary nucleus with or without hypertrophic changes. Three imaging stages of the HOD had been described.

FINDINGS AND/OR PROCEDURE DETAILS: The MRI characteristics of HOD are hyperintense signal on T2-weighted image with no signal change on T1-weighted image, no enhancement and no restricted diffusion. Hypertrophic olivary degeneration had been classified into three stages. Our case demonstrates the temporal relation and the characteristic MRI findings in each of the stages.

CONCLUSION: We described the typical MR findings and stages of HOD. HOD has three imaging stages but we proposed that in some cases, some of the stages will not be observed. We also described the different characteristic of inferior olivary nuclei hyperintensity in various stages of disease, which have not been reported in literature.

ACUTE NECROTIZING ENCEPHALOPATHY(ANEC) IN CHILDREN, DIAGNOSTIC CHALLENGE : A CASE REPORT

Renuka Devi*¹; Zabidi Ahamad¹

¹*Radiology, USM, Malaysia*

INTRODUCTION: Acute necrotising encephalopathy(ANEC) is a rare disease described in Japan by Mizuguchi and colleagues in 1995 and seen sporadically in the Far East. Initially noted mild prodromal symptoms followed by a fulminant clinical course and prognosis usually poor.

REPORT: One year and one month old boy presented to a district clinic with history of fever and cough for 3 days ,vomiting and diarrhea for 1 day. He had history of given suppository voltaren. Child was lethargic with poor perfusion, thus immediately transferred to tertiary hospital. Child was intubated in view of worsening condition despite hydration. Vital signs able to maintained. Blood investigation and all viral screening turned out negative. Blood culture and sensitivity also was negative. CT brain noted central hypodensity and MRI brain showed abnormal signal intensities involving bilateral symmetrical thalamic, midbrain and dorsal part of pons while DWI/ADC sequence showed restricted diffusion. No enhancement on post gadolinium images. Based on clinical, laboratory and imaging findings, the patient was diagnosed ANEC. Other conditions causing bilateral thalamic lesions such as extrapontine myelinolysis and acute disseminated encephalomyelitis (ADEM) did not fit the clinical content. Child was the started on iv methylprednisolone on for 5days and completed antibiotic and acyclovir. During follow up noted, child had development regression.

CONCLUSION: Acute Necrotizing Encephalopathy in childhood (ANEC) is a fast growing illness accompanied with progressive encephalopathy. Although ANEC is a rare disease, it should not be underestimated. Focal neurological deficits are common sequelae. Thus,early recognition and diagnosis will facilitate life-saving treatments.

A CASE REPORT OF SEPTO-OPTIC DYSPLASIA IN PAEDIATRIC PATIENT

Soo Suet Woon*¹

¹*Department of Radiology, University Malaya Medical Centre, Malaysia*

INTRODUCTION: Septo-optic dysplasia is a condition by optic nerve hypoplasia, absence of the septum pellucidum and in two-thirds of patients hypothalamic-pituitary dysfunction. It is as being part of the holoprosencephaly spectrum.

REPORT: We have encountered one 3 -year- old patient with the initial presentation of generalized hypotonia. Noted septo-optic dysplasia and corpus callosum dysgenesis .Clinically, also panhypopituitarism on growth hormone.

Clinical presentation is varied, and mostly associated with schizencephaly (~50% of cases).

- hypothalamic-pituitary dysfunction
- small pituitary gland with hypoplastic or absent infundibulum and ectopic posterior pituitary
- schizencephaly
- cortical anomalies: polymicrogyria, cortical dysplasia

MRI is the best modality of choice for assessing septo-optic dysplasia.

Coronal images:

- absent septum pellucidum-hypoplastic pituitary stalk
- hypoplastic optic chiasm/optic nerves and globes

CONCLUSION: Radiological findings are essential to characterize the features of this condition. Management of septo-optic dysplasia requires a multidisciplinary team to assess and treat for hormonal imbalance, loss of vision, autism and obesity.

ATYPICAL SITE OF INTRACRANIAL GERMINOMA - A CASE REPORT

Raana Kanwal*¹; Salma Gul¹

¹*Diagnostic Radiology, Shifa International Hospital, Pakistan*

INTRODUCTION: Review of the literature to the best possible level, a germinoma of corpus callosum is exceedingly rare. Neuroimaging plays a vital role in the diagnosis and extent of disease.

REPORT: We are reporting a case of 37 years old male with atypical site of germinoma in corpus callosum. Ventriculo-peritoneal shunting was performed for hydrocephalus a decade ago. He was showing poor compliance towards ongoing treatment of tuberculosis meningitis. Later, 7 months after aforementioned complaint, he developed a progressive dementia. Magnetic resonance imaging was performed to evaluate recent developing complaint of tonic-clonic seizures and weakness of whole body associated with tremors of both hands. It revealed a bi-lobed butterfly lesion in the region of centrum semiovale bilaterally, extending and crossing the midline with involvement of body of corpus callosum and hypothalamus extending into the third ventricle. It showed heterogeneous intermediate signal on T2, appearing isointense on T1 and FLAIR sequences, with avid post contrast enhancement. Keeping the neuroimaging features the differential given were lymphoma and glioma. Excisional biopsy and histopathological evaluation revealed this mass to be a germinoma.

CONCLUSION: Germinoma should be included among the differential diagnosis of corpus callosum lesions in young adults.

MENINGIOMATOSIS: CASE REPORT OF INNUMERABLE BRAIN AND SPINAL MENINGIOMAS

Smily Sharma*¹; Pankaj Sharma¹; Venkata Subbaih A¹; Amit Kumar¹; Anurag Modi¹; Shailvi
Singhal¹

¹*Radiodiagnosis, All India Institute of Medical Sciences, Rishikesh, India*

INTRODUCTION: Meningiomas are one of the most common benign tumors of central nervous system(CNS). However, diffuse Meningiomatosis is a rare entity which is of concern mainly due to their mass effect on CNS structures.

REPORT: A 36 year old female with no family history of Neurofibromatosis presented with bilateral severe sensorineural hearing loss, left eye proptosis, left forehead swelling and left vocal cord palsy. She had history of some unknown neurosurgical intervention around left orbit at 7 years of her age. Patient underwent contrast enhanced MRI of brain, orbit and spine (Siemens 1.5 Tesla Magnetom Aera MRI, Germany) and non contrast CT scan of brain (Philips Ingenuity Core 64 slice CT). CT and MRI showed innumerable avidly enhancing extra-axial dural based round to lobulated mass lesions in brain and intradural extramedullary dural based lesions in spine with many of them showing calcifications suggestive of diffuse meningiomatosis. Extensive calvarial hyperostosis was seen due to en plaque meningiomas. Extension of the meningiomas was seen to left orbit, sellar and suprasellar region, petroclival region, cervicomedullary junction and spine with encasement of multiple cranial nerves, cavernous sinus and compression of pituitary, brainstem, left cerebellar hemisphere and cervicomedullary junction. Craniotomy defect with porencephalic cyst was seen in left frontal region. Due to involvement of vital structures, patient was explained the poor prognosis.

CONCLUSION: Meningiomatosis can have extensive compressive effects on vital structures of brain and involvement of regions like cavernous sinus and petroclival region make the possibility of complete surgical excision difficult.

A PROSPECTIVE STUDY TO EVALUATE THE ROLE OF MRI WITH MR SPECTROSCOPY OF RING ENHANCING LESIONS IN THE BRAIN.

Sudhanshu Tonpe*¹

¹*Department of Radiology, Omega Hospital, Hyderabad India*

OBJECTIVE: To differentiate neoplastic from non-neoplastic brain lesions using conventional and advanced MR imaging techniques.

MATERIALS & METHODS: Contrast MRI and MRS were done on 50 patients with GE Optima 1.5 Tesla MRI- machine referred with clinically suspected Space Occupying Lesions(SOL) and patients with incidental/ diagnosed ring-enhancing lesion by CT scan were enrolled in the study from June-18 to June-19. The data will be entered in MS EXCEL spreadsheet and analysis will be done using Statistical Package for Social Sciences (SPSS) VERSION 22.0

RESULTS: Out of 50 cases, 22 were tuberculomas, 16 were NCC, 5 were abscess, 5 metastasis, 1 case of pilocytic astrocytoma and 1 tumefactive demyelination. Males were predominantly affected(31 cases - 62% of cases) than females (19 cases - 38 %). 21-30 years is the most common age group involved (28% of cases) and seizures are the most common presenting complaint (84%). Single lesion was noted in 34 % of patients whereas the rest 66% presented with multiple cases. Follow up CT/MRI in 26 patients show resolution of the lesion and its associated perilesional oedema.

CONCLUSION: MRI is non-invasive and non-radiating is an ideal imaging modality. MRS helps in the characterization of various ring-enhancing lesions. Limitations: MRS could not be performed in 4 cases due to the presence of lesions close to the bone. MRS helps in the characterization of various ring-enhancing lesions. However, no lesion can be diagnosed based on the findings of MRS as the sole criteria.

ISCHEMIC STROKE IN YOUNG MEN HAS BEEN LINKED TO COVID-19

Freedy Laisto Panusunan Tambunan*¹; Dian Komaladewi¹; Gustiara Munir¹; Ganjar Simakerti¹;
Aswin Gunawan Christanto¹; Setia Dewi Sartika Tambun¹; R.Vera Indriani¹

¹*Radiology, Padjajaran University, Indonesia*

INTRODUCTION: COVID-19 is mainly recognised as a viral pneumonia, with a dry cough, high fever, shortness of breath and loss of taste and smell as its characteristic features. However, the virus responsible for this illness, SARS-CoV-2, may influence the presentation of ischaemic stroke. Although ischaemic stroke has been recognised as a complication of COVID-19 (usually with severe disease).

REPORT: We report a 31 year old male with fever for 8 days with painful swallowing and diarrhea, the patient is also obese and has hypertension, later confirmed as COVID 19, acute kidney injury and thrombocytopenia. In the hospital treatment, the patient experienced increased shortness of breath and on the 28th day of treatment he experienced left body weakness and had a double vision and speak incoherently. A CT scan found that vertebrobasilary system stroke was associated with COVID-19. Then the patient is given a variety of drugs including heparin.

CONCLUSION: We report and review to characterize the clinical characteristics, neuroimaging findings of our patient who had suffered a stroke due to COVID-19. The mechanism of cerebrovascular manifestation in people with COVID-19 tends to be multifactorial. They may be linked to conventional stroke mechanisms, with COVID-19 acting as the trigger. Nevertheless, our findings suggest that ischemic stroke associated with COVID-19 infection may occur in the context of a highly systemic prothrombotic state, supporting recommendations for immediate prophylactic anticoagulation with Low Molecular Weight Heparin (LMWH).

CRANIAL VAULT EXTRAMEDULLARY HEMATOPOIESIS WITH HEPATIC AND PANCREATIC SECONDARY HEMOCHROMATOSIS IN A BETA THALASSEMIA PATIENT.

Pravinkumar Bharde*¹; Ch Swapna¹; A Praveenkumar¹

¹*Radio-Diagnosis, Kakatiya Medical College, India*

INTRODUCTION: Extramedullary hematopoiesis(EMH) refers to the proliferation of hematopoietic cells in organs and tissues other than the bone marrow. EMH observed in many hematological conditions(e.g. myelofibrosis, leukemia, thalassemia and sickle cell anemia) EMH common in poorly managed thalassemia patients in developing world. Incidence in patients with thalassemia intermedia may reach up to 20% in comparison to poly-transfused thalassemia major patients where the incidence remains less than 1%. Typical locations are the liver, spleen, lymph nodes and paravertebral region and Atypical locations are intra-spinal canal, presacral region, nasopharynx and paranasal sinuses.

REPORT: MRI BRAIN shows Marked bony expansion of skull vault. Multiple round to oval lesions which are homogeneously hyperintense on T1-WI and hypointense on T2-WI, FLAIR, DWI and enhances moderately on contrast. There is also left Otomastoiditis, sigmoid sinus thrombosis, Left cerebellar abscess along with tentorial enhancement. NECT and MRI of ABDOMEN shows Increased liver and Pancreatic density in NECT and signal drop on T2 images are indicative of liver and Pancreatic secondary hemochromatosis.

CONCLUSION: Cranial EMH is a rare site for Passive EMH and sometime may present with bony pain. Intracranial EMH is most frequently associated with thalassemia. The cranial dura is the most commonly involved site. In secondary hemochromatosis, the signal intensity of the pancreas is generally preserved, except when the volume of blood infused goes beyond the storage capacity of the reticuloendothelial system, leading to parenchymal deposition. Radiologist should have an appreciation for this clinical entity and interpreted with the patient's clinical history to reach the correct diagnosis.

**ADAMANTINOMATOUS CRANIOPHARYNGIOMA MISTAKEN AS RATHKE
CLEFT CYST: A CASE REPORT**

Raihanah Haroon*¹; Siti Nor Suzeana Mustfar¹; Intan Bazilah Abu Bakar¹; Radhiana Hassan¹;
Siti Kamariah Che Mohamed¹

¹*Radiology Department, IIUM, International Islamic University of Malaysia*

INTRODUCTION: A great variety of lesions can be found in the suprasellar region, often with similar clinical presentations; posing difficulty while investigating it. When a suprasellar mass is encountered, the differential diagnosis is crucial in order for the operating surgeon to determine further management including the surgical approach as well as the degree of resection. However it is not always easy if the mass exhibits mixed solid cystic or entirely cystic features.

REPORT: The author presents a case of a 19-year-old lady who initially presented with left facial weakness, subsequently has been followed up several years for Rathke's cleft cyst (RCC) in view of its MR appearance. But recently the patient complained of eye symptoms, occipital headache and amenorrhea. Repeat MRI showed increasing size of the suprasellar mass and local mass effect unto the optic chiasm. Patient underwent deroofting of the cyst with the histopathological examination which revealed adamantinomatous craniopharyngioma, WHO grade 1. Nevertheless, possible transformation of RCC into craniopharyngioma is not known in view of no tissue diagnosis obtained earlier on. Review of MR appearances of these two entities in previous literature as well as the radiopathological correlation and differentiating features are presented.

CONCLUSION: Though the imaging features are characteristic for both entities, radiologists should be aware of the possible atypical appearance mimicking each other. Postulated hypothesis that both lesions arise from the same spectrum of cystic ectodermal lesions of the sellar region as well as possible transformation of RCC into craniopharyngioma also needs to be considered.

**THE IMPORTANCE OF PRE-OPERATIVE CT LOCALIZATION OF THE ANTERIOR
ETHMOIDAL ARTERY FOR THE PREVENTION OF INJURY DURING
ENDOSCOPIC SINUS SURGERY**

Silpa C. Raju*¹; Rajiv C. Raju²

¹*College of Medicine, University of Illinois College of Medicine, United States,* ²*Department of Radiology and Biomedical Imaging, Yale School of Medicine, United States*

LEARNING OBJECTIVE: Improve awareness of the surgical significance of the anterior ethmoidal artery (AEA) among radiologists.

BACKGROUND: When the AEA lies below the skull base, it is at risk of injury during endoscopic sinus surgery. If the AEA is injured during sinus surgery, it may retract into the orbit and results in orbital hematoma which in turn can potentially cause blindness. When the AEA is identified preoperatively on CT scans, the risk of injury to the AEA can be decreased.

FINDINGS AND/OR PROCEDURE DETAILS: The relevant anatomy of the AEA will be reviewed and illustrated with CT images. The AEA canal in the ethmoid region is more likely to be below the skull base when Supraorbital Ethmoid Air Cells (SOEC) are present. The AEA foramen can be identified on coronal CT images as a bony outpouching along the medial wall of the orbit near the inferior margin of the superior oblique muscle. The CT imaging landmarks which can be used to identify the AEA will be illustrated using CT image examples.

CONCLUSION: After viewing the exhibit, the radiologist should understand the surgical significance of the AEA and be able to identify the AEA foramen and AEA canal on sinus CT studies. They should also be able to determine when the AEA is at increased risk of injury when SOECs are present.

NON-KETOTIC HYPERGLYCEMIC HEMICHOREA: "DANCING LIMBS" IN THE "OVERLY SWEET"

Vatsela Krishnan*¹

¹*Radiology Department, Hospital Sultan Abdul Halim, Malaysia*

INTRODUCTION: Hemichorea is a neurological disorder whereby there is unilateral abnormal jerky movement of the limbs. In patients with poor hyperglycemic control, but not in ketotic state, this abnormal hemichorea is termed as non-ketotic hyperglycemic hemichorea (NHH). Biochemical and radiological imaging are the mainstay to make this diagnosis. We present a case of uncontrolled diabetes presenting with hemichorea and stroke-like symptoms. CT findings demonstrated characteristic changes which should ring a bell when encountering patients with poor glycemic control.

REPORT: A 69-year-old female with underlying diabetes mellitus, hypertension and ischemic heart disease, presented to the emergency department, after an alleged fall. Patient also had uncontrolled movement of the right upper limb, right sided facial asymmetry. Initial DXT at the emergency department was 18.4 and urine ketone was negative. An emergency non-contrast CT brain was performed, which revealed a subtle hyperdensity involving the left striatal region without mass effect or surrounding edema, suggestive of NHH. Subsequently, once the glycemic control improved, repeated CT brain showed resolution of the hyperdensity at the left striatal region.

CONCLUSION: Diabetes Type II is prevalent in the Asian community, predominantly the elderly female. Characteristic CT findings of contralateral subtle hyperdensity in the striatal region are the typical findings. Our patient initially presented with a history of fall due to 'stroke-like symptoms', with incidental findings of uncontrolled diabetes. However, once her glycemic control improved, there was resolution of the imaging findings and symptoms. Early recognition of this imaging findings avoids unnecessary diagnostic investigations and further intervention.

ITS NOT OVER YET: A REVIEW OF CEREBRAL TUBERCULOSIS AND ITS COMPLICATIONS

Maria Rauf*¹; Belqees Yawar Faiz¹; Asma Javed¹; Muhammad Usman¹; Surraya Zafar¹;
Khurram Khaliq Bhinder¹

¹Radiology, Shifa international hospital, Pakistan

LEARNING OBJECTIVE:

- To illustrate the panoramic spectrum of imaging features of CNS tuberculosis.
- To demonstrate intracranial complications of tuberculosis.

BACKGROUND: Tuberculosis is regarded as a major worldwide health problem, it keeps on recurring and has never subsided despite the advances in medicine. The underlying pathogen - Mycobacterium tuberculosis can involve any organ. The most common being lungs, however the most devastating form of the disease occurs with central nervous system (CNS) involvement. CNS tuberculosis is a potentially life threatening condition. If it is diagnosed early and being treated aggressively, it can be cured even at initial stages. Clinically and radiologically, CNS manifestations of tuberculosis often mimic other neurological conditions of infectious and noninfectious etiology. Hence, recognizing the imaging appearances of various forms of CNS tuberculosis is necessary for timely diagnosis and management of this disease.

FINDINGS AND/OR PROCEDURE DETAILS: We compiled all the cases CT and MRI brain performed from January 2018 to December 2019 at Shifa international hospital, Islamabad, Pakistan with diagnosis of CNS tuberculosis and/or its complications. These include:

- Meningitis(leptomeningitis or pachymeningitis) further complicated by infarcts and hydrocephalus
- Tuberculomas
- Focal cerebritis/encephalitis
- Intracranial abscesses/ empyema
- tuberculous encephalopathy
- Ischemic infarcts due to vasospasm
- Midline shifts
- Brain herniations
- Subdural empyema
- Secondary osteomyelitis

CONCLUSION: Familiarity with the spectrum of imaging manifestations of CNS tuberculosis is vital for the timely diagnosis, thereby reducing the morbidity and mortality of this potentially life-threatening disease.

RARE CLINICAL ENTITY - TRANS-SPHENOIDAL MENINGOCELE

Prabhpreet Singh*¹; Nehal Ahmad¹; Kriti Malhotra¹

¹*Radio-diagnosis, Hamdard Institute of Medical Sciences, India*

INTRODUCTION: Meningocele are protrusions of meninges through a defect in the skull. Trans-sphenoidal meningocele is a rare clinical entity. Origin can be spontaneous, congenital or traumatic. The diagnosis & treatment of this uncommon disease can be exigent for otorhinolaryngologists. We present a rare case of transsphenoidal meningocele which is diagnosed using radiological modalities. This case will help in recognizing this uncommon disease and play an essential role in diagnosis and patient management.

REPORT: Multiplanar MRI Images of the brain were taken. It revealed Trans sphenoidal meningocele anterior to the dorsum sella projecting into the nasopharynx through a large craniopharyngeal canal. There is a communication between the anterior recess of the third ventricle and the meningocele. The pituitary stalk and gland can't be identified. Abnormal morphology of eye globe is also noted on right side. Incomplete cleft palate was also noted, which was co-related on CT axial bone window. Ultrasonography revealed hypoplastic uterus.

CONCLUSION: The aim of this poster is to describe the imaging findings of one of the rarest disease and how it corelates with clinical and radiological imaging findings to achieve a timely diagnosis that helps in reducing the associated morbidity and mortality involved in this cranial defect.

**SUPRATENTORIAL EXTRA-VENTRICULAR EPENDYMOMA IN A YOUNG ADULT
: A CASE REPORT.**

Emiza Azreen Ahmad Suhaimi*¹; Juhara Haron¹; Mohd Shafie Abdullah¹

¹*Radiology, Hospital Universiti Sains Malaysia (HUSM), Malaysia*

INTRODUCTION: Ependymoma is a slow growing tumor of ependymal cells lining the ventricular walls and the central canal. In 70% of cases, it arises from the fourth ventricle and in the remaining 30% of cases from the lateral ventricle or periventricular brain parenchyma. It is most common in children aged 1 to 5 years old.

REPORT: A 17 year old girl who presented with intermittent episodes of left fronto-parietal throbbing headache for four months duration was attended at our Emergency Department. Initial plain and contrasted CT head was performed which a left frontal extra-axial lesion with mass effect was found. This was then followed by MRI brain which revealed a huge broad-based solid-cystic left fronto-parietal extra-axial mass. The patient subsequently underwent craniotomy and tumor excision. Histopathological examination came back as WHO grade II ependymoma. In this case report, the clinical course, radiological appearance and the prognosis of supratentorial extra-ventricular ependymoma are discussed.

CONCLUSION: Supratentorial extra-ventricular ependymoma is relatively rare compared to the infratentorial ependymoma with both manifest differently in clinical and radiological presentation. It is imperative to include this as one of the differential diagnosis in patient with supratentorial parenchymal mass lesion, particularly in the child.

CRYPTOCOCCUS MENINGITIS: A REVIEW OF PATHOLOGICAL-IMAGING CORRELATION.

Noor Badriah Othman, Muhammad Hilmi B Husman, Nurul Akhmar*¹

¹*Radiology Department, Taiping Hospital, Malaysia*

INTRODUCTION: Cryptococcal meningitis, caused by the *Cryptococcus neoformans* (*C. neoformans*), an environmental fungus, is a fatal HIV-related opportunistic infection.

C. neoformans frequently an opportunistic infection in immunocompromised patients. Some cases of immunocompetent hosts are also susceptible to this infection although exact aetiology and mechanism is still debatable.

REPORT: A 46 -year-old male, presented with severe headache, vomiting, reduced consciousness and episodes of seizure. Denied any high risk behaviour. Temperature was 37.4°C, heart rate 102, blood pressure 122/74, respiratory rate 28, and oxygen saturation of 96% on high flow oxygen. GCS was E1V2M2, intubated for airway protection. Laboratory results showed white blood cell (WBC) count of 5.4, platelet of 115. Plain head computed tomography (CT), normal. He was found to be positive for hepatitis C and RVD with CD4 count of 4. The cryptococcus species from CSF culture was isolated. Patient was deteriorated and repeated CT brain showed multiple hypodense lesions in bilateral cerebral hemispheres. Magnetic resonance imaging (MRI) of the brain showed multiple pseudocysts at bilateral basal ganglia, right corona radiata, left side of corpus callosum, bilateral head of caudate nucleus, areas of abnormal cortical and parenchyma signals at all lobes of bilateral cerebral hemispheres.

CONCLUSION: Cryptococcal meningitis in immunocompromised patient are important to be diagnosed during early stage of the disease as it can help in better treatment and prognosis. Imaging plays an important role in the evaluation of CNS cryptococcal infection. Better understanding of pathogenesis of this opportunistic CNS infection with help in treatment plan and prognostic value.

**NEURO CUTANEOUS MELANOSIS:A RARE MELANCHOLIC MELANGE OF
NEURAL AND CUTANEOUS MELANOSIS**

Shubham Saha*¹; Tapan Dhibar¹; Sumit Chakraborty¹; Sudipta Saha¹; Bijaya Gayari¹; Arindam Santra²; Uttara Chatterjee³

¹*Department Of Radiodiagnosis, Institute Of Post Graduate Medical Education & Research, India,* ²*Department Of Neuromedicine, Ipgmer Sskm,India,* ³*Department Of Pathology, Ipgmer Sskm, India*

INTRODUCTION: Neurocutaneous melanosis is a rare non-inherited congenital phakomatosis characterized by the presence of large or multiple congenital melanocytic cutaneous nevi associated with leptomeningeal melanocytosis.

REPORT: 21 years male presented to neurology department with headache, vomiting and dimness of vision.5 months back, he developed one intermittent high grade febrile episode, followed by severe headache with projectile vomiting and one episode of GTCS .Patient was admitted locally and started on Anti tuberculous therapy for 2 months after onset of those symptoms. Thereafter he developed bilateral dimness of vision for last 3 months. Patient was referred to our hospital. Examination revealed multiple nevi over leg ,buttock and back which he was having since birth. Patient was alert but confused. CSF protein was 146mg/dl, Acid fast stain was negative , cell count was 03cell/cmm. Skin biopsy revealed melanocyte nevus.

Non Enhanced CT brain revealed diffuse high attenuation along both sylvian fissures and along the effaced sulci with both supra & infratentorial ventriculomegaly. This was mimicking convexal subarachnoid haemorrhage. However, MRI brain revealed T1w diffuse hyperintensity ,T2w hypointensity along sulci of both cerebral and cerebellar hemisphere, along sylvian fissures with leptomeningeal thickening and effacement of sulci. On post contrast study intense enhancement of leptomeninges noted .Imaging features suggested leptomeningeal melanomatosis confirmed by Meningeal biopsy .

CONCLUSION: Diagnosis was made neurocutaneous melanosis by Kadonaga and Frieden criteria. Due to paramagnetic property of melanin ,above mentioned signal changes were noted in MRI brain. This rare case suggests adult patient can present with neurocutaneous melanosis mimicking tuberculous/infectious pathology.

**MAGNETIC RESONANCE IMAGING CHARACTERISTICS OF COMMON SELLAR
AND PARASELLAR LESIONS: A PICTORIAL REVIEW**

Fatin Nur Jannah Sahar*¹; Farihah Abd Ghani¹; Hairuddin Achmad Sankala²; Siti Salwa
Mohamad Zaini²; Hilwati Hashim³

¹*Radiology, Hospital Sungai Buloh, Malaysia,* ²*Radiology, Hospital Kuala Lumpur, Malaysia,*
³*Radiology, Pusat Perubatan UiTM, Malaysia*

INTRODUCTION: The sellar and parasellar regions are relatively small areas of the skull base that harbour important neurovascular structures and feature complex anatomy. Pathology arising from this site are variable in aetiology, and may present with similar clinical as well as neuroimaging features, which can be diagnostically challenging for the radiologist. Computed tomography maintains a complimentary role in imaging, particularly in delineating bone erosion and characterizes calcifications. However, magnetic resonance imaging (MRI) is the mainstay in the neuroimaging assessment as it offers superior tissue characterisation and lacks ionizing radiation.

REPORT: In this article, we present a comprehensive pictorial review of common sellar and parasellar lesions, which include neoplastic, congenital, vascular as well as inflammatory/granulomatous lesions with an emphasis on MRI features.

CONCLUSION: MRI is the imaging modality of choice for the diagnosis of sellar and parasellar lesions.

**INTERACTIVE CASES ILLUSTRATING THE ANATOMY AND PATHOLOGY
DEFORMING THE FOURTH VENTRICLE**

Yap Chee Woei*¹; Clement Yong¹; Soon Kar Hoon Betsy¹

¹*Radiology, National University Of Singapore*

LEARNING OBJECTIVE: The main objective is to describe the anatomical structures bordering the fourth ventricle and to highlight pathology that deformed its shape via a collection of interactive cases. Our goal is to enhance the ability to recognize the subtle changes in shape or configuration of the fourth ventricle, enabling early detection of pathology.

BACKGROUND: The fourth ventricle in the posterior cranial fossa has a diamond-shaped configuration and bordered by a few vital structures. By understanding the anatomical boundaries of the fourth ventricle, the potential pathologic processes that resulted in the abnormal shape of the fourth ventricles could be differentiated and aid in diagnostic.

FINDINGS AND/OR PROCEDURE DETAILS: The pathologic processes that may cause deformation of the fourth ventricle range from congenital to acquired pathology. These could be due to pathology arising within the ventricle or in relation to the surrounding structures of which the latter would be our focus. Description of the disease entities would be achieved via interactive cases and correlation with the anatomical landmarks. Some of these deformations are known to radiologists as “aunt Minnie” diagnosis whilst the subtle ones will necessitate a more thorough search.

CONCLUSION: An understanding of the anatomic relationship and effect of various pathologies on the shape of the fourth ventricle is key in image evaluation. Some pathologies resulted in characteristic shape changes whilst others may be subtle asymmetry or change in the shape, volume and position of the fourth ventricle.

**A CASE REPORT OF POLYCYTHEMIA AND UNIFORMLY HYPERDENSE
INTRACRANIAL VESSELS IN NON-CONTRASTED COMPUTED TOMOGRAPHY
OF THE BRAIN.**

Pei Ting Leow*¹; WM Wan Zakaria¹

¹*Radiology Department, Hospital Putrajaya, Malaysia*

INTRODUCTION: Polycythemia is defined as elevated concentrations of hemoglobin and/or hematocrit in the peripheral blood. Uniformly hyperdense intracranial vessels on non-contrasted computed tomography of the brain are characteristic findings of several conditions, including polycythemia. We report a case of patient with congenital heart disease and polycythemia, whose non-contrasted computed tomography study showed hyperdense circle of Willis and cerebral venous sinuses, mimicking the appearance of a contrasted study.

REPORT: A 19-year-old gentleman with congenital heart disease and history of stroke with left sided weakness a month prior, presented with new onset right sided body weakness. He appeared well-hydrated, with no headaches or seizures. Non-contrasted computed tomography of the brain done revealed prominent and uniformly hyperdense intracranial vessels, including vertebral arteries, basilar artery, Circle of Willis branches involving the anterior, middle and posterior cerebral arteries, and the cavernous internal carotid arteries. Involvement of dural venous sinuses include the superior sagittal sinus, straight sinus, transverse sinus, confluence of sinuses and falx cerebri. Ill-defined hypodensity is also noted at left corona radiata with well-defined hypodensities in the head of right caudate nucleus and both sides of pons, consistent with multifocal infarcts. Blood investigation done subsequently revealed a raised hemoglobin level of 27.1g/dL and raised hematocrit level of 78.6%, leading to the diagnosis of polycythemia.

CONCLUSION: Findings of uniformly hyperdense intracranial vessels in non-contrasted computed tomography of the brain, in combination with blood investigations, could lead to diagnosis of polycythemia, though further workup for cerebral venous thrombosis might be warranted if clinically indicated.

MOYAMOYA DISEASE : ATYPICAL PRESENTATION OF SENSORINEURAL HEARING LOSS.

Zubair Ahmad Sharifuddin*¹; Hairuddin Achmad Sankala²; Shahizon Azura Mohamed Mukari¹

¹*Department of Radiology, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia,*

²*Department of Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Moyamoya disease is an idiopathic progressive occlusive disease affecting the terminal internal carotid arteries (ICA) and circle of Willis. Clinically, the disease may be of ischemic, haemorrhagic or epileptic type. Typical clinical features are stroke, transient ischemic attacks, haemorrhages, seizure and headache. Some are also asymptomatic with incidental findings on imaging performed for other indication. We report an interesting case of Moyamoya disease, presenting as bilateral hearing loss.

REPORT: A case of 28 years old female with no comorbidity. She presented with hearing loss and tinnitus bilaterally, associated with vertigo, dizziness, forgetfulness and inability to focus. Pure tone audiometry showed bilateral moderate sensorineural hearing loss. High Resolution Computed Tomography (CT) of the temporal bone was normal. Magnetic Resonance Imaging (MRI) showed old lacunar infarct at the left posterior parietal lobe as well as irregular stenosis of the left ICA (clinoid and supraclinoid segments), both anterior cerebral arteries and left middle cerebral artery with bilateral basal ganglia collateral vessels, suggestive of Moyamoya disease. There was no other abnormal findings. The biochemical markers, particularly the connective tissue screening was normal.

CONCLUSION: Wide range of clinical symptoms and severity of Moyamoya disease have been reported, with a very rare auditory involvement, such as in this patient. Prompt diagnosis and accurate assessment could significantly improve the diagnosis. Recognition of the characteristic imaging features which are stenosis or occlusion of the arteries of the circle of Willis and development of collateral vasculature, is crucial.

**ASSOCIATION OF TEACHING INSTITUTIONS WITH THE USAGE OF
FLUOROSCOPIC-GUIDED LUMBAR PUNCTURES: A HEALTHCARE COST AND
UTILIZATION STUDY**

Aarushi Aggarwal*¹; Ali Seifi²

¹Long School of Medicine, UT Health San Antonio, ²Neurosurgery, UT Health San Antonio, United States

OBJECTIVE: Fluoroscopic-guided lumbar punctures are performed when a patient may be a difficult candidate for conventional techniques or when there is a prior unsuccessful bedside attempt. On average, the United States spends \$2.6 billion yearly in healthcare cost for this procedure. This study assesses whether there is a higher propensity to utilize image-guided lumbar punctures in teaching hospitals over non-teaching hospitals in the U.S.

MATERIALS & METHODS: Fluoroscopic-guided lumbar puncture procedure frequency was obtained from the Healthcare Cost and Utilization Project database, using the International Classification of Diseases, Tenth Revision (ICD-10) as a principal diagnosis during 2016 and 2017. The cohorts were dichotomized to teaching hospitals and non-teaching hospitals, using the Z-test to analyze significance.

RESULTS: 373,858 primary hospital admissions for fluoroscopic-guided lumbar punctures were recorded during 2016-2017. The mean patient age was 37.68 years old, with 50.64% being female. The mean procedure frequency in teaching institutions was 146,600 ($\pm 3,512$ SD), while usage in non-teaching institutions was 32,298 (± 943 SD), $p < 0.001$. The mean aggregate charges for the teaching hospitals were \$8,954,640,822 ($\pm 320,188,434$ SD), which was significantly higher compared to non-teaching hospitals with \$1,890,380,970 ($\pm 72,953,863$ SD), $p < 0.001$.

CONCLUSION: There is significantly higher utilization of fluoroscopic-guided lumbar punctures in urban teaching hospitals over non-teaching hospitals in the U.S. This could be attributed to higher performance capabilities and increased resource availability. Teaching hospitals also provide more care for minorities and are likely to receive patient transfers from off-site hospitals. Further studies are warranted to assist healthcare radiology administrators in building appropriate infrastructures.

SKULL BASE ANATOMY AND PATHOLOGY EDUCATIONAL EXHIBIT: KEY CONCEPTS VIA INTERACTIVE DIGITAL MODERN IMAGING SOFTWARE THROUGH SERIES OF CASES

Tze How Yeong*¹; Betsy Kar Hoon Soon¹; Poh Sun Goh¹

¹*Department Of Diagnostic Medical Imaging, National University Hospital System, Singapore*

LEARNING OBJECTIVE: The learning objective of this exhibit is to familiarize readers with skull base anatomy via:

- Interactive, scrollable, side by side normal vs pathology ‘illustrating’ anatomy images sets
- Both ‘without’ and ‘with’ annotations

BACKGROUND: The anatomy of the skull base is complex and ability to localize the pathology to the anatomical landmark is pivotal, not only in making diagnosis but also in identifying involvement of the surrounding structures which may affect management.

FINDINGS AND/OR PROCEDURE DETAILS: The skull base is formed by five bones that shape the floor of the cranial cavity and contains numerous foramens and canals. Given the complexity of the skull base anatomy, variety of pathology can occur, affecting the osseous, neurovascular structure, soft tissue and muscles. These can be categorized into anterior, middle and posterior compartments of skull base with pathology that can occur in this area range from neoplastic, infectious, inflammatory, vascular and congenital in etiologies. Description of disease entity via series of cases will be covered. CT and MR will be used to illustrate the anatomical structures and delineate the compartments of the skull base.

CONCLUSION: The skull base is an important anatomical landmark that hosts diverse pathology. A structured anatomical approach will aid in diagnostic and offer a guidance to surgeons preoperatively.

SPINAL PARAGANGLIOMA IN A 37-YEAR-OLD MALE

Precious Joy Katherine C. Alpaño*¹; Joyce D. Komiya¹

¹*Radiology, St. Luke's Medical Center - Global City, Philippines*

INTRODUCTION: Paragangliomas in the spine is a neuroendocrine tumor originating outside of the typical location of the adrenal medulla. The majority of central nervous system paragangliomas are located in the head and neck region particularly in the carotid sheath and middle ear. Rarely do they arise from the spine. As of 2018, there are only 8 reported cases in literature.

REPORT: This is a case of a patient who presented with a 6-month history of intermittent low back pain radiating to the leg. MRI of the spine revealed paravertebral masses in the lumbar and sacral levels. Other reported symptoms include weight loss, night sweats, sporadic anxiety attacks, tachycardia and episodes of high blood pressure [180s]. Laboratory work-ups including 24-hour urine and serum metanephrines showed elevated levels. GA-68 DOTATATE PET/CT revealed somatostatin receptor-positive lesions in the paravertebral soft tissue masses, supraclavicular, mediastinal and abdomino-pelvic lymph nodes and several bones. Treatment of peptide receptor radionuclide therapy was started.

CONCLUSION: The role of imaging in the diagnosis of diseases such as paraganglioma is crucial especially because biopsy of such lesions may lead to life-threatening consequences. This case also highlights the role of MRI in diagnosing the cause of a common complaint of low back pain.

**PICTORIAL REVIEW: DIFFERENT DISEASES CAUSING ISCHAEMIC
INFARCTION IN YOUNG ADULTS AND THEIR RADIOLOGICAL FEATURES.**

Cheung Kin On*¹; Wong Kin Hoi¹

¹*Department of Radiology, North District Hospital, Hong Kong (SAR)*

OBJECTIVE: Ischaemic stroke in young adults (18-45 years old) are debilitating and increasingly frequent. Comparing with older adults, young adults have different etiologies. Young adults have fewer ischaemic infarcts from large- or small-vessel diseases, but more from cardioembolism and other causes. The purpose of this pictorial review is to illustrate radiological features of different pathologies that can cause ischaemic infarcts in young adults.

MATERIALS AND METHODS: Retrospective review of young adults with ischaemic stroke, with their underlying disease, imaging findings of CT, MRI and angiogram reviewed.

RESULTS: Radiological features of various disease which can cause ischaemic infarcts in young adults are discussed, namely arterial dissection, cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL), mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes (MELAS), moyamoya disease and reversible cerebral vasoconstriction (RCVS). Their imaging findings and subsequent management are discussed.

CONCLUSION: Ischaemic stroke in young adults is increasingly frequent. Early recognition by radiologists can help patient with correct diagnosis and early treatment.

A GIANT SACRAL PLEXIFORM NEUROFIBROMA

Kommuru Suhas*¹; N.L.N Moorthy¹; Kotte Abhijith Kumar¹

¹*Radio-Diagnosis, Apollo Institute Of Medical Sciences And Research, India*

INTRODUCTION: Neurofibromas are benign nerve sheath tumours and involves skin, soft tissues, or viscera. Superficial plexiform neurofibromas arises from peripheral nerves. Deep plexiform neurofibromas arise from nerve plexuses, dorsal nerve roots. Para-spinal and sacral neuro-fibromas are the commonest abdominal neoplasm in neuro-fibromatosis type 1 (NF1). Spinal manifestations include acute kypho-scoliosis, soft tissue abnormalities such as dural ectasia and lateral meningocele. Plexiform neurofibromas are network like growths of tumour involving multiple fascicles of nerve, leading to diffuse mass of thickened nerve fibres surrounded by proteinaceous matrix which are pathognomonic for NF1.

REPORT: A 25 year old male patient came with chief complaint of a large swelling in the lower back since birth which presently is extending below the gluteal region. There were multiple café-au-lait spots (>1.5cms) on the trunk, with bilateral axillary freckling. There was bowel and bladder incontinence since birth.

- X ray findings: A soft tissue mass is seen arising from sacral region in midline and extending below the gluteal region.
- Magnetic resonance imaging findings: T2 STIR hyperintensities, T1 hypointense areas – target lesions were noted in the sacral and pelvic region with dural ectasia in lumbo-sacral region and posterior scalloping of lumbo-sacral vertebral bodies.
- Computed Tomography findings: Hypodense to isodense mass lesion in the sacral region with widening of sacral neural foramina noted.
- Biopsy: Plexiform neurofibroma.

CONCLUSION: With the above clinico-radiological findings, a diagnosis of a plexiform neurofibroma was made. Recognition of radiologic appearance often allows prospective diagnosis and improves clinical management in patients.

THE KEY IMAGING DIAGNOSTIC FEATURE OF TUMEFACTIVE DEMYELINATING LESIONS: A CASE REPORT

Tan Tiong Keat*¹; Tan Peng Peng¹

¹Radiology, Hospital Seberang Jaya, Malaysia

INTRODUCTION: Tumefactive demyelinating lesions (TDLs) are rare and may mimic brain tumors both clinically and radiologically, therefore posing a diagnostic challenge. They occur more frequently in women in second and third decades of life. This case report highlights the key diagnostic features to TDLs, which may help in reducing the necessity of invasive diagnostic procedures.

REPORT: A 21-year-old lady presented with behavioral change for one month followed by left-sided body weakness and reduced vision. Brain magnetic resonance imaging (MRI) revealed two T2W hyperintense white matter lesions (>3cm in size) surrounded by incomplete hypointense rim, one at bilateral frontoparietal regions involving the corpus callosum, and another at right occipital region. These lesions demonstrate smooth incomplete ring enhancement and associated peripheral restricted diffusion, suggesting advancing front of demyelination. There is little vasogenic edema. Magnetic resonance spectroscopy showed nonspecific finding of increased choline and decreased N-acetylaspartate. Cerebrospinal fluid analysis revealed positive oligoclonal bands with raised IgG index. Characteristic incomplete ring enhancement on MRI is suggestive of TDLs. Glioma was suggested as remote differential. Patient was treated with methylprednisolone. Biopsy was not performed. Follow-up MRI after 3 months showed significantly smaller lesions with no enhancement, with moderate neurological improvement clinically.

CONCLUSION: All clinical parameters should be evaluated carefully in establishing the diagnosis of TDLs. Incomplete ring enhancement with peripheral restricted diffusion on MRI is helpful in distinguishing TDLs from glial tumours. In this case, the diagnosis is supported by the patient's clinical improvement after steroid therapy and the improved follow-up MRI findings.

A CASE REPORT OF A RARE SOLITARY NEUROCYTOMA IN THE THIRD VENTRICLE.

Sohini Gandham*¹; NLN Moorthy¹; Sindhura Manne¹

¹*Radiodiagnosis, Apollo Institute Of Medical Sciences And Research, India*

INTRODUCTION: Central neurocytomas are very rare , normally benign intraventricular brain tumours that form typically from the neuronal cells of septum pellucidum. They are characteristically located in the supratentorial ventricular system. Half of these cases involve lateral ventricles near the foramen of munroe. 15% are located in both lateral ventricles and IIIrd ventricle. 13% of central neurocytomas are bilateral. Only 3% occur in third venticle as an isolated location.

REPORT: A 28 year old female presented with signs of raised intracranial tension of 5 months duration which were progressively worsening and accompanied by a headache of 4 months duration. On MRI T1W axial sequences there was a heterogenous hypointense lesion with multiple hyperintense foci within it occupying and causing expansion of the third ventricle . On T2W sagittal and coronal sections the heterogenously hyperintense lesion with multiple hypointense foci within it was seen inferiorly abutting the midbrain. Axial GRE sequences showed foci of blooming which appeared T2 hypointense suggestive of calcific foci. Post contrast the sagittal and axial MR images demonstrated significant homogenous enhancement. Biopsy of the third ventricular lesion proved to be a neurocytoma.

CONCLUSION: Based on location and histomorphology, the differential diagnosis of masses located in ventricular system, are oligodendroglioma, ependymoma and neuroblastoma. Central neurocytomas are slow growing, rare, benign intraventricular tumors of neuronal origin. The diagnosis is established by location of tumor with histology and immunohistochemistry playing a key role in ruling out the other differentials. Prompt imaging and diagnosis of central neurocytomas have a good prognosis.

EXTREMELY RARE TRIPLE PATHOLOGY OF RASMUSSEN'S ENCEPHALITIS , FOCAL CORTICAL DISPLASIA, AND HIPPOCAMPAL SCLEROSIS

Annisa Zeinadinanda*¹; Gustiara Munir²

¹Radiology, Padjadjaran University, Indonesia, ²Radiology, Hasan Sadikin General Hospital, Indonesia

INTRODUCTION: Rasmussen encephalitis is an extremely rare chronic inflammatory neurodegenerative disease affecting a single cerebral hemisphere, causing progressive neurological deterioration and intractable seizures, mainly in pediatric population. MRI of the brain has become a mainstay for diagnostic assessment and follow-up. Dual pathology may be noted in 10% of patients and varies from low-grade tumor, cortical dysplasia, tuberous sclerosis, hippocampal sclerosis, vascular abnormalities, or old ischemic lesions. This case presents the incidence of Rasmussen's encephalitis with the coexistence of hippocampal sclerosis, and focal cortical dysplasia.

REPORT: A 3 year old girl with unremarkable birth history, present with seizures dan progressive right hemiparesis . The seizure initially presented at the age of 2,5 months with fever, marked by jerks of both hand and feet, eyes deviated backward, lasting about 60 s up to 8 times a day, unresponsive to antiepileptic agent. There was a history of antituberculosis treatment for 6 months, despite no laboratory or radiologic evidence. Abnormal generalized epileptic wave, especially in the right hemisphere accompanied with severe generalized cortical dysfunction were demonstrated in EEG. MRI revealed left cerebral hemisphere atrophy, focal cortical displasia in the right temporoparietal lobes, and bilateral hippocampal sclerosis. For the time being, patient are treated conservatively.

CONCLUSION: Diagnosis of Rasmussen Encephalitis is based on characteristic clinical, radiological, and pathological features with more emphasis on clinico-radiological features, as brain biopsy, due to its invasive nature, is not done in all the cases.

BILATERAL CEREBELLAR LIPONEUROCYTOMA

Shaista Riaz*¹; Khurram Khaliq Bhinder²; Zainab Malik²

¹Radiology, McGill University, Montreal, Pakistan , ²Radiology, Shifa International Hospital, Islamabad, Pakistan

INTRODUCTION: One of the very infrequent and seldom seen tumour of the central nervous system is "Cerebellar liponeurocytoma(cLNC)". It is very rare and less than 65 cases have been reported so far. It comes under the WHO grade II tumours. It is a very slow growing, well differentiated tumour with benign prognosis and high recurrence. It mainly involves cerebellum , less commonly vermis or cerebellopontine angle. It is a radiological-pathological diagnosis showing lipidized neurocytic cells histologically and well circumscribed hyperintense areas on T1WI due to lipid content within the tumour radiologically. Regarding immunohistochemistry, it is S-100(+) , GFAP(+) , Synaptophysin (+) and IDH1(-) . Concerning differentials are medulloblastoma followed by teratoma and oligodendroglioma.

REPORT: We report a rare case of a 60 years old female who presented to our hospital with vertigo, gait disturbances and headache in the occipital area. CT was performed, which showed right cerebellar tumoural lesion with inhomogenous appearance, diffuse enhancement and ill-defined areas. Diagnosis of right cerebellar liponeurocytoma was made upon the findings established on MRI. MR spectroscopy was also performed that demonstrated increased choline and decreased NAA. Post radiation progressively enlarging left posterior fossa mass was seen on MRI which later on proved to be a cerebellar liponeurocytoma on histology.

CONCLUSION: Suboccipital craniotomy was performed at several stages but later developed recurrence at right but left cerebellar post surgical site didn't show any recurrence.

TUMOUR-LIKE PRESENTATION OF BRAINSTEM TUBERCULOMA: A LESSON LEARNT

Yeat Chia Ming*¹; Hairuddin Achmad Sankala²; Shahizon Azura Mohamed Mukari¹; Nik
Farhan Nik Fuad¹

¹Radiology Department, Universiti Kebangsaan Malaysia Medical Centre, Malaysia, ²Radiology
Department, Hospital Kuala Lumpur, Malaysia

INTRODUCTION: Brainstem tuberculoma is diagnostically challenging as it lacks clinical clues and imaging mimics a high-grade glioma (HGG). Clues on signal characteristic may help in diagnosis to expedite treatment.

REPORT: A 16 year-old girl diagnosed with brainstem HGG, was referred to our centre for Gamma Knife. She presented with facial asymmetry, dysphagia and progressive left sided body weakness. She had no cough, constitutional symptoms or tuberculosis contact. Clinical examination revealed multiple cranial nerve palsies causing complex ophthalmoplegia with bulbar dysfunction. Initial MRI showed a pontomedullary junction, rim enhancing lobulated lesion demonstrating central hypointensity on T2-weighted (T2W) and fluid attenuation inversion recovery (FLAIR) with extensive vasogenic oedema. Upon review of the initial MRI, an alternative diagnosis of infection was entertained and biopsy was suggested. The parents however, opted for trial of alternative treatment. Three months later, her symptoms worsened and a repeat MRI revealed an enlarging ring enhancing lesion with a distinct central T2 hypointensity with daughter lesions. Suboccipital craniotomy and debulking were performed with intraoperative findings of Cheesy ‘tumour’. The histopathological findings were classical of chronic granulomatous inflammation. No tuberculous bacilli detected from the histopathological specimen, bronchoalveolar lavage or cerebrospinal fluid. Anti-tuberculous treatment was started. Her stay at intensive care unit were complicated with nosocomial infections. Due to bulbar dysfunction, she required tracheostomy and home ventilatory support.

CONCLUSION: Intracranial tuberculoma can present as a lesion mimicking brain tumour. In an endemic area like Malaysia, there should be a high index of suspicion particularly in the presence central T2W/FLAIR hypointensity.

POST-INFECTIOUS CEREBRAL VASCULITIS: INTRACRANIAL VESSEL WALL MRI IMAGING

Khoo Sian Zhen*¹; Hairuddinachmad Sankala²; Erica Yee Hing Wong¹; Shahizon Azura
Mohamed Mukari¹

¹*Department Of Radiology, Universiti Kebangsaan Malaysia Medical Centre, Malaysia,*

²*Department Of Radiology, Hospital Kuala Lumpur, Malaysia*

INTRODUCTION: Central nervous system (CNS) vasculitis affects the wall of blood vessels in the brain, spinal cord, and the meninges. The causes can be primary or secondary. Vessel wall magnetic resonance imaging (MRI) is useful to differentiate between vasculitis and other causes of vascular narrowing. We report a case of a 46 year-old lady, presented with dysphasia and evidence of vasculitis on vessel wall imaging (VWI).

REPORT: A case of a 46 years-old female with no comorbidity, presented with receptive dysphasia followed by expressive dysphasia for one month, associated with intermittent memory loss, intermittent reduced left hearing, left hand weakness and joint pain. Otherwise, there was no fever, respiratory symptoms or ear discharge. Electroencephalogram showed focal slowing at the left temporal region. MRI showed subacute infarcts at the left frontal and left parieto-temporal lobes with cortical laminar necrosis. MRA showed narrowing of the mid-to-distal segment of the M1 segment of the left middle cerebral artery with reduced signal flow to the distal branches. VWI revealed eccentric enhancing vessel wall at the aforementioned segment of left MCA. Patient was tested positive for mycoplasma pneumonia antibodies, which was deemed to be the causative organism. Patient showed marked improvement after commencement of intravenous methylprednisolone for five days.

CONCLUSION: Secondary causes of CNS vasculitis, as in our case, are far more common than primary CNS vasculitis. Recognition of the characteristic imaging features which are concentric or eccentric vessel enhancing wall thickening on MRI VWI is crucial in order to make a prompt diagnosis.

AN UPDATE OF DISTINGUISHING HEMORRHAGE AND CALCIFICATION IN BRAIN PARENCHYMA BY DUAL-ENERGY COMPUTED TOMOGRAPHY

Thanh Nhi Thi Nguyen*¹; Cong Thao Trinh¹; Van Trung Hoang²

¹*Department of Radiology, Hue University of Medicine and Pharmacy Hospital, Vietnam,*

²*Department of Radiology, Thien Hanh Hospital, Vietnam*

LEARNING OBJECTIVE: To differentiate calcification from a hemorrhage in brain parenchyma using dual-energy computed tomography (DECT).

BACKGROUND: Focal hyperattenuation in brain parenchyma is a common finding on non-contrast-enhanced head CT scans, in which intracranial calcification and hemorrhage are the main causes. Precisely differentiating these two entities is important for diagnosis and treatment. In most cases, it is easy to distinguish them on conventional CT images. However, some confusing cases can be misdiagnosed, leading to inaccurate treatment. Several techniques can help differentiate them, such as conventional CT or magnetic resonance imaging, DECT, gradient-echo phase imaging or phase susceptibility weighted imaging and quantitative susceptibility mapping. Based on the advantages and disadvantages of the techniques, DECT is selected for emergencies with benefit of low cost and minimal radiation dose.

FINDINGS AND/OR PROCEDURE DETAILS: The principle of this method is based on the inherent differences in the spectral signature of blood and calcium at different energies. Diagnostic algorithm by observing on three types of images include non-contrast CT, calcium overlay and virtual noncalcium (VNC) images. On non-contrast-enhanced CT images, focal intracranial hyperattenuating lesions are calcification if they expressed hyperattenuation on calcium overlay images, and they do not appear clearly on VNC images. In contrast, the focal intracranial hyperattenuating lesions are hemorrhage if they do not appear on the calcium overlay images and have high attenuation on VNC images.

CONCLUSION: DECT may be used as a complement to conventional CT to distinguish intraparenchymal hemorrhage or calcifications with high sensitivity, specificity and accuracy.

MRI STROKE PROTOCOL AS FIRST LINE NEUROIMAGING IN ACUTE STROKE

Mohamad Khairi Mahmood Ab Hamid*¹; Nabila Hanem Arshad¹; Ahmad Sobri Muda²; Anis Shamimi Mohd Darus¹; Mohd Fandi Al Khafiz²; Mohd Naim Mohd Yaakob²

¹*Radiology Department-MRI Unit, Teaching Hospital UPM, Malaysia,* ²*Radiology, HPUPM, Malaysia*

LEARNING OBJECTIVE: Stroke represents the third leading cause of mortality in Malaysia as reported by Institute for Health Metrics and Evaluation. Early diagnostic-imaging allows for introduction of fibrinolytic therapy and evaluation of ischemic penumbra. CT brain is the first line imaging for acute in most centres compared to MRI. Acute stroke protocol in our centre uses MRI as the first line imaging tools. Comprehensive MRI protocol with fast imaging techniques proved valuable to the management of acute stroke

BACKGROUND: MRI scan was performed in 131 patients who presented with acute stroke, from May-Dec 2020. Our protocol starts with DWI, followed by FLAIR and MRA. The susceptibility weighted imaging (SWI) will be performed as 2nd sequence if suspected haemorrhage in DWI. Other sequences include 3D Arterial Spin Labeling (ASL), perfusion, carotid MRA and black blood imaging. However, other sequences only performed after treatment decision has been achieved

FINDINGS AND/OR PROCEDURE DETAILS: Total of 112 patients had MRI with above protocol. There were 112 acute stroke and 19 stroke mimics. Almost all cases had treatment decision after 3rd sequences and average scan to decision time is 12 minutes. DTN time is not significantly delayed. There were 25 cases acutely treated representing 22% treatment rate compared to typical rate of 5-10% in majority of other centres. MRI clearly diagnosed stroke mimics in 19 cases

CONCLUSION: MRI with appropriate protocol doesn't significantly delay treatment. Our protocol able to achieve treatment decision not later than-3rd sequence and do not significantly delay the decision time. MRI with appropriate protocol increases the treatment rate.

**MAN IN THE BARREL DUE TO SNAKE EYES IN HIS SPINAL CORD - A RARE
MANIFESTATION OF ANTERIOR SPINAL ARTERY INFARCT**

Vidya Desai *¹; Bhawana Sonawane¹; Anagha Deshpande¹; Shriram Mate²

¹Radiology, Indira Gandhi Government Medical College Nagpur, India, ²Radiology, Grant Medical College Mumbai, India

INTRODUCTION: Acute spinal cord ischemia represents only 5-8% of acute myelopathies and <1% of all strokes. It is most commonly idiopathic in nature but other causes include atherosclerosis, trauma, thromboembolism etc. Prominent symptoms include severe back pain, limb weakness and loss of bladder control. Arterial territory most frequently affected is anterior spinal artery.

REPORT: A 35-year-old male patient present with sudden onset bilateral upper limb weakness. Mild bilateral lower weakness was noted; however, sensations and bladder control were intact (classically described as man in barrel sign). History of trauma, surgery or coagulopathy was not there. This patient evaluated on 3 Tesla MRI scanner. MRI spine of patient showed T2 hyperintensity in the cervical spinal cord just below the cervico-medullary junction. Bilateral symmetric circular to ovoid foci of high T2-weighted signals in the anterior horn cells of the spinal cord on axial MR imaging (Referred classically as owl eye or snake eye sign) with diffusion restriction. Associated mild cord enlargement and sparing of peripheral white matter was seen.

CONCLUSION: Involvement of the anterior spinal artery represents the majority of cases, and the anterior and central portion of the cord are involved. In most of the cases the anterior horn cells are primarily involved this gives rise to this owl eye / snakes eye appearance. This appearance on MRI axial images especially T2W with cord swelling is consistently associated with spinal cord infarct and it will give direction to the physician for the further management of patient.

**LEPTOMENINGEAL METASTASES IN A CASE OF RENAL CELL CARCINOMA:
RARE BUT NOT TO BE MISSED**

Kavitha Krishnamurti*¹

¹*Radiology, Hospital Canselor Tuanku Muhriz UKM, Malaysia*

INTRODUCTION: Genitourinary cancer rarely cause leptomeningeal metastasis (LM). However, although rare, LM should be considered as a complication of GU cancer as it would affect the mode of treatment and subsequent patient management. Objective of this case report is to discuss on leptomeningeal metastases particularly the clinical presentation and modalities available for diagnosis as well as the imaging features.

REPORT: Here we present a case of Mr LTC whom presented with progressively worsening headache, giddiness, right sided body weakness, dysarthria and dysphagia for 1 month's duration. Clinical examination revealed reduced power on right side, right upper motor neuron facial nerve palsy and left sided cerebellar signs. Blood investigations were normal. CT brain showed a lobulated hyperdense lesion occupying almost 50% of entire surface of pons, notably on the left side with marked perilesional edema. MRI brain subsequently showed that the lesion is possibly arising from its pia-arachnoid surface compressing onto brainstem parenchyma with hemorrhage within. He then underwent left retrosigmoid craniotomy and the tumour was grossly excised after the frozen section was in keeping with metastases. Subsequent HPE and also CT TAP is consistent with right renal cell carcinoma as the primary tumour.

CONCLUSION: With this case report, we would like to emphasize that leptomeningeal metastases should be considered in a patient with renal cell carcinoma.

SPINAL DURAL ARTERIOVENOUS FISTULA; A RARE CASE OF ACUTE LOWER LIMB PARALYSIS IN ADOLESCENT

Susantina Yulianti*¹

¹*Radiology, Padjadjaran University, Indonesia*

INTRODUCTION: Spinal dural arteriovenous fistulae (SDAVF) are the most commonly encountered vascular malformation of the spinal cord for progressive para- or tetraplegia. The increase in spinal venous pressure leads to decreased drainage of normal spinal veins, venous congestion, and tend to a progressive myelopathy. On MR images, the combination of cord edema, perimedullary dilated vessels, and cord enhancement is a main characteristic. Objective: was to present role of MRI to diagnose SDAVF.

REPORT: Utilizing MRI modality to conclude the diagnosis on the area quietly hard to assess by simple or moderate imaging modality. Patient present with acute lower limb paralysis. He was known as a high school student that progressively feels disturbances in both limbs ranging from disturbed gait, often feeling tired, tingling, numb, and finally experiencing paralysis at the age of sixteen. He was then referred for contrast enhanced MRI, and the finding was serpentine signal void with the largest diameter about 4.54 cm as high as 12th of thoracic vertebra until 2nd lumbar vertebral in the extramedullary region that tend to make the spinal canal wider and pushed the spinal cord anteriorly and caused a stenosis on medulla spinalis continuous with vascular dilatation on the proximal and distal part of the lesion suggested as spinal dural arteriovenous fistula.

CONCLUSION: This report illustrates the role of spine MRI in a case of SDAVF, a rare case but treatable. The neuroradiologist plays a major role in the detection of these lesions and in their planning treatment.

ANATOMICAL VARIANT OF ANTERIOR CEREBRAL ARTERIES: CASE SERIES

Yogambigai Balakrishnan*¹; Roudhotul Nadiah Md. Hamsin²; Siti Mayzura Abdul Rasid²; Siti Khairunnisaak Abdul Rahman²; Wan Najwa Zaini Wan Mohamed²

¹Radiology, University Putra Malaysia, ²Radiology, Hospital Queen Elizabeth 2, Malaysia

INTRODUCTION: Normal anatomical variants of anterior cerebral arteries (ACA) are not uncommon. Knowledge of presence and clinical relevance of this anatomical variants are important as some predispose to ischemic events or development of intracranial malformations (aneurysm or arteriovenous malformations).

REPORT: We present two cases of anatomical variants of ACA that were detected in our hospital settings. First patient is a 42 years old female with underlying hypertension and presented with complain of headache and vomiting for 1 day. No neurological deficit noted on examination. Computed tomography angiography (CTA) brain done showed azygous anterior cerebral artery with saccular aneurysm arising from it. Patient had aneurysmal clipping surgery done and subsequent repeated CTA brain showed no residual aneurysm. Second patient is a 31 years old male who was presented with tonic movements of bilateral upper limbs with uprolling of eyeballs. No neurological deficit noted subsequently. CTA showed presence of trifurcated A2 segment which was found to be the feeding artery for arteriovenous malformation at right frontal region. Aneurysm also noted at the distal segment of the variant. However, no immediate surgical intervention was done for the patient.

CONCLUSION: Anatomical variant of ACA are not uncommon and some has higher risk of developing aneurysms or arteriovenous malformations, with examples of the cases described above. Knowledge of the anatomical variant of ACA is important, particularly to reporting radiologist, to prevent medical errors and also to aid in the planning of neurosurgical procedures.

SYMPTOMATIC CERVICAL TARLOV'S CYST

Thiban Sivapragasam*¹; Chandran Nadarajan²

¹*Imaging & Diagnostic Department Seberang Jaya Hospital, Ministry Of Health Malaysia*

²*Imaging & Diagnostic Department USM, University Sains Malaysia*

INTRODUCTION: In 1938, an American neurosurgeon Dr. Isadore Max Tarlov found meningeal dilatation of the posterior nerve root sheath filled with liquor in the sacral region which was later called as perineural cyst. Symptomatic cervical perineural cysts are extremely rare in comparison with sacral cysts.

REPORT: A 31-year-old man presented with left upper limb pain and numbness progressively worsening past 1 year. Plain cervical radiograph revealed no abnormality. Cervical MRI revealed a perineural cyst at the C6 and C7 exiting neural foramina with the larger cyst in the C6 perineural cyst abutting the C7 nerve root which was well appreciated in the axial cut. The cyst was hypointense in T1WI and hyperintense in T2WI sequences.

Patient was subjected to physiotherapy, non-steroidal anti-inflammatory drugs as well to avoid strenuous activities especially extreme stretching of neck and arm. There was significant improvement in patient's symptoms.

CONCLUSION: Tarlov cyst is usually found in the lumbar spine, rare in cervical and is usually diagnosed from MRI. They are typically found near the dorsal root ganglion. They are hypointense in T1W images and hyperintense in T2w images and are not enhanced post contrast. These are usually incidental findings from diagnostic possibilities of either double crush phenomena, other pathology or finally is the root cause. Treatment for this are NSAIDs, oral steroids, physical therapy and in severe cases transforaminal epidural steroid injection. Despite its rarity, symptomatic should be a differential diagnosis in cervical radiculopathy.

JULIE'S HOT BUNS : COULD IT BE MULTIPLE SYSTEM ATROPHY?

Kamille Comilang-Martinez*¹

¹*Radiology, Davao Doctors Hospital, Philippines*

INTRODUCTION: Multiple system atrophy is a rare and fatal neurodegenerative disorder with features of progressive ataxia, parkinsonism, and autonomic failure in any combination. Its clinical manifestations reflect underlying central autonomic and striatonigral degeneration and olivopontocerebellar atrophy. The cerebellar variant of this disease is designated when cerebellar ataxia dominates the clinical picture. The number of published reports about multiple system atrophy in the Philippines is limited.

REPORT: This is a case of 52-year-old Filipino female with a three-year history of gait instability, slurring of speech, and recent onset of urinary incontinence. She has no known comorbidities and has unremarkable family history. Two cranial magnetic resonance imaging taken early in her disease were reported as negative, and she was initially managed as a case of stroke. Progression of her symptoms prompted a third cranial magnetic resonance imaging, which revealed pontine and cerebellar atrophy, abnormal hyperintensity in the middle cerebellar peduncles, and a cruciform hyperintensity in the pons. These findings suggest the cerebellar type of multiple system atrophy.

CONCLUSION: Progression of this disorder is relatively rapid and there is no effective disease-modifying therapy. Accurate diagnosis as early as possible is important not only for the management of patients but also for the development of new therapeutic, social, and lifestyle strategies. The magnetic resonance imaging abnormalities demonstrated in this case give clues to a diagnosis of multiple system atrophy in patients with progressive ataxia.

RELAXATION-ENHANCED ANGIOGRAPHY WITHOUT CONTRAST AND TRIGGERING (REACT) VERSUS CONVENTIONAL MAGNETIC RESONANCE ANGIOGRAPHY (MRA) FOR IMAGING OF EXTRACRANIAL ARTERIES IN ACUTE ISCHEMIC STROKE AT 3T

Mohamad Syafeeq Faez Md Noh*¹; Fathina Marnie Othman¹; Mohd Naim Mohd Yaakob¹;

Mohd Fandi Al-Khafiz Kamis¹; Ezamin Abdul Rahim¹; Ahmad Sobri Muda¹

¹*Department of Radiology, Universiti Putra Malaysia (UPM) Teaching Hospital, Malaysia*

OBJECTIVE: To evaluate a novel flow-independent MRI sequence (REACT) compared with conventional MRA for the imaging of extracranial arteries in acute ischemic stroke (AIS).

MATERIALS AND METHODS: This was a retrospective study of patients who underwent a stroke protocol at 3 T including REACT and conventional MRA of the extracranial arteries. Two radiologists evaluated scans regarding vessel delineation, signal, and contrast; and assessed overall image quality for treatment decisions.

RESULTS: Compared to conventional MRA, REACT successfully provide clinically relevant information for treatment decisions in patients referred for acute ischemic stroke (AIS) in our center.

CONCLUSION: Given its fast acquisition, comparable image quality to conventional MRA and high sensitivity and specificity for the detection extracranial vascular pathology, REACT was proven to be a clinically applicable method to assess extracranial arteries in AIS.

DEVELOPMENTAL DELAY DUE TO UNILATERAL CONGENITAL HYDROCEPHALUS

Kalyani Kalambe*¹; Bhawana Sonawane¹; Anagha Vaidya-Deshpande¹

¹Radiology, IGGMC, Nagpur, India

INTRODUCTION: Unilateral hydrocephalus results from obstruction of foramen of Monroe resulting in asymmetrical dilatation of lateral ventricle, Etiological factors are divided into two main groups namely.

- Congenital(atresia of foramen of Monroe)
- Acquired including neoplastic obstruction, vascular anomalies, ependymal cysts, iatrogenic cause such as post shunting, idiopathic. Congenital forms occur almost exclusively in children, while the acquired forms present later, including adult life. Idiopathic unilateral hydrocephalus is a rare entity in adults.

REPORT: 18 month female patient present with global developmental delay with h/o 1 episode of seizures on 10/12/20. This patient evaluated on 3 Tesla MRI scanner. MRI Brain of patient showed gross dilatation of left lateral ventricle with resultant loss of adjacent white matter in left cerebral hemisphere, however right lateral, 3rd, 4th ventricle appear normal, No e/o intraventricular mass lesion. No e/o midline shift. Mild periventricular oozing is seen. No e/o abnormal leptomeningeal enhancement. T2/FLAIR /T1 hyperintensities in white matter of right frontal lobe showing foci of blooming and corresponding phase hypointensity s/o hemorrhagic foci in late subacute phase.

CONCLUSION: In 18 month old child gross dilatation of left lateral ventricle with resultant loss of adjacent white matter in left cerebral hemisphere. This appearance on MRI multiplaner images is constantly associated with congenital atresia of left foramen of Monroe causing unilateral gross hydrocephalus also hemorrhagic foci in white matter of right frontal lobe in late subacute phase suggesting previous ischemic insult . It will give direction to the pediatrician for the further management of patient.

CRADLE IN THE TOMBSTONE DUE TO A BLEED IN THE GERMINAL MATRIX

Abhijit C More*¹; Bhawana Sonawane¹; Ramesh Chaple¹; Anagha Vaidya Deshpande¹

¹Radiology, Indira Gandhi Government Medical College Nagpur, India

INTRODUCTION: Germinal matrix hemorrhages, also known as periventricular-intraventricular hemorrhages (PVIH), are the commonest type of intracranial hemorrhage in neonates and are related to perinatal stress affecting the highly vascularized subependymal germinal matrix. The majority of cases occur in premature births within the first week of life. Clinical presentation for grade I and II bleeds is vague. These are usually found on routine ultrasound performed on premature neonates. With grade III and IV bleeds, respiratory depression or apnea, abnormal posturing, seizures, and bulging fontanelles may be seen with 90 percent mortality for grade 4

REPORT: A 9 days preterm 35weeks baby 2.5KG weight presented with a single episode of convulsion, sepsis, history of increase in head circumference. On contrast enhanced computed tomography shows evidence of intraparenchymal bleed noted involving right caudothalamic groove, GERMINAL MATRIX GRADING GRADE 4, bleed was extending to adjacent right lateral ventricle, left lateral ventricle and third ventricle; with mass effect in the form of midline shift, compression of ipsilateral lateral ventricle; with diffuse cerebral oedema with mild dilatation of bilateral ventricles. Sulcal hyperdensity noted involving right cerebral hemisphere suggestive of right subarachnoid haemorrhage. Follow up scan after supportive treatment showed reduced size of haemorrhage, reduced mass effect.

CONCLUSION: CECT BRAIN helped in specifically diagnosing germinal matrix haemorrhage, GERMINAL MATRIX GRADING GRADE 4 giving more detailed view of site, extent of the lesion ;helped in early diagnosis, follow up, neurodevelopmental prognosis, treatment saving the cradle from the tombstone and giving positive clinical outcome.

IMAGING THE NEURAL BRIDGE-ULTRASOUND AND MRI IN CORPUS CALLOSAL DYSGENESIS AND AGENESIS

Meghanaa Jayakumar*¹; Aniruddha Rangari¹

¹Radiodiagnosis, AMD Centre For Imaging Sciences, India

LEARNING OBJECTIVE:

- To understand the normal anatomy and development of the corpus callosum and the malformations that resulted from its interruption.
- To discuss role of imaging techniques in the evaluation of corpus callosum genesis/dysgenesis and enumerate the various radiology signs encountered in such disorders

BACKGROUND: The corpus callosum is a broad band of white matter located along the midline between the two cerebral hemispheres of the brain and it has a close relation to other midline structures. The embryological development of this structure takes place in a specific order, which is essential for understanding of congenital anomalies. While ultrasound is the initial screening modality in suspected cases, MRI is the most useful imaging method in the evaluation of the corpus callosum since it provides excellent visualization of anatomic features and lesions which aids in understanding the etiology and makes diagnosis easier

FINDINGS AND/OR PROCEDURE DETAILS: A retrospective evaluation of 500 paediatric patients who underwent neonatal cranial ultrasound/ MRI brain was carried out. 96 patients had corpus callosum related developmental anomalies. The corpus callosum has a fundamental role in the formation and connection of the two hemispheres and is an essential indicator for normal brain formation. The present study has discussed on the embryological development of the corpus callosum and illustrated schematically ultrasound and MR imaging findings of its congenital abnormalities.

CONCLUSION: The corpus callosum is a midline cerebral structure with a unique embryological development pattern. Many developmental corpus callosal pathologies have characteristic appearances on ultrasound and magnetic resonance imaging. As their therapeutic approaches are different, the neuroradiologist should be aware of them.

**PRIMARY CEREBRAL INTRAVENTRICULAR HYDATID DISEASE IN A CHILD: A
RARE CASE REPORT**

Shubham Saha*¹; Shahid Iftekhhar Siddique¹; Anish Kumar Mondal¹; Sudipta Saha¹; Bijaya
Gayari¹

¹*Department Of Radiodiagnosis, Institute Of Post Graduate Medical Education & Research, India*

INTRODUCTION: Cerebral hydatid disease (caused by *Echinococcus granulosus*) is extremely rare,(Only 2% occur in brain) being more common in the pediatrics population. In brain, hydatid mostly occur in an intraparenchymal site. Intraventricular hydatid cyst is very rare even in literature.

REPORT: 7 year old female child presented with chief complaint of headache for last 3 months associated with intermittent early morning vomiting for last 2 months. The child was unable to maintain her balance for last 15 days. The child was conscious but drowsy, afebrile. Fundoscopy revealed bilateral papilledema. Clasp knife rigidity was found in right leg and mild ankle clonus was noted in right side. NECT brain revealed large well defined thin walled multiseptated hypodense(HU +10) cystic lesion without any calcific foci within bilateral lateral ventricles and third ventricle causing supratentorial ventriculomegaly. MRI brain shows T1w hypointense, T2w hyperintense(suppressing in FLAIR images) multiseptated non enhancing cystic lesion without any oedema involving lateral and third ventricles which causing mild supratentorial ventriculomegaly and midline shift to the right . MR Spectroscopy shows reduction of NAA with increased choline, lactate, acetate and succinate peak is seen. NAA /creatinine is decreased. Succinate/acetate ratio is increased . CECT Whole abdomen & Thorax, Echocardiography finding were within normal limit. Patient underwent craniotomy and cysts were removed and sent for histopathology.

CONCLUSION: Based on imaging, operative & histopathology finding, Primary Cerebral Intraventricular Hydatid Disease diagnosis was made. Surgery is the treatment of choice and en block removal of cyst without puncture should be done.

AN UNUSUAL CASE OF CENTRAL PONTINE MYELINOLYSIS

Goh Chong Ciek*¹; Soh Kok Ming²; Sangeetha Arumugam³; Gan Ee Leng²; Teh Pei Chiek²

¹Neurology, Hospital Tuanku Ja'afar Seremban, Malaysia, ²Medical, Hospital Tuanku Ja'afar Seremban, Malaysia, ³Radiology, Hospital Tuanku Ja'afar Seremban, Malaysia

INTRODUCTION: Central pontine myelinolysis (CPM) also known as osmotic demyelination syndrome is characterized by non-inflammatory demyelinating process involving primarily but not restricted to the pons. The commonest cause of CPM is the overzealous correction of hyponatremic state. It was also frequently reported among index cases of liver disease, malnutrition or alcoholism. We report a case of Hodgkin's lymphoma (HL) associated with normonatremia CPM.

REPORT: A 28-years-old lady with a newly diagnosed HL (Stage IV-B) on ABCD regime was referred to neurology team with unsteady gait. She presented with subacute onset, progressive bilateral lower limbs weakness and numbness without bowel or bladder incontinence. Physical examination revealed spastic paraparesis over both lower limbs without objective sensory impairment. Otherwise, she is well-nourished, intact in cognitive function without cerebellar involvement. Subsequent investigation shows sodium level within normal limit without a history of intravenous correction. Lumbar puncture did not suggest cerebrospinal fluid infiltration by HL. Magnetic resonance study demonstrated classical trident sign with central pontine T2 hyperintensity and restricted diffusion pattern.

CONCLUSION: Central nervous system involvement in HL is rare. Pathophysiology of CPM associated with HL need to be further studied in order to predict the clinical and radiological reversibility. Nonetheless, it is paramount to recognize lymphoma being either HL or Non-HL can both present with classical CPM.

**ARTIFICIAL INTELLIGENCE IN THE NEW MILLENNIA: DECIPHERING THE
MYSTERY OF ALZHEIMER'S DISEASE BY FUNCTIONAL MAGNETIC
RESONANCE IMAGING**

Buhari Ibrahim*¹; Subapriya Suppiah¹; Hasyma Abu Hassan¹; Mazlyfarina Mohamed²; Normala Ibrahim³; Iqbal M. Saripan⁴

¹*Department of Radiology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia,*

²*Fakulti Sains Kesihatan, Universiti Kebangsaan Malaysia,* ³*Department of Psychiatry, Universiti*

Putra Malaysia, ⁴*Department of Computer and Communication Sys. Engineering, Faculty of Engineering, Universiti Putra Malaysia*

OBJECTIVE: Alzheimer's disease (AD) is a type of dementia that afflicts millions of people worldwide. Early detection using resting state-functional magnetic resonance imaging (rs-fMRI) has promising prospects particularly with the development of artificial intelligence (AI) techniques such as machine learning (ML). AD is characterized by impaired functional connectivity (FC) of the default mode network (DMN) on rs-fMRI. The objective of our study was to evaluate the utility of AI in identifying the rs-fMRI FC features of AD.

MATERIALS AND METHODS: We source published literature, with particular medical-databases that evaluated the utility of AI in identifying rs-fMRI FC features of AD. Inclusion criteria were articles in English, original research and had controls for comparison. Exclusion criteria included review articles and articles that evaluated other dementias apart from AD.

RESULTS: Twenty-two articles were eligible, of which 13 articles evaluated AD alone and 9 articles evaluated AD and mild cognitive impairment. Our study revealed that the multiple classifiers method achieved a specificity of up to 95% for identifying and differentiating features of AD from healthy controls. The commonest method was multimodal support vector machine (SVM). Multiple kernel SVM was utilized for both FC pathway-based approach and region-based approach. FC was significantly decreased in nodes of the DMN, e.g, posterior cingulate cortex and medial prefrontal cortex in AD.

CONCLUSION: Machine learning is at the brink of achieving relevance in the clinical setting for diagnosing AD. Despite, technical advances in AI, much work is needed for replicable results in multi-scanner and multicentre studies.

A CASE OF SPORADIC CREUTZFELDT-JAKOB DISEASE

Lai Pick Yeen*¹; Muhammad Zabidi Ahmad¹; Preetvinder Singh Dheer Singh²

¹Radiology, Hospital Universiti Sains Malaysia (HUSM), Malaysia, ²Radiology, Hospital Raja Permaisuri Bainun, Ipoh, Malaysia

INTRODUCTION: Creutzfeldt-Jakob disease (CJD) is a rare, invariably fatal and rapidly progressive neurodegenerative prion disorder. Definitive diagnosis of CJD is established by histopathological confirmation, brain biopsy or autopsy materials. In addition to clinically progressive cognitive impairment, magnetic resonance imaging, electroencephalogram (EEG) and cerebrospinal fluid (CSF) analysis are crucial in excluding other differentials and allowed for prompt diagnosis of probable CJD.

REPORT: A 61 years old woman presented with one month history of progressive memory loss, on and off headache and blurring of vision. Her clinical symptoms deteriorated progressively to akinetic mutism with reduced conscious level for the past one week which required mechanical ventilation. In view of EEG showing generalized periodic epileptic discharge, neurologist initially treated as autoimmune encephalitis. Subsequent MRI evaluation revealed symmetrical hyperintense signal changes at bilateral caudate nuclei with cortical ribboning on diffusion weighted image and T2 fluid attenuated inversion recovery (FLAIR) sequences. CSF for 14-3-3 protein level was positive. Her condition was concluded to be consistent with sporadic CJD. Neuromedical team explained to her family regarding the course and prognosis of CJD. Patient ultimately succumbed to her illness three months after the onset of symptoms.

CONCLUSION: Although CJD is incurable, it is vital to make an early diagnosis so that proper management and prognosis could be explained to the family members and allowed the family members to focus on the goal of care. MRI is an essential component to evaluate the patient with progressive dementia, to exclude possibly etiologies and to provide prognostic information.

**IMAGING FEATURES OF EPIGASTRIC PARASITIC TWINNING: A CASE
REPORT**

Julian Santos*¹; Nonette A. Cupino¹

¹*Department of Radiology, Philippine General Hospital, Philippines*

INTRODUCTION: Parasitic twinning is a rare form of conjoined twinning in which an underdeveloped twin (parasite) is attached to a well-formed twin (autosite), varying in location and degrees of union. It occurs in approximately 1 in 1-2 million live births.

REPORT: We report a case of a newborn male who presented with a mass of tissue and four rudimentary supernumerary extremities arising from the anterior lower thorax and epigastrium. Multimodality radiologic imaging was performed on the patient in order to aid in surgical planning, comprising of radiographs, ultrasound, and computed tomography. Excision of the parasite was performed, and the autosite tolerated the procedure and sent home. Post-operatively, histopathologic findings were compared with the imaging findings. Within the excised parasite, loops of blind-ended small and large bowel, a horseshoe kidney with complete pelvocalyceal system and urinary bladder, and undescended testicles were noted, with absence of the other thoracoabdominal viscera.

CONCLUSION: Imaging is essential in delineating the anatomic abnormalities between parasitic twins, including extent of union as well as potentially life-threatening conditions such as complex congenital heart disease. Information from the imaging findings would aid the clinicians in planning for the medical and surgical management for the patient, which would ultimately determine the prognosis of the patient.

SPLENIC TORSION AND ACUTE APPENDICITIS AS CAUSES OF ACUTE ABDOMEN IN A CHILD WITH HETEROTAXY SYNDROME

Maria Crispina Cu Corral*¹; Nathan David P. Concepcion¹

¹*Pediatric Radiology, St. Luke's Medical Center-Quezon City, Philippines*

INTRODUCTION: Heterotaxy with polysplenia is a complex congenital syndrome associated with multiple variable cardiovascular and visceral anomalies.

REPORT: In this paper, the authors describe a case of an 11-year-old Filipino male, with known complex cardiac shunt defect, status post repair, who presented with a 2-day history of progressive general abdominal pain, vomiting and scrotal pain. Abdominal Computed Tomography (CT) was done and showed a predominantly left- sided liver but spanning the entire upper abdomen, left-sided gallbladder and enlarged left- sided appendix with appendicolith. An ectopically located spleen was also seen to be 2 cm below the pylorus. Another large, homogeneously enhancing structure was seen in the pelvic region just above the urinary bladder with probable torsion. An emergency exploratory laparotomy was done, confirming a congested appendix, with appendicolith. The previously mentioned pelvic mass was discovered to be an enlarged and violaceous spleen with torsion of its pedicle. They proceeded with an appendectomy and splenectomy.

CONCLUSION: This paper describes a pediatric case of wandering spleen in association with heterotaxy.

OSTEOPETRORICKETS: A RARE PARADOXICAL ASSOCIATION

Liew Xiao Ching*¹; Caroline Judy Westerhout¹

¹*Department Of Biomedical Imaging, University Of Malaya, Malaysia*

INTRODUCTION: Osteopetrosis is a hereditary bone disease. The rare paradoxical association between osteopetrosis and rickets is named osteopetrorickets. We herein report a case of osteopetrorickets of a pediatrics patient.

REPORT: A four-month-old boy presented to University Malaya Medical Centre with symptoms of acute bronchiolitis and conjunctivitis. He has history of recurrent upper respiratory tract infection, urinary tract infection and anemia, associated with failure to thrive. Clinical examination revealed dysmorphic features including macrocephaly with widened anterior frontanelle, micrognathia, hypertelorism and frontal bossing. Hepato-splenomegaly noted. No developmental delay. He has bilateral hearing impairment with obstructive sleep apnoea. Clinical examination and flexible nasopharyngeal scope showed narrowed nasal space with resulting stertor. Peripheral blood film demonstrated normochromic- normocytic anemia and leukocytosis. Total vitamin D was low. His serum calcium, phosphate, magnesium and albumin levels were normal. Serum lactate dehydrogenase and parathyroid hormone levels were elevated. Skeletal survey was performed. Chest radiograph showed generalized increased bone density, metaphyseal lucencies of proximal humeri, healed fractures at right clavicle, right lower ribs with flaring of anterior rib ends. Metaphyseal widening and growth arrest lines seen at long bones, with associated fraying and cupping. “Bone-in-bone” appearance noted at both ilia. Lateral spine radiograph displayed diffuse osteosclerosis. Based on the clinical and radiographic findings, he was diagnosed with osteopetrorickets. He was treated with Rocalcitriol capsule, 2000U cholecalciferol and iron (III)-hydroxide polymaltose complex solution.

CONCLUSION: Radiographs and biochemical markers play crucial roles in diagnosis and assessment of disease progression in Osteopetrorickets. This is imperative for administration of early and appropriate treatment for the patient.

SONOGRAPHIC RENAL LENGTH IN MALAYSIAN INFANT POPULATION - A HOSPITAL BASED CROSS-SECTIONAL STUDY

Aidi Aswadi Halim Lim*¹; Azian Abd Aziz¹

¹*Department of Radiology, International Islamic University Malaysia (IIUM)*

OBJECTIVE: The neonatal stage is an important period of organ development whereby an insult could result in organ impairment. The kidneys demonstrate similar predisposition. Renal ultrasonography is crucial in examining the kidneys, including the renal length. The lack of local data means Malaysian doctors are dependent on data from other populations, which may not be locally suitable.

- To determine the range of normal sonographic renal length amongst infant up to 1 year old in IIUMMC and HTAA Kuantan, Malaysia.
- To investigate sonographic renal lengths differences between male and female infants.
- To propose simple mathematical equations to estimate ideal renal length based on infant's age.

MATERIALS & METHODS: All children under the age of 1 who had normal ultrasound of the kidneys were included. Five age groups were formed based on examples from previous studies. Data were mined from the Radiology Information Systems of both centres. 463 cases were selected. Important data were obtained – the infant's age, gender and their sonographic renal lengths for both kidneys. Their respective sonographic renal lengths were tabulated according to their age group, following which a group mean and 95% confidence interval were derived.

RESULTS: We tabulated the means and 95% confidence intervals for both right and left kidneys separately for each group. No significant difference in the sonographic renal lengths between the genders identified. Two separate linear regression equations were formulated for the right and left kidneys.

CONCLUSION: We formulated a table of normal sonographic renal lengths according to age for infants, useful in day-to-day practice.

CAN THE SIMPLY QUANTIFIED BASIC MRI SEQUENCES DIFFERENTIATE PEDIATRIC MEDULLOBLASTOMA AND EPENDYMOMA ?

Nguyen Minh Duc*¹; Huynh Quang Huy²; Pham Minh Thong³; Mai Tan Lien Bang⁴;
Nguyen Chanh Thi⁴; Bilgin Keserci⁵

¹*Doctoral Program, Department of Radiology, Hanoi Medical University, Vietnam,*
²*Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam,* ³*Department of Radiology, Hanoi Medical University, Vietnam,* ⁴*Department of Radiology, Children's Hospital 02, Vietnam,* ⁵*Department of Radiology, Universiti Sains Malaysia, Malaysia*

OBJECTIVE: This study aimed to investigate the role of simply quantified basic MRI sequences in the differentiation between medulloblastomas and ependymomas in children.

Materials & Methods: Institutional review board approved this prospective study. Brain MRI protocol including sagittal T1W, axial T2W, coronal FLAIR, and axial T1W with contrast enhancement (T1CE) were assessed in 26 patients (mean age: 6.7 ± 3.4) including group 1 (22 medulloblastomas) and group 2 (4 ependymomas). The quantified ROI values of tumors and their ratios to parenchyma were collected and compared between two groups.

Multivariate logistic regression analysis was utilized to find the significant factors affected the diagnosis between two groups.

RESULTS: The T1-, T2-, FLAIR-, and T1CE-ROI values of group 1 and group 2 were 656.3 and 564.0; 1100.9, and 1205.5; 1131.1 and 1622.0 ($p < 0.05$); 801.6 and 593.5 ($p < 0.05$), respectively. The ratios of T1-, T2-, FLAIR-, and T1CE-ROI values to parenchyma of group 1 and group 2 were 0.8 and 0.9; 1.3 and 1.3; 1.1 and 1.3 ($p < 0.05$); 1.2 and 1.1, respectively. Multivariate logistic regression analysis showed that the T2-, T1CE-ROI values of tumors and the ratios of T1CE-ROI values to parenchyma were the most significant factors affected the diagnosis between two groups.

CONCLUSION: Our study suggests that T2-, T1CE-ROI values of tumors and the ratio of T1CE-ROI values to parenchyma derived from basic MRI sequences could be served as differential factors between pediatric medulloblastomas and ependymomas. Further research should be carried out to validate these findings.

SYNCHRONOUS MALIGNANCY OF MEDULLOBLASTOMA AND RENAL EPITHELIOID SARCOMA IN A NEWBORN

Nur Shezwani Akmal Mohd Sharif*¹; Chandran Nadarajan¹; Mohd Shafie Abdullah¹

¹*Radiology, Hospital Universiti Sains Malaysia Kubang Kerian, Malaysia*

INTRODUCTION: Synchronous malignancy is widely defined as multiple neoplasms that occur at the same period of time. Medulloblastoma is a common pediatric brain tumor that occur in the posterior fossa. Medulloblastoma is classified into 4 molecular subgroups; WNT, SHH, group 3 and group 4. Epithelioid sarcoma is a rare malignant mesenchymal neoplasm which characterized into distal and proximal subtypes. Distal subtype affects the distal extremities and proximal subtype affects the deeper soft tissue regions and rarely solid organs. The first case of renal epithelioid sarcoma was reported in 2017 by AliKhan M et al.

REPORTS: A baby girl was born via emergency caesarean section due to fetal distress. On day 10 of life, she was referred to the hospital for an abnormal increment of the head circumference. A CT brain done showed a large posterior fossa lesion causing obstructive hydrocephalus and cerebral edema. MRI brain done affirming the lesion and it is seen involving both supratentorial regions and falx cerebri. Craniectomy and tumor debulking surgery was done. Histopathology report was consistent with medulloblastoma (WHO grade IV). A mass in the lower pole of the left kidney was found incidentally during an MRI of the spine, done to rule out any drop metastasis. An ultrasound guided renal biopsy was performed and the histopathology result was consistent with epithelioid sarcoma.

CONCLUSION: Advancement in medical imaging is revealing more synchronous lesions than what was previously reported. We report an interesting synchronous lesion of medulloblastoma and renal epithelioid sarcoma in a newborn.

INIENCEPHALY CLAUSUS WITH CONGENITAL PERITONEOPERICARDIAL DIAPHRAGMATIC HERNIA: AN EXTREMELY RARE ASSOCIATION.

Seema Rohilla*¹; T Seetam Kumar¹

¹*Radio-Diagnosis, Pt Bd Sharma Pgims, Rohtak, India*

INTRODUCTION: Iniencephaly is an uncommon and lethal neural tube defect. Most cases are diagnosed prenatally by ultra-sonography(US); however, Magnetic Resonance Imaging(MRI) gives additive information in detecting associated anomalies. Here, we report the case of a neonate with iniencephaly clausus associated with hydrocephalus and congenital peritoneopericardial diaphragmatic hernia, which is an extremely rare association and has never been documented in the literature, best to our knowledge.

REPORT: A 26-year-old healthy primigravida at 32 weeks of gestation with uneventful antenatal history, after an abnormal prenatal US scan performed at an outside facility, came to our hospital. Fetal and neonatal MRI, as well as neonatal radiography, were performed, findings were hyperextended face with a short neck (like star gazing fetus) with significant shortening of the spinal column by marked lordosis and hyperextension of the malformed cervicothoracic vertebra. In the brain, there was gross hydrocephalus with thinned out cerebral cortex, communicating with enlarged cisterna magna. There was also partial herniation of spleen into the pericardial cavity as well as herniation of left lobe of the liver into the left pleural cavity with small bilateral lungs. With the above finding, Iniencephaly clausus with congenital peritoneopericardial and Bochdalek diaphragmatic hernia was diagnosed.

CONCLUSION: Fetal MRI has been validated as an efficient technique to evaluate equivocal fetal sonographic findings, especially for neurological anomalies. Since iniencephaly is a lethal syndrome, it's identification with other associated anomalies is of academic interest only.

RETROPERITONEAL TERATOMA IN AN INFANT: A CASE REPORT

Siti Dayana Mohamad*¹; Muhamad Zabidi Ahmad²; Nik Fatimah Salwati Nik Malek³

¹Radiology Department, Hospital Universiti Sains Malaysia, Malaysia, ²Radiology Department, Institut Perubatan dan Pergigian Termaju, Universiti Sains Malaysia, Bertam, Malaysia, ³Radiology Department, Hospital Sultanah Bahiyah, Kedah, Malaysia

INTRODUCTION: A retroperitoneal mass accounts for a wide range of differential diagnosis. In paediatric age group, among the most common retroperitoneal tumours are neuroblastoma, Wilms' tumour and retroperitoneal teratoma. Retroperitoneal teratoma is a type of neoplasm which originates from pluripotent cells that give rise to a wide spectrum of mature or immature tissues. It exhibits characteristic imaging findings of mixed solid cystic mass with soft tissue, fat, fluid and calcifications component.

REPORT: A newborn baby girl was referred to a paediatric surgical team for a left abdominal mass, which was initially discovered during antenatal follow up scan. The baby was otherwise well. Initial plain abdominal radiograph and ultrasound abdomen revealed a large left retroperitoneal mass with mixed solid cystic component and calcifications within. Computed tomography images further delineate the mass which was diagnosed as left retroperitoneal teratoma. Surgical excision was performed. Histopathology resulted as immature teratoma. The baby did well postoperatively and was discharge home.

CONCLUSION: Teratoma accounts for approximately only 3% of all childhood malignancies, with its most common primary site being the sacrococcygeal region. Even though retroperitoneal teratoma in infancy commonly present as a large mass, most are benign lesions with surgical therapy being the definitive treatment. Nonetheless, in view of its potential for malignancy; clinical, radiological and pathological correlation are extremely important in planning the course of management and patient follow up.

CYSTIC HYGROMA ASSOCIATED WITH ANEURYSM OF THE COMMON FACIAL VEIN: A CASE REPORT

Palwasha Gul*¹

¹*Bolan Medical Complex Hospital, Pakistan*

INTRODUCTION: Cystic hygromas (CH) are malformations of lymphatic system. It consists of internal macrocystic lesions and have poor communication with normal lymphatic channels. Lymphangiomas are usually classified as capillary, cavernous or cystic. CH most commonly occur in the cervicofacial regions, particularly at the posterior cervical triangle. Cystic hygroma can be associated with aneuploidic anomalies and non aneuploidic anomalies. Venous anomalies are rarely seen with cystic hygromas .

REPORT: A 3 years old baby resident of Afghanistan presented with left submandibular soft swelling since birth. Mother gave history of aspiration of the lesion by a doctors few months back in Afghanistan. CE CT done showed hypodense cystic lesion consistent with CH with a dilated common facial vein was seen within the postero inferior aspect of cystic hygroma . Ectatic lingual vein was passing medially to it. Under GA transverse incision given in neck crease. Per operatively were seen traversing through the lesion as mentioned by the CT report and also depicted by per operative hand held doppler USG. All the dissected specimen along with its vascular component was sent for histopathology. Tissue diagnosis showed lymphangioma (cystic hygroma).

CONCLUSION: Cystic hygroma is a common and manageable lesion . Association of cystic hygroma has not been well established with venous aneurysms or vascular anomalies but cases are reported in the literature and with advanced imaging such as doppler USG and CE CT / MRI might bring more cases into light.

OSSEOUS HEMANGIOMA: A MULTIMODALITY PERSPECTIVE

Siti Nadiah Mohamad Nawj*¹; Teh Yong Guang²

¹*Department Of Radiology, Sabah Women And Children's Hospital, Malaysia,* ²*Faculty Of Medicine, University Malaysia Sabah, Malaysia*

INTRODUCTION: Primary intraosseous cavernous hemangiomas (PICHs) is a benign vascular bone tumor that accounts for approximately 0.7% to 1.0% of all bone tumors, that is usually found in the vertebral column and rarely in the skulls. Imaging studies play an important role in the management of this rare benign entity, specifically to avoid high-risk investigations and associated complications.

REPORT: A 24 days of life baby girl presented with swelling on the left temporal region since birth, which had been progressively increasing in size. Birth history was uneventful. On examination, the size of the lesion on the left fronto-temporal region was about 3x3cm. In consistency, the lesion was firm and non-mobile. Ultrasound cranium noted intracranial extra-axial left temporal mass. MRI and MRA brain requested for further assessment. On MRI, noted a well circumscribed extra-axial enhancing mass extending from the inner and outer table of the skull in the left fronto-temporal region. Complementary skull radiograph shows a smooth overlying soft tissue component with no internal calcification at the region of interest. Complementary ultrasound shows heterogeneous soft tissue components with no significant Doppler signal. Radiological diagnosis was given as left temporal intraosseous cavernous hemangioma.

CONCLUSION: Primary intraosseous cavernous hemangiomas (PICHs) of the skull is a rare benign vascular tumor. In this case, imaging helped reduce the need for invasive procedures that carry an inherent risk of morbidity. Consequently, clinicians were able to tailor their surgical strategies for a curative outcome.

**ACUTE TRANSVERSE MYELITIS PROGRESSING TO SPINAL CORD ATROPHY.
A CASE REPORT.**

Azian Abd Aziz*¹; Zarifa Zainuddin²; Azhar Mahmud³; Farah Syuhada Mohd Radzi³

¹Radiology, International Islamic University Malaysia, Malaysia, ²Radiology, Hospital Tengku Ampuan Afzan Kuantan, Malaysia, ³Paediatric, Hospital Tengku Ampuan Afzan Kuantan, Malaysia

INTRODUCTION: Acute transverse myelitis (ATM), usually presents with lower limb weakness, back pain, and sphincter disturbances in childhood. Magnetic resonance imaging (MRI) commonly shows enlargement and abnormal signal of the spinal cord. When spinal cord atrophy appears during the disease course, the outcome becomes unfavorable. Spinal cord atrophy following ATM in children is uncommon. We report a 9 year old girl with spinal cord atrophy following acute transverse myelitis and no motor recovery occurred .

REPORT: The patient presented at 7 years old for acute lower limb weakness which quickly progresses to inability to move or feel both legs. She also had urinary incontinence and was not able to sense defecation. There was no history of trauma or previous illness. Urgent MRI spine showed expansion of the cord with increased T2 signal at T5 to T9 and T10 to L1 levels. These lesions appear isointense on T1 and did not exhibit any enhancement post IV gadolinium. Based on the clinical presentation and MRI findings, a diagnosis of acute transverse myelitis was made. She had courses of IV Methylprednisolone, plasmapheresis and IV Immunoglobulin therapy which all failed to show any improvement. Nerve conduction study is consistent with axonal motor neuropathy. Follow-up MRI spine 1 year later shows atrophy of the spinal cord from T11 to T12.

CONCLUSION: Spinal cord atrophy must be considered if a pediatric patient with inflammatory spinal cord lesion does not show motor recovery. Spinal cord atrophy on MRI suggests an indicator of poor prognosis in pediatric patients with transverse myelitis.

MASSIVE HEMOPTYSIS IN PAEDIATRIC AGE GROUP : CASE REPORT**JULIANA FAIRUZ MAKTAR, HAMZAINI ABDUL HAMID**Juliana Fairuz Maktar*¹; Hamzaini Abdul Hamid¹¹*Radiology, HCTM, Malaysia*

INTRODUCTION: Hemoptysis is an acute and alarming presentation especially in paediatric age group. These concern mainly towards the child, the family and the paediatricians. There are several causes that can cause hemoptysis; with the commonest etiology is lower respiratory tract infection. Choices of imaging modalities vary from plain radiograph, CT to MRI, mainly due to its benefit versus outcomes in terms of the radiation aspect. We report a rare occurrence of angio invasive aspergilosis of the pulmonary artery presented with massive hemoptysis in an 8-year-old child.

REPORT: An 8 year-old-girl with underlying Acute Lymphoblastic Leukemia (ALL) underwent chemotherapy regimen in our center. However, the regimen was truncated due to febrile neutropenia. She then developed opportunistic infection of aspergillosis, which shows positive blood result for its antigen and was on anti- fungal treatment. In the ward, complicated with two episodes of massive hemoptysis, which worsened her condition. CTA Thorax showed left lung cavitating lesions with multiple lung nodules and left descending pulmonary artery mycotic aneurysm, which represent angio invasive aspergillosis.

CONCLUSION: Diagnostic workup and suggested management that may relate to better outcome were discussed.

EPIGNATHUS TERATOMA IN A CASE OF FACIAL DUPLICATION - A CASE REPORT

Nurdillah Idris*¹; Victor Chong Xing Dao²; Asiah Kassim³; Zakaria Zahari⁴; Rohazly Ismail⁵; Che Zubaidah Che Daud⁵; Zaleha Abd Manaf⁵; Normawati Mat Said⁵; Syazarina Sharis Osman¹

¹Department of Radiology, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical, Malaysia, ²Department of Radiology, Paediatric Institute, Hospital Kuala Lumpur, Malaysia, ³Respiratory Unit, Paediatric Institute, Hospital Kuala Lumpur, Malaysia, ⁴Surgery Unit, Paediatric Institute, Hospital Kuala Lumpur, Malaysia, ⁵Department of Radiology, Paediatric Institute, Hospital Kuala Lumpur, Malaysia,

INTRODUCTION: Hemoptysis is an acute and alarming presentation especially in paediatric age group. These concern mainly towards the child, the family and the paediatricians. There are several causes that can cause hemoptysis; with the commonest etiology is lower respiratory tract infection. Choices of imaging modalities vary from plain radiograph, CT to MRI, mainly due to its benefit versus outcomes in terms of the radiation aspect. We report a rare occurrence of angio invasive aspergilosis of the pulmonary artery presented with massive hemoptysis in an 8-year-old child.

REPORT: An 8 year-old-girl with underlying Acute Lymphoblastic Leukemia (ALL) underwent chemotherapy regimen in our center. However, the regimen was truncated due to febrile neutropenia. She then developed opportunistic infection of aspergillosis, which shows positive blood result for its antigen and was on anti- fungal treatment. In the ward, complicated with two episodes of massive hemoptysis, which worsened her condition. CTA Thorax showed left lung cavitating lesions with multiple lung nodules and left descending pulmonary artery mycotic aneurysm, which represent angio invasive aspergillosis.

CONCLUSION: Diagnostic workup and suggested management that may relate to better outcome were discussed.

**CONGENITAL UNILATERAL HYDROCEPHALUS IN NEONATE DUE TO
MEMBRANOUS OCCLUSION OF FORAMEN OF MONRO, MANAGED
SUCCESSFULLY WITH VENTRICULO-PERITONEAL SHUNTING. A RARE
CASE REPORT IN THE PHILIPPINES.**

Ernie G Bautista II*¹

¹*Radiology, Quezon City General Hospital, Philippines*

INTRODUCTION: Congenital unilateral hydrocephalus is a disorder characterized by a dilatation of one of the lateral ventricles. The estimated incidence of hydrocephalus is 0.5 – 3 per 1000 live births while the incidence of isolated hydrocephalus is between 0.4 and 0.9 per 1000 live births. Due to limited peer-reviewed research and rarity of the disease in the Philippines, its incidence rate was rarely documented.

REPORT: A male newborn delivered full term via Caesarean section to a 30-year-old G1P1 (1001) with unremarkable maternal history. Prenatal diagnosis of ventriculomegaly on ultrasound was made with noticeable increase in bi-parietal diameter during 3rd trimester of pregnancy. The newborn presented with clinical features of raised intracranial pressure. Repeat cranial ultrasound postnatal was done and still shows ventriculomegaly. Patient was referred to a neurosurgery service for further management. Plain cranial computed tomography scan was done and revealed severely dilated left lateral ventricle and thinned out ipsilateral cerebral cortex with preservation of the meninges, interhemispheric falx and posterior fossa structures. Radiologic findings are attributed to membrane occlusion of foramen of Monro. Patient underwent ventriculo-peritoneal shunting in the 2nd hospital day and tolerated the procedure. Patient was discharged without post-operative complications and was scheduled for interval radiologic follow-up.

CONCLUSION: We conclude that the ultrasound is reliable to suspect the pre-natal diagnosis of unilateral hydrocephalus and to be able to investigate the possible cause of this pathology. The role of cranial CT scan in diagnosis and follow-up is emphasized.

CONGENITAL TALIPES EQUINOVARUS IN TWINS

Hendra Toreh*¹; Muhammad Ilyas¹, Rafika Rauf¹, Dario Nelwan¹

¹Radiology, Universitas Hasanuddin Makassar, Indonesia

INTRODUCTION: CTEV is one of the most common serious congenital musculoskeletal anomalies with a worldwide incidence of 1 in 1000 live births. Genetic factors play a role in the etiology of clubfoot, given that nearly 25% of all cases are familial. Males are more frequently affected (2:1 male to female ratio), and such a finding is consistent across ethnic groups. CTEV is bilateral in approximately 50% of all cases.

REPORT: A twins 8 years old male presented walking disorder is examined with X-ray. Bilateral foot X-ray revealed a defect in bones that represent Congenital Talipes Equinovarus. We also found a mixed developmental delayed also observation of moderate stunting and nutritional marasmus.

CONCLUSION: The CTEV deformity is due to the abnormal relationship of the tarsal bones: the navicular and calcaneus are displaced around the tarsus. Correction of this abnormal tarsal relationship is resisted by pathological contracture of the associated softer parts. CTEV is evaluated on dorsoplantar and lateral radiographs of the foot. The dorsoplantar view is obtained with the beam angled 30° to the horizontal and centered on the talar neck. The radiographic analysis of CTEV is focused on the talocalcaneal complex. Most important are the talocalcaneal angles, which are measured on dorsolantar and lateral radiographs. CTEV in twins is a rare case but important to be diagnosed and treatment. Plain X-Ray image is the best choice of radiological examination to diagnose CTEV.

IN-UTERO AUTOAMPUTATED OVARIAN CYST MIMICKING A MESENTERIC DUPLICATION CYST.

Vidhyah Sivakumar*¹; Caroline Judy Westerhout¹

¹*Biomedical Imaging, University Malaya Medical Centre, Malaysia*

INTRODUCTION: Ovarian cyst autoamputation is a rare condition, especially in the paediatric population. It may be explained by chronic adnexal torsion and subsequent devascularization leading to infarction/necrosis. We report an abdominal cystic mass diagnosed in-utero and the following radiological, surgical and histological findings.

REPORT: A female infant was referred to the surgical unit for an antenatally diagnosed abdominal mass. Prenatal ultrasonography revealed a right-sided abdominal cystic mass. Otherwise, the child was born at term via spontaneous vaginal delivery with good APGAR score. Serial postnatal ultrasonography revealed an encapsulated unilocular cystic mass at the mid to lower right abdomen, demonstrating hypo- and hyperechoic walls with layering of echogenic material within. Subsequent contrasted CT and plain MRI of the abdomen confirmed the presence of a right sided abdominal cystic lesion with fluid-fluid level, without communication to the adjacent bowel loops. A radiological diagnosis of mesenteric duplication cyst was made. Laparoscopic assessment and excision of the abdominal cyst was performed at 1 and 1/2 months of life. Intraoperatively, a free-floating cyst was seen in the abdominal cavity with loose adhesions between the cyst and the omentum. The right ovary was not visualised, while the left ovary was normal, suggesting an in-utero autoamputation. Histopathological analysis demonstrated necrotic cyst with blood and degenerate cellular debris. With an uneventful post-operative course, the child was discharged well on the post-operative 5th day.

CONCLUSION: Ovarian cyst autoamputation is a rare clinical entity which is usually asymptomatic and does not compromise fertility if the contralateral adnexa are normal.

UNUSUALLY LARGE INFLAMED MECKEL'S DIVERTICULUM IN A PAEDIATRIC PATIENT

Ng Bi Yoke*¹; Chan Wai Yee¹; Raja Rizal Azman¹

¹*Department Of Biomedical Imaging, University Of Malaya, Malaysia*

INTRODUCTION: Meckel's diverticulum (MD) occurs in 2% of the population and generally manifests complications by the age of two years old. The presentation of complicated MD is nonspecific, which includes abdominal pain, intermittent intestinal obstruction and gastrointestinal bleed. Despite being the most common congenital anomaly of the gastrointestinal tract, diagnostic difficulty is often encountered by both clinicians and radiologists. We present a rare case of an usually large infected MD and its imaging manifestations.

REPORT: A 11-month-old 6.3kg baby boy presented to the emergency department with symptoms of subacute intestinal obstruction associated with low-grade fever for one day. Abdominal examination showed mildly distended abdomen with normal bowel sounds. His total white blood count and serum C-reactive protein were raised. Abdominal radiograph showed paucity of bowel gas at the right iliac fossa with no bowel dilatation. Ultrasound abdomen revealed a well-defined thick-wall intra-abdominal cystic lesion with echogenic debris in the right para-umbilical region. Computed tomography confirmed the presence of right sided intra-abdominal cystic lesion with surrounding inflammatory changes and a suspicious tract attaching the cyst to the umbilicus. Provisional diagnosis of infected mesenteric or urachal cyst was given based on imaging findings. Emergency exploratory laparotomy was carried out. Intra-operation a large inflamed MD measuring 4.0cm in diameter was found and excised.

CONCLUSION: MD is often overlooked on routine imaging modalities and the diagnosis is always challenging to both clinicians and radiologists. This case provides novel insights into this condition to enable exact diagnosis in future practice.

LATE PRESENTATION OF PLEUROPULMONARY BLASTOMA : CLINICAL RADIOLOGICAL DIAGNOSIS

Tasnim M*¹; Noor Hasnita Im¹; Nor Hayati Yunus²

¹Radiology, Hospital Raja Perempuan Zainab II, Malaysia, ²Pathology, Hospital Raja Perempuan Zainab II, Malaysia

INTRODUCTION: Pleuropulmonary blastoma is a very rare, highly aggressive and malignant tumour that originates from either the lungs or pleura. It occurs mainly in children aged less than five or six years. Its treatment requires tumour excision and chemotherapy. Three pathologic types ; Type I is cystic, type II is a combined cystic and solid tumour; and type III is solid and it can be accompanied by haemorrhage and necrosis. Pleuropulmonary blastoma type I has good prognosis, type II and III variants have lower survival. We report a 15-year-old girl, a rare case of late presentation of pleuropulmonary blastoma, pointing to the clinical-radiological diagnosis.

REPORT: 15 years old girl with onset of fever, cough, and lethargy for 3 days. Clinically febrile, mild tachypnoeic with good saturation, and hemodynamically stable. There was reduced air entry in the left lung with crepitations at basal region.

Chest radiograph revealed homogenous opacity occupying the whole left hemithorax. CT thorax showed ill-defined large solid mass in the left thoracic cavity measuring approximately 11.3x16.5x13.5cm (APxWxCC) and mediastinal shift. It has foci of haemorrhage within. No calcification, fat or cystic component.

Tissue biopsy obtained under CT guidance and HPE result was pleuropulmonary blastoma. She was planned for neo-adjuvant chemotherapy to reduce the tumor size prior to tumor resection.

CONCLUSION: Pleuropulmonary blastoma is rare childhood tumour which occur in children aged less five or six years. Only one case report has been published on late presentation of pleuropulmonary blastoma, in a 14 year old boy (Nagre et al, 2017).

DISSEMINATED TUBERCULOSIS PRESENTING AS CHRONIC ABDOMINAL MASS

Lim Guan Tatt*¹; PG Mohammad Nizam*¹; Anithaa Tangaperumal¹

¹Radiology, SWACH, Malaysia

INTRODUCTION: The diagnosis of pediatric tuberculosis is difficult due to atypical presentation. The frequently reported presentation of pediatric tuberculosis includes mediastinal lymphadenopathies, CNS infection or military disease. We report of an 11 years old boy who presented with chronic abdominal mass with no constitutional symptoms.

REPORT: 11 years old boy with background of beta thalassemia carrier presented with 7 months history of enlarging painless right upper quadrant mass. No altered bowel habits or anemic symptoms. No loss of weight, loss of appetite or night sweats. The mass is firm, non-fluctuating, fixed to anterior abdominal wall and measures 5 x 7cm. Ultrasound showed a heterogeneous hypoechoic intramuscular lesion within calcification within right external oblique muscle. Incidentally noted multiple hypoechoic scattered liver lesions some with central calcification. CECT shows rim enhancing intramuscular lesion with septations, located between right external and internal oblique muscle measuring 1.8 x 3.5 x 5.0cm with hypodense liver lesions, some with coarse calcification, peritoneal lesions and minimal ascites. There was also multiple mediastinal and right hilar lymphadenopathies with areas of necrosis and calcifications as well as lung and pleural nodules of varying size within bilateral lung. Abdominal wall biopsy showed necrotizing granulomatous inflammation. However no demonstrable acid fast bacilli seen on Zeihl Neelson stain. Sputum culture and gene expert tests are negative for tuberculosis.

CONCLUSION: Initial diagnosis of soft tissue sarcoma was suspected in absence of clinical symptoms. Imaging and histological finding supports the diagnosis of disseminated tuberculosis in endemic areas.

HYBRID LESION OF CYSTIC ADENOMATOID MALFORMATION AND BRONCHOPULMONARY SEQUESTRATION: A CASE REPORT

Ong Li Xin*¹; Yik Weng Fai¹; Preetvinder Singh¹; Noor Khairiah A. Karim²

¹*Radiology Department, Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia,* ²*Regenerative Medicine Cluster, Imaging Unit, Advanced Medical And Dental Institute, Universiti Sains Malaysia, Bertam, Kepala Batas, Pulau Pinang, Malaysia*

INTRODUCTION: Congenital cystic adenomatoid malformation (CCAM) and bronchopulmonary sequestration (BPS) are rare congenital pulmonary diseases. We describe a child presented with hybrid lesion of CCAM and BPS, an extremely rare condition that is surgically treatable once correct diagnosis is made.

REPORT: A seven-year-old boy presented with one week history of cough and left upper abdominal pain. He developed acute onset of shortness of breath which required ventilator support. Physical examination revealed reduced air entry at the left thoracic region. Biochemical tests showed raised infective parameters. Left hemithorax opacities with tracheal and mediastinal shift to the right were seen on his chest radiograph. Ultrasonography demonstrated a large mass at the left hemithorax. A vessel was seen arising for the abdominal aorta crossing within this lesion on colour Doppler study. Contrast enhanced computed tomography revealed a heterogenous enhancing multicystic mass occupying the left hemithorax with no connection to the left bronchial tree. A feeding artery from a branch of the abdominal aorta with venous return to the left pulmonary vein were seen. With the multicystic features and abnormal blood supply of this left mass, diagnosis of hybrid lesion of CCAM and BPS were made. Child underwent resection of mass which intraoperatively confirmed the findings of BPS. Histopathology confirmed the diagnosis of CCAM. Child was discharged well and currently on routine follow up.

CONCLUSION: Diagnosis of hybrid lesion is difficult with clinical history. Imaging techniques are helpful to obtain the correct diagnosis and making appropriate treatments which are life saving for the patient

EMBRYONAL RHABDOMYOSARCOMA OF BILE DUCT IN A CHILD: A CASE REPORT

Ong Li Xin*¹; Tan Ling Sze¹; Tan Suzet¹; Noor Khairiah A. Karim²

¹Radiology Department, Hospital Taiping, Perak, Malaysia, ²Regenerative Medicine Cluster, Imaging Unit, Advanced Medical And Dental Institute, Universiti Sains Malaysia, Bertam, Kepala Batas, Pulau Pinang, Malaysia

INTRODUCTION: Embryonal rhabdomyosarcoma (ERMS) is a rare tumour in children. Clinical presentation and imaging features often mimic a benign choledochal cyst. Key distinguishing feature is the presence of solid component in the tumour. Nonetheless, imaging also plays an important role for pre-operative planning and staging.

REPORT: We describe a 15-month-old girl who initially presented with diarrhoea and pale stool. Clinically, she was jaundice with presence of hepatomegaly. Her biochemical examination revealed elevated total bilirubin level with direct bilirubinemia. Serum alkaline phosphatase was also increased. Abdominal ultrasonography was performed, revealing a large complex thick-walled cystic lesion with internal septations at the porta hepatis. Common bile duct (CBD) was dilated with a focal fusiform sac seen. Contrast enhanced computed tomography showed a large irregular heterogeneously enhancing hypodense mass at the porta hepatis with bubbly appearance. The CBD was dilated. Magnetic resonance cholangiopancreatography revealed an enhancing mass with solid cystic component at the porta hepatis encasing the portal vein, hepatic artery and involving the whole length of the CBD. In view of the findings, the child underwent excision of the tumour and roux-en-Y hepaticojejunostomy, with histopathological examination confirming the diagnosis of ERMS of bile duct. Following the surgery, she had a course of chemotherapy and was well on subsequent surveillance follow ups.

CONCLUSION: ERMS can mimics choledochal cyst in clinical presentation and imaging. Each of the different imaging modalities has its own role for characterisation, localisation of the mass and staging purpose prior to surgical intervention.

SEPTO OPTIC DYSPLASIA PLUS: A CASE REPORT

Nur Atifah Mohd Naim*¹; Anithaa Tangaperumal¹

¹*Department Of Radiology, Sabah Women And Children's Hospital, Malaysia*

INTRODUCTION: Septo-optic dysplasia (SOD) is a rare congenital condition, initially described by Reeves in 1941. Also known as de Morsier syndrome, its relative incidence is 1/10,000 live births. Most SOD cases are sporadic and several etiologies have been postulated, like viral infections, gestational diabetes, environmental teratogens, vascular or degenerative injury and genetic mutations. Term SOD-plus was suggested by Miller in 2000 to differentiate those patients whose global development delay and motor deficits couldn't be explained by corpus callosum hypoplasia alone and may manifest other underrecognized cortical malformations, such as schizencephaly, polymicrogyria, and gray matter heterotopias. Clinical diagnosis requires ophthalmological examination, magnetic resonance imaging (MRI), and pituitary hormone analyses.

REPORT: 7 month-old girl, born term with birth weight of 3.4kg presented with global developmental delay. On examination noted anisocoria, horizontal nystagmus, bilateral hearing loss and central hypotonia with developmental age of 3 to 6 months old. Bedside cranial ultrasound noted left germinolytic cyst with mild ventriculomegaly. MRI shows absent septum pellucidum, small anterior pituitary with poorly developed posterior pituitary and small optic chiasm. Additional findings are bilateral parietal cleft lined by grey matter communicating with ventricles in keeping with closed-lip schizencephaly with subependymal grey matter heterotopia. The corpus callosum is normal. The visualized optic nerves grossly preserved.

CONCLUSION: The disorder is difficult to classify because of the diversity of clinical and pathologic manifestations. Early recognition in diagnosing septo-optic dysplasia is vital in early multidiscipline management with consequent reduction of morbid-mortality.

TO BE OR NOT TO BE; DILEMMA IN DIAGNOSING DISORDERS OF SEXUAL DEVELOPMENT (DSD)

Juliana Fairuz Maktar*¹; Hamzaini Abdul Hamid¹

¹*Radiology, HCTM, PPUKM, Malaysia*

INTRODUCTION: Disorders of sex development (DSD) is a challenging diagnosis in the newborn and pediatric age group. It is rare intersex condition.

REPORT: Radiological examination and diagnostic value in illustrating the difficulties and challenges in diagnosing DSD are elaborated in this case report. Delaying in management will give negative impact to the patient and unnecessary psychoemotional stress. Hence measures need to be taken to avoid these situations.

CONCLUSION: Delaying in management will give negative impact to the patient and unnecessary psychoemotional stress. Hence measures need to be taken to avoid these situations.

PHACE SYNDROME: A CASE REPORT AND ITS RADIOLOGICAL IMAGING CHARACTERISTICS

Norsarah Shamsudin*¹; Marina Sophianna Marzukie¹; Rohazly Ismail¹; Leong Yuh Yang²

¹*Radiology Department, Hospital Wanita Dan Kanak-Kanak Kuala Lumpur, Malaysia,*

²*Radiology Department, Hospital Canselor Tuanku Muhriz, Malaysia*

INTRODUCTION: The acronym PHACE summarizes the most important manifestation of rare neurocutaneous syndrome. Posterior fossa malformations, segmental hemangiomas, arterial anomalies, cardiac defects, eye abnormalities, and sternal or ventral defects (PHACES) are an association defined by segmental cutaneous hemangioma and malformations in the brain, neck, and/or thorax. PHACE syndrome is a rare but probably underdiagnosed neurocutaneous condition.

REPORT: We reported a case of complete phenotype expression of PHACE syndrome in a 3 years 3 months old Chinese girl who was previously diagnosed with PHACE syndrome at the age of 6 months old. Initial MRI at the age of 6 months old demonstrated frontosegmental, right periorbital and right-sided posterolateral neck infantile hemangioma with hypoplasia of right cerebellum and right inferior vermis. MR reassessment of the facial and neck meningioma was done at the age of 3 years 4 months old shows multiple abnormalities of the cerebral vasculature as well as cardiovascular were observed on magnetic resonance imaging /magnetic resonance angiography (MRI/MRA).

CONCLUSION: We stress that it is important always to consider the existence of this syndrome in all patients with facial hemangioma and highlighted the importance of MRA brain and neck for spectrum/diagnosis of PHACE syndrome which contribute risk stratification of developing arterial ischaemic stroke (AIS).

ABDOMINAL CYSTIC LYMPHANGIOMAS, A RARE ENTITY PRESENTING AS JEJUNAL VOLVULUS IN A CHILD

Chitra Supuramaniam*¹; Anand Sanmugam²; Chow Tak Kuan³; Anushya Vijayanathan⁴

¹Radiology, Hospital Tengku Ampuan Rahimah, Malaysia, ²Paediatric, Pusat Perubatan Universiti Malaya, Malaysia, ³Pathology, Pusat Perubatan Universiti Malaya, Malaysia,

⁴Radiology, Pusat Perubatan Universiti Malaya, Malaysia

INTRODUCTION: A 3 years old boy presented to the emergency department with 3 days history of central abdominal pain. No other related symptoms. He was afebrile, and his vital signs were normal. There was no discernible abdominal distension on examination. However tenderness over the epigastric region with guarding were elicited. Blood investigations were normal.

REPORT: An abdominal radiograph showed air filled stomach with paucity of bowel gas in the central abdomen. Ultrasound noted a large cystic fluid filled lesion within abdomen, with some dilated bowel loops. A contrast enhanced computer tomography (CECT) of the abdomen and pelvis was performed showed reversal relationship of the SMA/SMV and a typical 'whirlpool sign' at the level of D1/D2. No evidence of bowel ischemia. There was a well-defined, non-enhancing, hypodense, loculated lesion at the right side of the abdomen extending to the pelvis measuring 4.5 x 4.4 x 12.0cm with the Hounsfield unit (HU) of 30-40 which was interpreted as a large focal fluid collection.

CONCLUSION: Intraoperatively the cystic lesion was noted to be adherent to the jejunum with midgut volvulus. The volvulus was de-rotated 540 degrees. A large multi-loculated cyst was found on either side of the mesentery along a 5cm length of jejunum, 35cm from the duodeno-jejunal flexure. Jejunal resection and primary small bowel repair was performed. No malrotation or Ladd's band noted intraoperatively. The resected bowel with the cyst was sent for histological examination which showed dilated cystic spaces of varying sizes within fibroadipose tissue in keeping with cystic lymphangioma.

MESENTERIC CYST WITH SMALL BOWEL VOLVULUS - A DIAGNOSTIC CHALLENGE : A REPORT OF 2 CASES

Tjun Hoe Lui*¹; Nur Yazmin Yaacob¹; Normawati Mat Said²

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia, ²Paediatric Radiology, Hospital Wanita Dan Kanak-Kanak Kuala Lumpur (WCH), Malaysia

INTRODUCTION: Mesenteric cysts are rare, benign intra-abdominal masses in paediatric population. It is uncommonly associated with small-bowel volvulus. Pre-operative diagnosis is challenging due to lack of specific symptoms. Ultrasound and CT are useful to aid surgical planning. We report two cases of mesenteric cysts associated with small-bowel volvulus : one with malrotation and the other without.

REPORT:

Case 1: 3 year old boy with vomiting, abdominal pain and distension for one week.

Ultrasound showed a large multiloculated suprapubic cystic mass, suggestive of mesenteric cyst. Whirlpool sign demonstrated, indicating volvulus.

Case 2: 7 year old girl with abdominal pain and distension for 2 days. Ultrasound showed a huge multiseptated intraperitoneal cystic mass. CT demonstrated midgut malrotation and volvulus.

Both patients underwent surgical excision of cyst and small bowel resection with uneventful post-operative recovery. Histopathological report confirmed the diagnosis.

CONCLUSION: Small-bowel volvulus can occur with mesenteric cysts having normal rotation and fixation. Volvulus is potentially life threatening and should be considered in a child with mesenteric cyst presenting with acute abdomen. Surgical treatment should not be delayed to prevent significant morbidity and mortality. Ultrasound and CT are useful to make early pre-operative diagnosis and aid surgical planning. These cases support the two different theories on the etiology of mesenteric cyst with volvulus. Firstly, mesenteric cyst may arise from ectopic lymphatics in mesentery that lack communication with lymphatic system. Mesenteric cyst could act as a lead point causing volvulus in absence of malrotation. Secondly, mesenteric cyst could be an acquired anomaly due to malrotation and chronic intermittent midgut volvulus.

APPENDICITIS:A TALE OF COMMON WITH ATYPICAL STORY

Siti Nur Adni Mohd Ali*¹; Ahmad Hadif Zaidin¹; Nur Asma Sapiai¹; Mohd Shahrulsalam
Mohd Shah¹

¹*Department of Radiology, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia, Malaysia*

INTRODUCTION: Acute appendicitis is one of the commonest causes of acute abdomen in pediatric age group. Typical presentation of abdominal pain, which accompanied by vomiting, loose stool, fever and leucocytosis may assist in establishing the diagnosis. However, these symptoms may not easily elicit in younger age group. Thus, making diagnosis of acute appendicitis quite challenging.

REPORT: A 2-year-old boy presented with history of fever, poor oral intake, vomiting and loose stool. There is no history of upper respiratory tract symptoms, abdominal pain, recent travelling or dengue outbreak in his neighborhood area. No abdominal tenderness was elicited upon examination. His blood work up showed leucopenia with normal platelet count and dengue serology was negative. He was admitted with diagnosis of viral fever. On day 4 of hospitalization, he had spiking temperature, persistent bilious vomiting with abdominal distension and mucus in the stool. Abdominal ultrasound revealed dilated small bowel with right iliac fossa and pelvic collection. Normal appendix was not visualized, no target sign or pseudo-kidney sign were seen. Contrast enhanced CT abdomen revealed additional finding of rounded hyperdense-lesion in tubular blind-ended structure with its tip in the pelvic collection. Revised diagnosis of perforated appendicitis with appendicolith was made. Patient underwent emergency operation with intra-operative findings revealed perforated tip of appendix, presence of intraluminal appendicolith and interloop collection.

CONCLUSION: Ultrasound has a very good sensitivity, specificity and accuracy in diagnosing acute appendicitis. However, in case of inconclusive ultrasound findings, CT scan can aid in diagnosis as appendicolith are better appreciated in CT scan.

COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN: ROLE OF CXR ON ADMISSION IN PREDICTING OUTCOME OF PNEUMONIA.

Nor Fauziah Muhamad Handar*¹; Faizah Mohd Zaki¹; Erica Yee Hing¹; Hamzaini Abdul Hamid¹; Hasniah Abdul Latif²; Rozita Hod³

¹Radiology, Universiti Kebangsaan Malaysia, ²Paediatric, Universiti Kebangsaan Malaysia,

³Community Health, Universiti Kebangsaan Malaysia

OBJECTIVE: To determine the association between chest radiograph (CXR) pattern with clinical severity of community acquired pneumonia (CAP) on admission and to identify the correlation between clinical outcomes in End Point Pneumonia (EPP) and complicated pneumonia groups.

MATERIALS & METHODS: A retrospective study of 245 healthy children (between age 2 months old to 12 years old) admitted due to CAP within 2-year period (January 2017-December 2018) with CXR on admission. CXR pattern was evaluated by a paediatric radiologist. End Point Pneumonia (EPP) was defined as presence of significant consolidation often containing air bronchogram. Complicated pneumonia categorized as presence either parapneumonic effusion, cavities, abnormal air locules, necrotizing component or empyema. Chi-square analysis was utilized to assess correlation of clinical/biochemical outcome parameters with radiological pattern of EPP versus non-EPP. CXR patterns of complicated pneumonia and its association with positive culture and pathogen isolation were also evaluated.

RESULTS: There was significant association of EPP with longer hospitalization (three and more days) ($p=0.002$), failure of first antibiotics ($p<0.001$), positive culture ($p<0.001$) and ICU support ($p<0.001$). Both groups showed significant association with higher CRP value ($p<0.001$). Surgical intervention and unilateral multifocal radiographic pattern proved to have significant association with complicated pneumonia group ($p=0.020$; $p<0.001$). EPP patterns were also observed mostly in bacterial etiology. No specific radiological pattern can be seen to differentiate between bacterial, viral or fungal pathogens.

CONCLUSION: Radiologically diagnosed pneumonia pattern-based approaches can be a useful tool to predict outcome of community-acquired pneumonia in paediatric population.

EXTRAOSSEOUS EWING'S SARCOMA INVOLVING VAS DEFERENS: A CASE REPORT

Fatimah Ismail*¹

¹*Radiology, University Kebangsaan Malaysia, Malaysia*

INTRODUCTION: Extraosseous Ewing's sarcoma belongs to Ewing's sarcoma family of tumors (ESFT) and is generally rare compared to its osseous counterpart.

REPORT: Here, we report a case of a 9 year old boy who initially presented with acute appendicitis with incidental finding of an iliac fossa mass. Further imaging and intraoperative findings revealed multiple multilobulated heterogenous intraabdominal mass with extension into the inguinal canal. He was subjected to chemo- and radiotherapy and yielded in tumor regression. A laparotomy and tumor excision was performed and intraoperative findings showed a spermatic cord mass which involves the vas deferens.

CONCLUSION: As of now, there is no case of extraosseous Ewing's sarcoma in the iliac fossa involving the vas deferens has been reported. Clinically, they may present with a large, rapidly growing, solitary, superficial or deep soft-tissue mass.

TORTICOLLIS POST RECURRENT TONSILLITIS IN CHILDREN : GRISEL SYNDROME REVISITED

Shazatul Ezanni Samsudin, Ahmad Hadif Zaidin Samsudin*¹; Che Mazura Hussain²

¹*Department Of Radiology, School Of Medical Sciences, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia,* ²*Department Of Radiology, Hospital Raja Perempuan Zainab II, Kelantan, Malaysia*

INTRODUCTION: Grisel syndrome is a rare condition described as a non-traumatic atlantoaxial subluxation of indeterminate aetiology which occurs primarily in children. It is hypothesized that increased ligament laxity following infection or inflammation of the neck region is the main pathogenesis of this condition.

REPORT: A previously healthy 9-year-old girl presented with abnormal tilted neck with pain and stiffness for two months. Further history revealed multiple admissions for recurrent tonsillitis. Patient denied history of trauma. On examination, there was tenderness at the left sternocleidomastoid muscle, however no obvious mass or lymph node palpable. Throat examination was normal. Range of movement of her neck was severely limited due to pain and stiffness. Neurological examinations were normal. Plain cervical radiograph revealed loss of normal cervical lordosis. Subsequent computer tomography scan of the neck showed abnormal lateral placement of atlas (C1) on axis (C2) with asymmetrical atlanto-dental distance in keeping with atlanto-axial rotatory subluxation. Multiple cervical lymph nodes was also noted. She was put on Halter neck traction for 20 days before changing to neck collar. Follow up MRI and computer tomography scan performed 2 months after the onset of symptoms revealed persistent subluxation. External immobilization using neck collar was continued for another one month. Subsequent follow-up review in the clinic shows complete resolution of subluxation.

CONCLUSION: Decent clinical assessment in combination with appropriate radiological examination are substantial in diagnosing Grisel syndrome. Early diagnosis and treatment are deemed important in preventing catastrophic sequelae.

**PULMONARY GLUE EMBOLISM: A RARE POTENTIALLY FATAL
COMPLICATION OF N-BUTYL-2-CYANOACRYLATE INJECTION IN A CHILD.**

Anusha Apparau*¹; Caroline Judy Westerhout¹; Eric Chung¹

¹*Biomedical Imaging, University Of Malaya, Malaysia*

INTRODUCTION: N-butyl-2-cyanoacrylate injection is the first line sclerosant used for treatment of bleeding gastro-esophageal varices (for emergency haemostasis and as secondary prophylaxis). It polymerises on contact with blood, forms a clot and acts as an adhesive. It is combined with an oily radio-opaque contrast agent, lipiodol and injected endoscopically. Pulmonary embolism is a potential life-threatening complication that may arise from this procedure. Therefore, a high index of suspicion is crucial in patients who develop cardiovascular compromise post-sclerotherapy.

REPORT: We report a case of a 10-year-old child with underlying biliary atresia, post-Kasai procedure at two years of age and chronic liver failure with portal hypertension. The child was admitted for ascending cholangitis and subsequently developed sepsis with hepatorenal syndrome. She developed acute haematemesis. Gastroscopy showed gastric and oesophageal varices with adherent clot. A mixture of N-butyl-2-cyanoacrylate (Histoacryl) and lipiodol was injected. Post-procedure, the child had worsening hemodynamic compromise. Post-procedural chest radiograph showed radio-opaque material in right pulmonary artery and branches of both pulmonary arteries. The child subsequently had cardiorespiratory arrest and could not be revived.

CONCLUSION: Pulmonary glue embolism is a rare, potentially fatal complication of endoscopic intervention and should be suspected in patients who develop cardiorespiratory symptoms post-procedure. The risk factors of developing glue embolism include the size of varices, the volume and speed of injection of sclerosant. In this case, the size of varices and volume of N-butyl-2-cyanoacrylate were the likely cause.

A CURIOUS CASE OF CURRARINO TRIAD.

Lee Shien Low*¹; Caroline Judy Westerhout¹

¹*Department of Biomedical Imaging, University of Malaya, Malaysia*

INTRODUCTION: The Currarino triad is a unique complex of congenital caudal anomalies comprising of anorectal malformation, sacrococcygeal defect and presacral mass. We describe a case of a baby boy with symptomatology of bowel obstruction.

REPORT: A baby boy was born at term to a non-consanguineous marriage with normal APGAR score and initial physical examination. Antenatally mother gave personal history of presacral retro-rectal cystic tumour on regular follow-up and a nephew with suspected Hirschsprung disease requiring surgical intervention. This baby developed his first episode of vomiting, recurrent regurgitation and abdominal distension within the first 24 hours of life. Minimal passage of meconium was noted through a rectocutaneous fistula. Abdominal radiograph demonstrated right sided bowel loop dilatation with paucity of gas within the rectum. Conventional cytogenetic analysis revealed normal male chromosome (46, XY) with no evidence of chromosomal abnormalities. Biochemical marker study revealed normal serum HCG levels and alpha feto protein levels within the expected range corrected to age. Outpatient sonography of abdomen and spine demonstrated sacrococcygeal bones agenesis with low lying spinal cord and a cystic lesion anterior to the cord. Both kidneys and urinary bladder were normal. This was confirmed with contrast enhanced magnetic resonance imaging (MRI) of the pelvis and lumbosacral spine. Distal loopogram study in preparation for posterior sagittal anorectoplasty revealed distal anal atresia.

CONCLUSION: Multimodality radiologic investigation is a preferred choice to making the diagnosis of Currarino triad especially in our locality where genetic analysis is not readily available.

ESSENTIAL RADIOLOGY REVIEW OF SHORT LIMB SKELETAL DYSPLASIA IN PAEDIATRIC GROUP

Soo Suet Woon*¹; Kartini Rahmat¹; Caroline Judy Westerhout¹

¹*Department of Radiology, University Malaya Medical Centre, Malaysia*

LEARNING OBJECTIVE:

- Review the diseases included in spectrum of the skeletal dysplasia and their radiological manifestations.
- Describe and recognise some of the radiological manifestations of limb shortening (rhizomelic, mesomelic and acromelic).

BACKGROUND: We have encountered patients presented with rhizomelic dwarfism with the clinical features suggestive of achondroplasia in our centre. Pair of siblings who presented with mesomelic dwarfism.

FINDINGS AND/OR PROCEDURE DETAILS: Short limb skeletal dysplasia are characterised by limb shortening:

- Rhizomelic dwarfism (proximal limb shortening) involving humerus and femur.
 - achondroplasia, chondrodysplasia punctate, pseudoachondroplasia, thanatophoric dysplasia
- Mesomelic dwarfism (middle limb shortening) involving radius, ulna, tibia and fibula.
 - dyschondrosteosis (Leri-Weil disease)
- Acromelia dwarfism (distal limb shortening) including hands and feet.
- Images of the described conditions above will be further described accordingly.

CONCLUSION: This educational exhibit is to educate the trainee to recognise the clinical features of different types of short limb skeletal dysplasia.

FETUS IN FETU : A RARE CASE REPORT OF RETROPERITONEAL MASS IN A NEWBORN

Nadia A. P. Panisutia*¹; Farah Hendara Ningrum¹

¹*Radiology Department, Faculty of Medicine Diponegoro University, Dr. Kariadi General Hospital, Semarang, Indonesia*

INTRODUCTION: Fetus in fetu (FIF) is an extremely rare congenital fetiform mass containing column vertebrae, limbs and other organs inside the body of the living partner. There are theories as to what this abnormality represents; a highly differentiated teratoma or an accident of monozygotic, monochorionic, diamniotic twinning.

REPORT: A nineteen-day-old baby boy with complaint of abdominal distension was referred to our department for computed tomography examination. Physical examination revealed grossly distended abdomen with a nontender palpable mass of variable consistency about 15x15 cm in left abdominal region. Laboratory examination is unremarkable. Plain and postcontrast CT scan was performed, showing a 9x9x11cm sized well-circumscribed retroperitoneal mass that contained predominantly fluid and fatty tissue surrounding a bony structure having foetoid morphology, vertebral axis was present. Lesion was producing mass effect to the adjacent organs. Surgical exploration was done. The gross pathology specimen revealed an anencephalic fetus covered with skin tissue and fat. Column vertebrae was formed. Microscopy revealed bone, skeletal, smooth muscles, and partly gastrointestinal tissue.

CONCLUSION: As the hallmark of FIF is the presence of vertebra along with appendicular bones and formed organs, our case matches the criteria. Imaging holds a pivotal role in preoperative diagnosis of FIF because it is made on the observation of vertebral column in the mass. It is very important to distinguish FIF as a benign condition from Teratoma because of the possibility of malignancy in Teratoma and the need to do mass excision procedure immediately for the latter case.

**A PICTORIAL GUIDE OF VOIDING CYSTOURETHROGRAM IN PAEDIATRIC
VESICourethRAL REFLUX: INDICATIONS, TECHNIQUE, ANATOMY OF
URINARY SYSTEM, GRADE OF VESICourethRAL REFLUX AND
ANOMALIES OF URINARY SYSTEMS**

Chew Fatt Yang¹;Tzu Jing Wang¹; Kang-Lun Cheng¹;Pei Hua Lee¹; Chun-Lin Huang¹

¹*Department of Medical Imaging, China Medical University Hospital, Taiwan (ROC)*

LEARNING OBJECTIVE:

- To review the main indications as well as the basic technique of voiding cystourethrogram(VCUG).
- Identify the key features for each grade of vesicoureteral reflux (VUR).
- Describe a wide spectrum of anomalies involving urethra, bladder, ureter and kidney in VCUG.

BACKGROUND: VCUG has gained wide acceptance in the diagnosis of VUR and it is also the method of choice in evaluating various anomalies of the urinary system, particularly the urethra, urinary bladder and distal ureter as well as the kidney when there is associated high-grade reflux.

FINDINGS AND/OR PROCEDURE DETAILS: VCUG is a fluoroscopically monitored examination involving retrograde instilling of a detectable substance into the bladder by urethral catheter in mimicking the process of filling and emptying of the bladder. The principle of “as low as reasonably achievable” (ALARA) was adhered to assure that radiation doses to the children are appropriate. Intermittent fluoroscopic monitoring was carried out throughout the entire examination to detect the presence and extent of the VUR, as well as the evaluation of both anatomic defects and functional anomalies of the urinary system. In this exhibit, anomalies involving urethra, bladder, ureter and kidney in VCUG including neurogenic bladder, Hutch diverticulum, posterior urethral valve, ureterocele, megaureter, ectopic ureter, ectopic kidney, and duplication of the urinary collecting system will be demonstrated

CONCLUSION: VCUG is an efficient, accurate and reproducible method to detect and characterize VUR and urinary tract abnormalities in children. Adherence to basic principles in performing the examination and interpretation are essential in establishing a diagnosis and treatment plan.

A RARE CASE OF PAEDIATRIC SINONASAL EWING'S SARCOMA : THE DIAGNOSTIC CHALLENGE AND RADIOLOGICAL FEATURES

Duxburry Dix*¹; Isa Azzaki Zainal¹

¹*Department of Radiology, Hospital Canselor Tuanku Muhriz, UKM Medical Centre, Malaysia*

INTRODUCTION: Ewing Sarcoma is a malignant and aggressive tumour, commonly affecting children and adolescent. Long bones of extremities, pelvic and ribs are most often affected. Primary Ewing Sarcoma in the head and neck regions are extremely rare, with less than 20 cases reported worldwide. We herein present a case of Ewing Sarcoma arising from the right sinonasal region.

REPORT: A 5 year old boy with unremarkable past history presented with 3 months history of right epistaxis and nasal block. Nasal endoscopic examination showed a large vascular mass confined within the right nasal cavity. Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) examinations showed a large sinonasal mass arising from the right maxillary involving the ethmoid sinus, sphenoid sinus and right nasal cavity. The tumour has extended into the right pterygopalatine fossa and infratemporal space without intraorbital or intracranial extension. Erosion of the surrounding bones also demonstrated. On MRI, it appears as heterogeneously enhancing ill defined, lobulated solid-cystic lesion which predominantly demonstrate isointensity to muscle on T1 and T2 weighted imaging. Lack of calcification within the mass. No evidence of distant metastases. Punch biopsy was taken with histopathological examination later confirmed the diagnosis. Adjuvant chemotherapy comprising vincristine, ifosfamide, doxorubicin and etoposide (VIDE) was commenced for 6 cycles.

CONCLUSION: Ewing Sarcoma of the head and neck, in particular the sinonasal region is extremely rare. Imaging diagnosis is challenging as no specific features to diagnose it. Therefore, it should be considered as a differential of sinonasal tumor in the paediatric age group.

A RARE AND INTRIGUING CASE OF PONTOCEREBELLAR HYPOPLASIA

Oo Cheng Yeow*¹; Emy Saera¹

¹*Radiology, Hospital Sungai Buloh, Malaysia*

INTRODUCTION: Pontocerebellar hypoplasia (PCH), also known as pontocerebellar hypoplasia of Barth, is a group of rare autosomal recessive neurodegenerative disorders characterised by hypoplasia of the pons and cerebellum. This condition was first described as a specific entity by a Dutch paediatric neurologist, Peter G Barth in 1990. It has 10 different described subtypes in which all of them with a prenatal onset.

REPORT: A 6-month-old baby girl born preterm at 29 weeks with various complications which include Patent Ductus Arteriosus, Bronchopulmonary Dysplasia, Retinopathy of Prematurity and anemia was subjected to ultrasound cranium in view of persistent drop in hemoglobin level.

The ultrasound cranium showed bilateral germinal matrix hemorrhage with intraventricular extension and hydrocephalus.

Subsequently, MRI Brain was done revealing the following features:

- Small cerebellum not sparing the vermis in a fluid filled and small posterior fossa.
- Hypoplastic ventral pons (flattened ventral surface of the pons)
- Thinned out corpus callosum.
- Dilated ventricles with bilateral occipital horn colpocephaly.
- Residual intraventricular hemorrhage in the occipital horn of lateral ventricles.

Clinically, she is active and thriving with no significant delayed milestones at the current stage.

CONCLUSION: Pontocerebellar hypoplasia(PCH) represents a group of autosomal recessive neurodegenerative disorders that present with unique but overlapping features on imaging studies. Due to the similar appearances of these disorders on imaging studies, their clinical, pathological and molecular features are crucial for the final diagnosis.

IMAGING FINDINGS OF BRANCHIAL CLEFT ANOMALIES:A PICTORIAL REVIEW

Mohd Zulkimi Roslly*¹; Faizah Mohd Zaki¹

¹*Radiology Department, Universiti Kebangsaan Malaysia*

LEARNING OBJECTIVE :

- Understand the embryological development of pharyngeal arches in relation to pathogenesis of branchial cleft anomalies.
- Identify and distinguish the variant and spectrum of branchial cleft anomalies in different imaging modalities.
- Correlate between the clinical information and imaging findings in suspicion of underlying branchial cleft anomalies.

BACKGROUND: Branchial cleft anomaly is recognized as one of the commonest paediatric congenital lesions of head and neck which commonly presents with cystic masses of the neck. It falls under the umbrella of branchial apparatus anomalies in which they can also present as sinus tracts, fistulae or cartilaginous remnants. It is clinically challenging to establish diagnosis if the clinical suspicion is not set in. Therefore, radiological investigation has become one of important medical tools in assessment of patients with suspected branchial cleft anomaly especially when patients presented with recurrent neck abscess.

FINDINGS AND/OR PROCEDURE DETAILS: CT and MRI provide excellent cross-sectional information and sometimes are able to even show the whole fistulous tract from the skin to the pharyngeal cavity. Thus, this article intends to demonstrate the spectrum of radiological manifestations of this anomaly using various radiological modalities that may facilitate the establishment of diagnosis. We will present a variety of imaging findings and discuss the role of each imaging modality emphasizing on the pearls and pitfall in diagnosing branchial anomalies. Several imaging modalities in a series of cases with variations of findings according to the clinical condition will be presented. Differential diagnosis of paediatric neck lesion will also be discussed to compliment this pictorial review.

CONCLUSION: Even though branchial cleft anomalies is relatively common entity, basic knowledge of its variant and radiological manifestations is mandatory in every clinical radiologist.

INCARCERATED INGUINAL HERNIA MIMICKING ACUTE SCROTUM IN A CHILD: A CASE REPORT

Janice Goh Hui Ling*¹; E. Y. Hing¹; Norhafizaab. Rahman²

¹*Department of Radiology, University Kebangsaan Malaysia Medical Centre (UKMMC), Malaysia,* ²*Department of Surgery, University Kebangsaan Malaysia Medical Centre (UKMMC), International Islamic University Malaysia (IIUM), Malaysia*

INTRODUCTION: Acute scrotal swelling and pain in children are common presentations in the emergency department (ED). It requires accurate evaluation as the aetiology is diverse. Among all of the aetiology, testicular ischemia is a condition that requires prompt diagnosis because time is pivotal factor in preventing irreversible damage to the testis. However, inguinal hernia with omental incarceration in children is an exception and rare. To the best of our knowledge, there are only a few such cases have been reported. It is often not considered in the initial evaluation and only diagnosed intra-operatively.

REPORT: A 7 year-old boy with no known medical illness was presented to the ED with 3 days history of right scrotal painful swelling. He had no fever, abdominal pain, nausea or vomiting. Physical examination revealed swollen and erythematous right scrotum which is painful on palpation. Blood and urine analysis are unremarkable. Ultrasonography was concluded as acute/recent right testicular torsion with complex right hydrocele. Surgeon subsequently decided on right inguinal exploration. However, intra-operatively noted incarcerated right inguinal hernia with necrosis of the tip of omental cake. The right testis is normal. Omentectomy and right orchidopexy was done. His recovery was uneventful and was discharged well.

CONCLUSION: The diagnosis of an incarcerated inguinal hernia is rare in children but should be considered as a differential diagnosis of an acute scrotum. This could assist the surgeon in deciding on the suitable approach of the surgery.

POSTERIOR URETHRAL VALVE WITH PROSTATIC UTRICLE CYST AND URETHRO EJACULATORY DUCT REFLUX

Ravindar Kashyap*¹; Subathra A¹; Swathi Kiran¹; Kumaravel S²

¹Radiodiagnosis, JIPMER, India, ²Urology, JIPMER, India

INTRODUCTION: Prostatic utricle cysts associated with posterior urethral valve and urethra ejaculatory duct reflux are rare. Prostatic utricle cysts are an embryologic remnants of the müllerian duct system, resulting in incomplete regression of this structure during embryologic development. We present a case of Down's syndrome with PUV, prostatic utricle cyst and urethro ejaculatory duct reflux in a 12 year old male.

REPORT: 13 year old male child, PUV with CKD and anterior urethra-cutaneous fistula underwent PUV ablation. Had recurrent episodes of epididymo-orchitis. MRI Pelvis showed a well-defined T2 hyperintense, T1 hypointense cystic lesion in the midline prostatic region with no diffusion restriction with normal appearing bilateral seminal vesicles. MCU showed a bladder diverticula, PUV and another smooth walled outpouching from the posterior wall of posterior urethra possibly prostatic utricle cyst. During voiding urethro - ejaculatory duct reflux was demonstrated. Robotic excision of the cyst was performed.

CONCLUSION: Utricular anomalies result from the incomplete regression of müllerian ducts or incomplete androgen-mediated closure of the urogenital sinus caused by an error in the production of or sensitivity to local testosterone or müllerian inhibiting substance. This is the first Indian case report demonstrating posterior urethral valve, prostatic utricle cyst and urethra-ejaculatory duct reflux in the same patient. Associations are with various genitourinary abnormalities, including hypospadias, intersex disorders, cryptorchidism, and ipsilateral renal agenesis, posterior urethral valve, anorectal malformation and syndromes like Prune- Belly syndrome, Down's syndrome. Surgical excision is considered the treatment of choice.

COMPLICATION OF UMBILICAL VENOUS CATHETER IN NEONATE: TPNOMA

Thiban Sivapragasam*¹; Tan Yuan Ying¹

¹*Imaging & Diagnostic Department Seberang Jaya Hospital, Ministry Of Health Malaysia, Malaysia*

INTRODUCTION: Umbilical venous catheterization (UVC) is a common procedure performed in neonatal intensive care units (NICU) for preterm babies to deliver total parenteral nutrition (TPN) and medications. TPNoma is one of the uncommon complications following TPN infusion secondary to malposition of the UVC.

REPORT: A 28-weeks preterm baby was treated as respiratory distress syndrome. Umbilical artery catheter (UAC) and UVC were inserted. The tip of the UVC is suboptimal (T10/T11) and superimposed over the liver. In view of difficult vascular access, UVC was not removed. TPN was given on day 3 of life. Day 9th of TPN, patient developed abdominal distension with deranged liver enzymes, raised total white cells count (TWC) and dropped haemoglobin level. Ultrasound abdomen revealed hyperechoic area with centre cystic lesion in the liver. No color flow within. UVC was replaced with peripherally inserted central catheter (PICC) line for continuation of TPN. Patient was treated with IV antibiotics and supportive care. One month later, patient was discharged with normal TWC and inflammatory markers. However, liver function tests were deranged. Follow up ultrasound shows complex collection which has reduced in size with echogenic margin and beginning to calcify.

CONCLUSION: TPNoma is TPN extravasation which is rare complication of UVC malposition causing hepatic erosion which lead to hepatic collection. Neonate who develops abdominal distension after UVC insertion should watch out for vascular or hepatic complications. Long term follow up are advisable to assess the lesion progression even patient is asymptomatic. Follow up plans will include clinical assessment, biochemical test and sonographic imaging.

MR IMAGING OF MOYA-MOYA SYNDROME IN A 10 YEAR OLD MALE WITH BETA THALASEMIA

Nadia A. P. Panusutia*¹; F. Mardiana Wahyuni¹; Elizabeth Angeline¹; Victor Christian¹

¹*Radiology Department, Faculty Of Medicine Diponegoro University, Dr. Kariadi General Hospital, Semarang, Indonesia*

INTRODUCTION: Moyamoya syndrome (MMS) is a progressive bilateral stenosis or occlusion of the arteries at terminal portions of the internal carotid arteries and their proximal branches with prominent collateral artery formation. It causes irreversible damage to the cerebral hemodynamics due to its progressive nature. Therefore, immediate diagnosis and appropriate management is needed. We reported a case of 10 year old male with beta thalasemia and MMS.

REPORT: 10 year old male was brought to the hospital due to seizure and weakness of the right arm and lower extremity 5 months before hospital admission. Patient had past history of multiple blood transfusions since 2016. Physical examination revealed paleness of palpebrae conjunctiva, lips, skin, and hepatosplenomegaly. Neurological examination showed right hemiparesis. Haemoglobin electrophoresis revealed beta thalasemia. MRI revealed encephalomalacia with white matter gliosis of the left frontal lobe, cortical laminar necrosis of the left temporal lobe, subacute lacunar infarction of the right frontal lobe. The left medial cerebral artery branch was only visualized up to the proximal M1. Thin and tortous collateral flow was seen originated from the left medial cerebral artery from proximal branch of M1 and the left posterior communicating artery forming puff of smoke appearance. The left posterior cerebral artery appeared narrow. All of this findings are corresponding and diagnosed as moyamoya syndrome.

CONCLUSION: In thalassemia, anemia and low hemoglobin levels may cause tissue hypoxia and hypertrophic vascular endothelium, leading to microvascular stenosis. MR and CT angiography are noninvasive methods of diagnostics to evaluate vascular changes in moyamoya disease.

A CASE REPORT OF SURVIVING UNTREATED 11 YEARS-OLD MALE WITH ENDOCARDIAL CUSHION DEFECT, MONOVENTRICLE HEART, VENA CAVA DISPLACEMENT, AND SITUS INVERSUS

Victor Christian*¹; Nadia A. P. Panisutia¹; Elizabeth Angeline¹; Mardiana Wahyuni¹

¹Radiology, Diponegoro University-RSUP Kariadi, Indonesia

INTRODUCTION: Endocardial cushion defect or Atrioventricular septal defect (AVSD) is a broad-spectrum defect identified by the involvement of the atrial septum, ventricular septum, and 1 or both atrioventricular (AV) valves. It constitutes 4% of all congenital cardiac malformations. The patient in this report was diagnosed at age two years old and never took surgical or specific medication.

REPORT: Eleven years old male admitted with easy to get fatigued during light exercise. Physical examination found cyanotic, clubbing finger, ictus cordis, and pansystolic murmur. Chest radiograph revealed cardiomegaly. Echocardiogram further recorded a single atrium and ventricle with AV valve regurgitation with normal cardiac contraction. Chest CT contrast shows a single ventricle in a cardiac chamber without interventricular septal, atrial septal defect, endocardial cushion defect, infundibular stenosis, displacement of inferior vena cava inlet, displacement of the right-left pulmonary vein, displacement of left subclavian-jugular-brachiocephalic vein insertion, and situs inversus.

CONCLUSION: Patients with complete AVSD rarely survive for decades without surgical treatment secondary to pulmonary vascular obstructive disease or pneumonia. Associated pulmonary stenosis usually presents in 2% of pediatric patients and 5.8% of adults. Lifespan of patients with AVSD depends on the balance between the pulmonary and systemic circulations, which are affected by the presence and degree of pulmonary stenosis. In rare circumstances, patients might have compensated pulmonary and systemic circulations that will increase their life expectancy with minimal symptoms. The best approach for diagnostic with echocardiography to determine the cardiac septum. CT and MR reconstructions will help to demonstrate cardiac, coronary, and extracardiac anatomy for presurgical planning.

HSV ENCEPHALITIS COEXIST WITH ABUSIVE HEAD INJURY?? OR ATYPICAL HSV ENCEPHALITIS PRESENTATION??

Chiam Wooi Kee*¹; Faizah Mohd Zaki¹

¹Radiology, Pusat Perubatan Universiti Kebangsaan Malaysia, Malaysia

INTRODUCTION: Herpes simplex encephalitis (HSE) is a condition associated with high mortality and morbidity. Definitive diagnosis is established by clinical history, imaging studies, supportive electroencephalogram (EEG) findings, and cerebrospinal fluid (CSF) analysis.

REPORT: We report a case of HSE presenting as an intracranial hemorrhage in a 4 months old boy. He was admitted due to status epilepticus with fever, reduce oral intake and less active. A computed tomography (CT) of the head showed bilateral subdural effusion, multiple intraparenchymal haemorrhage and multiple hypodensities within bilateral frontal, temporal and right parietal lobes with associated hydrocephalus. Brain magnetic resonance imaging (MRI) done after 2 weeks of admission shows residual left frontal SDH, multiple intraparenchymal haemorrhages, haemorrhagic transformation of previous infarction and cystic encephalomalacic changes. CSF serology was positive for IgG for herpes simplex virus (HSV) type 1 and 2. He recovered with intravenous acyclovir therapy. Our patient was a case of diagnostic dilemma, as being suspect to have non accidental injury (NAI) due to presence of chronic subdural effusion with background poor social history and associated preretinal hemorrhage.

CONCLUSION: This case emphasize on the important of correlation of imaging studies with the clinical picture in diagnosis of HSE. This case highlights the important of high suspicious of HSE in cases of intracranial haemorrhage in appropriate clinical setting of encephalitis. Delay in treatment may result in worse clinical outcome.

FETAL CHOLEDOCHAL CYST IN 37 WEEK GESTATIONAL FETUS

Victor Christian*¹; Elizabeth Angeline¹; Nadia A. P. Panisutia¹; Farah Hendara¹

¹Radiology, Diponegoro University-RSUP Kariadi, Indonesia

INTRODUCTION: Choledochal cyst is rare a congenital anomaly of the bile duct, characterized by cystic dilation from the intrahepatic or extrahepatic bile ducts. The estimated incidence rate is 1 in 2 million live births. It related to an abnormal connection between the pancreatic duct and the common bile duct, resulting in irritation and duct dilatation. Ultrasonography is the first prenatal imaging modality for evaluating the fetus due to this real-time and non-invasive display. Magnetic Resonance Imaging (MRI) has recently become a complement to ultrasound which offers a more clearly delineated cyst and its surrounding structure.

REPORT: 30-years female with 37 weeks of pregnancy went antenatal care to the obstetrician and discovered a tumor in the right quadrant over fetal abdomen form ultrasonography. Abdominal MRI without contrast performed and reveals a round cystic lesion in the midline abdomen of the fetus which appears to be associated with the bile duct, tends to be choledochal cysts. A fetus born vaginally with vacuum extraction with an APGAR score of 9-9-10. At the age of two days old, an abdominal ultrasound was performed and confirm the cystic dilatation finding of the common bile duct.

CONCLUSION: Ultrasound performs as the initial diagnostic tool, however the extent of intrahepatic involvement is demonstrated accurately with MRI. MRI can give excellent anatomical resolution and contrast to help in the differential diagnosis of right upper quadrant cystic lesion. Additional information provided by prenatal MRI may be useful for early postpartum care.

A CASE REPORT OF PHOCOMELIA

Sushuma Reddy*¹

¹Radiology, Dr. D.Y.Patil University School Of Medicine, Nerul, Navi Mumbai, India

INTRODUCTION: Phocomelia is an extremely rare congenital skeletal disorder that characteristically affects the limbs. It can affect either the upper limbs or lower limbs or both. It manifests as a deficiency or shortening of the proximal to mid portions of the limbs. It is usually associated with other anomalies like cranio-facial abnormality, cardiac abnormality and any other skeletal abnormality. Phocomelia is most commonly thalidomide induced, however Phocomelia Syndrome may occur as a result to a mutation in the gene or can be the outcome of genetic transmission between family members. Thus, there is significantly increased risk for Phocomelia when parents have consanguinity. Phocomelia Syndrome is usually diagnosed on a prenatal ultrasound of the fetus.

REPORT: There is a 30 year old female with average gestational age of 21 weeks was referred to the diagnostic ultrasound. On USG imaging , it was found the there is absence of bilateral radius and ulna with presence of only 4 fingers on right and 3 fingers on the left hand. There was no other associated abnormality. The imaging findings were confirmed on the x ray following the abortion.

CONCLUSION: Detailed antenatal anatomic survey of the fetus during anomaly scan, play an important role in early diagnosis of fetal anomalies and helps the obstetrician for further management and better prognosis of the patient. The anomaly ultrasound examination at 18–20 weeks gestation should be advised and performed routinely.

MULTIMODALITY DEPICTION OF CONGENITAL HERNIA WITH GASTRIC PERFORATION IN A NEWBORN

Shashank S. Prasad*¹; Yacoub Khatab ²; Niti Manglik³

¹Radiology, The Hospitals Of Providence, United States, ²Medical Education, Paul L Foster School Of Medicine, TTUHSC, El Paso, United States ³Medical Education And Pathology, Paul L Foster School Of Medicine, TTUHSC, El Paso, United States

INTRODUCTION: Congenital diaphragmatic hernia (CDH) is a congenital anomaly of the diaphragm that occurs in about 1:3000 live births. CDH usually presents with respiratory symptoms. Acute gastrointestinal (GI) complications may arise from incarceration of the stomach and intestines. An unusual association with CDH is neonatal gastric perforation, which usually presents with GI symptoms and requires emergency surgical intervention. We are reporting an asymptomatic, premature newborn with left-sided CDH and gastric perforation.

REPORT: A 2.46 kg female baby was born prematurely at 35 weeks to a 24-year-old woman. Antenatal ultrasound at 31 weeks (confirmed with fetal MRI) demonstrated left-sided CDH containing part of the stomach. Immediately after birth, a chest X-ray demonstrated a prominent gastric bubble, but the CDH was not very well visualized. Subsequent CT chest confirmed the diagnosis of left-sided CDH containing part of the stomach. Upper GI examination demonstrated partial stomach herniation with gastric perforation, identified by contrast spillage into the peritoneal cavity. The patient was managed surgically. A small perforation in the lesser curvature of the stomach and the CDH were repaired. The baby was discharged after a short uneventful stay in the neonatal ICU.

CONCLUSION: Gastric perforation in newborns is a very rare complication of CDH with only 4 other cases reported in the literature. Our case is the earliest detected case in a newborn (detected within the first 24 hours of life) and showed gastric perforation with CDH without symptoms. This is unique in comparison to other cases which presented with GI and/or respiratory symptoms.

**ALVEOLAR SOFT PART SARCOMA IN THE GLUTEAL REGION: A CASE
REPORT IN AN 18-YEAR-OLD FEMALE**

Nathan David P. Concepcion*¹; Josefina Marie P. Medina²

¹*Paediatric Radiology, St. Luke's Medical Center - Quezon City, Philippines,* ²*Radiology, St. Luke's Medical Center - Quezon City, Philippines*

INTRODUCTION: Alveolar soft part sarcoma (ASPS) is a rare, malignant tumor of mesenchymal origin that accounts for about 1% of all soft tissue sarcomas. It is most commonly observed in women under 25 years old and most frequently seen in the thigh or buttocks. ASPS has poor prognosis and is prone to early metastases. Due to its rarity, there is paucity of knowledge on ASPS.

REPORT: An 18-year-old female patient presented with left gluteal mass that started three months prior to her admission. Ultrasound showed a well-defined, solid, mixed echogenic, vascular, intramuscular mass extending to the subcutaneous region. Magnetic resonance imaging confirmed the presence of a non-fatty vascular mass with flow voids, within the left gluteus maximus muscle bulging toward the overlying subcutaneous tissue. It exhibited iso- to mildly hyperintense signal relative to muscle on T1 and intermediate to muscle and fat on T2 weighted sequences, with restriction on diffusion imaging. Post-contrast demonstrated strong enhancement. Patient underwent simple excision of the mass. Samples were sent to Pathology and results favored a diagnosis of ASPS. After three months, wider excision was done to check for recurrence and the sample sent for frozen histopathology was negative for tumor recurrence.

CONCLUSION: Although a rare tumor with low incidence, an early diagnosis of ASPS can be critical as the prognosis is poor, and metastases occur early. Thus, recognition of ASPS on imaging findings is important for early recognition, and timely and adequate treatment.

SCROTAL SWELLING IN A NEWBORN: A RARE CASE OF MECONIUM PERIORCHITIS

Kah Lai Choong*¹; Shamini Maniam¹

¹*Radiology Department, Hospital Shah Alam, Malaysia*

INTRODUCTION: Meconium periorchitis is a rare disorder of the infant boys, with reported incidence of 1 in 35,000 live births. It occurs as a consequence of in-utero bowel perforation and passage of meconium through the patent processus vaginalis into the scrotal sac. Patients usually present with scrotal swelling at birth. Radiological imaging, especially sonography, plays a key role in diagnosing these patients. Lack of knowledge of this rare condition may lead to unnecessary invasive interventions.

REPORT: A near-term infant boy was delivered uneventfully. On day two of life, mother noted the child to have bilateral painless scrotal swellings. Otherwise, he tolerated feeding and passed meconium. On examination, there were bilateral irreducible inguino-scrotal swellings. Trans-illumination test was negative. The abdomen was soft.

Ultrasound scrotum showed fluid with extensive echogenic foci within bilateral scrotal sacs (right>left), no intraperitoneal extension. The right undescended testis was at the inguinal region while the left testis was within the scrotal sac. No intratesticular mass bilaterally.

Ultrasound abdomen showed minimal ascites. Abdominal radiograph revealed multiple irregular coarse calcifications scattered in the abdomen as well as bilateral scrotal sacs (right>left). The diagnosis of bilateral meconium periorchitis was established.

The child was asymptomatic and discharged well. He was referred to paediatric surgical clinic for management of undescended testis.

CONCLUSION: Although rare, meconium periorchitis should be considered in an infant presented with painless calcified scrotal swelling. Sonography plays a key role in establishing accurate diagnosis as well as to rule out other more common causes (hernia, testicular mass, birth trauma).

RARE PRESENTATION OF CYCLOPHOSPHAMIDE INDUCED INTRA-CEREBRAL HEMORRHAGES AT GREY-WHITE MATTER JUNCTION IN A PATIENT OF IGA NEPHROPATHY

Belquees Yawar Faiz*¹; Asma Javed¹; Humera Bashir¹

¹*Radiology, Shifa International Hospital, Pakistan*

INTRODUCTION: IgA nephropathy (IgAN) is an important cause of progressive kidney disease. In patients presenting with acute renal failure, a renal biopsy should be performed to distinguish acute tubular necrosis from crescentic IgAN, the latter one requires treatment with corticosteroids and CYC. Toxic effect of cyclophosphamide (CYC) resulting in brain hemorrhages is not well-known. We hereby through our case report demonstrate neurological side-effects of CYC in a young patient of IgAN who had unusual intra-cerebral hemorrhages.

REPORT: A 15 years old female patient with known IgA nephropathy presented with respiratory distress and deteriorated GCS. She had 6 months recent history of chronic kidney disease, but now developed subconjunctival hemorrhages. Plain CT head was performed which showed multiple varied sized hemorrhages in subcortical white matter. Few other hemorrhages were located in corpus callosum-splenium and genu. Trace subdural hemorrhage was also noted in midline falx. She had been taking high doses of CYC for her chronic kidney disease. Patient had no underlying coagulopathy, so CYC is supposedly culprit behind this toxic effect in brain. Her lab workup included normal TLC and platelets. Patient was also tested for COVID-19 pneumonia, which was negative.

CONCLUSION: Patient's treatment with high and multiple doses of CYC and then presentation with subconjunctival and intracranial hemorrhages lead us to conclude the direct relation of CYC and the cerebral bleed in absence of other explanations.

ACUTE PANCREATITIS : DIAGNOSING A RARE ENTITY IN PAEDIATRIC POPULATION

Fadhila Mohd Hanapiah*¹; Mohd Ezane Aziz¹; Nazri Ismail²

¹*Radiology Department, Hospital Universiti Sains Malaysia, Kampus Kesihatan Kubang Kerian, Malaysia,* ²*Radiology Department, Hospital Tanah Merah, Malaysia*

INTRODUCTION: Diagnosing acute pancreatitis in paediatric population can be very challenging since its clinical presentation may mimic many other acute abdomen symptoms. To make it worse, children do not have a capacity like adults to tell a complete disease history to the treating physicians. In this sense, it is crucially eminent to utilize additional clinical tools to help us working towards the correct diagnosis.

REPORT: 5 years old Malay girl with no known medical illness, presented to emergency department with the chief complaint of severe epigastric pain lasting for 2 days. It was cramping in nature, non-radiating. Otherwise, no documented fever at home, no loose stool, vomiting or abdominal distention. Her vital signs were stable. Her physical examination demonstrated epigastric tenderness with vague mass felt at epigastrium, however no guarding or abdominal distention. Her total white cell count was remarkably high, $24 \times 10^9/L$. Abdominal radiograph displayed fecal-laden bowel with no evidence of abdominal obstruction. Transabdominal ultrasound performed revealed bulky pancreas with dilated pancreatic duct and presence of intra-abdominal free-fluid, features commonly seen in the setting of acute pancreatitis. Her later biochemical investigations disclosed raised serum amylase of 168 U/L and staggering urine diastase of 2449 U/L which confirmed the diagnosis of acute pancreatitis.

Aggressive hydration and intravenous antibiotic commenced upon diagnosis. Patient was able to be discharged home well after 4 days in ward.

CONCLUSION: Clinical findings are immensely insufficient to diagnose acute pancreatitis in paediatric population. Additional work-up for instance, sonographic imaging, proven to be significant and critical in making the correct diagnosis.

**POSTERIOR MEDIASTINAL NEUROBLASTOMA IN A 3-YEAR-OLD CHILD
WITH SPASTIC PARALYSIS OF BILATERAL LOWER LIMBS - A CASE
REPORT.**

Debarpita Datta*¹

¹*Department Of Radiodiagnosis, Medical College Kolkata And Hospital, India*

INTRODUCTION: Neuroblastoma is an embryonic tumour of the sympathetic nervous system derived from neural crest cells, arising within the adrenal gland or anywhere along the peripheral sympathetic nervous system.

REPORT: A 3-year-old child presented with progressively worsening dyspnoea and cough for five months and bilateral lower limb weakness without bowel or urinary incontinence. On examination grade 3 spastic paralysis of both lower limbs and bilateral plantar was extensor. Chest X-ray reveals left opacified hemithorax with blunting of costo-phrenic angle. MRI was performed which reveals a large posterior mediastinal mass lesion measuring 5.5*4.2*5cm with intra-spinal extra-dural extension through the inter-vertebral foramina into spinal canal at D3-D7 levels with cord compression and marked cord edema. The mass showed low signal intensity on T1W images and heterogeneously high signal intensity on T2W images and shows heterogeneous enhancement post-contrast with enlargement of left superior mediastinal, right para-tracheal, bilateral hilar and sub-carinal lymph nodes. Investigation reveals increased TLC and increased urine vanillyl mandelic acid levels. The patient underwent Left thoracotomy with en-bloc resection of the mass. Histopathological examination confirmed it to be neuroblastoma.

CONCLUSION: Posterior mediastinal neuroblastomas comprise 15% of all cases of neuroblastoma as a primary site. The patients at high risk are those older than 18 months of age with disseminated tumours. Spinal cord compression diagnosis is especially challenging in young children. Therefore, posterior mediastinal neuroblastoma should be considered in the differential diagnosis of dyspnoea and paraparesis in young children.

SPERMATIC CORD INVOLVEMENT IN A RARE CASE OF BURKITT'S LYMPHOMA

Smily Sharma *¹; Venkata Subbaih Arunachalam¹; Bikram Raja Sharma²; Rakesh Chauhan³

¹Radiology, All India Institute of Medical Sciences Rishikesh, India, ²Medicine, SGRR, India, ³Radiology, Dhillon Scan, India

INTRODUCTION: Spermatic Cord Lymphoma is a lethal disease with poor prognosis in even early stages. A rare case of Burkitt's Lymphoma along with explicit Review of the related Literature is presented keeping primary focus on the imaging manifestations.

REPORT: A five year old boy was referred for evaluation of a large abdominal lump in right iliac fossa and inguinoscrotal swelling. Ultrasound abdomen followed by Contrast Enhanced CT scan of abdomen were done for his Radiological assessment. A large soft tissue mass was found in right iliac fossa and right lumbar region which was encasing the mesenteric vasculature and invading into Ascending Colon and Caecum. Multiple large conglomerated retroperitoneal lymph nodes were seen at pre-para aortic, aortocaval, periportal and peripancreatic stations. The child also had thickened hypoechoic right spermatic cord, however with normal bilateral testes. On Contrast enhanced CT Scan, Right spermatic cord was thickened and showed significant post contrast enhancement. Another remarkable feature was omental thickening and post contrast enhancement. On histopathology and Immunohistochemistry evaluation of a sample from the right iliac fossa mass, the child was found to have typical features of Burkitt's Lymphoma.

CONCLUSION: Burkitt's Lymphoma affecting the spermatic cord is an extremely rare and lethal disease. The discussion of the imaging features and understanding the possible manifestations can help Radiologists suggest such a rare diagnosis in appropriate clinical situation. This can help in early diagnosis and optimal management of such cases where time is the key to save these patients.

CONGENITAL BRAIN ANOMALIES MASKED BY CHRONIC SUBDURAL EFFUSION

Chin Yunci*¹; Nik Fatimah Salwati Nik Malek¹

¹*Radiology, Hosp Sultanah Bahiyah,, Malaysia*

INTRODUCTION: Persistent accumulation of fluid in the subdural space is commonly due to trauma or infection. We report a rare case of chronic subdural effusion associated with congenital anomalies.

REPORT: A 6 month old baby boy born prematurely at 35 weeks via uncomplicated spontaneous vaginal delivery was noted to have rapidly increasing head circumference at 4 months of life, along with clinical manifestations of obstructive hydrocephalus. Initial Computed Tomography (CT) scan showed fluid filled enlarged of subdural space with no evidence of tumour and subdural haemorrhage. Bilateral Burr hole drainage tubes were inserted to relieve the obstructive hydrocephalus. Subsequent CT showed reduced subdural effusion, expanded brain and normal ventricle size. Cerebrospinal fluid analysis was unremarkable. Further investigation with Magnetic Resonance Imaging (MRI) brain revealed corpus callosum dysgenesis associated with defect at the right posteromedial lateral wall of the right lateral ventricle, causing direct communication to the basal cistern and subdural space.

CONCLUSION: Early detection of the underlying cause of chronic subdural effusion is important to prevent permanent brain damage. MRI is the imaging modality of choice in this case for detection of underlying intracranial pathologies.



19th Asian Oceanian Congress of Radiology

incorporating

Malaysian Congress of Radiology (MCOR) 2021

Tel: + 603 7931 2856 | Email: secretariat@aocr2021.com

For sponsorship and exhibition enquiries, please contact :-



Congress Secretariat c/o Medical Congress Partners
9, Jalan 9/3, Section 9, 46000 Petaling Jaya, Selangor, Malaysia
Tel: +(60)3-7931 2856
Email: secretariat@aocr2021.com

This announcement has been prepared in good faith and is correct at the time of sharing.