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[1]Department of Paediatrics, Faculty of Medicine and Health Sciences, University Putra Malaysia; [2]Genetic Medicine and Regenerative Research Centre, Clinical Genetics Unit, Department of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University Putra Malaysia

AIA 1

Evaluation of Beta Cell Dysfunction by Mixed-Meal Tolerance Test Among Vietnamese with Newly Diagnosed Type 2 Diabetes

Van Phan Thi Tuong, Khanh Tran Quang

University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam

Background: Beta cell dysfunction and insulin resistance are dual defects of type 2 diabetes mellitus (T2DM); nevertheless, the contribution of these factors varies among different ethnic groups. Obesity and decreased insulin sensitivity predominate in Caucasian patients while impaired insulin secretion plays a pivotal role in T2DM development in Asian diabetics. Insulin secretion is affected by many factors such as genetic predisposition, glucolipotoxicity, diabetes duration, metabolic syndrome, age, sex, and alcohol consumption.

Objectives: to evaluate the prevalence of beta cell dysfunction and its related factors in newly-diagnosed type 2 diabetic patients in Vietnam.

Materials and methods: Subjects with newly diagnosed T2DM were enrolled from 2 hospitals in Ho Chi Minh City, Vietnam. The liquid mixed-meal tolerance test (MMTT) with 53.5 g of Ensure Gold (231.4 kcal, carbohydrate 53.8%, protid 14.8%, lipid 31%) was used to measure insulin secretion response in these patients. Fasting and 2-hour-postprandial blood samples were collected for measurement of glucose and C-peptide.

Results: There were 104 patients including 40 males and 64 females with mean age of 51.3 years and median HbA1c of 8.5%. The prevalences of impaired fasting insulin secretion (fasting C-peptide < 1.2 ng/ml) and impaired posprandial insulin response (postprandial C-peptide < 3.3 ng/ml) were 3% and 9%, respectively. Ten percent had either one of these two criteria while only 2% had both. Median fasting and postprandial C-peptide concentration were 3.08 and 6.03 ng/ml, respectively. In univariate regression models, postprandial C-peptide were directly proportional to age, BMI, WHR, HOMA-IR, female gender, and metabolic syndrome; being inversely proportional to fasting plasma glucose, HbA1c, and alcolhol consumption. On multivariate analysis, however, only correlations between postprandial C-peptide and age, sex, fasting plasma glucose, and HOMA-IR remained statistically significant.

Conclusion: Two percent of Vietnamese type 2 diabetic patients exhibit severely impaired insulin secretion right after diagnosis. Young male patients with low BMI and WHR, with high fasting plasma glucose and HbA1c, and with alcohol comsumption may be most likely affected by this condition.

AIA 2

Modifying Effect of Body Mass Index on Survival in Elderly Type 2 Diabetic Patients - Hong Kong Diabetes Registry

Kitty Cheung, Jiang Guozhi, Jenny Lee, Andrea Luk, Alice Kong, Risa Ozaki, Ronald Ma, Francis Chow, Juliana Chan, So Wing Yee

Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong SAR

Background: There are non-linear risk associations of body mass index (BMI) with mortality in type 2 diabetes (T2D) and elderly populations although similar information in elderly T2D subjects are lacking.

Objectives: To examine the risk association of death with different Asian BMI categories as proposed by World Health Organization (underweight (BMI <18.5 kg/m2), normal (18.5-22.9 kg/m2), overweight (23.0 – 24.9 kg/m2), and obese (≥25.0 kg/m2)) in different age categories (65-69, 70-74, ≥75 years) over medium (6 years) and prolonged (9 years) follow-up.

Materials and Methods: We analyzed prospective data for 3186 Chinese T2D patients with age ≥65 years. Baseline demographic data, risk factors, complications and all-cause mortality were captured from the Hong Kong Diabetes Registry and the Hong Kong Hospital Authority Clinical Management System.

Results: Over a median follow-up period of 6.0 years (medium-term), 816 (25.6%) deaths occurred and at 9.4 years (long-term), 1557 (48.9%) patients had died. Men were more likely to die than women with increased mortality rate with increasing age (morality rates of men with normal BMI at 9-year follow-up in the 65-69, 70-74, ≥75 age-groups were 41.8, 70.3, 101.4 per 1000-person-year, while that for women were 35.5, 50.4, 78.8 respectively). Within each age-group, high BMI was associated with increased survival especially in the ≥75 age-group and with prolonged follow-up period. Using Cox regression analysis, after adjustment for confounders, high BMI (≥25.0 kg/m2) was associated with reduced risk of death in all subgroups, reaching significance in men in the older age-groups at 9-year follow-up (for men 70-74 year-old, hazard ratio [HR] of mortality was 0.67 [95%CI 0.48-0.95], for those ≥75, HR was 0.62 [95%CI 0.44-0.89]) compared to 18.5-22.9 kg/m2 as referent.

Conclusions: In Chinese elderly T2D patients, high BMI protected against mortality calling for more attention to people with low BMI who might have unmet clinical needs.

AIA 3

Genetics of Diabetes: The Variant of Transcription Factor 7-Like 2 (TCF7L2) Gene and the Prediction of Diabetes Risk in Diabetic Families

Dr Abbasali Palizban

Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Iran.

Background: The TCF7L2 is a component of the Wnt signalling pathway with a major role in hormone gene expression and metabolic homeostasis. There is widespread evidence for the heritability of diabetes, and research in most population worldwide has identified genes, particularly the variant of transcription factor 7-like 2 (TCF7L2) gene, with significant role in homeostasis glucose metabolism.

Objectives: The objectives of this study were to investigate the real impact of TCF7L2 gene polymorphism in homeostasis glucose metabolism within an Iranian population and families possessing diabetes to compare scale allele transmission from parents to healthy and ill offspring.

Materials and Methods: This study consists of diabetics families (n=30) and none-diabetics families (n=30) (parents and offspring) referring to the clinic. In parallel a case control study within our population, diabetics (n=80) and none-diabetics (n=80), was also investigated. The diabetics were included based on WHO guidelines. The blood DNA genotyped by PCR-RFLP and Rsa1 restriction enzyme.

Results: In a case control study, we found that the TT carriers of TCF7L2 (rs7903146, C/T) are more at risk of developing T2D. Logistic regression analysis of the rs7903146 polymorphism showed that the odds ratio was 3.71(95% CI: 1.43–9.56; P: 0.008) for the TT. The investigation in frothy families, we found that there is a T risk allele (TT in TCF7L2 gene) transmission from parents to ill offspring. The frequency percentage of the T allele in the diabetic mother's offspring was 64.5% and 28.6% in daughters and sons, respectively. This frequency in diabetic father's offspring was 48% in daughters and 53.1% in sons.

Conclusion: The significant difference of T allele frequency between diabetic parents and non-diabetic parents show the strong correlation of this risk allele with T2D in families. The high frequency of the T allele in diabetic mothers' daughters shows high transmission of this risk allele from mother to daughter. Moreover, the high numbers of TT homozygous in these daughters when compared to sons confirm the situation. Finally, the more frequency of TT homozygous in women than men shows high transfer of this risk allele between female, which increases diabetes probability in this gender.

AIA 4

MODY 2 Diabetes: 3 Years of Follow

Alla Ovsyannikova, Oksana Rymar, Vladimir Maximov, Elena Voropaeva, Mikhail Voevoda

Federal State Budgetary Scientific Institution “Scientific Research Institute of Therapy and Preventive Medicine”

The Purpose: To Identify the clinical features of MODY 2 diabetes which we need to follow of this group of patients.

Materials and Methods: We observed 11 patients (8 families). We diagnosed MODY 2 diabetes during the molecular genetic testing (direct automatic sequencing) of glucokinase gene. Follow-up was of 3 years. All patients had once a year a full clinical examination, blood samples for biochemical research, determination of C-peptide and TSH, antibodies to b- cells, microalbuminuria, abdominal ultrasound, heart and thyroid ultrasound, examination of ophthalmologist.

Results: Patients with MODY 2 diabetes were 5 males (45%) and 6 (55%) female, age of onset ranged from 6 months to 32 years. 8 (73%) of 11 patients with MODY 2 had not clinical manifestations of disorders of carbohydrate metabolism at the time of debut. All patients with MODY 2 had fasting hyperglycemia and 2 hours after a meal - a small increase in blood glucose levels. Overweight and obesity were not detected in any patient.

1 (9%) patient had diabetic peripheral neuropathy, 1 - retinopathy and 1 - nephropathy. Among the comorbid conditions 4 (36%) patients had thyroid pathology, 4 (36%) - the presence of allergic reactions, and 1 (9%) - a disease of the gastrointestinal tract. 1 (9%) patient at the time of pregnancy used insulin, 6 (55%) - oral hypoglycemic agents and 4 (36%) - a balanced diet.

10 (91%) patients with MODY 2 diabetes had targets levels of HbA1c, C-peptide level was below the reference values, anti-b-cells were not detected. Microalbuminuria was in 1 patient.

Conclusions: 1. The earliest age of clinical manifestations of disorders of carbohydrate metabolism in MODY 2 diabetes was six months which should be considered in the differential diagnosis with type 1 diabetes because it is also manifest in a younger age group.

2. MODY 2 diabetes had oligosymptomatic onset, soft flow, good compensation of carbohydrate metabolism, no complications, no need for exogenous insulin in most cases.

The reported study was supported by RSCF, research project No. 14-15-00496.

AIA 5

The Development of a Risk Score in Predicting Hypoglycaemia Admissions for Patients with Type 2 Diabetes Mellitus

Kurumbian Chandran, Yu Weichang, Christine Wu, Darren Seah Ee-Jin, Matthias Paul Toh Han Sim

Ng Teng Fang General Hospital, Singapore; National Healthcare Group, Singapore; National Healthcare Group Polyclinics, Singapore

Background: Hypoglycaemia admissions are costly and potentially preventable. Currently, there is no effective risk scoring tool in clinical practice to predict hypoglycaemia admissions for patients with Type 2 DM (T2DM).

Objective: Using some of the established risk factors for hypoglycaemia, we set out to develop a Risk Scoring tool to be used by clinicians.

Materials and Methods: In this cross-sectional study, we extracted the data of 47,404 T2DM patients with complete data based on their last visit in 2012 at selected National Healthcare Group Polyclinics in Singapore. The outcome variable is the occurrence of any hypoglycaemia admission within 6 months from their last visit in 2012. We entered the following potential predictors into a logistic regression model: (a) age, (b) last Body Mass Index, (c) last estimated Glomerular Filtration Rate, (d) largest reduction in glycated haemoglobin within one year, (e) usage of sulphonylurea and/or insulin, (f) last glycated haemoglobin and (g) any previous hypoglycaemia admission in the past I year. The relative weightage of predictors were compared, and the model parameters were subsequently converted to a simple risk score (range: 0 to 100).

Results: We found predictors (a) to (e) to be statistically significant for subsequent hypoglycaemia admission. In our study population, based on a sensitivity of 73.8% and a specificity of 73.1%, a cut-off score of 38 was selected. The area under the receiver-operating characteristic curve was 80.9% (Cl:76.3% - 85.5%).

Conclusion: A risk score using commonly available data can help to identify those at risk of hypoglycaemia admission with satisfactory level of accuracy. This score needs to be further validated with randomised control studies.

AIA 6

Free 25-Hydroxyvitamin D Levels, Polymorphism of Viatmin D Binding Protein Gene and Risk for Gestational Diabetes Mellitus

Natthinee Charatcharoenwitthaya[1], Charintip Somprasit[2], Athita Chanthasenanont[2], Laor Chailurkit[3], Suwannee Chanprasertyothin[3], Boonsong Ongphiphadhanakul[3]

[1]Endocrinology and Metabolism, Department of Medicine, Faculty of Medicine, Thammasat University, Thailand; [2]Department of Obstetrics and Gynecology, Faculty of Medicine, Thammasat University, Thailand; [3]Endocrinology and Metabolism, Department of Medicine, Ramathibodi Hospital, Mahidol University, Thailand

Background: The studies of the association between total 25-hydroxyvitamin D (25OHD) levels and risk for gestational diabetes (GDM) showed inconsistent results. The free 25OHD levels may be better correlated with glucose parameters and the risk of developing GDM than the total 25OHD levels. Genotypic variations in the group-specific component (GC) gene may be associated with the differences in binding affinity between vitamin D binding proteins and 25OHD and the risks of GDM.

Objectives: The objectives were to examine: the differences in free 25OHD levels between women with GDM and normal pregnant women; the relationships between free 25OHD levels and parameters of glucose metabolism; and the relationship between to SNP (rs2282679) in the GC gene and the risk of GDM.

Materials and methods: A nested case-control study was conducted. Eighty women with GDM were matched with 80 normal pregnant women for age and body mass index (BMI) range. Clinical data and blood samples were obtained during the first trimester and during 24-28 weeks' gestation. The free 25OHD levels, the total 25OHD levels, GC rs2282679 genotypes, and glucose parameters were measured.

Results: Levels of free 25OHD were not significantly different between women with GDM and normal controls, both during the first trimester (3.53±0.81 pg/ml vs. 3.42.7±0.83 pg/ml; P=0.39) and during 24-28 weeks' gestation (3.57±1.02 pg/ml vs. 3.58±0.87 pg/ml; P=0.92). During 24-28 weeks' gestation, free 25OHD levels were negatively correlated with HOMA-IR (r = -0.16, P = 0.04) and fasting insulin levels (r = -0.17, P = 0.03). In multivariate analysis adjusting for age, log BMI, and a family history of diabetes, women carrying the G allele of SNP rs2282679 located in the GC gene showed a tendency toward increased risk of GDM (OR 1.88, 95%CI: 0.97-3.66; P = 0.06). The association was stronger after excluding 6 women with vitamin D deficiency during 24-28 weeks' gestation (OR 2.14, 95%CI: 1.1-4.2; P = 0.03).

Conclusions: Free 25OHD levels were negatively correlated with HOMA-IR and fasting insulin during 24-28 weeks' gestation. Carrying the G allele of GC SNP (rs2282679) may be associated with increased risk of GDM, even among women with adequate vitamin D levels.

AIA 7

Predictors of Secondary Intervention in Surgically Resected Non-Functioning Pituitary Adenoma

Jeyakantha Ratnasingam[1,2], Benjamin Ong[3,4], Anthony Russell[2,4], Warrick Inder[2,4], Ken KY Ho[2,4]

[1]Endocrine Unit, Department of Medicine, University Malaya Medical Centre, Kuala Lumpur, Malaysia
[2]Department of Diabetes and Endocrinology, Princess Alexandra Hospital, Brisbane, Queensland, Australia
[3]Department of Diagnostic Radiology, Princess Alexandra Hospital, Brisbane, Queensland, Australia
[4]School of Medicine, University of Queensland, Australia

Background: Surgery is the primary mode of therapy for non-functioning pituitary adenomas(NFA). The post-operative management of NFA is a challenge because of a lack of knowledge regarding factors influencing remnant tumour growth that is clinically significant.

Objectives: To identify radiological factors that predict the need for secondary intervention after surgical resection of NFAs.

Methods: This is a single-centre retrospective study of surgically resected NFAs in patients with pre- and serial postoperative magnetic resonance imaging (MRI) followed for at least a year. Tumour characterisation were performed by a single operator from pre-operative(tumour volume and invasiveness) and serial post-operative images(remnant presence, volume, remnant position and growth rate). Secondary intervention was the outcome measure. The coefficient of variance for pre- and post-operative tumour volume from 8 subjects measured twice were 4% and 7% respectively.

Results: 108 patients (58 men, mean age at surgery:52.9 ± 1.45) with a median follow up of 5.7 years (range:1.2- 15.1) were studied. The pre-operative median tumour volume was 3340 mm3(527-25451). Post-operatively, 62% had remnant tumours, with a median volume of 318mm3(33-5474), and remnant position: intrasellar(44%), suprasellar(16%) and cavernous sinus/parasellar(40%). The mean remnant growth rate was 11.7± 3.1 mm3/year. Secondary intervention was required in 22% of patients who had irradiation(13%) or second surgery(9%). Kaplan-Meier analysis showed that the rate of secondary intervention increased with duration after surgery, with a median time of 6 years. Secondary intervention was not required beyond 10 years. The initial growth rate was highly correlated with the overall growth rate, r= 0.75, $p<0.01$, with a rate of 25mm3/year as a specifically predictive cut off for secondary intervention. Cox regression analysis identified in order of influence: position of post-operative remnant in the cavernous sinus/ parasellar region(HR:7.2,CI:1.5-13.0,$p<0.01$), remnant growth rate beyond 25mm3/year(HR:3.9,CI:1.8-7.5,$p<0.01$) and pre-operative suprasellar(HR:3.4,CI:1.2-6.7, p=0.02) and cavernous sinus(HR:2.7,CI:1.3-5.6, p=0.01) invasion as independent predictors of secondary intervention.

Conclusion: In surgically resected NFPAs (i)secondary intervention is unlikely to be required beyond a decade (ii)the location of tumour remnant is the primary prognostic indicator (iii)initial remnant growth rate is a good predictor of overall growth (iv)intensity of follow up should be tailored to imaging characteristics.

AIA 8

CYP11B2, CYP17A1 and KCNJ5 Protein Expression in Aldosterone-producing Adenomas (APA) with or without CACNA1D Somatic Mutations

Elena Azizan, Norlela Sukor, Nor Azmi Kamaruddin, Isa Mohamed Rose, Tan Geok Chin

The National University of Malaysia (UKM) Medical Centre

Background: KCNJ5 and CACNA1D are the two genes with the largest number of somatic mutations found to be causal for aldosterone-producing adenomas (APA) pathology[1]. Recently, APAs with a KCNJ5 mutation were found to exhibit lower KCNJ5 expression relative to their peritumoral zona glomerulosa (ZG)[2].

Objectives: We sought further evidence of genotype:phenotype relationships of this kind by comparing CYP11B2, CYP11B1 and KCNJ5 protein expression, CACNA1D genotype, and cell morphology of APAs.

Materials and Methods: Sections of APAs and control normal adrenals were used for immunohistochemistry of CYP11B2, CYP17A1, and KCNJ5. Genotyping of CACNA1D mutation V259D, G403R, I750M, and P1336R of DNA extracted from the APAs were performed using custom made Taqman genotyping assays. Cell morphology was performed by two histopathologists blinded to genotype data.

Results: In control adrenals, ZG cells that were positive for CYP11B2 were discontinuous, KCNJ5 expression was continuous around the periphery of the adrenal, and homogenous CYP17A1 staining was seen in the zona fasciculata and zona reticularis. In CACNA1D mutant APAs, KCNJ5 staining was intense, CYP17A1 low, and CYP11B2 patchily distributed, whereas in wild-type APAs there was intermediate homogenous staining of KCNJ5, CYP17A1 and CYP11B2. Cells with ZG morphology more frequently occurred in CACNA1D mutant APAs.

Conclusion: CACNA1D mutant APAs differ morphologically and histochemically from wild-type APAs. As current pathological diagnosis of APA is limited to the description of nodules and/or hyperplasia in the resected adrenal gland, characterization of histopathological markers can be used to confirm the presence and identify the sites of aldosterone production, and to discriminate genotype of the APA.

[1]Hypertension. 2014 Aug;64(2):354-361.
[2]Mol Cell Endocrinol. 2015 Jun 15;408:220-226.

AIA 9

Long Sleep Duration is Associated with Insulin Resistance Independently of Obesity in Korean Non-Diabetic Adults

Ki Dong Ko, Kyoung Kon Kim, Heuy Sun Suh, In Cheol Hwang

Department of Family Medicine, Gachon University Gil Medical Center, Republic of Korea

Background: A close association has been known between sleep duration and cardiovascular diseases. Insulin resistance is a major underlying cause driving cardiovascular diseases. We investigated whether sleep duration is associated with insulin resistance independent of obesity in Korean non-diabetic adults.

Materials and Methods: The data were collected from the KNHANES IV-2 2008, which is a part of the Fourth Korean National Health and Nutrition Examination Survey (2007-2009). A total of 5689 subjects (2375 males and 3314 females) with no diabetes were assessed in this study. After gender stratification, adjusted means of homeostasis model assessment of insulin resistance (HOMAIR) were calculated according to sleep duration (≤ 5 hr, 6-7 hr, 8 hr, ≥ 9 hr). Furthermore, logistic regression analyses were conducted to examine the association between sleep duration and increased HOMA-IR (≥ 3.2).

Results: Trends favoring a positive association between sleep duration and insulin resistance were demonstrated in women but not in men. In women, long sleep duration (≥ 9 hr/night) was associated with increased HOMA-IR (adjusted odds ratio 1.66, 95% CI 1.07-2.59) compared with normal sleep duration (6-7 hr/night), even after adjusting for body mass index (BMI) and other covariates.

Conclusions: This study shows the gender-specific association between sleep duration and insulin resistance. Women with long sleep duration are more likely to have increased insulin resistance, independently of obesity and other potential confounders.

AIA 10

Dietary penta-O-galloyl-α-D-glucose (PGG) Reduces Blood Glucose and Triglyceride in Obese Mice and Expression of PPARγ, C/EBPα, and Induces p21-mediated G1 Phase Cell Cycle Arrest and Inhibits Adipogenesis in 3T3-L1 Preadipocytes

Ahmed Malki[1], Xueqing Liu[2,3], Yanyan Cao[2,4,5], Yunsheng Li[2], Yanrong Qian[2,3,5], Xuan Wang[2,4,5], Xiaozhuo Chen[2-6]

[1]Department of Health Sciences, Biomedical Sciences Program, Faculty of Science, College of Arts and Sciences, Qatar University, Doha, Qatar; [2]Edison Biotechnology Institute, [3]Department of Chemistry and Biochemistry [4]Department of Biologic Science, [5]Molecular and Cellular Biology Program and [6]Department of Biomedical Sciences, Ohio University, Athens Ohio 45701

Obesity has become a serious worldwide epidemic and many Arab countries, including Qatar, have been suffering from it and the trend of the disease is worrying. Obesity is closely associated with type 2 diabetes (T2D) through its contribution to insulin resistance and most people with T2D are either overweight or obese. Although lifestyle changes such as more physical activities and healthy and calorie-restricted diet are absolutely required for stopping obesity and T2D epidemics, anti-diabetes and anti-obesity therapeutics are also necessary for more effectively reducing morbidity and mortality of the diseases. Natural dietary compounds can significantly contribute to the therapeutic approach. We previously reported that a natural plant insulin mimetic compound α-penta-galloyl-glucose (α-PGG), a hydrolysable tannin or polyphenol, binds to insulin receptor (IR), activates IR-mediated glucose transport signaling pathway, and reduces blood glucose levels of diabetes and obese mice. To investigate the anti-obesity potential and effects of α-PGG on adipogenesis, the compound was studied in both animals and 3T3-L1 preadipocytes. Here we report that, in vivo, daily oral administration of α-PGG at 10 mg/kg significantly reduced levels of blood glucose, triglyceride, and insulin in high fat diet-induced diabetic/obese mice. In vitro, α-PGG inhibited the differentiation of 3T3-L1 preadipocytes into mature adipocytes at 3, 6, and 9 weeks after the start of the treatment. Northern and Western blot analyses as well as ELISA show that α-PGG suppressed levels of either protein or gene expression of key positive adipogenic factors mTOR, PPARγ and C/EBPα and augmented the negative factor Pref-1, respectively. In comparison, adipogenic differentiation signaling pathways mediated by insulin, the cAMP response element binding protein (CREB) and glucocorticoid receptor (GR), were not inhibited. These results indicate that the PGG-induced anti-adipogenic activity in 3T3-L1 cells is very selective regarding its inhibitory targets. Furthermore, Western blot analyses of cell cycle proteins show that α-PGG upregulated p21 and downregulated cyclin D1. Flow cytometry studies reveal that α-PGG induced G1 cell cycle arrest and low but noticeable levels of apoptosis in adipocytes. Combining these results, α-PGG inhibits adipogenesis of 3T3-L1 adipocytes likely through upregulation of p21, since RNAi knockdown of p21 expression led to substantial restoration of adipogenesisas illustrated by triglyceride measurements. All of these results demonstrate that α-PGG is anti-diabetic, triglyceride-lowering, as well as adipogenesis-modulating, warranting further studies for its anti-diabetes and anti-obesity therapeutic potentials, particularly in animal models.

AIA 11

Thyroid Stimulating Hormone Receptor Gene Intron 1 and Regulatory T Cells are Risk Factor of Relapse in Graves Disease

Fatimah Eliana[1], Pradana Suwondo[2], Asmarinah[2], Alida Roswita Harahap[2], Joedo Prihartono[2], Tjokorda Gde Dalem Pemayun[3]

[1]YARSI University, [2]University of Indonesia, [3]Diponegoro University

Background: Graves' Disease disease management begins with the administration of antithyroid drugs, but require a long time to achieve remission and more than fifty percent of patients who had remission may relapse after the drug is stopped. This study aims to determine the factors that influence the occurrence of such recurrence. Genetic factors that play a role in the incidence of GD; such as Cytotoxic T Lymphocyte-Associated Molecul-4 (CTLA-4) gene nucleotide 49 kodon 17 exon 1 and Thyroid Stimulating Hormon Receptor (TSHR) gene rs2268458 intron 1. Immunological factors, namely number of regulatory T cells and antibodies to the thyroid receptor (TRAb).

Methods: This study is a case-control study comparing 144 patients who relapsed GD and 142 patients who did not relapse. Gene polymorphism examination was performed by PCR RFLP. Examination of the number of regulatory T cells was doing with flowcytometry, and ELISA was used to measure TRAb.

The Results: Analysis of the research results prove the significant relationship between recurrence with family factors (p 0.008), age at diagnosis (p 0.021), ophthalmopathy degree 2 (0.001), enlarged thyroid gland exceed the lateral edge of the sternocleidomastoid muscular (p 0.040), genotype GG CTLA-4 gene exon 1 (p 0.016 and OR 7.3), genotype CC TSHR gene intron 1 (p 0.003 and OR 13.3), low number of regulatory T cells (p 0.001) and high levels of TRAb (p 0.002). This study also showed that GD patients with genotype GG CTLA-4 gene exon 1 has had lower regulatory T cells than genotype GA and AA (p 0.035). GD patient with genotype CC TSHR gene intron 1 has had higher level of TRAb than genotype CT and TT (p 0.026).

Conclusion: GD patients with genotype GG CTLA-4 gene nucleotide 49 kodon 17 exon 1, genotype CC TSHR gene rs2268458 intron 1, low number of regulatory T cells and high level of TRAb, have higher risk of relapse.The risk of relapse in patients with GD can be determined prior to administration of antithyroid therapy based on clinical factors, genetics and immunology.

01

Prospective Study Suggests that Central Arterial Stiffness Independently Predicts Albuminuria Progression in Asians with Type 2 Diabetes

Lim Su Chi, Zhang Xiao, Li Na, Liu Jian Jun, Angela MC Moh, Su Chang, Serena KM Low, Tavintharan Subramaniam, Yeoh Lee Ying, Sum Chee Fang

Diabetes Centre, Clinical Research Unit & Department of Medicine, Khoo Teck Puat Hospital, Singapore

Background: The progression of albuminuria has been associated with renal deterioration and increased risk of cardiovascular disease in type 2 diabetes (T2DM). Central arterial stiffness (CAS) can aggravate systemic vasculopathy by propagating elevated systolic and pulse pressures forward, thereby accentuating global vascular injury. However, longitudinal study (for causal inference) to evaluate whether increased arterial stiffness in T2DM could predict the progression of albuminuria remained very limited, especially among Asians.

Objectives: We aim to investigate whether CAS is an independent predictor for progression of albuminuria in a multi-ethnic T2DM Asian cohort in Singapore.

Materials and Methods: In a prospective cohort, 437 patients with T2DM were clinically assessed at baseline and after a median follow-up of 3.1 years (range 2.3–4.1). Patients were divided into progression and non-progression groups according to the changes of urinary albumin-to-creatinine ratio (ACR). Progression was defined as transition from normo- (ACR<30mg/g) to microalbuminuria (ACR=30-299mg/g), micro- to macroalbuminuria (ACR>300mg/g), or normo- to macroalbuminuria. CAS was estimated by carotid-femoral pulse wave velocity (PWV) using applanation tonometry method. Multivariable logistic regression was used to estimate the odds ratio (OR) for progression of albuminuria.

Results and Conclusion: Progression of albuminuria occurred in 80 patients (15.5%). Baseline PWV was significantly higher in progression (10.5 ± 3.4 m/s) than in non-progression group (9.6 ± 2.5 m/s, P=0.002). One standard deviation (SD) increase in baseline PWV was associated with an increased odds of 1.368 (95% CI, 1.087-1.721, P=0.008) for albuminuria progression. After adjustment for age, gender, ethnicity, systolic blood pressure, low-density lipoprotein-cholesterol, estimated glomerular filtration rate, body mass index, angiotensin-converting-enzyme and angiotensin receptor blockers, baseline PWV remained a significant predictor of albuminuria progression (OR for 1-SD increase in PWV=1.389, 95% CI, 1.055-1.827, P=0.019). In summary, increased CAS at baseline predicted future progression of albuminuria. Our results suggest the potential benefit of ameliorating CAS (e.g. by angiotensin receptor antagonist) to retard albuminuria progression in T2DM.

02

Single Nucleotide Polymorphism at +45 T>G of the Adiponectin Gene and Plasma Adiponectin Level in Type 2 Diabetes Mellitus

Khin Thin Yu, Kyu Kyu Maung, Theingi Myint, Khin Win Sein, Ko Ko, Thein Myint

Myanmar Society of Endocrinology and Metabolism (MSEM)

Adiponectin is an adipocytokine and secreted from adipose tissue, which is a 244 amino acids peptide and affects insulin sensitivity. Recent preclinical and clinical studies have implicated that adiponectin as an important role in the regulation of glucose and lipid metabolism. Diabetes Mellitus is a major cause of morbidity and mortality in worldwide, with an increasing prevalence. The variants in the adiponectin gene have been found to be consistently associated with type 2 diabetes mellitus in different population and different countries. The aim of the present study was to investigate the association between single nucleotide polymorphisms rs 2241766 (SNP+45 T>G) of the adiponectin gene and plasma adiponectin level in Myanmar type 2 diabetic patients.

It was a cross-sectional study and 100 type 2 diabetic patients and 104 non-diabetic subjects were included. SNP+45 T>G of adiponectin gene were determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method and plasma adiponectin was measured by enzyme linked immunosorbent assay (ELISA) method.

The genotype frequency (TT, TG, GG) of SNP+45 T>G in type 2 diabetic patients were 65%, 24% and 11% respectively. Carrier groups (TG heterozygous and GG homozygous genotype) were more likely to develop type 2 diabetes risk than non-carrier groups (TT homozygous genotype) [Odd ratios =1.8 (95% CI = 0.89-3.63, p = 0.09) and Odd ratios = 3.51 (95% CI = 1.07-11.54, p =0.04)] respectively. Moreover, the minor G allele was significantly more frequent in type 2 diabetic patients than in non-diabetic subjects, (23% versus 12.02 %) and G allele of SNP+45 was found to statistically increase type 2 diabetes risk than T allele [Odd ratios =2.38 (95% CI = 1.38-4.09, p = 0.002)].

The mean plasma adiponectin level of type 2 diabetic patients were 33.32±17.98, 24.28±14.56 and 21.18±11.37 µg/ml in TT, TG and GG genotypes respectively. The mean plasma adiponectin levels of carrier groups (TG heterozygous and GG homozygous genotype) were significantly lower than that of non-carrier groups (TT homozygous genotype) (p=0.02). It can be concluded that the polymorphism of +45 T>G (rs-2241766) of adiponectin gene is significantly associated with low plasma adiponectin level and type 2 diabetes mellitus in this study groups of Myanmar population.

03

Incidence of Decreased Glomerular Filtration Rate and Associated Risk Factors in Patients with Type 2 Diabetes

Phat Ma Tung, Khue Nguyen Thy

University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam

Background: Decreased glomerular filtration rate (GFR) is a marker of diabetic kidney disease. Once GFR is less than 60 ml/minute/1.73m2, end-stage renal disease and cardiovascular disease events can occur with high rates despite advanced management.

Objectives: To estimate the incidence rate of decreased GFR and investigate its associated risk factors.

Materials and Methods: In this retrospective cohort study, the medical records (from 2000 – 2004) of 1165 type 2 diabetes patients at MEDIC outpatient clinic, Ho Chi Minh City (aged 18 or older, baseline GFR>60 ml/min/1.73m2 according to CKD-epi) were examined. Serum creatinine was assessed annually. All subjects were followed up until the development of decreased GFR (confirmed by two consecutive estimated GFR<60 ml/minute/1.73m2), or until the end of 2014. The effects of covariates on later development of decreased GFR were tested with the use of Cox proportional hazards model; $p<0.05$ was considered significant.

Results: The cohort was followed up with a median time of 8.5 years and a total of 9647 person-years. There were 324 new cases of decreased GFR, the incidence rate was 3.36/100 person-years. In multivariable analysis, the following characteristics at baseline represent independent risk factors of decreased GFR: age (every 5 years increase, HR=1.32, 95%CI: 1.23-1.41, p=0.000), male sex (HR=1.76, 95%CI:1.25-2.47, p=0.001), hypertension (HR=1.41, 95%CI:1.06-1.89, p=0.025, duration of diabetes (every year, HR=1.05, 95%CI : 1.02-1.09, p=0.002), retinopathy (HR=1.32, 95%CI: 1.03-1.67, p=0.025), low hematocrit (every 3% decrease, HR=1.22, 95%CI: 1.09-1.36, p=0.001), high HbA1c (every 1% increase, HR=1.1, 95%CI: 1.04-1.16, p=0.001), high triglycerides (every 1 mmol/l increase, HR=1.07, 95%CI: 1.02-1.13, p=0.008) and low GFR (every 5 ml/minute/1.73m2 decrease, HR=1.14, 95%CI: 1.09-1.21, p=0.000).

Conclusion: The incidence rate of decreased GFR was high in Vietnamese patients with type 2 diabetes. Baseline hematocrit, HbA1c and triglycerides were the modifiable risk factors associated with decreased GFR.

04

Microvascular & Macrovascular Complications in Young Onset Type 2 Diabetes in a Tertiary Health Institution in Malaysia in Comparison with Type 1 Diabetes Patients (MiMaCom)

Lim Kim Piow, Foo Siew Hui, Liew Kean Yew, Kavitha Arumugam, Nurafna Mohd Jaafar, Choo Yung Zhuang, Wong Yen Shen

Endocrine Unit, Department of Medicine, Selayang Hospital, Selangor, Malaysia

Rationale & Objectives: Young onset type 2 Diabetes Mellitus (T2DM) has been increasingly diagnosed in recent years. This phenomenon will pose a significant burden to the health and economic status at the individual and society level as these individuals are predisposed to increased risk of complications at a younger age. This is a pilot study conducted in Malaysia with the objectives of comparing the rate of diabetes complications in young onset T2DM with type 1 diabetes (T1DM) patients in a tertiary health care institution and to examine the relationship between the diabetes complications with clinical and metabolic parameters.

Materials & Methods: A retrospective, descriptive study based on electronic medical record review from medical clinic, Selayang Hospital was conducted from March to May 2015. All young onset T2DM patients defined as those with disease onset before 40 years old and T1DM patients were included. Data was collected on demographic and clinical parameters, cardiovascular risks factors, macrovascular and microvascular complications.

Results: There are 194 young onset T2DM and 45 T1DM. Despite similar glycemic profile, significantly more subjects in the T2DM group developed macrovascular and microvascular complications than the T1DM group (22 vs. 0%, $p < 0.001$for macrovascular, 68 vs. 40%, $p < 0.001$ for microvascular). Young onset T2DM patients are more likely to have unfavourable cardiovascular risk factors compared with T1DM including hypertension (71% vs. 7%, $p< 0.001$), dyslipidemia (92% vs. 67%, $p < 0.001$), overweight/ obesity (98% vs. 55%, $p< 0.001$). After adjusted for age, disease duration, gender, presence of hypertension and dyslipidemia, body mass index, blood pressure, triglyceride and Hba1c level, young onset T2DM remains an independent predictor for both macrovascular and microvascular complications in the overall cohort (OR= 2.635, p= 0.022).

Conclusion: Our study shows that young onset T2DM appear to be a more aggressive disease compared to T1DM as it independently predicts development of macrovascular and microvascular complications among this young cohort. An aggressive approach to control their cardiovascular risk factors and optimise glycemic control from the disease onset will be warranted to prevent premature morbidity and mortality.

05

Association of Metabolic Syndrome with Non-Alcoholic Fatty Liver Disease in Type 2 Diabetes

Kuhu Roy, Uma Iyer, Rumin Shah, Tushar Vaishnav

Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara-390007, Gujarat, India.

Background: A hepatic consequence of metabolic syndrome (MS) is non-alcoholic fatty liver disease (NAFLD).1 It is a state of ectopic fat accumulation in the hepatocytes2 in absence of alcohol intake.3 Type 2 diabetics are at higher risk of developing NAFLD compared to non-diabetics.4 Asian Indians develop central obesity5 hence are more susceptible to NAFLD.6 There is scarce data on association of MS with NAFLD in type 2 diabetics from India.

Objective: To map the prevalence of NAFLD among type 2 diabetics and assess its association with MS.

Materials and Methods: Type 2 diabetics aged 30-75 years (N=95) attending a private clinic were enrolled. Those with recent gastrointestinal surgery, known liver disease, consuming hepatotoxic drugs, alcohol, testing positive for hepatitis B surface antigen and hepatitis C antibody were excluded. Detailed clinical history, anthropometric data, fasting blood sample for estimating high sensitivity C reactive protein (hs-CRP), hepatic, renal, lipid profile, ferritin and glycated hemoglobin was obtained followed by ultrasound.

Results: The prevalence of NAFLD was 77.9% (CI 69.4-86.4). NAFLD subjects had significantly higher body mass index (P 0.007), waist circumference (0.0006), waist stature ratio (0.001), non-HDL-C (P 0.03), hs-CRP (P 0.017), gamma glutamyl transferase (GGT) (P 0.023), liver span (P 0.019) and number of features of MS (P 0.036) than those with a normal liver. Obesity (P 0.006, OR: 3.86, CI: 1.26-11.99), abdominal obesity (P 0.0016, OR: 5.42, CI: 1.57-19.09), GGT >35U/L (P 0.036, OR: 7.92, CI: 1.01-168.34), hs-CRP>3mg/l (P 0.017, OR: 3.47, CI: 1.09-11.41), liver span >160mm (P 0.028, OR: 3, CI: 1-9.22), presence of MS (P 0.008, OR: 3, CI: 1.71-17.54) emerged as risk factors for NAFLD. With addition of each component of MS, the mean grade of steatosis increased (P 0.023). Presence of MS was the strongest predictor of NAFLD in type 2 diabetics (P 0.002, OR 5.4, CI: 1.9-15.3).

Conclusion: The risk of advancement of NAFLD leading to adverse cardiac and hepatic episodes of morbidity and mortality lurks in these subjects. The need of the hour is to identify the type 2 diabetics with NAFLD by making screening mandatory for those with MS.

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06

Use of Continuous Glucose Monitoring in Patients with Diabetic Kidney Disease with Suboptimal Glycemic Control

Ester Yeoh, Sharon Fun, Julia Tong, Lim Boon Khim, Tavintharan S., Sum Chee Fang, Yeoh Lee Ying, Lim Su Chi

Khoo Teck Puat Hospital, 90 Yishun Central, Singapore 768828

Background: Patients with diabetic kidney disease (DKD) on anti-diabetic agents, are at greater risk of glycemic variations, both hypoglycemia and hyperglycemia. We hypothesize that continuous glucose monitoring (CGM) allows titration of anti-diabetic therapy to improve glycemic control in DKD patients without increasing hypoglycemia.

Objectives: We aimed to compare glycemic control (using HbA1c) and hypoglycemia incidence in patients with stage 3 or worse DKD [not on renal replacement therapy (RRT)], receiving retrospective CGM-guided anti-diabetic therapy vs. structured self-monitoring of blood glucose (SMBG) over 3 months.

Materials and Methods: Thirty patients with HbA1c >8% were randomized to 6-day retrospective CGM or SMBG. In the CGM group, CGM was worn at the beginning and 6 weeks. HBA1c, assessment of hypoglycemia events (self-reported and BG<4mmol/l from CGM/SMBG data) and medication adjustment were performed at the beginning, 6 weeks and 3 months. All patients received education on hypoglycemia avoidance.

Results: Fourteen patients were allocated to CGM and 16 to SMBG. Mean(±SD) estimated glomerular filtration rate (eGFR) was 41.2±9.3ml/min. Majority (86.7%) of patients had diabetes duration >10years and on insulin therapy (90%). HbA1c improved significantly from baseline 9.9±1.2 to 9.0±1.5% (p<0.001) at 3 months, with no difference between CGM (9.8±1.2 to 8.8±1.8%, p=0.009) or SMBG (9.9± 1.3 to 9.1±1.1%, p=0.007) groups, (p=0.869 between groups). In the CGM group, percentage duration in hyperglycemia (BG>10mmol/l) reduced from baseline 65.4±22.4% to 54.6±23.6% (p=0.033) at 6 weeks, with a non-significant rise in percentage duration in hypoglycemia from 1.2±2.2% to 4.0±7.0% (p=0.176). CGM data showed that average lowest glucose was lower after medication adjustment at 6 weeks (4.9±2.2 to 3.8±1.4mmol/l, p=0.04) but with improved average glucose (12.1±2.5 to 10.9±2.5mmol/l, p= 0.014). There was no difference in hypoglycemia events in the CGM [median 0(IQR 0-1.35) at baseline, 1(0-4) at 6 weeks, p=0.085 and 0(0-0), p=0.269 at 3 months] and SMBG [0(0-0.25) at baseline to 0(0-0.75) at 3 months, p=1] groups.

Conclusion: In a pilot study of DKD patients, short-term episodic use of CGM improved duration spent in hyperglycemia without significantly increasing time-exposure to hypoglycemia. Future larger and longer studies are needed to demonstrate whether CGM is superior to SMBG in optimizing glycemia.

07

Prognostic Factors in Patients Hospitalised with Diabetic Ketoacidosis

Manish Gutch, Sukriti Kumar, Syed Mohd Razi, Abhinav Gupta, Keshav Kumar Gupta

Department of Endocrinology, Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh, India; Department of Radio diagnosis, SGPGI, Lucknow, Uttar Pradesh, India

Background: Diabetic ketoacidosis is characterized by biochemical tired of hyperglycemia, acidosis, and ketonemia. It remains a life threatening condition despite improvement in diabetic care, timely identification and intervention remains the backbone of treatment.

Aim and Objectives:
1. To evaluate the clinical and biochemical prognostic markers in diabetic ketoacidosis.
2. To correlate the various prognostic markers with mortality in diabetic ketoacidosis.

Settings and Design: A prospective observational study done at tertiary care center.

Methods and Materials: Two hundred and seventy patients hospitalized with diabetic ketoacidosis over a period of 1 year were evaluated clinically and by laboratory tests. They were managed in the standard way with insulin, intravenous fluids and appropriate supportive care. Serial assays of serum electrolytes, glucose and blood pH, and clinical outcome of either discharge home or death.

Statistical Analysis Used: Data were analyzed by SPSS version 17 and were presented in the values of mean, median, and percentages. The P value of < 0.05 was considered significant.

Result: The significant predicators of final outcome obtained above [sex, past history of Type 1 DM and Type 2 DM, SBP, DBP, TLC, APACHE II score, BUN, S. Creatinine, S. Mg++, S. PO4-3, S. Osmolality, NT-ProBNP, SGOT, SGPT, S. Albumin] were further regressed together and subjected with multivariate logistic regression (MLR) analysis. The MLR analysis further revealed that the male sex had 7.93 fold higher favorable outcome as compared to female sex (OR=7.93, 95% CI=3.99-13.51) while decrease in mean APACHE II score (14.83) and S. PO3-- (4.38) at presentation may lead 2.86 (OR=2.86, 95% CI=1.72-7.03) and 2.71 (OR=2.71, 95% CI=1.51-6.99) fold better favourable outcome respectively as compared to higher levels (APACHE II score: 25.00; S. PO3--: 6.04).

Conclusions: Sex, baseline biochemical parameters like APACHE II Score, and phosphate level, were important predicator of mortality from DKA.

08

Glycemic Variability Among Older Adults with Type 2 Diabetes

Tong Chin Voon, Nurain Mohd Noor, Masni Mohamad, Zanariah Hussein

Endocrine Unit, Department of Medicine, Hospital Putrajaya, Malaysia

Background: Glycemic Variability (GV) is another measure of dyslycemia in diabetes which is not reflected by HbA1c. GV has been found to cause deleterious effects on endothelial function and oxidative stress.

Objectives: The aim of this study was to evaluate GV among older adults with type 2 diabetes in Putrajaya Hospital using the Continuous Glucose Monitoring System (CGMS) and to compare the GV between patients with good glycemic control and those with poor control.

Method: A total of 138 patients (69 in each arm) with type 2 diabetes age 65 and above were included in this study. All subjects underwent baseline clinical evaluation followed by monitoring using CGM for six days. GV was calculated using the EasyGV software.

Results: The patients with HbA1c ≥ 7% had longer duration of diabetes, higher use of insulin, more microvascular complications and higher systolic blood pressure compared to their counterparts. They also had significantly higher fasting blood glucose, total cholesterol and triglyceride levels. The patients with HbA1c ≥ 7% had significantly higher GV in all parameters except one. The Mean Amplitude Glycemic Excursions (MAGE) [5.45(IQR 1.6) versus 4.45(1.8)], Continuous Overlapping Net Glycemic Action (CONGA) [8.10 (IQR 2.2) versus 6.49 (1.3)], Standard Deviation (SD) [3.01 (±0.854) versus 2.18 (±0.910)], M-value [10.51(IQR 10.3) versus 4.13 (6.0)], Average Daily Risk Ratio (ADDR) [27.69 (IQR 12.1) versus 15.30 (8.6)], Lability Index (LI) [3.17 (IQR 2.2) versus 2.19 (1.7)], High Blood Glucose Index (HBGI) [9.28 (IQR 6.5) versus 3.85 (4.9)], Mean of Daily Difference (MODD) [3.11(IQR 0.9 versus 2.29(1.0)], Glycemic Risk Assessment in Diabetes Equation (GRADE) [7.52(IQR 6.3) versus 2.89(3.3)] and Mean Absolute Glucose (MAG) [1.65(IQR 0.7) versus 1.40(0.7)] were significantly higher in the group with HbA1c≥ 7%. The Low Blood Glucose Index (LBGI) [2.14(IQR 3.4) versus 2.11(2.6)] which represents risks of hypoglycemia was the only parameter which was not significantly different between both groups.

Conclusion: Hypoglycemia is an important complication and risk to be assessed in older adults with diabetes, regardless of their HbA1c. Clinicians performing CGM for patients should utilize calculated parameters of GV as it allows a more objective assessment of GV.

09

Glycemic Indices of Traditional Javanese Foods in the Healthy State and Type 2 Diabetes

Teky Widyarini, Supriyanto Kartodarsono, Sugiarto, Eva Niamuzisilawati

Endocrinology Division, Internal Medicine Department, Faculty of Medicine Sebelas Maret University-Dr. Moewardi Hospital Surakarta

Background: Main food for most of Indonesian people, especially Javanese is white rice, causing an increase in blood glucose levels after eating significantly. Any diet to counteract diabetes should be evaluated for its effects on glucose response to substitute white rice which is familiar to the Javanese traditional foods, such as red rice, corn rice and tiwul.

Objectives: to determine the glycemic indices of traditional javanese foods in healthy subjects and type 2 diabetes mellitus

Materials and Methods: 11 healthy subject and 11 type II diabetes aged 40-50 years participated in research. The white rice, red rice, corn rice and tiwul, matched for 50 grams of available carbohydrate, were consumed at breakfast after separate a 10 hour fasting. Capillary blood glucose concentrations at baseline and at 30 minute intervals up to 120 minutes postprandial were collected. The glycemic indices were determined as ratios of the incremental areas under the response curves with white rice as the refference. Statistical analyses are performed using banferroni confidence intervall, barlett's test, levene test and repeated measures analysis of variance.

Results: Mean glycemic indices ± SEM of the red rice, corn rice and tiwul for the healthy state are 30,0±29, 45,7±28 and 38,0±24 for for red rice, corn rice, and tiwul, respectively. Corresponding values for those with type 2 diabetes are 39,1±26,6, 24,6±28,3 and 55,0±44,9.There are no statistically significant differences in the GIs between the control and the diabetic groups for red rice, corn rice and tiwul, nor were there statistically significant differences among red rice, corn rice and tiwul($p = 0.89$).

Conclusions: The results show low glycemic indices for red rice, corn rice and tiwul included in the study and that their consumption by diabetic individuals does not result in significant postprandial glucose excursions. These findings point to the potential benefits of red rice, corn rice and tiwul when used in a healthy balanced diet. Promotion of traditional foods may provide non-pharmaceutical management of type 2 diabetes and improve dietary adherence with cultural groups.

O10

Effect of Cosmos Caudatus (Ulam Raja) on Glycemic and Cardiovascular Risk Factors in Type 2 Diabetic Patients: A Randomized Controlled Trial

Cheng Shi-Hui, Amin Ismail, Joseph Anthony, Ng Ooi Chuan, Azizah Abdul Hamid, Barakatun Nisak Mohd Yusof

Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia; Department of Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia; Department of Food Science, Faculty of Food Science and Technology, Universiti Putra Malaysia, Selangor, Malaysia.

Background: Type 2 diabetes is frequently associated with cardiovascular risk factors such as hypertension and dyslipidemia. Therefore managing glycemic control together with cardiovascular risk factor is crucial to prevent type 2 diabetes related complications. Cosmos caudatus is reported to have anti-diabetic, anti-hypertensive and anti-inflammatory activity in animal studies. However, its clinical effectiveness in human remains unclear.

Objectives: This study aimed to investigate the effectiveness of C. caudatus on glycemic status and cardiovascular risk factors in patients with type 2 diabetes.

Methods: In this randomised controlled trial with two arms parallel group design, a total of 101 patients with type 2 diabetes were randomly allocated to diabetic-ulam group or diabetic controls for eight weeks. Patients in diabetic-ulam group consumed 15g of raw C. caudatus daily while diabetic controls were abstained from taking C. caudatus for eight weeks respectively. Both groups received the standard lifestyle advice.

Results: After eight weeks of C. caudatus supplementation, there were significant improvement in mean HbA1c level (-0.76% vs -0.37%), mean serum insulin (-1.16 uU/ml vs +3.91 uU/ml), mean systolic blood pressure (-6.79mmHg vs -1.85mmHg), and mean hs-CRP (-1.53 mg/l vs -0.23 mg/l) in diabetic-ulam group compared to the diabetic controls ($p<0.05$). There was no significant difference in the change of lipid profile at the end of the trial.

Conclusions: C. caudatus supplementation demonstrated an improvement in HbA1C, serum insulin, in addition to systolic blood pressure, and hs-CRP in patients with type 2 diabetes. The results suggest the potential of C. caudatus to develop as a functional food. This study is on-going to elucidate the mechanism of C. caudatus using metabolomic analysis.

011

Correlation of Phospholipase (sPLA2 IIA) Enzime's Level and Severity of Diabetic Renal Disease in Type 2 Diabetic Patients

Harli Amir Mahmudji[1], R. Bowo Pramono[2], Hemi Sinorita[2], M. Robikhul Ikhsan[2]

[1]Internal Medicine – Prof. dr. Soeroyo Mental Health Hospital, Magelang; [2]Division of Endocrinology – Internal Medicine, dr. Sardjito Hospital, Yogyakarta

Background: Diabetic nephropathy is the most important complication in Asian diabetic. Phospholipase enzime is the link of inflamation marker that can affect to diabetic kidney disease.

Objective: The aim of this study was to determine the correlation of phospholipase enzim level and severity of diabetic renal disease in type 2 diabetic subjects.

Research Design and Methods: The cross sectional study arrange type 2 diabetic with nephropaty inclusive subjects (n = 118), and randomly selected by the level of eGFR. Subject will separate randomly in four category, e.i mild (eGFR ≥ 90 ml/min), moderate (eGFR 60 – 90 ml/min, high (eGFR 15 - 59 ml/min, very high (eGFR < 15 ml/min), and all subject will be measuring the level of phospholipase (spLA2 IIA) enzime.

Results: The amount of subject in each category were 15 patients (pts) in mild group, 47 pts in moderate group, 55 pts in risk group, and no patients in very high risk group, and 28 subject for the normal group. The results from ROC and AUC analysis for sensitivity and spesifity sPLA2 IIA in all of subject are 68% and 69%, with positive / high value level enzime is ≥ 3247 pg/ml. There are significant differences between level of log10_sPLA2 IIA in non diabetic and diabetic subject (p =0.000), and between diabetic subject who have positive than normal level (p = 0.000). In chi-square analysis the eGFR category just allow with two categories e.i mild to moderate and high risk, and there is no significant difference level of log10_spLA2 IIA of them (p = 0.217). Proteinuria as marker nephropathy diabetic show significant result of log10_sPLA2 IIA in diabetic subject (p = 0.038) and dominantly in female group (p = 0.000), but there is no different between sex group in log10_eGFR level (p = 0.299).

Conclusions: The result of the study suggest that there is no significant correlation between phospholipase enzime with the level of severity diabetic kidney disease, but show different level of phospholipase enzime in diabetic subject, which dominantly in female and proteinuria.

012

Incidence of Adrenal Insufficiency and its Relation to Mortality in Patients with Septic Shock

Manish Gutch, Sukriti Kumar, Syed Mohd Razi, Abhinav Gupta, Keshav Kumar Gupta

Department of Endocrinology, Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh, India; Department of Radio diagnosis, SGPGI, Lucknow, Uttar Pradesh, India

Background: The hypothalamic pituitary adrenal axis has pivotal role to combat acute insults. Glucocorticoids directly or indirectly play role in the maintenance of normal vascular tone and in potentiating the vasoconstrictor action of catecholamine, associated with septic shock.

Aims: To determine the incidence of adrenal insufficiency and its relation to mortality in patients with septic shock.

Settings and Design: A prospective observational study done at tertiary care center.

Methods and Materials: In patients of septic shock, APACHE II score was calculated and serum cortisol was measured at the time of admission and 1 hour after giving 250 µg ACTH. Hydrocortisone was added to inotropics in all patients after drawing 2nd blood sample for serum cortisol and was continued till 7 days or less. In our study, the patients with inadequate adrenal response were divided into two groups: 1) absolute adrenal insufficiency – baseline cortisol < 20 µg/dL and increment ≤ 9 µg/dL after the ACTH stimulation test; 2) relative adrenal insufficiency – patients with baseline cortisol≥20 µg/dL and increment≤9 µg/dL.

Results: The incidence of AI in septic shock was 42% (absolute 14%, relative 28%). The mortality rate was 48%, and it was higher in patients with AI than in patients without AI (P = 0.017). The APACHE II score > 25 carried higher mortality rate than a score of < 25 (P =< 0.001). Baseline serum cortisol > 1210 nmol/L had exceptionally high likelihood of mortality (OR 50, P =< 0.001). Among those who survived, inotropic support was required for longer period in relative as compared to absolute AI and to non-AI.

Conclusions: AI is prevalent among patients with septic shock. We found that higher APACHE scores were associated with higher rates of adrenal failure and mortality in patients with septic shock. There also appears to be a bimodal distribution of mortality with adrenal status in patients with septic shock.

013

A Descriptive Review of Patients Suspected with Primary Aldosteronism at The Medical City Hospital Philippines (2000-2015)

Patrick James Co, Ruben Kasala, Pacheco Elizabeth

The Medical City Hospital, Section of Endocrinology, Ortigas Avenue, Pasig City, Philippines

Primary Aldosteronism (PA) is recognized to be the most common secondary cause of hypertension. The suspicion of PA warrants evaluation due to significant negative cardiovascular and renal effects, which may have a potential cure with proper management.

The objective of this paper is to present initial data regarding characteristics and management of suspected PA patients at The Medical City Hospital, Philippines.

We reviewed in-hospital data from year 2000 to 2015 with the keywords “Hyperaldosteronism” and “Primary Aldosteronism” through the Medical Information and Documentation Access System (MIDAS).

Sixty two (62) suspected PA patients were generated, 14 patients were excluded due to lack of documented aldosterone-renin ratio (ARR) while 48 patients were further reviewed and had ARR more than 20. Seventeen (17) out of 48, had confirmatory saline suppression test (SST) and all had plasma aldosterone concentration (PAC) level of more than 10.

Females were more predominant than males, with 52% vs 48% respectively. The mean age was 44 years old and mean serum potassium (K) was 2.8 meqs/L. The most common presentation was hypokalemia (98%) and the most common CT scan finding was a unilateral adrenal adenoma (75%).

There were a total of 20 ARR positive patients who underwent laparoscopic adrenalectomy with final histopathologic finding of an adrenal adenoma. Only 9 out of 20 (45%) had a confirmatory SST(Group 2), prior to adrenalectomy compared to 11 (55%) who only had positive ARR test, (Group 1).The median value of PAC for Group 1 was 41.32 and for Group 2 was 40.4 ng/dL while median value of plasma renin activity (PRA) for Group 1 was 0.22 and 0.28 ng/mL/hr for Group 2. The median ARR value for Groups 1 and 2 were 139.3 and 134.15, respectively. A total of 28 patients were medically managed

The initial data showed 100% confirmed PA based on histopathologic finding of an adrenal adenoma with positive ARR test alone. Also, the median values of PAC, PRA and ARR between groups 1 and 2 had minimal differences but statistical analysis is needed to draw a significant conclusion.

014

Factors Associated with Adrenal Insufficiency Among Medical Admissions in Hospital Sungai Buloh

Ida Ilyani Adam, Nordiana Nordin, Sharimilla Shanugam

Internal Medicine Department, Hospital Sungai Buloh, Selangor, Malaysia

Introduction: Adrenal insufficiency (AI) is a rare and potentially lethal disease if untreated. Other than clinical signs and symptoms, the role of other factors in association with AI has not been extensively investigated. To date, there have been no previous studies done in Malaysia focusing on this aspect.

Objectives: To determine the factors and outcome associated with adrenal insufficiency among patients admitted to acute medical wards in Hospital Sungai Buloh.

Materials and Methods: Based on complete hospitalizations datasets from the electronic medical record system, the characteristics of patients with AI was retrospectively analysed.

Results: A total of 110 patients (63.3% male, 70.9% aged between 40-79 years) were included in the study. 41% were diagnosed as tertiary AI while the rest were diagnosed as others- no predisposing factors (40%), primary AI (16.4%) and secondary AI (1.8%). Univariate analysis showed that primary AI was significantly associated with symptoms of fatigue (OR 1.596; 95% CI (1.596-98.025); p=0.003) and loss of weight (p=0.000), signs of fever (p=0.014) with loss of hair (p=0.033) and intake of traditional medications (p=0.004), phenytoin (p=0.023) and rifampicin (p=0.001). Secondary AI was associated with myalgia (p=0.000) and hypotension (p=0.023). Tertiary AI was associated with traditional medications (p=0.000). “Others” diagnosis was associated with fatigue (OR 0.375; 95% CI (0.168-0.836); p=0.015) and fever (p=0.003). Hyponatremia was associated with primary AI (OR 2.482; 95% CI 0.981-8.3238; p=0.048). Hypercalcemia (p= 0.038) and hypoglycaemia (OR 17.0; 95% CI 0.943-306.348; p=0.011) was associated with secondary AI and eosinophilia was associated with tertiary AI (p=0.040).

Significant associations between symptoms and signs were found among all types of AI: postural blood pressure drop with dizziness (p=0.001), dry skin (p=0.008), fatigue (p=0.001) and weight loss (p=0.032), fever with fatigue (p=0.001), weight loss (p=0.004) and myalgia (p=0.001), hypotension with fatigue (p=0.02) and dry skin (p=0.000), fatigue with dehydration (p=0.001).

Upon discharge, 7 patients (6.4%) passed away due to various factors while the rest survived (94.5%). At 6 months, 20% were readmitted, 35.5% were seen in clinic for follow-up and 32.7% were lost to followup. A review 1 year later showed a higher rate of patients lost to followup (42.7%) but a lower readmission rate (9.1%).

Conclusions: The combination of clinical presentations of fatigue, weight loss, myalgia, dizziness, postural blood pressure drop and hypotension with biochemical markers of hyponatremia, hypercalcemia and hypoglycaemia might be of interest to suspect adrenal insufficiency. Traditional medications, rifampicin and phenytoin were significantly associated with AI. The high morbidity rate validates the need to have a high suspicion of index for diagnosis.

015

Serum Zinc and Copper in Hyperthyroidism

Mohammad-Hasan Khadem-Ansari, Sahar Godratizadeh, Yousef Rasmi

Department of Biochemistry, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

Introduction: Zinc and other trace elements such as copper are required for the synthesis of thyroid hormones. On the other hand, thyroid hormones are essential for the absorption of zinc. We aimed to determine the levels of these trace elements in hyperthyroidism.

Materials and Methods: Thirty five patients (34.75±7.09 years) with hyperthyroidism and 35 normal healthy individuals (34.91±6.55 years) participated in study. Serum copper and zinc were determined using colorimetric chemical kits.

Results: A significant increase in serum copper levels were demonstrated in hyperthyroidism as compared with that of the normal subjects (102.70±8.15 vs. 88.88 ±10.53µmol/l, respectively; $p<0.001$. while serum zinc levels of hyperthyroidism patients were significantly lower than the levels in normal individuals (92.69± 8.52 vs. 96.94± 10.70 µmol/l, respectively; $p<0.0001$.

Conclusion: Study confirmed significant changes in the levels of serum Zn and Cu in hyperthyroidism patients. These changes may be related to pathophysiology of thyroid disorders. We suggest that the metabolism of Zn and Cu is abnormal in hyperthyroidism.

016

Prevalence of Non Alcoholic Fatty Liver Disease in Non Obese Hypothyroid North Indian Subjects

Tanvi Raghuvanshi, Sandeep Garg, Sunita Aggarwal, Ved Prakash Ghilley

Department of Medicine, Maulana Azad Medical College, New Delhi, India

Background: Hypothyroidism leads to deranged lipid profile by its action on the lipid metabolism. Serum triglycerides, cholesterol and LDL levels are increased in hypothyroidism causing dyslipidemia which further leads to steatosis in liver leading to NAFLD.

Objectives: To find out if hypothyroid carries an independent risk for NAFLD.

Method: In an observational cross sectional study 81 hypothyroid subjects with S.TSH >5.5mIU/L who were non obese, non diabetic, non hypertensive , non alcoholic, non pregnant ,not on any drugs and with no previous history of jaundice were included and subjected to abdominal ultrasonography and blood investigations.

Results: The mean age of study population was 34.12 ± 10.62 years. 87.70% were females and 12.3% were males. The prevalence of NAFLD based on USG findings was 55.6%(45/81). 33.3% showed grade 1 fatty liver, 16% showed grade 2 fatty liver, 8.9% showed grade 3 fatty liver and 2.2% showed diffuse fatty liver Thirty seven subjects with NAFLD had dyslipidemia. 59.46 showed grade 1 fatty liver, 29.73% showed grade 2 fatty liver, 8.1% showed grade 3 fatty liver and 2.7% showed diffuse fatty liver. S.TSH values showed a positive correlation with total cholesterol [r=0.381], TG[r=0.503 and BMI[r=0.300] with $p<0.001$ and n=81. There was a significant positive correlation between USG findings of NAFLD and total cholesterol [r=0.480], TG's [r=0.618], LDL levels [r=0.393] and BMI [r=0.605] with $p<.001$ and n=81.

Conclusion: There is a high prevalence of NAFLD in hypothyroid subjects due to the deranged lipid metabolism in body with both showing positive correlation with the increasing S.TSH levels.

017

Hipothyroidsm Animal Model Using Caprine Thyroglobulin (cTg)

Dyah Kinasih Wuragil, Dyah Ayu Oktavianie, Mohammad Noer DliyaulHaq, Aulanni'am Aulanni'am, Agung Pramana Warih Marhendra

Brawijaya University, Indonesia

Low birth of a healthy baby due to an autoimmune disorder in a pregnant woman becomes important to be considered by the Government and public. On the other hand, autoimmune disorders especially hypothyroidsm becomes difficult to know because many symptoms in patients, making it difficult to detect. Preparation of hypothyroidism animal models becomes an important as an effort to comprehensively study the pathomechanism of this disease. It can be used as the basis for detection method of disease and to determine the appropriate therapeutic measures. Tyroglobulin is one of autoimmune markers that show the progression of hypothyroidism. Tyroglobulin a major part of the thyroid gland which can induce AITD significantly, have the same physical, biochemical and structure in several mammalian species. Previous research resulted induction of 200 μg/ml of goat thyroglobulin (cTg) produced hypothyroidsm condition in rats (Rattus norvegicus) animal models. This study aimed to determine the effect of hypothyroidism on multiple organs such as pancreas, kidneys and liver. This study using female rats (Rattus norvegicus) Wistar strain aged of 3 months. Rats were induced with 200 μg/ml of cTg on the 1st, 15th, and 29th days. This research resulted, beside damaged of thyroid gland, induction of cTg could lead deterioration of pancreas, kidneys and liver, which shown by decreasing of thyroid hormone alpha receptor, increasing of proinflammatory cytokines (Il-1β, TNFα, and iNOS) expression, increasing of Malondealdehyde (MDA) levels as well as tissue damaged. In addition, this condition also lead the inhibition of endometrial thickening due to prolonged estrus phase in animal models.

018

Role of Radiofrequency Ablation for the Treatment of Benign Thyroid Nodule; An Experience from Banda Aceh-Indonesia

Hendra Zufry, Krishna Wardhana Sucipto

Division of Endocrinology, Metabolism & Diabetes, Thyroid Center, Department of Internal Medicine, College of Medicine, Syiah Kuala University; Dr. Zainoel Abidin General Teaching Hospital, Banda Aceh, Indonesia

Background: Thyroid nodules are very common in adults, found in 4–8% by palpation, in 10–41% by ultrasonography (US), and in 50% by pathologic examination at autopsy. Radiofrequency ablation (RFA) is a minimally invasive technique and a valuable alternative to surgery in the treatment of benign thyroid nodules and Autonomous Functional Thyroid Nodules.

Objectives: To evaluate the safety and efficacyof RFA in the treatment of benign thyroid nodules.

Material and Methods: Prospective cohort study of 43 benign thyroid nodules were treated with RFA from November 2013- December 2014.RFA proceduresweре performed with RF Medical generator, internal cooling electrode of thyroid, Gauge-18, 7 cm length, 1 cm active tip, power 40-60 watt, with trans-isthmic and moving shot approach. Thyroid US were performed at 1, 6 and 12 months after the RFA to evaluate volumereduction. Symptoms score using a 10-cm visual analogue scale (0–10), cosmetic scores (1, no palpable mass; 2, a palpable mass but no cosmetic problem; 3, cosmetic problem on swallowing only; 4, readily detected cosmetic problem)and complication were evaluated up to1yearfollow-up.A paired T- test and Wilcoxon test analysis were performed to compare changes in nodule volume, symptom score and cosmetic score from before RFA until1 year after RFA.

Results: Mean volume reduction at 1, 6 and 12 months follow upwere 40.1 %, 70 %, and 80 %.RFA effective decrease symptom score (6.02 ± 0.83) to (1.13 ± 0.63) and cosmetic score (3.72 ± 0.42) to (1.06 ± 0.25) (P< 0.001).The incident of complication were skin burn (0.32 %) and carbonization (0.04 %).

Conclusion: Our study shows that RFA of benign thyroid nodules is safe and give excellent short-term results as is shown by significant reduction of volume, nodule-related symptoms and cosmetic problems.

019

Subchronic Inhalation Exposure of Transfluthrin on Thyroid Peroxidase Level in Rattus Novergicus Wistar Strain

Herwindo Pudjo Brahmantyo, Djoko Wahono Soeatmadji

Endocrine, Metabolic and Diabetes Division of Internal Medicine. Faculty of Medicine, Universitas – Brawijaya, Saiful Anwar Hospital, Malang

Background: There are many chemical subtances in our environtment, one of the chemical substance is pesticide. Pesticide potentially could become the encdocrine disrupting chemicals that threat human health by act slowly and years. Transfluthrin is one of the pyrethroid pesticide that widely used and stated to be safe, but in other way pyrethroid is one of the EDC. Thyroid as one of important organ could affected by EDC and disruption of thyroid function could bring a systemic effects.

Objectives: To see the effects of subchronic perinhalation exposure of transfluthrin on Thyroid Peroxidase (TPO) level as one parameter of thyroid function.

Material and Methods: An experimental study using rattus norvegicus wistar strain as the experimental subject, post test evaluation of the exposure. There are 5 groups in this study each group contain 7 rats, control negative group, control positive group (solution only), treatment 1 group (transfluthrin dose 0.1 mg/ml), treatment 2 group (transfluthrin dose 0.2 mg/ml), treatment 3 group (transfluthrin dose 0.4 mg/ml), 7 rats of each group and given treatment of perinhalation transfluthrin exposure for 56 days. The result was analyse using one way ANOVA.

Results: Experimental data shows increasing trend of TPO level between control negative group, control positive group and also treatment groups.

Conclusion: Subchronic perinhalation exposure of transfluthrin may affect the TPO level.

O20

10-year Probability of Fracture After Bariatric Surgery Based on QCT and DXA Measured BMD

Tan Hong Chang, Matthew Tan Zhen-Wei, Muhammad Asyraf Mohd Razali, Pasupathy Shanker, Alvin Eng Kim Hock, Alvin Ng Choong Meng

Department of Endocrinology, Singapore General Hospital

Background: Fractures remain the most important clinical consequence of bone loss after bariatric surgery. We had demonstrated a significant decrease in dual energy X-ray absorptiometry (DXA) measured bone mineral density (BMD) while computed computer tomography (QCT) BMD at the neck of femur was unchanged. It remains unclear how these discordant results would affect long-term fracture risk.

Objectives: To report the 10-year probability of major and hip fractures using QCT and DXA measured the WHO Fracture Assessment Tool (FRAX).

Materials and Methods: In 23 adults with morbid obesity undergoing bariatric surgery (gastric bypass = 10, sleeve gastrectomy =13), the 10-year fracture risks were calculated using FRAX based on the BMDs using DXA and central QCT pre-operatively and 12-months later.

Results: None of the patients had osteopenia or osteoporosis at baseline and no fractures were observed. After a significant decrease in body weight by 25.7%, the 10-year probability of hip fractures did not change but probability of major fractures increased significantly by 26.3% and 21.5% when FRAX scores were calculated using DXA and QCT measured BMDs respectively. Despite this, the absolute major fracture risk remained very low at 1 % using both imaging modalities.

Conclusion: Although the risk of major fractures was significantly increased after bariatric surgery, the absolute risk in this population remains low.

021

Single Nucleotide Polymorphism at rs7903146 of Transcription Factor 7-like 2 Gene in Type 2 Diabetic Patients with Sulphonylurea Failure

Tet Tun Chit, Tint Swe Latt, Than Than Aye, Kyu Kyu Maung, Aye Thida, Sagawah Phu

Myanmar Society of Endocrinology and Metabolism (MSEM)

Type 2 diabetes mellitus is characterized by impaired insulin secretion, insulin resistance, excessive hepatic glucose production and abnormal fat metabolism. Type 2 diabetes mellitus has a strong genetic component. The risk T allele at rs7903146 of transcription factor 7-like 2 (TCF7L2) gene was associated with impaired insulin secretion, incretin effects and enhanced rate of hepatic glucose production. TCF7L2 expression in human islets was increased 5-fold in T2DM, particularly in carriers of the TT genotype. Patients with diabetes risk alleles in TCF7L2 gene have an altered hypoglycaemic response to sulphonylureas resulting in earlier secondary failure.

The aim of this study was to investigate the association between single nucleotide polymorphism at rs7903146 of transcription factor 7-like 2 gene and type 2 diabetic patients with sulphonylurea failure.

This study was a cross-sectional study. 60 type 2 diabetic patients with sulphonylurea failure and another 62 controlled type 2 diabetic patients were included. HbA1c was measured by latex immunoagglutination inhibition method. The fasting serum C-Peptide level was determined by ELISA method. Single nucleotide polymorphism at rs7903146 of TCF7L2 gene was determined by mutation specific polymerase chain reaction.

The mean fasting serum C-Peptide level of type 2 diabetic patients with sulphonylurea failure was 3.367 ± 3.56 ng/mL (mean ± SD). The mean fasting serum C-Peptide level of controlled type 2 diabetic patients was 2.127 ± 1.64 ng/mL ($p = 0.014$). When comparing type 2 diabetic patients with sulphonylurea failure and controlled type 2 diabetic patients, CC genotype was found in 8 (13.3%) versus 14 (22.6%), CT genotype was found in 46 (76.7%) versus 46 (74.2%) and TT genotype was found in 6 (10.0%) versus 2 (3.2%) respectively ($P = 0.165$). TT genotype was more commonly observed in type 2 diabetic patients with sulphonylurea failure.

The predominant pathophysiological mechanism by which the risk T allele is associated with sulphonylurea failure in the present study may be due to insulin resistance rather than impaired insulin secretion because SNP at rs7903146 of TCF7L2 gene carrying patients is associated with higher fasting serum C-Peptide level which is a surrogate marker for insulin resistance in this study group of Myanmar people.

022

Melatonin Inhibits Adipogenesis in 3T3-L1 Preadipocytes

Lee Jeongkun, Choi Jongyun, Lee Hyun, Gim Juyeon, Kim Chi Hyun

Department of Biomedical Engineering, College of Health Science, Yonsei University, Wonju, Republic of Korea

Background: Adipocytes are the main constituent of adipose tissue. Adipose tissue has a central role in lipid metabolism which is related to obesity. Understanding the molecular basis of adipogenesis is pivotal to find the therapeutic targets for the development of anti-obesity drugs. Melatonin is known to be associated with obesity and its mechanism is currently under intensive investigation.

Objective: The objective of this study was to investigate the effect of melatonin on adipogenesis in preadipocytes.

Materials and Methods: 3T3-L1 preadipocytes were cultured in Dulbecco's modified Eagle's medium (DMEM) containing 5% calf serum at 37C with 5% CO2 in a humidified incubator. Differentiation was induced using DMEM with 10% fetal bovine serum supplemented with MDI [methylisobutylxanthine (M; 0.5 mmol/L), dexamethasone (D; 0.001 mmol/L) and insulin (I; 0.01 mmol/L)] two days after cell confluence. The day that differentiation was induced with MDI was considered as day 0. Cells were treated with 0 mM, 0.01 mM, 0.1 mM, and 1 mM of melatonin on either day 0 or day 5. At 72 hours after each treatment, lipid accumulation was measured by Oil Red O staining. Cells were harvested and lysed in RIPA buffer. Proteins were resolved by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) and transferred to membranes. The membranes were incubated with the following antibodies: anti-PPAR gamma, anti-C/EBP alpha, anti-C/EBP beta and anti-GAPDH. GAPDH was used as a house keeping gene. Proteins were visualized by exposure to X-ray film.

Results: The expression of PPAR gamma and C/EBP beta was reduced as the concentration of melatonin increased. Accumulation of lipid in the cells diminished as the concentration of melatonin increased.

Conclusion: Adipogenesis is stimulated by two families of transcription factors, C/EBPs and PPARs. C/EBP beta plays a major role in promoting the differentiation process of preadipocytes and also induces PPAR gamma which shows enhanced expressions in the terminal differentiation stage of adipocytes. Thus reduced expressions of C/EBP beta, PPAR gamma and C/EBP alpha by melatonin treatment imply that melatonin may inhibit the process of adipogenesis and may have a role as a new anti-obesity drug.

023

Increased Levels of Retinol Binding Protein 4 (RBP4) in Rats with Subchronical Inhalation Exposure of Transfluthrin

Rulli Rosandi, Djoko Wahono Soeatmadji

Endocrine, Metabolic and Diabetes Division of Internal Medicine, Faculty of Medicine - Universitas Brawijaya, Saiful Anwar Hospital, Malang

Introduction: Transfluthrin, a pyrethroid-based insecticide which is used frequently in Indonesian house hold, known to have an effects in endocrine system (endocrine-disrupting chemical). It affect endocrine system by interupting the nuclear receptor of retinol binding protein. Several study shows serum RBP4 levels correlated with the magnitude of insulin resistance in subjects with obesity and impaired glucose tolerance.

Objective: To determine the level of Retinol Binding Protein in rats with subchronical inhalation exposure of transfluthrin.

Methods: True experimental in vivo, post-test only, control group in 35 male rats (Rattus norvegicus strain Wistar), divided into five groups, namely negative control (without exposure), positive control (expose with n-hexana solution as solvent of transfluthin), group 1 (inhalation with transfluthrin 0.1mg/dl), group 2 (inhalation with transfluthrin 0.2mg/dl), and group 3 (inhalation with transfluthrin 0.4mg/dl). On the 56th days, the rats was terminated and serum level of Retinol Binding Protein (RBP) was measured with ELISA methods.

Results: Means and standart deviation of Retinol Binding Protein level in negative control was 61.43 + 54.46 ng/mL, positive control was 177.86 + 66.56 mg/mL, group 1 was 108.83 + 35.61 ng/mL, group 2 was 129.57 + 57.69 ng.mL, and group 3 was 952.14 + 254.07 ng/mL. One way ANOVA test shows there were significance differences in negative control with group 2 ($p=0.042$, p value<0.05), positive control with negative control, group 1 with p value of each differences were 0.004 and 0.044 (p value <0.05), group 3 with negative control ($p=0.000$), positive control ($p=0.000$), group 1 ($p=0.000$) and group 2 ($p=0.000$), with p significant value <0.05. Presumably due to its activity to nuclear receptor for retinoids.

Conclusion: Level of Retinol Binding Protein was increased in rats with subchronical inhalation exposure of transfluthrin. Does this increase causes the onset of insulin resistance still require further investigation.

024

Correlation Lipoprotein(a) with Fibrinogen Level in T2DM Patients with Overweight and Obese

Hermina Novida, Askandar Tjokroprawiro, Ari Sutjahjo, Agung Pranoto, Sri Murtiwi

Surabaya Diabetes and Nutrition Centre, Dr. Soetomo Teaching Hospital; Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Prevalence of diabetes and obesity have been increasing in developing countries, including Indonesia. The risk of cardiovascular diseases are increased in diabetes mellitus and obesity. It remains the main cause of morbidity and mortality in those patients. Lipoprotein(a) [Lp(a)] is a complex lipoprotein consisting of lipids, carbohydrates and two large apoproteins. Fibrinogen is a coagulation factor, a major determinant of plasma viscosity and platelet activation. Both of Lp(a) and fibrinogen have been shown to serve as a predictor of cardiovascular events.

Objective: The aim of this study is to analyze the correlation of Lp(a) with fibrinogen in type 2 DM (T2DM) patients with overweight and obese.

Materials and Methods: We analyzed patients who have been diagnosed with T2DM and patients have body mass index (BMI) > 23 kg/m2 in private outpatient endocrinology clinic using cross sectional observational design. We measured BMI, blood pressure, waist circumference, fasting plasma glucose (FPG) and post prandial glucose (PPG), HbA1c, lipid profiles, Lp(a) and fibrinogen levels. The data was statistically analyzed using one-sample Kolmogorov-Smirnov and logistic regression test.

Results: We analyzed 54 patients who consisted of 34 male and 20 female.The overall mean of BMI was 28.98+3.33kg/m2, HbA1c was 8.72+ 2.19%, Lp(a) was 30.95 + 27.2 mg/dL and fibrinogen level was339.59 +106.82 mg/dL. Lp(a) and fibrinogen levels in female patients were higher than male patients (31.26 + 22.37 mg/dL vs 30.77+30.02 mg/dL, 354.63+106.82 mg/dL vs 333.68+102.21 mg/dL) although BMI of female patients were lower than male patients (28.58+3.17kg/m2 vs 29.22+3.44kg/m2). Statistical test showed that there was significant correlation between Lp(a) and fibrinogen (r 0.440; $p<0.01$). There was significant correlation between Lp(a) and fibrinogen in female patients (r 0.580; $p<0.01$), but there was no significant correlation between Lp(a) level and fibrinogen in male patients (r 0.387; p 0.024).

Conclusion: Lp(a) level was correlated with fibrinogen level in overweight and obese T2DM.

025

Correlation Between Testosterone Level and Erectile Dysfunction Among Male Type 2 Diabetes Patients

Nanang Miftah Fajari, Achmad Rudijanto

Endocrine, Metabolic and Diabetes sub Division of Internal Medicine Department, Brawijaya University Malang, East Java, Indonesia

Objectives: Low testosterone level has been reported in approximately half of type 2 diabetic men in general. This study aims to assess total testosterone serum levels in type 2 diabetics with erectile dysfunction.

Methods: A cross sectional study was conducted at the Ratu Zaleha General Hospital from January 2014 to August 2014. The study enrolled 41 type 2 diabetic males with erectile dysfunction who were analyzed with regard to age, duration of diabetes, severity of erectile dysfunction (IIEF-5), and total testosterone serum levels. The data were statistically analyzed using the independent two-sample, Student t test, $\chi 2$ test and Spearman or Pearson correlation test. A p-value of <0.05 was considered statistically significant.

Results: Fifty one percent of type 2 diabetic males with erectile dysfunction were found to have low total testosterone levels. Mean total testosterone serum level was 414,4 x ± 196,3 ng/dL whereas mean of IIEF-5 score was 11,87 ± 5,5 with thirteen patients (31,7%) had severe erectile dysfunction. Total testosterone serum level had negative correlation with erectile dysfunction degree (r : -0,392 ; $p < 0,05$)

Conclusion: There was significant negative correlation between total testosterone serum level with erectile dysfunction degree.

026

Insulin Resistance Gene Expression in Malay Women with PCOS

Hanifullah Khan, Fazliana Mansor, Liyana Ahmad Zamri, Fatin S.

Diabetes & Endocrine Unit, CDNRC, Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Malaysia; Department of Obstetrics and Gynaecology, Cyberjaya University College of Medical Sciences, JalanTeknokrat 3, Cyber 4, 63000 Cyberjaya, Selangor, Malaysia

Background: Polycystic Ovarian Syndrome (PCOS) , the most common endocrine disorder in women has been associated with diabetes mellitus (DM) and obesity, with insulin resistance (IR) being a key underlying factor common to all. Genetic studies have shown that the dinucleotide repeat microsatellite genetic marker D19S884 in the fibrillin 3 gene is linked to IR in PCOS women. IR may be caused by dysregulation of the complex signalling between adipose tissue, pancreatic islets, liver and skeletal muscle. This study was aimed at discovering the differential expression of genes that might be related to IR in Malay PCOS women.

Methods: Variations expression in PCOS women were investigated by realtime quantitative polymerase chain reaction (PCR) amplification using RT2 profiler PCRTM array. Blood RNA was extracted from 3 normal samples and 3 PCOS samples. The blood transcriptome of each cDNA sample was characterized using the custom PCRbased array of 84 genes.

Results: 12 upregulated and 33 genes downregulated were discovered (more than 4-fold change, p value threshold less than 0.05). Among the upregulated genes were Adiponectin (ADIPOQ), Adiponectin Receptors 1 (ADIPOR1), InsulinLike Growth Factor 1 (IGF1), Oxidized Low Density Lipoprotein (OLR) and Apolipoprotein (APOE). The Downregulated genes included Hexokinase (HK2), Insulin Receptor Substrate 1 (IRS1) and Serpin Peptidase Inhibitor (SERPINE1). These genes are involved in insulin and adipokines signaling, genes commonly dysregulated in DM, genes involved in innate immunity and inflammatory processes, and enzymes and transporters key to carbohydrate and lipid metabolism.

Conclusions: The differentially expressed genes from Malay PCOS women are involved in the insulin resistance pathway, similar to those noted in studies involving other ethnicities. These findings serve to clarify the role of IR in PCOS, specifically in Malay women.

027

Microsatellite D19S884 Detection in Malay Women with Polycystic Ovary Syndrome

Hanifullah Khan, Fazliana Mansor, Liyana Ahmad Zamri, Fatin S.

Diabetes & Endocrine Unit, CDNRC, Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Malaysia; Department of Obstetrics and Gynaecology, Cyberjaya University College of Medical Sciences, JalanTeknokrat 3, Cyber 4, 63000 Cyberjaya, Selangor, Malaysia

Background: Polycystic ovarian syndrome (PCOS), the most prevalent endocrine disorder in women, has long been noted to have a strong genetic susceptibility. In previous Caucasian studies, a PCOS susceptibility gene (the fibrillin 3 gene, or FBN3) had been mapped to chromosome 19p13.2 with the strongest association being with the dinucleotide repeat microsatellite genetic marker D19S884. Whereas the PCOS susceptibility locus D19S884 allele 8 (A8) has been replicated in studies among Caucasian populations, A7 seems to be the most prevalent among Han Chinese PCOS subjects. Since the presence of D19S884 is more likely to confer insulin resistance, β-cell and other metabolic dysfunctions, it is of clinical importance to be able to detect this in a local population. In this on-going study, we use electrophoretic techniques for the detection of human microsatellite D19S884 in the blood DNA of Malay women with PCOS.

Methods: Blood was drawn from 111 consecutive cases of Malay PCOS women. DNA microsatellites were amplified by polymerase chain reaction (PCR) using a pair of specific primers tagged with fluorescence to yield products of 160-200 base pair in length. Alleles were separated on 4% low-melting agarose gels electrophoresis to preliminarily to confirm the success of PCR. It was followed by analysis using the capillary gel electrophoresis for fragment analysis.

Results: Analysis of the microsatellite D19S884 polymorphism of the CA repeat in the FBN3 gene was successfully carried out using the aforementioned electrophoretic techniques. From the alleles detected, the highest allele frequency noted was A9 (28%), followed by A12 and A6 (both 14%) and A8 (13%).

Conclusion: In this preliminary analysis, quite apart from A8 and A7, the most common allele noted among Malay PCOS women seems to be A9. In order to investigate whether the (CA)n polymorphism (A9) in FBN3 also increases susceptibility to PCOS in Malaysian women, an association study is in progress.

028

Potensial Effects of Transfluthrin as an Endocrine Disruptor Chemicals on Estrogen, Androgen, and Thyroid Receptors: Insilico Study

Djoko Wahono Soeatmadji

Division of Diabetes and Endocrinology, Dr. Saiful Anwar Hospital, School of Medicine, Universitas Brawijaya, Malang, Indonesia

Background: Transfluthrin is one of the most popular chemical substance used as mosquito killer and insecticide in Indonesia household. Endocrine disruptor chemicals (EDCs) are substance that may activate or inhibit the naturally circulating hormones by binding to its receptors. Effects of endocrine disruptor chemicals on experimental animals may also occur in in human being if they were exposed in similar ways.

Objectives: To study the potensial effects of transfluthrin as an endocrine disrutor chemical on estrogen, androgen, and thyroid hormone actions.

Methods: Insilico studies were carried to explore possibilities of transfluthrin as a ligand on active sites of estrogen receptor (ER), androgen receptor (AR) and thyroid receptor (TR) using autodock vina program.

Conclusion: The structural activity approach (SAR) showed that transfluthrin may inhibits androgen expression [Pa (0.45)] and modulate the activity of CYP2H [Pa (0.624)]. Transflutrin may also binds to estrogen receptor (binding affinity -9.0 (Kcal/mol) and thyroid receptor (9.0 (Kcal/mol).

029

Clinical and Metabolic Profile of Male-to-Female Transgenders in Zamboanga Peninsula

Alex Jr Pang, Jerome Barrera

Zamboanga City Medical Center; Ateneo de Zamboanga University; Philippine Council for Research and Health Development; Department of Science and Technology; Zamboanga Consortium for Health and Research and Development

Introduction: The effect of self-prescribed cross-sex hormone therapy on Male-to-Female (MtF) transgenders do not appear to have been well investigated and can be associated with potential serious longterm complications. The main purpose of this study is to look at the clinical and metabolic profile, and cardiovascular outcomes of MtF transgenders in Zamboanga Peninsula.

Methodology: This is a cross-sectional study, done to determine the clinical and metabolic profile of Zamboanga-based MtF transgenders on either self-prescribed or on supervised cross-sex hormone therapy. Demographic and biochemical characteristics were taken as well as feminizing effects and cardiovascular outcomes (e.g. hypertention) were also documented 30 study participants aged 18 years and above.

Results: All respondents reported self-prescribed practices on cross-sex hormone therapy. Oral contraceptives pills (OCP) containing Ethinyl Estradiol 30mcg + Levonorgestrel 125 mcg + Fe 75mg was the most common hormone drug used based on recommendations by respondents' friends (100%). Most respondents got their OCPs from pharmacies (60%) and public health centers (13%). Common side effects were decreased libido (100%), Breast pain (93%0, acne (20%), mood swings (17%) and headaches (10%). Breast enlargement (100%), decreased morning errection (100%), decreased muscle mass (76%), smoother skin (70%), weight gain (66%) and change in voice (10%) were observe. Clinical profile of the study participant showed that 36% were overweight and 6.67% were obese, 60-70% were pre-hypertensive, and 10% have Hypertension. Metabolic profile revealed that respondents were in the pre-diabetics range (FBS 16%, 2hrs 75 OGTT 40%, HbA1c 73%) and lipid profile showed 20% have borderline high LDL result and 3% have low HDL.

Conclusion: The result of this study showed that majority of MtF transgenders in Zamboanga peninsula not only self-prescribe cross-sex hormone, they tailor-make their own drug dose and administration on the basis of suggestions from friends who are not trained to do so. The OCPs which they use as their main drug for cross-sex hormone is not recommended by WRATH and may be potentially hazardous to their health. Prediabetic and overweight were among the abnormalities noted on the respondent.

O30

Pattern and Etiological Profile of Short Stature in Northern India

Manish Gutch, Sukriti Kumar, Syed Mohd Razi, Abhinav Gupta, Keshav Kumar Gupta, Madhukar Mittal

Department of Endocrinology, Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh, India; Department of Radio diagnosis, SGPGI, Lucknow, Uttar Pradesh, India; Department of Endocrinology, King George's Medical University UP

Background: Short stature can be caused by a great variety of congenital and acquired conditions, some of which present with additional symptoms and signs. Overall short stature may be considered as the tip of an iceberg.

Objectives: To determine the pattern and etiological factors of short stature in children.

Study Design: A prospective observational study carried out in Department of Endocrinology at a tertiary care health center in north India from august 2012 to June 2015.

Methodology: Four hundred and fifty one children's (280 boys and 171 girls), ranging from 04 to 18 years presenting with short stature were studied. Anthropometric measurements were plotted on Indian standard growth charts. Appropriate investigations were done based on the study protocol.

Statistical Analysis: Statistical analysis was performed by using software SPSS version 17. All categorical variables were expressed as percentages and all continuous variables were expressed as mean ± standard deviation. Continuous variables were compared using t–test & ANOVA as applicable. All p values <0.05 were taken as significant.

Results: In the present study, male to female ratio was found to be 1.6:1, with mean chronological age of 11.68 + 3.2 year, and mean bone age of 7.88 + 2.8 year. The common etiological factors in the order of frequency were constitutional delay in growth and puberty (41.2%), familial short stature (15.9%), type 1 diabetes mellitus (9.9%), and hypothyroidism (8.6%) while the growth hormone deficiency (2.4%) was a relatively rare phenomenon. The most common pathological cause for proportionate short stature was Type 1 Diabetes and for disproportionate short stature was hypothyroidism. Hypothyroidism caused the maximum retardation of bone age while least bone age retardation was noticed in familial short stature. The most common hormonal abnormality was found to be gonadotropins deficiency (LH and FSH) in children with multiple pituitary hormone deficiency.

Conclusion: Physiological/ normal variants outnumbered the pathological causes for short stature. Endocrinological causes were found in almost one fourth of short stature children however growth hormone deficiency constitutes only 2.4% of total short stature children.

031

Prevalence of Metabolic Syndrome among Overweight and Obese Adolescents in Petaling Jaya: Alarming Rate that Needs Immediate Attention

Arliena Amin, Asma Omar, Fatimah Harun, Azriyanti Anuar Zaini, Nurshadia Samingan, Noorasekin Saiman, Aisha Fadhilah Abang Abdullah, Muhammad Yazid Jalaludin

Department of Paediatrics, Faculty of Medicine, University Malaya, 59100 Kuala Lumpur

Background: Obesity has become a pandemic worldwide and Malaysia is of no exception. Morbidity and mortality associated with obesity is of concern as affected children and adolescents may develop early cardiovascular disease and type 2 diabetes mellitus.

Objective: To determine the prevalence of metabolic syndrome among overweight and obese adolescents and its association with insulin resistance, birth weight, history of breastfeeding, and parental obesity and early cardiovascular disease.

Methodology: Population based, cross-sectional study with prospective data sampling was performed from March 2011 to July 2012. Two staged sampling was done; ten secondary schools in Petaling Jaya were randomly selected. Overweight and obese students were pre-identified and invited to participate. Anthropometric measurements, examination for acanthosis nigricans, blood pressure and fasting bloods for glucose, insulin and lipids were taken. Metabolic syndrome was defined using IDF 2007 guidelines. Descriptive and multivariate logistic regression were performed.

Results: Total number of 275 overweight and obese students were identified and 248 (90.2%) participated (52% overweight, 48% obese) with mean age 15.2 (1.0). Of those, 99 (40.0%) were males. Malays predominate with 156 (63.0%), Indians 62 (25.0%) and Chinese 27 (11.0%). Almost three quarter, 179 (72.2%) of the overweight and obese students had abnormal waist circumference, 104 (41.9%) had abnormal blood pressure, 10 (4.0%) had abnormal fasting blood sugar, 32 (12.9%) had hypertriglyceridemia and 64 (25.8%) had low HDL-cholesterol. The prevalence of metabolic syndrome was 21.0%. Students with metabolic syndrome had higher HOMA index ($p<0.001$) and acanthosis nigricans ($p=0.001$) compared to those without metabolic syndrome. Those who were born large for gestational age are 2 times more likely to have metabolic syndrome (OR: 2.02, 95% CI: 1.07-3.80). However, metabolic syndrome was not found to be associated with being born small for gestational age, exclusive breastfeeding and parental obesity/early cardiovascular disease.

Conclusion: The prevalence of metabolic syndrome among the overweight and obese adolescents in Petaling Jaya was high and associated with being born large for gestational age. Serious measures are needed for early detection and management to avoid complications.

032

Clinical Audit of Turner Syndrome Girls on Growth Hormone Therapy in a Paediatric Endocrine Clinic, Malaysia

Melissa Nunis, Lim Poi Giok, Ting Tzer Hwu

Endocrine Unit, Department of Paediatrics, Paediatric Institute Kuala Lumpur Hospital; Department of Paediatrics, Faculty of Medicine & Health Science, University Putra Malaysia

Background: Turner syndrome (TS) is a chromosomal disorder which results from the total or partial absence of one of the X chromosomes in females. The most common clinical feature is short stature and growth hormone (GH) therapy has been proven to help improve the height gain.

Objective: Clinical audit to evaluate the response of TS girls to GH therapy in our endocrine clinic.

Materials & Methods: TS patients seen in the Paediatric Endocrine clinic, Kuala Lumpur Hospital from year 2009 - 2014 were identified. A retrospective review of medical records was done for clinical data, karyotype, growth parameters and GH therapy information. The SDS scores for height & body mass index (BMI) were calculated using an anthropometric calculator based on the US Centers for Disease Control and Prevention (CDC) 2000 growth charts.

Results: There were 31 TS patients, 19 were started on GH therapy. 4/19 were aged below 12 years. 15/19 received at least 12 months of GH. The most common karyotype was 45 XO. The age of initiating GH ranged from 4.33 to 17.25 years with mean 10.75 ± 3.42 years. All patients started on GH were pre-pubertal except one. Puberty was induced in 12/19 patients at age 11.9 to 16.8 years. 2/19 had spontaneous puberty. Duration of GH therapy ranged from 0.2 to 8.4 years with mean of 3.5 ± 2.5 years. Pre-GH height SDS score ranged from -5.39 to -1.72 with mean -3.96 ± 0.90, BMI SDS score was -2.43 to 1.58 with mean -0.19 ± 1.08. The average GH dose in the first year was 0.046mcg/kg/day. At the end of first year GH, the height SDS score ranged between -5.38 to -1.65 with mean -3.69 ± 0.97. The height gain was 3.6 to 8.7 cm, mean 6.5 ± 1.4 cm after one year GH therapy.

Conclusion: GH seemed to improve height gain in our TS girls, mostly with normal nutritional status.

033

Case Report: A Successful Pregnancy and Delivery in a Patient with Simple Virilizing Congenital Adrenal Hyperplasia

Karen SW Leong, LL Wu

Paediatric Department, Universiti Kebangsaan Malaysia Medical Centre (UKMMC)

Introduction: Congenital adrenal hyperplasia (CAH) is commonly caused by 21-hydroxylase deficiency. It can be divided into classic CAH which includes salt wasting and simple virilizing forms and non-classic CAH. In patients with classic CAH, lifelong glucocorticoids with or without mineralocorticoid replacement is mandatory. Insufficient steroid replacement results in suboptimal disease control due to increase in androgen production which in turn suppresses gonadotrophins leading to anovulation and infertility. Women with CAH have decreased fertility rates compared with unaffected women. A North American study found that among classic CAH women, 80% of simple virilizers and 60% of salt wasters were fertile. With adequate treatment, many sexually active CAH women can become pregnant.

Objective: To report a successful pregnancy and delivery of a healthy baby boy in a patient with simple virilizing CAH.

Methods: The clinical features, investigations and progress of the patient were analysed and described.

Results: AS first presented to UKMMC at 6 years 4 months old for ambiguous genitalia and was diagnosed to have simple virilising CAH. She was tall with advanced bone age. Serum 17-hydroxyprogesterone and ACTH were elevated. She was started on glucocorticoid treatment. Feminising surgery was done when she was 7 years 5 months old. Initially her control was poor but subsequently improved in her late teens and was good prior to pregnancy. She conceived spontaneously 9 months after marriage. Her disease control during pregnancy was good and she did not require any increase in her medications. At 31weeks 4 days gestation, she had persistent uterine contractions, polyhydramnios and foetal breech presentation. Her baby boy was delivered by LSCS with a birth weight of 1.97 kg. He was not hyperpigmented and had normal male external genitalia. However, he developed Respiratory Distress Syndrome requiring surfactant and ventilation for one day and non-invasive ventilation (nasal CPAP) for five days. He did not have any electrolyte imbalances or hypoglycaemia. AS was discharged 3 days post-LSCS and her baby was discharged well on Day 18 of life.

Conclusion: Good disease control in patients with CAH will ensure a good outcome with regards to fertility, pregnancy, foetal growth and perinatal wellbeing.

034

Diabetes Self-Care Management among Malaysian Children and Adolescents

Noor Shafina Mohd Nor[1], Fatimah Harun[2], Azriyanti Anuar Zaini[2], Muhammad Yazid Jalaludin[2,3]

[1]Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia; [2]Division of Paediatric Endocrinology, Department of Paediatrics, Faculty of Medicine, University Malaya, Kuala Lumpur, Malaysia; [3]University Malaya Paediatric and Child Health Research Group, University Malaya, Kuala Lumpur, Malaysia

Background: Self-care is an important element in optimizing diabetes management. The revised Summary of Diabetes Self-Care Activities (SDSCA) is a useful tool to measure patients' self-management of their diabetes. The Malay version of the revised English SDSCA questionnaire is available for Malaysian children and adolescents with diabetes.

Objective: To evaluate the diabetes self-care management among diabetes patients and compare with their HbA1c.

Methods: SDSCA questionnaires were distributed to patients aged 10-18 years with type 1 (T1DM) and 2 diabetes mellitus (T2DM) attending University Malaya Medical Centre paediatric diabetes clinic. The questionnaires assessed four aspects of diabetes regimen: diet, exercise, glucose testing and foot care. Choices ranged from 0 to 7, with higher scores indicating better self-care performance. HbA1c were measured within a month of completion of the questionnaires.

Results: A total of 61 patients completed the questionnaires with mean age 14.5 + 2.3 years and 39.3% were males. Malay, Chinese and Indians were 36.1%, 23.0% and 41.0% respectively. 80.3% were T1DM and 19.7% were T2DM. Mean HbA1c and SDSCA score were 9.5 + 2.3% and 17.8 + 5.6 respectively. Patients on intensive insulin therapy had significantly lower HbA1c compared to non-intensive therapy (9.8 + 2.1 vs 10.8 + 1.9, $p = 0.047$). The SDSCA score was significantly higher in T1DM compared to T2DM (18.5 + 4.5 vs 15.1 + 7.7, $p = 0.05$), which was contributed by significantly higher score in the blood-glucose testing subcategory for the T1DM (5.1 + 2.0 vs 2.9 + 2.9, $p = 0.003$). However, there was no significant correlation between the SDSCA score and HbA1c.

Conclusion: Diabetes self-care activities are better in T1DM compared to T2DM contributed by more diligent blood-glucose testing in these patients. However, the SDSCA score did not correlate well with glycemic control (HbA1c) necessitating further research in this field.

035

17 Alpha-Hydroxylase Deficiency in a 46,XX Karyotype with Coexistent Mullerian Agenesis and Gonadal Dysgenesis

Ma. Vircel Duyongco-Tiu, Claire Carampatana-Jandug, Sheena Buaquina, Albert Chu

Chong Hua Hospital, Endocrine Office, 4B wing, Don Mariano Cui St., Cebu City 6000 Philippines

Background: 17 alpha-hydroxylase deficiency is a rare disorder of steroidogenic defect, comprising <5% of all congenital adrenal hyperplasia with only about 150 cases reported worldwide. It results to impaired synthesis of cortisol, androgen and sex steroids, with consequent mineralocorticoid excess. The usual presentation is hypertension, hypokalemia and hypergonadotropic hypogonadism. Females usually present with infantilism and primary amenorrhea; males with hermaphroditism.

Both gonadal dysgenesis and mullerian agenesis also present with primary amenorrhea. The former is also due to hypergonadotropic hypogonadism, thus affected patients have phenotypically infantile sexual characteristics. The latter is however characterized by the absence of the uterus with variable degrees of proximal vaginal hypoplasia, but may still develop secondary sexual characteristics with functional ovaries.

The above mentioned disorders are all uncommon. Coexistence in a patient has not been reported.

Clinical Case: This is a case of a 19-year-old patient who presented with bilateral lower extremity weakness after several days of diarrhea. Significant medical history was the absence of thelarche, pubarche and menarche and a BP of 140/100 mmHg at the age of 18 during a preemployment medical check. She is not a child of consanguineous parents.

Abnormal vital signs on admission were elevated BP of 160/100 mmHg, height of 150 cm (<3rd percentile, short stature category), weight of 40 kg (<3rd percentile, underweight category). Other pertinent findings were generalized skin hyperpigmentation, absent axillary hair, Tanner staging 1 for both breast and pubic hair development. A normal female external genitalia was noted. Muscle strength was grade 2. The rest of the findings were unremarkable.

Blood tests showed hypokalemia (0.98 mmol/L), metabolic alkalosis (ph 7.48, HC03 28.4 mmol/L, PaC02 37.8 mmHg), normal aldosterone (142 pg/mL) with low renin (<2 pg/mL) values. The ACTH was normal at 41.24 pg/mL, 8am serum cortisol (3.730 mcg/dL) was low. FSH and LH were elevated (84.550 mIU/mL and 51.76 mIU/mL, respectively). Progesterone (4.08 ng/mL) was high, but DHEAS (0.06 mcg/dL) and estradiol (<5 pg/mL) were low. Thyroid function tests were normal (TSH 3.010 uIU/mL, FT4 14.43 pmol/L).

CT scan with contrast showed that both adrenal glands were slightly prominent with slightly nodular contours of the medial and lateral limbs, suggestive of nodular hyperplasia. This however did not visualize the presence of the uterus, seminal vesicles, prostate gland nor undescended testes. Other findings were osteopenia and incomplete fusion of the epiphyses of the proximal femurs. Transrectal ultrasound disclosed the absence of the uterus, and of both ovaries and cervix, but the vaginal canal was seen. Karyotype was 46,XX.

Patient is currently on dexamethasone and estrogen replacement. Anti-hypertensive medication and potassium replacement were eventually discontinued. There were no recurrence of extremity weakness (muscle strength 5/5) and hypokalemia. Blood pressure ranged 100-110/70 mmHg.

Conclusion: This case presented the features of 17 alpha-hydroxylase deficiency, a rare form of congenital adrenal hyperplasia, which should be considered as a differential diagnosis in patients presenting with hypokalemia, hypertension and primary amenorrhea. The mullerian agenesis and ovarian dysgenesis contributed further to her amenorrhea.

036

Hypoglycemia in Pregabalin: A Case Report

Michelle Cornel, Erva Magbanua, Ruby Go

Chinese General Hospital And Medical Center

An 82 year old, female, hypertensive, diabetic on Sitagliptin+Metfomin 50/500 mg twice a day, came in due to altered sensorium. One week prior to admission, patient had neck pain, and took Pregabalin 50 mg once a day. Patient took 2 tablets of Pregabalin 50 mg at night and the following day, patient had decreased sensorium. Patient was brought to a nearby hospital where CBG was low, given 2 vials glucose water intravenously. Patient regained consciousness and was discharged. On the same day, patient took Pregabalin 50 mg at bedtime. Few hours prior to admission, patient became drowsy and was brought to a hospital, CBG was 41, and given glucose water and repeat CBG was 182. Patient regained consciousness. Upon admission, after 8 hours of fasting, patient had CBG of 45, but asymptomatic. Simultaneous blood tests showed: low RBS, elevated C-peptide and insulin assay. Sitaglipin+Metformin and Pregabalin were withheld. No recurrence of hypoglycemia noted and discharged with Sitagliptin+Metformin. No further hypoglycemic episodes at home. Among diabetic patients, use of sulfonylureas and insulin is the most common cause of hypoglycemia. Since neither were taken by the patient, possibility of Pregabalin-induced hypoglycemia was considered. Possible mechanisms include: first, since Pregabalin is a structurally similar compound with GABA, it may bind to GABA receptors, causing membrane depolarization and stimulating insulin secretion. In a human study, oral administration of GABA resulted in a dose-dependent increase in insulin secretion. Second, it involves interference of Pregabalin with GABA metabolism. Glutamine and glutamate from GABA enters the TCA cycle generating reducing equivalents that enters electron transport chain, leading to ATP generation and eventually opening the Ca2+ channels. Increased intracellular Ca2+ triggers insulin exocytosis. Finally, Pregabalin may act on the calcium channels: alpha 2 delta 1 and alpha 2 delta 2 found in the pancreas. There may be possible binding sites for gabapentin in the pancreas leading to enhanced insulin secretion. Hence, hypoglycemia may be a potential adverse effect of Pregabalin especially among diabetic patients. Older patients and those who have renal dysfunction should be more cautious in the dosing of Pregabalin.

037

IgG4-Related Hypophysitis Presented with Diabetes Insipidus, a Diagnostic Problem Case Report

Hari Hendarto[1,2], Imam Subekti[1]

[1]Division of Endocrinology and Metabolism, Department of Internal Medicine, Faculty of Medicine University of Indonesia, Cipto Mangunkusumo Hospital, Jakarta, Indonesia; [2]Department of Internal Medicine, Faculty of Medicine and Health Science, UIN Syarif Hidayatullah, Jakarta, Indonesia

A seventeen years old female came to the hospital with complaints of three-years history of poliuria and amenorrhea. She had signs of diabetes insipidus and secondary amenorrhea. There were increasing in prolactin hormon, but decreased spontaneously to normal level. MRI showed pituitary stalk enlargement.

Patient was consulted to Toranamon Hospital, Tokyo, and anterior pituitary provocative test revealed severely impaired response of gonadotropin (FSH and LH) to GnRH and GH respons to GHRP-2 (growth hormone-releasing peptide-2), blunted response of TSH to TRH. ACTH and cortisol respons to CRH were within normal limit. Her serum estradiol (<11 pg/ml) and IGF1 (71 ng/ml) were low, indicating that patient had hypogonadotropic hypogonadism and severe growth hormone deficiency. Lumbal bone mineral density test showed osteoporosis sign (Z score -3,7).

The differential diagnosis of her pituitary stalk enlargement include germinoma, lymphocytic infundibulo-panhypophysitis, granulomatous hypophysitis secondary to sistemic illness (e.g sarcoidosis, collagen deseases, and tuberculosis) and IgG4 related hypophysitis. Analysis of PLAP (germinoma marker), serum lysozyme and angiotensin-converting enzyme (for predicting sarcoidosis), anti-nuclear antibody, rheumatic factor, PR3-ANCA, MPO-ANCA (for predicting collagen deseases), T-Spot (test for tuberculosis) and others including sIL-2 receptor, Beta HCG, AFP were all within normal limit. However her serum IgG and IgG4 were elevated (1780 mg/dl and 144 mg/dl). The patient was suggested as having IgG-4 related infundibulo-hypophysitis.

IgG4-related disease involves in many variable organs. Patient was then examined with thyroid ultrasound and the result compatible with chronic thyroiditis. Thyroid autoantibodies TPOAb and TGAb were negative. Abdominal ultrasound showed no abnormality in pancreas, liver and retroperitoneal region. Although the definitive diagnosis of IgG4-related infundibulo-hypophysitis is biopsy, but because of the risk for panhypopituitarydism, the test was not done.

038

Thyrotoxic Periodic Paralysis Clinical Features in the Cambodian Patients: Report of 16 Cases

Sum Satha, Ros Sina, Chea Savuth, Nhem Sophoeun, You Kimyean

Department of Internal Medicine "A", Calmette University Hospital, Cambodia

Introduction: Thyrotoxic periodic paralysis (TPP) is a rare disease. It occurs predominantly in Asian males. However there are very few reports about TPP in the Cambodian population.

Objective: The objective of this study is to report the clinical features of TPP amoung Cambodian patients.

Methods: Sixteen cases of TPP, admitted to Calmette University Hospital in Phnom Penh, Cambodia during a 8-year period (from 2006 to 2014), were retrospectively reviewed.

Results: Patients were adults male between 20 and 57 years of age. 6 of the 16 cases (37.5%) had lower extremities paralysis while others 10 cases (62.5%) had both arms and legs paralysis. 25% of the cases didn't have the signs of hyperthyroidism. All the 16 patients had low potassium serum concentrations (1.3-2.6.00 mmol/L).

Conclusions: TPP is not an uncommon disease in Cambodia. The clinical feature is characterized by recurent, transient episodes of muscles weakness that range from mild weakness to complete flaccid paralysis. This disease is related to hyperthyroidism. However the signs of hyperthyroidism is sometimes subtle.

039

Carcinoid Crisis in a Medullary Thyroid Carcinoma

Subashini Rajoo, Azraai Nasruddin, Wan Juani Wan Seman, Zanaria Hussein

Endocrine Unit, Department of Medicine, Hospital Putrajaya, Pusat Pentadbiran Kerajaan Persekutuan, Presint 7, 62250 Putrajaya, Malaysia

We experienced managing a challenging case of carcinoid crisis in a patient with medullary thyroid carcinoma with high levels of calcitonin and carcinogenic embryogenic antigen (CEA) but normal levels of urinary 5HIAA. Patient developed carcinoid symptoms during ultrasound manipulation of the thyroid gland and first two attempts of surgery failed as he developed carcinoid crisis. Thereafter, he was given 50microgram(mcg)/hour of octreotide infusion for the first 24 hours pre-operatively and a bolus of 200mcg prior to induction. Induction agents were intravenous (i.v) fentanyl, i.v midazolam, i.v propofol and i.v rocuronium. He developed tachycardia ranging 160-170 bpm and hypotension ranging systolic 54-78mmHg and diastolic of 40-50 mmHg. Intravenous phenylephrine was added when intravenous fluid challenge failed to recover blood pressure. A total of 800mcg of octreotide was administered at bolus doses of 100mcg every 5 min, 35 min since induction. Concurrent octreotide infusion was increased to 500mcg/hr and maintained throughout surgery. Phenylephrine was successfully tapered off at completion of surgery. At recovery, i.v octreotide infusion was gradually reduced to 200mcg/hr again and maintained for 48 hours post operatively. Blood pressure and heart rate normalised post-operatively with resolved carcinoid symptoms. During tumour manipulation or anaesthesia[1], a large number of peptides stimulating the adrenergic pathways maybe released at once, precipitating a life threatening carcinoid crisis. Calcitonin gene related peptide (CGRP) which is derived from the calcitonin gene as a result of alternative processing of calcitonin mRNA; and vasoactive intestinal peptide (VIP) are some of those peptides. CGRP is widely distributed in the thyroid and neural tissues of brain, gut and perivascular tissue whereas VIP is the major product in the central and peripheral nervous system. Both peptides are potent vasodilators, mimicking serotonin, causing flushing and hypotension.[2] Octreotide is a somatostatin analogue that blocks the release of serotonin and other hormones and stabilizes blood pressure directly. This reduces carcinoid symptoms in more than 70% of patients.[3] Diagnosis of carcinoid crisis may be clinical and not biochemically supported. The use of octreotide has to be titrated according to individual patients as there is no severity scoring for carcinoid crisis so far.

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040

A Comparison of two Cases of Pheochromocytoma with Predominant Neuropsychiatric Manifestations

Kristine De Luna, Leilani Mercado-Asis, Allan Baroque

Section of Endocrinology, Diabetes and Metabolism, University of Santo Tomas Hospital, Manila

Background: Pheochromocytoma are neuroendocrine tumors of the adrenal gland that secrete excessive catecholamine resulting in sympathetic nervous system hyperactivity. This condition may be misdiagnosed as anxiety, depression, or ordinary headache. The consideration of catecholamine-producing tumors in the work-up for organic causes of neuropsychiatric disorders is indispensable.

Objective: The objective is to report and compare two cases of pheochromocytoma with neuropsychiatric symptoms as main manifestations.

Materials and Methods: The first case is a 21 year old male with 1 year history of throbbing occipital headache accompanied by mild anxiety and hypertension with the highest value at 170/100 mmHg. Bilateral adrenal venous sampling with glucagon stimulation localized the pheochromocytoma to both adrenal glands with the dominant catecholamine-secreting lesion in the right adrenal gland. Patient subsequently underwent open right adrenalectomy. The second case is a 51 year old male with a complaint of intermittent episodes of anxiety and depression of 20 years duration. He has been hypertensive for 1 month with the highest value at 180/130 mmHg. Family history is positive for neurofibromatosis. Pheochromocytoma was localized to both adrenal glands with dominant catecholamine-secretion in the right, through performance of bilateral adrenal venous sampling with glucagon stimulation. Open right adrenalectomy was performed to remove the dominant catecholamine-secreting adrenal gland.

Results and Conclusion: In the first case, patient was asymptomatic for headache and anxiety after surgery. Blood pressure also normalized to the range of 100 to 120 over 70 to 80 mmHg without anti-hypertensive drugs. In the second case, a subjective decrease in the patient's degree of anxiety and depression, as supported by improvement of the anxiety and depression scores in the neuropsychiatric rating scales were noted post-operatively. There was also improvement in the blood pressure of the patient with values ranging from 120 to 130 over 70 to 80 mmHg, without anti-hypertensive drugs. When evaluating new or atypical cases with an anxiety disorder, or any neuropsychiatric symptoms or cases particularly refractory to treatment, it is important to have pheochromocytoma as one of the considerations. Bilateral adrenal venous sampling with glucagon stimulation is useful and safe diagnostic modality in detecting pheochromocytoma in these cases. Adrenalectomy is an effective management for unloading these patients of excessive catecholamines, thereby providing relief of neuropsychiatric symptoms and improvement of blood pressure.

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041

Ectopic Pheochromocytoma Localized Through Bilateral Adrenal Venous Sampling with Glucagon Stimulation

Kristine De Luna, Leilani Mercado-Asis, Allan Baroque

Section of Endocrinology, Diabetes and Metabolism, University of Santo Tomas Hospital, Manila

Background: Majority of pheochromocytoma come from the chromaffin cells of the adrenal medulla. Bilateral adrenal venous sampling with glucagon stimulation is a safe and effective technique in the localization of small and microscopic pheochromocytomas. In addition, this technique is especially helpful if biochemical test results have been equivocal.

Objective: The objective of this report is to present a case of an ectopic pheochromocytoma localized by bilateral adrenal venous sampling with glucagon stimulation.

Materials and Methods: This is a case report of a 21 year old male with a throbbing occipital headache of 1 year duration accompanied by mild anxiety. The headache was severe enough to cause the patient to bump his head against the wall. Patient is also hypertensive with the highest blood pressure of 170/100 mmHg. Bilateral adrenal venous sampling with glucagon stimulation was done which localized the pheochromocytoma to both adrenal glands. The dominant catecholamine-secreting lesion was found in the right adrenal gland. Patient subsequently underwent open right adrenalectomy.

Results and Conclusion: There was a disappearance of headache and anxiety after surgery. Blood pressure also normalized to the range of 100 to 120 over 70 to 80 mmHg without intake of anti-hypertensive drugs. Final histopathology revealed ectopic pheochromocytoma in the right adrenal cortex, which stain positively for synaptophysin. Bilateral adrenal venous sampling with glucagon stimulation is a safe and useful approach in localizing pheochromocytoma in this case. Performance of adrenalectomy is still the best management in unloading of excess catcholamine, leading to symptomatic relief and blood pressure improvement in this type of pheochromocytoma.

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042

Composite Rhabdoid Features in Adrenocortical Carcinoma with an Unpredictable Natural History: A Case Report and Review of Literature

Taweesak Wannachalee, Rungpailin Buranagan, Ananya Pongpaibul

Division of Endocrinology and Metabolism, Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand; Department of Pathology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Background: Adrenocortical carcinoma (ACC) with rhabdoid features, an extremely rare variant of ACC, is characterized by the prominence of rhabdoid component on background of conventional ACC. These tumors seem to be difficult to predict natural history and prognosis due to limited number of cases.

Objective: To describe a case of composite rhabdoid features in ACC, and To investigate their immunohistochemical and natural history of these tumor.

Methods and Results: Herein we report a 33-year-old man presented with left abdominal and back pain for two months. Computed tomography (CT) revealed huge heterogeneous enhancing mass with internal necrotic area at left suprarenal region, measuring about 13x10x18 cm. His hormonal evaluations, including morning serum cortisol, serum potassium, adrenocorticotropic hormone (ACTH), plasma aldosterone concentration and urinary catecholamines, were normal. The patient underwent an open midline left adrenalectomy. Macroscopically, the tumor was a well encapsulated solid 21×13×8 cm mass, and weighed 916.2 grams. Histopathological examination revealed extensive rhabdoid tumor cells with tumor necrosis. Immunohistochemical staining were markedly positive for melan A, synaptophysin, inhibin, vimentin and integrase interactor 1, while negative staining for cytokeratin 20, chromogranin, renal cell carcinoma antigen, myogenin, desmin and calretinin. These features were compatible with composite rhabdoid features in ACC. After the operation for 3 months, CT scan revealed no local tumor recurrence, also showed three new pulmonary nodules varying in size 0.5-1 cm. However, the patient refused to receive either chemotherapy or mitotane. The pulmonary metastases were slightly increased in size during the next 24 months of follow up.

Conclusion: Due to the rarity and uncommon histopathology, ACC with rhabdoid features seem to be problematic case in term of diagnosis and treatment modality. Extensive and careful immunohistochemical examinations should be the mainstay for diagnosis these type of ACC.

043

A Rare Case of MEN1 with Parathyroid Adenomas, TSH-FSH Secreting Pituitary Macro Adenoma and Pancreatic Neuroendocrine Tumour

Lau Bik Kui, Florence Tan

Endocrine Unit, Medical Department, Sarawak General Hospital, Kuching, Malaysia

Background: MEN1 syndrome is reported to represent only 2-4% of patients presenting with primary hyperparathyroidism (PHP) but should be suspected when PHP is diagnosed in younger patients or those with family history of hypercalcemic syndrome. We present a case of MEN1 diagnosed during workup of hypercalcemia complicated by renal calculi.

Case Report: A 39-year-old lady was admitted for extracorporeal shock wave lithotripsy (ESWL) for left renal calculi. She gave a history of recurrent renal colic past 1 year. Investigation confirmed PHP with corrected serum calcium of 3.02mmol/L and elevated intact parathyroid hormone at 31.8pmol/L (1.6-6.9pmol/L). She had no known medical history and denied paroxysmal symptoms. Her menses was regular. On detailed family history, her father and two sisters passed away between 30-40 years old of unknown cause and another sister had kidney stones treated with ESWL. On examination, her BMI was 21kg/m2, blood pressure 130/90mmHg, with regular pulse rate of 100/min. There was no goiter but neurological examination showed bilateral temporal hemianopia. Physical examination was otherwise unremarkable. Hematological, renal and liver function were normal. 24 hour urinary catecholamines and HIAA were within normal limits. Chromogranin A was elevated at 770 ng/ml (27.0-94.0). Pituitary function tests showed elevated free T4 47.73 pmol/L (11.50-22.70) with unsuppressed TSH 13.39mU/L (0.35-4.50); FSH 58.81 IU/L, LH 0.93 IU/L, prolactin 3423 uIU/mL; 8 am cortisol 19.19 ug/dL. Parathyroid scan showed bilateral hyperfunctioning inferior parathyroid adenomas. MRI pituitary revealed 3.3x3.8x4.0cm sellar mass while contrast-enhanced CT thorax-abdomen-pelvis detected a 1.5x1.8cm heterogenous mass at pancreatic body. She was treated with subcutaneous octreotide with reduction of free T4 and TSH and subsequently underwent subtotal parathyroidectomy followed by transphenoidal surgery. Her vision improved. Later, cytology assessment for pancreatic mass was performed via endoscopic ultrasound guided fine needle aspiration with histology confirming neuroendocrine tumour.

Conclusion: We reported a case of MEN1 with parathyroid adenomas, TSH-FSH secreting pituitary macroadenoma and pancreatic neuroendocrine tumour diagnosed when an unsuspected patient presented with renal calculi complicated by hypercalcemia. Despite the rarity of this condition, high clinical suspicious, detailed history and clinical examination had led to initiation of appropriate investigations and timely management of her associated diseases.

044

Micronodular Pheochromocytoma

Joie Dj Isip, Aivind Santiago, Nerissa Ang-Golangco

Makati Medical Center

56 year old female known hypertensive and Diabetic came in with one year history of sudden onset non radiating grade 7-8/10 nape pain, palpitation, diaphoresis, restlessness accompanied by sudden spikes of blood pressure highest at 200/100 mmHg partially controlled with quadruple anti hypertensive medication (amlodipine 5 mg OD, metoprolol 50 mg OD, Irbesartan + hydrochlorothiazide 300/25 mg OD). Because of the above symptoms, she was referred to an Endocrinologist. Upon physical examination showed Blood Pressure 120/90mmhg Heart rate: 90 bpm, no frontal bossing, moon facies, exophthalmos, thyroid gland not enlarged, absence of central obesity. Work ups done revealed the following normal results: TSH-IRMA: 0.56uIu/ml, FT4-RIA: 21.703pmol/L, plasma aldosterone: 12.772ng/dl, plasma renin: 0.670ng/ml/hr, PA/PRA ratio: 19.06, serum potassium 3.8meq/L, 0800 hr cortisol: 310nmol/L. 24 hour urine metanephrine and VMA were elevated at 7.126mg/24h and 17.4mg/24hr respectively. CT scan of adrenal gland with contrast: right adrenal nodule in the lateral limb measuring 9.2x5.6 mm, absolute washout 67.5% CT scan of head and chest done for surveillance showed subcentimeter pulmonary nodules due to previous infection. Working impression at this time was pheochromocytoma, rule out MEN2a. Hence, additional work ups were done: Thyroid ultrasound showed normal sized thyroid gland, with calcified solid nodule (1.06x1.04x0.84cm) at the right lobe, which was colloid nodule on Fine needle aspiration biopsy. Ionized calcium normal at 1.25meq/L, intact PTH 10.358pg/ml. Patient was admitted for adrenalectomy right. Pre operative hydrocortisone 100mg/IV was given. Operative findings showed 1x1 cm yellowish well circumscribed mass at the right adrenal gland. No intraoperative hypotension noted. Patient remained stable, discharged on the fourth hospital day.

Discussion: Pheochromocytoma is a tumor arising from the catecholamine producing chromaffin cells in the adrenal medulla. Most common symptoms include headache, palpitations, diaphoresis. Urine metanephrine has a high sensitivity for the diagnosis with sensitivity of 97% and specificity of 99%. Pheochromocytomas have an average size of 4.5cm on detection. This patient was symptomatic compatible with pheochromocytoma which on CT scan revealed a micronodule size of 0.9x0.56cm.

Conclusion: This case report extrapolated the occurrence of pheochromocytoma in a patient with micronodule on CT scan.

P1

Novel Insights into the Paradigm of Kidney Disease in Type 2 Diabetes – Lessons from a 13-Year Retrospective Large Cohort Study

Serena Low, Lim Su Chi, Yeoh Lee Ying, Liu Jian Jun, Sharon Fun, Su Chang, Zhang Xiao, Tavintharan Subramaniam, Sum Chee Fang

Khoo Teck Puat Hospital, Singapore

Background: Little is known of the natural history of kidney disease in Type 2 Diabetes Mellitus (T2DM) although much research has been done on Type 1 DM.

Objectives: The objectives are to understand the natural history of kidney disease in T2DM and identify the factors associated with its onset and progression.

Materials and Methods: This was a retrospective cohort study on patients with T2DM attending Diabetes Centre in a regional hospital in Singapore in 2002-2014. Blood and urine samples were collected at baseline and through follow-up. We identified 533 patients with no pre-existing kidney disease for onset of CKD (Chronic Kidney Disease) analysis and 967 patients with pre-existing kidney disease for CKD progression analysis. Onset of CKD was defined as first occurrence of estimated glomerular filtration rate (eGFR) to <60 ml/min/1.73m² and/or increase of urine albumin-to-creatinine (uACR) to ≥30 mg/g. Progression was defined as annual rate of eGFR change ≤cohort median value (-1.82 ml/min/1.73m²) and/or progression of uACR to ≥30 mg/g or ≥300mg/g.

Results: The proportions of patients who developed CKD and had progression of CKD were 45.4% and 61.0% respectively. Among patients with onset of CKD, three-quarters had only albuminuria. Among patients with CKD progression, about two-thirds had only eGFR decline. Among patients with microalbuminuria at baseline and progressed, 26.4% had macroalbuminuria and 18.4% normoalbuminuria at last follow-up. Among patients with macroalbuminuria at baseline and progressed, 9.9% had improvement of albuminuria. Higher baseline uACR and higher HbA1c variability were independently associated with onset and progression in multivariable logistic regression. Male and older age group were associated with onset whereas higher baseline HbA1c, lower eGFR, higher systolic blood pressure and higher LDL-cholesterol were associated with progression.

Conclusions: Development of albuminuria appears to predominate at the onset of CKD whereas eGFR decline appears to play a bigger role in CKD progression. Albuminuria may regress even during progression of CKD. The shared and unshared risk factors for onset and progression may inform potential treatment strategies. HbA1c variability is a relatively new risk marker for onset and progression and may have the potential to be used for monitoring DM control in an effort to prevent renal complication.

P2

Use of Continuous Glucose Monitoring in Patients with Diabetic Kidney Disease with Suboptimal Glycemic Control

Ester Yeoh, Sharon Fun, Julia Tong, Lim Boon Khim, Tavintharan S., Sum Chee Fang, Yeoh Lee Ying, Lim Su Chi

Khoo Teck Puat Hospital, 90 Yishun Central, Singapore 768828

Background: Patients with diabetic kidney disease (DKD) on anti-diabetic agents, are at greater risk of glycemic variations, both hypoglycemia and hyperglycemia. We hypothesize that continuous glucose monitoring (CGM) allows titration of anti-diabetic therapy to improve glycemic control in DKD patients without increasing hypoglycemia.

Objectives: We aimed to compare glycemic control (using HbA1c) and hypoglycemia incidence in patients with stage 3 or worse DKD [not on renal replacement therapy (RRT)], receiving retrospective CGM-guided anti-diabetic therapy vs. structured self-monitoring of blood glucose (SMBG) over 3 months.

Materials and Methods: Thirty patients with HbA1c >8% were randomized to 6-day retrospective CGM or SMBG. In the CGM group, CGM was worn at the beginning and 6 weeks. HBA1c, assessment of hypoglycemia events (self-reported and BG<4mmol/l from CGM/SMBG data) and medication adjustment were performed at the beginning, 6 weeks and 3 months. All patients received education on hypoglycemia avoidance.

Results: Fourteen patients were allocated to CGM and 16 to SMBG. Mean(±SD) estimated glomerular filtration rate (eGFR) was 41.2±9.3ml/min. Majority (86.7%) of patients had diabetes duration >10years and on insulin therapy (90%). HbA1c improved significantly from baseline 9.9±1.2 to 9.0±1.5% (p<0.001) at 3 months, with no difference between CGM (9.8±1.2 to 8.8±1.8%, p=0.009) or SMBG (9.9± 1.3 to 9.1±1.1%, p=0.007) groups, (p=0.869 between groups). In the CGM group, percentage duration in hyperglycemia (BG>10mmol/l) reduced from baseline 65.4±22.4% to 54.6±23.6% (p=0.033) at 6 weeks, with a non-significant rise in percentage duration in hypoglycemia from 1.2±2.2% to 4.0±7.0% (p=0.176). CGM data showed that average lowest glucose was lower after medication adjustment at 6 weeks (4.9±2.2 to 3.8±1.4mmol/l, p=0.04) but with improved average glucose (12.1±2.5 to 10.9±2.5mmol/l, p= 0.014). There was no difference in hypoglycemia events in the CGM [median 0(IQR 0-1.35) at baseline, 1(0-4) at 6 weeks, p=0.085 and 0(0-0), p=0.269 at 3 months] and SMBG [0(0-0.25) at baseline to 0(0-0.75) at 3 months, p=1] groups.

Conclusion: In a pilot study of DKD patients, short-term episodic use of CGM improved duration spent in hyperglycemia without significantly increasing time-exposure to hypoglycemia. Future larger and longer studies are needed to demonstrate whether CGM is superior to SMBG in optimizing glycemia.

P3

Comparison of Arterial Stiffness Between Obese and Non Obese T2DM

Jongky Hendro, Sri Murtiwi, Askandar Tjokroprawiro, Agung Pranoto, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono, Hermina Novida, Hermawan Susanto, Rio Wironegoro, Deasy Ardiany

Surabaya Diabetes and Nutrition Center, Dr. Soetomo Teaching Hospital, Faculty of Medicine, Airlangga University, Surabaya, Indonesia

Background: In diabetes, arterial stiffness was found in all age groups and contributes to cardiovascular morbidity and mortality. In patients with type 2 diabetes mellitus (T2DM) – obese. Recently, there are no consistent evidences showing the difference in terms of cardiovascular morbidity and mortality among patients with obese and non obese T2DM. This was due to lack of research information available on the impact of obesity in patients with T2DM and relation to vascular morbidity and mortality.

Objective: The Study was designed to investigate the comparison of arterial stiffness in obese and non obese T2DM subjects.

Materials and Methods: The study consisted of 50 T2DM subjects, who were recruited from the outpatient metabolic clinic and evaluated for the study.The study participants were divided into two groups according to presence of obesity according to BMI, using the American Diabetic Association (ADA) 2015 obesity criteria. The first Group consisted of 25 diabetic non obese subjects, and the 2nd group consisted of 25 participants with diabetes and obesity. Pulse wave velocity (PWV) to asses the arterial stiffnes was measured by recording the right brachial and the right ankle artery pulse wave forms by two pressure transducers using the Vaserra 1000. We analyze the comparison of PWV between two grups by using pair T-test

Results: The mean of age was 58, 98± 12, 28 years, and the mean of BMI, PWV and HbA1c for obese group was 28, 50 ± 2, 02 and 22, 76 ± 1, 90for non obese.PWV obese: 16, 41± 2, 43 m/second and 13, 2 ± 2, 44 m/sec for non obese, while HbA1c level: 7, 69 ± 0, 98% for obese and 6, 8 ± 0, 65% for non obese group.Test results showed the deference of Hb A1C level between two groups is weak (r=0, 048; P>0, 05), the deference of PWV value between two groups shows strong and significant result (r=0, 403; P<0, 05).

Conclusion: There were significance difference of Arterial stiffness in obese and non obese T2DM subjects

P4

Vitamin B12 Status in Type 2 Diabetes Mellitus: Effect of Metformin and B12 Supplementation in a Cohort of Malaysian Population

Fung Wai Yee, Ang Hock Aun, Yuen Kah Hay, Irene Looi, Hor Chee Peng, Lim Luen Hui, Lim Sheau Chin

School of Pharmaceutical Sciences, Universiti Sains Malaysia; Clinical Research Centre, Hospital Seberang Jaya

Background: Vitamin B12-deficiency in Type 2 diabetes patients has been strongly associated with metformin treatment. The prevalence varied from 3% to 33%, due to varied definitions of B12-deficiency and diet. In Malaysia, vitamin B12 is prescribed to patients showing symptoms of neuropathy while B12-deficiency screening is not a routine clinical practice. The effect of oral B12 supplementation on serum B12 levels in metformin-treated patients is not well-reported.

Objective: The objective was to define the prevalence of low B12-status in Type 2 diabetes population in Malaysia, and to elucidate the effect of oral B12 supplementation with or without metformin treatment.

Materials and Methods: We conducted a cross-sectional study of 296 diabetes patients with peripheral neuropathy at health clinics in West Malaysia. Demographic data and medication record were collected. Patients had homocysteine, vitamin B12 and folic acid levels measured. Biochemical B12-deficiency was defined as serum B12 concentrations ≤200pg/mL. Patients were divided into sub-cohorts - with or without vitamin B supplementation.

Results: There were only 2 patients (0.7%, n=296) with serum B12-deficiency (<200pg/mL), despite mean diabetes duration of over 10 years. The mean B12 levels of patients on B12 supplementation (Metformin:700.0±360.1pg/mL, Non-metformin:1139.6±464.5pg/mL) were significantly higher than non-B12 supplemented (Metformin:513.0±215.4pg/mL, Non-metformin:500.4±192.5pg/mL) patients in both metformin and non-metformin groups ($P<0.05$). However, the mean B12 level of B12-supplemented patients was approximately 40% lower in the metformin group compared with the non-metformin group ($P<0.001$). In contrast, the mean B12 levels in non-supplemented patients were not significantly different between metformin and non-metformin groups ($P=0.83$). The higher B12 status in B12-supplemented patients also reflected in lower homocysteine levels in both metformin (Non-B12:14.0±5.4µmol/L, B12:11.9±3.5µmol/L) and non-metformin (Non-B12:16.4±8.3µmol/L, B12:12.0±4.7µmol/L) groups. Gender effect was strongly observed in the metformin-treated group, with lower B12 and significantly higher homocysteine levels in men compared to women, regardless of B12-supplementation.

Conclusion: The dietary consumption of this study population provides sufficient vitamin B12 to prevent metformin-associated B12-deficiency commonly observed in other regions (3-33%). The findings suggest that the effect of oral B12 supplementation, apart from diet, is suppressed by metformin treatment, while men generally has lower B12 status compared to women regardless of B12-supplementation.

P5

High Incidence of Impaired Hypoglycaemic Awareness Among Insulin-Treated Patients with Diabetes in Malaysia

Nor Azmi Kamaruddin, Zanariah Hussein, Chan Siew Pheng, Mohamed Mafauzy, Wan Mohamed Wan Bebakar, Arvind Gadekar, Anand Jain

Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia; Hospital Putrajaya, Putrajaya, Malaysia; University of Malaya, Kuala Lumpur, Malaysia; Hospital Universiti Sains Malaysia, Kota Baru, Kelantan, Malaysia; Novo Nordisk Pharma Sdn Bhd, Kuala Lumpur, Malaysia; Novo Nordisk Region International Operations AG, Zürich, Switzerland

Background: Hypoglycaemia is a major barrier to improving glycaemic control. Data on patient-reported hypoglycaemia rates in the clinic setting are limited for Malaysia.

Objective: To determine the incidence, perceptions and responses to hypoglycaemia among patients with insulin-treated diabetes in Malaysia.

Materials and Methods: The Hypoglycaemia Assessment Tool (HAT) study was a non-interventional, multicentre, 6-month retrospective and 1-month prospective analysis of hypoglycaemic events conducted in 24 countries, using self-assessment questionnaires and diaries, among patients aged ≥18 years with type 1 (T1DM) or type 2 (T2DM) diabetes using insulin for ≥12 months.

Results and Conclusion: In the Malaysian cohort of the HAT study, 1153 patients completed the study (114 T1DM; 1039 T2DM). The average age was 30.2 (T1DM) and 55.8 (T2DM) years, the mean duration of diabetes was 12.2 (T1DM) and 13.1 (T2DM) years, and the mean duration of insulin use was 11.8 (T1DM) and 4.4 (T2DM) years. In the retrospective analysis, 74.6% (T1DM) and 47.1% (T2DM) of patients experienced ≥1 hypoglycaemic event as defined by symptoms or blood glucose (BG) levels, with estimated incidences of 26.2 (T1DM) and 12.6 (T2DM) events per patient-year (PPY). In the prospective analysis, fewer patients (50.4%, T1D; 33.4%, T2D) reported ≥1 hypoglycaemic event, with estimated incidence rates of 20.3 (T1DM) and 13.1 (T2DM) events PPY. Of these, only 6.8 (T1DM) and 4.7 (T2DM) events PPY were confirmed by glucose measurement. Nearly half of patients with T1DM (48%) and over a third with T2DM (36.9%) had impaired hypoglycaemic awareness. Of patients who experienced hypoglycaemia, 37.9% (T1DM) and 26.2% (T2DM) identified an event from symptoms and low BG. Fewer patients with T1DM (2.9%) had severely impaired hypoglycaemia awareness than those with T2DM (10.3%). Patients reported fear of hypoglycaemia on a scale of 1 (not afraid at all) to 10 (absolutely terrified), with mean scores of 5.4±2.8 for T1DM and 5.2±2.8 for T2DM. Patient responses to fear of hypoglycaemia included increasing their contact with healthcare professionals (57.0%, T1D; 37.7%, T2D) and increasing BG monitoring (48.2%, T1D; 36.7%, T2D). These findings demonstrate the incidence and impaired awareness of hypoglycaemia among insulin-treated patients with diabetes in Malaysia.

P6

Association Between Pancreatic Beta Cell Function and Glycemic Control of Type 2 Diabetes Patients on Maximal Sulphonylurea Therapy

Navin Kumar Loganadan, Hasniza Zaman Huri, Shireene Ratna Vethakkan, Zanariah Hussein

Department of Pharmacy, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; Clinical Investigation Centre, 13th Floor Main Tower, University of Malaya Medical Centre, Lembah Pantai, Kuala Lumpur, Malaysia; Endocrinology Unit, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; Department of Medicine, Putrajaya Hospital, Putrajaya, Malaysia

Addition of sulfonylurea which promotes insulin secretion from the pancreas, to metformin is an option once the latter fails to achieve the desired target glycated haemoglobin (HbA1c). In this study, we investigated the association between pancreatic beta cell function and glycemic control of type 2 diabetes (T2D) patients receiving maximal doses of this combination therapy. This cross-sectional study conducted at the University of Malaya Medical Centre (UMMC) in Kuala Lumpur, Malaysia from November 2014 until February 2015 recruited 104 T2D patients treated with 120mg of gliclazide modified release once daily and a minimum of 850mg of metformin twice daily from the primary care clinic. Patients who received the combination therapy for at least a year, did not have acute diabetes complications and had not undergone pancreatic surgery were included. Their blood samples were analysed for fasting plasma glucose (FPG), HbA1c, fasting insulin and fasting c-peptide levels after which the homeostatic model assessment of insulin secretion (HOMA2-%B) and insulin resistance (HOMA2-IR) were calculated. The mean age of subjects was 57.3 ± 8.7 years with mean FPG of 9.3 ± 3.3 mmol/L and mean HbA1c of 8.2 ± 1.6%. In terms of insulin secretion, mean fasting insulin and mean fasting c-peptide were 17.1 ± 8.6 mU/L and 2.9 ± 1.3 ng/mL respectively. The subjects had a mean HOMA2-%B of 64.5 ± 41.9% and mean HOMA2-IR of 2.6 ± 1.3. Strong significant negative correlations between FPG and HOMA2-%B ($r = -0.658$, $p<0.001$) as well as HbA1c and HOMA2-%B ($r = -0.426$, $p<0.001$) was observed. HOMA2-IR showed significant positive correlation with FPG ($r = 0.368$, $p<0.001$) but not with HbA1c ($r = 0.178$, $p>0.05$). In conclusion, lower pancreatic beta cell function and higher insulin resistance were significantly associated with poorer glycemic control in Malaysian T2D patients receiving maximum sulphonylurea treatment in combination with metformin, failing which another oral agent or insulin is usually required.

P7

Factors Associated with Glycemic Control in Type 2 Diabetic Patients

Zinmyo Latt, Ko Ko, Yaa Kyaw Thu, Chit Tet Tun, Thu Aung Kyaw

The study was done under supervision of Prof Tint Swe Latt (Former President of Myanmar Society of Endocrine and Metabolism, Retired Rector of University Of Medicine 2, WHO expert in NCD Project) and Prof Ko Ko (General Secretariat of Myanmar Society of Endocrine and Metabolism). The study was submitted to post graduate board of studies, University of Medicine (2), Yangon in a partial fulfilment for the degree of master of medical science (Internal Medicine), 2014.

Background: Diabetic control is important not only for the prevention of onset of complications but also for the control of progression of complications particularly microvascular complications. It is important to know the causes of uncontrolled diabetes so that timely and appropriate corrective measures can be taken to ameliorate the adverse effects of uncontrolled diabetes.

Objectives: The study was done to find out the proportion of uncontrolled diabetes, to find socio-demographic factors and the dietary factors of uncontrolled diabetes, and to determine treatment factors and possible associated factors of uncontrolled diabetes among type 2 diabetic patients in outpatient clinic.

Materials and Methods: We randomly assigned 100 patients with type 2 diabetes at outpatient clinic during 1 year to find the proportion of uncontrolled diabetes, defined as HbA1c > 7% with regular treatment for 1 year. We found the factors of both groups (Uncontrolled and Control) which were collected using personal interview. The 24 hour recalled food dairy method was used.

Results: In the study, the proportion of uncontrolled diabetes was 73% (n=100).Most of uncontrolled diabetic patients were female (61.6%, n=73) and 40-59 years age group (65.7%, n=73). According to the study (n=100), family income of the patients (P=0.002), carbohydrate intake (P=0.001) and sweet foods intake (P=0.008) of the patients, adherence to treatment (P=0.006) and regular follow up (P=0.003) of the patients, history of having drugs causing hyperglycemia (P=0.04), monitoring of SMBG (0.00001), duration of participate in leisure time physical exercise (P=0.01), duration of screening time (P=0.00009) were associated with glycemic control in type 2 diabetic patients. The gender (P=0.9), education (P=0.26) and BMI (P=0.18) of the patients, fat intake (P=0.6), protein intake (P=0.3) and fibre intake (P=0.9) among them, types of treatment (P=0.61), hypertension (P=0.95) and duration of diabetes (P=0.09) were not associated with glycemic control in type 2 diabetic patients.

Conclusion: The family income of the patients, carbohydrate and sweet foods intake, treatment adherence, regular follow up, SMBG, use of drugs causing hyperglycemia, duration of physical exercise and duration of screening time were associated with the glycemic control of type 2 diabetes mellitus, so they should be emphasized in the management of type 2 diabetes mellitus.

P8

Factors Affecting the Degree of Diabetic Neuropathy (Study Based on Private Diabetic Clinic in Semarang, Central Java, Indonesia)

Tania Tedjo, Heri Nugroho, Tjokorda Gde Dalem Pemayun, Tony Suhartono, Darmono

Medical Faculty Diponegoro University - Dr. Kariadi General Hospital, Semarang, Indonesia

Background: Neuropathy is a common complication among diabetic patients, it accounts for about 50% and causing degradation in patients' quality of life. Many factors have been related to the degree of diabetic neuropathy. Coming from high social economy status not always become a guarantee that such patients would screen themselves or seek for medical attention as soon as possible.

Aim of the Study: The aim of this study is to look forward the profile of wealthy patients with diabetics neuropathy that routinely control in private diabetic clinic in Semarang and to find out factors that significantly affecting the degree of neuropathy among those patients.

Materials and Methods: Cross sectional study. We collected questionaire from outpatient diabetic clinic since January - December 2014. Respondents were all fulfilling these criteria: confirmed as having diabetic neuropathy, routinely control and take the medication for at least 3 months.

Independent Variables: sex, age, disease duration (since diagnosed as having diabetes), body mass index, hypertension, smoking habit, and glycemic control. Multivariate analysis was done to find out is there any significant correlation between the degree of diabetic neuropathy (based on Toronto Clinical Scoring System/TCSS) and those independent variables.

Results: We found 52 respondents eligible for this study. Male 25 (48%) vs. female 27 (52%). Range of age: 30-80 years of age; median of age was 62 years old. Disease duration: ≤1 year - 38 years; median 8 years. Body mass index (BMI) 16, 65 kg/m² - 37, 38 kg/m²; median 25, 55 kg/m². Twenty four respondents (46%) were also having hypertension. Smoking habit found in 17 (33%) respondents, all were male; in other words, 68% male respondents were smoker. Glycemic control categorized as: good (A1c <7, 5%), average (A1c 7, 5-9%), and bad (A1c >9%); respectively 26 (50%) vs. 9 (17%) vs. 17 (33%) respondents. Abnormal Ankle Brachial Index (ABI) found in 9 (17%) respondents. Fourty one (79%) respondents took only OHA, 5 (10%) respondents got insulin, and 6 (11%) respondents got the combination of OHA-Insulin. The degree of diabetic neuropathy was categorized as: none (TCSS score 0-5), mild (TCSS score 6-8), medium (TCSS score 9-11), and severe (TCSS score ≥12). Five (10%) respondents categorized as having mild neuropathy, 21 (40%) respondents were medium, and half were none. No one diagnosed as having severe neuropathy. Diabetic neuropathy was predominantly found in patients older than 60 year of age, disease duration more than 15 years, overweight, abnormal ABI, average glycemic control, and having hypertension. Nevertheless, based on statistical analysis, glycemic control and hypertension were the only two factors that significantly affecting the degree of diabetic neuropathy (p value respectively 0, 019 and 0, 016; 95% CI).

Conclusion: Profile of wealthy patients with diabetic neuropathy were not differ to those from average population. Glycemic and tension control plays an important role in the management of diabetic neuropathy.

P9

Adiponectin is Inversely Correlated with Fibrinogen in Patients with T2DM-MetS

Pradana Zaky, Askandar Tjokroprawiro, Ari Sutjahjo, Sri Murtiwi, Soebagijo Adi, Sony Wibisono, Agung Pranoto

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Type 2 diabetes mellitus (T2DM) is considered as major health problem with increasing prevalence, and leading cause of morbidity, mortality and vast complications. Cardiovascular disease is the most life-threatening consequences of diabetes mellitus with mortality rates up to two to four times higher for persons with diabetes mellitus. Adiponectin (Apn) has been identified as the adipocytokines that are derived from adipose tissue. Adiponectin has protective role in the initiation and progression of atherosclerosis through anti-inflammatory and anti-atherogenic effects. Many clinical studies have demonstrated that low plasma Apn level associates closely with metabolic syndrome (MetS), including atherosclerotic cardiovascular diseases, T2DM, hypertension and dyslipidemia. High fibrinogen level in T2DM has been suggested to play an active role in the development and progression of atherosclerotic plaques in diabetes. High fibrinogen level and impaired fibrinolysis are more common in diabetics than in non-diabetics.

Objective: The aim of this study was to investigate the relationship between adiponectin and fibrinogen in patients with T2DM-MetS

Materials and Methods: The study was a cross sectional analytical study which has enrolled T2DM-MetS patients who were on routine visited in private diabetic clinic. The study included T2DM-MetS patients with age > 40 years old. Informed consent was obtained from all patients. Exclusion criteria for the study group were: history of alcohol abuse, cardiovascular or cerebrovascular diseases, end stage renal disease, active hepatic disease. Adiponectin and fibrinogen was measured. Statistical analysis was performed using Pearson correlation test.

Results: There were 85 subjects who matched the criteria, 53 males and 32 females; mean of age was 61 ± 11.32 years. The laboratory results of mean Apn level was 6.14 ± 2.48 µg/mL and mean fibrinogen level was 527 ± 216.52 mg/dL. Statistical analysis showed that Apn was significantly and inversely correlated with fibrinogen (r=-0.327, p=0.05)

Conclusion: There was significant inverse correlation between adiponectin and fibrinogen in patients with T2DM-MetS

P10

Prostate Specific Antigen is Inversely Correlated with Body Mass Index in Men with T2DM

Pradana Zaky, Askandar Tjokroprawiro, Agung Pranoto, Ari Sutjahjo, Sri Murtiwi, Soebagijo Adi, Sony Wibisono

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Patients with diabetes have suggested to be at an increased risk for cancers of the pancreas, liver and colon. In contrast other malignancies, population-based data studies in men indicate that the risk of prostate cancer may have an inverse relationship with type 2 diabetes mellitus (T2DM). Prostate specific antigen (PSA) is a most valuable cancer marker that is widely use for population screening, diagnosis and monitoring of patients with prostate cancer. Inverse associations between PSA levels and T2DM have been reported in recent studies. Multiple studies have found that obese men have lower serum PSA concentrations than non-obese men in T2DM. Hemodilution may play a major role in the lower serum PSA concentrations among obese men with T2DM.

Objective: The aim of this study was to investigate the correlation between PSA level and body mass index (BMI) in men with T2DM.

Materials and Methods: The study was a cross sectional analytical which has enrolled male T2DM patients who were on routine visited in private diabetic clinic. The study included T2DM patients with age > 40 years old. Informed consent was obtained from all patients. PSA level and BMI was measured. Statistical analysis was performed using Pearson correlation test.

Results: There were 40 male subjects who matched the criteria, mean of age was 63 ± 9.91 years. The laboratory results of mean PSA level was 3.43 ± 1.79 ng/mL and mean BMI was 25 ± 4.68 kg/m². Statistical analysis showed that PSA level significantly and inversely correlated with BMI ($r=-0.47$, $p < 0.01$)

Conclusion: There was significant inverse correlation between PSA level and BMI in men with T2DM

P11

Correlation Between Plasma Lipoprotein(a) Level and Insulin Resistance in Patients with Type 2 Diabetes Mellitus

Wahyu Eko Prasetyo, Soebagijo Adi, Askandar Tjokroprawiro, Sony Wibisono, Agung Pranoto, Ari Sutjahjo, Sri Murtiwi

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Lipoprotein(a) [Lp(a)] is an emergent cardiovascular risk factor that is related to the presence and severity of cardiovascular disease. Insulin resistance and/or compensatory hyperinsulinemia contribute to the cardiovascular risk in patients with type 2 diabetes mellitus (T2DM). Past investigations have suggested an inversed relationship of Lp(a) levels with circulating insulin and/or insulin resistance in T2DM.

Objective: Aim of the study is to investigate the correlation between Lp(a) and insulin resistance in patients with T2DM.

Materials and Methods: This cross-sectional analytical study enrolled outpatients with T2DM in a private diabetic clinic. A venous blood sample was drawn after an 10-hour overnight fast. The Homeostatic Model Assessment Insulin Resistance (HOMA-IR) was calculated as an index of insulin sensitivity from fasting plasma glucose (mmol/L) and insulin (μU/mL) using the formula: [(glucose × insulin)/22.5]. Lp(a) was measured with laboratory examination with turbidimetric assay method. Informed consent was obtained from all patients. Exclusion criteria for the study group were: history of alcohol abuse, having cardiovascular, cerebrovascular disease, end stage renal disease and active hepatic disease. Statistical analysis was performed using Spearman rank test.

Results: The study included 58 subjects, 40 males (69 %) and 18 females (31 %); the mean of age was 61.08 ± 7.54 years. The mean of Lp(a) level was 16.82 ± 18.48 mg/dL, the mean of plasma insulin was 12.47 ± 6.69 μU/mL, the mean of HOMA-IR was 5.36 ± 3.72. Statistical analysis showed that Lp(a) was inversely correlated with HOMA-IR (r -0.280, $p<0.05$) and plasma insulin level (r -0.268, $p<0.05$).

Conclusion: There was inversed correlation of Lp(a) level with insulin resistance in patients with T2DM.

P12

Lipoprotein(a) Levels Varies Across the Components of Metabolic Syndrome in T2DM

Wahyu Eko Prasetyo, Sri Murtiwi, Askandar Tjokroprawiro, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono, Agung Pranoto

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: The metabolic syndrome (MetS) is a constellation of risk factors of metabolic origin that are accompanied by increased risk for cardiovascular disease and type 2 diabetes mellitus (T2DM). These risk factors are atherogenic dyslipidemia, elevated blood pressure, elevated plasma glucose, a prothrombotic state, and a pro-inflammatory state. Lipoprotein(a) [Lp(a)] and MetS is individually considered an atherosclerotic factor.

Objective: Aim of this study was to investigate the comparison between Lp(a) and the five components of MetS based on AHA criteria in patients with T2DM.

Materials and Methods: This cross-sectional study enrolled patients with T2DM-MetS (T2DM with MetS) in a private diabetic clinic. MetS was based on the American Heart Association (AHA) criteria. Such a criteria are waist circumference (WC) >80 cm in females and >90 cm in males accompanied with 2 or more of the following components: systolic blood pressure (SBP) >130 mmHg, triglyceride (TG) >150 mg/dL, fasting blood glucose (FBG) > 100 mg/dL, high density lipoprotein cholesterol (HDL-C) <40 mg/dL in males and <50 mg/dL in females. Informed consent was obtained from all patients. Exclusion criteria for the study group were: history of alcohol abuse, having cardiovascular, cerebrovascular disease, end stage renal disease and active hepatic disease. Lp(a) was measured with laboratory examination with turbidimetric assay method. Statistical analysis was performed using Kruskal-Wallis test and Spearman rank test.

Results: There were 85 subjects, 49 males (57, 6 %) and 36 females (42, 4 %); the mean of age was 63.58 ± 11.92 years. The mean of Lp(a) level was 21.76 ± 26.37 mg/dL, WC 98.412 ± 9.7215 cm, SBP 128.93 ± 19.45 mmHg, TG 202.38 ± 166.94 mg/dL, FBG 188.55 ± 75.70 mg/dL, and HDL-C 42.79 ± 9.84 mg/dL. Statistical analysis showed that no difference between Lp(a) and the metabolic syndrome components in T2DM-MetS patients. (p 0, 208)

Conclusion: There was no difference in Lp(a) levels and the number of MetS components among T2DM-MetS patients.

P13

Effect of Insulin Detemir Therapy on Weight in Insulin Naive Type 2 Diabetes Mellitus at HUSM Kelantan

Roslan Teh Roseleen Nadia, Mohamed Mafauzy

Hospital Universiti Sains Malaysia (HUSM) Kelantan

Background: Insulin therapy is associated with weight gain. Thus, identification of type of insulin which can address weight issue, is vital in the management of T2DM patients who are mostly overweight/ obese.

Objective: To evaluate weight effect of insulin Detemir therapy in insulin naive T2DM patient in real life practice

Materials and Methods: Retrospective cohort study on insulin naive adult T2DM patients on oral antidiabetc agents, initiated on Detemir for at least 48 weeks. Patient's medical record were reviewed, and data on weight, waist circumference and BMI at baseline and 48 weeks after detemir therapy were recorded and analysed. Paired t test and Wilcoxon Signed Rank test were used to compare baseline and post Detemir weight, waist circumference and BMI

Results: 27 patient were included in the analysis; median age (IQR) of 59 years (44), majority were malay; 21 (77.8%) and on combination antidiabetic agent (92.6%). Mean baseline weight was 69.17 (15.00), median BMI of 27.5 (23) and mean waist circumference of 95.50 (13.14) for female and 91.25 (9.88) for male. At 48weeks, treatment with insulin Detemir showed no significant difference in term of median weight (p 0.295), BMI (p 0.211) and waist circumference (p 0.166 for female and p 0.703 for male).

Conclusion: Insulin Detemir therapy have weight neutral effect on weight, BMI and central adiposity indicative by waist circumference.

P14

Correlation Between TG/HDL Ratio and Insulin Resistance in Patients with Type 2 Diabetes Mellitus – Metabolic Syndrome

Hermawan Susanto, Askandar Tjokroprawiro, Sri Murtiwi, Agung Pranoto, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya-Indonesia

Background: Type 2 diabetes mellitus (T2D) is part of the metabolic syndrome with a cluster several abnormalities, including insulin resistance, dyslipidemia, cardiovascular disease (CVD). Obesity, metabolic syndrome, and T2D also show characteristic dyslipidemia and measuring these variables might also help identify insulin resistance (IR). For example, plasma TG, HDL-C, and TC are independently associated with insulin resistance insulin level, and are independent predictors of CVD. Evaluations of IR and β-cell function are important for selection of treatment and understanding the disease status. Triglyceride/HDL-cholesterol (TG/HDL) ratio is a new surrogate marker for IR. Because IR plays important role in development of CVD and the TG/HDL-c ratio was significantly associated with these conditions, we conducted this study to determine whether the TG/HDL-c ratio is associated with IR in patients with T2DM-MetS.

Objective: Aim of the study is to investigate the correlation between TG/HDL ratio and insulin resistance in patients with T2DM-MetS.

Materials and Methods: This cross-sectional analytical study enrolled outpatients with T2DM-MetS in a private diabetic clinic. A venous blood sample was drawn after an 10-hour overnight fast. The Homeostatic Model Assessment Insulin Resistance (HOMA-IR) was calculated as an index of insulin sensitivity from fasting plasma glucose (mmol/L) and insulin (μU/mL) using the formula: [(glucose × insulin)/22.5]. Normal value of HOMA-IR used in the study was <2.0. TG/HDL ratio measured using simple laboratory measurement. TG/HDL-c ratio more than 3.5for male and more than 2.5 for female is considered abnormal. Statistical analysis was performed using SPSS 17.0 and Pearson's correlation test.

Results: The study included 63 subjects, 41 males (68 %) and 22 females (32 %); the mean of age was 62.13 ± 9.38 years. The mean of TG/HDL ratio was 4.51 ± 3.39 mg/dL, the mean of plasma insulin was 12.47 ± 6.69 μU/mL, the mean of HOMA-IR was 5.78 ± 4.95. Statistical analysis showed that TG/HDL ratio was inversely correlated with HOMA-IR (r 0.296, $p<0.05$) and plasma insulin level (r 0.268, $p<0.05$).

Conclusion: There was correlation of TG/HDL ratio with insulin resistance in patients with T2DM-MetS.

P15

The TG/HDL Ratio After Insulin Treatment in Patients with Type 2 Diabetes Mellitus

Hermawan Susanto, Askandar Tjokroprawiro, Sony Wibisono, Agung Pranoto, Ari Sutjahjo, Sri Murtiwi, Soebagijo Adi

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya-Indonesia

Background: Several recent studies have suggested that insulin resistance may be a factor in causing dyslipidemia . The characteristic of lipoprotein abnormalities associated with insulin resistance including hypertriglyceridemia and high levels of VLDL and low levels of HDL cholesterol and apolipoprotein (apo) A-I. Although no relationship has been observed between insulin resistance and levels of LDL cholesterol, some studies suggest an association of insulin resistance with LDL particle size . By definition, insulin resistance implies an insufficient biological or metabolic response to a given plasma concentration of insulin.

Objective: The Study was designed to investigate the comparison of TG/HDL Ratio after insulin treatment.

Materials and Methods: This study enrolled 42 outpatients with T2DM-MetS in a private diabetic clinic who were on insulin treatment. TG/HDL ratio was measured using simple laboratory measurement. TG/HDL-C ratio more than 3.5 for male and more than 2.5 for female is considered abnormal. Statistical analysis was performed using SPSS 17.0 and paired t test.

Results: The study included 42 subjects, 31 males (74 %) and 11 females (26 %); the mean of age was 64.79 ± 8.47 years. The mean of TG/HDL ratio was 4.12 ± 2.38 mg/dL and mean of TG/HDL ratio after insulin was 2.83 ± 1.80 mg/dL. Test results showed significant difference of TG/HDL ratio before and after insulin tretment (t 5.80; P<0, 05).

Conclusion: There was significant difference of TG/HDL ratio after insulin treatment in patients with T2DM.

P16

The Clinical Characteristic of Patients with Young Onset Diabetes in Diabetes Clinic Sarawak General Hospital

Ho Kian Hui, Tan Chen Ting, Florence Tan

Endocrinology Unit, Department of Medicine, Sarawak General Hospital

Background: Diabetes mellitus (DM) is increasingly diagnosed in young adults. The increase is thought to be driven predominantly by increase prevalence of type 2 DM due to the obesity epidemic. The patients with young onset diabetes are of particular interest as they are exposed to prolonged period of hyperglycemia and it is associated risk of long term DM complications

Objective: To examine the characteristic of patients with young onset DM followed up in our hospital diabetes clinic.

Materials and Methods: In Malaysia, the cut off age for transition to adult medical care is at 12 year-old. We included patients with diabetes onset between 12 to 35 years of age who were followed up in our diabetes clinic for analysis. Data were collected through retrospective case review.

Results: The cohort of 68 diabetic patients (54.4% female) consisted of 50% Malay, 27.9% Chinese and 20.6% Sarawak natives. Mean (SD) age of diabetes onset was 25.6 (6.3) year old, with 23.5% presented before age 20. 41.7% gave a positive family history of DM. Baseline HbA1c at presentation was 10.2 (2.7) % and improved to 8.2 (1.9) % at 3 months. The cohort was phenotypically obese with mean BMI of 28.5 kg/m². Overall, 42.2% were overweight (BMI of 23-27.5kg/m²) while 46.9% were obese (BMI>27.5 kg/m²). Presence of associated metabolic risk included hypertension in a third and dyslipidemia (TG > 1.7 mmol/L) in 59%. LDL was elevated (>2.6 mmol/L) in 70% of patients. In addition, high percentage of them were smoker (53.7%). 32.8% of the patients presented with diabetic ketoacidosis (DKA) at diagnosis and more than 50% of patients received insulin as their initial treatment. Occurrence of DKA was not predicted by patient's BMI nor by insulin requirement at 3 months.

Conclusion: Our cohort of patients with young onset of diabetes was predominantly overweight or obese; and had high cardiovascular risk due to coexisting hypertension, hyperlipidemia and smoking. Our data seem to support obesity as the major driving force to development of diabetes in the young and call for urgent attention and collective measures to halt the epidemic of obesity in our country.

P17

The Effect of Structured Education and Intervention for Diabetes Patients During Fasting in Ramadan

Yan Limin, Sueziani Binte Zainudin, Salmiah Binte Abdullah, Chan Yoke Ling, Able Soh Wah-Ek

Department of Endocrinology, Singapore General Hospital, Singapore; Nursing Division, Singapore General Hospital, Singapore

Background: Fasting from dawn to dusk during the month of Ramadan is an obligatory religious practice for Muslims. This practice proposes challenges in the metabolic control of patients with diabetes mellitus, increasing the risk of complications due to altered dietary habits and activity level [1].

Objective: This study aims to evaluate the outcomes of focused education session with individualized intervention in optimizing diabetes control and decreasing complications during the fasting month.

Materials and Methods: Nineteen patients on follow-up with the Diabetes Centre in Singapore General Hospital were enrolled in a pre-Ramadan education session involving an endocrinologist, diabetes nurse clinician and dietician, with individualized medication adjustments. Data on demographics, diabetes history, metabolic control and diabetic complications before and after intervention were collected.

Results: The mean age was 50.9±11.9 years; 26.3% were males; 84.2% Malays and 15.8% Indians. Ninety-five percent had Type 2 Diabetes. Eleven percent had diabetes for less than 5 years, 36.9% for 5 to 10 years and 52.6% for more than 10 years. Five percent were on oral glucose-lowering drugs only, 26.3% on insulin therapy and 68.4% on combined therapy. Significant co-morbidities are hypertension in 94.7% and hyperlipidaemia in 84.2%. Diabetic complications are nephropathy and retinopathy in 78.9% and 47.4% respectively. Only 37% had prior diabetes education sessions and only 42.1% were performing home blood glucose monitoring. After Ramadan, 6 patients lost weight while 6 patients gained weight. Fifty-eight percent had decreased glycated haemoglobin (HbA1c) level and 64.7% had decreased triglyceride levels. However, 58.8% had increased low density lipoprotein cholesterol (LDL) levels while 64.7% had decreased high density lipoprotein (HDL) cholesterol levels. Self-reported hypoglycaemic events during and after Ramadan decreased by 50% compared to before the session. There were no hospital admissions for both hypoglycaemia and hyperglycaemia during the fasting month.

Conclusion: Managing diabetes during fasting in Ramadan remains challenging. A focused and structured education and interventional pre-Ramadan session by a multi-disciplinary team of healthcare professionals provides a platform to prepare patients for close monitoring to decrease complications during fasting.

P18

Risk Factor for Delaying of Wound Healing in Diabetic Foot Ulcer (A Retrospective Study)

Diana Novitasari, Tjokorda Gde Dalem Pemayun, Khris Heri Nugroho, Tony Suhartono, Darmono

Internal Medicine, Semarang District Hospital, Semarang, Indonesia

Background: Diabetic Foot Ulcer (DFU) in Indonesia remains a public health problem, especially in distric hospital. Delaying of wound healing cause various problems but factors that influencing wound healing after surgical or other treatment were still unclear.

Aim: Aim of this study is to investigate the factors that influence wound healing of DFU.

Objective: This study aims to evaluate the outcomes of focused education session with individualized intervention in optimizing diabetes control and decreasing complications during the fasting month.

Materials and Methods: The study is retropective conducted on Semarang District Hospital, Central Java, Indonesia between January 2013-December 2014. Reviewing medical record from diabetic foot ulcer patients, twenty two out of 152 patients were eligible for further analysis.

Results: More than half of subjects was female (56, 6 %) with 1: 1.3 male to female ratio; most were 46-65 year of age (74, 4 %); mean±SD of age 21, 7±26, 1. 86, 9 percent suffered from diabetes < 5 years. Onset of ulcer mostly were < 1 week before admission (63, 8 %). Mean±SD duration of ulcer is 5, 13 ± 42, 4 days. Ulcer severity (Wagner's Grading System) were : grade 0 (0, 7 %), grade I (17 %), grade 2 (57, 9 %), grade 3 (17, 1 %), grade 4 (13, 15 %). Diabetic complications including Hypertension 65, 1 % (prehipertensi 15, 2 %; Grade I 28, 9 %; Grade II 21 %), Hypertrigliseridemia 27, 6 %, High LDL level 45, 4 %, Terminal stage of GFR is 4, 6 %). Comorbidities including anemia 72, 36 % and hypoalbuminemia 57, 2 %. Most subjects were fully subzidied by the goverment health insurance. Overall 12 % were amputated in various degree. Mean±SD LOS (Length Of Stay) 5, 13 ± 4, 9 days; 80, 3 % was < 2 week and 19, 7 ≥ 2 week. Albumin and Hb level were two variables which statically had association with prolonged hospitalitation for ≥ 3 weeks (p = 0, 001; p = 0, 016 respectively)

Conclusion: Diabetic foot ulcer patients with hypoalbuminemia and anemia were predicted to have delaying wound healing.

P19

Budget Impact Analysis of Insulin Detemir in the Treatment of Type 2 Diabetes Mellitus in Patients Treated with Insulin in Malaysia

Prof Mohamed Mafauzy, Dr GR Letchuman, Eliza Kruger, Seng Tan

Objective: Budget impact analysis (BIA) is an essential part of comprehensive economic assessment of health care interventions. The purpose of this study is to assess the financial impact of introduction of insulin detemir (levemir) for the treatment of type 2 diabetes mellitus (T2DM) in Malaysia, to determine the financial impact to the public payer. The clinically relevant comparators to insulin detemir are insulin glargine (lantus) and NPH insulin.

Materials and Methods: An Excel-based 5-year budget impact model, using local epidemiological and cost data, was built to estimate the proportion of T2DM patients treated with insulin in the public sector. Baseline characteristics and effectiveness of insulin detemir were obtained from ASEAN subgroup analysis of the A1chieve trial data. For baseline major hypoglycaemic rate of NPH, we used the Malaysian cohort data reported from the HAT study. In addition to treatment costs, we consider the impact of major hypoglycaemic events. All the costs were expressed in 2015 value with a 0% discount rate applied. The adoption rates were projected based on the 2015 data provided by the private sector. Sensitivity analyses were conducted to assess the robustness of the result.

Results: Compared to a scenario without insulin detemir, additional drug acquisition costs incurred to MOH are MYR 0.57M in 2016, increasing to MYR 1M in 2020, for a cumulative total of MYR 4M. Introduction of insulin detemir reduces the number of major hypoglycaemic events by 433 in 2016, increasing to 752 in 2020, which generates a cumulative saving of MYR 12.83M from 2016 to 2020. The overall cumulative budget impact of introduction of insulin detemir is a decrease of roughly MYR 8.88M over the 5-year time horizon.

Conclusion: The increase in pharmacy acquisition costs of introduction of insulin detemir is completely offset by the savings generated from reduced major hypoglycaemic events. Therefore, insulin detemir will decrease the budget impact of treatment of T2DM, from the perspective of the Malaysian public health system.

P20

Vildagliptin During Ramadhan Fasting in Indonesia: Its effectiveness, safety, and tolerability (Sub analysis of Indonesian patients from the VIRTUE Study)

Ida Ayu Kshanti, Arif Abdillah, Reswita Dery Gisriani,

Indonesian VIRTUE Study Physicians, Division of endocrine and metabolic diseases Dept. of Internal Medicine, Fatmawati General Hospital, Jakarta; PT Novartis Indonesia, Jakarta; Physicians involved on Multinational VIRTUE Study, Indonesia.

Indonesia is one of a big Muslim populated country in the world, yet there is no data evaluating the effectiveness, safety, and tolerability of DPP4-inhibitor for type 2 diabetes patients fasting during Ramadan. The VIRTUE study was a multinational, prospective, observational study that assessed the risk of hypoglycemic events (HE) in patients with type 2 diabetes mellitus (T2DM) who fast during Ramadan. The primary endpoint was the proportion of patients with ≥1 HE during Ramadan. Secondary endpoints included change in HbA1c, change in body weight, treatment adherence and overall safety. In this realworld study of fasting Muslim patients with T2DM, vildagliptin was associated with significantly fewer hypoglycaemic episodes compared with SU therapy.

Here we shown sub analysis of Indonesian patients from the VIRTUE study. The study enrolled fasting patients with T2DM in two cohorts: vildagliptin (n=23) or sulphonylurea (SU; n=19), both given either as monotherapy or dual therapy with metformin. Mean HbA1c was 7.9+0.7% and 7.4+0.8% in the vildagliptin and SU cohorts, respectively.

At the end of the study, there were no HE reported on both cohorts, include HE grade 1 and 2. The mean change in HbA1c, pre- to post-Ramadan, was –0.73+0.094% in the vildagliptin group compared with -0.09+0.266% in the SU group, showed -0.63+0.237% between treatment difference; p=0.012 (95% CI, -1.12, 0.15). There were numerically greater body weight reductions were observed with vildagliptin compared with SU (–1.22 vs. –0.48 kg; –0.74 kg between treatment difference; p=0.21).

No missed doses observed in vildagliptin group, while on SU group there were two (11.1%) patients, had missed SU doses. Both cohorts reported no adverse events and serious adverse events until the end of the study.

In conclusion, based on this sub analysis, no treatment group difference could be assessed for the primary efficacy variable due to no HE was observed in the primary analysis set. Most likely, this was caused by a low sample size in the primary analysis set. Despite the low sample size and the short study duration, vildalgiptin was well tolerated with good glycemic and weight control in patients with T2DM fasting during Ramadan.

P21

Reduced Hypoglycemia Events in Hospitalised Patients with Diabetes Following Implementation of the Inpatient Diabetes Care Team

Shawna Ong, Sharon Fun, Rangan Srinivasa, Ester Yeoh

Khoo Teck Puat Hospital, Singapore

Background: The inpatient diabetes care team (IDCT) was established in January 2015, providing inpatient diabetes support to non-medical disciplines in primarily 4 ward areas. This team consists of consultant endocrinologists and endocrine speciality trainees.

Objective: To determine whether IDCT improves glycemic control among inpatients with diabetes mellitus (DM).

Materials and Methods: In 4 selected wards with predominantly (>75%) non-medical inpatients, proactive inpatient DM reviews were conducted and adjustment of medications were performed for those with capillary blood glucose (CBG) < 4 mmol/l and ≥ 14 mmol/l on two occasions per day. Inpatient DM protocols were applied for hypoglycemic and hyperglycemic emergencies. CBG readings were retrospectively analyzed from the point-of-care data management system before (1 November – 31 December 2014 - BEFORE) and after (1 June – 31 July 2015 - AFTER) implementation of the IDCT.

Results: The total number of CBG readings in 4 wards over the 4 months was 15962 readings (7990 readings BEFORE and 7972 readings AFTER). There was no difference in mean CBG readings in the 2 time periods (8.9±3.8 mmol/l BEFORE and AFTER). There was no significant percentage reduction in CBG readings < 4 mmol/l from 1.73%, N=138 BEFORE to 1.52%, N=121 AFTER (p=0.411), relative risk reduction (RRR) 0.12. However, the percentage of CBG readings < 3 mmol/l was significantly reduced from 0.41% (N=33) BEFORE to 0.21% (N=17) AFTER (p=0.003) with RRR 0.49. There was no significant change in percentage CBG readings within target CBG range of 4-11 mmol/l from 74.16%, N=5925 BEFORE to 75.51%, N=6020 AFTER (p=0.404). Percentage of patients with hyperglycemia (>11 mmol/l) demonstrated a modest but non-significant reduction from 24.12%, N=1927 BEFORE to 22.97%, N=1831 AFTER (p=0.535).

Conclusion: The implementation of the IDCT was associated with a reduction in inpatient hypoglycemia, particularly for CBG < 3 mmol/l along with a modest but non-significant improvement in percentage hyperglycemia readings. Long term data will be needed to demonstrate a sustained improvement in glycemic indices.

P22

Short-Term Outcomes of Patients with Type 2 Diabetes Treated with Canagliflozin Compared with Sitagliptin in a Real-World Setting

Shao Yanli, Yeo Kuan Hao, Koh Seow Ken, Wong Yip Fong, Yeo Lee Ying, Sum Chee Fang

Khoo Teck Puat Hospital, Singapore

Background and Objective: Sodium glucose co-transporter (SGLT2) inhibitors are a new class of oral anti-diabetic agent. The aim of the study is to evaluate the effectiveness and safety of canagliflozin (SGLT2 inhibitor) in a real-world setting, as compared with sitagliptin, a commonly used dipeptidyl peptidase-4 inhibitor (DDP4-I).

Materials and Methods: New-user, active-comparator study design was used in this observational study. Retrospective data were obtained from Diabetes Centre in a tertiary hospital between1 May to 31 Dec 2014. Patients aged 18 to 69 years with type 2 diabetes and estimated glomerular filtration (eGFR) $\geq$ 60 ml/min/1.73 m² were eligible if they were initiated on once daily canagliflozin 300mg or sitagliptin 100mg with 24 weeks follow-up subsequently. Changes in HbA1c, weight and eGFR were measured and compared between the canagliflozin and sitagliptin group. Safety was assessed based on patients' adverse event (AE) reports.

Results: A total of 57 patients were included in the study(22 in canagliflozin group; 35 in sitagliptin group) . Baseline characteristics of patients in the two groups were similar, with overall mean HbA1c of 9.4 ± 1.4%. Compared with sitagliptin, use of canagliflozin was associated with greater reduction in HbA1c (-1.6% versus -0.4%, p< 0.001) and weight (- 3kg versus -0.2 kg, p <0.001). Both groups had significant eGFR reduction (- 9.2 ±12ml/min/1.73m² for canagliflozin and -7.3 ± 10 ml/min/1.73m² for sitagliptin, but no significant difference between the two groups (p= 0.57). About half of patients on canagliflozin reported mild osmotic-diuresis-related side effect, which did not lead to any discontinuation.

Conclusion: The observations suggest that among patients with type 2 diabetes, canagliflozin provided a significantly greater reduction in HbA1C and weight compared with sitagliptin, but with an increase in mild osmotic-diuresis-related AEs which are expected from its mechanism of action.

P23

The Effect of Bromocriptine on Body Weight, Blood Glucose and Lipid Profile in Patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis

Zcharmaine Yumang, Jenna Marie Carlos, Oliver Allan Dampil

Department of Medicine, St.Luke's Medical Center, Quezon City, Philippines

Background: Central control of energy metabolism is mediated in part by the dopaminergic pathways and its impairment was found to be contributory to the development of type 2 diabetes mellitus. There is evidence that validates the use of dopamine antagonist, Bromocriptine in the treatment of diabetes. Furthermore, there is also considerable evidence which favors the use of Bromocriptine in the improvement of other metabolic disorders such as dyslipidemia and obesity, which also prevalent in Type 2 diabetic patients.

Objective: To determine the effect of Bromocriptine on weight, glycemic control and lipid profile in patients with type 2 diabetes mellitus. This study also aimed to identify the adverse effects seen on use of Bromocriptine.

Search Strategy: Articles were searched in PubMed, Google Scholar, clinicaltrials.gov, Cochrane library and use of cross-references using the following search tersm: Bromocriptine, type 2 diabetes mellitus.

Selection Criteria: Studies that were included were randomized controlled trials with adult, Type 2 diabetes patients as subjects who received Bromocriptine versus placebo or active control. Only studies with quality assessment of A or B were included. DATA ANALYSIS: Studies were selected based on inclusion and exclusion criteria were assessed independently. Results were summarized using Forest plots using random effects and sensitivity analysis to decrease foreseen source of heterogeneity.

Results and Conclusion: A total of eight randomized controlled trials of 12-52 week duration, including 3946 subjects, 2512 subjects exposed to Bromocriptine (0.8-4.8mg once a day) and 1434 subjects exposed to placebo or active control were reviewed and analysed to determine the effect of Bromocriptine in body weight, lipid profile and blood glucose of diabetic patients. Results showed favorable effect in terms of change in weight and measures of glycemic control. There was neutral effect with regards to measures of lipid profile. However, its use may be limited by a high incidence of drug intolerance.

P24

The Difference Decreased Levels of Total Cholesterol and Tryglicerides Between the Use of Insulin Monotherapy and Combination Therapy of Insulin and Metformin in Type II Diabetes Melitus Patients

Erlina Marfianti, Prita Murani Nugraheti

Internal Medicine Departement, Faculty of Medicine Islamic University of Indonesia Yogyakarta Indonesia

Background: Diabetes mellitus (DM) is a degenerative disease that is highly prevalent in the world. World Health Organization (WHO) estimates that there will be increase in the number of people with diabetes in Indonesia from 8.4 million in 2000 to approximately 21.3 million in 2030. Diabetes is a disease that is closely associated with increased levels of total cholesterol and triglycerides. The treatment of DM is currenty using oral hypoglicemic agents, insulin, or a combination of both. Previous studies is still rare that examine the effects of these therapies on the lipid profile, especially the total cholesterol and triglycerides.

Objective: To know difference of a decrease in total cholesterol levels and triglycerides levels between the use of insulin monotherapy and combination therapy with insulin and metformin in type II diabetes mellitus patients at the Sleman District Hospital and Gramedika hospital Yogyakarta.

Materials and Methods: This study was an observational analytic study using a retrospective cohort study. Samples (n = 80) taken by way of non-probability consecutive sampling. The study included type 2 diabetes mellitus patients, outpatient and inpatient in Sleman hospitals and Gramedika hospital Yogyakarta. The samples were divided into two groups, group 1 was insulin monotherapy and group 2 was combination therapy with insulin and metformin. The data taken is total cholesterol and triglycerides first, then the data retrieved both total cholesterol and triglyceride levels after 4 months of therapy.

Results: Statistical analysis showed decrease in total cholesterol levels in insulin monotherapy group p = 0.045, , and in the combination therapy group p = 0.006. Decrease triglyceride levels in insulin monotherapy group p = 0.114, in the combination therapy group p = 0.276. Statistical data analysis using paired t test for decreased in total cholesterol levels in both treatment groups showed p = 0518, while changing levels of triglycerides in both treatment groups showed p = 0.629.

Conclusions: There were no significant differences in dcreased levels of total cholesterol and triglycerides between the groups mono insulin therapy and insulin and metformin combination therapy for 4 months.

P25

The Effect of Pre Lunch Versus Pre Breakfast Mixtard 30/70 on Glycaemic Control in Type 2 Diabetes Patients Receiving BID Regime

Shartiyah Ismail, Rohana Abdul Ghani, Nor Azmi Kamaruddin

Hospital University Kebangsaan Malaysia, Malaysia

Background: Premixed insulin Mixtard 30/70 offer a convenient approach to type 2 DM patients. Conventionally, twice daily regime at breakfast and dinner, may be suboptimal to control post- lunch hyperglycaemia in some Malaysian patients who are taking higher carbohydrate portions at lunch in comparison to breakfast. Thus the need arose for evaluating an alternative insulin regime to achieve better glycaemic control without compromising the twice daily injection.

Objective: This study was designed to evaluate the efficacy and safety between prelunch mixtard 30/70 in comparison to prebreakfast mixtard 30/70 in type 2 diabetes patients taking BID regime who consume small portion of carbohydrate at breakfast and larger carbohydrate portions at lunchtime

Research Design and Methodology: This study was designed as an open label randomized control study recruited 44 patients with poorly controlled type2 diabetes (baseline HbA1c 8.0%-14%) who had been treated with mixtard 30/70 for at least 6 months prior to trial initiation. They were randomized to receive Mixtard BID at either prelunch (intervention group) or prebreakfast (control group) followed by a predinner dose for a 12 weeks' duration. The primary endpoint in glycaemic effect were reduction in Hba1c, fasting plasma glucose and 4 point self monitored blood glucose (SMBG). The secondary end points included weight gain and hypoglycaemia event.

Results: Median HbA1c levels significantly decreased from 10.6 % to 9.0%, p=0.001 in the intervention group (pre-lunch mixtard) and from 10.1 % to 8.7%, p=0.001 in control group (pre-breakfast mixtard) at 12 weeks. There was no significant difference in HbA1c reduction between both groups (median HbA1c reduction of - 1.35% vs -1.25%, in intervention group vs control group, respectively, p=0.329). Patients in the intervention group demonstrated significantly lower fasting plasma glucose 6.10 mmol/L versus control group 7.10 mmol/L(p=0.005) with a corresponding reduction of -3.05 mmol/L versus -1.65 mmol/L (p=0.001) respectively. The intervention group had significantly greater reductions in pre breakfast SMBG, 9.6 mmol/l (7.7-10.6) to 6.1 mmol/l (5.6-6.4), p=0.03 and pre-dinner SMBG, 10.5 mmol/l (8.00- 11.55) to 6.9 mmol/l (6.18-7.52), p=0.038. Both groups experienced similar hypoglycaemic events of 36.4% within the intervention group in comparison 22.7% within the control group (p= 0.322). We found that body weight change from baseline did not differ between intervention and control group.

Conclusion: We concluded that type 2 DM patients' who consumed higher calorie intake at lunch in comparison to breakfast, administration of mixtard 30/70 at prelunch and predinner were associated with significantly greater reduction in fasting plasma glucose as well as SMBG at predinner and prebed. However there was no significant reductions in HbA1c. Our data has shown that this alternative regime may provide a comparable glycaemic control without significant weight gain and increased incidences of hypoglycaemia.

P26

Prevalence of Anemia in Type 2 Diabetic Patients with Renal Failure, Admitted in Calmette University Hospital, Cambodia

SUM Satha, HOV Chamroeun, OUK Vara, LIM Vadhana, NHEM Sophoeun

Department of Internal Medicine "A", Calmette university hospital, Cambodia

Introduction: Like others countries the prevalence of type two diabetes in Cambodia is increasing. And two thirds of the cases are undiagnosed. The patients often come in late a stage with complications. In a recent study, it's estimated that aproximately 50% of the patients in the country has reduced eGFR.
Anaemia is a common complication of chronic kidney disease and in particular in diabetic nephropathy. Anemia has lots of impacts on the patients starting from quality of life reduction to increase of mortalities and morbidities. However there are no prevoius studies about the prevalence of anemia amoung type two diabetic patients with renal failure.

Objectives: The aim of this study was to determine the prevalence of anaemia in type 2 diabetic patients with renal failure.
Method and Materials: It is a retrospective study. We include 173 patients admitted from June to December 2013 in the department of medicine A, Calmette university hospital, Cambodia.-
Inclusion criteria:

- Type 2 diabetes with renal failure
- Male & Female
- Adult

Exclusion criteria:

- Acute renal failure
- Type 1 diabetes
- Type 2 diabetes without renal failure
- Gut hemorrhage < 3 months
- Hematuria < 3 months
- Bone marrow diseases
- Chronic inflammatory diseases
- Blood transfusion < months

Defenition of anemia

- Male and Post menopause female Hb < 130g/l
- Pre menopose female Hb < 120g/l

eGFR calculation

- CKD-EPI formula

Results: Amoung 173 cases we found 131 cases (75.72%) have anemia, which is 51.91% normocytic 45.04% microcytic and 3.05% macrocytic. The prevalence is 66.4% in patients who have GFR below 30 ml/mn/1.73m² vs 33.6% in the group having GFR 30-60 ml/mn/1.73m².

Conclusion: This study demonstrates the high prevalence of anaemia, which increases as the renal disease progresses.

P27

Role of Radiofrequency Ablation for the Treatment of Benign Thyroid Nodule; An Experience from Banda Aceh-Indonesia

Diana Novitasari, Tjokorda Gde Dalem Pemayun, Khris Heri Nugroho, Tony Suhartono, Darmono

Internal Medicine, Semarang District Hospital, Semarang, Central Java; Subdivision Endocrinology and Metabolic Diseases, Faculty of Medicine, Diponegoro University, Kariadi Hospital, Semarang, Indonesia

Background: Diabetic Foot Ulcer (DFU) in developing country such as Indonesia remains a public health problem, especially in distric hospital. Delaying of wound healing cause various problems. Factors that influencing healing of ulcer after surgical or other treatment were still unclear.

Aim: The aim of this study is to investigate of factors which influence wound healing of DFU.

Material and Methods: This is a retrospective study. Reviewing medical record from diabetic foot ulcer patients admitted to Semarang District Hospital, Central Java Province, Indonesia. Twenty two out of 152 patients were eligible for further analysis. Study period was between January 2013- December 2014.

Results: More than half of subjects was female (56, 6 %) with 1: 1.3 male to female ratio; most were 46-65 year of age (74, 4 %); mean±SD of age 21, 7±26, 1. 86, 9 percent suffered from diabetes < 5 years. Onset of ulcer mostly were < 1 week before admission (63, 8 %). Mean±SD duration of ulcer is 5, 13 ± 42, 4 days. Ulcer severity (Wagner's Grading System) were : grade 0 (0, 7 %), grade I (17 %), grade 2 (57, 9 %), grade 3 (17, 1 %), grade 4 (13, 15 %). Diabetic complications including Hypertension 65, 1 % (prehipertensi 15, 2 %; Grade I 28, 9 %; Grade II 21 %), Hypertrigliseridemia 27, 6 %, High LDL level 45, 4 %, Terminal stage of GFR is 4, 6 %). Comorbidities including anemia 72, 36 % and hypoalbuminemia 57, 2 %. Most subjects were fully subzidied by the goverment health insurance. Overall 12 % were amputated in various degree. Mean±SD LOS (Length Of Stay) 5, 13 ± 4, 9 days; 80, 3 % was < 2 week and 19, 7 ≥ 2 week. Albumin and Hb level were two variables which statically had association with prolonged hospitalitation for ≥ 3 weeks (p = 0, 001; p = 0, 016 respectively)

Conclusion: Diabetic foot ulcer patients with hypoalbuminemia and anemia were predicted to have delaying wound healing. It is mainly due to postponement of wound healing and also time consumption for albumin and PRC transfusion.

P28

Hyperlipidemia in Patients with Type 2 Diabetes Mellitus in Saudi Arabia

Khalid Aljabri, Samia Bokhari, Khalid Alqurashi

Consultant Endocrinology

Objectives: Type 2 diabetes mellitus(T2DM) occurs at a high prevalence in Saudi population.This study was conducted with the aim to determine the plasma lipid levels in Saudi individuals with T2DM and to compare them to the values obtained in the non-diabetic groups.

Material and Methods: A total of 3786 adult Saudis (males:1429; females:2356) were included in the study. 1902 were patients with T2DM. Height and weight were recorded and Body Mass Index was calculated.

HbAlc, total cholesterol, triglyceride, low density lipoprotein and high density lipoprotein levels were measured and were compared among the two groups.

Results: The lipid parameters in patients with T2DM compared to nondiabetc group showed:total cholesterol (4.7±1.1 vs. 4.8±0.9, p=0.001), triglyceride (1.8 ±1.1 vs. 1.4±0.8, p<0.0001), low density lipoprotein (2.8±0.9 vs. 3.1±0.8, p<0.0001) and high density lipoprotein(1.16±0.3 vs.1.2±0.3, p<0.0001). Female patients with type 2 diabetes mellitus were associated significantly with higher total cholesterol and low density lipoprotein and lower triglyceride.Younger patients with T2DM were associated significantly with higher total cholesterol and low density lipoprotein.Patients with body mass index >25 and T2DM were associated significantly with higher total cholesterol and low density lipoprotein and triglyceride. 47% and 42% of patients with T2DM did not meet the American diabetes association goals for the low density and triglyceride levels respectively. Higher HbA1c was associated significantly with higher total cholesterol, triglyceride

Conclusion: Since the prevalence of T2DM is high in Saudis and since hyperlipidemias is high in such group, it is essential to initiate control programmes in an attempt to reduce the morbidity associated with hyperlipidemic states.

P29

Clinical Characteristic and Patterns of Hypoglycaemia Among Type 2 Diabetes Mellitus Patients Fasting in the Month of Ramadan

Wan Juani Wan Seman, Nor Azmi Kamaruddin, Norlaila Mustafa, Nurain Mohd Noor, Norlela Sukor, Najma Kori, Subashini Rajoo

Putrajaya Hospital; Pusat Perubatan Universiti Kebangsaan Malaysia

Introduction: Patients with Type 2 Diabetes Mellitus (T2DM) has a higher risk of hypoglycaemia during fasting in the month of Ramadan. Study by Rachel M.B. et al have demonstrated a temporal and geographic patterns of hypoglycemia among hospitalized patients with diabetes mellitus, with frequent hypoglycaemia seen in the early morning hours. Our aim was to characterized the clinical features and pattern of hypoglycaemia in T2DM patients during Ramadan fasting month.

Material and Methods: In this 12-weeks, randomized, open-label, two-arm parallel group study, 119 patients with T2DM on sulphonylurea(SU) and metformin therapy randomised to either Dapagliflozin (n=58) or remain on sulphonylurea (SU) (n=52). Patients were advised to monitor their blood glucose at 5 different times; pre-dawn, 2 hours post dawn, at noon, before sunset and 2 hours after sunset. Documented hypoglycaemia with blood glucose values of < 4mmol/L were analysed from the patient's diary. Data analysed via IBM SPSS Statistics Version22.

Result: Overall hypoglycaemia consisting of reported hypoglycaemia and documented hypoglycaemia were seen in 19 patients; 4(6.9%) patients in SU group and 15 (28.8%) patients in dapagliflozin group; p=0.002. 17 patients had documented hypoglycaemia based on 2518 blood glucose readings obtained from the patient' diary; (4(7.3%) vs 13(27.1%) patient; p=0.007 in dapagliflozin and SU group respectively). Hypoglycaemia were commonly seen at 3 different time throughout the day; 36% (n=9) at noon, 12% (n=3) at pre-dawn and 24% (n=6) before sunset.

Majority of these patients had asymptomatic hypoglycaemia; 4 (100%) patients in dapagliflozin group and 8 (61.5%) patients in SU group.

Conclusion: Hypoglycaemia is common in T2DM patients who fasts during Ramadan with higher proportion of hypoglycaemia seen in the SU group. Majority of the hypoglycaemia occurs within 6 hours of fasting (12 noon) during daytime.

P30

A Review of Hospitalized Muslim Type 2 Diabetes Mellitus Patients' Profile in Hospital Tuanku Jaa'far Seremban During Ramadan Year 2013 and 2014

Yong Lit Sin, Rosly Hannah, Ghazale Fadia, Tahir Nur Zaidah, Adam Noor Lita

Department of Medicine, Hospital Tuanku Jaa'far, Seremban

Ramadan fasting is one of the five pillars of Islam, which is passionately practiced by Muslims across the world. Many Muslim patients with type 2 Diabetes Mellitus (T2DM) fast during Ramadan despite increased risk of severe hypoglycemia of 7.5 fold, as well as other complications such as hyperglycemia, diabetic ketoacidosis, dehydration and thrombosis. This is a cross sectional study done in Hospital Tuanku Jaa'far Seremban. This study included total of 118 Muslim T2DM patients admitted to medical ward from 17th July 2013 to 17th August2013, and from 29th June2014 till 29th July2014(fasting month). Patient details such as demographic features, clinical data, diagnosis, and management were evaluated. Among the 118 patients, there were slightly more male patients who admitted to medical ward (61 vs 57). The mean age was 58.9 years old (95%CI 56.8, 61.3). The mean duration of diabetes was 10.3 years (95%CI 8.7, 11.9). The mean duration of hospital stay was 5.7 days (95%CI 4.9-6.4) Nearly half (50.8%) of them on Metformin, while 27.1% on sulphonylurea. Sixty of patients (50.8%) were on insulin and majority were on basal bolus regime (34 patients) followed by premixed regime (17 patients). The commonest diabetes-related complications were nephropathy (48.3%) and retinopathy (43.2%). Majority of them was fasting during Ramadan (56.8%) and 66.1% didn't receive fasting advice from doctors. The commonest causes of admission is infection (44.1%) followed by uncontrolled diabetes (27.1%), acute coronary syndrome or congestive cardiac failure (26.3%), hypoglycemia (16.9%), dehydration (13.6%), transient ischemic attack or cerebrovascular accident (4.2%) and diabetic ketoacidosis (1.7%).

Admission for hypoglycemia is significant associated with female gender (p=0.001), with odds ratio of 10.65 (95% CI 2.77, 40.96), patient who doesn't fast during Ramadhan (p=0.010), with odds ratio of 4.24 (95% CI 1.41, 12.75). On the other hand, admission for uncontrolled diabetes is significant associated with female gender (OR 2.79, 95%CI 1.05, 7.46), those patients who doesn't have nephropathy (OR 4.90, 95%CI 1.71, 14.04), and prior fasting blood glucose between 7.1-10mmol/l prior to Ramadan(OR 13.96, 95%CI 2.01, 93.16).Patients who insist on fasting should undergo pre-Ramadan assessment and receive appropriate education and instructions related to physical activity, meal planning, glucose monitoring, and dosage and timing of medications.

P31

First Three Months Experience in the Use of Dapaglifozin as Add-On Therapy

Mohd Rahman Omar, Norasyikin Abdul Wahab, Norlaila Mustafa, Norlela Sukor, Nor Azmi Kamaruddin

Universiti Sains Islam Malaysia; Universiti Kebangsaan Malaysia Medical Centre

Background: Dapaglifozin is a SGLT2 inhibitor selectively inhibits SGLT2, a transporter in the proximal tubule, thus reducing glucose reabsorption leading to increase urinary glucose excretion. It has been proven to reduce HbA1c by 0.7% when used as monotherapy and up to 2.1% when used in combination with other oral anti-diabetic agents (OADs) or insulin.

Objectives: To evaluate the glycemic control in patients treated with dapaglifozin either as monotherapy or as add-on therapy.

Material and Methods: This was a retrospective descriptive cross sectional study conducted over three month period involving type 2 diabetes mellitus patients who were treated with dapaglifozin in our instituition. Data were retrieved from electronic medical records and their fasting blood sugar and A1c at initiation of treatment and the following clinic visit were analyzed.

Results: A total of 58 patients received dapaglifozin in our centre from January till May 2015. However only 22 patients had the followup A1c and FBS. Amongst 58 patients, 50.0%(29) are males with median age of 48 years old (38, 59) The median baseline FBS, A1c and creatinine of these 58 patients are 8.60 mmol/L(6.71, 11.14), 8.40 % (7.4, 9.9) and 70.55 ug/L (65.55, 79.75) respectively. From 22 patients who have follow-up blood parameters the mean duration of follow-up after initiation of dapaglifozin was 4.14 months (SD 1.81). One patient (4.5%) patients received dapaglifozin as monotherapy, 5 (22.7%) received as dual oral therapy, triple therapy and quadruple therapy. Six (27.3%) patient received dapaglifozin with combination insulin therapy. The median FBS, A1c and creatinine at initiation of therapy were 8.41mmol/l (6.87, 9.90), 8.1% (7.2, 8.93) and 70.5 ug/l (65.55, 82.50) . At follow up the were significant reduction of FBS down to 6.99 mmol/l (5.78, 8.82) $p < 0.05$ and A1c reduction to 7.6 %(6.58, 7.98) $p<0.01$. There was no significant change in serum creatinine (71 ug/l (63.1, 87.2) $p=0.274$).

Conclusions: Significant HbA1c reductions were seen when dapaglifozin was given as add-on therapy . Median A1c reduction was 0.5% when using as a short term therapy which is lower than these reported in the randomized control trials.

P32

Continuous Subcutaneous Insulin Infusion (CSII) in Adult Diabetics: Experiences from Putrajaya Hospital, Malaysia

Noor Rafhati Adyani Abdullah, Zanariah Hussein

Putrajaya Hospital, Ministry of Health, Malaysia

Background: Insulin pump therapy is the most physiological method of insulin delivery currently available1 and closely mimics a healthy functioning pancreas. Previous studies have demonstrated benefits of insulin pumps which include improvement of glycaemic control, decreased severity and frequency of hypoglycaemia, increased flexibility, normalization of lifestyle and sense of well-being2. This is an audit looking at the usage of CSII in adult diabetic patients from Putrajaya Hospital.

Objectives: To study the demographics of diabetic patients on CSII and their glycaemic control, metabolic profiles, diabetes related complications, parameters of CSII, advantages and complications directly associated with CSII.

Material and Methods: All diabetic patients attending Endocrinology Clinic, Putrajaya Hospital who were on CSII were identified and their Electronic Medical Records were retrieved and analysed.

Results: Until September 2015, there were a total of 13 patients on CSII in Putrajaya Hospital. 61.5% were females versus 38.5% of males and the mean age was 41.5 ± 16.6 years. 61.5% were of type 1 DM and 38.5% were of type 2 DM. The duration of diabetes were 16.5 ± 11.1 years and the duration of pump was 17.8 ± 8.2 months. 38.5% of patients had retinopathy, neuropathy and nephropathy prior to CSII therapy. 76.9% were on basal bolus regimen versus 23.1% on premixed insulin before CSII of which 92.3% were insulin analogues. The main indications for CSII were recurrent hypoglycaemia with unawareness (38.5%), poor glycaemic control (38.5%) and recurrent diabetic ketoacidosis (DKA) (23.1%). The total daily insulin prepump was 62.8 ± 44.5. HbA1c at pump initiation was 9.3 ± 1.8 with reduction of HbA1c by -0.98 ± 1.85 with the CSII. The number of basal rate was 1.54 ± 0.97 and the bolus:basal ratio was 48.7 : 51.3. 53.8% of patients reported mild hypoglycaemia with 69.2% indicated less frequent hypoglycaemia episodes compared with prepump. There were no DKA or pump failure events.

Conclusions: Despite a very small number of patients, CSII has been well tolerated and is beneficial in improving glycaemic control, increased flexibility with reduced severity and frequency of hypoglycaemia.

P33

Association of Eating Behaviors and Demographic Profiles of Filipino Adults with Type 2 Diabetes Mellitus seen in a Tertiary Hospital

Anthony Harvey Aguilar, Mark Anthony Sandoval, Cecilia Jimeno, Elizabeth Paz-Pacheco

Evangelista Medical Specialty Hospital; University of the Philippines – Philippine General Hospital

Background: Patients with type 2 diabetes face the daily challenge of making appropriate dietary choices. Eating does not only involve food intake but also eating behaviors that are influenced by environmental and psychosocial factors. Several studies have evaluated eating behaviors; more so, described differences in eating habits across demographic profiles. Recognition of eating behaviors and demographic profiles could provide guidance in creating individualized dietary plans and direct community nutrition programs in forming targeted and cost-effective measures.

Objectives: The primary goal of this study is to identify differences in eating behaviors across demographic profiles of Filipinos with type 2 diabetes.

Material and Methods: A total of 197 type 2 diabetic patients were recruited from the outpatient clinics of a tertiary hospital. Socio-demographic data were collected. Patients then completed the Filipino eating behavior questionnaire that assesses five domains, namely: uncontrolled, restrained, emotional, social, and pro-active eating20. Paired t-test and one-way ANOVA were used to compare eating behavior scores across categories of the demographic data.

Results: Patients with type 2 diabetes who scored higher in the uncontrolled eating domain tend to have a higher level of education, positive family history of diabetes, and ate two meals with no snacks per day. Those who were considered restrained eaters were previous smokers, on insulin and oral hypoglycemic agents, and ate three meals and a snack. Emotional eaters were observed to eat two meals with no snacks per day while social eaters tend to be younger, have a higher level of education, were employed, and have a family history of diabetes. High scorers in the proactive eating domain have a longer duration of diabetes and ate no snacks.

Conclusions: Eating behaviors may vary and depend on the demographic profiles of type 2 diabetic patients. Uncontrolled, emotional, social, and pro-active eating domains seem to have direct relationships, while restrained eating tends to show an inverse relationship with the other eating behaviors.

P34

Shift from Multiple-Three Kind-Insulin Regimen to Insulin Pump-Premeal Bolus Single Insulin Regimen in Type 2 Diabetes Mellitus

Charlene Ann Balili, Erick Mendoza, Leilani Mercado-Asis

Section of Endocrinology, Diabetes and Metabolism, Department of Medicine, University of Santo Tomas Hospital, Espana, Manila, Philippines

Background: Over 90% of type 2 diabetic patients on oral hypoglycemic agents will eventually need insulin to maintain the HbA1c goal of< 7% in the long-term clinical course. Use of insulin pump in type 2 diabetes is less discussed and actually provides better glycemic control, greater lifestyle flexibility, and convenience for those with multiple high-dose daily insulin administration.

Objectives: To describe the clinical profiles of patients shifted from multiple (6x) three type-insulin to insulin pump and to demonstrate patient satisfaction on the new regimen.

Material and Methods: We reviewed charts of two patients with type 2 diabetes, who were offered to shift from multiple injections three-types of insulin regimen to insulin pump. Ages, gender, diabetes duration, co-morbidities, total insulin requirement, BMI, and HbA1c before and after shift were noted. Both were on insulin 70/30 BID, detemir OD, and glulisine TID

Results: Patient 1 is a 54 year old, male, obese (BMI 35.9 kg/m²), diabetic for 7 years with nephropathy and dyslipidemia. Total daily insulin requirement was 78 units plus liraglutide 1.8 units/day. Insulin pump dose was adjusted from 2.0 to 2.6/ hr with 10 to 14 units bolus premeals using glulisine alone. HbA1c levels before and after pump use were 6.2 to 6.9% to 7.0 to 7.6% with insulin adjustment accordingly. Patient 2 is a 53 year old, female, obese (BMI 33.2 kg/m²), diabetic for 16 years with no co-morbidities. Total daily insulin requirement was 116 units with liraglutide 1.8 units/day and metformin 500 mg TID. Insulin pump dose was 2.9 units/day with 14 to 16 units bolus premeals using glulisine alone. HbA1c levels before and after pump use were from 13 to 9% on multiple injection regimen to 9.4% on initial follow-up while on insulin pump. Dose will be adjusted accordingly. Both patients have busy lifestyles and expressed satisfaction and convenience on the shift of insulin treatment.

Conclusions: Insulin pump use in type 2 diabetes mellitus provides an excellent alternative for patients requiring multiple injections and with multiple types of insulin combination with similar obtainment of HbA1c goal. Patient satisfaction and convenience was evident.

P35

Evaluation of the Intensive Insulin Therapy Group Education Programme in Patients with Diabetes Mellitus

Sumathi Govindan, Puja Sharda, Winnie Chui, Mee Lee Yap, Jasmine Kwan, Kian Peng Goh, Chee Fang Sum, Angela Koh

Khoo Teck Puat Hospital

Introduction: The ability to adjust insulin dose based on carbohydrate intake and glucose level is integral to a more flexible lifestyle and better glycaemic control in diabetic patients who are on short- or rapid-acting insulin. The Khoo Teck Puat Hospital Intensive Insulin Therapy Programme (IITP) is a modular group education programme designed to deliver the necessary knowledge for flexible insulin dosing, with subsequent follow-up to intensify glycaemic management in motivated individuals. We aimed to evaluate the effectiveness of Module 1('An introduction to flexible insulin dosing and carbohydrate counting') of this programme.

Material and Methods: We retrospectively studied participants who attended ITTP Module 1 (a three-hour group education class), which was conducted from July 2012 to April 2014. The patient characteristics and pre- and post-education questionnaires were reviewed.

Results: A total of 44 patients (80% with type 1diabetes and 68% female) with a mean age of 38 ± 12 years had attended the IITP Module 1. Before enrolment, the mean HbA1c was 8.8 ± 2.1%; only 6.8% adjusted insulin based on carbohydrate counting, and 9.0% based on glucose readings. A mean score of 81% ± 15% was achieved on the post-education knowledge quiz. About 96% of the participants found the course content relevant, and 93% would recommend the course to their friends. About 43% of the participants proceeded to send their glucose and food records to the team, and attended the IITP clinic for intensification of diabetes management.

Conclusions: We conclude that the IITP Module 1 was successful in knowledge delivery, and a substantial proportion of participants opted to intensify their diabetes management after attending the course by continuing with the programme.

P36

Glucagon-like Peptide-1 Analogue Used in Management of Type 2 Diabetes Mellitus in Hospital Tuanku Ja'afar Seremban (HTJS)

Adam Noorlita, Yong Lit Sin, Karim Nor Afidah, Suk Chyn Gun

Department of Medicine, Hospital Tuanku Jaa'far, Seremban

Type 2 Diabetes Mellitus (T2DM) and obesity is closely interrelated. Liraglutide is a glucagon like peptide-1 (GLP-1) analogue that stimulates glucose-dependent insulin secretion and suppresses glucagon secretion. It has evidences to reduce Hba1c using in monotherapy or in combinations with other diabetes medications and. It can reduce hypoglycaemia episodes while promotes weight loss.

It is a retrospective analysis of all 14 patients with Type 2 DM treated with subcutaneous liraglutide in addition to oral diabetic medications and/ or insulin.

Majority of the patients were female (9, 64.3%). Most of the patients were Malay, followed by Indian and Chinese ethnicity (8 (57%) vs 4 (29%) vs 2 (14%). Their mean age was 48.4 years old with duration of diabetes of 14.5 years. More than 70% of them have hypertension and hyperlipidaemia. Their diabetes complications included ischaemia heart disease in 35.7%, nephropathy in 50%, retinopathy in 28.6% and peripheral neuropathy in 35.7%.

After initiation of liraglutide, majority of patients were taking BIDS regime 50%, followed by pre-mixed in 29%, basal bolus 14% and OAD alone in 7%. They received liraglutide for mean duration of 23.9 months. There was a reduction in patients mean body weight after treatment seen at 6 months, one year and 2 years. The baseline pre-treatment weight was 104.9 kg and gradually reduced to 95.7 kg, 94.5 kg and 93.6 kg respectively. The mean weight lost was 6.5 kg with maximum weight lost seen after 9.9 months treatment. Fasting blood sugar improved gradually from 11.0mmol/l to 10.2, 9.3 and 9.2 at 6 months, 1 year and 2 years. Similarly, the glycated hemoglobin (Hba1c) readings were also improved from 11% at baseline to 9.5, 9.3 and 9.2% after 6 months, 1 year and 2 years. Mean Hba1c reduction was 2.6% and the maximum reduction of Hba1c observed after 12 months treatment with liraglutide

A small number of our patients showed an improvement in their glycaemic control and have weight loss after nearly a year on liraglutide treatment. However, the number of patients on the Liraglutide treatment is small due to the higher cost of the medication compared to the usual OAD and insulin.

P37

The Status of Diabetes Control and Complications in a Single Tertiary Institution in Kuala Lumpur

Ahmad Marzuki Omar, Mohamad Arif Shahar, Wan Juani Wan Seman, Azura Dina Muhayidin, Subashini Rajoo, Chew Peng Ooi, Huai Heng Loh, Mohd Rahman Omar, Norasyikin A. Wahab, Norlaila Mustafa, Norlela Sukor, Nor Azmi Kamaruddin

International Islamic University Malaysia, Kuantan, Pahang; Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur; Universiti Putra Malaysia, Serdang, Selangor; Universiti Malaysia Sarawak, Kuching, Sarawak; 5Universiti Sains Islam Malaysia, Kuala Lumpur.

Background: The prevalence of type 2 diabetes mellitus (T2DM) in Malaysia continues to increase over the last two decades. Even with the availability of resources and expertise, the metabolic control and rate of complications remained unsatisfactory.

Objectives: The study was conducted to evaluate the status of diabetic control and rates of complications in a dedicated diabetic clinic in a tertiary teaching hospital.

Material and Methods: This was an observational, non-interventional, cross-sectional study conducted among T2DM patients attending two prespecified clinic days, fulfilling the inclusion and exclusion criteria.

Results: Out of 103 consecutive subjects, there were 35 (34.0%) males and 68 (66.0%) females, with a mean age of 60.5±10.7 years. By ethnicity, 49 (47.6%) were Malays, 35 (34.0%) Chinese, 18 (17.5%) Indians and 1 (1.0%) of other ethnicity. Mean body mass index (BMI) was 29.1±6.9 kg/m², with majority of them (83.3%) were overweight or obese (BMI ≥23 kg/m²). Mean duration of diabetes was 15.2±8.8 years with two-third (66.0%) who had diabetes for more than 10 years. Mean HbA1c was 8.2±1.8% with only 20.4% of the subjects achieving the target level of <6.5%, while 31.1% of them achieved ADA target of <7%. Mean fasting plasma glucose was 8.0±4.1 mmol/L with 37.4% of them achieved the target level of ≤6.1 mmol/L. Three-quarter (75.7%) of subjects were on metformin while insulin was used in 71.8% of them. Only 27.5% achieved blood pressure of ≤130/80 mmHg although 84.5% of them were on antihypertensive agents, with over two-third (68.4%) were on either ACE inhibitors or angiotensin receptor blockers. Up to 67.3% of subjects achieved LDL-cholesterol levels of ≤2.6 mmol/L, with 81.2% had HDL-cholesterol levels of ≥1.1 mmol/L and 64.4% had triglycerides of ≤1.7 mmol/L. Statins were used by 89.6% of the subjects. The rates of diabetic complications were microalbuminuria (37.9%), cataract (35.9%), peripheral neuropathy (33.0%), myocardial infarction (6.8%) and cerebrovascular accident (6.8%).

Conclusions: Majority of subjects were overweight or obese with long-standing diabetes. Overall, the glycaemic, blood pressure and lipids levels were not satisfactorily controlled, hence the high rates of complications.

P38

Early Experience with Dapagliflozin in the Management of Patients with Type 2 Diabetes in MOH Hospitals in Malaysia

Zanariah Hussein, Mohd Badrulnizam Long Bidin, Nor Azizah Aziz, Ijaz Hallaj Rahmatullah, Norhaliza Mohd Ali

Hospital Putrajaya, Hospital Kuala Lumpur, Hospital Pulau Pinang, Hospital Sultanah Aminah Johor Baru, Hospital Sultanah Bahiyah Alor Setar, Hospital Selayang, Hospital Raja Perempuan Zainab II Kota Bharu, Hospital Tengku Ampuan Rahimah Klang, Hospital Umum Sarawak.

Dapagliflozin is the first and only SGLT-2 Inhibitor currently available for treating type 2 diabetes in Malaysia since 2014. We performed a retrospective review of patients treated with dapagliflozin, prescribed by endocrinologists in Ministry of Health hospitals in Malaysia. A total of 90 patients were included in this analysis. Mean age was 48.3 years (range 23 – 76years) and mean duration of diabetes was 10.3 years (range 1 – 29 years). All patients were prescribed Dapagliflozin as add-on therapy, 99% combined with metformin (alone or with other OADs and/or insulin), 54% as add-on therapy to insulin and 24% had combination with metformin and a DPPIV-inhibitor. Mean baseline HbA1c was 9.1% (range 6.3% - 14.7%) and mean baseline weight was 92.3 kg (range 57 – 155kg). Mean blood pressure was 137/77 mmHg. Mean duration of therapy with dapagliflozin was 6.4 months.

More than two thirds of patients (69.3%) experienced HbA1c reductions of at least 0.4% whereas 16% of patients experienced increase in HbA1c of at least 0.4%. In those who experienced HbA1c improvement, range of decline was 0.4% to 5.0%. Mean HbA1c reduction was 1.0% for the mean treatment duration of 6.4 months.

The majority of patients experienced weight reduction, ranging between 0.5 – 10.3 kg with mean weight loss of 2.8kg over the mean treatment duration. Weight gain was seen in 13.3% and 8% had no change in weight. Blood pressure was unchanged in 46.6%, reduced in 39.7% of patients but only 1 patient experienced volume depletion.

Dapagliflozin was well tolerated with 82.2% of patients reporting absence of adverse effects. Three patients experienced UTI and 2 patients experienced genital tract infection (GTI). Only four patients reported hypoglycaemia of which three were on concomitant insulin therapy and the other on sulphonylurea. Fifteen patients discontinued dapagliflozin for various reasons (1 had volume depletion, 3 had UTI/GTI, 5 had nonresponse, 4 were nonadherent, 1 had biliary colic).

In summary, endocrinologists in MOH hospitals in Malaysia prescribed Dapagliflozin mainly in combination with metformin, insulin and/or DPPIV- inhibitor. The majority of patients achieved reasonable improvement in HbA1c, along with weight reduction and treatment was well tolerated.

P39

Nocturnal Dipping Behaviour of Blood Pressure in Type 2 Diabetes Patients With or Without Microalbuminuria

Wutt Yi-Hlaing, Win Naung, Mya Thanda-Sein, Ohnma, Mya-Mya Thwin, Tint Swe- Latt

Department of Physiology, University of Medicine 2, Yangon, Myanmar

Background: Hypertension is one of the main risk factors for the onset and progression of chronic complications in type 2 diabetes mellitus. Thus, it is of great importance to study circadian blood pressure rhythm in normoalbuminuric and microalbuminuric diabetic patients to determine early development of diabetic complications.

Objectives: To investigate the association between nocturnal non-dipping behaviour of blood pressure and microalbuminuria in patients with type 2 diabetes mellitus.

Material and Methods: Urinary albumin measured by Hemocue albumin analyser and Hemocue urine albumin microcuvettes were evaluated in both sex of type 2 diabetes patients. Urine albumin concentration <20 mg/l was accepted as normoalbuminuric patients. After that 36 normoalbuminuric patients (male = 14; female = 22; age= 61±5.7 years) and 36 microalbuminuric patients (male =17 ; female = 19; age = 62.2±5.3 years) were recruited in this study. 24-hour blood pressure was recorded at 30 min intervals by an 24-hour ambulatory blood pressure monitoring device (ABPM). Individuals with a fall of mean arterial pressure (MAP) greater than 10% from day to night are dippers whereas those without a fall in blood pressure are non-dippers.

Results: Night-time MAP is significantly higher in microalbuminuric group than normoalbuminuric group (89mmHg vs 84mmHg, $p<0.05$). Day/night reduction of MAP (% dipping) was significantly more blunted in microalbuminuric patients compared to normoalbuminuric patients (4.9% vs 8.5%, $p<0.05$). Non-dipping behaviour was observed in 27 microalbuminuric (75%) and 18 normoalbuminuric (50%) diabetes patients. There was a significant association ($C^2=4.8$, $p<0.05$) between nocturnal non-dipping behaviour of blood pressure and the presence of microalbuminuira.

Conclusions: Microalbuminuria is significantly associated with nocturnal non-dipping behaviour of blood pressure in type 2 diabetes patients. Present study showed that abnormal circadian BP rhythm determined by 24-hour ABPM is a significant predictor of microalbuminuria as an early marker of diabetic nephropathy.

P40

Association of Low Salt Diet and Increase in Insulin Resistance in Myanmar Healthy Male Subjects

Wutt Yi-Hlaing, Win Naung, Mya Thanda-Sein, Ohnma, Mya-Mya Thwin, Tint Swe- Latt

Department of Physiology, University of Medicine 2, Yangon, Myanmar

Background: Low dietary salt intake is recommended as one of the public health measures to decrease the risk of noncommunicable disease. However, dietary salt restriction activates the renin-angiotensin system and sympathetic nervous systems, both of which can impair insulin sensitivity. Thus, there is now growing concern whether salt restriction is beneficial to individual's health.

Objectives: We investigated the hypothesis that Low salt (LS) diet is associated with an increase insulin resistance (IR) in Myanmar healthy male subjects.

Material and Methods: Fifty-one apparently healthy male subjects, age 22.2± 3.2, BMI 25.3 ± 4.0 kg/m² (range 18- 39.5) were recruited in this study. They were maintained on a LS diet (urine sodium <50mmol/day sodium) and a high salt (HS) diet (urine sodium >165mmol/day sodium) for one week each, in random order. IR measured by MOMA-IR was studied after each diet. HOMA-IR >2.5 was accepted as IR.

Results: IR was observed in 28 subjects (55%) where as normal insulin sensitivity (IS) was observed in 23 subjects (45%) after HS diet. 4 out of 28 insulin resistant subjects were change to normal insulin sensitivity after LS diet. However 13 out of 23 insulin sensitive subjects were change to insulin resistance. After MaNember's Chi-square test, there was significant positive association ($p< 0.05$) between low salt diet and increase in IR independent of BMI.

Conclusions: Low salt diet is associated with an increase in IR. The result of present study points out that salt restriction does not give positive effect on individual's health.

P41

Effect of Postmenopausal Status on Insulin Sensitivity in Myanmar Women

Lwin Aye-Thet, Mya Thanda-Sein, Ohnmar, Tint Swe-Latt

Department of Physiology, University of Medicine 2, Yangon, Myanmar

Background: Insulin sensitivity in postmenopausal women showed various results and controversy.

Objectives: Present study evaluated the insulin sensitivity in Myanmar postmenopausal women compared to premenopausal women.

Material and Methods: This study recruited 33 premenopausal women (32.7±4.9 years; BMI: 19.7±2.18 kg/m²) and 42 post menopausal women (52.6±4.4 years; BMI: 21.3±2.76 kg/m²). All participants underwent OGTT. Insulin sensitivity was assessed by homeostasis model assessment method (HOMA) based on fasting blood glucose and fasting serum insulin level. Blood glucose was determined by glucose oxidase method. Serum insulin was estimated by enzyme linked immunosorbent assay (ELISA).

Results: Fasting blood glucose and post-prandial blood glucose were 4.87±0.51mmol/L and 4.92 ± 0.94 mmol/L in the premenopausal women and 4.76±0.63mmol/L and 5.24±1.11mmol/L in the postmenopausal women. There were no significant differences between the two study groups. Median and interquartile range of fasting serum insulin was 8.1 (6.7-11.8) μ IU/ml in the premenopausal women and 8.1(6.5-9.9) μ IU/ml in the postmenopausal women. It was also not significantly different between them. Median and interquartile range of HOMA-IR in the premenopausal women and postmenopausal women were 1.7 (1.4-2.8) and 1.7 (1.2-2.2) respectively, indicating that insulin sensitivity was not significantly different between premenopausal and postmenopausal women. However, cut off points of body mass index; BMI for Asian people >=23kg/m² classified as overweight group. HOMA-IR value of non-obese premenopausal (BMI= 19.4±1.96; n = 30), postmenopausal (BMI=19.31±2.09; n=23) and overweight postmenopausal (BMI=23.83±0.7; n=19) women were (2.05 ± 0.81), (1.85 ± 1.59) and (3.28 ± 3.04). HOMA-IR value of overweight postmenopausal women was significantly higher than that of non-obese premenopausal and postmenopausal women ($p < 0.05$).

Conclusions: Postmenopausal status has no effect on insulin sensitivity in postmenopausal women. . Observed decrease of insulin sensitivity in overweight postmenopausal women may be due in part to increased BMI.

P42

Profile of DKA and HHS Patients Admitted to a Tertiary Centre Hospital and Their Management Overview

Hazleen Zainal, Masni Mohamad

Endocrine Unit, Department of Medicine, Putrajaya Hospital, WP Putrajaya, Malaysia

Introduction: Diabetic ketoacidosis (DKA) and Hyperglycemic hyperosmolar state (HHS) are both life threatening diabetes related condition and a common cause of hospital admissions. Here, we described both hyperglycemic crisis occurred within a year in a tertiary endocrine referral centre.

Purpose: To evaluate the characteristics of DKA and HHS patients admitted to Hospital Putrajaya, their triggering factors and their parameters of treatment, progress and outcome within 24-hour of their management.

Material and Methods: A descriptive study involving all patients admitted for DKA and HHS from from August 2014- Aug 2015. Electronic patient records were reviewed to evaluate baseline characteristics, medical history and biochemical parameters.

Results: Total of 52 patients admission for hyperglycemic crisis, 30 for DKA and 22 for HHS. For DKA, majority of patients are male (56.7%) with mean age of 35.97 years (15 - 61). It consists of mainly Type 2 DM (60%) with mean duration of diabetes was 4.5 years +/- 4.43 and 30% of them were newly diagnosed diabetes.Mean HbA1c of 12.25% +/- 2.693. The most encountered precipitating factors in DKA were infection (60%) followed by non-compliance (20%) and others (16.7%). Mean random blood glucose on admission was 26.85 mmol/L (7.2-70.5). Mean blood ketone was 4.74 (1.3-7.8) and mean pH was 7.1537+/- 0.151. DKA resolved within 24 hours in 73.3% of patients, the rest of patients, the average time to resolve was 45.75 hours (28-57).Average total fluids given to patients in DKA over 24 hours is 6.961L (4-7).For HHS, majority of patients were female (77.3%) with mean age of 58.14 years (30 to 94). All were Type 2 DM (100%) with mean duration of diabetes of 8.5 years +/-7.74. 22.7% of the patients were newly diagnosed diabetes. Mean HbA1c was 11.91% +/- 2.66 . The most common triggering were infection (68.2%) followed by non-compliance (27.3%) and others (4.5%). Mean random blood glucose on admission was 40.31 mmol/L (21.3-64.4). Mean blood ketone was 0.941 (0-4.2) and mean serum osmolality was 343.14+/- 17.313. In HHS, 40.9% of patients able to overlap their insulin infusion within 24 hours and the average duration to subcutaneous insulin is 33.22 hours (10-104). Average total fluids given over 24 hours was 4.625L +/-2.785.

Conclusion: DKA in T2 DM is not uncommon and with prompt plus aggressive fluid management, able to achieve resolution within 24 hours.

HHS patients only able to overlap their insulin infusion after 24 hours. These patients are mostly elderly with multiple co-morbidities of which too rapid correction may be harmful Following standard protocol, close monitoring and treat the precipitating factors has improved hyperglycemic crisis management.

P43

A Narrative of a Patient Who Has Been on 20 Years of Diazoxide for Insulinoma

Mohd Rahman Omar, Ooi Cheow Peng, Norasyikin Abdul Wahab, Norlaila Mustafa, Norazmi Kamaruddin

Universiti Sains Islam Malaysia; Universiti Putra Malaysia; Universiti Kebangsaan Malaysia Medical Centre

Case summary: A 69-year-old lady was diagnosed with insulinoma back in 1990 when she presented with recurrent loss of consciousness and generalised seizures. The 72-hour fasting was performed and hypoglycaemia was elicited with inappropriately raised fasting C-peptide. A CT scan of abdomen showed mass in body of pancreas and she underwent enucleation of the lesion in April 1990 and the HPE of which confirm pancreatic insulinoma. She had recurrent of symptoms of hypoglycaemia in 1994 with elevation of C-peptide whilst she was hypoglycaemic. As she refused second surgical procedure, medical therapy was opted and she was started on corticosteroid and later to diaxozide once the drug was available in our center. As she was noncompliance she had a series of hypoglycaemia but later improved once the diazoxide dose was optimised. In May 2010 she was admitted with severe hypoglycaemia and the repeat workup showed fasting insulin of 16 IU/ml, C-peptide of 344 pmol/L while the repeat CT scan and EUS were negative for pancreatic lesions. She also had coexisting hypothyroidism post radio ablative iodine for thyrotoxicosis. She also had dyslipidemia and hypocortisolism secondary to exogenous steroid that required prn cortisone supplementation. In May 2015 she admitted for decompensated congestive heart failure and noted to be hyperglycaemic. The diagnosis of stress-induced hyperglycaemia were made. Her random blood sugar was 18.7 mmol/L with A1c of 7.1%. Her blood sugar in ward ranged from 8.5 to 24.7 mmol/l with no hypoglycaemic episodes where on diazoxide dose of 100 mg tds. No OADs or insulin was initiated. With the hyperglycaemic episode, the diazoxide was withheld and sugar level were between 6-14.0 mmol/L. Upon discharge she had hypoglycaemic episodes at home with glucose reading as low as 2.0 mmol/L and she started takingDiazoxide 100 mg nocte. The repeated blood test 2 months later showed FBS of 2.3 mmol/L, A1c of 6.0% insulin level 4.30 IU/ml and C-peptide of 325pmol/L and and again the diazoxide dose wasincreased to 100 mg tds. In October 2015, she was again admitted for cough, lethargy and anorexia for 1 month. Noted on admission the random sugar was 21.7 mmol/L and A1c of 7.3%. In the ward the sugar were persistently elevated ranging between 12- 24.9 mmol/L and later she was commenced on low basal bolus insulin therapy.

Conclusion: The presence of residual insulinoma in this patient is evidence by the persistent fasting hypoglycaemia when she was not on diazoxide. While on diazoxide she maintained biochemically diabetes especially in the presence of other disease such as heart failure.

P44

Achieving the Composite Endpoint of A1C <7.0%, No Hypoglycemia, and No Weight Gain in the Once-Weekly Dulaglutide AWARD Program

Kamlanathan Kodiappan, Kathleen Dungan, Itamar Raz, Zachary Skrivanek, Whitney Sealls, Jessie Fahrbach

Presenting on behalf of Eli Lilly and Company, Indianapolis, IN, USA; The Ohio State University, Columbus, OH, USA; Hadassah Hebrew University Hospital, Jerusalem, Israel; Eli Lilly and Company, Indianapolis, IN, USA

Background: This post-hoc analysis compares the once-weekly glucagon-like peptide-1 receptor agonist dulaglutide 1.5 mg and 0.75 mg with active comparator (AC) therapies and placebo used in the AWARD program on the composite endpoint of glycated hemoglobin (A1C) <7.0%, no weight gain (≤0 kg), and no hypoglycemia (glucose <3.1 mmol/L or any report of severe hypoglycemia) after 26 weeks of treatment.

Materials and Methods: A logistic regression analysis was performed on the intent-to-treat population, last observation carried forward.

Results: At 26 weeks, within each study, 37 to 58% of patients on dulaglutide 1.5 mg, 27 to 49% of patients on dulaglutide 0.75 mg, and 9 to 61% on AC achieved the composite endpoint. Significantly more patients reached the composite endpoint with dulaglutide 1.5 mg than with metformin, sitagliptin, exenatide BID, and insulin glargine (odds ratio [95% confidence interval]: 1.5 [1.0, 2.2; p<.05], 4.5 [3.0, 6.6; p<.001], 2.6 [1.8, 3.7; p<.001], 7.4 [4.4, 12.6; p<.001], respectively), with no difference between dulaglutide 1.5 mg and liraglutide 1.8 mg. In addition, significantly more patients reached the composite endpoint with dulaglutide 0.75 mg compared to sitagliptin and insulin glargine (3.3 [2.2, 4.8; p<.001], 4.5 [2.7, 7.8; p<.001], respectively).

Conclusions: Dulaglutide is an effective treatment option, resulting in a similar or greater proportion of patients who reached the A1C target of <7.0% without hypoglycemia or weight gain.

P45

Risk Factor for Prolonged Hospitalitation in Patients with Diabetic Foot Ulcer

Diana Novitasari, Tjokorda Gde Dalem Pemayun, Khris Heri Nugroho, Tony Suhartono, Darmono

Internal Medicine, Semarang District Hospital, Semarang, Indonesia

Background: Diabetic Foot Ulcer (DFU) cause important morbidity and seen in 15-20% of diabetic population. Lower extremity amputation is an increasing problem among patients with diabetic foot ulcer.

Aim: The aim of this study is to figure out the clinical profile, treatment, and factors that have association with prolonged hospitalitation among patients with diabetic foot ulcer in our hospital.

Materials and Methods: This is a cross sectional study. Reviewing medical record from diabetic foot ulcer patients admitted to Semarang District Hospital, Central Java Province, Indonesia. Twenty two out of 152 patients were eligible for further analysis. Study period was between January 2013- December 2014.

Results: More than half of subjects was female (56, 6 %) with 1: 1.3 male to female ratio; most were46-65 year of age (74, 4 %); mean of age 21, 7±26, 1. 86, 9 percent suffered from diabetes < 5 years. Onset of ulcer mostly were< 1 week before admission (63, 8 %). Mean duration of ulcer is 5, 13 ± 42, 4 days. Ulcer severity (Wagner's Grading System) :grade 0 (0, 7 %), grade I (17 %), grade 2 (57, 9 %), grade 3 (17, 1 %), grade 4 (13, 15 %). Diabetic complications including Hypertension 65, 1 % (prehipertensi 15, 2 %; Grade I 28, 9 %; Grade II 21 %), high Hypertrigliseridemia 27, 6 %, High LDL level 45, 4 %, Terminal stage of GFR is 4, 6 %). Comorbidities including anemia 72, 36 % and hypoalbuminemia 57, 2 %. Most subjects were fully subzidied by the goverment health insurance. Overall 12 % were amputated in various degree. Mean LOS (Length Of Stay) 5, 13 ± 4, 9 days; 80, 3 % was < 2 week and 19, 7 ≥ 2 week. Albumin and Hb level were two variables which statically had association with prolonged hospitalitation for ≥ 3 weeks (p = 0, 001; p = 0, 016 respectively)

Conclusions: Diabetic foot ulcer patients with hypoalbuminemia and anemia were predicted to have prolonged hospitalitation> 2 weeks. It is mainly due to postponement of wound healing and also time consumption for albumin and PRC transfusion.

P46

Autoimmune Diabetes Markers Review in Adult Multi Ethnic Diabetics: From Tertiary Centre Hospital

Anez Aslan, Masni Mohammad

Endocrine Unit, Department of Medicine, Putrajaya Hospital

Introduction: The prevalence of these autoimmune markers in Asian diabetic population has been reported to be lower compared to Scandinavian counterpart. The association of seropositivity autoimmune markers in T 1 DM with other autoimmune diseases, such as Thyroid disease is well recognized. Here, we review on Anti-islet autoantibodies sent from a single tertiary centre and their associations with other auto immune disease.

Purpose: To evaluate the characteristics of Type 1 DM and Type 2 DM with seropositive autoantibodies in Asian mixed ethnicities.

Materials and Methods: A descriptive study seropositivity from the 4 types insulin autoantibodies [anti-glutamic acid decarboxylase antibody (Anti-GAD), anti-islet cell antibody (ICA), anti-insulin antibody (Anti-IA), Insulinoma Associated 2 Autoantibodies (Anti-IA2)] that were sent from tertiary adult endocrine referral centre from 2010 till 2015. Electronic patient records from age 12 years and above, were reviewed evaluating baseline characteristics and biochemical parameters for association of autoimmunity.

Results: A total of 107 patients insulin autoantibodies were sent to check for seropositivity. 34 of those are Type 1 DM and 65 are Type 2 DM. Majority were male 59(55.1%) with mean age of 29.28 years (12- 63). Ethnic distribution were majority Malays 75(70.1%) and 12(11.2%) Chinese and 17(15.9%) Indians. Mean BMI is 2.57

In Type 1 Diabetes, Malay 20(58.8%), followed by Chinese 7(20.6%), and Indian 6(17.6%). Among these Type 1 patients 21(61.8%) were seropositive for ICA and Anti GAD. Whereas, seropositive for Anti IA2 and Anti IA were 9(26.5%) and 5(14.7%) respectively.

In Type 2 Diabetes, ethnic distribution, Malay 50(76.9%) followed by Indian 9(13.8%) and Chinese 4 (6.2%). Among these type 2 patients, 7(10.8%) were seropositive for ICA, 3(4.7%) were seropositive for Anti GAD, 3(4.6%) were seropositive for anti IA2 and 1(1.5%) were seropositive for IA.

Autoimmune diseases associated with Type 1 DM, were hypothyroidism in 3(8.8%), 2(5.9%) Grave's Disease, 1(2.9%) hyperthyroidism and 2.9% Autoimmune Polyglandular Syndrome.

Conclusion: Anti-GAD and ICA has the highest seropositivity in Type 1 DM with Chinese ethnic group. ICA has the highest seropositivity in Type 2 DM

P47

Fibrinogen Level Difference Between Microalbuminuria and Normoalbuminuria in T2DM

Deasy Ardiany, Soebagijo Adi, Askandar Tjokroprawiro, Sri Murtiwi, Sony Wibisono, Agung Pranoto, Ari Sutjahjo

Surabaya Diabetes and Nutrition Centre; Dr. Soetomo Teaching Hospital – Faculty of Medicine, Airlangga University Surabaya – Indonesia

Background: Increase of fibrinogen concentration in type 2 diabetes mellitus (DMT2) patients is an indicator for vascular inflammation, endothelial dysfunction. Hyperfibrinogenemia is a strong, independent marker for atherosclerosis. Hyperfibrinogenemia can precede macro- and microvascular complication. In T2DM, microalbuminuria is an early marker for diabetic nephropathy which indicates endothelial dysfunction. Microalbuminuria is useful both as renal as well as cardiovascular damage predictor. Microalbuminuria is also a marker for endothelial dysfunction.

Objectives: To investigate the fibrinogen level difference between microalbuminuria and normoalbuminuria in T2DM.

Materials and Methods: This was a cross sectional study in T2DM who came to a private endocrinology clinic in Surabaya during January 2010 to December 2014. The study included T2DM patients with age more than 40 years old. Exclusion criteria for the study were: history of cardiovascular or cerebrovascular diseases, end stage renal disease, active hepatic disease. Fibrinogen plasma level was measured by using mechanical method and rates of urinary albumin excretion by albumin/creatinine ratio (ACR) using immunoturbidimetry method.

Results: There were 223 T2DM enrolled in this study, 114 subjects with microalbuminuria and 109 with normoalbuminuria. The mean of fibrinogen level in microalbuminuria diabetic patients was 433.79 ± 125.2 mg/dL, while in normoalbuminuria was 309.05 ± 83.9 mg/dL. There was a significance difference of fibrinogen level between microalbuminuria and normoalbuminuria diabetic patients ($p<0.05$).

Conclusion: The fibrinogen level is significantly different between DMT2 with microalbuminuria and normoalbuminuria.

P48

Arterial Stiffness and Insulin Resistance Before and After Glimepiride/Metformin FDC Treatment in T2DM

Deasy Ardiany, Soebagijo Adi, Askandar Tjokroprawiro, Sony Wibisono, Agung Pranoto, Ari Sutjahjo, Sri Murtiwi

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya-Indonesia

Background: Insulin resitance is associated with increased cardiovascular risk. Increased arterial stiffness has been proposed as a common pathway by which insulin resistance leads to increased cardiovascular risk. Arterial stiffening related to insulin resistance and diabetes can be modified by pharmacological intervention by decrease the glucose level. Oral hypoglycemic monotherapy agent is often ineffective in controlling hyperglicemia and related to secondary failure. Oral hypoglycemic agents are needed especially metformin to increase the insulin sensitivity and/or insulin secretagogues such as glimepiride. Glimepiride, third-generation sulfonylureas are hypothesized to have greater extrapancreatic effect, such as an improvement in insulin resistance.

Objectives: To study the difference of arterial stiffness measured by brachial-ankle pulse wave velocity (baPWV) and insulin resistance measured by Homeostatic Model Assessment Insulin Resistance (HOMA-IR) before and after glimepiride/metformin fixed-dose combination (FDC) treatment.

Materials and Methods: This was a quasi experimental study with pre and post test design. Type-2 diabetes mellitus (DMT2) patients who came to the Endocrinology outpatient clinic of Dr. Sutomo Hospital and 6 public health centres and met the inclusion criteria were measured their baPWV and HOMA-IR before and after 12 weeks of treatment with glimepiride/metformin FDC.

Results: There were 33 T2DM patients, 14 males and 17 females, enrolled in this study. Significance difference was found in baPWV (1579.68 ± 239.4 and 1540.91± 279.1 cm/sec, respectively; $p<0.05$) and HOMA-IR before and after treatment (3.24 ± 1.9 and 2.7 ± 1.6 cm/sec, respectively; $p<0.05$).

Conclusion: There are significance improvements of baPWV (arterial stiffness) and HOMA-IR (insulin resistance) before and after glimepiride/metformin FDC treatment.

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Comparative Pharmacokinetics and Pharmacodynamics of LY2963016 and Insulin Glargine in Healthy Subjects at 2 Dose Levels

Deasy Ardiany, Soebagijo Adi, Askandar Tjokroprawiro, Sony Wibisono, Agung Pranoto, Ari Sutjahjo, Sri Murtiwi

Presenting on behalf of Eli Lilly, Indianapolis, IN, USA; Eli Lilly and Company, Indianapolis, IN, USA; Lilly-NUS Centre for Clinical Pharmacology, Singapore, Singapore

Background: LY2963016 and insulin glargine are both insulin glargine products, with identical amino acid (AA) sequences. Even with identical AA sequences, protein-based therapeutics manufactured by distinct processes must be shown to be similar.

Objectives: This Phase I, single-site, randomized, subject- and investigator-blinded, 4-treatment, 4-period crossover study evaluated the pharmacokinetics (PK) and pharmacodynamics (PD) of LY2963016 and insulin glargine at 2 different dose levels.

Materials and Methods: Fasted healthy subjects (N = 24; 20M/4F; 23 to 52 years) were randomly assigned to 1 of 4 dosing sequences and received a total of 2 doses (0.3 and 0.6 U/kg) of LY2963016 and 2 doses (0.3 and 0.6 U/kg) of insulin glargine on 1 occasion each. A minimum 6 day washout separated doses. Blood samples were collected predose and up to 24 hours postdose to assess PK, and a euglycemic clamp lasting up to 24 hours postdose was conducted to assess PD.

Results: The PK and PD properties were not statistically significantly different between LY2963016 and insulin glargine and were consistent across dose levels. The ratio of least squares (LS) geometric means (90% confidence interval [CI]) for the AUC(0-24) were 1.03 (0.91, 1.16) and 1.07 (0.95, 1.21) and Cmax were 1.03 (0.92, 1.15) and 1.03 (0.92, 1.16) for 0.3 U/kg and 0.6 U/kg, respectively. The ratios of LS geometric means (90% CI) for the total amount of glucose infused during the clamp procedure were 0.98 (0.78, 1.24) and 0.87 (0.70, 1.09) and for the maximum glucose infusion rate were 1.04 (0.87, 1.25) and 0.94 (0.79, 1.12) for 0.3 U/kg and 0.6 U/kg, respectively. LY2963016 was well tolerated, with no safety concerns noted in adverse events (AE), clinical laboratory tests, vital signs, or ECG data. The total number of drug related AEs reported across all dose levels was similar between LY2963016 and insulin glargine.

Conclusions: The study demonstrates similar PK and PD properties for LY2963016 and insulin glargine at doses of 0.3 and 0.6 U/kg.

P50

The Differences of Adiponectine Serum in Low and Normal Testosterone Level of T2DM-MetS

Jongky Hendro, Sri Murtiwi, Askandar Tjokroprawiro, Agung Pranoto, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono, Hermina Novida, Hermawan Susanto, Rio Wironegoro, Deasy Ardiany

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya-Indonesia

Background: Low testosterone are known to be associated with morbidity and mortality of cardio vascular disease. The mechanism of relationship between testosterone levels and various aspects of cardiovascular health is not clearly understood. Low serum adiponectin level has been implicated in the pathogenesis of type 2 diabetes mellitus (T2DM) and coronary arterial disease. The correlation between adiponectin and testosterone have been reported in an animal model, castration significantly increased the concentration of serum adiponectin, and testosterone repalcement therapy reduced the level of adiponectin serum. Study results indicated that testosterone decreased plasma adiponectin concentrations through its effect on adipocytes. It is possible that testosterone-mediated reduction of plasma adiponectin may account, at least in part, for the higher incidence of atherosclerotic diseases in men.

Objective: This study design to investigate whether any differences of adiponectine level in low and normal testosterone of the T2DM with Metabolic Syndrome (T2DM-MetS) population.

Materials and Methods: This is a comparative study. We recruited 104 men with T2DM-MetS, then divided into two groups, the first group is a group of 52 subjects with low testosterone level, and a second group of 52 subjects with normal testosterone levels. Those who undergo testosteron replacement therapy exclude from this study. They were recruited from specialist consultants Endocrine-Metabolic and Diabetes private clinics in Surabaya-Indonesia. Subjects performed a waist circumference measurement, and performed of total testosterone levels. We compared the Testosteron levels between two groups. Since the data have a normal distribution, the comparison of adiponectine level between two grups analyze using pair T-test

Results: The mean of age was 58, 98± 12, 28 years, The mean of Testosterone level was 168.18 ± 116.759 and 404.38 ± 60.029. while the mean of adiponectin level was 3.627 ± 0.2392 and 7.540 ± 0.5214, mean of A1C measurement each group resulted in 9.05 ± 1.84 %, and 7.69 ± 1.982. Test results showed differentiation of Adiponectine level between two groups is significant (r=0, 218; P<0, 05), the Testosteron level were different significant between two groups (r=0, 114; P<0, 05).

Conclusion: There were significance difference of Adiponectine level in normal and low testosterone group of T2DM-MetS subjects.

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Profile of Patients with Diabetic Kidney Disease at Unit Hemodialysis Kardinah Distric Hospital Tegal, Central Java Indonesia

Nurmilawati, Tjokorda GD e Dalem Pemayun, K Heri Nugroho HS, Tony Suhartono, Darmono

Internal Medicine, Kardinah District Hospital, Tegal, Central Java Indonesia; Sub Division Endocrinology; Metabolic Disease, Medical Faculty of Diponegoro University Semarang, Central Java Indonesia

Objective: Diabetes mellitus type 2 are having chances to get complications to kidney about 40%. This condition make the prevalence of Diabetic Kidney Disease(DKD) are also increase. In developed countries, DKD recorded as the largest component of new patient who underwent kidney replacement therapy, including Indonesia. DKD is one of the leading causes of death, especially in diabetes type 2. The purpose of this study is to present a profile of Diabetic Kidney Disease patients that undergoing dialysis treatment at Unit Hemodialysis of Kardinah Distric Hospital Tegal.

Materials and Methods: This is a descriptive analytical study of total 105 patients, 58 patients are diagnosed with DKD who undergoing dialysis treatment in Unit Hemodialysis of Kardinah Hospital Tegal. The data were gathered from February-April 2015 and taken from medical records, interview, physical examination and laboratories. In the interview, they were asked about how long they suffer from diabetes and undergoing dialysis, signs and symptoms of hypoglycemia, frequency per week and duration of dialysis in one day.

Result: Subject consists of 105 patients who undergoing dialysis, 58 patients are diagnosed with DKD and 47 patients non DKD. From total 58 patients, (68, 9%) are males and (31, 1%) are females. Age < 50 years (41.4%), ≥ 50 years (58, 6%). Suffer from diabetes < 10 years (56, 9%), ≥ 10 years (43, 1%). Duration o dialysis treatment <5 years (84, 5%), ≥ 5 years 915, 5%). Hb <10 g/dl (39, 3%), ≥ 10 g/dl (39, 3%). HbA1c <7% (94.8%), HbA1c ≥ 7% (5, 2%). Potassium < 3mmol/L (89.7%), sodium <135mmol/L (36.2%).Urea <40 mg/dl (46.6%), ≥40 mg/dl (53.4%). Creatinine < 2, 5 mg/dl (17, 2%), ≥ 5 mg/dl (82, 8%). Albumin <3, 5 g/L (15, 4%), random blood glucose ≤70 mg/dl (6.9%). Access HD femoral (69.0%), A-V shunt (25, 9%), double lumen dialysis (5.1%). All patients are having HD twice a week and took 5 hours each time.

Conclusion: 58 patients with DKD were predominantly males over females, aged over 50 years, suffer DM over 10 years, having HD under 5 years, HbA1c <7% with complication hypokalemia, hyponatremia, hypoglycemia, hypoalbuminemia. These patients are having HD twice a week and took 5 hours each time.

P52

Correlation Between High Density Lipoprotein (HDL) Cholesterol And Glomerular Filtration Rate (GFR) in Type 2 Diabetes Mellitus and Obesity Patients in Margono Soekarjo Hospital Purwokerto Indonesia

Pugud Samodro, A.Hussein Asdie, Bowo Pramono, Hemi Sinorita, M.Robikhul Ikhsan

Department of Internal Medicine, Faculty of Medicine, General Soedirman University/Margono Soekarjo Hospital Purwokerto; Division of Endocrinology, Departement of Internal Medicine, Faculty of Medicine, Gadjahmada University/ Sardjito Hospital Yogyakarta

Background: Diabetes Mellitus (DM) is a disease that suffered by many people around the world. Hyperglicemia on DM affect disbalanced of lipid cholesterol in blood, one of them are low of high density lipoprotein level. High Density Lipoprotein (HDL) level in type 2 diabetes and obesity patient tends to decrease. Low level of HDL will effect kidney function. Glomerular Filtration Rate (GFR) is one of parameter to diagnose kidney function disorder.

Objectives: To understand the correlation of HDL level and Glomerular Filtration Rate (GFR) in type 2 DM and obesity.

Materials and Methods: This research was use observational analytic with cross sectional design. Subjects enrolled were 47 people patients with type 2 DM and obesity, aged 35-60 years old. Subjects that already received insulin therapy, agents that can decrease level of dyslipidemia, have do hemodialisis and hypertension have excluded.

Result: Maximum value of HDL in men were 62 mg/dl with minimal value were 28 mg/dl. Maximum value of HDL in women were 69 mg/dl with minimal value were 26 mg/dl. The mean value of HDL in men were 39, 82 mg/dl and the mean value of HDL in women were 41, 17 mg/dl. GFR maximum value were 72 mL/Min/1, 73 m² and minimum value were 23 mL/Min/1, 73 m² with mean value were 49, 23 mL/Min/1, 73 m². The result of Pearson Correlational Test showed significantly correlation between HDL level and GFR, with weak correlational strength and negative direction (p = 0, 045; r = 0, 293).

Conclusions: There was correlation between HDL level and GFR in type 2 diabetes mellitus and obesity patients.

P53

Prevalence of Malnutrition Among Patients with Diabetes Mellitus type 2 Admitted in a Tertiary Hospital

Myl R. Cabangon, Carolyn Narvacan-Montano, Maria Leonora Del Rosario-Capellan, Ma. Luisa Campos-Cagingin

Section of Endocrinology, Diabetes and Metabolism, Department of Internal Medicine, Makati Medical Center, Makati City, Philippines

Background: Malnutrition is a state of deficiency of the proper micro and macronutrients to meet daily nutritional requirement that is often unrecognized and untreated among hospitalized patients. Hospital malnutrition is associated with higher infection, impaired wound healing, longer length of hospital stay and increased morbidity and mortality, especially in hospitalized patients with diabetes mellitus type 2.

Objective: To determine the prevalence of malnutrition and the comprehensive baseline nutrition status of hospitalized patients with Diabetes Mellitus type 2 in Makati Medical Center.

Materials and Methods: This was a prospective cross sectional study involving Filipino patients with Diabetes Mellitus type 2 admitted at Makati Medical Center from October to December 2014. Malnutrition risk and status were assessed with Subjective Global Assessment (SGA) and clinical parameters.

Results: A total of 150 adults with T2DM assessed with the Comprehensive Nutrition Assessment Form (CNAF) used SGA and nutritional risk level showed 37% has moderate risk while 63% has high risk for malnutrition. Nutritional status showed that 55% has mild to moderate malnutrition and 45% of patients have severe malnutrition. Factors significantly associated with high nutritional risk for malnutrition were SGA C ($P<0.001$), abnormal BMI-underweight and obese class2 ($P<0.001$), lower albumin ($P=0.005$) and lower total lymphocyte count ($P<0.001$). Factors associated to nutritional status were: weight change ($P=0.004$), functional capacity ($P=0.017$), disease and nutritional requirements ($P<0.001$), and presence of edema or ascites ($P=0.012$).

Conclusion: Malnutrition is highly prevalent in the acute hospital setting, 37% has moderate risk while 63% has high risk for malnutrition. While 55% has mild to moderate malnutrition and 45% of patients has severe malnutrition. Significant association for malnutrition are patients with SGA C, abnormal BMI (underweight and obese class 2), low albumin of <2.5 and low total lymphocyte count. Factors associated with severity of malnutrition were weight change, functional capacity, disease and nutritional requirements, and presence of edema or ascites. Therefore, this study emphasized the importance of the American Diabetes Association (ADA) recommendation of implementing Medical Nutrition Therapy (MNT) as cornerstone of T2DM patients to prevent severe malnutrition and its negative outcomes.

P54

Bacteriological Pattern, Antibiotic Sensitivity by Gender in Diabetic Foot Ulcer in Sardjito Hospital, Yogyakarta, January 1st 2015 – June 2015

Vina Yanti Susanti, Andaru Dahesih Dewi, Rizka Humardewayanti, Bowo Pramono, Hemi Sinorita, Robikhul Ikhsan

Endocrinology – Pathology Clinic Departement, Sardjito Hospital Yogyakarta - Indonesia

Background: Diabetic ulcer is a chronic complications of diabetes mellitus. Factors that play a role is angiopathy, neuropathy and infection. Peripheral neuropathy will cause a decrease on pain sensation on the feet, so it will be easier to get an ulcers on the feet. Angiopathy cause a decrease on intake of nutrients, oxygen and antibiotics that cause wounds are difficult to heal. Infection is a complication that often accompanies diabetic ulcers due to reduced blood flow, or neuropathy, angiopathy factors and infections that affect the healing process of diabetic foot ulcers.

Objective: To observe the pattern of bacteria and their sensitivity to antibiotic based on gender in patients with diabetic foot ulcers who were treated at Dr. Sardjito Hospital in January 2015 through June 2015.

Methods: The study was a cross sectional study. Discharge was taken from the wound base and did the culture and sensitivity tests on that discharge.

Results: There were total 46 (20 female, and 24 male) patients, with type 2 diabetes mellitus with foot ulcers, The culture and sensitivity test results, in female and male respectively, the bacteriological patterns are gram-negative (80%) for female, and (83%) for male, and gram-positive (20%)for female, and (17%) for male. The major bacteria were K.pneum.pneumoniae (28%), aci baumanni (21.4%), morg.morg.morgani (20.7%) for female, and Esch. Coli (34.5%), Ps. Aeruginosa (24.1%) and K.pneum. pneumoniae (20, 7%) for male. The potential antibiotics according to sensitivity test are Ertapenem (100%), Amikacin (90%), Tigecyclin (88%), Meropenem (76%), Cefepim (70%) for female, and Ertapenem (84%), Amikacin (84%), Meropenem (80%), Tigecyclin (68%)Cefepim (52%) for male.

Conclusion: The bacteriological pattern in diabetic foot ulcers are mostly a gram-negative bacteria, and the antibiotic, Ertapenem, is the most sensitive antibiotics in diabetic foot ulcers among female and male patients.

P55

Lower Risk of Hypoglycemia with Insulin Degludec vs. Insulin Glargine in Patients Diagnosed with Type 2 Diabetes for >10 years: Meta-analysis of Five Randomized Trials

Avideh Nazeri, Jiten Vora, Helena Rodbard, Stewart Harris

Novo Nordisk Pharma Operations (BASEA) Sdn. Bhd.; Royal Liverpool University Hospitals, Liverpool, UK; Endocrine and Metabolic Consultants, Rockville, MD, USA; University of Western Ontario, London, ON, Canada

Insulin degludec (IDeg), an ultra-long-acting basal insulin with a stable and consistent glucose-lowering effect, has been shown to be associated with significantly lower rates of overall (17%) and nocturnal hypoglycemia (32%) compared to insulin glargine (IGlar) in a pre-planned meta-analysis of patients with type 2 diabetes (T2D). T2D is a progressive disease where the incidence and rates of recurrent hypoglycemia increase with diabetes duration and consequent intensification of insulin therapy. In this post-hoc meta-analysis, hypoglycemia rates were compared between IDeg and IGlar in a subset of T2D patients with a diabetes duration >10 years.

The meta-analysis included all five phase 3a, open-label, randomized, treat-to-target (FPG <90 mg/dl) clinical trials of 26 or 52 weeks duration in which once-daily IDeg and IGlar have been compared in T2D patients. Analysis of A1C and FPG was based on an ANCOVA model; analysis of hypoglycemic episodes was based on a negative binomial regression model.

In all, 1, 651 (IDeg: n=1, 143; IGlar: n=508) of 3, 372 randomized patients had a duration of T2D >10 years and were included in the meta-analysis. Treatment groups were similar with respect to mean A1C at end-of-trial (treatment difference (TD) IDeg−IGlar: 0.08% [–0.02; 0.17]; NS). IDeg was associated with a significantly greater reduction from baseline in mean FPG (TD: -10.1 mg/dL [–14.2; 5.8]; $p<0.01$). The rate of overall confirmed hypoglycemia (plasma glucose <56 mg/dL and severe episodes requiring assistance) was 21% lower with IDeg vs IGlar ($p<0.01$); the rate of nocturnal confirmed hypoglycemia (12.01AM to 5.59AM) was 29% lower with IDeg vs IGlar ($p<0.01$).

In conclusion, this meta-analysis demonstrates that treatment with IDeg provides important clinical advantages in patients with a long-term T2D. This includes significantly lower rates of both overall and nocturnal hypoglycemia than IGlar at similar A1C levels.

P56

Effectiveness of Switching from a DPP-4 Inhibitor to the Human GLP-1 Analogue Liraglutide in Patients with Type 2 Diabetes: Data from the EVIDENCE Study

Arvind Gadekar, Suliya Madani, Guillaume Charpentier, Luc Martinez, Eveline Eschwège, Pierre Gourdy, Jean-francois Gautier, Alfred Penfornis

Novo Nordisk Pharma (Malaysia) Sdn. Bhd.; Novo Nordisk, Paris, France; Centre Hospitalier Sud Francilien, Corbeil, France; Université Pierre & Marie Curie, Paris, France; INSERM, Villejuif, France; Toulouse University Hospital, Toulouse, France; Lariboisière Hospital, Paris, France; University of Franche-Comté, Besançon

Background and Aims: We used data from a post-marketing study in France to assess the effectiveness of switching from a DPP-4 inhibitor (DPP-4i) to liraglutide in patients with type 2 diabetes.

Materials and Methods: EVIDENCE is a multicentre, observational, post-marketing outpatient study requested by the French National Health Authority to evaluate the efficacy and safety of the human GLP-1 analogue liraglutide. Its primary objective is to determine the percentage of patients still taking liraglutide and at HbA1c target (<7%) after 2 years. Statistical analyses: for quantitative variables a normality Kolmogorov-Smirnov test was used; comparisons of two dependent groups were performed using the Wilcoxon signed rank test; for paired qualitative variables the McNemar test was used.

Results: Data were collected from 3152 subjects of whom 1261 (40%) were receiving a DPP-4i prior to liraglutide initiation. A total of 1002 (32%) subjects switched from a DPP-4i to liraglutide at the start of the study. These subjects (n = 624) achieved significant reductions in mean HbA1c (–0.85%, p<0.0001), fasting plasma glucose (–0.28 g/L, p<0.0001) and body weight (–3.60 kg, p<0.0001). An increased percentage of subjects reached the HbA1c target of <7% after switching to liraglutide (31.7% at the end of the study vs. 9.7% at baseline; p<0.0001). Withdrawals (21.4 % in overall study cohort) were mostly due to gastrointestinal disorders experienced at the start of the study.

Conclusion: Switching from a DPP-4i to liraglutide led to significant improvements in glycaemic control and body weight in this observational study. In a randomised controlled trial, switching from the DPP-4 inhibitor sitagliptin to liraglutide provided significant HbA1c (–0.5%; p<0.0001) and body weight reductions (–2.5 kg; p<0.0001). The greater reductions in HbA1c and body weight in this observational study versus the controlled setting of a clinical trial may reflect different baseline characteristics and concomitant diabetes medications. However, these data support the potential benefits of switching from a DPP-4i to a GLP-1 analogue, as previously observed in a randomised clinical trial.

P57

Urinary Tract Infection in Women with Type 2 Diabetes Mellitus

Nan Phyu Sin Toe Myint, Than Than Aye

University of Medicine

Background and Aims: Diabetes Mellitus has been associated with increases the susceptibility to infections. Urinary tract infections (UTIs) are more prevalent in individuals with DM and may evolve to complications and/or serious manifestations.

Objective: To determine clinical characteristics, microvascular complications of diabetes and assess the causative pathogens in type 2 diabetic women with culture positive symptomatic urinary tract infection.

Methods: This cross sectional study was conducted at North Okkalapa General Hospital, Thingangyun General Hospital and Insein General Hospital during one year study period. A total of 76 type 2 diabetic women with culture positive symptomatic UTI were examined for microvascular complications, tested for Hb A1c and glycosuria by dipstick method during one year study period.

Results: Of the 76 type 2 diabetic women with UTI, the mean age was 65 ± 9.8 years. The majority of study participants had more than 5 years duration of diabetes (70%) and 68.5% had HbA1c > 7%. Regarding risk factors for UTI in diabetes, 52.6% had glycosuria and 71.1% had peripheral neuropathy. The isolation rate of Escherichia coli (E. coli) from urine culture was highest among study population (67.1%) followed by Klebsiella (17.1%) and Pseudomonas (5.3%). Relapses and reinfections were found in 2.6% and 30.2% of the study population.

Conclusions: Most of the type 2 diabetic women with UTI were more than 55 yrs of aged and had longer duration of diabetes. High percentage of them also had poor glycemic control, glycosuria and peripheral neuropathy. There was significant association between diabetes duration more than 5 years and recurrence of UTI in diabetic women. But, there was no significant association of HbA1c level between newly diagnosed and occurrence of recurrent UTI.

P58

Budget Impact Analysis of Insulin Detemir in the Treatment of Gestational Diabetes Mellitus in Patients Treated with Insulin in Malaysia: A Public Payer Perspective

Dr. Nurain Mohd Noor, Dr. Hanin Farhana Kamaruzaman, Eliza Kruger, Seng Tan

Objectives: BIA is an essential resource for decision-makers as it provides information on how changes in treatment for a particular health condition may impact spending. The purpose of this study is to assess the financial impact of introduction of insulin detemir (Levemir) for the treatment of gestational diabetes mellitus (GDM) in Malaysia, from the perspective of the Ministry of Health (MoH). The clinically relevant comparator to insulin detemir for treatment of GDM is NPH insulin.

Methods: An Excel-based 5-year budget impact model, using local epidemiological data, was built to estimate the proportion of GDM patients treated with insulin in the public sector. Baseline characteristics were obtained from ASEAN subgroup analysis of the A1chieve trial data and effectiveness from a randomized controlled study of insulin detemir and NPH for the treatment of GDM. In addition to treatment costs, we consider the impact of major hypoglycaemic events. All the costs were expressed in 2015 value with a 0% discount rate applied. The adoption rates were projected based on the 2015 data provided by the public sector. Sensitivity analyses were conducted to assess the robustness of the result.

Results: Compared to a scenario without insulin detemir, additional drug acquisition costs incurred to MOH are MYR 9.9K in 2016, increasing to MYR 66.3K in 2020, for a cumulative total of MYR 172K. Introduction of insulin detemir reduces the number of major hypoglycaemic events by 165 over the 5-year period, which generates a cumulative saving of MYR 704.7K. The overall cumulative budget impact of introduction of insulin detemir is a saving of over half a million MYR over the 5-year time horizon.

Conclusions: The increase in pharmacy acquisition costs of introduction of insulin detemir for the GDM population is completely offset by the savings generated from reduced major hypoglycaemic events. Given the additional costs of GDM, including maternal and infant morbidity, this saving is likely to be underestimated. Therefore, insulin detemir will decrease the budget impact of treatment of GDM, from the perspective of the Malaysian public health system.

P59

Improvement of Glycaemic Control Following Subcutanous Insulin Lispro Mix 50 in Diabetic Patient Who Were on 3-Hourly Nasogastric Tube Feeding

Mohd Rahman Omar, Norasyikin Abdul Wahab, Norlaila Mustafa, Norlela Sukor, Nor Azmi Kamaruddin

Universiti Sains Islam Malaysia; Universiti Kebangsaan Malaysia Medical Centre

Background: Nasogastric feeding is a route of enteral feeding in patients with difficulty in swallowing. Its delivered for six or seven times perday with equally divided amount of calories. In diabetic patients, multiple feeding leads to multiple peaks of blood glucose. The use of standard basal bolus insulin may not be ideal to normalised the sugar as its only given four times daily. Insulin lispro mix 50 is postulated to be able to control these blood sugar peaks. The 2 equal amounts of shortacting and intermediate acting insulin would provide a sustained and prolonged peak level over the next few hour following administration.

Objective: To evaluate the blood sugar profile in nasogastric feeding diabetic patients who received interminntent 3 - hourly feeding with subcutanous Insulin lispro mix 50 for 3 times per day.

Design and Method: This was a prospective observational study involving diabetic patients who were admitted and put on intermittent nasogastric feeding. All patients who were selected were given either oral antidiabetic agents or multiple insulin injections prior to recruitment. Glucose monitoring was by standard capillary blood sugar monitoring.

Results: A total of 14 patients were recruited during study period, however only data from 9 patients were completed for analysis. Median age of the patients was 64 (45, 75.5) years old with majority 55.6% being male patients. Majority (88.9%) had hypertention, 66.7% had dyslipidimia and stroke and 44.4% patients had chronic kidney diasease. The median duration of diabetes was 10.0 years (5.0, 16.0) with median baseline fasting blood glucose and A1c were 8.70 mmol/l (7.02, 13.57) and 7.35% (6.75, 8.95) respectively. Fifty-five point six percent of patients were either on oral antidiabetic agents or insulin. Prior to the study, the reasons for ryle tube feedinng were 66.7% patients for stroke, 22.2% patients for poor glascow coma scale and 11.1% for aspiration pneumonia. The feeding regime were nutrien diabetic in 66.7% of patients and glucerna for 44.4% of patients. Median total calory intake was 1620 kcal (1443, 1775). Prior to the recruitement with Insulin lispro mix 50the patients either receive basal bolus regime with actrapid and insulatard or premixed mixtard 70:30 for minimum of 3 days before switching off . The median pre humalog mean blood sugar and total daily insulin dose were 13.0 mmol/L (8.98, 15.21) and 54 unit/day (36, 78) respectively. Post Insulin lispro mix 50treatment has shown reduction of mean blood sugar to 8.34 mmol/L (6.9, 11.58) with p of 0.008. The total daily insulin dose had shown no significant different with median of 61 unit/day (38.5, 70.5), p =0.492. The incidence of hypoglycaemia was seen in 1 patient prior to Insulin lispro mix 50 and in 3 patients in post treatment but they werestatistically not significant (p=0.708)

Conclusions: Significant glycaemic control were seen following initiation with 3 time daily injection of insulin lispro mix 50 in patient receiving 3-hourly nasogastric feeding with no intensification of insulin dose. No significant hypoglycaemia was observed prior and post intitition with the insulin lispro mix 50 injection.

*This study was not sponsored by Eli Lily the manufacture of Lispro mix 50.

P60

Cost-effectiveness of Liraglutide, a Glucagon-like Insulin Peptide -1 Analogue in Comparison to Insulin Glargine in Type 2 Diabetes Patients with Suboptimal Glycaemic Control in Malaysia

N. A. Kamaruddin, M. B. Long Bidin, S.C. Tan, A.A. Shafie

Department of Medicine, Faculty of Medicine, National University of Malaysia, Kuala Lumpur, Malaysia; Department of Medicine, Kuala Lumpur Hospital, Kuala Lumpur, Malaysia; Health Economics & Outcomes Research, IMS Health Asia Pacific, Singapore; School of Pharmaceutical Sciences, Universiti Sains Malaysia, Kota Baru, Malaysia

Objective: The study aimed to evaluate the long-term cost-effectiveness outcomes of liraglutide versus insulin glargine in the local context of Malaysia for obese patients with uncontrolled T2DM patients despite receiving 2-3 oral anti-diabetics (OADs).

Methods: A cost-effectiveness analysis from the societal perspective was simulated using the validated IMS CORE Diabetes Model over a time horizon of 40 years. Baseline characteristics and treatment effects were derived from LEAD5, a head-to-head trial comparing liraglutide and glargine. Published local cost data was used, along with resource use inputs. All costs were reported in 2014 Malaysian Currency Unit (MYR). A 3% discount rate was applied. Both one-way and probabilistic sensitivity analyses were conducted to test the robustness of the results.

Results: The base case analysis showed that treatment with liraglutide in comparison to glargine was associated with a gained of 0.216 quality-adjusted life years (QALY) and an incremental total cost of MYR12, 132, resulting in an incremental cost-effectiveness ratio of MYR56, 120 per QALY gained. Sensitivity analyses indicate the result is sensitive to changes in parameters such as number of treatment years and daily dose of liraglutide. However, none of them resulted an ICER above the WHO's recommended threshold of 3x GDP per capita of Malaysia in 2014.

Conclusion: Treating poorly controlled obese T2DM patients in Malaysia with liraglutide instead of insulin glargine for an initial treatment period of up to 5 years was projected to be a cost-effective strategy resulting in beneficial outcomes such as lower rates of long-tem complications and higher quality-adjusted life expectancy.

P61

J-shaped Incidental Relationship of Diabetes with the Variation Level of Fasting Insulin for 5 Years in Korean

S.K. Park, J.H. Ryoo, M.H. Seo

Departments of Preventive Medicine, School of Medicine, Kyung Hee University, Seoul, Korea; Total healthcare center, Kangbuk Samsung Hospital, Sungkyunkwan University, School of medicine, Seoul, Korea; Soonchunhyang university hospital Gumi, Gumi city, Gyeongbuk, South Korea

Background: Insulin plays a significant role in the management of diabetic patients as a key hormone regulating carbohydrate metabolism. Although not a few studies have demonstrated the clinical significance of fasting insulin level in diabetic and non-diabetic patients, there is only scarce information about the impact of variation of fasting insulin level on the development of diabetes.

Aim: This study was conduct to evaluate the incidental risk for diabetes according to the variation level of fasting insulin for a certain period.

Method: Cohort of 26, 315 middle aged non-diabetic Korean men was followed-up annually or biennially from 2005 to 2010. On the basis of fasting insulin in 2005, study participants were categorized into 5 groups according to their variation levels of fasting insulin for follow-up period from the lowest quintile to the highest quintile (1stquintile – 5thquintile). Variation level of fasting insulin for a follow-up period was calculated by formula as follows: (fasting serum insulin at censoring time or follow-up loss time – fasting serum insulin at baseline)/ follow-up period (person year). The incidence and adjusted hazard ratios (HRs) for diabetes were evaluated in 5 quintiles.

Results: During 107, 765.1 person-years of follow-up, 1, 474 (5.4 %) incident cases of diabetes developed between 2006 and 2010 (quintile 1: 5.9%, quintile 2: 4.1%, quintile 3: 3.6%, quintile 4: 5.4%, quintile5: 8.1%). When quintile 3 was set as a reference, in adjusted model, the adjusted hazard ratios for diabetes showed the J-shaped relationship with the variation levels of fasting insulin [quintile 1: 1.46 (1.21-1.76), quintile 2: 1.10 (0.90-1.34), quintile 3: 1.00 (reference), quintile 4: 1.62 (1.34-1.95), quintile 5: 5.50 (4.60-6.57), respectively].

Discussion: In this study, J-shaped relationship pattern was demonstrated between risk for diabetes and the variation levels of fasting insulin. This finding indicates that the risk of diabetes can paradoxically increase in elevated fasting insulin as well as decreased fasting insulin.

P62

Case Report: Successful Desensitisation with Insulin Lispro in Allergy to Insulin Excipient

Wan Juani Wan Seman, Azraii Nasrudin, Nurain Mohd Noor, Masni Mohamad, Zanariah Hussein

Putrajaya Hospital

Introduction: Allergy to insulin has become rare with the advent of human insulin and its analogues in diabetic patients. Allergic reactions to insulin may results from insulin molecule or carrier proteins. Most allergic reactions are local and confined to the skin. However, systemic allergic reactions involving generalised urticarial rash and anaphylaxis has been reported. Treatment options for insulin allergy are symptomatic therapy, insulin desensitisation or use of monoclonal antibodies.

Case Report: We herewith present a case of a 27 years old lady with type 2 diabetes mellitus who was initiated on insulin therapy for poor glycaemic control and pre-conception preparation. She developed urticarial rash 30 minutes after administration of short-acting human insulin (actrapid) or basal insulin analogue (detemir). Trial of rapid-acting insulin analogue (aspart), recombinant human insulin (mixtard) and long-acting basal insulin analogue (glargine) resulted in angioedema and bronchospasm, requiring rescue with intravenous antihistamines, hydrocortisone and intramuscular adrenaline injections. She also had previous allergy to gliclazide and seafood. Blood investigations of total IgE was raised at 123 kU/L (reference range < 100 kU/L). We treated the patient with rapid-acting insulin analogue (glulisine) intradermally using a modified insulin desensitisation protocol beginning with 0.0001 IU with initial gradual low dose augmentation (0.0001, 0.0001, 0.001, 0, 005) using injection interval of 30 minutes for day 1. There was a greater augmentation of the insulin dose (0.01, 0.02, 0.03, 0.04, 0.05, 0.08 and 0.10 IU) with subcutaneous insulin injection the next day. Therapy was accompanied with antihistamine therapy with no steroid cover. Subsequent conversion to rapid-acting insulin (lispro) and intermediate acting human insulin (insulatard) was well-tolerated.

Conclusion: A review by Claudia Pfohler et al on insulin and its excipients reveals that metacresol is present in most insulin.1 Metacresol is also available in soaps and adhesives.1 Allergies to both insulin and oral hypoglycaemic agents suggest a common allergen like metacresol rather than allergy to insulin molecule itself.

In summary, we have described a case of Ig-E mediated allergy to insulin excipients which have been successfully treated with modified insulin desensitisation.

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Cognitive Impairment in Type 2 Diabetes Mellitus: A Preliminary Study Using Trail Making Test in a Rural Malaysian Adult Population Above 40 Years Old

Ooi Cheow Peng, Jamil Zubaidah, Mahat Nur Atikah, Hindu Nur Syuhada, Ching Siew Mooi, Ruhaini Haji Ismail, Tengku-Aizan Tengku Abdul Hamid

Endocrine Unit, Department of Medicine, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Endocrine Unit, Department of Medicine, Pusat Perubatan Universiti Kebangsaan, Malaysia; Department of Psychiatry, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Department of Family Medicine, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Health Office of the District of Sepang (Ministry of Health, Malaysia), Salak, Selangor; Malaysian Research Instutite on Ageing, Universiti Putra Malaysia

Introduction: Mild cognitive impairment(MCI) of multiple aetiologies complicating type 2 diabetes mellitus(T2DM) is well established. The prevention and early intervention to halt or reverse the progression of mild cognitive decline across the age span may elevate the burden of the disease. Neuropsychological assessment is considered as gold standard tools for MCI. Trail Making Test(TMT), a popular, economical and easily administered test, measures different cognitive processes. The utility of this neuropsychological tool among the Malaysian population has not been explored.

Objective: We explored the effect of T2DM on the performance of the TMT-A, TMT-B(Roman) and TMT-B(Jawi) in the Malaysian population.

Method: A convenience sample of adults above 40 years old attended Klinik Kesihatan Salak between the periods of July to August 2013 were enrolled. TMT-A and TMT-B were administered to each of the participants. Their performance in each of part was timed. Comparisons of T2DM status, gender, education level, age and TMT scores were analysed with Mann-Whitney U tests, Kruskal-Wallis Tests and Spearman's Rank Order Correlation as appropriate using SPSS 22.0. $P < 0.05$ was taken as the significant value. Exclusion criteria included those with neurological diseases, head trauma, cognitive or psychiatric disorders, unable to understand given instruction and vision or hearing deficit.

Results: 160 respondents participated in the TMT-A and TMT-B(Roman). Only nine participants used TMT-B(Jawi). 41 respondents had T2DM. The median performance TMT-A and TMT-B scores for participants with T2DM were 60 and 93.5 seconds(s) respectively. These scores were significantly greater than those without T2DM: median TMT-A= 49 s ($p = 0.015$); median TMT-B=80s ($p = 0.014$). In addition, there were also significant correlation between age and TMT score [(TMT A ($rs=0.48$, $p < 0.05$), TMT B ($rs=0.42$, $p < 0.05$)] as well as educational level [(TMT A, $p < 0.05$), TMT B ($p < 0.05$)].

Conclusion: TMT-A, TMT-B(Roman) and TMT-B(Jawi) can be used for cognitive assessment in the Malaysian population. The significant reduction of performance of both TMT-A and TMT-B in T2DM is consistent with findings of cognitive impairment in other population with T2DM. Further research is required in developing this tool for assessment of MCI in the Malaysian population.

P64

Cognitive Impairment in Type 2 Diabetes Mellitus: A Preliminary Study Using Digit Span and Digit Symbol in a Rural Malaysian Adult Population Above 40 Years Old

Ooi Cheow Peng, Jamil Zubaidah, Mahat Nur Atikah, Hindu Nur Syuhada, Ching Siew Mooi, Ruhaini Haji Ismail, Tengku-Aizan Tengku Abdul Hamid

Endocrine Unit, Department of Medicine, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Endocrine Unit, Department of Medicine, Pusat Perubatan Universiti Kebangsaan, Malaysia; Department of Psychiatry, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Department of Family Medicine, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia; Health Office of the District of Sepang (Ministry of Health, Malaysia), Salak, Selangor; Malaysian Research Instutite on Ageing, Universiti Putra Malaysia

Introduction: Mild cognitive impairment(MCI) of multiple aetiologies complicating type 2 diabetes mellitus(T2DM) is well established. The prevention and early intervention to halt or reverse the progression across the age span may elevate the burden of the disease. Neuropsychological assessment is considered as gold standard tool for MCI. Digit-span task(DST) is used to measure working memory's number storage capacity while the Digit Symbol Substitution Test(DSST) explores attention and psychomotor speed. They are easily administered. The utility of these neuropsychological instruments among the Malaysian population has not been explored.

Objective: We explored the effect of T2DM on cognitive functioning using DST and DSST in the Malaysian population.

Methods: A convenience sample of adults above 40 years old attended Klinik Kesihatan Salak between July and August 2013 were enrolled. The DST and DSST were administered to each of the participants. Their performance in each of the test was scored accordingly. The relationship between age, gender, race and educational level and T2DM status were explored using chi-square. Comparisons of DST and DSST scores with T2DM status were analysed with Student's t-test. $P < 0.05$ was taken as the significant value. Statistical analyses were performed with IBM SPSS 22.0. Exclusion criteria included those with neurological diseases, head trauma, cognitive or psychiatric disorders, unable to understand given instruction and vision or hearing deficit.

Results: 160 respondents participated in both the DST and DSST. 41 respondents had T2DM. There were no significant difference in age, gender, race and educational level between those with and without T2DM ($p > 0.05$). The mean DST scores for T2DM and without T2DM were 12.4 + 3.1 and 11.9 + 3.0 respectively. Mean scores for the DSST were 26.6 + 13.7(T2DM) and 31.2 + 13.6(no T2DM). For both the tests, there were no statistical significant difference in scores for both the test($p> 0.05$).

Conclusions: DST and DSST can be used for cognitive assessment tools in the Malaysian population. Since there was no significant difference in scores for both the tests in patients with and without T2DM, further research is required to increase the sensitivity of these tests for teasing out issues of mild cognitive impairment in T2DM.

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Combining Clinical Criteria and Next Generation Sequencing for the Identification of Monogenic Diabetes Among Multi-Ethnic Asians

Lim Su Chi, Ang Su Fen, Clara Tan SH, Jessie Fong CW, Winston Kon YC, Lian Xia, Sylvia Liu, Hoi Qiangze, Tavintharan Subramaniam, Sum Chee Fang

Diabetes Centre & Clinical Research Unit, Khoo Teck Puat Hospital, Singapore; Endocrine and Diabetes Clinic, Tan Tock Seng Hospital, Singapore

Background: Diabetes is increasing globally and Asia is the epi-centre. Among those with young-onset diabetes (<45 years), the prevalence of monogenic diabetes is estimated to be non-trivial (~5%). An accurate diagnosis of monogenic diabetes is important to inform treatment, prognosis and genetic counseling. Therefore, a robust clinical algorithm to identify probands for testing is needed.

Objectives: Our aims are (1) to select probands for genetic testing based on their clinical phenotype for variant identification and (2) to evaluate the MODY probability calculator (http://www.diabetesgenes.org/) in our multi-ethnic Asian population.

Materials and Methods: Eighty-four potential probands were identified in accordance with clinical practice guidelines and subjected to 16-candidate genes next-generation sequencing (NGS) and targeted testing for mitochondrial 3243A>G point-mutation. Variants, confirmed by bi-directional Sanger sequencing, were classified as pathogenic if they fulfilled the criteria adapted from American College of medical Genetics. Performance of MODY calculator (at positive predictive threshold of >62.4%) for those with diabetes-onset ≤35 years (data input-limit) (n=71) was also evaluated.

Results and Conclusion: Thirteen subjects (15.5%) harbored likely pathogenic/pathogenic variants: 6 (2 novel) in HNF1A (1 subject concomitantly had another HNF4A variant), 1 in HNF4A, 2 in mt3243A>G and 1 each in GCK, KCNJ11 (novel), ABCC8 (novel) and PAX4 (novel). Performance of the MODY calculator was: sensitivity 0.769, specificity 0.603 and negative predictive value 0.921. When analysis was restricted to MODY1-3, the performance was: 0.875, 0.587 and 0.974 respectively. The prevalence of MODY is non-trivial (~15%) among Asians with young-onset diabetes phenotypically suggestive of monogenic diabetes. On-line MODY calculator, derived from Caucasians, performs reasonably well in our multi-ethnic Asians population in nominating probands for genetic testing using NGS method.

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Pre-Ramadan Medical Review for Muslim Diabetics in Hospital Kuala Lumpur

Chee Keong See, Siti Mariam Ismail, Maisarah Taib, Norashikin Muhd Zali, Muhd Suffian Isa, Maryatul Mariam, Muhd Hadmizi Hadzir, Saidatul Ifzaidah Aripin, Syawatul Hida Muhamad

Endocrine Unit, Medical Department, Hospital Kuala Lumpur

Background: Fasting during Ramadan is one of the five pillars of Islam. Numerous studies have shown immense benefits of fasting but fasting among diabetics may have bad consequences such as hypoglycemia, dehydration, ketoacidosis and thrombosis. Despite the risk of complications, many Muslim diabetics still insist to fast. Similar trends are seen among Muslim diabetics treated in Hospital Kuala Lumpur.

Objectives: The aim of this study was to assess the risk categories of developing complications among Muslim diabetics in endocrine clinic in Hospital Kuala Lumpur during their pre-Ramadan medical review and to provide appropriate advice regarding fasting.

Methods: This study was conducted within 6 weeks prior to Ramadan 1436/2015. All Muslim diabetic patients presenting for endocrine clinic follow-up were assessed to determine their risk categories. Patient will then be advised appropriately for or against fasting by medical doctors/ diabetes educators. Further advice regarding modifications during Ramadan will also be offered. Patients will be reviewed again after Ramadan to assess for any complications during Ramadan.

Results: 103 patients were assessed with patient mean age of 55.5 (SD 13.2) years old. There were 49.5% (n=51) in the high risk category, 24.3% (n=25) very high risk category and 26.8% (n=27) low-moderate risk category. All of the low-moderate risk category patients were keen to fast. Only 13.2% (10 out of the 76 patients) high-very high risk group patients agreed to the advice against fasting. Despite this, all patients were receptive to the advices given regarding medication and lifestyle modification during Ramadan. Reporting of complications occurring during Ramadan among study patients was low.

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The Impact of Dipeptidyl-peptidase-4 Inhibitor on Hemoglobin Decline in the Elderly with Type 2 Diabetes Mellitus

Wang Te-Chun, Li Szu-yuan, Ou Shuo-Ming, Tarng Der-Cherng

Division of Nephrology, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan; Department and Institute of Physiology, National Yang-Ming University, Taipei, Taiwan; Department and Institute of Clinical Medicine, National Yang-Ming University, Taipei, Taiwan

Background: Previous basic study demonstrated that dipeptidyl-peptidase 4 (DPP-4) inhibitors induced anemia in the animal model. Among the elderly, anemia occurs with increasing frequency because of underlying comorbidities and concomitant medications. However, the association between DPP4 inhibitors and haemoglobin decline in the elderly with type 2 diabetes mellitus (T2DM) has never been explored.

Objectives: This study aimed to evaluate clinical outcomes after DPP4 inhibitor use in a hospital based sample of T2DM elderly patients.

Methods: Between September 2004 and February 2015, we conducted a hospital-based cohort study enrolled 140 T2DM elderly adults > 65 years old (male: female, 100:40; median age, 79.0 years; interquartile range, 73.0 to 84.8 years) who received DPP4 inhibitors. Change of haemoglobin level, nutrition status and inflammation markers were collected before and after DPP4 inhibitor intervention at 3 month and 6 month. Baseline glomerular filtration rate was estimated by the Chronic Kidney Disease Epidemiology Collaboration equation.

Results: During the study period, there were 31.4% episodes of Hb decline at month 3 and 40.7% at month 6. The baseline age ($p = 0.651$), geriatric nutritional risk index ($p = 0.619$) and C-reactive protein level ($p = 0.822$) were comparable between these 2 groups. Among the elderly patients treated with DPP4 inhibitors, those having a high baseline Hb > 10 exhibited a significantly higher rate of Hb decline at month 3 ($p = 0.026$) and month 6 ($p < 0.001$) compared to those having a low baseline Hb.

Conclusions: Our findings showed that DPP4 inhibitor use increase risk of haemoglobin decline in the elderly with T2DM, especially those with haemoglobin > 10. Further study may be needed to explore the underlying mechanisms.

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Uninvestigated Dyspepsia in Type 2 Diabetes Patients in Sultan Sulaiman General Hospital Indonesia

Yulizal Ok, Rudi Mahruzar

Department of Internal Medicine, Sultan Sulaiman General Hospital, Serdang Bedagai District, Province of North Sumatra, Indonesia

Background: Diabetes is a systemic disease that may affect Gastrointestinal (GI) tract, from the oral cavity and esophagus to the large bowel and anorectal region. GI complications of diabetes seem to be related to dysfunction of the neurons supplying the enteric nervous system (enteric neuropathy). Dyspepsia syndrome is one of the common complains. Many patients go undiagnosed and under-treated because it has not been traditionally associated with diabetes and its complications. Diagnostic evaluation of dyspepsia patients is crucial. Therefore, the terms "uninvestigated dyspepsia" and "investigated dyspepsia" were conceived. By direct definition, uninvestigated dyspepsia relates to patients with dyspepsia that have not been further investigated by endoscopy, while investigated dyspepsia refers to patients with known organic dyspepsia or functional dyspepsia.

Objectives: The aim of this study is to assess metabolic factors related to dyspepsia in type 2 diabetic patients with uninvestigated manner.

Materials and Methods: A descriptive analytical cross-sectional study to diabetic patients. We collect all patients data including history of diseases, medications, physical examinations and glycemic control were reviewed and evaluated. Validated dyspepsia questionnaire was given to diabetic patients. Data was analysed using descriptive analysis and then proceed with Mann-Whitney U test, Chi-square method with calculation of odds ratio (OR) and 95% confidence interval (CI).

Results: We found dyspepsia in 55 diabetic patients (63.2%) of a total 87 patients. Male 16 patients and female 39 patients. Mean age was 56.51 ± 8.69 years, mean duration of diabetes was 12.75 ± 4.19 years, mean HbA1C was 8.83 ± 2.25%. There was a significant difference in duration of diabetes (12, 75 ± 4.19 years vs 10.28 ± 3.25 years, P = 0.004) and HbA1C (8.83 ± 2.24 % vs 6.75 ± 1.58 %, P = 0.000) between dyspeptic and non dyspeptic patients. Dyspepsia was fewer significantly on those who were in well controlled than poor controlled diabetes patients (P = 0.000, OR = 0.061, 95% CI (0.018 – 0.210).

Conclusion: Duration of diabetes, HbA1C and diabetes control seems play an important role in the event of dyspepsia in diabetes patients.

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Comparison of Metabolic Profile Between Type 2 Diabetic Coronary Heart Disease Patients and Type 2 Diabetic Non Coronary Heart Disease Patients in Sultan Sulaiman General Hospital Indonesia

Yulizal Ok, Rudi Mahruzar

Department of Internal Medicine, Sultan Sulaiman General Hospital, Serdang Bedagai District, Province of North Sumatra, Indonesia

Introduction: Metabolic abnormalities including centrally distributed obesity, decreased high-density lipoprotein (HDL), elevated triglycerides (TG), elevated blood pressure and hyperglycemia accelerate the risk of atherosclerosis. Coronary heart disease (CHD) is due to atherosclerosis and will be accelerated if there are risk factors such as diabetes mellitus (DM), hypertension and dyslipidemia.

Objective: The aim of this study was to assess metabolic factors in type 2 diabetes patients, comparing diabetic patients with CHD and diabetic patients without CHD.

Materials and Methods: A descriptive analytical retrospective study to type 2 diabetes patients. We collect all patients data from medical records including history of diseases, physical examinations, laboratory and ECG results. Data was analysed using descriptive analysis and then proceed with Mann-Whitney U test, Student t test and Chi-square.

Results: This study included 44 CHD patients (36.4% male) and 48 non CHD patients (45, 8% male). CHD patients were older (53.70 ± 6.476 years vs 52.79 ± 6.398 years). There was a significant difference in Total cholesterol (235.66 ± 44.61 mg/dl vs 199.77 ± 37.84 mg/dl, P = 0.000), TG (140.36 ± 38.63 mg/dl vs 123.88 ± 52.71 mg/dl, P = 0.006), HDL cholesterol (42.23 ± 6.61 mg/dl vs 45.65 ± 7.25 mg/dl, P = 0.026) and hypertension (P = 0.001, OR 5.857, 95% CI (2.164 - 15.855) but no significant difference in duration of DM (10.16 ± 4.35 years vs 8.55 ± 4.37 years, P = 0.073), body mass index (BMI) (24.99 ± 2.49 kg/m² vs 24.81 ± 1.88 kg/m², P = 0.796), LDL cholesterol (139.52 ± 32.99 mg/dl vs 132.94 ± 26.23 mg/dl, P = 0.687) and HbA1C (10.08 ± 1.89 % vs 9.59 ± 2.10 %, P = 0.242) between diabetic CHD patients and diabetic non CHD patients.

Conclusion: In this study there was a significant difference in total cholesterol, TG and HDL cholesterol but no difference in duration of DM, BMI, LDL cholesterol and HbA1C between diabetic CHD patients and diabetic non CHD patients. Hypertension was more prevalent in diabetic CHD patients

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Cardiac Autonomic Denervation in Type 2 Diabetic Patients: A Comparison of Patients Treated with Insulin and Oral Hypoglycemic Agents

Yulizal Ok

Department of Internal Medicine, Sultan Sulaiman General Hospital, Serdang Bedagai District, Province of North Sumatra, Indonesia

Background: Cardiac autonomic denervation (CAD) is a common finding in diabetic patients as a result of long-term diabetes complication.

Objective: To assess cardiac autonomic denervation in type 2 diabetic patients comparing patients treated with insulin and oral hypoglycemic agents.

Materials and Methods: A retrospective case-control analysis in purposive samples of diabetic patients who were more than 5 years having this illness. Group I 36 patients who were treated with insulin and group II 38 patients with oral hypoglycemic agents. CAD tests in both groups were done in terms of presence of resting tachycardia, heart rate variation during deep breathing and QT interval lengthening (QT corrected) using ECG. Statistical methods used Student t test and Mann-Whitney U test, Chi-square method and Fisher exact test, with calculation of odds ratio (OR) and 95% confidence interval (CI).

Results: We found CAD in 50 subjects (67, 6%) of a total of 74 subjects. Mean age was 60, 84 ± 8, 18 years, mean duration of diabetes was 13, 60 ± 4, 81 years, mean HbA1C was 8, 36 ± 2, 42 %. There was a significant difference in duration of diabetes (P = 0, 001) and HbA1C (P = 0, 019) between CAD and non CAD. In 50 CAD subjects, 20 subjects (55%) belonged to the insulin group and 30 subjects (79%) to oral hypoglycemic agents group (P = 0.032, OR 3, 95% CI (1.08 – 8.3). CAD was fewer significantly in well controlled than poor controlled diabetes patients (P = 0.002, OR 5.25, 95% CI (1.75 – 15.77)

Conclusion: CAD was influenced by duration and diabetes control. In this study insulin seemed more useful in reducing the risk of CAD in type 2 diabetes patients compared to oral hypoglycemic agents.

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Triglyceride Serum Level is Inversely Correlated with eGFR in Patients with Type 2 Diabetes Mellitus

Fauzia Noor Liani, Agung Pranoto, Askandar Tjokroprawiro, Sony WIbisono, Ari Sutjahjo, Sri Murtiwi, Soebagijo Adi

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Chronic Kidney Disease (CKD) is accompanied by characteristic abnormalities of lipid metabolism, which appear as a consequence of renal insufficiency and reflected in an altered apolipoprotein as well as lipid profile. Experimental and clinical studies have suggested a correlation between the progression of renal disease and dyslipidemia. It has been well established that plasma TG levels are increased in patients with type 2 diabetes mellitus (T2DM). However, diabetic nephropathy including the microalbuminuric stage might be involved in the mechanisms for elevating plasma TG. The underlying pathophysiologic mechanisms for the relationship between TG and progression of renal disease are not yet fully understood.These abnormal plasma lipoproteins may contribute to the increased CHD risk in diabetic nephropathy.

Objective: To determine correlation between triglyceride and estimated Glomerular Filtration Rate (eGFR) in patients with T2DM

Methods: This was a cross sectional analytical study which enrolledpatients with T2DM who were on routine follow up in private diabetic clinic.Blood TG level was measured using, andeGFRwas calculated by using Cockroft-Gault equation. Statistical analysis was performed by using Pearson test.

Results: The samples included 159 patients with T2DM (79 males and 80 femas) with mean age (62 ± 11.59) years old. Mean of eGFR was 89 ± 47.94 mL/min/1, 73m². The laboratory result of TG was 187 ± 163.84 mg/dL. There was a significant inverse correlation between triglyceride and eGFR(r -0.179; p 0.025).

Conclusion: Blood TG level is inversely correlated with eGFR.

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Correlation Between Serum Fibrinogen Level and HbA1c in Patients with Type 2 Diabetes Mellitus

Fauzia Noor Liani, Agung Pranoto, Askandar Tjokroprawiro, Soebagijo Adi, Sony Wibisono, Ari Sutjahjo, Sri Murtiwi

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Patients with type 2 diabetes mellitus (T2DM) have 2 – 4 times higher risk for cardiovascular diseases than non-diabetic patients. However, this increased risk could not be fully explained by the traditional cardiovascular risk factors (hypertension, hypercholesterolemia, smoking and obesity) which are also associated with diabetes. Fibrinogen may have a role in such excess risks. Several studies show that fibrinogen is found to be higher in T2DM. Fibrinogen is the major coagulation protein in circulation, the precursor of fibrin and an important determinant of blood viscosity and platelet aggregation.

Objective: Aim of the study is to determine the correlation between serum fibrinogen level and HbA1c in patients with T2DM.

Methods: This cross sectional analytical study enrolled outpatients with T2DM in private diabetic clinic. Informed consent was obtained from all patients. Serum fibrinogen and HbA1c level was measured. Exclusion criteria were liver, kidney and cardiovasculer disease. Correlation between serum fibrinogen level and HbA1c was statistically analyzed by Pearson test.

Results: The study included 98 subjects (47 males and 51 females) with mean of age (61 ± 11.11) years old. Mean of serum fibrinogen level was 386.49 ± 130.50mg/dL and mean of HbA1c was 8.8 ± 2.4%. The result showed significant correlation between serum fibrinogen level and HbA1c (r 0.466, $p < 0.01$).

Conclusion: There was significant correlation between serum fibrinogen level and HbA1c in patients with T2DM.

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Lipoprotein(a) and Glycemic Control in Type 2 Diabetes Mellitus

Sri Murtiwi, Askandar Tjokroprawiro, Soebagijo Adi, Sony Wibisono, Agung Pranoto, Ari Sutjahjo

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Diabetic patients are reported to have higher lipoprotein(a) values than non-diabetic persons and levels are still more significantly elevated in patients with diabetic complications. Lipoprotein(a) [Lp(a)] levels are elevated in poorly controlled diabetic patients. Lipoprotein(a) is regarded as an independent indicator of risk development of vascular disease which is also a diabetic complication. Changes in lipid profile are also well related with severity of type 2 diabetes mellitus (T2DM) as adjudged by glycated Hb (HbA1c).

Objective: The aim of this study was to evaluate whether there is any difference in Lp(a) levels between good glycemic control and poor glycemic control in T2DM.

Methods: The study was a cross sectional analytical study which has enrolled diabetes patients who were on routine follow up in private outpatients diabetes clinic. The study included patient age > 40 years old. Exclusion criteria for the study were: liver, kidney, and heart diseases. HbA1c and Lp(a) was measured. Good glycemic control was defined as HbA1c < 7%, and poor glycemic control if HbA1c ≥ 7%. Statistical analysis was performed using Independent t test.

Results: This study include 171 subjects, 108 males (62.8%) and 63 (36.6%) females, mean of age was 63.14 ± 10.82 years. There were 134 (78.3%) patients in poor glycemic control group, and 37 (21.6%) patients in good glycemic control group. The mean of HbA1c was 8.76 ± 2.18 %. The mean levels of Lp(a) were higher in poor glycemic control 22.63 ± 18.06 mg/dL compared to subjects with good glycemic control 20.16 ± 19.37 mg/dL. Statistical analysis showed there was no significant difference in Lp(a) level between good and poor glycemic control in T2DM (p 0.470).

Conclusion: There was no significant difference in Lp(a) level between good and poor glycemic control in T2DM.

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Correlation Between Uric Acid Level With Metabolic Syndrome Components in Patients with Type 2 Diabetes Mellitus

Dana Pramudya, Askandar Tjokroprawiro, Sri Murtiwi, Soebagijo Adi, Sony Wibisono, Agung Pranoto, Ari Sutjahjo

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: It has been suggested that hyperuricemia is associated with metabolic syndrome (MetS). An elevated uric acid is common in subjects with insulin resistance and obesity, and is in effect part of the MetS complex. There is increasing evidence that uric acid could have a contributory causal role. Clearly more studies are needed to better understand the role of uric acid in metabolic syndrome. Another compelling evidence suggests that hyperuricemia predicts the development of obesity and type II diabetes mellitus (T2DM). A prospective study from the Framingham Heart Study original (n = 4883) and offspring (n = 4992) cohorts showed that individuals with higher serum uric acid, including younger adults, had higher future risk of type 2 diabetes mellitus (T2DM).

Objective: The aim of this study is to determine correlation between uric acid level and MetS in patients with T2DM.

Methods: This was a cross sectional analytical study which has enrolled male patients with T2DM who were on routine follow up in private diabetic clinic. We measured uric acid level and assesed metabolic syndrome according to AHA/NHLBI criteria. The presense of metabolic syndrome was defined of having: (1) Serum triglyceride(TG) levels ≥150 mg/dl or on drug treatment for elevated triglycerides; (2) serum HDL-C levels <40 mg/dl (3) systolic blood pressure ≥130 mmHg (4) fasting blood glucose ≥100 mg/dl or on drug treatment for elevated glucose. Statistical analysis was performed using Spearman correlation test.

Results: The samples included 86 male patients with T2DM with mean age (52 ± 11.35) years. The result of uric acid 7.25 ± 5.35 mg/dL, TG was 226 ± 123.56 mg/dL, HDL-C was 55 ± 31.79 mg/dL, systolic blood pressure was 144 ± 42.27 mmHg, fasting blood glucose was 152 ± 71.08 mg/dl. There was a significant correlation between uric acid level and MetS components. ($p < 0.05$)

Conclusion: There was a significant correlation between uric acid level and MetS components

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Testosterone is Inversely Correlated With HbA1c in Patients with T2DM

Dana Pramudya, Askandar Tjokroprawiro, Sri Murtiwi, Soebagijo Adi, Sony Wibisono, Agung Pranoto, Ari Sutjahjo

Surabaya Diabetes and Nutrition Center - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya, Indonesia

Background: Several studies have suggested that men with low testosterone are at a greater risk of developing Type 2 Diabetes Mellitus (T2DM), and that low testosterone also may even predict the glycemic control in T2DM. Low testosterone level is also presumed as a risk factor for cardiovascular diseases, accounting for the significantly higher prevalence of coronary heart disease (CHD) especially in patients with T2DM. Insulin resistance might impair testosterone secretion by the Leydig cell, maybe directly since there are insulin receptors on the Leydig cell and this might be the cause of low testosterone in patients with T2DM.

Objective: The aim of this study is to determine correlation between testosterone and glycosilated hemoglobin (HbA1c) in patients with T2DM

Methods: This was a cross sectional analytical study which has enrolled males with T2DM who were on routine visited in diabetic clinic. Informed consent was obtained from all patients. We measured serum testosterone and HbA1c level. Correlation between testosterone and HbA1c was statistically analyzed by Pearson test.

Results: The samples included 76 T2DM male patients with mean age (52 ± 9.24) years old. Mean of testosterone serum was 496.65 ± 184.34 ng/dL. The laboratory result of HbA1c was 7.8 ± 1.4%. There was a significant inverse correlation between testosterone serum and HbA1c (r -0.501; $p < 0.01$).

Conclusion: There was significant inverse correlation between testosterone serum and HbA1c in patients with T2DM.

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The Effect of Nano-Cinnamon Extracts on Streptozotocin Induced Diabetic Rats

Mai A Elobeid, Elham Ahmed

Department of Zoology, Faculty of Science, King Saud University, Women's Students-Medical Studies & Sciences Section, Riyadh 11451, Saudi Arabia; Department of Biomedical Sciences-Biology Unit, University of Science and Technology, Khartoum, Sudan

Background: Diabetes mellitus, a lifelong progressive disease is a chronic metabolic disorder due to the relative deficiency of insulin secretion.

Objective: The present study assessed the antidiabetic effect of orally administered aqueous extracts of cinnamon (JF) powder and cinnamon extracts treated with silver/gold nano particles (SG JF) in streptozotocin induced diabetic rats.

Materials and Methods: The experimental groups (36 rats) were equally divided: A control diabetic group treated with metformin (standard drug), diabetic group treated with aqueous cinnamon, and diabetic group treated with silver/gold nanoparticles. Nano silver/gold cinnamon particles synthesis were characterized, body weights and blood glucose levels were estimated. Nanoparticles characterization employed zetasizer, scanning electron microscopy, and transmission electron microscopy. Nano silver/gold cinnamon (SG JF) particles characterization, body weights and blood glucose levels were estimated.

Results and Conclusion: The size and shape of the SG JF were 45.34 nm, stable, homogenous and showed mono dispersity distribution. The morphology of SG JF was highly variable with a variety of shapes being rod, spherical and irregular, spherical and follow certain arrange like pyramid, triangular, and diamond shaped. Body weights of the diabetic rats treated with cinnamon vs nano cinnamon showed no significant change for all the groups. SG JF administration showed significant decrease in glucose levels ($p \leq 0.05$) among diabetic rats in comparison with the rats treated with metformin. Rats' glucose levels administered metformin or control JF showed no significant change. The results suggest that the nano cinnamon possess a potent antihyperglycemic, which may be due to the presence of antioxidants such as carbazole alkaloids and polyphenols. The overall results suggested that nano-silver/gold cinnamon had a greater potential than that of cinnamon by itself, indicating its possible use in the future drug design and management of hyperglycemia.

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rs662799 and rs2266788 APOA5 Genes Polymorphism Among Subjects with Hypertriglyceridemia

Fabiola Ms Adam, Makbul Aman, Syakib Bakri, John Mf Adam, Rajkumar Dorajoo, E Shyong Tai

Division of Endocrinology and Metabolism, Departement of Internal Medicine Faculty of Medicine Hasanuddin University Makassar, Indonesia

Background: The role of triglycerides in the pathogenesis of atherosclerosis remain controversial. Epidemiological studies showed that an increased triglyceride concentrations are related to increased of cardiovascular disease. Apolipoprotein A5 (APOA5), a novel lipoprotein play an important role as a significant modulator of serum triglyceride concentrations. Several studies in human proved that genetic variants of APOA5 locus showed strong correlation with serum triglyceride concentrations and emerging evidence for associations with cardiovascular disease.

Methods: This study was a part of LIFECARE study in Makassar. Hypertriglyceridemia was defined as triglyceride serum levels > 200 mg/dL. We did genotyping for 2 SNP gene APOA5 which are rs662799 and rs2266788. Chi square test statistical analysis was used for the correlation of genotypes and triglycerides.

Results: In this study we analyzed 188 subjects, 86 subjects (45, 7%) had triglycerides > 200 mg/dL and 102 (54, 3%) had triglycerides < 200 mg/dL. Genotype GG and AG polymorphism rs662799 had risk of hypertriglyceridemia with OR 9 (95%CI 2.38-34.09) and OR 3.5 (95%CI 1.85-6.63) subsequently. Genotype GG and genotype AG polymorphism rs2266788 gen APOA5, both had risk to have hyipertrigliseridemia with OR of 6, 9 (95%CI 1, 37-34, 88) and 3, 2 (95%CI 1, 72-6, 09).

C**onclusions:** Alel G rs662799 and rs2266788 gen APOA5 are risk to have elevated hypertriglyceridemia.

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Factors Associated with Post-Discharge Follow-Up Among Hospitalized Patients with Diabetic Foot Ulcer: A Retrospective Cohort Study

Diane Carla Bernardo, Annabelle Marie Lat, Cherrie Mae Sison-Peña

Department of Medicine, University of the Philippines-Philippine General Hospital

Background: Proper management of diabetic foot patients requires continuous care from inpatient to outpatient. Failure to attend outpatient consults has been linked to higher risk for complications and hospital re-admissions. Currently, there are no local objective reports of actual follow-up rates nor are there investigations on factors associated with follow-up among this population.

Objectives: To identify clinical and demographic factors associated with post-discharge follow-up among patients admitted for diabetic foot and discharged to the outpatient clinics and to document the follow-up rate of this population.

Methods: This is a review of charts of adult patients admitted for diabetic foot ulcers in the Medicine Wards of the Philippine General Hospital from December 2011 to December 2013 and subsequently discharged to the outpatient clinics. Patients were identified from the Diabetes Extremity Care Team registry and the Department of Medicine electronic medical records (MEDISYS) database. Outpatient follow-up was confirmed using printed attendance logs and electronic scheduling system. Clinical and demographic characteristics of the cohort were presented using descriptive statistics. Univariate and multiple logistic regression were employed to derive associations between variables and follow-up.

Results: The post-discharge follow-up rate of patients with diabetic foot ulcers in this cohort is 22%. Non-drinkers of alcohol were twice more likely to show up for follow-up after discharge compared to past or current drinkers (OR 1.98; C.I. 1.01 – 3.88; p = .047). This remained significant after adjusting for sex (OR 3.09; C.I. 1.39-6.87; p=0.006). There was a trend for clinic attendance among obese patients (OR 2.46; C.I. 0.97-6.25; p=0.058) but a high percentage of missing values precluded further investigation on this potential association.

Conclusion and Recommendations: The 30-day post-discharge follow-up rate of previously hospitalized diabetic foot patients remains low and needs to be improved. Non-drinking status is associated with post-discharge follow-up and may be a marker for good treatment-seeking behavior in this population. Associations between follow-up and obesity, patient attitudes, perceptions about care and other subjective factors must be investigated in future research.

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Use of Oral Anti-Diabetic Agents in Pregnancy

Dr Tarafdar Runa Laila, Dr Sheikh Salahuddin Ahmed

Faculty of Medicine, University Kuala Lumpur, Royal College of Medicine Perak, Ipoh, Perak

Insulin is the standard medication for treatment of hyperglycaemia in pregnancy due to its unparalleled efficacy and safety. But it can be inconvenient for some women due to daily injection, skillful handling and associated cost which may lead to poor patient compliance. This has led to the exploration of oral anti-diabetic agents an alternative to insulin therapy. The objective of this presentation is to investigate the recent evidences regarding the efficacy, safety and current recommendations of oral anti-diabetic agents in pregnancy. Various studies have suggested that certain oral anti-diabetic agents (metformin and glibenclamide) may be safe and acceptable alternatives in pregnancy with mild to moderate hyperglycaemia. There are no serious safety concerns with metformin though it crosses the placenta. The glycaemic control is equivalent to insulin; but in one study metformin failure is reported in upto 46.3% patients. However these patients had BMI >30 kg/m² and had high fasting plasma glucose levels. There is equivalent neonatal outcomes for metformin compared with insulin. Metformin is associated with reduced neonatal hypoglycaemia, maternal hypoglycaemia, and weight gain with improved treatment satisfaction. Glibenclamide is more effective in lowering blood glucose in gestational diabetes and has a lower treatment failure rate than metformin. There is less incidence of maternal hypoglycaemia than insulin. However some studies have reported higher rate of preeclampsia, neonatal jaundice and macrosomia. UK National Institute for Health and Care Excellence has recommended that the safety record of glibenclamide and metformin is sufficient for well-designed randomized controlled trials to be conducted on its use in early pregnancy. With the exception of glibenclamide and metformin, there are insufficient data to recommend treatment with any other currently available oral anti-diabetic agents during pregnancy. Therefore metformin and glibenclamide may be used in mild to moderate hyperglycaemia especially in developing countries where resources and availability of the insulin is of concern. However, the woman should be fully informed regarding lack of long-term safety data of use of oral anti-diabetic agents in pregnancy. We need more randomized controlled trials of these drugs to provide more information on the long-term follow up on neonatal function and cognitive development.

P80

The Study of Once- and Twice-daily Biphasic Insulin Aspart 30 (BIAsp 30) with Sitagliptin, and Twice-daily BIAsp 30 without Sitagliptin, in Patients with Type 2 Diabetes Uncontrolled on Sitagliptin and Metformin – The Sit2Mix Trial

Radhakrishna Sothiratnam, Sultan Linjawi, Ramazan Sari, Henning Andersen, Line Conradsen Hiort, Paturi Rao

Columbia Asia Hospital, Seremban, Malaysia; Coffs Endocrine and Diabetes Services, Coffs Harbour, New South Wales, Australia; Akdeniz University, School of Medicine, Department of Internal Medicine, Division of Endocrinology and Metabolism, Antalya, Turkey; Novo Nordisk A/S, Søborg, Denmark; Novo Nordisk A/S, Søborg, Denmark; Nizam's Institute of Medical Sciences, Hyderabad, India

Aims: Investigate efficacy and tolerability of intensifying diabetes treatment with once-or twice-daily biphasic insulin aspart 30 (BIAsp 30) added to sitagliptin, and twice-dailyBIAsp 30 without sitagliptin in patients with type 2 diabetes (T2D) inadequately controlled on sitagliptin.

Methods: Open-label, three-arm, 24-week trial; 582 insulin-naïve patients were randomized to twice-daily BIAsp 30 + sitagliptin (BIAsp BID + Sit), once-daily BIAsp 30 + sitagliptin (BIAspQD + Sit) or twice-daily BIAsp 30 without sitagliptin (BIAsp BID), all with metformin.

Results: After 24 weeks, HbA1creduction (%) was superior with BIAsp BID + Sit vs. BIAspQD + Sit (BIAsp BID + Sit minus BIAsp QD + Sit difference: −0.36 [95% CI –0.54; –0.17], $P < 0.001$) and BIAsp BID (BIAsp BID minus BIAsp BID + Sit difference: 0.24 [0.06; 0.43], $P = 0.01$). Observed final HbA1cvalues were 6.9%, 7.2% and 7.1% (baseline 8.4%), and 59.8%, 46.5% and 49.7%of patients achieved HbA1c<7.0%, respectively. Confirmed hypoglycaemia was lower withBIAsp QD + Sit vs. BIAsp BID ($P = 0.015$); rate: 1.17 (BIAsp QD + Sit), 1.50 (BIAsp BID + Sit) and2.24 (BIAsp BID) episodes/patient-year. Difference in bodyweight change favoured BIAspQD + Sit vs. both BID groups ($P < 0.001$).

P81

Effects of Subchronic Inhalation of Insecticide Transfluthrin to Risk of Obesity

Laksmi Sasiarini, Djoko Wahono Soeatmadji

Endocrine Metabolic and Diabetes Division of Internal Medicine; Faculty of Medicine Brawijaya University-Saiful Anwar Hospital, Malang, East Java, Indonesia

Background: Transfluthrin, a lipophilic pyrethroid class of insecticides, is widely used as insecticide. Chronic use of transfluthrin is suspected or known to be endocrine disrupters. Obesity, one of the risk factors of some metabolic abnormalities, is increasing dramatically not only in adult but also in childhood. Nowadays, scientific research implies if any environmental substances impacts to the high prevalence of obesity.

Objective: To determine the effect of subchronic inhalation of insecticide transfluthrin exposure in TNF-α level and change of body weight in rats.

Material and Methods: True experimental in vivo study in 35 male Rattus novergicus strain Wistar, divided into 5 groups. Negative control (no treatment), positive control (exposed by n-hexana as solvent of transfluthrin), and group 1, 2, and 3 (exposed by transfluthrin of 0.5 mg, 1 mg, and 2 mg). After 56 days of transfluthrin inhalation exposure, the rats was terminated and serum TNF-α was examined using ELISA kit. The body weight was also measured among groups.

Results: TNF-α level increased in both control and transfluthrin groups. The highest level of TNF- α was found in rats exposed to highest dose of transfluthrin. The body weight tends to increase during the study but there is no difference among groups. There were no correlation between TNF-α level and change of body weight.

Conclusions: Subchronic inhalation of transfluthrin increase serum TNF-α level. It is considered that TNF-α level may be an early marker of weight gain.

P82

Urinary C-Peptide Creatinine Ratio (UCPCR) and Responsiveness of Third Oral Anti-Diabetic Agent in Poorly Controlled Type 2 Diabetic Patients with Two Drugs

Kyaw Thu Yaa, Chit Soe, Myo Lwin Nyein, Thein May Saw, Theingyi Kyaw, Aye Thida

North Okkalapa General Hospital (Teaching Hospital) University of Medicine 2, Yangon

In Type 2 DM, responsiveness to oral Anti-Diabetic Agent (ADA) should be based on β-cell function for which UCPCR is a useful test. This analytical study was aimed to explore the association between UCPCR and responsiveness to 3rd oral ADA in poorly controlled diabetic with two oral ADAs. Among 131 patients, 72 had responsiveness (HbA1c < 7%) to 3rd oral ADA and 59 did not have (HbA1c ≥ 7%). UCPCR had significant differences between response and non response group (mean ± SD was 2.32 ± 3.45 Vs 1.03 ± 1.95 nmol/mmol) (p = <0.05). So this study suggested UCPCR is helpful in determining responsiveness to 3rd oral ADA.

P83

The Main Sources of Anxiety and Dissatisfaction of Gestational Diabetes Mellitus Patients Determined by Content Analysis of Their Blogs

Ralph Jason S. Li, Angeline Odelia C. Concepcion, Iris Thiele Isip-Tan

Philippine General Hospital, Department of Medicine, Section of Endocrinology, Diabetes and Metabolism

Background: Studies by Daniells et al1, Hui et al2, and Lapolla et al3 show that patients with gestational diabetes mellitus(GDM) have increased anxiety from various sources. However, Pilnick et al showed that authority of the medical staff might keep the patient hesitant to give information during consult4. Thus, content analysis of blogs posted by GDM patients is helpful in elucidating the anxieties and dissatisfactions that these patients are hesitant to divulge to their physicians.

Objective: This study aims to determine the sources of anxiety/dissatisfaction of GDM patients by content analysis of their blogs shared within tweets with #Gestationaldiabetes from March 21, 2006 to July 31, 2015.

Materials and Methods: This study was done in 3 phases. The first is an online search of blogs of GDM patients within tweets followed by characterization of the bloggers and the blogs. The last phase is content analysis of blogs which consists of evaluating each sentence for anxiety/dissatisfaction and categorizing the source of anxiety/dissatisfaction into a developed classification system: disease notification, outpatient consult, hospitalization, diagnostics, treatment, clinic facilities/equipments, relationship with medical staff, symptoms/side effects, lifestyle, financial burdens, relationship with family members, disease perception, anxiety/dissatisfaction not otherwise specified.

Results: Fifty-six blogs were included. Most of the bloggers were from the USA(70%), were in the 3rd trimester when blog was written(32%), and were on diet only treatment(59%). The average number of sentences per blog is 50. Most blogs expressed negative sentiment(54%). From the 2, 787 sentences of the 56 blogs, 422(15%) expressed anxiety/dissatisfaction. The most common source of anxiety/dissatisfaction is symptoms/side effects(18.96%), followed by treatment(18.25%). Sub-analysis of the sources of anxiety/dissatisfaction by region showed that the most common are treatment(20.07%), symptoms/side effects(18.89%), and treatment(28.57%) in North America, Europe, and Australia/Asia, respectively. Sub-analysis by type of treatment showed that the most common sources are disease notification(16.30%), anxiety/dissatisfaction not otherwise specified(27.37%), and treatment(34.21%) for those on diet alone, on diet+oral hypoglycemic agent, and on diet+insulin, respectively.

Conclusion: This study provides insight into the different sources of anxiety and dissatisfaction in GDM patients through blogs. Regional and treatment type differences in the main sources of anxiety/dissatisfaction occur in GDM patients.

P84

A Case Control Study of Lower Extremity Amputation (LEA) Risk Factors Following Diabetic Foot Ulcer (DFU) Admission at Dr. Kariadi General Hospital: The Contribution of HbA1c and Peripheral Arterial Disease (PAD)

Ridho Naibaho, Tjokorda Gde Dalem Pemayun

Department of Endocrinology, Metabolism and Diabetes, Department of Medicine, Medical Faculty of Diponegoro University / Dr. Kariadi General Hospital, Semarang, Indonesia

Introduction: The development of diabetic foot disease, ulceration and progression to amputation is a multifactorial entity. Previous study has reported that high HbA1c and the presence of PAD are important risk factors. The aim of this study was to establish the contribution of HbA1c and PAD in both minor and major LEA.

Methods: A retrospective review of non-random sample of 84 DFU patients with amputation (cases) and 84 randomly selected DFU patients without amputation (controls) were collected from Dr. Kariadi General Hospital database. The patients were treated accordingly to ulcer severity based on the Wagner's grade and PEDIS classification system. Cases were then separated into a minor and a major LEA group. The effect of hyperglycemia and presence of PAD were analyzed. Stepwise logistic regression were used for statistical analysis.

Results: Total 168 patients with DFU were analyzed. The HbA1c ranged between 5.9% and 18.1%. PAD are present in 44.6% of all patients. In our study, HbA1c were not related to ulcer severity according to Wagner's grade ($r = 0.177$; $p=0.034$) and infection events ($r = 0.205$; $p=0.014$). However, there is a stepwise increased risk for LEA in each 2% increment of HbA1c value above 8%. In patients with high HbA1c, higher risk occurs if they have PAD (OR 13.9, 95% CI 4.4-43.9; $p<0.001$) compared to non-PAD (OR 4.0, 95% CI 0.8-19.5; $p=0.08$). If minor LEA group were analyzed, HbA1c level (OR 5.3, 95% CI 1.6-17.3; $p=0.006$) and PAD (OR 4.1, 95% CI 1.5-11.2; $p=0.004$) shows an contribution. In major LEA, the presence of PAD exhibit an absolute determinant of this outcomes (OR 50.4, 95% CI 7.7-328.4; $p<0.001$) along with high HbA1c (OR 17.2, 95% CI 2.5-117.4; $p=0.004$). Collectively, high HbA1c and PAD are accounted for 75% (AUC 95% CI 67.7-82.4; $p<0.001$) of the risk for all LEA.

Discussion: The outcome of DFU are differs in the presence of two major risk factors i.e. high HbA1c and PAD. DFU patients with uncontrolled hyperglycemia in the presence of PAD should be considered as a distinct disease states.

P85

Effect of Gut Microbiota Modification on Insulin Resistance: A Systematic Review

Trivanie Sherly Elona, Dita Aulia Rachmi, Fabianto Santoso, Dicky Levenus Tahapary

Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo Hospital

Studies about the role of gut microbiota on insulin resistance are recently increased. Our study is a systematic review analyzing the effect of gut microbiota modification on insulin resistance. Literature search for published studies during the period of January 2011 to January 2015 was done at PubMed and Cochrane Library. Titles, abstracts, and keywords were screened by three independent reviewers. Evidence level of those studies was assessed. We included only clinical trial studies and full-text articles. Animal studise were excluded. Appraisal of those articles was based on critical appraisal for therapy article. Eleven studies were identified on screening, in which seven of them were relevant by the selection criteria. After appraisal, five studies were furthermore assessed. Two studies were conducted by consuming probiotics, and the others were done by fecal transplantation, transglucosidase and diet intervention. The modification of gut microbiota might improve insulin sensitivity directly or indirectly. Until now, only few clinical studies have been conducted to assess this relationship. Our study concluded that altering gut microbiota might have positive impact in increasing insulin sensitivity. Nevertheless, further studies are needed to strengthen this finding and to determine the optimal way to modify the gut microbiota.

P86

DiabCare 2012: A Cross-sectional Study of Hospital Based Diabetes Care Delivery and Prevention of Diabetes Complications in Malaysia

Mafauzy Mohamed, Zanariah Hussein, Siew Pheng Chan, Nor Azmi Kamaruddin, Avideh Nazeri

Universiti Sains Malaysia, Kota Bharu, Malaysia; Hospital Putrajaya, Putrajaya, Wilayah Persekutuan Putrajaya, Malaysia; University of Malaya Medical Centre, Kuala Lumpur, Malaysia; Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia; Novo Nordisk Pharma Operations (BASEA) Sdn. Bhd., Kuala Lumpur, Malaysia

Background: DiabCare is a series of cross-sectional observational studies, which have been used to evaluate diabetes management, and psychosocial aspects of living with type 2 diabetes. In Malaysia, the results of successive DiabCare audits have facilitated diabetes healthcare policy decision-making.

Objectives: The aim of the DiabCare 2012 study was to re-evaluate the relationship between diabetes care delivery and prevention of complications, following implementation of the 2009 Malaysian National Diabetes Care Guidelines, and a national insulin educational programme.

Materials and Methods: DiabCare is an observational, non-interventional, cross-sectional study of hospital based outpatient diabetes care.

Results: A total of N=1668 patients participated in the study: mean age 57.8 ± 11.0 years, and duration of diabetes 13.0 ± 8.6 years. Mean weight was 74.3 ± 16.6 kg (BMI 29.1 ± 5.8 kg/m²). The majority of patients were female (53.6%) and the largest ethnic group was Malay (51.3%), followed by Indian (21.9%) and Chinese (20.1%). The percentage of patients with HbA1c < 6.5% (< 42 mmol/mol) and < 7.0% (< 53 mmol/mol) was 12.2% and 23.8%, respectively (mean HbA1c 8.52 ± 2.01% [70 ± 22 mmol/mol]). The proportion of patients using insulin was 65% at a total daily dose of 60 ± 37 IU. One or more episodes of hypoglycaemia were reported by 39% (n=658) of patients within the previous 3 months. The risk of any hypoglycaemia was associated with the use of insulin (odds ratio [OR 3.26, 95% CI 2.59–4.09]), and total daily insulin dose (OR 1.04, 95% CI 1.01–1.07 per 10 IU increase). Compared to the previous DiabCare 2008 cohort, patients had a larger BMI ($p < 0.001$) and waist circumference ($p < 0.001$), longer duration of diabetes ($p < 0.001$), and were more likely to have had a positive family history ($p < 0.001$). Mean HbA1c had not changed significantly between 2008 and 2012 ($p=0.07$).

Conclusion: Despite evidence of improved diabetes treatment and risk assessment processes in recent years, glycaemic control remains unsatisfactory.

P87

Recent Issues in the Early Diagnosis and Management of Diabetic Kidney Disease

Sheikh Salahuddin Ahmed

University Kuala Lumpur, Royal College of Medicine, Perak, Malaysia

Diabetes mellitus is the leading cause of end stage renal failure (ESRF) that needs renal replacement therapy (RRT) to sustain life. RRT includes dialysis or kidney transplantation. There is strong evidence that a number of interventions if initiated at an early stage of diabetic kidney disease (DKD) prevent or slow the progression to ESRF. The objective of this presentation is to outline recommendations from various recent guidelines on the aspect of early diagnosis and management of DKD. The term DKD has been used to describe chronic kidney disease CKD resulting from diabetes. In 2002 National Kidney Foundation (NKF) defined CKD as either kidney damage or glomerular filtration rate (GFR) <60 mL/min/1.73 m² persisting for 3 months or more irrespective of the etiology. Persistent albuminuria (>300 mg in 24 hour urine) was considered as one of the important marker of kidney damage in that guideline. In 2012, the Kidney Disease: Improving Global Outcomes (KDIGO) has classified CKD based on GFR and albuminuria category. The threshold for urinary albumin excretion rate of >30 mg/24 hours (microalbuminuria) was chosen to indicate CKD. Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation has been recommended for reporting eGFR because it was found to be more accurate than other equations. Recent international guidelines have recommended patient centered approach in considering glycemic targets. A reasonable HbA1c goal for adults is <7%. More stringent HbA1c goals (such as <6.5%) has been recommended for selected patients if achieved without significant hypoglycemia. Less stringent HbA1c goals (such as <8%) may be appropriate for other group of patients (with a history of severe hypoglycemia or limited life expectancy). Joint National Committee (JNC) 8 in 2014 has fixed new targets in BP control that recommends, for individuals with diabetes, a threshold of <140/90 mmHg. This target is currently being reconsidered by a number of organizations worldwide. The role of dietary protein restriction in slowing progression of CKD is more controversial. Recent guidelines do not suggest protein restriction less than recommended daily allowance. Other interventions remain unchanged which include: (i) annual screening (ii) use of ACEI/ARBs in albuminuria regardless BP level (iii) control of dyslipidemia (iv) cessation of smoking (v) exercise and reduction of body weight (vi) avoidance of nephrotoxic agents and (vii) timely nephrology referral.

P88

Content Analysis of Tweets of Pregnant Women with Diabetes

Iris Thiele Isip Tan, Helen Madamba, Rene James Balandra

University of the Philippines College of Medicine; Cebu Doctors University College of Medicine; University of the Philippines National Telehealth Center

Background: Tweets of pregnant women with diabetes may provide clues as to their information needs and health behavior.

Objectives: 1. Define information needs of pregnant women with diabetes using tweets. 2. Describe how information on diabetes in pregnancy is shared on Twitter.

Methods: Different search strategies were used to generate tweet transcript reports from Symplur Signals from 1 Jan 2010 to 1 Jan 2015. Tweets by women with diabetes were identified. Duplicate tweets were excluded. Tweets were coded using Dann's Twitter content classification. Two investigators independently mapped each "Status" tweet to a construct of the Health Belief Model. Differences were resolved by consensus. Tweets by women with pre-existing diabetes and GD were analyzed separately. Tweets classified as "Pass along" contain links to websites and blogs. Unique domains of these links were surveyed for the Health on the Net (HON) Foundation seal, which ensures quality, objectivity and transparency of medical information online.

Results: Tweets of women with GD expressed shock and anger on diagnosis (perceived susceptibility). Perceived severity was conveyed by tweets about cravings and the connection of high carbohydrate meals with big babies. Perceived barriers included food restriction, hunger, lab tests, clinic consults and blood glucose monitoring. Perceived benefits of blood glucose testing and following a healthy diet were linked to healthy babies. Blood glucose monitoring, weight gain and age of gestation were cues to action. Others proclaimed confidence in managing their condition (self efficacy), and shared their success on Twitter. Perceived barriers of women with pre-existing diabetes were feelings of helplessness, loss of control and anger rather than about food. Self efficacy was evident in tweets declaring ability to adjust insulin as needed. The data set contained 239 links from 93 unique domains. Only 9 domains (9.7%) had the HON Code seal. Women with preexisting diabetes shared their own blog posts (67%) compared to women with GD who shared links from organizations or news sites.

Conclusion: Content analysis of tweets showed that women with GD and preexisting diabetes had differing perceptions of susceptibility, severity, barriers, benefits, cues to action and self efficacy; and shared links to information differently.

P89

Can Increased Visceral Adiposity Without Body Weight Changes Accelerate Carotid Atherosclerosis in Type 2 Diabetic Patients?

Kim Chul Sik, Araneta Rosario, Lee Eun Jig, Elizabeth Barrett-Connor, Huh Kab Bum

Department of Internal Medicine, Hallym University Sacred Heart Hospital, Anyang, Korea; Department of Family and Preventive Medicine, University of California San Diego, CA.; Department of Internal Medicine, Yonsei University College of Medicine, Seoul, Korea; Department of Family and Preventive Medicine, University of California at San Diego, San Diego, CA.; Huh's Diabetes Center and the 21st Century Diabetes and Vascular Research Institute, Seoul, Korea

Objective: Type 2 diabetes mellitus (T2DM) and visceral obesity are intimately associated with each other and with cardiovascular diseases. Our aim was to determine whether increased visceral adiposity without weight gain accelerates carotid atherosclerosis over 2 year in subjects with T2DM.

Methods: We enrolled 280 subjects with T2DM who had body weight, visceral fat thickness (VFT), and carotid intima-media thickness (IMT) measurements at intervals of 2 years. According to VFT change, quartiles of clinical characteristics and changes of carotid IMT were determined after stratifying by sex. Logistic regression models predicted the odds of the progression of carotid IMTs in each quartile.

Results: VFTs were reduced by 5.2 ± 13.5 mm in men ($P<0.001$) and 3.4 ± 10.5 mm in women ($P<0.001$), and progression of IMTs were not significant except women's maximal IMT (0.031 ± 0.145 mm, $P=0.012$) after 2 years. Moreover, significant improvements on HbA1c were found (0.9%; $P<0.001$ in both men and women) over 2 years. There were no significant differences in clinical characteristics, progression of mean and maximal carotid IMT in men or women according to 2-year quartiles of VFT change.

Conclusion: Our results do not suggest that increased visceral adiposity without body weight changes impact the progression of carotid IMT in T2DM patients in South Korea.

P90

Comparison Between 4 Diabetes Risk Score for Type 2 Diabetes Mellitus Screening in Indonesian Population

Steven Alviano Yuwono, Shannen Karsten, Indra Wijaya, Veli Sungono

Faculty of Medicine, Universitas Pelita Harapan

Introduction: Type 2 diabetes mellitus (T2DM) remains a major health problem with a high level of morbidity and mortality. More than 46% of the population left undiagnosed. It is important to identify people who are at risk of developing type 2 diabetes mellitus. Several scoring systems to detect undiagnosed diabetic patients have been developed in some other countries. In Indonesia, there is no T2DM risk score ever created that is specific for Indonesian population.

Objective: We designed a study to compare the reliability between American Diabetes Association Risk Score (ADA), Canadian Risk Score (CANRISK), Finnish Diabetes Association Risk Score (FDA), and Indian Diabetes Risk Score (INDIAN) to Indonesian population.

Methods and Samples: We performed a cross-sectional study with eighty samples, upon which forty samples were diagnosed with diabetes mellitus and forty samples were non-diabetes mellitus. It was conducted at Siloam Teaching Hospital Lippo Village, Tangerang, Indonesia. All data were obtained by interview and questionnaire. Bivariate analysis was done using ROCTAB diagnostic test.

Results: There were 49 (61.3%) male and 32 (38.8%) female with a mean age of 45.40 + 15.78. The existing scoring system showed varies in accuracy in predicting type 2 diabetes mellitus. The CANRISK and INDIAN risk score provide the same sensitivity result of 100% but different in specificity that is 60% and 32, 5% respectively. Followed by FDA with sensitivity of 83% and specificity of 95% and ADA is 52, 3% and 90% respectively.

Conclusion: The CANRISK diabetes risk score seem to have reached their maximal efficacy in screening of type 2 diabetes mellitus for Indonesian population.

P91

A Case of Non Insulin Dependent Hypoglycaemia

Sharifah Faradila Wan Muhamad Hatta, Associate Professor Rohana Abdul Ghani

Universiti Teknologi MARA (UiTM)

We describe a case of persistent hypoglycaemia in a patient with co-infection of HIV and Hepatitis C in the presence of a large hepatoma and undetectable insulin and C-peptide levels.

A 50-years-old male with lonstanding untreated Hepatitis C and Human Immunodeficiency Virus (HIV) infections for 24 years presented to the Emergency Department with one episode of transient generalised tonic clonic seizure with blood glucose of 1.8 mmol/L. On examination, he appeared cachectic with BMI of 19kg/m², pulse rate 80 beats per minute, regular, blood pressure 162/80 mmHg and temperature 37oC. Abdominal examination revealed hepatomegaly with hard, irregular and nodular margin. Cardiovascular, respiratory and neurological examinations were unremarkable. During admission he developed recurrent episodes of symptomatic hypoglycaemia blood glucose levels below 3 mmol/L requiring continuous intravenous glucose transfusion. Investigations revealed Insulin level 2 uIU/mL (N: 6-27), C-peptide <33 pmol/L, IGF-1 of 18 µg/L at blood glucose level of 2.2 mmol/L. Serum cortisol was 817 nmol/L and investigations were normal. Computed Tomography of the abdomen revealed a large heterogeneously enhancing mass measuring 10x14x17 cm with ill defined nodular border and multiple satellite nodules within the right lobe of the liver suggestive of hepatocellular carcinoma. The spleen, pancreas and adrenals are normal. He was deemed unfit for surgery and started on oral prednisolone which alleviated his hypoglycaemic episodes. Unfortunately, 4 weeks into admission, he developed sudden onset of shortness of breath and arrested. He failed to be resuscitated.

Hypoglycemia has been reported as a frequent occurrence in hepatoma.1 It has, in general, been considered as a consequence of increased utilization of glucose by the tumor or the secretion of insulin-like growth factor II by the tumor. Unfortunately, we were not able to obtain a level for the latter. Moderate-to-high-dose glucocorticoid therapy had immediate beneficial influence on symptomatic hypoglycaemia and, if tolerated in the long term.

P92

Detection Kit of Type 1 Diabetes Mellitus with Autoimmune Marker GAD65 (Glutamic Acid Decarboxylase)

Aulanni'am

Brawijaya University, Indonesia

Incidence of Diabetes Mellitus (DM) progressively increasing, it became serious problem in Indonesia, and is a disease that is a government priority to be addressed. The longer a person suffering from diabetes the more likely to develop complications, particularly diabetic patients who are not well maintained. So, its needs to be done in the early diagnosis of pre-phase disease. In this pre-phase disease already happening destruction of pancreatic beta cells and declining in beta cell function and the sign autoimmunity reactions associated with beta cell destruction. Type 1 DM is a multifactorial disease triggered by genetic and environmental factors, which leads to the destruction of pancreatic beta cells. Early marker of "beta cell autoreactivity" is the synthesis of autoantibodies against 65 kDa protein, which can be a molecule that can be detected early in the disease pathomechanism. The importance of early diagnosis of diabetic patients held in the phase of pre-disease is to determine the progression towards the onset of pancreatic beta cell destruction and take precautions. But the price for this examination is very expensive ($ 150/ test), the anti-GAD65 abs examination cannot be carried out routinely in most or even in all laboratories in Indonesia. Therefore, production-based Rapid Test Recombinant Human Protein GAD65 with "Reverse Flow Immunchromatography Technique" in Indonesia is believed to reduce costs and improve the quality of care of patients with diabetes in Indonesia. Rapid Test Product innovation is very simple and suitable for screening and routine inspection of GAD65 autoantibodies.

In the blood serum of patients with diabetes caused by autoimmunity, autoantibody-GAD65 is a major serologic marker to detect autoimmune reaction because their concentration level of stability. GAD65 autoantibodies can be found 10 years before clinical symptoms of diabetes. Early diagnosis is more focused to detect the presence autontibodi-GAD65 given specification and high sensitivity. Autoantibodies- GAD65 that circulates in the blood is a major indicator of the destruction of the islet cells of the pancreas. Results of research in collaboration with Biofarma has produced GAD65 autoantibodies based Rapid Test had conducted the soft launch of products and has been tested with the results of a sensitivity of 100 percent and a specificity between 90 and 96% compared with the gold standard (import product) which worked based on ELISA method.

P93

Is Diabetes Mellitus a Risk Factor for Elevated Creatinine Kinase Levels in Chronic Kidney Disease Patients on Lipid Lowering Therapy?

Siti Hafizah Mohammad Ismail, Mohd Ramadhan Mohd Din, Rafidah Abdullah, Salwana Adam, Dorothy Maria A/P Anthony Bernard, Hakimah Salehuddin, Ang Chui Munn, Muhammad Hazwan Nasaruddin, Tan Hui Xin

Department of Medicine, Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang

Background: Chronic Kidney Disease (CKD) is associated with dyslipidaemia, a known risk factor for cardiovascular disease. Statins should be offered to patients with CKD for primary and secondary prevention of cardiovascular events. In patients with Diabetes Mellitus (DM), disbalance at the level of regulation of glucose metabolism as well as lipid metabolism has been noted in skeletal muscles. These changes are reflected at the level of total activity of the Creatinine kinase (CK) enzyme.

Objective: To correlate the incidence of elevated CK levels in CKD patients on lipid lowering therapy with DM. Elevated CK levels were defined as levels more than 170U/L.

Material and Methods: This is a retrospective, observational, single centre study involving 77 CKD patients in the Nephrology clinic in Hospital Jerantut in 2014. All patients were either on statin or a combination of statin and fibrates for at least 1 year. Data were obtained from the medical records and results were analysed using SPSS version 20.

Results: Data from a total of 77 patients were obtained. There were 41 male patients (53.2%) and 36 female patients (46.8%) with almost similar distribution of mean age at 63.5±12.5 and 65.3±10.2 years respectively. A total of 55 patients (71.4%) were diabetic; 37 patients (67.3%) were on single agent statin while the other 18 patients (32.7%) were on statin and fibrates as lipid lowering agents. There were 19 patients (34.5%) with DM who had abnormal CK level with a mean of 297±156 U/L. On the other hand, 5 patients (22.7 %) without DM also had abnormal CK level with a mean of 285±63 U/L. CKD patients with DM on statin did not show any significant association with elevated CK levels, p=0.87.

Conclusion: Results of this study demonstrate that the CK levels were not significantly raised in CKD patients with DM on lipid lowering therapy.

P94

Effect of Changes in Blood Glucose Level on Cardiovascular Autonomic Neuropathy After Initiation of Insulin Therapy in Type 2 Diabetes Mellitus

Phyo Thiha

University of Medicine, Magway

Background: Cardiovascular autonomic neuropathy is a common complication of diabetes mellitus. It has a great impact on morbidity and mortality, causing exercising intolerance, silent myocardial infarct, postural hypotension, intraoperative liability, prolonged QT interval and sudden cardiac death. Like other microvascular complications of diabetes, it is influenced by glycaemic control.

Materials and Methods: This study was aimed to find out the effect of change in blood glucose level on cardiovascular autonomic neuropathy after initiation of insulin therapy in type 2 diabetes mellitus. Type 2 diabetic patient with HbA1c ≥8% (n=77) were recruited for insulin therapy. Their cardiovascular autonomic was tested by the cardiac autonomic neuropathy system analyser, using Ewing's criteria. Five parameters of cardiac autonomic functions were tested: E:I ratio, 30:15 ratio, Valsalva ratio, Postural hypotension (SBP) and hand grip blood pressure change (DBP) at initial and 6th month of insulin therapy. Their HbA1c level were tested at initial and 6th month of insulin therapy. The changes in cardiovasculhar autonomic neuropathy in the HbA1c improvement group (≤7.5 %) and HbA1c non - improvement group (>7.5%) were compared. There was an evidence that rapid change in glycaemic control by insulin had an adverse effect on neuropathy, called insulin neuritis. Therefore, this study was also aimed to find out the association between cardiovascular autonomic neuropathy and rate of change in HbA1c at 6th month of insulin therapy. The rapid change in HbA1c was defined as ≥ 2% change at 6th month.

Results: No statistical significance was found in all five parameters of cardiac autonomic test.

Conclusion: Changes in glycaemic control neither improved nor worsened cardiac autonomic neuropathy which was determined by cardiac autonomic neuropathy analyser (CAN 504) at 6th month of insulin therapy.

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Corelation Between Arterial Stiffness and Diastolic Function in Diabetic Patients

Kreisty Saerang, Johan Winata, Yuanita Langi, Karel Pandelaki, Lucia Panda, Janry Pangemanan, Emma Moeis

Division of Endocrinology, Diabetes, and Metabolism; Division of Cardiology and Vascular Medicine; Division of Nephrology and Hypertension; Internal Medicine Department RSU Prof. Dr. R.D. Kandou Manado, North Sulawesi, Indonesia.

Background: Increased arterial stiffness and left ventricular (LV) diastolic dysfunction are commonly observed in patients with diabetes mellitus (DM), kidney disease, as well as hypertension. However the correlation between arterial stiffness and LV diastolic function in diabetic patients remains unclear.

Objectives: To investigate relationship of arterial stiffness as assessed with Pulse Wave Velocity and LV diastolic function in diabetic patients.

Material and Methods: This was a cross sectional study. A total of 62 male type II diabetes mellitus patients, aged less than 56 years were enrolled between Maret 2012 – January 2013. Stroke and myocard infark was excluded in all of the study participants. Arterial stiffness was evaluated measuring the pulse wave velocity (PWV) using two-dimensional (2D) doppler echocardiography. LV diastolic function was assessed with echocardiography. We categorized diastolic function into normal, mild- moderate, and severe diastolic dysfunction, based on ASE classification. Statistical correlation analysis was performed using pearson test.

Results: Arterial stiffness was correlated with LV diastolic dysfunction, (r = 0, 263. p = 0, 039).

Conclusion: The present findings suggest that in diabetic patients, increasing arterial stiffness is significantly associated with LV diastolic dysfunction.

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Efficacy and Safety of Liraglutide Versus Sulfonylurea Both in Combination with Metformin During Ramadan in Subjects with Type 2 Diabetes (LIRA-Ramadan): A Randomized Trial

Sami T. Azar, Akram Echtay, Wan Mohamad Wan Bebakar, Sumayya Alaraj, Abdelkrim Berrah, Mahommed Omar, Abhay Mutha, Karen Tornøe, Margit Kaltoft, Naim Shehadeh

American University of Beirut Medical Centre, Beirut, Lebanon; Lebanese University Medical School, Rafik Hariri University Hospital, Lebanon; Universiti Sains Malaysia; Ras-Alkhaimah, United Arab Emirates; University Hospital Bab El Oued, Algeria; University of Kwazulu-Natal, Republic of South Africa; Diabetes Care & Research Centre, Maharashtra, India; Novo Nordisk A/S, Søborg, Denmark; Meyer Children's Hospital of Haifa at Rambam Medical Center, Israel

Subjects with type 2 diabetes (T2D) who fast during Ramadan have a 5- and 7.5-fold increased risk of severe hyper- and hypoglycemia, respectively. The effect of liraglutide (lira) vs sulfonylurea (SU), both + metformin (Met), on change in glycemic control in subjects with T2D who fasted during Ramadan was examined.

In this up to 33-week, open-label trial, adults (HbA1c 7-10%; BMI >20 kg/m²; stable SU + Met; intent to fast during Ramadan) were randomized to either switch to once daily lira 1.8 mg (N=172) or continue pretrial SU (N=171), both + Met. After 3-week dose escalation, a 6–19-week maintenance period preceded Ramadan. Primary endpoint was change in fructosamine (FA) from start to end of Ramadan (lira N=151; SU N=165) (Table).

During Ramadan, despite lower FA & HbA1c at start of Ramadan in the lira arm, a similar reduction in FA with lira and SU was seen. Confirmed hypoglycemic episodes appeared to be lower with lira & fewer subjects withdrew during Ramadan (lira 3, SU 11). AE frequencies appeared similar: lira 23.7%; SU 20.9%. GI AEs were more common for lira (10.5%; SU 3.7%). A low incidence of SAEs was observed (lira 1.3%; SU 0%).

During Ramadan, lira showed similar improvements in glycemic control from lower FA & HbA1c levels compared to SU with a similar number of AEs, apparently fewer confirmed hypoglycemic episodes and better weight control.

P101

The Bigger Loser: A Comparative Study Between a Structured Hospital-based Weight Loss Program and Structured Incentivized Weight Loss Program

Milldeanna de Guzman, Alfred Apostol

Makati Medical Center, Philippines

Obesity is associated with increased risk for chronic diseases such as diabetes, hypertension, heart disease, stroke and even death and is now becoming a pandemic worldwide. Modest weight loss, defined as 5 percent weight loss from baseline, was proven to provide significant clinical benefits. Several strategies and programs for weight loss were developed to address the problem.

This is a retrospective study comparing the effectiveness of weight loss program under weight wellness center of Makati Medical Center and Fit and Fab. The outcome, significant weight loss, is defined as 5% weight loss from the baseline. Proportion of participants who achieved significant weight loss was compared and two sample t-test was used to determine if there is statistical difference between the two.

The final weight of participants enrolled in weight wellness program is not significantly different from their baseline weight (baseline= 87.14 + 21.8 SD; final= 83.52 + 18 SD; p-value=0.0796), in contrast to Fit and Fab where there is significant difference (baseline= 88.45 + 16.19 SD; final= 83.28 + 14.26 SD; p-value=0.000). However, the mean weight loss of the 2 programs (MMC=4.55 kg; Fit and Fab=5.39 kg) and proportion of participants who achieved significant weight loss (MMC=67%, Fit and Fab=51.6%) were not statistically different from each other.

Fit and Fab and weight loss program conducted by Weight Wellness Center of Makati Medical Center were comparable and equally effective in producing significant weight loss. However, it has to be noted that the study was limited with a small sample size and on the available data recorded.

P102

Inhibition of 3T3-L1 Preadipocytes Differentiation Using Fluid Shear Stress

Choi Jongyun, Lee Jeongkun, Gim Juyeon, Lee Hyun, Kim Chi Hyun

Department of Biomedical Engineering, Yonsei University, Wonju, Republic of Korea

Background: Obesity is a severe world health problem due to its related chronic diseases such as type 2 diabetes, cardiovascular diseases and cancer. Adipocytes play an important role in secreting hormones and adipokines which modulate lipid metabolism in obese adipose tissues. Physical exercise is known to be beneficial in preventing obesity. However, the effect of mechanical stimulation on adipocytes is rarely studied.

Objectives: The objective of this study is to analyse the effect of fluid shear stress on adipogenic differentiation at a cellular level.

Materials and Methods: 3T3-L1 preadipocytes were incubated in Dulbecco's modified Eagle's medium containing 10% fetal bovine serum. Preadipocytes were induced to differentiate with induction medium supplemented with dexamethasone, 3-isobutyl-1-methylxanthine and insulin (Day 0). Fluid shear stress of 1 Pa at 1 Hz was applied for 1 hour at either (1) Day 0 (pre-differentiation) or (2) Day 5 (post-differentiation). Fluid shear stress was not applied to control groups. All 3 groups were analysed at Day 9. GAPDH, C/EBP beta, C/EBP alpha, PPAR gamma were assessed by Western blot analysis. Lipid droplet accumulation was observed by Oil Red O staining.

Results: The expressions of C/EBP beta, C/EBP alpha, PPAR gamma were decreased in response to fluid shear stress. The decrease was enhanced when mechanical stimulation was applied at the post-differentiation period compared to the pre-differentiation period. Also, the number of lipid droplets stained with Oil Red O was decreased in the post-differentiation stimulation group.

Conclusion: C/EBP beta, C/EBP alpha and PPAR gamma are transcription factors which play a pivotal role in leading to adipogenic differentiation. Therefore, the decreased expressions of C/EBP beta, C/EBP alpha and PPAR gamma along with the decreased formation of lipid droplets suggest suppression of differentiation of preadipocytes by mechanical stimulation. In addition, the effect of inhibiting the differentiation appears to be enhanced when fluid shear stress is applied at the post-differentiation period. These results suggest the importance of mechanical stimulation in obesity-related diseases.

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Inverse Association Between Serum Bilirubin Levels and Hemostatic Markers in Korean Subjects

Kim Eun Sook, Moon Sung Dae, Han Je Ho

Division of Endocrinology and Metabolism, Department of Internal Medicine, The Catholic University of Korea College of Medicine, Incheon St. Mary's Hospital, Incheon, Korea

Background: Oxidative stress may contribute to atherosclerosis and increased activation of the coagulation pathway.

Objectives: This study investigated whether high levels of serum bilirubin, a potent innate antioxidant, are associated with low levels of serum fibrinogen and plasminogen activator inhibitor-1 (PAI-1), respectively.

Methods: A cross-sectional analysis was performed on 1076 subjects (mean age, 55.8 ± 11.1 years; 62.7% men) undergoing a general health checkup. Insulin resistance (using homeostasis model of assessment [HOMA]), C-reactive protein (CRP), fibrinogen, and PAI-1 were measured.

Results: Subjects with metabolic syndrome (MetS) had lower bilirubin and higher HOMA-IR, CRP, fibrinogen, and PAI-1 than individuals without MetS. Total bilirubin (TB), direct bilirubin (DB), and indirect bilirubin (IB) were all inversely correlated with HOMA-IR and fibrinogen in both genders, and with CRP and PAI-1 in men only. After adjustment for confounding factors, TB, DB, and IB were inversely associated with high fibrinogen (highest vs lowest tertile, odds ratio [OR]= 0.54, 95% confidence interval [CI]=0.37–0.78, P = 0.001; OR= 0.52, 95% CI=0.35–0.77, P= 0.001; and OR=0.59, 95% CI=0.40–0.87, P = 0.008, respectively). DB, but not TB or IB, was significantly associated with PAI-1 (highest vs lowest tertile, OR= 0.47, 95% CI: 0.29 - 0.76, P = 0.002). The tendency was similar in the multiple linear regression models and subgroup analysis excluding diabetes and MetS.

Conclusions: High bilirubin concentrations were independently associated with low levels of fibrinogen and PAI-1, respectively. Bilirubin may protect against the development of atherothrombosis by reducing the hemostatic response.

P104

Comparison of DPP-4 Level in Obese and Non-Obese Young Adult Men

Veny Mandang, Bungsu, Vonne Lumintang, Yuanita Langi, Karel Pandelaki

Division of Endocrinology, Metabolism & Diabetes - Department of Internal Medicine, College of Medicine, Sam Ratulangi University/Prof.Dr. R.D. Kandou General Hospital, Manado - Indonesia

Background: Recently, the DPP-4 enzyme is one of the main parameters that play a pivotal role in the homeostasis of blood glucose by inhibiting the activity of the GLP-1 hormone, inactivation of this hormone will cause hyperglycemia. Obesity has been known as one of the major risk factor for development of type-2 diabetes mellitus through insulin resistance mechanism. Study of the DPP-4 enzyme levels in obesity are still very rarely reported, especially in developing countries.

Objectives: The main objective of this study was to compare the enzyme DPP-4 level between obese and non-obese young adult men.

Material and Methods: This study is a comparative analytic observational. Research began in March 2014 to March 2015. The subject is a young adult men with an age range between 20-40 years of both obese and non-obese based on BMI criteria. Samples of the DPP-4 enzyme were taken in the morning while fasting at least 8 hours before. Test results of tests carried out by the comparative mean average analysis of DPP-4 level both obese and non-obese.

Results: In this study, subjects are 60 obese and 20 non-obese young adult men. In each group (95% CI), obese group average levels of DPP-4 was 201.33 (179.17 to 223.50), while in the non-obese group average levels of DPP-4 was 164.16 (141.80 to 186.51).

Conclusion: There are significant differences in DPP-4 levels between obese and non-obese young adult men.

P105

Beta-cell Function is Impaired in Morbid Obesity Asian Individuals Without Clinical Evidence of Dysglycemia

Yew Jielin, Lee Phong Ching, Muhammad Asyraf Mohd Razali, Tham Kwang Wei, Ganguly Sonali, Pasupathy Shanker, Alvin Kim Hock Eng, Tan Hong Chang

Singapore General Hospital

Background: Type 2 diabetes (T2DM) ensues when the compensatory increase in insulin secretion could no longer maintain euglycemia in the face of worsening insulin resistance. This dysfunction in pancreatic beta cell occurs early in the pathogenesis of T2DM and despite apparent normoglycemia in a subset of individuals with morbid obesity, we hypothesise that early beta-cell dysfunction is already present.

Methods: 8 normoglycemic lean controls, 4 normoglycemic morbidly obese and 6 pre-diabetic (pre-DM) morbidly obese individuals were assessed using the OGTT. Blood glucose and insulin were measured at 0, 15, 30, 60 and 120 min. Insulin sensitivity was calculated using the Matsuda Index and first phase insulin secretion using the insulinogenic index. Glucose disposition index (DI) was used to define beta-cell function relative to insulin sensitivity and calculated as the product of insulin sensitivity and first phase insulin secretion.

Results: BMI between the morbidly obese subgroups were similar at 40.9 ±7.5 vs. the lean control's BMI of 23.4 ± 2.4 kg/m² ($p < 0.01$) and insulin secretion appeared highest in the normoglycemic morbidly obese individuals based on the insulinogenic index. However, there was a progressive worsening in insulin sensitivity across the spectrum of severity: Matsuda index = 8.2 +/- 3.9 (lean) to 4.7 +/- 3.1(obese normoglycemic) to 1.8 +/- 1.0 (obese pre DM), $p < 0.001$. This was accompanied by a significant and progressive decline in beta-cell function as quantified by the glucose disposition index during the transition from lean normoglycemia (13.2 +/- 5.3) to morbid obesity with normoglycemia (8.2 +/- 3.3) to morbid obesity with pre-DM (2.3 +/- 1.1).

Conclusion: Beta-cell dysfunction occurs early in the pathogenesis of glucose intolerance and is evident even in apparently healthy morbidly obese individuals with normoglycemia. Obesity remains a significant risk factor for T2DM that should be aggressively managed even in face of apparent normoglycemia.

P106

The Role of the FTO Gene rs9939609 Polymorphism on Obesity

Himawan Sanusi, Syakib Bakri, Makbul Aman, John MF Adam

Division of Endocrinology and Metabolism, Departement of Internal Medicine Faculty of Medicine Hasanuddin University Makassar, Indonesia

Background: The prevalence of over weight and obesity is increasing each year. The role of genetic has been demonstrated as an important role in the incidence of obesity in the last decade by doing Genomic wide study it is known that the FTO gene rs 9939609 polymorphism is a risk of obesity.

Methods: A cross-sectional observational study from Rappocini area, 187 subjects wich was 18-70 years including the inclusi on criteria. Subjects categorized as obese based on BMI calculation and waist circumference measurements.

Results: The subjects consisted of 93(49.7%) female and 94(50.3%) were male. Based on BMI, it was found 76 subjects (40.6%) with normal weight, 39subjects (20.9%) with over weight, 60(32.1%) were obese 1, and 12 persons (6.4%) were obese 2. Based on waist circumference measurements, it was 83 subjects (44.4%) with central obesity and 104 subjects (55.6%) without central obesity. FTO gene rs939609 allele A2, 264-risk over weight and obesity incidence in the age group ≥35years old. From the analyzed correlation between rs9939609 FTO gene with central obesity we found that the FTO gene rs9939609 allele A at 2, 789 times the risk of central obesity in the age group ≥ 35years old.

Conclusion: Allele rs9939609 FTO gene as a risk factor for the insidence of obese and central obesity

P107

Childhood Obesity and the Association with Metabolic Syndrome (MetS), an Audit in the Paediatric Patients at Hospital Putrajaya

Nor Azyati Yusoff, Janet Hong YH, Arini Nuran Idris, Law Huong Nai, Fuziah Md Zain

Paediatric Endocrine Unit, Hospital Putrajaya, Malaysia

Background: Data on Metabolic Syndrome (MetS) in children is still limited in Malaysia. Our aim is to assess the prevalence of MetS related components, and their association with childhood obesity. Objectives: The objectives of this study are to evaluate the demographic, clinical characteristics, management practice and outcome of childhood obesity in Department of Pediatric, Hospital Putrajaya. Our second objective is to explore the predictors for these children to develop MetS.

Methods: A retrospective record review was done for all cases identified as childhood obesity. Data were collected as part of the obesity audit on MetS among 42 children identified (66.6% male, 33.93% female) range 2-20 years old at the time of review, in Hospital Putrajaya between January until April 2015. General obesity was assessed by body mass index (BMI), and MetS was defined according to the International Diabetes Federation 2007 definition.Venous blood tests were used to assess triglyceride (TG), total cholesterol (TC) and impaired fasting glucose (IFG). Vein blood samples were collected from all 42 children to classify the MetS. Serial measurement of blood pressure was also taken in all subjects to screen for systemic hypertension.

Results: Dyslipidaemia was seen in 45.2% of patients at the time of diagnosis and 21.4% of patients had systemic hypertension at presentation. Ten (23.8%) received active medical intervention during the diagnosis (mainly with subcutaneous insulin for the pre-existing Type 2 Diabetes Mellitus and also L-Thyroxine for hypothyroidism).

Conclusion: Male gender and the presence of dyslipidaemia were found to be important predictors for Metabolic Syndrome among obese children. It is hoped more studies regarding childhood obesity will be conducted in our country in the near future to better manage our children with obesity.

P108

Comparison with HbA1c and Body Mass Index for the Nonalcoholic Fatty Liver Disease in Nondiabetic Korean

M.H. Seo, J.Y. Jeong, J.S. Kim

Soonchunhyang University Hospital Gumi, Gumi city, Gyeongbuk, South Korea

Background: Fatty liver often occurs in obese patient with type 2 diabetes. however, there is few study about comparison with serum glycosylated hemoglobin (hba1c), body mass index(BMI), and other metabolic risk factors for nonalcoholic fatty liver disease (NAFLD) in non diabetic korean.

Aim: The goals of this study were to clarify the comparison with HbA1c levels and BMI for NAFLD in nondiabetic Korean.

Method: In the current study, there was a total of 7149 subjects (mean age : 43.2±9.5 years) who underwent a medical check-up at the health promotion center at Gumi soonchunhyang hospital from January 2014 to December 2014. Anthropometric indices of adiposity, metabolic variables, blood pressure were measured.

Results: A total of 2985(41.75%) subjects fulfilled the diagnostic criteria of NAFLD, and NAFLD patients had significantly higher serum HbA1c levels than controls ($P < 0.001$). The prevalence of NAFLD was significantly higher in subjects with increased serum HbA1c level (HbA1c ≥5.7%) than in those with normal range of serum HbA1c level (71.0% vs. 52.5%; $P < 0.001$), and the prevalence increased along with progressively higher serum HbA1c levels (P for trend <0.001). Body mass index(BMI), waist circumference, γ-GTP, Triglyceride, HDL, Fasting glucose, uric acid, and hba1c were associated with NAFLD in multivariate analysis.Of these, the odds ratio of hba1c and BMI for NAFLD were 1.03 (95% confidence interval 1.006-1.054) and 1.759 (95% confidence interval 1.705-1.815), respectively.

Discussion: Our results suggest metabolic risk factors (including hba1c and BMI) might be independently associated with NAFLD in nondiabetic Korean.

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Plasma Ghrelin and Leptin Level in Obese and Non Obese Women

Myat Mon Khine, Kyu Kyu Maung, May Thazin, May Pyone Kyaw, Aye Thida

Myanmar Society of Endocrinology and Metabolism

Obesity is assumed to be the result of a chronic disequilibrium between food and drink intake and energy demands. The balance between energy intake and energy expenditure is tightly regulated. Ghrelin is the first peripheral orexigenic molecule with increased food intake and often called the “hunger hormone”. Ghrelin is first identified from rat stomach in 1999 by Kojima.The hormones which also play an important role in body weight regulation are leptin, insulin, adiponectin, resistin, apelin and visfatin. Leptin, the 167 amino acid protein, is a cytokine-like hormone secreted by white adipose tissues. Leptin and insulin could regulate plasma ghrelin levels in different levels of obesity. Leptin inhibit both the secretion of gastric ghrelin and stimulation of feeding by ghrelin and also importance for suppression of basal ghrelin during moderate weight gain in normoinsulinemic subjects. In the present study, the association between the plasma ghrelin and leptin in non obese and obese women was studied. 38 non-obese women (BMI 18-25 kg/m², waist circumference ≤ 80 cm) and 38 obese women (BMI > 25 kg/m², waist circumference > 80 cm), aged between 30- 60 years were examined in this study. Informed consent were obtained, prior to the study. The fasting plasma ghrelin and leptin levels were determined by ELISA method. All procedures were performed according to guidelines of the Ethical Committee of the University of Medicine 2, Yangon, Myanmar. Plasma ghrelin level of non-obese women was significantly higher (196.29 + 19.99 pg/ml) than obese women (115.68 + 11.22 pg/ml) ($P < 0.001$). Mean plasma leptin level of non-obese women (17.31 ± 2.41 ng/ml) ($P<0.001$) was significantly ($p<0.001$) lower than obese women (36.40 ± 2.33 ng/ml). The significant negative correlation ($p<0.05$) was found between fasting plasma ghrelin and fasting plasma leptin level in both study groups. It appeared that plasma leptin and obesity are inversely associated with ghrelin secretion. Therefore, increased plasma leptin level found in obese group could be attributed to fall in plasma ghrelin level and their changes may lead to alteration in food intake and energy homeostasis in obesity.

P110

Correlation Apo(B) with HbA1c, but not with Insulin Resistance in T2DM with Metabolic Syndrome Patients

Hermina Novida, Askandar Tjokroprawiro, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono

Surabaya Diabetes and Nutrition Center, Dr. Soetomo Teaching Hospital, Faculty of Medicine, Airlangga University, Surabaya, Indonesia

Background: The incidence of metabolic syndrome (MetS) is increasing worldwide. Although insulin resistance is crucial to the pathogenesis of MetS, the atherogenic lipoprotein phenotype possible enhances the risk of cardiovascular complications. Apolipoprotein B (ApoB) is the main structural protein atherogenic lipoproteins VLDL, IDL dan LDL. The plasma concentration of ApoB indicates the cumulative number of atherogenic particles. Furthermore we compared apoB, lipid profile, glycemic control (fasting glucose, post prandial glucose and HbA1c) and parameters of insulin resistance [fasting insulin, Homeostasis Model Assessment Insulin Resistance (HOMA-IR)] in MetS patients.

Objective: The aim of this study is to analyze the correlation of Apo(B) with HbA1c, fasting insulin, HOMA-IR in T2DM-MetS patients.

Material and Methods: This study was performed in private outpatient endocrinology clinic using cross sectional observational design. Patients were already diagnosed T2DM and also diagnosed MetS based on NCEP-ATP III 2005 criteria. We interviewed and checked body weight and height, BMI, blood pressure and waist circumference. We measured fasting plasma glucose (FPG) and post prandial glucose (PPG), HbA1c, lipid profiles, ApoB, fasting insulin and HOMA-IR. Distribution of data was statistically analyzed using one-sample Kolmogorov-Smirnov and logistic regression test.

Results: We analyzed 53 patients who consisted of 36 males and 17 females. The overall mean of BMI was 29.71 + 4, 03 kg/m², HbA1c was 8.67 + 2.30 %, FPG was 183.81 + 75.09 mg/dL, PPG was 263.34 + 124.88 mg/dL, total cholesterol was 195.13 + 50.92 mg/dL, LDL-C was 123.38 + 45.61 mg/dL, HDL-C was 46.30 + 13.06 mg/dL, triglyceride was 185.09 + 180.93 mg/dL, ApoB was 97.01 + 24.21 mg/dL, fasting insulin was 14.41 + 6.54 mg/dL and HOMA-IR was 6.10 + 3.58. Statistical test showed that there was significant correlation between ApoB and HbA1c (r 0.440; $p<0.01$). There was no significant correlation between ApoB with fasting insulin level and HOMA-IR (r 0.030; p 0.831 and r 0.597; p 0.074).

Conclusion: ApoB correlated with glycemic control, but did not correlate with insulin resistance (fasting insulin and HOMA-IR) type T2DM-MetS patients.

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Correlation Among Serum Soluble Intercelullar Adhesion Molecule-1 (sICAM-1) and Serum Amyloid A (SAA) Level with Insulin Sensitivity in Overweight Medical Students of Sriwijaya University

Ratna Maila Dewi Anggraini, Alwi Shahab, Yulianto Kusnadi

Division of Endocrinology, Metabolism & Diabetes Department of Internal Medicine, College of Medicine, Sriwijaya University/Dr. Mohammad Hoesin General Teaching Hospital, Palembang - Indonesia

Background: Prevalence of excessive bodyweight in children and adolescence tend to be increased dramatically in the last decade. They have chronic inflammation as a risk for insulin resistance and cardiovascular diseases. Thus, it is also become predictive factor cardiovascular event in adult.

Objectives: The subject of this study is late adolescence medical students Sriwijaya University Palembang with excessive bodyweight.

Material and Methods: Study design is cross sectional with correlative analytic observational study. We conducted this study from August-December 2013. The subject of this study is late adolescence medical students Sriwijaya University Palembang with excessive bodyweight. Serum sICAM-1, SAA and glycemic control indices (fasting blood glucose, insulin, HOMA) were measured in this participants. Data were analyzed using SPSS for windows.

Results: There are 35 subjects, 51, 4% women and 48, 6% men. SAA mean levels was 3.088 ng/mL, and sICAM-1 serum levels was 218, 7 ng/mL. We found 9 subjects (25, 7%) with insulin resistance. There are significant correlation between SAA serum levels with insulin sensitivity (r=0, 394; p = 0, 019; n= 35) and either with sICAM-1 serum level with insulin sensitivity (r=0, 446; p=0, 007; n=35).

Conclusion: The level of SAA and of sICAM-1 have significant correlation with insulin sensitivity in the late adolescence with excessive body weight at medical faculty of Sriwijaya University.

P112

Metabolic Syndrome Among Sub-Urban Population in Makassar, Indonesia

Husaini Umar, Fabiola Adam, John MF Adam, Ei Ei Nang, E Shyong Tai

Division of Endocrinology and Metabolism, Departement of Internal Medicine Faculty of Medicine Hasanuddin University Makassar, Indonesia

Background: The last two decades, changes in lifestyle increased the prevalence of obesity and metabolic syndrome, especially in the developing countries including Indonesia. Limited population based study of metabolic syndrome reported from Indonesia. The aim of the study is to find out the prevalence of this syndrome in Makassar, East Indonesia.

Methods: City of Makassar have a population of 1.200.000 people. The screening were performed in Kecamatan Rapocini, which is a medium socio-economic class population. The AHA/NHLBI criteria was used for the diagnosis of metabolic syndrome. In this study, waist circumference for male > 90 cm, and female > 80 cm. Blood samples was taken after 12-h fasting and examined in the Prodia Central Lab

Results: During the study 3502 adult subjects can be covered, 2549 females and953 males, age varied from 16-87 years old. In this study, 1074 subjects fulfilled the criteria of metabolic syndrome, 846 females and 229 males. The prevalence was 30.7% more females compared to males, 32.2% and 23.9% subsequently (p=0.001). The metabolic syndrome increased with increasing age, especially after the age of 40 years old. Obesity and low HDL cholesterol were statistically higher among females, while elevated blood pressure, elevated triglycerides, and hyperglycemia where more common in males.

Conclusions: Metabolic syndrome is common among medium socio-economic class population in Makassar

P113

A Variegated Management of Obesity

Sudheendra A. Deshpande, Vasudha S.

Phytoinc Divya Jyothi Clinic, Ananta Research Foundation, Bengaluru, India

Objective: To achieve visible long lasting qualitative results in the management of obesity and provide QOL in the patients suffering from chronic lifestyle disorders.

Introduction: Obesity has dominated the present day lifestyle disorders like never before either solely as a major risk factor in causing CVDs, T2DM, Psychological disorders, carcinogenicity or as co-morbids of T2DM, HT, Thyroid dysfunction and so on. There has been steep rise in the incidence of Obesity since 1980. In 2008 there were about 1.5 billion adults obese/ overweight. Annually about 2.8 million adult die globally either because of obesity/ overweight, 3 lakh adults die in South-East Asia itself. The management of Obesity has been a big challenge over the years, with only diet and lifestyle changes yielding brief to non-satisfactory results.

Methodology: The selection of patient has been in the age group of 20- 80 yrs with exclusive obesity/ overweight or obesity as a co-morbid of T2DM, HT or Thyroid dysfunction.

Discussion and Results: There has been increased intake of high energy dense foods rich in fat, sugars and salts, low on vitamins, minerals and micro-nutrients, large scale urbanization, changing modes of transportation, increased affordability, sedentary lifestyles, and mobile telephony have contributed to the explosive proportions in the incidence of Obesity across countries. The traditional advise of less fat and carbohydrate diet and regular exercises although contributive to the minimal difference in the body fat mass (BFM), but not yielding the long desired effects, due to the fact of the inconsistencies in the implementation of the same. This real challenge posed, made us to adopt a more comprehensive management with the integration of traditional systems like Ayurveda Medicine, Diet and Lifestyle Change (AMDLC) with conventional methods at our center. The patients have been grouped into 1) exclusive on AMDLC, 2) AMDLC with Synthetic Anti-Glycemic (SAG) Agents, 3) AMDLC with Synthetic Anti-Hypertensive (SAH) Agents, 4) AMDLC with Synthetic Anti-Thyroid (SAT) Agents. The patients in the group 1, lost the body fat mass much quicker than the other groups. The BMI also showed appreciable results in 10-12 weeks of management with increased QOL, here too the group 1 fared better than the other groups.

Conclusion: To conclude, it's an ongoing research module to achieve long lasting regression in the obesity/ overweight scales with apparent enhancement of QOL.

P114

Relationship Between Body Fat Ratio and Mortality

Eurah Goh

Department of Family Medicine, Graduate College of Medicine, Kangwon National University, Chuncheon, Korea

Background: Body mass index(BMI) is widely used for diagnosis of obesity but it is not an accurate indicator for adiposity. The relationship between body fat ratio(BFR) and mortality remains controversial.

Objectives: The objective of this study was to evaluate the relationship between BFR and all-cause mortality in Korean population.

Materials and Methods: Authors examined the association between body fat ratio and mortality among 8487 women and 8436 men aged 40-85 years who visited health promotion center from 1995 to 1999. Additionally, BMI, blood pressure, glucose, lipid, CRP(c-reactive protein), smoking status, alcohol consumption, regular exercise, sleeping time, marriage status, education duration, and income were examined. BFR was estimated by bioelectric impedance analysis.

Results: There were 601 deaths over a median follow-up period of 11.2 years except the first 2 years. While BMI shows a U-curved relationship with mortality, BFR shows a significant linear association with mortality and this trend tends to be more distinguished in women. These findings persisted after adjusted for BMI, blood pressure, glucose and other potential confounders. Risk of death was highest in low BMI and high BFR group and lowest in high BMI and low BFR group.

Conclusion: The finding that BFR remained strongly and directly associated with all-cause mortality and cardiovascular mortality when adjusted for BMI, and persons with a normal BMI but a high BFR had a higher mortality risk suggest that increased BFR should be considered a risk factor for mortality, in addition to BMI in especially relatively thin Asian population.

P115

Selenium Supplementation and Autoantibody Titers in Graves' Disease: A Meta-Analysis of Two Randomized Controlled Trials

Marc Gregory Yu, Antonio Faltado, Laura Trajano-Acampado

Section of Endocrinology, Diabetes and Metabolism, Department of Medicine, Philippine General Hospital, Manila, Philippines

Background: Selenium (Se), a trace mineral with anti-oxidative properties, has been proposed by many studies to be potentially beneficial in patients with Graves' disease (GD), especially those with active Graves' ophthalmopathy (GO).

Objectives: The study aims to evaluate the efficacy of Se supplementation in patients with GD and GO. Specifically, it aims to evaluate changes in any of the following: ocular and systemic signs and symptoms, health-related quality of life, and thyrotropin, thyroid hormone, TSH-receptor antibody (TRAB) and anti-thyroid peroxidase antibody (TPOAB) levels.

Materials and Methods: Randomized controlled trials evaluating the efficacy of Se supplementation among adult patients with GD and active GO, of any ethnicity or gender and without comorbid illnesses, versus either placebo or an alternative drug, were included. A structured literature search was performed by two independent authors with eligible studies undergoing a validity screen. Data extraction of selected studies was performed using a data extraction form, with subsequent statistical analysis using Review Manager 5.1 software. Results were presented as mean differences, standard errors, and 95% confidence intervals, and graphically presented as forest plots. Estimates were calculated using the inverse variance method for continuous variables and pooled using the fixed effects model. I-square and Chi-square tests were used to assess heterogeneity.

Results: Fourteen studies were initially retrieved for consideration, but only two trials were ultimately included in the analysis. Both were of good methodological quality and totalled 197 participants with GD and non-severe GO. The only common outcomes of interest were changes in TRAB and TPOAB titers. In the analysis, no statistically significant difference was found in TRAB (95% CI, 1.73 [-0.36, 3.82], p=0.10) as well as in TPOAB (95% CI, 22.03 [-51.30, 95.36], p=0.56) titers on follow up among patients given Se supplementation as compared to the placebo group.

Conclusion: This is the first meta-analysis summarizing the current available data on the efficacy of Se supplementation in patients with GD and non-severe GO. Se supplementation in these patients was not associated with statistically significant differences in both TRAB and TPOAB titers on follow up. Larger studies, however, are recommended to strengthen these findings.

P116

Association Between Serum Insulin-like Growth Factor-1 and Thyroid Nodules

Lee Jae Hyuk, Choi Han Seok, Lee Sihoon, Chun Sung Wan, Kim Kwang Joon, Shin Dong Yeob

Internal Medicine/Endo, Seonam University College of Medicine, Myongji Hospital, Goyang, Korea; Internal Medicine/Endo, Gachon University Gil Medical Center, Incheon, Korea; Internal Medicine/Endo, Dongguk University Ilsan Hospital, Goyang, Korea; Internal Medicine/Endo, Soonchunhyang University College of Medicine, Cheonan Hospital, Cheonan, Korea; Internal Medicine/Endo, Yonsei University College of Medicine, Severance Hospital, Seoul, Korea

Background: Insulin-like growth factor-1 (IGF-1) is known to be closely related to the growth of thyroid cells and thyroid diseases. However, the association between IGF-1, thyroid nodule, and thyroid cancer has not been clearly established yet. Therefore, this study investigated the association between IGF-1 and thyroid nodule size.

Methods: A total of 346 patients with thyroid nodules confirmed by ultrasonography were included. For all participants, the levels of serum T3, free T4, TSH and IGF-1, were determined by radioimmunoassay. Among the participants, the risk group was defined as those with nodule size greater than 10mm or those with suspicious features on ultrasonography even for nodule size smaller than 10mm, and they underwent fine needle aspiration biopsy. The measurement data were expressed as the mean ± standard deviation (SD). The analysis of variance was performed by t-test, and the correlation analysis was performed by linear regression.

Results: The proportion of patients with large nodule size and suspicious sonographic features was significantly higher in risk group. In non-risk group, IGF-1 and nodule size did not show a significant association. Subgroup analysis for the risk groupfound IGF-1 to be significantly elevated in subjects whose cytology returned as thyroid cancer. (173.3 ng/ml vs 213.1ng/ml, p-value <0.05) In this group, IGF-1 and nodule size demonstrated a positive association(r=0.195, p-value <0.05), and multiple linear regressions found IGF-1 to be independently associated with nodule size.(ß = 5.579, p-value <0.05)

Conclusions: A positive association between IGF-1 and nodule size was observed only in risk group, and IGF-1 was elevated in thyroid cancer group. Measuring serum IGF-1 in patients with large thyroid nodule on ultrasonography and with suspicious sonographic features may be clinically significant.

P117

Early Prognostic Factors at the Time of First Radioactive Iodine Therapy Predict Survival of Patients with Bone Metastases from Differentiated Thyroid Carcinoma

Choi Yun Mi, Kim Won Gu, Kim Tae Yong, Shong Young Kee, Kim Won Bae

Department of Internal Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Objective: Bone is the second most common site of distant metastases for differentiated thyroid cancer (DTC) after the lungs. Patients with bone metastases was associated with poor clinical outcomes, however their clinical course was heterogeneous due to recurrent skeletal complications. This study aims to evaluate early prognostic factors associated with survival in patients with bone metastases from DTC.

Methods: This retrospective study included 93 patients with bone metastases from DTC in a single center. We evaluated prognostic factors associated with over-all survival (OS) according to the time of initial radioactive iodine therapy (RAIT).

Results: Median age of 93 patients (Male = 30 and F = 63) was 55.4 years and 55 patients (59%) had papillary thyroid cancer. Forty five patients (59%) were dead during median 7.6 years follow-up. Patients who diagnosed bone metastasis before initial RAIT (n = 32) had significantly poor OS (HR 1.86, 95% CI 1.02 – 3.39, p = 0.04). There was no significant difference in OS according to the RAI-avidity after initial RAIT in all study subjects (p = 0.18). However, RAI-avid bone metastases had better OS in patients who confirmed bone metastases before initial RAIT (HR 0.27, 95% CI 0.10 – 0.76, p = 0.01). In patients who detected bone metastasis after initial RAIT, older age (>45 years), elevated serum thyroglobulin level (>250 ng/ml), and presence of skeletal related events (SRE) were significantly associated with poor OS. RAI avidity was not significant prognostic factor in these patients.

Conclusion: Bone metastases detected before initial RAIT was important prognostic factor for patients with bone metastasis from DTC. RAI avidity after initial RAIT was good prognostic indicator only in patients who detected bone metastases before initial RAIT.

P118

Features Predicting Distant Metastasis in Papillary Thyroid Microcarcinoma

Jeon Min Ji, Kim Won Gu, Kim Tae Yong, Kim Won Bae, Shong Young Kee

Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Background: Recent increased incidence in thyroid cancer is almost attributed to papillary thyroid microcarciomas(PTMCs) and many suggested more conservative strategies for diagnosis and treatment of PTMC. However, PTMC might be associated with distant metastasis (DM).

Objectives: To evaluate the clinicopathological features and identify risk factors of DM in PTMC.

Methods: We reviewed the medical records of patients who were diagnosed PTMCs from 1999 to 2012 and found 12 (0.1%) patients with DM. We also selected 41 PTMC patients, who initially had lateral cervical lymph node (LN) metastasis and were cured without evidences of DM, as a control group for statistical analysis.

Results: Of twelve patients with DM, 9 patients had synchronous metastasis and 3 patients had metachronous metastasis. All of them had primary tumors larger than 0.5 cm and had cervical LN metastasis at initial surgery. Three patients were cured after repetitive high dose radioactive iodine therapy. Four patients were died of thyroid carcinoma. Disease-specific mortality was associated with old age, large metastatic LNs with extranodal extension, and aggressive change in pathologic subtype of metastatic LNs. When we compared clinicopathological characteristics of patients with DM to control patients, the presence of extranodal extension and aggressive pathologic subtype change in metastatic LNs were significantly associated with distant metastasis and persistent structural distant metastasis of PTMC.

Conclusions: Most of patients with PTMC have excellent clinical outcome and DM from PTMCs was occurred rarely. However, DM of PTMCs could cause fatal outcomes. A meticulous pathologic examination of metastatic LNs to identify the presence of extranodal extension and pathologic subtype of metastatic LNs is helpful for assessing the risk of DM in PTMCs.

P119

Outcome of 15MCi Fixed Dose Radioiodine Therapy in Hospital Sultanah Aminah Johor Bahru

Loh Leh Teng, Phillip Pang Boon Cheong, Ang Cheng Siew, Norhaliza Mohd Ali

Medical Department, Radionuclear Department Hospital Sultanah Aminah

Background: Radioiodine therapy (RAI) is a definitive treatment for patients with hyperthyroidism. In our centre, a standard dose of 15MCi is administered to these patients.

Objectives: Our primary objective was to determine the response rate at one year after RAI. The patients were defined as responsive to treatment if they achieved euthyroidism or hypothyroidism. Non responsiveness was defined if patients remained hyperthyroid. The secondary objective was to determine the factors that affect the outcome of the patients.

Materials and Methods: This was a retrospective analysis of the patients who were followed up in the endocrine clinic for hyperthyroidism and had undergone RAI in year 2013. Data collected include demographic data, duration of disease, thyroid function test(TFT) results immediately prior to RAI and one year after RAI.

Results: 54 patients received RAI in 2013, however only 36 patients were available for analysis. The median age of the patients were 47 years old (35.8, 62.5), 59.9% were female and majority of the patients were Chinese(38.1%). The median duration of disease was 4.5 years(2, 10), the median Thyroid stimulating Hormone(TSH) before RAI was 0.005(0.005, 0.756) whereas the median free thyroxin hormone(FT4) was 23.32pmol/l(12.73, 4.85). Eleven patients had received additional RAI either before or after the analysis. Only 35.7% of patients responded to one dose of RAI. Various factors such as age, gender, ethnicity, duration of disease, TSH, FT4 results and even additional RAI were not found to be associated with the responsiveness of the patients to the treatment.

Conclusion: The one year response rate of RAI in our centre was very low compared to Western studies which usually achieve nearly 90%. We postulate that high iodine content in our daily diet in peninsular is most likely the major factor that reduce the RAI uptake in our patients. There were two major limiting factors in this study. Complete data was only available in 67% of the patients and the etiology of hyperthyroidism was not determined in our routine clinical practice thus we were unable to ascertain whether the etiology affects the response rate. Further studies need to be carried out to determine the factors that contribute to this poor outcome.

P120

Prevalence of Dyslipidemia and Fatty Liver Disease in Adults with Mildly Elevated TSH: A Medical Record Review in Makati Medical Center

Rochelle C. Lingad-Sayas, Carolyn Montano, Maria Jocelyn Isidro

Makati Medical Center

Background: Like overt hypothyroidism, there is a growing interest to its precedent condition-subclinical hypothyroidism and/or solely an elevated TSH, its prevalence and metabolic impact. It is only fit to study this condition in Filipinos who are at greater risk than Caucasians for metabolic disorders like Diabetes.

Objectives: This study examined for association of dyslipidemia and fatty liver disease with mildly elevated TSH among Filipino adult patients admitted for general work-up.

Materials and Methods: Clinical profile, metabolic work-up, imaging, and TSH results of 580 patients were evaluated in a retrospective cross-sectional study.

Results: The prevalence of mildly elevated TSH is 3% and an abnormal lipid profile, high FBS and uric acid is more frequent in patients with elevated TSH but this was not statistically significant. However when regression analysis was performed, it revealed associations between elevated TSH (along with other variables) and the conditions of interest. On regression analysis, an elevated TSH, female gender, and absence of comorbid disease were found to be associated with fatty liver disease. For high LDL, the absence of comorbidities and elevated TSH increases the likelihood of this condition. While for triglyceride, it was found that a male with elevated TSH is at risk for high triglyceride. For HDL, a low value is associated with elevated TSH, male gender and presence of comorbid disease while a high value is more likely in a female with elevated TSH but without comorbid disease.

Conclusion: This study showed a 3% prevalence of mildly elevated TSH, but TSH alone was not a significant predictor for these metabolic problems. However on regression analysis, along with gender and presence/absence of comorbid disease in a given individual, a mildly elevated TSH increases the risk for dyslipidemia and fatty liver disease

P121

Correlation Between Free Thyroxine (FT4) and Serum Uric Acid Level in Patients with Graves' Disease

Rio Wironegoro, Deasy Ardiany, Hermawan Susanto, Hermina Novida, Jongky Hendro, Sony Wibisono, Soebagijo Adi, Sri Murtiwi, Agung Pranoto, Askandar Tjokroprawiro, Ari Sutjahjo

Endocrinology-Metabolic Division of Internal Medicine Department Medical Faculty of Airlangga University Surabaya, Indonesia

Background: A significant correlation between hypothyroidism and hyperuricemia has been established. On the contrary, the relationship between hyperthyroidism and hyperuricemia still under debate. In 1989 Ford et al. in contrast with previous reports demonstrated that hyperthyroidism can cause hyperuricemia through the increase of purine nucleotide turn over and the decrease of renal urate excretion. Other studies also revealed that hyperuricemia due to hyperthyroid can be corrected by antithyroids drugs.

Objective: The purpose of this study is to observe whether there is correlation between free thyroxine (FT4) level and uric acid level in Graves' disease patient.

Material & Methods : The study was a cross sectional study in 42 Graves' disease patient who were on routine follow-up in private clinic. All patient underwent biochemical evaluations in particular : FT4, thyroid-stimulating hormone (TSH) and serum uric acid. Patient with other causes of of thyrotoxicosis and patients with renal insufficiency and metabolic syndrome were excluded from this study.

Result: This study include 42 subjects, 27 (64.3%) females and 15 (35.7%) males. There was a significant increase of serum uric acid level in Graves' disease patient. A significant correlation was found between FT4 level and serum uric acid level ($p < 0.05$, pearson's correlation coefficient).

Conclusion: Our findings confirm the data from literature, it shows that hyperthyroidism can cause an increase in serum uric acid level.

P122

Correlation Between Thyroid-Stimulating Hormone (TSH) and Serum Uric Acid Level in Patients with Graves' Disease

Rio Wironegoro, Deasy Ardiany, Hermawan Susanto, Hermina Novida, Jongky Hendro, Sony Wibisono, Soebagijo Adi, Sri Murtiwi, Agung Pranoto, Askandar Tjokroprawiro, Ari Sutjahjo

Endocrinology-Metabolic Division of Internal Medicine Department Medical Faculty of Airlangga University Surabaya, Indonesia

Background: There was a correlation between TSH and serum uric acid level. Previous studies have reported high prevalence of hyperuricemia in patients with both hypothyroidism and hyperthyroidism. In one study, hyperuricemia was found in 5 out of 18 hyperthyroid patients. Another study found that patients with hyperthyroidism due to Graves' disease had significantly higher serum uric acid levels than age- and sex-matched controls.

Objective: The purpose of this study is to observe whether there is correlation between thyroid-stimulating hormone (TSH) level and uric acid level in Graves' disease patient.

Material & Methods: This is a cross sectional study in 42 Graves' disease patient who were on routine follow-up in private clinic. All patient underwent biochemical evaluations in particular : FT4, thyroid-stimulating hormone (TSH) and serum uric acid. Patient with other causes of thyrotoxicosis, patients with renal insufficiency and metabolic syndrome were excluded.

Result: The study involved 42 subjects, 27 (64.3%) females and 15 (35.7%) males. There was an increase of serum uric acid level in Graves' disease patient. A significant correlation was found between TSH level and serum uric acid level ($p < 0.05$, pearson's correlation coefficient).

Conclusion: Our findings in accordance with literatures which revealed that hyperthyroidism can cause an increase in serum uric acid level.

P123

Efficacy of Ultrasound-Guided Percutaneous Fine Needle Aspiration in Treatment of Thyroid Cystic Nodules

Avigael Junsay, Roberto Mirasol

St. Luke's Medical Center, Quezon City, Philippines

Background: Thyroid nodules are prevalent especially in the advent of ultrasonographic evaluation. The content may be solid or cystic in nature in various proportions. Thyroid cysts aspiration is safe and effective procedure minimizing the need for surgical intervention. The aim of the study is to determine the efficacy of ultrasound-guided percutaneous fine-needle aspiration in the treatment of cystic thyroid nodule.

Methods: This is a retrospective cohort study reviewing the charts of patients with cystic thyroid nodule who underwent ultrasound-guided percutaneous fine needle aspiration in the Diabetes, Thyroid and Endocrine Center, St Luke's Medical Center Quezon City from November 2013 to December 2014. Complete response will be defined as volume reduction of more than 90%; partial response as volume reduction at 50-89% and no response as volume reduction less than 50%. Efficacy will be defined as volume reduction of more than 50% of the thyroid nodule after aspiration.

Result: A final cohort of 92 charts were reviewed with 95 aspirated thyroid nodules included in the study. Seventy six percent of the nodules were complex, 55% of which were predominantly cystic and 21% were predominantly solid, and 24% were purely cystic. The mean pretreatment volume was 13.14ml ± 16ml (range: 1 to 78ml). The mean volume aspirated was 8.29ml ± 11.71ml (range: 0.2-64ml). The mean percent reduction was 78.34% ± 27.45% (range: 0 to 100%). Majority (92.63%) of the aspirated fluid were cystic fluid that were easily aspirated while 7.37% where thick and viscous during aspiration with colors ranging from yellow, pinkish to reddish, amber and brown. Complete response, partial response and no response was seen in 47, 36 and 12 cases, respectively. Thirty-nine patients had complete disappearance of the cystic fluid in the nodule after one aspiration. There were 3 cases wherein no change in the volume was noted after aspiration.

Conclusion: Ultrasound-guided aspiration is an effective therapy for those patients with cystic thyroid nodule.

P124

Diagnostic Accuracy of Ultrasound Guided Fine Needle Aspiration Biopsy in Predicting Malignancy in Thyroid Nodules 3cm in Size or Greater

Natalie Bernice T. Ong, Roberto C. Mirasol

St. Luke's Medical Center, Quezon City, Philippines

Background: Thyroid nodules are a common problem encountered in endocrine practice. Various reports have shown that majority of these nodules are benign, but in 5 to 15% of cases, these lesions harbor malignancy. Several risk factors for the presence of carcinoma within thyroid nodules have been identified. Though controversial, the prevalence of thyroid carcinoma appears to be associated with larger nodule size. Studies have shown that the diagnostic accuracy of fine needle aspiration biopsy is limited in large nodules prompting recommendations for diagnostic lobectomy regardless of FNAB result.

Objective: To determine the diagnostic accuracy of ultrasound guided fine needle aspiration biopsy (USG-FNAB) in predicting malignancy in thyroid nodules 3cm in size or greater.

Materials and Methods: Retrospective cohort study of patients whose thyroid nodules were subjected to USG-FNAB followed by thyroidectomy. Nodules were divided into four groups according to their respective sizes. The study group consisted of patients with nodules 3cm in size or greater. Patients with nodules less than 3cm will be considered as the control group. FNAB cytopathology report was correlated with post thyroidectomy histopathologic diagnosis by nodule dimensions. Sensitivity, specificity, positive predictive value, negative predictive value, accuracy rate, and malignancy rate will be computed in each group and will be compared.

Results: A total of 1, 464 nodules were subjected to USG-FNAB at the Diabetes, Thyroid and Endocrine Center of SLMC between January to December 2014. 173 nodules were surgically excised following USG-FNAB. Out of the 173 nodules, 53 (29.8%) measured 3cm in size or greater (study group) and 120 (67.4%) measured less than 3cm in size (control group). The sensitivity, specificity, positive predictive value, negative predictive value, and accuracy rate were 48.5%, 85%, 84.2%, 50%, and 62.3% for the study group and 63.4%, 84.2%, 89.7%, 51.1%, and 70% for the control group. Malignancy was observed in 62.3% of the study group and 68.3% of the control group. There was no statistically significant difference between the diagnostic accuracy ($p>0.05$) and malignancy rate ($p=0.436$) in both groups.

Conclusion: Increased nodule diameter is not associated with limitations in the diagnostic value of USG-FNAB. Malignancy rate is smaller for larger nodules but did not reach statistical significance.

P125

A 24-Year-Old Female with Hashitoxicosis

Dieni Azra Bukhari, R. Bowo Pramono, Hemi Sinorita, M. Robikhul Ikhsan

Division of Endocrinology – Internal Medicine Departement, dr. Sardjito Hospital, Yogyakarta, Indonesia

Introduction: Hashimoto's thyroiditis is an autoimmune disease first described by Hakaru Hashimoto in 1912. The diagnosis can be established by an elevated anti-thyroid peroxidase (anti-TPO) antibodies. The term 'hashitoxicosis' is sometimes used to describe an autoimmune thyroid disease overlap syndrome of Graves' and Hashimoto's disease. Hashitoxicosis is most likely to present in the early stages of autoimmune hypothyroidism.

Case Report: A 24-year-old female patient presented with thyroid swelling and features of thyrotoxicosis confirmed by thyroid function tests. A fine needle aspiration biopsy results is Hashimoto's Thyroiditis, confirmed by an elevated anti-thyroid peroxidase (anti-TPO) antibodies. Thyrostatic therapy had been initiated immediately after the diagnosis of hyperthyroidism . After almost one-year follow-up, this patient never experience an euthyroid nor hypothyroid state. Since the thyrotoxicosis symptoms is prominent, we decided to suggest the radioactive Iodine ablation to prevent further complication.

Discussion: Hashitoxicosis is self limiting, and lasts for a period of a few weeks to some months. Hashitoxicosis is sometimes treated with a block and replace method. In most cases with highly unstable thyroid function, the patient is referred for thyroidectomy or radioactive iodine ablation.

P126

The Association Between Thyroid Stimulating Hormone and Lipid Profile in Patients with Graves' Disease

Sri Murtiwi, Askandar Tjokroprawiro, Ari Sutjahjo, Soebagijo Adi, Sony Wibisono, Agung Pranoto

Surabaya Endocrine and Metabolic division - Internal Medicine Department - Dr. Soetomo Teaching Hospital - Faculty of Medicine Airlangga University, Surabaya-Indonesia

Background: Dyslipidemia is a common metabolic abnormality in patients with thyroid disease. Effect of thyroid hormones in all aspects of lipid metabolism leading to various quantitative and/or qualitative changes of triglycerides, phospholipids, cholesterol, and other lipoproteins. Thyroid hormones induce the 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, which is the first step in cholesterol biosynthesis, low density lipoprotein receptor (LDLR) via sterol regulatory element-binding protein-2 (SREBP-2), lipoprotein lipase, cholesteryl ester transfer protein and apolipoprotein A-V, induce adipogenesis, lipolysis and increase the activity of HMG-CoA. There are linier positive associations between thyroid stimulating hormone (TSH) and total cholesterol (TC), triglyceride (TG), low density lipoprotein cholesterol (LDL-C), and negative association with high density lipoprotein cholesterol (HDL-C) in hyperthyroidism.

Objective: The aim of this study was to investigate the association between TSH, and lipid profile (TC, TG, LDL-C, HDL-C) in patients with Graves' disease.

Method: The study was a cross sectional analytical study which enrolled Graves' disease patients who were on routine follow up in private out endocrinologist clinic. The study included patients with Graves' disease based on clinical examination, and laboratory findings (TSH, TSHs, FT4, and FT3). Informed consent was obtained from all patients. Lipid profile (TC, TG, LDL-C, HDL-C) was measured. Exclusion criteria for the study group were: diabetes patients, pregnancy, neoplasms, liver, kidney, and heart failure diaseses. Statistical analysis was performed using Pearson test.

Result: This study included 152 subjects, 52 males (34.2%) and 100 females (65.8%); mean of age was 56.28 ± 15.12 years. The laboratory results mean of TSH was 0.32 ± 0.298, FT4 was 5.26 ± 7.83, TC was 189.6 ± 46.43, TG was 120.5 ± 48.69, LDL-C was 119.07 ± 39.99, HDL-C was 57.15 ± 18.75. Statistical analysis show significant association between TSH and TC (r 0.524, $p < 0.01$), TG (r 0.420, $p < 0.01$), LDL-C (r 0.548, $p < 0.01$) and HDL-C (r -0.709, $p < 0.01$).

C**onclusion:** There was significantly association between TSH and lipid profile (TC, TG, LDL-C) and inversed association with HDL-C in patients with Graves' disease

P127

Thyroid Function Derangement in Patients with Chronic Kidney Disease

Yar Pyae, Than Than Aye, Ye Myint

University of Medicine 2

Background: The number of patients with chronic kidney disease worldwide is rising markedly. Some study showed CKD was associated with higher prevalence of primary hypothyroidism, both overt and subclinical. Other recent study showed that thyroid hormone replacement therapy preserved renal function better even in subclinical hypothyroidism. Nevertheless, signs and symptoms of hypothyroidism may resemble those of chronic renal failure. Awareness should be raised about hypothyroidism in CKD and who should be screened for hypothyroidism in CKD.

Objectives: To find out the association between hypothyroidism and severity of chronic kidney disease and to compare clinical hypothyroid scores between hypothyroid and non-hypothyroid patients with chronic kidney disease.

Materials and Methods: This study was a hospital-based cross-sectional descriptive study. Total 55 patients with chronic kidney disease were collected from affiliated hospitals of University of Medicine 2 during one year study period in 2013. Case history, physical examination and laboratory blood tests were done in this study.

Results: In patients with eGFR between 30 to 60 group, number of hypothyroid was 5 among total number of 28 and proportion was 18 and in patients with eGFR less than 30 group, number of hypothyroid was 12 among total number of 27 and proportion was 44. Hypothyroidism was significantly associated with severity of chronic kidney disease (P-value = 0.032) and there was also significant correlation between all thyroid function tests (free T3, free T4 and TSH level) and severity of chronic kidney disease. Hypothyroid patients has more clinical hypothyroid scores than non-hypothyroid patients in comparison (P-value = <0.001) and there was also significant correlation between all thyroid function tests (free T3, free T4 and TSH level) and clinical hypothyroid scores in CKD patients.

Conclusion: According to this study, hypothyroidism was significantly associated with severity of chronic kidney disease. Thus high index of suspicion will be needed to detect hypothyroidism in CKD patients. Zulewski's hypothyroid clinical scores should be considered to be calculated in all chronic kidney disease patients to decide whether thyroid function test should be done or not as in this study hypothyroid patients have more clinical hypothyroid scores than non-hypothyroid patients in CKD.

P128

Prevalence of Thyroid Dysfunction in Childbirth Women of Haji Hospital Medan

Lita Septina Chaniago, Achmad Rudijanto, Djokowahono Soeatmadji, Putu Moda Arsana

Department of internal Medicine Haji Hospital Medan, Indonesia; Division Endocrinology Metabolic and Diabetes, Dr Saiful Anwar General Hospital / Medical Faculty of Brawijaya University, Malang, Indonesia

Background: The thyroid diseases hyper and hypothyroidism are relatively common in pregnancy and important to treat. Undiagnosed or untreated thyroid diseases in pregnancy may lead to miscarriages, premature births, intrauterine growth retardation and pregnancy complication. Pregnant women with hyperthyroidism can also develop high blood pressure, and are at greater risk of heart conditions. Hypothyroidism during pregnancy is not common. However, the symptoms can be overlooked because some mimic the hormonal changes of a normal pregnancy, such as tiredness and weight gain.

Objectives: The purpose of the study was to evaluate result of thyroid function in childbirth women. Hyperthyroidism and hypothyroidism in childbirth women are diagnosed based on blood tests to measure levels of thyroid-stimulating hormone (TSH) and thyroid hormones T4.

Materials and Methods: Screening for thyroid function in 60 subject who child birth women in Haji Hospital Medan was doing start on January until May 2015 period. Data collection consist of age, history of gestation, parturition and abortion, type of child birth, long baby, head circumference and birth weight. Thyroid dysfunction base from TSHs and FT4 level.

Results: 9 women (15 %) of all study population had bad obstetric history (abortion). Mean TSHs was 1, 44 μIU/mL (± 0, 74 SD) and FT4 was 0, 88 ng/dL(± 1, 44 SD). Hypothyroid or subclinical hypothyroid and hyperthyroid was found in 3 (5%) and 1 (1, 7%) women respectably base of TSHs and FT4. There are no statistical correlation between hypothyroid (or subclinical hypothyroid) and long baby, head circumference, birth weight, number of gestation or parturition and haemoglobin level.

Conclusion: Most of study population was on normal limit. Hypothyroid or subclinical hypothyroid and hyperthyroid only found in 3 and 1 women.

P129

Prevalence of Thyroid Disorders and Thyroid Autoantibodies Among Coastal Communities of Malaysia (Part of Nationwide Study of Thyroid Disorders in Malaysia)

Mohammad Arif Shahar, Liyana Ghani, Ahmad Marzuki Omar, Huai Heng Loh, CP Ooi, Yusniza MY, Zanariah Hussein, Subashini S, Luqman Ibrahim, Norasyikin Abd Wahab, Norlela Sukor, Rabizah Md Zain, Kha Ching Long, Amyliaton Mohd Razali, Noradilah Zainuddin, Nurul Hani Mat, Fadhlin Mender, Musilawati Muhajir, Hanita Othman, Nor Azmi Kamaruddin

Kulliyyah of Medicine, International Islamic University Malaysia (IIUM); Endocrine Unit, Universiti Kebangsaan Malaysia Medical Centre (UKMMC); Universiti Malaysia Sarawak (UNIMAS); Universiti Putra Malaysia (UPM); Hospital Putrajaya (HPJ); University of Malaya (UM); Department of Diagnostic Laboratory Services, UKMMC

Objectives: To determine the prevalence of thyroid disorders and thyroid autoantibodies in the coastal communities of Malaysia. This study is part of a nationwide study looking into the prevalence of thyroid disorders.

Methods: A cross sectional study was performed in two coastal districts of rural Selangor. A village from each district was chosen where a participant from each household from the village was selected using KISH tables. Sociodemographic data, medical history, anthropometric measurement and thyroid examination were performed. The presence of goiter was recorded according to the World Health Organization (WHO) goiter grading system. Blood withdrawn was tested for thyroid function and thyroid autoantibodies. Thyroid antibodies analyses were done using ELISA Immulite 2000 system. Lowest detectable limit for anti-thyroperoxidase (antiTPO) and anti-thyroglobulin (antiTG) are 10 IU/mL and 20 IU/mL respectively. Low, moderate and high titre is defined 40 - 100 IU/mL, 101-1000 IU/mL and >1000 IU/mL respectively.

Results: A total of 418 subjects were recruited with a mean age of 54.1 ± 14.2 years. Majority were Malays (86.8%), followed by Indians (11.7%) and Chinese (1.4%). Among respondents, 2.9% had Grade 1 and 8.9% had Grade 2 goitres. A mere 3.4% had clinically palpable thyroid nodules. A total of 411 blood samples were available for thyroid level assessment, with 1.9% of respondents were found to have hypothyroidism while 85.6% had TSH in the range of 0.32-2.5 mIU/L. The prevalence of overt and subclinical hypothyroidism were 0.2% and 1.7% respectively. On the otherhand, 3.4% of respondents were hyperthyroid (TSH < 0.32 mIU/L) with prevalence of overt and subclinical hyperthyroidism being 0.5% and 2.9% respectively. Among 405 samples which were available for antiTPO analysis, 9.1% has detectable antiTPO titre (>40.0 IU/mL), with 4.4% had moderate and 2.5% had high antiTPO titres. One respondent (10%) from among those with high antiTPO titres was found to have T3 thyrotoxicosis. Fourty percent of euthyroid respondents with high titre and 38.9% with moderate titre had high normal TSH, in the range of 2.51 – 5.00 mIU/L ($p<0.001$). Among 408 samples which are available for antiTG analysis, 3.4% and 5.4% had low detectable and moderate antiTG titres respectively. Only 0.5% (2 respondents) had high antiTG titre (>1000 IU/mL) and found to be hypothyroid. Among those with moderately positive titre, 9.1% were hyperthyroid and majority (63.6%), although euthyroid, had TSH levels between 0.32 – 2.50 mIU/L ($p<0.001$).

Conclusion: The low prevalence of thyroid antibodies and thyroid disorders in coastal communities could be attributed to the iodine sufficient status in those areas. Euthyroid respondents with moderate and high antiTPO titres tend to have higher TSH levels, while those with moderate and high antiTG titres had lower TSH levels.

P130

Association of Various Types of Diabetes Mellitus with Thyroid Disease in Young Patients

Alla Ovsyannikova, Oksana Rymar, Mikhail Voevoda

Federal State Budgetary Scientific Institution “Scientific Research Institute of Therapy and Preventive Medicine”

Aim: The aim of this research was to determine the prevalence of thyroid disease among different types of diabetes mellitus (DM) in young patients.

Materials and methods: We examined 88 patients with the debut DM before the age of 40 years: 35 people with DM 1, 42 - with type 2 diabetes mellitus (DM 2), 11 patients with confirmed molecular - genetic research MODY 2 diabetes. We did a full clinical examination, took blood samples for biochemical and hormonal analysis (determination of T4, TSH in serum, reference values of TSH 0.4-4.0 mU / l), thyroid ultrasound.

Results: Thyroid disease was present in 7 patients (20%) with DM 1: 3 patients had autoimmune thyroiditis, 3 - subclinical hypothyroidism, 1 - nodular goiter. Thus, all patients with DM 1 and thyroid disease had hypothyroidism.

13 patients with DM 2 (31%) had thyroid disease: 5 patients had autoimmune thyroiditis with hypothyroidism, 3 - nodular goiter with euthyroid, 1 - subclinical hypothyroidism, 1 - diffuse changes of the thyroid gland, euthyroidism, 2 - primary hypothyroidism without goiter, 1 - thyroid cysts, euthyroidism. Thus, euthyroidism was determined in 5 young patients with DM 2 (38%) in 8 patients (62%) - hypothyroidism.

4 patients (36%) with MODY 2 had thyroid disease: 1 - papillary carcinoma with thyroidectomy, 1 - autoimmune thyroiditis with hypothyroidism, 2 - diffuse changes of the thyroid gland, euthyroidism.

The average dose of thyroid hormones in treatment were in type 1 87, 5 ± 53, 0 mcg, in DM 2- 81, 2 ± 47, 3 mcg, with MODY 2 - 100 ± 56, 6 mcg. The average level of TSH in patients with type 1 diabetes was 1, 7 ± 1, 3 mU / l, with DM 2- 1, 7 ± 0, 9 mU / l in MODY 2 - 2, 0 ± 1, 1 mU / l.

Conclusions: 1. Young patients with MODY 2 and DM 2 had thyroid disease more frequently than patients with type 1; 2. All patients with type 1 diabetes and thyroid disorders had hypothyroidism, whereas in those with type 2 diabetes and MODY 2 had hypothyroid and euthyroid thyroid function.

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P131

Primary Hypothyroidism and Hypopituitarism in a Patient with Lingual Thyroid

Patrick Siy, Eduardo Thomas Aquino

Section of Endocrinology, Diabetes, and Metabolism, St. Luke's Medical Center, Quezon City

Lingual thyroid is a rare developmental abnormality commonly presenting in females, especially in populations of Asian origin. The most common symptoms are related to the growth of lingual thyroid. In terms of thyroid function, most patients with lingual thyroid present with hypothyroidism, usually in the absence of an orthotopic thyroid. We report a case of a 13 year old boy who consults due to short stature below the 3rd percentile. Work-ups showed primary hypothyroidism and a lingual thyroid. Other hormonal assays showed hypopituitarism: secondary adrenal insufficiency and hypogonadism with normal IGF-1 level. Patient was managed accordingly based on his hormonal deficits. Bone age was estimated at 9 years below his chronologic age and was offered growth hormone therapy for his short stature but due to lack of finances, opted not to have it. In these cases, it would be prudent to investigate thyroid and pituitary function to give appropriate hormonal replacement especially in pediatrics.

P132

Thyrotropin-Producing Pituitary Macroadenoma in a Filipino Patient

Michael Conrad L. Tongol, Stefanie W. Lim-Uy

St. Luke's Medical Center, Quezon City, Philippines

Thyrotropin-producing pituitary tumors are very rare. They usually present with symptoms of hyperthyroidism with or without compressive manifestations.

We report a 46 year-old female, Filipino, presenting with a 3 year-history of palpitations, tremors and irritability accompanied by diffuse goiter. Three years prior, baseline thyroid function tests showed elevated free thyroid hormones with inappropriately elevated thyrotropin or thyroid stimulating hormone (TSH). Pituitary MRI showed a pituitary mass (1.2x1.3x1.2 cm) with slight deviation of the infundibular stalk. She was lost to follow-up, consulted another physician who gave methimazole and propranolol. Persistence of symptoms prompted repeat consult. Physical exam showed diffuse goiter. Thyroid function tests revealed the same pattern of elevation. Other pituitary gland function tests were unremarkable except for mildly elevated prolactin. Somatostatin analogue treatment was offered but not started due to financial constraints. She underwent transphenoidal surgery of the pituitary gland with the final histopathology showing positive immunohistochemical staining for TSH. A week post-surgery, there was normalization of TSH and free thyroid hormone levels and resolution of symptoms and the goiter.

Despite being rare, TSH-producing pituitary adenoma is a differential in thyrotoxicosis with discordantly elevated TSH and free thyroid hormone levels. Prompt diagnosis is important since this is not generally responsive with anti-thyroid drugs. Pituitary surgery in this case proved successful in abating the patient's symptoms and goiter.

The positive immunohistochemical stain for TSH confirmed the diagnosis for this case and to our knowledge, this is the first reported case of TSH-positive pituitary macroadenoma in the Philippines.

P133

Acute Hepatitis as the Presenting Symptom of Graves Disease: A Case Illustration

Velma Herwanto, Ikhsan Mokoagow

Faculty of Medicine Tarumanagara University/ Royal Taruma Hospital, Jakarta, Indonesia; Jakarta Eye Center Kedoya, Jakarta, Indonesia

A 34-year old female admitted to our hospital with nausea and vomiting since 2 weeks prior to admission. She had been hospitalized on two separate occasions for the same condition. However, the symptoms reoccurred soon after she had been discharged. She had occasional feverish sensation and increased of appetite. No history of chronic liver disease or alcohol consumption was known. On admission, she had tachycardia, low-grade fever, and epigastric tenderness. There was no sign of jaundice or liver enlargement. On laboratory examination, increases in serum transaminases level (ALT was higher than AST) and gamma-GT were found, whereas bilirubin level was normal. Data of negative ANA result, negative serology of viral hepatitis – A, B, and C, and fatty liver parenchyma on abdominal ultrasound excluded possibility of autoimmune and viral hepatitis. We treated this patient as acute hepatitis and managed her symptomatically.

For the next few days, the symptoms were improved but the transaminases kept increasing and patient still had tachycardia. From physical examination we found diffuse thyroid enlargement in both lobes, neither tenderness nor sign of inflammation was present. Fine tremor was observed from upper extremity examination. Thyroid function tests revealed high fT4 and low TSHs. TRAb was positive and anti-TPO was negative. Thyroid ultrasound showed diffuse thyroid enlargement with some solid nodules on both lobes.

Propranolol were administered to the patient. We decided to postpone antithyroid medication due to high transaminases. On follow up, even though the symptoms were getting better, the transaminases were not improving at all. Hence, we decided to administered methimazole 20 mg/day and dexamethasone 10 mg/day. We evaluated the transaminases few days later. Due to improvement of transaminases, we increased methimazole dose and discharged the patient. She came to outpatient clinic one week later with lower heart rate and further improvement of transaminases level.

The interaction between the thyroid and liver is critical for maintaining homeostasis in both sites. Therefore, it is not surprising that hepatic dysfunction is commonly observed in patients with thyroid disease. Studies have noted that improvement in thyroid function will be accompanied by normalization of the liver panel.

P134

Spindle Epithelial Tumor with Thymus-Like Differentiation (SETTLE) of the Thyroid: A Case Report

Annabel Mata, Reynaldo Rosales

Section of Endocrinology, Diabetes, and Metabolism, St Luke's Medical Center, Quezon City

Spindle epithelial tumor with thymus-like differentiation (SETTLE) is a rare entity of the thyroid gland with only few reported cases in literature. We are presenting a case of a 72 year old female who initially presented with nontender left anterior neck mass with associated dysphagia and hoarseness of voice. Thyroid ultrasound showed enlarged left thyroid lobe with multiple nodules largest measuring 2.7 x 2.4 x.2.5 cm. Initial FNAB showed AFUS and she eventually underwent Total Thyroidectomy. Histopathology revealed Spindle epithelial tumor with thymus-like differentiation (SETTLE) measuring 3.3 cm, Left lobe with extension to isthmus and peri-thyroidal soft tissue with Papillary thyroid microcarcinoma, conventional measuring 0.3 cm, in the Right lobe and follicular variant measuring 0.4 cm, left lobe and 0.1 cm isthmus. Immunohistochemical staining was negative for HBME-1 and TTF-1 as well as Pax-8, a marker most often retained in anaplastic thyroid carcinomas. Cytokeratin was strongly positive among the spindle cells and glandular structures. Patient was apparently well post operatively and was started on Levothyroxine suppression therapy until 3 weeks post op when there was note of recurrence of enlarging left anterior neck mass and repeat FNAB was consistent with carcinoma. Patient was then readmitted due to progressive dyspnea and upper airway obstruction warranting tracheostomy and wide excision of mass. Histopathology of the mass revealed Undifferentiated Thyroid Carcinoma with Tumor extending to the skeletal muscle, immunohistochemical stains were positive for CK (Ae1/Ae3) and Vimentin, focally positive for PAX 8 and negative for LCA which favors dedifferentiation of Papillary Thyroid Carcinoma. This case emphasizes that Spindle epithelial tumor with thymus-like differentiation (SETTLE) is a distinct variant of thyroid neoplasm possibly arising from PTC with a potential more aggressive course of disease.

P135

A Case of Thyrotoxicosis Following Peripheral Blood Stem Cell Transplantation

Ahmad Marzuki Omar, Mohamad Arif Shahar, Wan Juani Wan Seman, Azura Dina Muhayidin, Subashini Rajoo, Chew Peng Ooi, Huai Heng Loh, Mohd Rahman Omar, Norasyikin A. Wahab, Norlaila Mustafa, Norlela Sukor, Nor Azmi Kamaruddin

International Islamic University Malaysia, Kuantan, Pahang; Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur; Universiti Putra Malaysia, Serdang, Selangor; Universiti Malaysia Sarawak, Kuching, Sarawak; Universiti Sains Islam Malaysia, Kuala Lumpur

Thyroid dysfunction may occur in patients after haematopoietic stem cell transplantation. We report a 41-year-old gentleman who was investigated for bicytopenia in June 2012 after presenting with pruritus and gum bleeding. His initial bone marrow aspiration (BMA) showed features of thrombocytopenia, which persisted despite treatment with oral steroid. A repeat BMA a year later revealed hypocellular marrow with full blood pictures showed persistent bicytopenia with presence of blast cells. Acute myeloid leukaemia was later confirmed with subsequent BMA. First induction/consolidation chemotherapy was performed in September 2013. He had persistent disease despite reinduction chemotherapy 6 weeks later. He underwent allogeneic peripheral blood stem cell transplantation (PBSCT) in March 2014. His donor was his brother who has had no significant medical problems including thyroid disease. The transplantation was complicated by neutropenic sepsis, which later resolved. Three weeks post transplantation he was noted to have suppressed thyroid-stimulating hormone levels with elevated free thyroxine levels and upper limit of free T3 (TSH <0.001 uIU/ml, fT4 24.59 pmol/l, fT3 4.1 pmol/l). His TSH a month before transplantation was 0.27 uIU/ml. However, his free T4 dan T3 levels were not available. He was otherwise asymptomatic. His thyroid antibodies later were found to be normal (anti-thyroglobulin, ATG <20 IU/ml; anti-thyroid peroxidase, anti-TPO 15.8 IU/ml). As he remained asymptomatic of thyrotoxicosis, he chose not to be treated medically and was given a follow-up in the clinic. This case illustrates the possible thyroid dysfunction following haematopoietic stem cell transplantation, which may or may not related to autoimmunity. Autoimmune thyroid disease (AITD) is a recognised complication of autologous or allogeneic haematopoietic stem cell transplantation (HSCT). In a series, 10 cases of autoimmune thyroid disease were diagnosed among 721 HSCT recipients, with three having features of hypothyroidism, five had hyperthyroidism and two had sequential hypo- and hyperthyroidism. Significant risk factors included HSCT for chronic myeloid leukaemia, HLA B46 and DR9 loci, the A2B46DR9 haplotype and female donors. Prior to the series, there were 17 reported cases of AITD after allogeneic HSCT (12 had hyperthyroidism, 5 had hypothyroidism).

P136

Tuberculous Lymphadenitis Mimicking Nodal Metastasis in Follicular Variant Papillary Thyroid Carcinoma

Marc Gregory Yu, Jenny Maureen Atun

Section of Endocrinology, Diabetes and Metabolism, Department of Medicine, Philippine General Hospital, Manila, Philippines

Background: Papillary thyroid carcinoma (PTC) is sometimes associated with cervical lymphadenopathy on presentation. Tuberculous (TB) lymphadenitis can mimic lymph node metastasis from PTC since the distribution and appearance of affected lymph nodes tends to be similar. A proper preoperative evaluation is needed to distinguish these two entities and provide appropriate treatment.

Case: A 50-year-old Filipino male presented with a seven-year history of a gradually enlarging anterior neck mass. A solitary lymph node was likewise palpated at the left cervical area. The patient denied any hypo- or hyperthyroid symptoms or compressive symptoms such as dyspnea, dysphagia, or odynophagia. He also denied symptoms of chronic cough, night sweats, weight loss, or fever. There was no history of prior treatment or known exposure to TB, no previous head and neck irradiation, and no family history of thyroid disease. Serum chemistry, hemogram, and thyroid function tests were normal. A thyroid ultrasound (US) showed a 6.5 x 5 x 3 cm solid mass at the left lobe with a single 1.2 x 1 x 0.5 cm cervical lymph node. Preoperative fine-needle aspiration biopsy (FNAB) of the thyroid mass revealed PTC. The patient underwent total thyroidectomy with cervical lymph node dissection where histopathology confirmed follicular variant (FV)-PTC. Examination of the lymph node, however, revealed chronic granulomatous inflammation with caseation necrosis and Langhans type giant cells consistent with a tuberculous etiology. A chest X-ray plus two acid-fast (AFB) stained sputum samples were negative for concomitant pulmonary TB. The patient was started on a quadruple-drug anti-mycobacterial regimen and is currently scheduled to undergo high-dose (100 mci) radioactive iodine therapy.

Conclusion: This is the first documented case of its kind in the Philippines and in Southeast Asia. The case illustrates that the presence of cervical lymphadenopathy in a patient with PTC may not always indicate metastatic spread from the disease. In endemic areas and developing regions, TB should be considered an important differential in the etiology of cervical lymphadenopathy in a patient with PTC. Proper preoperative evaluation remains the cornerstone to providing appropriate treatment.

P137

Hashimoto's Encephalopathy in a Patient with Type 1 Diabetes Mellitus: A Case Report

Ng Yong Muh, Lim Lee Ling, Tan Alexander Tong Boon, Vethakkan Shireene Ratna, Chan Siew Pheng

Division of Endocrinology, Department of Internal Medicine, University of Malaya Medical Centre

A 34 years old male, with background history of Type 1 Diabetes Mellitus since age of 9, presented with progressive neurological deficits. He started to have deteriorating cognitive function, anterograde amnesia, recurrent seizures (generalized tonic-clonic and absence) and poor social interaction since 2 years ago. He subsequently developed aggressive behaviour and paranoid delusion 2 months prior to this admission.

His initial Montreal Cognitive Assessment (MOCA) score was 11/30. Other neurological and systemic examinations were normal. He was clinically euthyroid with no evidence of goitre or Grave's ophthalmopathy.

Laboratory tests revealed free T4 (fT4) 15.6 pmol/L (11.5 - 22.7); thyroid stimulating hormone (TSH) <0.01 mIU/L (0.55 - 4.78) and anti-thyroid peroxide (anti-TPO) 182 mIU/L (0 - 35). Autoimmune screen, anti-N-methyl D-aspartate receptor antibody (anti-NMDA), serum HIV, VDRL, vitamin B12, paraneoplastic antibodies (anti-Hu, Yo, Ri) and tumour markers were negative. HLA-B1502 test was also negative. Magnetic resonance imaging of brain showed frontal, temporal and parietal lobes atrophy. Cerebrospinal fluids analysis excluded intracranial infections. Sharp waves on both fronto-temporal and right parieto-occipital regions were evident on electroencephalogram (EEG).

A diagnosis of Hashimoto's encephalopathy with subclinical hyperthyroidism was made. Intravenous (IV) pulse methylprednisolone 1gm daily for 5 days was given. MOCA score improved to 17/30 within 6-weeks of steroids therapy, together with TSH normalization and anti-TPO titre reduction to 100 mIU/L (without anti-thyroid treatment). He was then given 2nd pulse of IV methylprednisolone and continued with oral prednisolone 1mg/kg/day. At 3-month of steroids therapy, he became seizures free. Azathioprine was added as steroid-sparing agent by then. At 4-month, he was already ADL-independent. Throughout the duration of steroids therapy, insulin adjustment was done with self-monitoring of blood glucose (SMBG) and frequent clinic reviews.

This case illustrates the association of 3 different autoimmune disorders in a young patient. Hashimoto's encephalopathy is very uncommon and can rarely present with subclinical hyperthyroidism. Glucocorticoids remain as the mainstay of treatment, where neurological and thyroid status improvements are generally anticipated.

P138

Severe Hypothyroidism Presenting with Supraventricular Tachycardia: A Case Report

Raja Nurazni Raja Azwan, Woh Wei Mak

Department of Medicine, Hospital Sultan Haji Ahmad Shah, Temerloh Pahang, Malaysia

Background: Thyroid disease is common and can have various systemic manifestations. Abnormal thyroid hormone levels can lead to significant cardiovascular manifestations. Hypothyroidism is most commonly associated with sinus bradycardia, low voltage complexes, prolonged QT interval and conduction or atrio-ventricular blocks but rarely cause serious cardiac arrhythmias such as supraventricular tachycardia and torsades de pointes which have been reported in the literature.

Objective: We presented a case of a 26 years old woman who presented with presyncope and supraventricular tachycardia with aim to identify the association between supraventricular tachycardia and hypothyroidism.

Material and Methods: She was initially presented with first episode of palpitation, profuse sweating and presyncope. Physical examination on admission revealed blood pressure of 60/40mmHg and heart rate of 200bpm. She was afebrile with no clinical evidence to suggest on going sepsis. Peripheral pulses were present with no murmur on auscultation. The electrocardiogram revealed supraventricular tachycardia which was reverted to sinus rhythm with heart rate of 80bpm and normalization of blood pressure with intravenous adenosine. Thyroid function test was sent to evaluate the cause of arrhythmias.

Result: In this patient, severe hypothyroidism was diagnosed with free T4 0.3pmol/L (normal range: 10-23) and TSH 100mIU/mL (normal range: 0.32-5.00). Thyroid peroxidase IgG antibody is elevated with 101 IU/ml (normal range: <60) suggestive of autoimmune Hashimoto's thyroiditis. Other blood investigations were normal including serum electrolytes except for elevated cholesterol level. Repeated electrocardiogram showed sinus rhythm with no prolonged conduction or other abnormal arrhythmias. Structural heart disease was excluded by echocardiogram. Thyroxine replacement therapy was started with 25mcg/day, then increased to 50mcg/day on subsequent day and increased to 100mcg/day after one month.

Conclusion: Several cases with hypothyroidism as a cause of life threatening cardiac arrhythmias such as due to prolonged QT interval have been reported. In this case the patient responded well to thyroxine replacement with biochemical improvement with no recurrence of supraventricular tachycardia. The disappearance of the arrhythmia after restoration of euthyroidism suggests that hypothyroidism might be the cause of supraventricular tachycardia in this patient.

P139

Methimazole-Induced Aplastic Anemia: A Case Report

Andres V. Ebison Jr, Ayzel Embestro, Odessa Tolentino-Wilson

Makati Medical Center

Anti thyroid medications has been used for decades in the treatment of hyperthyroidism. Majority of patients tolerate the treatment well but some develop life threatening reaction. We present a case of a 28 year old female who consulted due to easy bruisibility. History started 2 weeks prior when the patient noted heavy flow of menstruation, about 4 pads per day for 7 days. 2 days prior, the patient noted petechiae on upper extremities. During this period, she had no fever, no abdominal pain. She consulted a haematologist with a CBC showing: Anemia (Hb 10.5 gm/dL) and Thrombocytopenia (9, 000). WBC count was normal. The patient denied fever, epistaxis, hemoptysis, irregular and profuse menstruation neither hematochezia nor melena. She was a diagnosed with hyperthyroidism and was initially given 40 mg per day of Methimazole. It was reduced to 10 mg once a day but titrated up to 20mg/day once a day, 5x a week. Her vital signs on admission were normal. Subsequent blood counts showed pancytopenia and continuous decrease in levels: haemoglobin - 9.9 gm/dl, haematocrit of 27.9, wbc of 2, 480, segmenters 25%, lymphocyte 74% and platelet of 12, 000. TSH - 0.037 mIU/L, FT4 -21.047 ng/dL (normal). She then had episodes of gum bleeding, palpitations, tremors and fever. New ecchymoses on left knee was noted. Propranolol 40mg and Cefepime 1 gm every 8 hours were started. Microbiology investigations done yielded normal results. Bone marrow biopsy revealed: Markedly hypocellular bone marrow (<5%) with marked panhypoplasia, indicative of aplastic anemia. The marrow aspirate was negative for acute leukemic blast cell population. The patient was given antithymocyte globulin 40 mg/day for 4 days and Cyclosporine 100 mg 1 tab daily. Hydrocortisone was continued at 100 mg every 6 hours. Post therapy, CBC was monitored daily. Platelet and PRBC transfusions, G-CSF were given accordingly. Blood counts were noted to be slowly recovering. Hydrocortisone was shifted to Methyprednisolone, 16 mg, (3-0-1). Aplastic anemia is a rare complication of Methimazole. The pathogenic mechanism is linked to either direct cytotoxic effect or an autoimmune mechanism. Severe aplastic anemia can be treated with immunosuppression or bone marrow transplantation.

P140

A Tale of Two Autoimmune Diseases: A Case Report of Thyrotoxicosis Secondary to Graves' Disease with Concomitant Thrombotic Thrombocytopenic Purpura

Patrick James Co, Ruben Kasala

The Medical City Hospital, Section of Endocrinology, Ortigas Avenue, Pasig City, Philippines

Graves' Disease (GD) is the most common cause of thyrotoxicosis and may overlap with another autoimmune disorder like Thrombotic Thrombocytopenic Purpura (TTP).

The dilemma to distinguish Thyroid Storm (TS) as a diagnosis apart from TTP remains to be a challenge among endocrinologists, since both may have similar presentations. The Burch and Wartofsky scoring system (BWSS) is based on clinical parameters and is a sensitive tool in the diagnosis of TS, but it is not specific. This is true for the diagnosis of TTP which includes hemolytic anemia, thrombocytopenia, fever, neurologic and renal abnormalities, and may coincide also with BWSS: unexplained jaundice, lethargy and presence of fever.

We report a case of 52 year old female with GD who presented with lethargy, jaundice and fever. Subsequent diagnostic evaluation showed, anemia (82 g/dL), thrombocytopenia (60, 000) and indirect bilirubinemia, thyroid function tests showed suppressed TSH, high free T3 and normal free T4 levels with elevated TSH receptor antibodies to more than 40U/L. Because of patient's worsening condition, she was managed as case of TS based on BWSS of 75 points (fever, tachycardia, unexplained jaundice, severe lethargy and history of GD) with Propylthiouracil (PTU), Dexamethasone and Propranolol. The suspicion of a haemolytic disorder was brought about by fulfilling the pentad criteria (worsening sensorium with anaemia and thrombocytopenia, fever and renal abnormality) in diagnosis of TTP. The diagnosis of TTP was confirmed with high level of ADAMTS-13 inhibitory assay (92.008 u/mL). She received a total of 4 transfusion plasma exchange (TPE) and had remarkable improvement in sensorium while continuing anti thyroid medications. She also received Rituximab as part of treatment for TTP. Patient was discharged without neurologic sequelae with PTU and Propranolol.

There were only three published cases of GD with concomitant TTP to date and this report aims to create awareness in providing prompt diagnosis and management in a life-threatening situation like this.

P141

Thyroid Storm with Severe Jaundice

Nur Anna C Sadyah, R. Bowo Pramono, Hemi Sinorita, M. Robikhul Ikhsan

Internal Medicine - faculty of medicine Sultan Agung Islamic University Semarang; Devision Endocrinology- Internal Medicine, Sardjito Hospital, Yogyakarta

Background: Thyrotoxic Crisis is hyperthyroid exacerbation with multi organ decompensasion that is live threathening condition. It usually happen due to Graves disease complication, rare cause toxic nodular. Thyroid crisis usually aburpt onset, multifactorial trigger like infectious dissease, ketoacidosis, acute trauma, etc. Clinical feature: fever, tachycardia or supraventricular arrhythmias, central nervous system symptoms dan gastrointestinal symptoms. Diagnosis usually make from clinical findings, if available can made from USG thyroid scan result color-Doppler pattern of hyperactivity. Management refer to TH's levels; supportive care, recovery decompensation. Jaundice is one of poor prognostic of thyroid crisis and found in rare case.

Case: Female, 52 years old, with struma for 1 year ago eksopthalmus and poor condition Burch and Wartofsky's (BW) scoring system 60. Very high (bilirubin direct: 17.95 mmol/dL thyroid, hyperglicemia ultrasoundografi: struma diffusa. Established diagnosis as Thyrotoxic Crisis (Thyroid Storm), Grave disease, Deep icteric, hyperglicemia. Treat with Propanolol, digoxin, Curcuma, Diltiazem, Prophylthiouracyl (PTU), Solutio lugol, Inj steroid deksametason. Follow up patien worsening

Discussion: Diagnosis established by clinical finding, BW scoring system is poor prognostic . Pharmacology treatment need best choice antithyroid for liver abnormality like PTU. steroid injection as treatment need monitor cause by increased of glucosa. Hyperglicemia mild – moderate due to increase glicogenolysis and inhibition of insulin release. PTU 200-250mg / 6 hour dan untuk MMI 20-25 mg/ 6 hour orally or parenteral. Lugol's solution (10 drops every 3h) terapi iodine succesfully inhibition sintesis TH. After 2-3 h PTU or MMI

P142

Thyroid Dysfunctions: Emerging Treatable Cause of Pulmonary Artery Hypertension

Shraddha Sharma, Sunita Aggarwal, Mradul Kumar Daga, Vivek Chaturvedi, Sandeep Garg

Maulana Azad Medical College, New Delhi, India

Background: Pulmonary artery hypertension (PAH) can be primary or secondary. In contrast to primary PAH which is a diagnosis of exclusion, secondary PAH is caused by various conditions including thyroid dysfunctions. It is also seen that pulmonary artery hypertension associated with thyroid dysfunctions is reversible by restoration of euthyroidism i.e. they have a good prognosis if diagnosed and treated timely.

Objectives: The aim of this study was to observe the prevalence of pulmonary artery hypertension (PAH) in patients of thyroid dysfunctions and to see its reversibility with treatment.

Materials and Methods: It was an observational prospective study which included 67 patients with thyroid dysfunctions. Patients with pre-existing cardiovascular disease, chronic pulmonary disease, severe hepatic and renal dysfunctions and critically ill patients were excluded. All the patients were subjected to 2D echocardiography in addition to detailed history and physical examination. Repeat echocardiographic assessment was done after 6 months of initiation of treatment to look for resolution of pulmonary artery hypertension.

Results: The study population included 84% females and 16% males. PAH was present in 19 (28.3%) patients, with a mean age of presentation of 34.3 ± 10.70 years and a female preponderance. In the echocardiographic assessment of patients with PAH, tricuspid regurgitation (100%), pericardial effusion (26%), dilatation of right heart chambers (21%), reduced LVEF (16%) and pulmonary regurgitation (5%) were the main findings recorded. Repeat echocardiography after 6 months of treatment was performed in 7 of the 19 patients diagnosed with pulmonary artery hypertension and reduction in pulmonary artery systolic pressure was observed in 3 of them.

Conclusion: High prevalence (28%) of PAH was observed in patients with thyroid dysfunctions in the current study and it seemed to reverse with adequate treatment. It is, therefore, suggested that every patient of thyroid dysfunction should be screened for PAH.

P143

Pericardial Effusion in an Adult with Down's Syndrome and Unrecognized Hypothyroidism: Case Report and Review of Literature

Ma. Felisse Carmen, Maria Faye Anne, Prof. Maria Honolina

Department of Internal Medicine, University of Santo Tomas Hospital, Manila, Philippines

Hypothyroidism in Down's syndrome maybe missed because ofsimilarities in clinical features and overlap of symptoms. We report a case of massive pericardial effusion related to undiagnosed hypothyroidism in an adult patient with Down's Syndrome. A 24-year-old, female fromthe Philippines, who wasgenetically confirmed as Trisomy 21 and lost to follow-up at 10 years of age had progressive dyspnea two months prior to admission. Chest x-ray doneshowed pleural effusion, left lung. Echocardiography revealed minimal pericardial effusion. A diuretic (Furosemide) was given with no relief. Follow-up chest x-ray after two weeks revealed Pneumonitis, left with cardiomegaly while theelectrocardiogram showed sinus rhythm with non-specific T-wave changes. She was managed as Pneumonia with oral antibiotics. Dyspnea persisted with easy fatigability and on repeat doppler2-D echocardiography, massive pericardial effusion was demonstrated. On physical examination, she had typical Down's syndrome appearance. Blood pressure was 90/60/mmHg, Pulse rate, 50 beats/min; normal jugular venous pressure; apex beat not visible nor palpable, distant heart sounds with no murmur nor pericardial rub; decreased fremiti and breath sounds on lower lung fields with no peripheral edema nor signs of pulsus paradoxus. Admitting impression wasMassive Pericardial Effusion, Rheumatic heart disease suspect. CBC was normal which ruled out an infectious cause of pericardial effusion. Likewise, ASO titer, urinalysis and serum electrolytes were normal. Low FT4, <0.1 ug/dl (NV:4.5-12.5) and elevated TSH, 58 IU/ml (NV:0.4-4.00) confirmed hypothyroidism. Thyroid autoantibodies were not determined. SodiumLevothyroxine, 25 mcg/tab was started then titrated to 100 mcg/day. Dyspnea was relieved after three weeks. The massive pericardial effusion secondary to hypothyroidism completely resolved without pericardiocentesis after two months with Levothyroxine treatment. A heightened awareness that thyroid disorders specifically hypothyroidism can occur withDown's syndrome is necessary since these children will be in transition to the primary care physician/internists as they reached adulthood. TSH determination is crucial for diagnosis and treatment.

P144

Methimazole-Induced Hypothyroidism in Rats: Effect of Methimazole-Induced Cellular Damage on Heart, Lung and Ovary

Dipanshu Sur

University of Calcutta; Kolkata; West Bengal, India

Introduction: Great efforts are ongoing in understanding and management of thyroids, the disease and disease related complications are increasingly unabated. It is known that thyroid hormones have an effect on tissue damage. The objective of this study was to determine hypothyroidism causes cellular damage in the heart, lung, thyroid gland and ovary.

Methods: In the present investigation an attempt is made to study the cyto-morphological changes in the heart, lung, thyroid glands and ovary caused by methimazole (an antithyroid drug) or hypothyroidism. Twelve female Sprague Dawley rats were divided into 2groups: euthyroid (control) and methimazole-induced hypothyroidism (20mg/kg body weight in 1ml water/day). At the end of the treatments (28 days for each group), the animals were sacrificed. The heart, lung, thyroid glands and ovary were removed and were processed for embedding in paraffin wax and also measure the serum concentrations of thyroid hormones. Coronal sections were stained with hematoxylin–eosin.

Results / Discussion: At the end of treatment, animals with the methimazole hypothyroidism had a significant reduction of serum concentration of thyroid hormones. Only methimazole-induced hypothyroidism causes cellular disturbances in the lung, heart, thyroid glands and ovary.

Conclusions: These results indicate that tissue damage found in hypothyroidism is caused by methimazole and thyroid hormones have an effect on cyto-morphological alteration of heart, lung, thyroid glands and ovary tissue.

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Usefulness of Thyroid Stimulating Antibody at the Time of Antithyroid Drug Withdrawal in Predicting Relapse of Graves' Hyperthyroidism

Kwon Hyemi, Kim Won Gu, Kim Tae Young, Shong Young Kee, Kim Won Bae

Division of Endocrinology and Metabolism, Department of Internal Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul 138-736, Korea

Objective: Relapse of hyperthyroidism in Graves' disease (GD) after antithyroid drug (ATD) withdrawal is common. The Role of thyrotropin receptor antibody (TRAb) measurement at ATD withdrawal in outcome prediction is controversial. This study was to compare thyroid-stimulatory antibody (TSAb) and thyrotropin-binding inhibitory immunoglobulin (TBII) at ATD withdrawal in predicting relapse.

Design and Methods: This study enrolled patients with GD who were treated by ATDs and whose serum TSH levels were normal after low-dose ATDs. ATD therapy was stopped irrespective of TRAb positivity after additional 6 months of low-dose ATD therapy. Patients were followed by thyroid function tests, and TSAb (TSAb group, n=35) or TBII (TBII group, n=39) every 3-6 months for 2 years after ATD withdrawal.

Results: Twenty-eight patients (38%) relapsed for a median follow-up of 22 months, and there were no differences in baseline clinical characteristics between TSAb and TBII groups. In the TSAb group, relapse was more common in TSAb-positive patients (67%) at ATD withdrawal than in TSAb-negative patients (17%, p=0.007). Relapse-free survival was shorter in TSAb-positive patients. In the TBII group, there were no differences in relapse rate and relapse-free survivals according to TBII positivity. For predicting relapse of GD, the sensitivity and specificity of TSAb were 63% and 83%, respectively, whereas those of TBII were 28% and 65%, respectively.

Conclusion: TSAb at ATD withdrawal could predict relapse of Graves' hyperthyroidism, but TBII could not. Measurement of TSAb at ATD withdrawal could be helpful for clinical decision-making in patients with GD.

P146

Prolonged Survival in Advanced Metastatic Adrenocortical Carcinoma with the Aid of Various Treatment Modalities

Mohd Rahman Omar, Norasyikin Abdul Wahab, Norlaila Mustafa, Norlela Sukor, Nor Azmi Kamaruddin

Universiti Sains Islam Malaysia; Universiti Kebangsaan Malaysia Medical Centre

Introduction: Adrenocortical carcinoma (ACC) is a rare tumour with an incidence of less than 2.0 per million population annually. Surgical resection on the tumour has been the mainstay treatment of ACC regardless the staging. In advanced metastatic ACC the median survival only 13 to 15 months. This case report ilustrate a case of advanced metastatic ACC and the subsequent use of multiple therapeutic modalities that helped to prolong her for 5 years and 6 months.

Case Report: A 17-year-old girl was admitted back in 2008 with progressive shortness of breath of 2 weeks duration. CT scan performed showed a huge left adrenal mass measuring 10 x 12 x 15 cm with inferior vena cava thrombosis and bilateral pulmonary embolism. A histopathological of the trucut biopsy of the mass was consistent with ACC. She was initially started on Mitotane with maximum tolerated dose of 1.5 gm/day however repeated CT scan a month later showed increasing tumour size and the IVC thrombosis extending into the right atrium. She underwent laparatomy and succesful left adrenalectomy with right atrium and IVC thrombectomy. Mitotane was recommenced and titrated to 4.5 gm/day. Nine month later the 18-FDG-PET-CT showed residual disease in the left adrenal bed and IVC. A surgical removal of the recurrence was performed. Repeated 18-FDG-PET-CT showed reduction activity in the primary disease site but new foci was found at the right adrenal and liver. She was subjected to several radiofrequency ablations (RFA) therapy and subsequent CT-scan revealed stable tumour size and metastases size. Tyrosine kinase inhibitor, sorafenib was started in 2011 with intend to improved survival and control the disease progression. Throughout the course of sorafenib, the 6 monthly PET CT showed no further progress of the tumor and its metatases with no new lesions. She only received soreafenib for 2 years due to financial constraints and was later left only on mitotate. Throughtout these time she remains active and manage to complete her undergraduate study. In 2012 she refused further RFA therapy for the recurrence liver metastases as well the adjuvant chemotherapy and radiotherapy. She passed away in March 2014, 5 years and 6 months after her initial stormy presentation.

Conclusion: Adrenocortical carcinoma is rare and has poor prognosis with no effective curative therapyfor advanced disease. Surgical resection remain a major form of treatment. In advanced stage, combination of multiple treatment modalities including adjuvant chemotherpy, radiotherapy, TKI, mitotane and RFA may improved symptoms and prolonged the survival.

P147

A Case Report: Subclinical Cushing's Syndrome Masquerading as Spontaneous Adrenal Haemorrhage

Genevieve Sia, Perie Adorable-Wagan, Lina Lantion-Ang

The Medical City, Ortigas Avenue Pasig City, Philippines

We report a case of a 36 year old female, hypertensive with spontaneous adrenal haemorrhage presenting with acute abdominal pain in the absence of prior trauma, coagulation therapy, antiphospholipid antibody, stress, and sepsis. Patient had no clinical features suggestive of overt Cushing's syndrome. CT scan of the whole abdomen revealed a well-defined hyperdense focus of near blood attenuation in the left suprarenal region measuring 12.4 x 8.0 x 8.9 cm with approximate volume of 882 mL. Preoperatively, hormonal work up revealed a random serum cortisol of 13.6 ug/dL, an elevated 24h urine free cortisol of 127.05 ug/dL (normal value 20-90 ug/24h), and a non-suppressed serum cortisol of 2.3 ug/dL (normal value <1.8 ug/dL) after an overnight 1 mg dexamethasone suppression test. Plasma free metanephrine, plasma aldosterone concentration, plasma renin activity were within normal range. She underwent left adrenalectomy and received Hydrocortisone preoperatively and post operatively. Histopathologic findings were consistent with Hemorrhagic Adrenal Pseudocyst. Patient was discharged on the 5th post operative day with maintenance antihypertensive medication but without steroid.

P148

Adrenocortical Carcinoma: A Case Report

Claire Carampatana-Jandug, Ma. Vircel Tiu

Chong Hua Hospital

Background: Adrenocortical carcinoma is a rare endocrine malignancy that may present with subtle clinical manifestations. It affects 0.72 persons per one million population and accounts for 0.02-0.2% of all cancer-related deaths. Majority of cases are metastatic, hence, detection is necessary for an early curative resection.

Clinical Case: A 60-year old Filipino male with no known co-morbidities was admitted due to complaints of left flank pain of one-month duration. There were no associated anorexia, body malaise, nausea or vomiting, jaundice, fever, change in urinary and bowel movements and early satiety. There were no complaints of headache, excessive sweating, or palpitations. On physical examination, patient was normotensive with normal heart rate and rhythm, not in respiratory distress and afebrile. A non-tender, 10x10cm mass was palpated at the left upper quadrant area. There were no cushingoid features appreciated, or any signs of androgen excess. Ct scan of the abdomen with contrast revealed a heterogeneously enhancing mass in the left retroperitoneal region, likely an adrenal gland carcinoma, measuring 20.9x14.0x19.6 cm causing displacement of the adjacent structures. Subsequent tests with corresponding results were: serum cortisol level of 3.8 ug/dl (N.V. <1.8 ug/dl) after a 1-mg overnight dexamethasone suppression test, serum aldosterone of 8.92 ng/dl (N.V. 1.3-14.5 ng/dl), supine plasma renin activity of 0.44 ng/ml/hr (N.V. 0.30-1.90 ng/ml/hr), an ARR value of 20 (N.V. >30), serum DHEAS of 192.20 ug/dl (N.V. 48.6-361 ug/dl) and a 24-hour urinary metanephrine of 0.06 mg/ml. Patient underwent an open left adrenalectomy. Grossly, the specimen was a huge, red brown, lobulated, well-circumscribed mass weighing 2, 750 gms and measuring 21.0x20.5x12.0 cm. Microscopically, the tumor is populated by ovoid to polyhedral cells with abundant eosinophilia or vacuolated cytoplasm. On higher magnification, moderate nuclear atypia and mitosis of >5 per 50 HPF were noted. These morphologic findings were compatible with an adrenocortical carcinoma. Patient refused any further tests and chemotherapeutic management.

Conclusion: The case illustrates a typical patient with a non-functional adrenocortical carcinoma. Adrenocortical carcinoma is rare clinical entity that entails prompt detection since total resection is the only prospect of cure.

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A Review of Adrenocortical Carcinoma Patients' Profile in Hospital Pulau Pinang

Yong Lit Sin, Lim Shueh Lin, Cheong Yew Teik, Sani Usman

Endocrine Unit, Department of Medicine, Hospital Pulau Pinang; Department of Surgery, Hospital Pulau Pinang; Department of Pathology, Hospital Pulau Pinang

Adrenocortical carcinoma (ACC) is a rare neoplasm with an estimated incidence of ~0.5–2 new cases per million people per year.

We studied 5 patients with adrenocortical carcinoma who were referred to Hospital Pulau Pinang between 2014 and 2015.

Three of the 5 patients are male patients. The median age is 56 years old, ranges from 28 to 68 years old. At the time of diagnosis, 3 patients complained of abdominal discomfort due to the adrenal mass, while one of them presented with features of Cushing's syndrome such as rapid weight gain, while one of them had both abdominal discomfort and symptoms suggestive of Cushing's syndrome.

Hormonal studies showed that 40% of the tumors were functional (2 female patients) which biochemically represented adrenocorticotropic (ACTH) independent Cushing's syndrome.

On computed tomography (CT) abdomen, ACCs are characteristically large, irregular masses with heterogeneous density showing areas of haemorrhage, calcification and necrosis. In our patient group, 3 patients (60%) had left adrenal lesion. All adrenal tumours were more and equal than 6cm in dimension. Three of the patients had adrenal lesion more than 10cm on CT abdomen. All our patients underwent open adrenalectomy uneventfully. The diagnostic score for differentiating adrenocortical carcinoma from benign adenoma in the pathology specimen, which is Weiss score was applied. All of our adrenal specimens had Weiss score ≥3. Ki67, the proliferative index was only performed in two patients, which is 5% in each of them.

In the assessment of the disease stage, all the patient had stage II disease according to the tumor–node–metastasis (TNM) classification proposed by the ENSAT (European Network for the Study of Adrenal Tumors). One of them received prophylactic radiotherapy over adrenal bed followed by mitotane, while the remaining patients were not on treatment yet. Four of them alive, and one of them passed away due to acute respiratory distress syndrome with recent Positron Emission Tomography (PET) scan showed evidence of relapse.

Because of its rarity, we should be encouraged to establish our own database of ACC in the Malaysia, which might help to consolidate our knowledge pertaining the presentation and management of this disease.

P150

Incidental Findings and Lack of Symptoms are Common Features of Phaeochromocytoma in a Small Series

Elliyyin Katiman, Norasyikin Abdul Wahab, Norlaila Mustafa, Norlela Sukor, Norazmi Kamaruddin

Universiti Kebangsaan Malaysia Medical Centre

Background: Phaeochromocytoma is an important but rare tumour. Diagnosis can be found following screening for secondary causes of hypertension. In our case series, the diagnosis of phaeochromocytoma is not uncommon finding following further assessment of adrenal incidentaloma.

Objective: To identify characteristics of patients diagnosed with phaeochromocytoma in a small collection of patients in a tertiary centre.

Materials and Methods: Laboratory records were used to identify biopsies-confirmed clinical cases of phaeochromocytoma resected in our centre in the past decade. Patients' medical notes were screened to analyse patients' clinical presentations, hypertension status, biochemistry, imaging studies, management modalities and post-surgical outcome.

Results: There were 22 cases of biopsy-confirmed phaeochromocytoma resected. However only 14 cases had complete data information. Most of our patients were females 13 (59%) and 9 (41%) were males. Patients were aged between 12 years to 72 years with median age of 29 years at the time of diagnosis. Up to 79% (11) patients had pre-existing hypertension while 21% (3) patients had no history of hypertension recorded prior to presentation. A total of 71% patients complained of paroxysmal symptoms. Of those who did have symptoms at presentation, the most common symptoms were headache 64% (9), palpitations 71% (10), sweating 29% (4) and 14% (2) had facial flushes. These are less than the commonly reported prevalence of 90% especially among sporadic cases of phaeochromocytoma. Five from 14 patients (36%) who were diagnosed with phaeochromocytoma were initially from those referred for further investigations of adrenal incidentaloma. These are documented from various imaging studies prior to biochemistry confirmation of raised catecholamines. One patient presented during second tri-semester with newly diagnosed hypertension in pregnancy. One patient presented with hypertensive encephalopathy with seizure and one had congestive heart failure with catecholamine-induced myocarditis. One mortality was recorded with the possible cause of death from phaeochromocytoma-induced cardiomyopathy. Three of our patients had MEN2a and one had a familial form of phaeochromocytoma. In terms of elevated catecholamines, 57% patients had raised noradrenaline levels, 7% patients had raised adrenaline, 22% had both dopamine and adrenaline elevated, 7% had all dopamine, noradrenaline and adrenaline levels elevated and 7% had normal catecholamine levels. All those with adrenal incidentaloma at presentation had elevated catecholamines.

Conclusion: In this small series of phaeochromocytoma, the classical triad of headache, diaphoresis and palpitation were less commonly reported with a third presenting as incidentalomas.

P151

Phaeochromocytoma and Paraganglioma: Analysis of Patient Characteristics and Outcomes in a Retrospective Review of 119 Cases Seen in a Single Centre

Azraai Bahari Nasruddin, Yusniza Yusoff, Normayah Kitan, Zanariah Hussein

Department of Endocrinology, Hospital Putrajaya; Department of Surgery, Hospital Putrajaya

We conducted a retrospective review of phaeochromocytoma and paraganglioma (PG) cases seen at Hospital Putrajaya between 2003-2015. A total of 119 cases were identified (70 Female, 49 Male) with mean age at diagnosis of 38 years (Range 8-75 years). 90 patients had adrenal phaeochromocytoma, 25 PG and 4 patients had both phaeochromocytoma and PG tumours. 16 cases were classified as non-functioning. 21 patients (17.6%) had a clinical syndrome (MEN2-14, NF1-4, MEN1-1, VHL-1, Familial PG-1). 125 operations were performed in 112 patients. (83 adrenalectomies, 11 bilateral adrenalectomies, 30 paraganglioma excisions). Mean adrenal tumour size was 6.5cm. 57 cases were done laparoscopically (39 anterior, 28 posterior approach) of which 19 were converted to laparotomy. In functioning cases, the majority received preoperative phenoxybenzamine (n=88) with remainder receiving terazosin (n=19), prazosin (n=1) and labetalol (n=1). The mean phenoxybenzamine dose was 38mg/day (Range 10-120mg/day). 97 patients received concurrent betablockade (Propranolol-56, Metoprolol-20, Bisoprolol-15, Atenolol-6) and 37 concurrent calcium channel antagonist. Concurrent calcium channel antagonist therapy did not affect the maximum systolic BP. The maximum systolic BP was higher in patients on terazosin (mean = 225mmHg, n=13) vs phenoxybenzamine (mean = 187mmHg, n=72) (p=<0.05). Seven patients had maximum systolic BP of >= 250mmHg (Terazosin-5, phenoxybenzamine-2). There was no difference in the lowest intraoperative BP with terazosin (mean BP 76/51mmHg) or phenoxybenzamine (mean = 74/45mmHg). There was no intraoperative mortality, with 1 postoperative death within 30 days. 18 cases already had recurrent/metastatic disease at first presentation to our centre . Followup data >1 year was available in 55 patients (Mean followup 4.5 years).A further 5 cases had metastases/recurrence detected during followup. Two patients underwent MIBG therapy and 1 is currently undergoing PRRT. Results of MIBG imaging was available in 13 PG patients, of which 7 (54%) had poor/no MIBG uptake.

Conclusion: Cases were predominantly female with relatively equal spread across ages. Peri/postoperative mortality was low (<1%). A significant proportion had metastases/recurrence especially amongst PG cases. BP lability seemed less with phenoxybenzamine, however analysis is limited by the retrospective nature of the study. The therapeutic option of MIBG in metastatic cases is limited and PRRT is a promising alternative.

P152

Prevalence, Awareness and Control of Hypertension in Rural Areas in Selangor and Perak

Siti Liyana Saud Gany, Mohammad Arif Shahar, Norlela Sukor, Ahmad Marzuki Omar, Chong Kuck Meng, Norasyikin Ab Wahab, Rohana Jaafar, Rabizah Md Zain, Long Kha Ching, Amyliation Mohd Razali, Noradilah Zainuddin, Nurul Hani Mat, Fadlin Mender, Musilawati Muhair, Hanita Othman, Siti Fatehah Yusof, Norhisham Rahmat, Khalidah Mazlan Bador, Nor Azmi Kamaruddin

Endocrine Unit, University Kebangsaan Malaysia Medical Centre (UKMMC); Kulliyyah Medicine, International Islamic University Malaysia (IIUM); University Malaya (UM); Klinik Lim, Bidor; Pathology and Diagnostic Laboratory Department, UKMMC; Jabatan Perkhidmatan Makmal Diagnostic, UKMMC; Jabatan Perubatan, UKMMC

Abstract: The aim of this study was to describe the prevalence, awareness and control of hypertension in the rural population of Perak and Selangor.

Methods: This was a population based cross-sectional study involving subjects in Kuala Selangor, Tanjung Karang and Bidor. The World Health Survey Kish tables were used to select eligible subject (≥18 years old) from each selected household. A Case Report Form (CRF) was used to record their social demography, past medical history, anthropometry measurement and blood pressure (BP). Hypertension was defined as a blood pressure > 140/90 mmHg. Hypertension controlled was defined as a blood pressure of < 140/90 mmHg.

Results: A total of 761 people participated in this study. Of which 287 (37.8%) were males and 473 (62.2%) were females. Out of this, 271 (35.6%) were hypertensive. The study showed 36 (4.7%) subjects were not aware that they have hypertension. Only 76% of hypertensive subjects were on HPT medication. One hundred and five (51%) subjects were on monotherapy, 66 (32%) were on dual therapy, 27 (13.1%) on triple therapy, 8 (3.9%) were on more than 3 medications. 73 (26.9%) of the hypertensive subjects were not on any HPT medications having a SBP of 133.9 +/- 17 and DBP of 86.2 +/- 49.3. The clinical characteristic of subjects with hypertension is shown in Table 1.

Table 1: Demographic of Hypertensive Subjects	
Hypertensive Patients (n)	271
Gender (male/female)	287/473
Age (years)	53.8 ± 14.8
Age of onset (years)	53.2 ± 10.9
BMI (kg/m²)	26.2 ±5.5
SBP (mmHg)	125.7 ± 18.9
DBP (mmHg)	7.9 ± 18.6
% on treatment	76%
% HPT under controlled	100%

Conclusion: The prevalence of hypertension in the rural areas of Selangor and Perak was 35.6%, with 24% were not on any medication. 4.7% was not aware that they have hypertension. All hypertensive patients on treatment were under good controlled.

P153

A Prevalence of Elevated ARR in Rural Selangor

Siti Liyana Saud Gany, Mohammad Arif Shahar, Norlela Sukor, Ahmad Marzuki Omar, Norasyikin Ab Wahab, Yusniza MY, Rabizah Md Zain, Long Kha Ching, Amyliation Mohd Razali, Noradilah Zainuddin, Nurul Hani Mat, Fadlin Mender, Musilawati Muhair, Hanita Othman, Siti Fatehah Yusof, Norhisham Rahmat

Endocrine Unit, University Kebangsaan Malaysia Medical Centre (UKMMC); Kulliyyah Medicine, International Islamic University Malaysia (IIUM); University Malaya (UM); Pathology and Diagnostic Laboratory Department, UKMMC; Jabatan Perkhidmatan Makmal Diagnostic, UKMMC; Jabatan Perubatan, UKMMC

Abstract: The objective of this study was to determine the prevalence of elevated Aldosterone Renin Ratio (ARR) in Rural Selangor.

Methods: This was a cross sectional study involving subjects in Kuala Selangor and Tanjung Karang. The World Health Survey Kish tables were used to select eligible subjects (≥18 years old) from each household. Their social demography, past medical history, anthropometric measurement and blood pressure were recorded. Blood were withdrawn for Aldosterone (ALD), Plasma Renin Activity (PRA), Creatinine (creat) and potassium (K). Raised ARR is defined as aldosterone/renin ratio of more than 20.

Results: A total of 392 subjects (age 55 +/- 14.1) were enrolled. Fourty three (11%) subjects showed an ARR > 20. Out of those with raised ARR, 16 (38%) were hypertensive, 2 of which were not taking any anti-hypertensive drugs and 27 subjects (62.8%) were normotensive. Only 2 (4.7%) of them were hypokalemic, one of them being hypertensive. The main clinical characteristics of subjects with raised ARR are shown in Table 1.

Table 1: Demographic and Biochemical Parameters of Participants with ARR level ≥20, ARR < 20

	ARR ≥ 20	ARR < 20
Patients (n)	43	349
Age (years)	56 ± 11.8	54 ± 14
Gender (male/female)	11/32	126/222
Hypertension	16	133
Duration hypertension (years)	9.6 ± 7.5	8.3 ± 7.5
BMI (kg/m²)	27.01 ± 6	26.8 ± 5.6
SBP (mmHg)	118± 35	122.6 ± 39
DBP (mmHg)	73 ± 20.7	66.6 ± 28.1
Serum K+ (mmol/L)	4.04 ± 0.5	4.15 ± 0.5
Serum Creatinine (umol/L)	77.2 ± 25.7	81.5 ± 39.5
Serum ALD ng/dl)	17.4 ± 11.6	9.8 ± 9.4
PRA (ng/ml/h)	0.48 ± 0.4	3.38 ± 5.5
ALD/PRA ratio(ng/dl per ng/ml/h)	41 ± 24	5.4 ± 4.7

Conclusion: The prevalence of raised ARR in Rural Selangor was 11%, and only 4.7% of them were hypokalemic.

P154

Sodium Resistance Index and Nocturnal Dipping Behaviour of Blood Pressure in Myanmar Male Normotensive Adolescents Under Low Salt and High Salt Diet

Aung Khaing, Mya Thanda-Sein, Ohnmar, Mya-Mya Thwin, Tint Swe- Latt

Department of Physiology, University of Medicine 2, Yangon, Myanmar

Background: Sodium sensitivity has individual variability to the effects of high sodium (HS) intake. Sodium resistance index (SRI) is a new measure of salt sensitivity risk from 24 hour ambulatory blood pressure monitoring, ABPM.

Objective: To determine SRI and nocturnal dipping behaviour of BP in normotensive adolescents under low salt (LS) and HS diet

Materials and Methods: Thirty six subjects (Age=15.9±0.9 years, BMI=19.4±1.6kg/m²) were maintained on HS diet (urine sodium = 200.8±56.3mmol/day) and LS diet (urine sodium=86.2±22.3mmol/day) for one week each. 24-hour ABPM and urinary sodium excretion (UNaV) were measured at the end of each diet. Salt sensitivity index (SSI) was calculated as the ratio of the change in mean arterial pressure (MAP) to the change in UNaV by sodium restriction. SRI was determined as night fall of MAP and pulse pressure (PP) in % of daytime levels to 24h heart rate. Subjects with fall of MAP > 10% from day to night were assigned to dippers and those without a fall in MAP were nondipper.

Results: Based on dipping status, 17 subjects were dippers in both LS and HS intakes (D group), 13 subjects were nondippers during HS intake and dippers during LS intake (ND-D group) and 6 subjects were nondippers in both salt intakes (ND group). Salt intake was significantly associated with nocturnal dipping behaviour of BP ($p<0.001$). Median and interquartile range of SSI were -21(-48.5 to 20.8), 4.8 (-43.5 to 37.7) and -7.4 (-17.9 to 4.2) mmHg/(mol/day) in D, ND-D and ND group respectively. There was no significant difference between groups. Only one salt sensitive person (decrease in MAP > 10% by sodium restriction) was found in ND-D group. SRI was significantly lower in ND-D group (0.07±0.14mmHg/bpm, $p<0.01$) than D (0.2±0.1 mmHg/bpm) and ND (0.13±0.06 mmHg/bpm) groups, indicating that SRI in normotensive adolescents showed increased sodium sensitivity risk with nocturnal BP profile in response to change in salt intake. SRI but not SSI was significantly correlated with night/day ratio of UNaV ($r = - 0.57$, $p<0.05$).

Conclusion: SRI gives useful information on the sodium sensitivity condition of normotensive adolescents than SSI.

P155

Clinical Prediction for Screening Primary Aldosteronism

Prasit Leewattanapat, Asst.Prof.Swangjit Suraamornkul

Faculty of Medicine, Vajira Hospital, Navamindradhiraj University, Thailand

Background: Primary aldosteronism (PA) is a common cause of secondary hypertension. It's most common in endocrine system related hypertension. Recently, the screening and diagnosis of PA are missed and delayed because there are many steps and many disturbing factors in diagnosis.

Objective: Using clinical prediction for detecting primary aldosteronism will help to guide diagnosis, and manage plan treatment.

Research Design and Methods: Descriptive statistics. The clinical prediction with analyzed by binary logistic regression model.

Patients: A Total of 114 patients whom consults at out-patient clinic of endocrine department for suspected secondary hypertension between 1 January 2010 and 31 December 2014. All patients had screening for primary aldosteronism.

Results: Prevalence of PA in this study was found 40 patients (42.2%) and non-PA 54 patients (57.45%), The age, gender, number of medication and blood pressure of both groups are indistinguishable from each group but the difference in result of laboratory e.g. sodium, potassium, eGFR, plasma aldosterone concentration (PAC), plasma renin activity (PRA) and aldosterone-renin ratio (ARR). Probability of PA was predicted by the equation [Prob=1 / (1+e-z)] and co-efficient (z) was calculated from Z = 4.295 – 0.005 (Na) – 1.632 (K) - 0.006 (eGFR) + 0.062 (ARR). These equations were sensitivity 82.5%, specificity 94.44%

Conclusions: Clinical prediction of PA by equation were high sensitivity and specificity that similar to standard confirmation test (saline infusion test and captopril challenge test). Finally this equation may be used for evaluation patients who suspected primary aldosteronism for reducing diagnostic procedure and save cost in the laboratory

P156

Effects of Long Term Inhaled Steroids on Adrenal Function in Patients with Bronchial Asthma

Rohaya Abdul Razak, Sharifah Faradila Muhammad Hatta, Fatimah Zaherah Mohamed Shah, Tengku Saifudin Tengku Ismail, Rohana Abdul Ghani

University Technology MARA

Background: Asthma is a complex disease of the respiratory tract associated with chronic inflammation. Inhaled corticosteroids (ICS) are highly effective therapy and the most potent anti-inflammatory for persistent asthma. But, long term use especially in high dose could lead to many systemic side effects including adrenal insufficiency.

Objective: To evaluate adrenal response to ACTH in asthmatic patients treated with inhaled corticosteroids.

Materials and Methods: 100 adults on inhaled corticosteroids (56 adults on fluticasone propionate and 44 adults on budesonide) were evaluated by measuring the baseline morning cortisol and ACTH level and performing an ACTH stimulation test (short tetracosactrin test).

Results: A total of 100 asthmatic patients (56 adults on fluticasone propionate – 10 patients on low dose < 250 mg /day, 36 patients on medium dose 250-500mg /day, 10 patients on high dose > 500mg/day ; 44 adults on budesonide – 10 patients on low dose 200-400mg/day, 19 patients on medium dose 400-800mg/day, 15 patients on high dose >800mg/day) completed the study. 5 of 100 patients had suboptimal response to ACTH stimulation test (1 of 15 taking high dose budesonide, 3 of 36 taking medium dose fluticasone, 1 of 10 taking low dose budesonide). There was no significant difference in the mean cortisol response to ACTH stimulation test between fluticasone propionate and budesonide group ($p > 0.05$). There was a significant correlation ($p=0.001$) between the dose of inhaled corticosteroids and baseline morning cortisol levels, suggesting a dose related suppression of adrenal function with increasing dose of inhaled corticosteroids. There was a significant correlation ($p < 0.05$) between the duration of inhaled corticosteroids use and baseline morning cortisol levels, suggesting the risk of adrenal suppression with longer duration of steroid use. There was no significant difference in median duration of ICS use (either less or more than 12 months) between fluticasone propionate and budesonide groups by giving the risk of development of adrenal suppression ($p > 0.05$).

Conclusion: There was significant adrenal suppression with the use of ICS, which was related to the dose and duration of treatment. The risk of adrenal suppression with the use of ICS remain relevant and necessitate the discovery of newer ICS aiming to provide effective asthma control at the lowest doses with minimal risk of adrenal suppression. Furthermore, close monitoring of adrenal function should also be considered in such patients.

P157

Phaeochromocytoma Presenting with Thunderclap Headache and Multiple Watershed Cerebral Infarcts

Fatimah Zaherah Mohamed Shah, Jeyakantha Ratnasingam, Sharmila Sunita Paramasivam, Rohaya Abdul Razak, Shireene Vethakkan

University Malaya, Malaysia; University Teknologi Mara, Malaysia

We describe an interesting case of a 35-year-old man with a 6-year history of untreated hypertension and poorly controlled Type 2 diabetes mellitus who presented with acute onset of severe headache and vomiting. During the course of admission, he was febrile and noted to have widely fluctuating blood pressure (systolic levels of 100-220 mmHg). On the third day of admission, he developed aphasia and right hemiplegia. Urgent magnetic resonance imaging (MRI) within six hours post-onset of neurological deficit revealed multiple cerebral infarcts in the left cerebral hemisphere corresponding with watershed areas between anterior, middle and posterior cerebral circulations; while magnetic resonance angiography (MRA) revealed no evidence of arterial stenosis/vasospasm. Thrombophilia and vasculitis screens as well as trans-thoracic and trans-oesophageal echocardiography revealed no abnormalities. Computed tomography requested to exclude occult abscesses that might cause fever incidentally revealed a large (3.6 x 3.7 x 5.1cm) vascular heterogeneous right adrenal mass. Raised 24-hour urinary normetanephrine levels more than 10 times upper limit normal range subsequently confirmed the diagnosis of phaeochromocytoma. On further evaluation, he had no features of MEN(Multiple Endocrine Neoplasia)2 syndrome. The patient underwent a laparoscopic right adrenalectomy with phenoxybenzamine cover, resulting in dramatic improvements in his blood pressure and glycemic control. Eight months postoperatively, he requires no antihypertensive therapy and is able to walk with minimal aid. Phaeochromocytomas are rare neuroendocrine tumours that can cause stroke via 3 mechanisms: 1)malignant hypertension, 2)emboli secondary to left-ventricular thrombus-formation in phaeochromocytoma-associated-cardiomyopathy, 3)vasospasm secondary to catecholamine release1. Our patient's stroke was likely due to reversible vasospasm of the left internal carotid artery undetected by the delayed MRA. Therefore in young patients with acute onset multi-territory stroke, apart from vasculitis and septic emboli, phaeochromocytoma should be considered as a possible cause.

P158

Masquerading Pheochromocyotoma

Subashini Rajoo, Nurain Mohd Noor, Masni Mohamad, Zanaria Hussein, Azraai Nasaruddin

Hospital Putrajaya, Malaysia

We encountered a Clostridium infected pheochromocytoma in an asymptomatic patient with normal urinary catecholamines. A 63 year old, diabetic and hypertensive for 12 years with single antihypertensive medication presented with left lumbar pain. Imaging revealed a left adrenal mass, appearing like a ring enhancing tumor with central lucency with surrounding streakiness and calcification within, suggesting inflammatory process. She denied symptoms of functioning adrenal tumor. Biochemical parameter, inclusive of adrenal hormones (i.e 24 hour urinary catecholamine) and infective work out were unremarkable. She underwent CT guided biopsy of her left adrenal and the tissue culture isolated Clostridium species other than C. perfringenes/ C.tetani/C. difficile. Therefore she was given a 4 weeks course of Unasyn. Serial CT adrenal showed reduction of adrenal mass from 5.8cm x 5.8cm x 8cm to 2.2cm x 2.6 cm. She underwent adrenalectomy with no operative complication or hypertensive crisis. Histopathology revealed a left pheochromocytoma, which stained positive focally for chromogranin, synaptophysin and S-100. Subsequently, blood pressure and glucose was controlled with no medication.

Abscess in a pheochromocytoma is rare but Salmonella Thyphimurium abscess, Streptococcus agalactiae and Campylobacter fetus infection3 in pheochromocytoma has been reported before. It is common to find areas of necrosis within a large pheochromocytoma because small areas within a large tumor of any kind can outgrow the blood supply of the tumor. Also as the tumor becomes necrotic, it no longer releases catecholamines4. The cystic nature of the neoplasm or tumor necrosis can result in failure of opacification of the mass or a central lucent area. Four cases of pheochromocytoma have been described where a central avascular zone was surrounded by a dense rim of contrast, giving a “ring sign.”5

Clinicians should always be wary of a pheochromocytoma even in the absence of catecholamines, especially if there is evidence of a large adrenal mass, presence of necrosis and isolation of infection within the adrenal gland.

P159

A Case of Cushing's Syndrome in Pregnancy

Lau Bik Kui, Florence Tan

Sarawak General Hospital, Kuching

Background: Pregnancy is uncommon in women with Cushing's syndrome (CS). The diagnosis is challenging due to overlapping clinical and biochemical features between pregnancy and CS. Early diagnosis and treatment are crucial as CS in pregnancy results in increased fetal and maternal complications.

Case Presentation: A 28-year-old primigravida lady was noted to be hypertensive with blood pressure of 150/90 mmHg at booking at seventh week of pregnancy. She reported progressive weight gain of 20kg over 6 months. Physical examination revealed an obese lady (BMI 41.54 kg/m^2) with cushingnoid appearance. She had plethoric moon face, acnes, supraclavicular fat pads, truncal obesity, purplish abdominal striae and bilateral pedal edema. She was started on methyldopa 250mg thrice daily. Endogenous hypercortisolism was confirmed by elevated 24-hour urine free cortisol at 2997nmol/day (normal: 150-800nmol/day) with loss of diurnal rhythm (serum cortisol: 8am 27.64 ug/dL; midnight 26.84ug/dL). Serum cortisol (17.12 ug/dL) was non-suppressible after 48 hours low-dose dexamethasone suppression test (DST) but suppressible (2.08 ug/dL) after high-dose DST. Her plasma adrenocorticotropic hormone (ACTH) level was 110.0 ng/L (normal: <46ng/L). Serum dehydroepiandrosterone and thyroid stimulating hormone were normal. A diagnosis of Cushing disease (CD) was made. Non-contrasted MRI pituitary revealed a pituitary microadenoma (0.9x0.7x0.6cm). Transphenoidal adenomectomy was done during her second trimester without complication. Postoperative outcome was excellent with remission of disease (8am serum cortisol 0.53ug/dL) and normalization of blood pressure without antihypertensive. She was put on hydrocortisone replacement and delivered a healthy infant at 38 weeks.

Conclusion: Pregnancy is a physiological state of hypercortisolism with rising cortisol and ACTH level throughout gestation. Non pregnant diagnostic criteria are not applicable during pregnancy and may lead to misdiagnosis. For instance, the hypothalamic-pituitary-adrenal axis while preserving diurnal secretary pattern become increasing resistance to dexamethasone suppression. Furthermore, adrenal adenoma (rather than CD) is more common cause of CS in pregnancy but ACTH may not be suppressed due to placental secretion of ACTH and CRH. Thus, high dose DST had been reported to aid in differentiating source of hypercortisolism during pregnancy. Our case highlighted the challenges of diagnosing CS in pregnancy and illustrated the good pregnancy outcome with early diagnosis and treatment.

P160

Radionuclide Therapy in Unresectable Malignant Paraganglioma: A Case Report

Lau Bik Kui, Azraai Bahari Nasrudin, Masni Mohamad

Hospital Putrajaya Malaysia

Background: Paragangliomas are rare neuroendocrine tumours that arise from the extra-adrenal autonomic paraganglia. Up to 25% of paragangliomas are malignant. They are known to express somatostatin receptors, thus DOTATATE radionuclide therapy (PRRT) is a promising new treatment modality for unresectable or metastasised paragangliomas.

Case Presentation: A 56-year-old lady who had left para-aortic paraganglioma resection 6 years ago was referred to our center for a recurrent disease. Abdomen CT showed a soft tissue mass measuring 5.3x5.3x6.8cm at para-aortic region at L2 vertebra level, with L3 vertebrae bony lytic lesion. Functional imaging with Ga-68 DOTATATE consistent with finding on abdomen CT with a SUV max of 108.3. She was started on alpha blocker, phenoxybenzamine for blood pressure optimization before she underwent tumour resection for the recurrent disease. However she developed severe hypotension needing 4 maximum inotropic support upon induction of anesthesia and opening up of abdomen, in which the operation has to be aborted. In view of biochemically functioning, big tumor size with high radionuclide uptake, but unresectable and intraoperative adverse events, she was considered for PRRT after multi-disciplinary discussion. She received 175.6mCi of Lu-177 DOTATOC uneventfully.

Conclusion: This case illustrates the first PRRT in the management of irresectable, metastatic paraganglioma in Malaysia.

P161

Malignant Pheochromocytoma

Avigael Junsay, Reynaldo Rosales

St. Luke's Medical Center, Quezon City, Philippines

An 81 year-old male was admitted for work-up of BP fluctuations and weight loss. Six months prior to consult, patient started noticing BP fluctuation despite compliance to antihypertensive medications. A 24hour ambulatory BP monitoring was requested and BP fluctuations confirmed within the range of 80-250/60-160, hence patient was admitted for further work-up. Aldosterone and renin levels were normal. A 24hr urine metanephrine was also negative. Plasma metanephrine was elevated at 3528.51pg/ml. Abdominal ultrasound showed solid mass measuring 3.8 x 4.4 x 4.2 cm at the right hepatorenal region. Abdominal CT scan confirmed the presence of the heterogenous enhancement with a 40 Hounsfield unit and relative washout of 28% measuring 5.3 x 4.1 x 4.4cm.

Patient underwent laparoscopic adrenelectomy right. Intraoperatively, BP range was 75-250/45-100 and no episodes of hypoglycemia. Removed was a well-delineated round, solid mass approximately 5cm in widest diameter which was sent for histopathology. Histopathogy report showed pheochromocytoma with malignant biologic behavior (PASS score of 10) with small vessels and capsular invasion with extension into periadrenal adipose tissue. Chromogrannin and synaptophysin were positive. The rest of the post-operative course was unremarkable. Repeat plasma metanephrine showed improvement in the levels.

Pheochromocytoma is a rare tumor, occurring in approximately 0.5% of the general population and 0.1-0.6% of hypertensive individuals(1, 2). It is important to confirm, localize and resect the tumor because the associated signs and symptoms may be reversed with removal of the tumor and at least 10% are malignant(2). Preoperative diagnosis of pheochromocytoma starts with determination of urine or plasma metanephrine levels with a sensitivity of 90% and 97% and specificity of 98% and 85%, respectively(3). CT scan is the initial imaging modality requested due to its modest cost and high sensitivity ranging from 88-90%(4, 5). Several scoring system has been devised to determine malignancy of tumor but the most commonly utilized system is the PASS (Pheochromocytoma of the Adrenal gland Scales Score), with a score more than 6 determines malignancy. The goal of surgical treatment is removal of the primary tumor. The overall 5-year survival rate of patients with malignant pheochromocytoma varies between 34% and 60% with survival rates depending upon the site of metastatic lesion.

P162

The Shrinking Adrenals

Sharifah Faradila Wan Muhamad Hatta, Associate Professor Rohana Abdul Ghani

Universiti Teknologi MARA (UiTM)

The burgeoning use of cross-sectional imaging in daily medical practice has led to a proportional increase in the burden of incidentally discovered nodules in the adrenal glands1. We report a case of a patient whom presented with a shrinking adrenal.

A 52-year-old man with Type 2 DM, hypertension and dyslipidaemia presented to the Emergency Department with sudden onset of left sided chest pain and palpitation, followed by transient loss of consciousness while running on a treadmill 6 hours prior to admission. There was no evidence of seizure and post-ictal drowsiness. Upon arrival, his vital signs were stable. There were no obvious neurological abnormalities. Electrocardiograph showed atrial fibrillation with ventricular rate of 80 beats per minute, T inversion in III and Q wave in III and aVF. Blood investigations include normal cardiac enzymes and Troponin I was 0.003ug/L. Full blood count, renal and coagulation profiles showed no significant results. Chest radiograph revealed 3rd, 4th and 5th rib fractures with mediastinal widening. A diagnosis of acute coronary syndrome was made and he was commenced on oral anti-platelets and subcutaneous low molecular weight heparin. Computed tomography (CT) of the thorax was conducted to investigate for possibility of thoracic aneurysm which revealed an incidental finding of a well defined border, heterogenous right adrenal mass measuring 3.1x5.1x4.1cm with attenuation range between 20-60 HU. Further investigations including Testosterone, DHEAS, Androstenedione, Aldosterone/Renin ratio, 24-hour urinary cortisol, and cathecolamines were subsequently normal. Repeated CT abdomen with a 3-phase adrenal protocol performed 3 months later revealed a significantly smaller adrenal mass measuring 3.0x1.4cm with similar attenuation range of 20-60 HU. No enhancing lesion, focal calcification, nor fat containing nodule detected. A diagnosis of haematoma within the right adrenal gland was made. The patient remained well and is currently on regular follow-ups for ischaemic heart disease and hypertension. He will undergo a repeat CT abdomen 6 months later to monitor the shrinking adrenals.

Adrenal haemorrhage frequently occurs without symptoms. A history of trauma or anticoagulation is helpful. Nevertheless, due to the radiological features, malignancy is a possible explanation. Therefore a strategy for characterizing these nodules at minimal cost and without invasive tissue sampling is important to spare the patient the need to undergo further testing for possible malignancy.

P163

Adrenal Insufficiency Among Acute Medical Admissions in Hospital Sungai Buloh

Sharimila Shanmugam, Ida Ilyani Adam, Nor Diana Nordin

Hospital Sungai Buloh

Introduction: Adrenal insufficiency (AI) is a life threatening disorder, however early diagnosis can be difficult due to the non-specific symptoms. Epidemiological studies about AI in South East Asia are sparse. To date, there have been no previous studies done in Malaysia focusing on this aspect.

Objective: To demonstrate the characteristics of patients with AI admitted in acute medical wards in Hospital Sungai Buloh.

Materials and Methods: Retrospective data on patients with AI were collected via the electronic medical record system between May 2012 till May 2015

Results: 40/110 (36.4%) of the patients were between 40-59 years of age, followed closely by the geriatric age group 60-79 (34.5%), of which was dominated by males (63.3%). 73 (66.4%) were Malays, 20 (18.2%) were Chinese and 15 (13%) were Indians. The most common presenting symptoms were fatigue (63.6%), abdominal pain (39.1%), myalgia (22.7%), dizziness (18.2%), dry, itchy skin (18.2%) and loss of libido (0.9%). Fever was the most common sign (35.5%), followed by dehydration (29.1%), hypotension (28.2%), cushingoid features (5.5%), postural blood pressure drop (2.7%) and skin pigmentation (1.8%). More than half of the patients had an early morning cortisol level sent (53.6%), the rest had a random cortisol level (46.4%) and only a small number had a synacthen test done (11.8%) of which 9 patients (8.2%) had an inadequate response while 4 (3.6%) had an adequate response. Nearly a quarter of the patients (41.8%) were diagnosed as tertiary AI, while the rest were diagnosed as others (40%), primary AI (16.4%) and secondary AI (1.8%). Patients who had no obvious predisposing factors were labelled as “others” for documentation purposes.

Conclusions: Approximately three-quarters of the patients with AI were in the advanced age group, aged between 40-79 years old, with a male predominance. There is a lack of awareness of AI screening as evidenced by the low synacthen test rate which is the gold standard for diagnosing AI, further supported by the absence of other cardinal signs and symptoms of AI as it was notthese were not screened by the attending medical officer. This consolidates the need for Malaysian physicians to pay more attention to this easily overlooked disease.

P164

Role of Bilateral Inferior Petrosal Sinus Sampling (BIPSS) in the Diagnosis of Cushing's Syndrome: Experience in National University of Malaysia (PPUKM)

Yong Lit Sin, Abdul Wahab Norasyikin, Kamaruddin Nor Azmi

Endocrine unit, Department of Medicine, National University of Malaysia(PPUKM), Malaysia.

Bilateral inferior petrosal sinus sampling (BIPSS) is described as the gold standard diagnostic evaluation in identifying the pituitary source of adrenocorticotropic hormone (ACTH) secretion in Cushing's syndrome (CS). Here, we describe our center's 12-year experience of performing BIPSS in 15 patients with CS. Fifteen patients underwent BIPSS in PPUKM since year 2003 till June 2015. Most of our patients who underwent BIPSS has Cushing's disease (11 of 15, 73.3%), followed by Ectopic Cushing's (2 of 15, 13.3%), Nelson's syndrome (1 of 15, 6.7%), and adrenocortical adenoma (1 of 15, 6.7%). Almost all the patients are female (14 patients) with a median age of 41 years old. All the patients who diagnosed with CS have biochemical evidence of hypercorisolism. We revealed that raised midnight plasma cortisol is a sensitive test to detect CS which showed in all of our cases (7/7, 100%) if performed correctly. We also found similar good performance in ONDST (Overnight Dexamethasone Suppression Test) and LDDST (Low Dose Dexamethasone Suppression Test), with 100% sensitivity. However, increase 24-hr urine free cortisol had only demonstrated in 6 of 11 patients (54.5%), which is lower compare with the previous study (71%). It seems like in our series, raised midnight serum cortisol, dynamic tests such as ONDST and LDDST have better sensitivities compare with 24-hr urine free cortisol. The morning serum ACTH level ranges from 17.70 to 130pg/ml with the median of 90.8pg/ml. Among them, 3 of the patients has normal ACTH level (<45pg/ml). MRI pituitary in 12 of the 15 patients had evidence suggesting pituitary tumors (80%), with predominantly pituitary microadenoma (80%), and right sided pituitary adenoma (8 of 15, 53.3%). Our interventional radiologists were able to cannulate 22 out of 30 (73.3%) inferior petrosal sinuses The sensitivities of BIPSS in Cushing's disease patients were 82% (9/11) and 91% (10/11), using C/P ratio ≥2 at baseline or ≥3 after vasopressin stimulation. It is comparable with other studies on utilization of BIPSS for diagnosing CD patients which reported the sensitivities of 89% and 94% before and after ovine CRH (Corticotropin Releasing Hormone) stimulation. Based on our limited experience, we believe that BIPSS is a safe and well-established procedure in our institution.

P165

Association Between Insulin-like Growth Factor-1 and Arterial Stiffness in Korean Adults

Cho Eun Suk

Department of Family Medicine, Yonsei University Wonju College of Medicine, Wonju, Korea

Background: Recent studies have demonstrated that lowered serum insulin-like growth factor-1(IGF-1) level was associated to atherosclerosis and plaque progression, resulting in cardiovascular diseases. Brachial-ankle pulse wave velocity (baPWV), a clinical marker of arterial stiffness, is a strong predictor of cardiovascular diseases.

Objectives: In order to address role of serum IGF-1 in arterial stiffness, we evaluated the association between IGF-1 and baPWV in Korean adults.

Materials and Methods: In this cross-sectional study, we investigated the relationship between IGF-1 and baPWV in 202 Korean adults (78 men, 124 women) aged over 20 years in the Health Promotion Center. Medical history, medication, and life style were recorded through a questionnaire. Physical examination was performed and body mass index was calculated. We measured the serum IGF-1, fasting glucose and lipid profile. The baPWV was measured using an automated recording device (waveform analyzer: VP-1000, Colin Co, Japan). Simple and multiple linear regression analyses were used to assess the correlation between baPWV and serum IGF-1.

Results: Simple regression analysis showed that the baPWV was positively correlated with age($r=0.493$, $P<0.001$), systolic blood pressure($r=0.421$, $P<0.001$) and diastolic blood pressure($r=0.257$, $P=0.023$) and inversely correlated with low density lipoprotein cholesterol($r=-0.250$, $P=0.027$) and IGF-1($r=-0.311$, $P=0.006$) in men. The baPWV was positively correlated with age($r=0.549$, $P<0.001$), systolic blood pressure($r=0.538$, $P<0.001$) and diastolic blood pressure($r=0.336$, $P<0.001$) and was not correlated with serum IGF-1($\beta=-0.063$; $p=0.485$) in women. The baPWV was decreased according to the level of serum IGF-1 in men. After adjustment for risk factors of established cardiovascular diseases such as age, BMI, smoking, hypertension, Diabetes, Hyperlipidemia, Systolic blood pressure, fasting plasma glucose and low density lipoprotein cholesterol, multiple linear regression analysis showed that serum IGF-1 was still significantly associated with decreased baPWV ($\beta=-0.238$; $p=0.018$). However, the baPWV was not independently correlated with serum IGF-1 in women ($\beta=0.047$; $p=0.502$).

Conclusion: The results indicate that serum IGF-1 was negatively associated with baPWV after adjustment for the risk factors of cardiovascular diseases in men. Serum IGF-1 level might be a useful addition to other parameters for assessing the risk of cardiovascular diseases.

P166

Alpha2-Adrenergic Receptor Subtype Expression in the Human Renal Cortex and Medulla

Gen Yasuda, Shiro Komiya, Sanae Saka, Azusa Mori, Mari Katsumata

Division of Nephrology and Hypertension, Yokohama City University Medical Centre

Background: We have reported that adrenaline inhibited PTH-stimulated urinary cAMP secretion. This suggests that effects of adrenaline on cAMP accumulation through α2-adnernergic receptors (α2R) existed in the kidney. In the experimental animals, it is suspected that, by decreasing cAMP accumulation in proximal tubules and collecting ducts through receptors, α2R play an important role in regulating sodium and water balance. However, little is known regarding human kidney α2R.

Objectives: The aim of this study is to investigate the α2R properties in the human renal cortex and medulla using radioligand binding assay.

Materials and Methods: Samples were obtained from the intact part of nephrectomized kidneys in patients with kidney cancer (n=7, aged 63±7 years, 5 men and 2 women). Membrane suspensions were prepared and incubated at 25°C with 3H-rauwolscine for the kinetic, saturation and competition studies.

Results: The bindings were rapid, saturable and reversible. 3H-rauwolscine bound to a single class of α2R. The Kd for each cortex and medulla was 5.9 nM and 5.5 nM, and the Bmax was 53 fmol/mg protein and 38 fmol/mg protein, respectively. Each antagonist displaced 3H-rauwolscine and the curves fit for a one-site model except for oxymetazoline. The rank order of affinity was rauwolscine (Ki=5.4 nM) >phentolamine (9.6) >yohimbine (11) >BAM1303 (81) >WB4101 (195) >SKF104078 (270) >oxymetazoline (high affinity, 760) >chlorpromazine (1, 770) >prazosin (3, 510) >corynanthine (4, 360) >propranolol (26, 100) in the cortex; and rauwolscine (3.9) >yohimbine (19) >oxymetazoline (high affinity, 22) >WB4101 (44) >phentolamine (56) >BAM1303 (94) >SKF104078 (266) >chlorpromazine (459) >corynanthine (1, 400) >prazosin (6, 900)>propranolol (28, 700) in the medulla.

Conclusion: Oxymetazoline and BAM1303 showed higher affinity than that for each chlorpromazine and prazosin, suggesting that α2R subtype A exists predominantly in both human renal cortex and medulla. However, the fact that oxymetazoline produced a biphasic inhibition curve cannot rule out the possibility that α2R subtypes in both the human renal cortex and medulla are heterogeneous.

P167

Pituitary Hyperplasia Precedes Adenoma in Somatotroph-specific AIP Deficient Mice, Displaying Acromegalic Clinical Features

Ku Cheol Ryong, Lee Yang Jong, Park Se Hee, Lee Eun Jig

Endocrinology, Department of Internal Medicine, Yonsei University College of Medicine, Seoul, Republic of Korea

Background: Patients with familial isolated pituitary adenoma are predisposed to pituitary adenomas, which in a subset of cases is due to germline inactivating mutations of the aryl hydrocarbon receptor interacting protein (AIP) gene.

Objectives: This study was aimed to evaluate the characteristics of somatotroph specific Aip deficiency mice.

Materials and Methods: Using Cre/lox and Flp/Frt technology, a conditional mouse model was generated to examine the loss of the mouse homolog, Aip, in pituitary somatotrophs.

Results: By 40 weeks of age, >80% of somatotroph specific Aip knockout mice develop growth hormone (GH) secreting adenomas. The formation of adenomas results in physiologic effects recapitulating syndrome of acromegaly, including increased body size, elevated serum GH levels, and glucose intolerance. Aip knockout mice also presented the decreased expression of somatostatin receptor subtype 2 with impaired response to octreotide. The pre-tumorigenic Aip-deficient somatotrophs secrete excess GH and exhibit pathologic hyperplasia associated with cytosolic compartmentalization of the cyclin dependent kinase (CDK) inhibitor $p27^{kip1}$ and perinuclear accentuation of CDK-4. The delayed tumor emergence, even with loss of both copies of Aip, implies that additional somatic events are required for adenoma formation.

Conclusion: These findings suggest that pituitary hyperplasia precedes adenomatous transformation in somatotroph-specific Aip deficient mice, accompanying with identical clinical characteristics of acromegaly.

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Burden of Illness of Patients with Acromegaly: A Single Institution Experience in Managing Acromegaly

Ooi Cheow Peng, Norasyikin Abdul Wahab, Norlela Sukor, Nor Azmi Kamarruddin, Norlaila Mustapha

Endocrine Unit, Department of Medicine, Pusat Perubatan Universiti Kebangsaan Malaysia; Endocrine Unit, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Introdution: Acromegaly is characterised by hyper-secretion of growth hormone(GH) and insulin-like growth factor I(IGF-1). It is associated with a variety of insidiously progressing detrimental symptoms and metabolic malfunction resulting in multiple co-morbidities. Consequently, the disease has a significant impact on patients' health, their physical, cognitive, emotional, social well-being and reduction of life expectancy. Treatment include surgery, radiotherapy, pharmacotherapy as well as control of co-morbidities. The objective of this analysis is to evaluate the treatment burden in patients with acromegaly receiving care in our institution.

Method: A retrospective analysis of patients attending our endocrine clinic for acromegaly over the past 22 years. Disease control was defined as having IGF1≤225ng/ml.

Results: A total of 15 patients with acromegaly were identified. Mean age(SD) was 59.63(10.54), mean age at diagnosis was 44.64(10.54) and the duration of follow-up was 12.64(7.51) years. Four patients (26.7%) had documented microadenomas and 10(66.7%) had macroadenomas.* A significant number had multiple co-morbidities, hormonal deficiencies and high cardiovascular risk at diagnosis(Table). Co-morbidities included: hypertension[9(60.0%)], diabetes mellitus[5(33.3%)], glucose intolerance[2(13.3%)], dyslipidemia[8(53.3%)], obstructive sleep apnoea[2(13.3)], carpal tunnel syndrome[3(20.0%)] and arthritis[4(26.7)]. Despite 9(60.0%) patients who had multimodal treatments (pharmacological agents, surgery and/or radiotherapy), only 6(40.0%) achieved biochemical disease control. In addition, a significant number required hormonal replacement therapy and pharmacotherapy for control of cardiovascular risk factors. Only one patient refused any form of treatment.

Discussion: A significant number of patients presented with significant complications and cardiovascular co-morbidities. With the advancement of surgical techniques, transphenoidal surgery superceded as main treatment option followed by adjunct pharmacological treatment (cabergoline or octreotide LAR) when the disease control was not achieved. Even with the multimodal management approach, disease control remained disappointing as only 6/15 patients (40.0%) had their disease under control.

Conclusion: Acromegaly is a chronic disease that ultimately requires multiple modalities of therapy. Despite that, disease control is achieved in surgery is more than a third of the patients.

P169

Phaeochromocytoma Presenting as Acute Abdomen and Pericardial Effusion: A Case Report

Yusniza Yusoff, Masni Mohamed, Nurain Md Noor, Azraai Bahari Nasruddin, Zanariah Hussein

Endocrine Unit, Hospital Putrajaya, Putrajaya Malaysia

Pheochromocytoma is a tumour of great clinical importance. It is typically located in the adrenal glands which leads to catecholamine release and profound multiorgan involvement. The lack of specificity of its clinical manifestations highlights the importance of clinical suspicion. If left untreated, it can be fatal.

We report a case of haemorrhagic phaeochromocytoma, who presented with generalised abdominal pain and fever for two weeks. The patient was a 33 years old lady with background history of beta-thalassaemia trait and pregnancy induced hypertension which normalised during post partum period . She underwent exploratory laparotomy for suspected perforated appendix. Intraoperatively a huge retroperitoneal hematoma at right paracolic gutter was noted. The appendix was normal. She also experienced brief episodes of hypotension ranging from 80 to 100mmHg of systolic and diastolic reading of 40 to 60mmHg intraoperatively. Computerized tomography (CT Scan) 3-phase liver and adrenal revealed large heterogenous hypodense right suprarenal mass measuring 9.5cm (AP) x 9.5cm (W) x 10.6cm (CC) associated with surrounding retroperitoneal hematoma. Subsequently, urine metanephrine and normetanephrine levels were obtained, and elevated levels supported the diagnosis of phaeochromocytoma. Her 24-hours urine metanephrine was 3.03 umol/24H (normal range (NR), 0.88-1.53), and 24-hours urine normetanephrine was 9.52 umol/24H (NR, 0.60-2.60).

Her electrocardiography (ECG) showed a sinus tachycardia with T waves inversion in chest leads V3 to V6 preceeding an echocardiogram which revealed a global pericardial effusion; anteriorly 1cm and posteriorly 2cm with regional wall motion abnormality over the basal and mid posterior wall. However, she did not exhibit any cardiac symptoms.

Cardiovascular presentation of phaeochromocytoma includes cardiomyopathy, malignant arrhythmia mimicking acute coronary syndromes and acute heart failure. Pericardial effusion maybe as a first presentation for a phaeochromocytoma is rarely observed. The non specific presentation warrants a high clinical suspicion and early recognition of phaeochromocytoma is the key to improve outcome.

P170

A Chinese Family with Rare and Aggressive Multiple Endocrine Neoplasia Type 1 (MEN1) Tumours and Other Related Manifestations

Shalini Sree Dharan, Lim Shueh Lin, Norazizah Aziz

Endocrinology Department, Penang General Hospital.

Multiple Endocrine Neoplasia Type1 (MEN1) is a syndrome of benign and malignant endocrine neoplasm. The common manifestation of MEN1 is hyperparathyroidism, enteropancreatic and pituitary tumours. Other less common manifestations are adrenal cortical tumours and carcinoid tumours. MEN 1 syndrome is diagnosed when a patient has 2 of the 3 main MEN 1 related tumours. Familial MEN1 is defined as at least 1 case of MEN1 plus a first degree relative with 1 of the 3 tumours. This is a case of Familial MEN1 in a Chinese family. None of the family members were aware how their disease were related with their family line until one of the family members first came to us in 2009. MEN1 would usually have Hyperparathyroidism diagnosed initially and then other related illnesses following it. In this report, we encountered two of the family members with rare foregut neuroendocrine tumours which was rather aggressive in it's nature as initial manifestation of MEN 1.. They were rather unfortunate to have the aggressive tumours as the first manifestation of the MEN1 syndrome with both succumbed to eventually.

P171

Pituitary Mass in a Patient with Ovarian Carcinoma Presenting with Apoplexy with Disappearance After Chemotherapy

Tan Chen Ting, Ho Kian Hui, Florence Tan

Endocrine Unit, Department of Medicine, Sarawak General Hospital, Malaysia

Introduction: Ovarian Cancer (OVC) is the fourth commonest cancer among Malaysian women. Epithelial OVC comprises > 90% of OVC with serous subtype being the most common and with a high rate of complete primary response to platinum based chemotherapy. Incidence of brain metastasis from OVC is reported to be rare at 0.29 -5%.

Aim: To describe a rare case of pituitary mass in a patient with OVC undergoing neo-adjuvant chemotherapy presented with apoplexy with subsequent tumour disappearance on follow-up suggesting possible pituitary OVC metastasis.

Method: A 48-year-old nulliparous lady with stage 3 moderately differentiated papillary serous carcinoma of the right ovary presented with 2 day history of severe headache associated with vomiting and blurring of vision. She had just completed her 6th cycle of 3-weekly neo-adjuvant chemotherapy (paclitaxel and carboplatin) and was on subcutaneous enoxaparin (Clexane) for treatment of pulmonary embolism (diagnosed 5 months prior to this presentation) . Examination showed left temporal hemianopia with no other neurological deficit. MRI brain showed pituitary macroadenoma (1.5cmx 2.6cm x2.6cm) with apoplexy. Hormonal profile showed low serum cortisol at 3.78 ug/dL. Free T4 (16.09 pmol/L) and prolactin (17.3 ng/ml) were normal. She was treated conservatively with hydrocortisone and subsequently underwent TAHBSO and total debulking surgery for her OVC. A repeated pituitary MRI five months later showed no lesion in the sellar with shrunken pituitary gland. Her visual field defect resolved and a.m cortisol normalized to 13.58 ug/dL.

Conclusion: Pituitary metastasis is rare event, being reported more commonly in breast and lung carcinoma. OVC with solitary pituitary metastasis had not been reported previously. Our patient could have a concurrent pituitary macroadenoma but its complete disappearance following treatment of OVC suggest pituitary metastasis to be more likely as serous epithelial OVC is known to have high rate of complete response to primary therapy. Pituitary metastasis had been reported to present with apoplexy. Suggested pathophysiology could be rapid change in tumour size that occurred during dopamine agonist treatment for prolactinoma and tumoural vasculopathy. The use of Clexane in our patient may have also been a contributory factor.

P172

Late Growth Hormone Initiation in Patients with Hypopituitarism

Tan Chen Ting, Ho Kian Hui, Florence Tan

Endocrine Unit, Department of Medicine, Sarawak General Hospital, Malaysia

Background: Growth Hormone (GH) is indicated for children with GH deficiency (GHD). It should be started at earliest opportunity to optimize growth. In developing country, GH initiation may be delayed due to late presentation or logistic inconvenience. Data is limited on the efficacy of late GH initiation in hypopituitarism patients.

Objective: To report the effect of late GH initiation in patients with hypopituitarism.

Method: Case review of patients with GHD who were initiated with GH after 12 year-old. Patients were replaced with hydrocortisone and L-thyroxine if insufficient. GH was started at 0.15mg/kg weekly. Sex hormone initiation was individualized based on bone age and psychosocial consideration.

Result: A 20 year-old female presented with headache and loss of vision. She was short [Height 123 cm; Bone age (BA): 10 year-old] with no secondary sexual characteristic. Investigation confirmed hypopituitarism secondary to craniopharyngioma. GH was started 3 month after surgery resulting in final height of 138 cm [mid-parental height (MPH) 142 cm] after 3 year.

A 15 year-old girl was referred for hypopituitarism secondary to craniopharyngioma. She was 114 cm in height (BA: 5 year-old). GH replacement initiated 3 months post-operatively resulted in a final height of 156 cm (MPH 149 cm) after 5 years.

A 14 year-old girl was referred for continuing of care of pan-hypopituitarism secondary to craniopharyngioma treated with transcranial surgery at age 4 and 7. GH was added to her hormonal replacement after confirmation of GHD. Her height increased from 143 cm (bone age 12 year-old) to 158 cm in 2 years (MPH 163 cm), but GH was stopped due to tumour recurrence on MRI surveillance.

A 15 year-old boy with history of epilepsy was noted to be small for his age. Hormonal work-up showed pan-hypopituitarism. MRI brain was normal. GH together with L thyroxine and hydrocortisone was started. His height increased from 135 to 141 at one year follow-up.

Conclusion: GH replacement is worthwhile in patients with hypopituitarism who present late but before epiphyseal fusion. Our patients achieved 6-12 cm height /year; with final height close to +/- 1 SD of predicted adult height despite late treatment.

P173

Transformation of Nonfunctioning Pituitary Adenoma to Cushing's Disease

Chai Shu Teng, Norhaliza Mohd Ali, Loh Leh Teng

Department of Medicine, Hospital Sultanah Aminah

Background: Nonfunctioning pituitary adenomas account for 25% to 30% of pituitary adenomas. They are hormonally inactive and are mostly macroadenomas. Transformation of nonfunctioning pituitary adenoma to Cushing's disease is rare.

Methods: We described a 50-year-old lady who presented with right optic atrophy secondary to a large, invasive and clinically nonfunctioning pituitary tumour. She underwent craniotomy and tumour debulking of the pituitary mass, followed by insertion of ventriculoperitoneal shunt eight months later due to persistent obstructive hydrocephalus. Histopathological features were consistent with pituitary adenoma. She developed secondary hypothyroidism following the surgery. Serial early morning serum cortisol before and after the surgery showed an increasing trend and the patient manifested features of Cushing's syndrome. Her biochemical workup was consistent with Cushing's disease. CT scan of the adrenal glands showed no focal lesion or hyperplasia. As the patient refused a second surgery, she was treated with ketoconazole. She developed symptoms of adrenal insufficiency with recurrent vomiting even with low dose ketoconazole despite an elevated serum cortisol level. Three months after the commencement of medical treatment, she was hospitalized for Addisonian crisis and the serum cortisol level decreased dramatically to 171 nmol/L (171-536) after one month of self-discontinuation of ketoconazole. CT scan of the pituitary showed no evidence of pituitary apoplexy. The possibility of cyclic Cushing's syndrome was considered.

Conclusion: Our report is consistent with the previous case reports in illustrating the hypersecretory potential of some presumably nonfunctioning pituitary adenomas.

P174

Idiopathic Thrombocytopenic Purpura in Childhood, Langerhans Cell Histiocytosis in Adulthood: More Than a Chance Association?

Kuan Yueh Chien, Nurain Mohd Noor

Sarawak General Hospital, Malaysia; Putrajaya Hospital, Malaysia.

Background: Langerhans cell histiocytosis (LCH) is a rare disease characterized by the proliferation of large mononuclear cells and can infiltrate one or more organs in the body including the hypothalamic-pituitary axis (HPA). Although the disease can occur at any age, it remains poorly defined in adults. Primary Immune Thrombocytopenia or previously known as Idiopathic Thrombocytopenic Purpura (ITP) is an autoimmune disorder characterised by isolated thrombocytopenia and remains a diagnosis of exclusion.

Case Report: Herein, we describe the case of a 23 year-old lady who was diagnosed to have chronic ITP in childhood on low dose maintenance steroids, presenting with a 1-month history of polyuria and polydipsia. Water deprivation test confirmed cranial diabetes insipidus. MRI pituitary showed pituitary stalk thickening with loss of posterior pituitary hyperintensity on T1. An initial diagnosis of lymphocytic hypophysitis was made. However, months later she developed hypogonadotrophic hypogonadism with multiple cervical lymphadenopathy and parietal bone swellings. Excisional biopsy of the cervical lymph node finally confirmed LCH.

Conclusion: This case highlights the possibility of LCH presenting as isolated thrombocytopenia in childhood only to be discovered more than a decade later when there was other system and organ involvement namely the pituitary and bone. The use of low dose prednisolone in this case could also have masked the disease as steroid is an accepted treatment for LCH. It reemphasizes the need for a high index of suspicion and the challenges in diagnosing LCH at the outset.

P175

VIPoma: A Rare Cause of Acute Diarrhea

Natalie Bernice T. Ong, Eduardo Thomas Aquino

St. Luke's Medical Center, Quezon City, Philippines

Background: The syndrome of watery diarrhea, hypokalemia, and achlorydia (WDHA syndrome) also known as pancreatic cholera syndrome is a rare condition characterized by severe watery diarrhea resulting from the over secretion of vasoactive intestinal peptide (VIP) from non-beta pancreatic islet cells. VIP secreting tumors is an exceedingly rare neuroendocrine tumor with a reported annual incidence of 0.05 to 0.2 cases per 1million adults in the US. It has an estimated global annual incidence of 5 cases per 1 million. VIPomas are usually considered as a cause of chronic diarrhea and the onset of symptoms is often described as insidious.

Objective: To present a case of VIPOMA manifesting as acute diarrhea in a Filipino.

Result: We present the case of a 60 year old Filipino who developed a four day history of profuse diarrhea necessitating emergency room consult. On physical examination, the patient looked weak and had signs of dehydration. Laboratory investigations revealed hyponatremia, hypokalemia, hypochlorydia, hyperglycemia, high blood urea nitrogen and creatinine, anion gap metabolic acidosis, and elevated chromogranin levels. Contrast-enhanced computed tomography scan and Somatostatin Receptor Scintigraphy revealed findings consistent with a localized functioning pancreatic neuroendocrine tumor. Further workup revealed elevated VIP hormone levels at 515 pg/mL. Despite manifesting with the typical features of severe watery diarrhea, dehydration and hypokalemia, our case was atypical in its rapidity of onset and progression of the clinical syndrome to acute renal failure necessitating hemodialysis. Patient was placed on intravenous Octreotide drip for symptom control while stabilizing other medical problems (multiple electrolyte imbalance and acute renal failure). He was eventually shifted to subcutaneous Octreotide-LAR injection once a month while awaiting definitive management which is surgery.

Conclusion: This case highlights the importance of considering VIPoma as one of the rare but important differential diagnosis in any patient presenting with acute diarrhea.

P176

A Case of Malignant Pheochromocytoma Associated with Hyperthyroidism

Lim Kim Piow, Foo Siew Hui, Harjit Singh

Endocrine Unit, Department of Medicine, Selayang Hospital, Selangor, Malaysia; Hepatobiliary Unit, Department of Surgery, Selayang Hospital, Selangor, Malaysia

Malignant pheochromocytomas are catecholamine secreting neuroendocrine tumours arising from chromaffin cells of adrenal medulla with metastases. Pheochromocytoma classically presents with paroxysmal spells associated with hypertension. Rarely, it may be associated with ectopic secretion PTHrP, ACTH/CRH, GHRH/GH, Calcitonin and VIP. Pheochromocytoma with ectopic TSH/TRH secretion is yet to be reported.

We report a 41 year-old female who presented with epigastric discomfort in October 2012. Radiological investigation revealed the presence of a large liver mass provisionally diagnosed as focal nodular hyperplasia of the liver. During the preoperative work-up, she was found to be hypertensive with biochemical evidence of hyperthyroidism. Her blood pressure was controlled with single anti-hypertensive but the elevated free T4 was resistant to high dose carbimazole accompanied by lack of TSH suppression. In view of the persistently discordant TSH with free T4 levels associated with negative thyroid antibodies, she was planned for further investigations along the line of probable thyroid hormone resistance. However, she defaulted the endocrine work-up. She underwent laparotomy in August 2013. Intraoperative findings revealed the presence of masses arising from liver and left adrenal infiltrating into pancreatic tail and spleen. Resection of liver tumor with cholecystectomy, distal pancreatectomy, splenectomy and left adrenalectomy was performed. Histopathological findings were consistent with malignant pheochromocytoma. The urinary catecholamines and serum chromogranin A levels done post-operatively were normal. Her hyperthyroidism went into spontaneous remission with rapid tapering of the carbimazole within 2 months after the surgery. She developed recurrent liver lesions which were somastostatin-avid on Gallium-68 DOTATOC PET-CT with no uptake on MIBG-131 in February 2015. This was accompanied by a relapse of hyperthyroidism. The repeated urinary catecholamines and serum chromogranin A levels remained normal.

This case illustrates a rare disorder of a non-functioning malignant pheochromocytoma associated with hyperthyroidism probably related to ectopic TSH/TRH secretion. An elevated free T4 can be useful for detection of tumor recurrence and monitoring of subsequent treatment response. Apart from resistance to thyroid hormone, unsuppressed TSH associated with elevated free T4 should prompt the consideration of a paraneoplastic syndrome related to ectopic TSH/TRH secretion especially in the setting of a pre-existing neuroendocrine tumour.

P177

Pituitary Abscess Mimicking a Pituitary Adenoma Presenting with Secondary Amenorrhea and Blurring of Vision

Jerico Gutierrez, Mark Anthony Sandoval, Daryl Jade Dagang, Kathleen Khu

Section of Endocrinology, Diabetes and Metabolism, Department of Medicine and Division of Neurosurgery, Department of Neurosciences, Philippine General Hospital, University of the Philippines Manila

We present the case of a 43 year old female presenting with secondary amenorrhea for 10 months duration and gradually progressing left temporal hemianopsia. The rest of the physical examination was normal. Laboratory work-up revealed normal prolactin at 92.2 mIU/mL, low estradiol level at 29.7 pg/ml and a low FSH at 0.35 mUI/ml, a low normal FT4 at 9.4 pmol/L with a low normal TSH at 0.5 uIU/mL, and a low 8AM serum cortisol at 39.54 nmol/L. These suggest hypogonadotropic hypogonadism, beginning secondary hypothyroidism and secondary adrenal insiffuciency. Complete blood count did not show anemia, with a normal WBC count at 5.23 x 109/L with 41% neutrophils and 46% lymphocytes. Brain MRI showed a 2.6 x 2.4 x 1.8 cm heterogenous, predominantly rim-enhancing sellar-suprasellar mass with small enhancing nodular component as well as complex central aspect with mixed soft tissue and fluid signals. Preoperative diagnosis was a non-functioning pituitary adenoma with hypopituitarism and optic chiasmal compression. During transsphenoidal surgery, instead of a solid mass, there was egress of purulent fluid upon puncturing of the capsule, findings compatible with an abscess. Gram stain revealed PMN 0-1 and Gram-positive cocci. No bacterial growth was seen after 5 days. Acid-fast bacilli smear and polymerase chain reaction for Mycobacterium tuberculosis were both negative. Histopathologic examination revealed benign cyst content. There was immediate improvement in visual acuity and visual field after surgery. The patient was treated with intravenous ceftriaxone 2 g every 12 hours for 14 days. She developed cerebrospinal fluid leak which was successfully treated with acetazolamide and drainage of CSF via lumbar tap. There was no post-operative diabetes insipidus. Post-operative 8AM serum cortisol and free thyroxine levels were low. She was sent home on prednisone and levothyroxine. She was advised to observe for return of menses. Preoperative diagnosis of pituitary abscess is challenging because of the lack of clinical features indicative of infection like fever and leukocytosis. Pituitary abscess is an important differential diagnosis in patients presenting with a heterogeneous rim enhancing pituitary mass with hypopituitarism. Treatment includes drainage of the abscess, antibiotic coverage, and hormonal replacement, if with hypopituitarism.

P178

A Case of Metastatic Insulinoma in Sarawak General Hospital

Ho Kian Hui, Tan ChenTing, Florence Tan

Endocrinology Unit, Department of Medicine, Sarawak General Hospital

Background: Insulinomas occur in 1-4 per million persons per year, malignant or metastatic insulinoma (MI) are even rarer, reported in only 5.8% to 15% of cases. Mean survival in patients with MI is 2.6 years. Management of MI is challenging and requires multimodal strategy based on tumour characteristic and patient's clinical status.

Objective: To describe a case of high grade insulinoma, inoperable due to multifocal liver metastasis, with disease stabilization following systemic chemotherapy.

Result: A 46 year-old premenopausal lady was referred for recurrent episodes of hypoglycemia requiring multiple hospitalizations over past 3 months. History revealed increasing frequency of episodic diaphoresis, palpitation, headache and fatigability which were relieved by food, over 6-8 months period. The episodes had become more frequent and severe over past 3 months with 3-4 times / month of nocturnal confusion, and occasional near-fainting episodes. Endogenous hyperinsulinemia was confirmed during a hypoglycemic episode with glucose of 2.3 mmol/L and c-peptide of 1.04 nmol/L. Serum Calcium, morning cortisol, thyroid, renal and liver function were all normal. Chromogranin A was elevated at 5060 ng/ml (27.0-94.0). Abdominal Computed tomographic scan demonstrated 1.5 cm hypo-enhancing non-cystic lesion at tail of pancreas with multiple liver metastases involving all segments of liver. She was treated with diazoxide and regular calorie feeding. Ultrasound guided liver biopsy showed neuroendocrine carcinoma, Grade III with Ki67 index > 20%. She underwent chemotherapy with carboplatin and etoposide. CT abdomen done after 6 cycle of chemotherapy 3 months later showed no tumour progression and she was able to maintain normoglycemia with reducing dose of diazoxide.

Conclusion: Metastatic insulinoma is rare. In patients with inoperable liver metastasis, expanding therapeutic options included somatostatin analogues, liver targeted therapies, systemic chemotherapy and targeted molecular therapies. Individualized multimodal treatment strategy is needed to control symptoms from hormonal excess, preserve quality of life and prolonged survival. Our patient presenting with rapid worsening of hypoglycemic episodes and was found to have widespread liver metastasis. Due to histology finding of high grade disease, she received systemic chemotherapy with stabilization of tumor burden and hypoglycemia. Other treatment modalities may be needed in future in case of disease progression.

P179

Ectopic ACTH Producing Malignant Paraganglioma – Experience with Etomidate

Tong Chin Voon, Nurain Mohd Noor, Masni Mohamad, Azraai Nasruddin, Zanariah Hussein

Hospital Putrajaya, Malaysia

We report a rare case of a 41 year old lady with ectopic adrenocorticotropic hormone (ACTH) producing malignant paraganglioma. Our patient presented initially with acute stroke and was found to be hypertensive and diabetic. Three months later, she was observed to have florid features of Cushing's syndrome. Further investigations confirmed she had ACTH dependant Cushing's syndrome with midnight serum cortisol of 2609 nmol/l and ACTH of 62.04 pmol/l. Further imaging for localization revealed a large lobulated mediastinal mass measuring 5.4 x 5.9 x 3.8 cm in the anterior superior mediastinum. She then underwent debulking surgery of her medistinal tumor after pre operative preparation which included use of ketoconazole and hydrocortisone (block and replace therapy). She remained Cushingnoid post surgery. As the patient declined chemotherapy, external beam radiotherapy was initiated and completed. Throughout her radiotherapy treatment, her blood sugar control became more difficult and she had persistent hypokalemia. Post radiotherapy, she developed severe nosocomial pneumonia and Cushing's myopathy requiring ventilation. In view of all the complications from severe hypercortisolemia despite being on ketoconazole and that surgical cure for her tumor was not possible she was referred for bilateral adrenalectomy. Intravenous infusion of etomidate was initiated at the recommended low dose of 0.04 mg/hour with close monitoring in intensive care unit (ICU). Our patient responded rapidly to etomidate and required an even lower dose of 1.4 mg/hour (0.02 mg/kg/hour) to achieve a steady level of cortisol before bilateral retroperitoneoscopic adrenalectomy. Etomidate infusion was stopped prior to induction of anaesthesia. As expected her blood pressure and sugar control was much easier post adrenalectomy. Our patient required a much lower dose of etomidate compared to other protocols described. As in many other medical therapies the dosages required by Asian patients tend to differ from their Caucasian counterparts. Based on our experience, we would in the future, use a lower starting dose of etomidate than described. More importantly is the close clinical and biochemical monitoring of patients to enable suitable dose adjustments.

P180

Use of Cabergoline for Persistent Cushing's Disease After Trans-sphenoidal Surgery: An Illustrated Case Report

Jeyakantha Ratnasingam, Katherine English, Warrick Inder

Endocrine Unit, Department of Medicine, University Malaya Medical Centre, Kuala Lumpur, Malaysia; Department of Diabetes and Endocrinology, Princess Alexandra Hospital, Brisbane, Queensland, Australia

Background: Persistent disease after pituitary surgery for Cushing's disease(CD) is common. We describe the use of dopamine agonist in the treatment of CD.

Case: A 36 year old lady presented with symptoms of depression and accelerated weight gain of 40 kg over a year. She weighed 124kg with purple striae over her abdomen and proximal myopathy. Investigations showed an elevated 24 hour urinary free cortisol(UFC): 1795nmol(25-180), midnight salivary cortisol: 6.2nmol/L(0-5), with ACTH: 88ng/L(9-51), indicating ACTH dependancy. Imaging revealed an invasive pituitary macroadenoma. Her other anterior pituitary function was intact, including a serum prolactin of 302mIU/L. She had trans-sphenoidal surgery, with the histopathology confirming a pituitary adenoma with strong ACTH and prolactin positivity, with weak TSH, FSH, LH and GH staining. In the first post-operative week, she had evidence of residual disease with an elevated morning cortisol: 673nmol/L (160-650) and 24 hour UFC: 911nmol/day. Her other pituitary function was intact with a serum prolactin: 288mIU/L (<500). She was commenced on ketoconazole titrated up to 400mg BD and underwent stereotactic radiotherapy. Post irradiation, she was intolerant to ketoconazole due to worsening anxiety. She had a trial of cabergoline at 3mg/week, uptitrated to 4mg/week as a bridging medical therapy awaiting irradiation effects. She had good response; 24 hour UFC normalised to 50nmol/24hr(25-180) with ACTH: 61ng/L(9-51) after 6 weeks, with sustained effects at one year post surgery.

Discussion: As D2 receptors are expressed in 80% of corticotroph adenomas, cabergoline is an effective medical therapy with remission rates of 50%. This response is not associated with prolactin level. Cabergoline is required to be titrated to an adequate dose of at least 3-4mg/ week to achieve remission in CD and there has been no valvulopathy reported at such doses. Cabergoline and ketoconazole combination therapy is additive with 79% of patients normalising UFC.

Conclusion: Cabergoline is an effective and safe first line or combination medical treatment in patients with persistence of CD. However as the response is probably related to D2 expression, receptor identification should be carried out routinely in patients with CD.

P181

Ectopic Pheochromocytoma Presenting as Headache and Anxiety Localized Through Bilateral Adrenal Venous Sampling with Glucagon Stimulation

Kristine De Luna, Leilani Mercado-Asis, Allan Baroque

Section Of Endocrinology, Diabetes, and Metabolism, University Of Santo Tomas Hospital

Background: Majority of pheochromocytoma come from the chromaffin cells of the adrenal medulla. It is reported that normal adrenal cortical tissue is devoid of beta-adrenergic receptors, whereas the adrenocortical neoplastic tissue possesses ectopic beta-adrenergic receptors which confer on these tissues the catecholamine sensitivity of its adenylate cyclase. There have also been a number of reports of ectopic hormone synthesis by neoplastic tissue. The characteristic clinical feature of pheochromocytoma is hypertension. The majority of the literature underestimates the significance of neuropsychiatric symptoms in patients with pheochromocytoma. Bilateral adrenal venous sampling with glucagon stimulation is a safe and effective technique in the localization of small and microscopic pheochromocytomas.

Objective: The objective of this report is to present a case of an ectopic pheochromocytoma localized by bilateral adrenal venous sampling with glucagon stimulation with headache and anxiety as main manifestations.

Materials and Methods: This is a case report of a 21 year old male with a throbbing occipital headache of 1 year duration accompanied by mild anxiety. Patient is also hypertensive with the highest blood pressure of 170/100 mmHg. Bilateral adrenal venous sampling with glucagon stimulation was done which localized the pheochromocytoma to both adrenal glands. The dominant catecholamine-secreting lesion was found in the right adrenal gland. Patient subsequently underwent open right adrenalectomy.

Results and Conclusion: There was a disappearance of headache and anxiety after surgery. Blood pressure also normalized to the range of 100 to 120 over 70 to 80 mmHg without intake of anti-hypertensive drugs. Final histopathology revealed ectopic pheochromocytoma in the right adrenal cortex, which stain positively for synaptophysin. The concept of ectopic beta-adrenergic receptors with ectopic catecholamine synthesis in the adrenal cortex is the highly probable pathophysiologic explanation for this very rare presentation of pheochromocytoma. In patients presenting with neuropsychiatric symptoms, it is reasonable to include pheochromocytoma as one of the differential diagnoses. Bilateral adrenal venous sampling with glucagon stimulation is a safe and useful approach in localizing pheochromocytoma in this case. Performance of adrenalectomy is still the best management in unloading of excess catcholamine, leading to symptomatic relief and blood pressure improvement in this type of pheochromocytoma.

P182

A Patient with Type 2 Diabetes Mellitus Presenting with Severe Polyuria and Polydypsia Due to Concomitant Central Diabetes Insipidus

Joanna Grace Dy, Ruben Kasala

The Medical City, Ortigas Avenue, Pasig City, Philippines

Introduction: Central diabetes insipidus is a rare pituitary disorder characterized by deficiency of AVP secretion and release causing water diuresis, while uncontrolled type 2 diabetes mellitus which is mainly due to insulin resistance causes osmotic diuresis.

Case: A 52 year old female with poorly controlled type 2 diabetes mellitus complained of polyuria described as 5 to 6 times micturition during the day and 4 to 5 times nocturia with associated polydipsia for eight weeks. She had type 2 diabetes mellitus for about 15 years and was maintained on long acting insulin and oral hypoglycemic agent for 2 years. Despite the hyperglycemia being controlled by adjusting her long acting insulin and giving of short acting insulin for prandial coverage, her symptoms persisted. Further investigations showed low urine specific gravity (1.005), elevated serum sodium (145meq/L), elevated serum osmolality (300mOsm/kg), low urine osmolality (69 mOsm/kg). Patient underwent water deprivation test which confirmed the coexistence of complete central diabetes insipidus demonstrated by more than 100% increase in urine osmolality an hour after giving vasopressin. Imaging of the sella was done to investigate the etiology of the central diabetes insipidus and it showed unremarkable examination of the sella. The patient was started on desmopressin acetate melt at 60mcg/tablet and dose was adjusted to 60mcg/tablet twice a day. Her symptoms of increased in thirst dramatically improved and her urine output, specifically her nocturnal voids improved with no episodes of hyponatremia.

Conclusion: It is therefore important to distinguish the cause of polyuria and polydipsia as mainly because of poorly controlled type 2 diabetes mellitus or if there is a concurrent diabetes insipidus. A simple serum osmolality and urine osmolality can provide significant information as to the cause of polyuria and at least more than 50% increase in urine osmolality after injecting vasopressin during water deprivation test confirms the diagnosis of central diabetes insipidus.

P183

One in a Million: Secondary Amenorrhea from a Thyrotropin Producing Pituitary Macroadenoma

Francis Bryant Go Chua, Ruben Gutierez Kasala

The Medical City, Pasig City, Philippines

A 29 year old Asian female was seen at the endocrine clinic due to menstrual irregularities, initially with altered interval of menses eventually resulting in amenorrhea. She had been previously well and did not have any headaches, visual field changes, nipple discharges, weight or appetite changes although she did have occasional palpitations She had a normal body mass index (23.3 kg/m²). She had consulted an obstetrician-gynecologist (OB-GYN) who diagnosed her with polycystic ovarian syndrome based on ultrasound findings. The use of oral contraceptive pills (OCPs) regularized her menses. However when she discontinued the use of OCPs she again became amenorrheic. She consulted an OB-GYN in our institution who had requested prolactin levels. The results were elevated and she was subsequently referred to us.

Complete biochemical workup showed elevated free thyroid hormones (Free triiodothyronine 5.8 pg/mL; Normal Value: 1.4 - 4.4 pg/mL, Free thyroxine 27.3 pg/mL Normal Value7-18 pg/mL) and an unsuppressed thyrotropin level (1.02 uIU/mL Normal Value (NV): 0.25 - 4.0 uIU/mL). Estrogen was low (Estrogen 18 pg/mL NV: 21 - 649 pg/mL) with inappropriately normal luteinizing hormone (LH) and follicle-stimulating hormone (FSH) levels (LH 3.45 mIU/mL NV: 1.14 - 74.24 mIU/Ml; FSH 3.88 mIU/mL NV 1.38 - 16.69 mIU/mL). Prolactin levels were only mildly elevated (Prolactin 35.87 ng/mL NV: 1.9 – 25.0 ng/mL). Cranial magnetic resonance imaging (MRI) revealed a pituitary macroadenoma and she subsequently underwent successful transsphenoidal excision of the mass. Histopathology showed glandular tissue with strong immunohistochemical staining for thyrotropin, and mild staining for prolactin, which were consistent with a thyrotropin-secreting adenoma. Follow up blood test in the subsequent months showed biochemical cure and MRI did not show recurrence of the adenoma. Careful history taking, and physical examination are key elements in making the correct diagnosis. When the clinical picture of the patient does not match the typical presentation of the clinician's impression, further workup should be done to confirm the diagnosis or workup for other causes of the patient's condition.

P184

Rectal Carcinoid in a 25-Year Old Female

Erva Magbanua, Michelle Cornel, Cristina Chua

Chinese General Hospital and Medical Center

Patient is a 25-years-old female who presented with carcinoid syndrome and a small rectal carcinoid tumor. Colonoscopy revealed a small 1 cm rectal polyp removed by polypectomy. Histology was diagnostic of a carcinoid tumor without atypical histopathologic feature. Immunohistochemical study was positive for chromogranin A and synaptophysin. There was no note of liver metastasis or pancreatic mass. After polypectomy, urine HIAA, chromogranin A, gastrin, acid phosphatase were negative. Patient underwent wide transanal excision of the rectum. There was no tumor recurrence 3 months after the wide excision.

P185

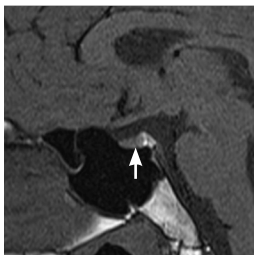
Kallmans Syndrome with Pituitary Hypoplasia

Perie Adorable-Wagan, Mariaem Andres, Ma. Theresa Chua-Agcaoili, Jose Emmanuel Flandes

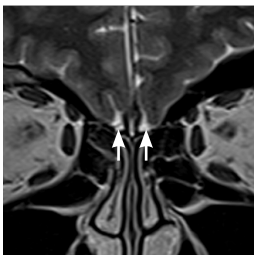
The Medical City Hospital, Ortigas Avenue, Pasig City, Philippines

A 34 year old male consulted for his uncontrolled diabetes and noted an unusual features for his sex and age. He presented with anosmia, gynecomastia, absent facial, axillary, pubic hair and eunuchoid body habitus. He has a small penis with a stretched length of 2 cm. There was no hypospadia. The left testes was small < 1ml, the right testes was not palpable. His total testosterone, LH and FSH revealed hypogonadotropic hypogonadism with low levels at 0.30ng/ml, low LH = 0.19 mIU/mL (1.14-8.75) and low FSH = 0.42 mIU/mL (0.95-11.95). Serum prolactin, ACTH, cortisol and thyroid function test were all normal. His IGF-1 level was 70 (115-307 ng/mL). Cranial MRI of the sella (A) showed a low normal sized pituitary gland (measuring 3.4 mm in height) in normal position (B) Rathke's cleft cyst or a non-functioning microadenoma. Follow up Cranial MRI with focus on the olfactory apparatus (C) revealed shallow left olfactory sulcus while right is intact. It also showed an absent or hypoplastic bilateral olfactory bulbs (D).

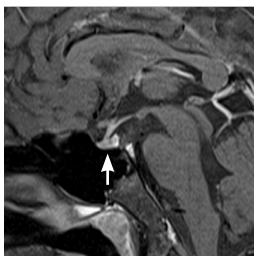
Our patient with clinical findings of hypogonadism and anosmia, a low LH, FSH and testosterone levels, points to the diagnosis of Kallman syndrome, in which there is hypoplasia or aplasia of the olfactory bulbs due to defective migration of olfactory and GnRH neurons. Another interesting finding is the small pituitary gland which measures 3 mm. A case report written by an Indian author described MRI findings in five patients with kallman syndrome, two out of the five patients have hypoplastic pituitary gland. He defined it with a height of less than 4mm. His explanation was that hypoplasia of anterior pituitary may be secondary to limited stimulation due to absence of hypothalamic GnRH neurons. The three local report on Kallman syndrome has no associated pituitary hypoplasia. This is the first reported case. Pituitary hypoplasia involves mutation in Prop-1 gene which resulted in deficiency or absence of several pituitary hormones while genetic abnormality in patient with Kallman syndrome involves mutation in the Kal-1 gene. Whether this is a new combination of genetic mutation is still unknown until a genetic testing work up is performed to further investigate this area.



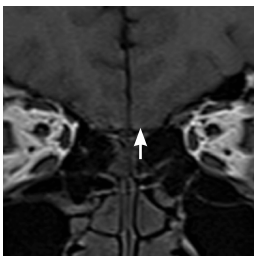
A. Cranial MRI of the sella using 1.5 Tesla Siemens machine showed a low normal sized pituitary gland (measuring 3.4 mm in height) in normal position



B. A tiny non-enhancing T2 bright focus in the left posterior pituitary gland measuring 1.3 mm in diameter was evident (B), with enhancement pattern compatible to small Rathke's cleft cyst or a non-functioning microadenoma



C. Follow up Cranial MRI with focus on the olfactory apparatus revealed shallow left olfactory sulcus while right is intact.



D. Coronal T1W images in the olfactory bulbs left in the patient is not visualized

P186

Impact of BMI, Insulin Metabolism Derangement and Lipid Profile on Increasing Risk of PCOS Among a Group of Saudi Women (Tabuk Region)

Intissar Ezzidi, Nabil Mtiraoui, Walid Zammiti, Eram Hussain, Faisal Abuduhair

Prince Fahd Bin Sultan Research Chair, Using Advance Technology for Disease detection and Treatment, Faculty of Applied Medical Sciences, University of Tabuk

Background and Aims: Polycystic ovary syndrome (PCOS) is a common endocrine disorder in females, and is associated with altered metabolic processes, in particular insulin resistance and diabetes mellitus. Insulin resistance in PCOS women appears to be independent of BMI, but is associated with obesity.

The present study was designed to investigate the influence of BMI, insulin metabolism derangement and lipid profile on increasing the risk of PCOS among a group of Saudi women (Tabuk region). A total of 111 Saudi Arabia PCOS cases and 82 control subjects were included.

Results: The serum total cholesterol, triglycerides, LDL-C, glucose, and free insulin were significantly higher in the PCOS women and higher BMI values when compared to controls.

Our results reveal significant differences among three groups of patients according to BMI status. A statistical correlation clearly demonstrated the influence produced by BMI status on HDL (P=0.009), cholesterol (P=0.044) in PCOS patients. In the population studied, a percentage of 26.12% of PCOS patients are obese and 6.3% are with morbid obesity. Hyperinsulinemia is manifested in obese women and to a lesser extent in lean patients.

A significant negative correlation was noted between BMI status and HDL levels. PCOS patient with normal BMI had higher HDL levels than patients (P=0.009).

Moreover, we reported the significant association between BMI status and age at inclusion (P=0.002). The patients obese are older than the patient either with overweight or with normal BMI. This is due to the fact that 54.05% of PCOS patients having normal BMI or slightly overwheight are young with a small SD on their mean age.

Conclusion: PCOS patients had significant increased levels of free insulin, fasting glucose and disturbed lipid profile (high triglyceride, cholesterol and LDL-C levels and low HDL-C level). our Results obtained will help in further report on susceptibility genes in PCOS and insulin resistance, which will significantly impact the diagnosis, management, and long-term follow up.

of several pituitary hormones while genetic abnormality in patient with Kallman syndrome involves mutation in the Kal-1 gene. Whether this is a new combination of genetic mutation is still unknown until a genetic testing work up is performed to further investigate this area.

P187

Impact of Androgen Hormones and Prolactin Profile on Increasing Risk of PCOS Among a Group of Saudi Women (Tabuk Region)

Nabil Mtiraoui, Faisal Abu-Duhier, Walid Zammiti, Intissar Ezzidi, Eram Husain

Prince Fahd Bin Sultan Research Chair, Using Advance Technology for Disease detection and Treatment, Faculty of Applied Medical Sciences, University of Tabuk

Background and Aims: PCOS is a common and heterogeneous endocrine disorder in females at reproductive age with well-established metabolic and hormomal abnormalities such as chronic anovulation or oligoovulation and clinical or laboratory hyperandrogenemia in the absence of other sources of androgen excess. This disorder causes the infertility in women.

Our goal is to investigate the influence of androgen hormones and prolactin profile on increasing the risk of PCOS among a group of Saudi women (Tabuk region).

A total of 111 Saudi Arabia PCOS cases and 82 control subjects were included.

Results: We reported that PCOS women displayed higher total testosterone, FSH, Estradiol levels compared to those in control group ($P<0.001$) in agreement with findings of several studies on the same.

Our results reveal significant differences among three groups of patients according to BMI status. A statistical correlation clearly demonstrated the influence produced by BMI status on prolactin ($P=0.008$) and testosterone levels ($P=0.003$) in PCOS patients. The obese patients presented higher prolactin levels than lean patients.

The levels of prolactin are significantly lower in obese patients compared to patients with morbid obesity (127.17 vs 540 pg/ml, $P= 0.008$). This finding might support the hyperprolactinemia as risk of PCOS through the insulin resistance and BMI.

When obese patients were compared to those with morbid obesity (BMI>40), the testosterone levels increased in an exponential manner

Conclusion: PCOS patients had significant altered hormonal profile (high FSH, oestrogen, prolactine and testosterone levels).Our Results obtained will help in further report on susceptibility genes in PCOS and insulin resistance and hormonal derangment, which will significantly impact the diagnosis, management, and long-term follow up.

P188

Leptin and Reproductive System During the Development of Wistar Male Rats

Fatima Illoul, Mouna Boukroufa, Rebiha Djediat

FSB, LBPO, Endocrinology, University of Science and Technology Houari Boumedienne Bab Ezzouar, Algiers, Algeria.

The leptin, hormone secreted by adipocytes, mainly involved in the regulation of energy balance. However, other roles are currently assigned to leptin, in particular in the reproduction; many receptors of it were detected in different organs .The purpose of this work is to analyze the impact of the leptin on reproductive axis of male rats during development at 30 days, 40 days and 60 days of age.

42 animals are used. The experimental animals received the leptin solution amount of 8µgr / kg/day) by intraperitoneally during 5 days and the control received the same volume of dilution liquid (0.9% NaCl) at the same time.

In the end of the treatment they are all killed at the same time.

Blood is collected, centrifuged and the plasma frozen at -20°C until assayed.

The testes and all the genital tract are removed, frozen or fixed in Bouin-Hollande for histological study. Frozen testes were grinded in a physiological fluid. After centrifuging the homogenate was stored at -20°C. Testosterone, FSH and LH were assayed in plasma, the two steroids, testosterone, 17β estradiol and cAMP in testicular homogenate by the RIA method. In plasma the testosterone increase at the three ages in animals treated versus controls.

The increase is very significant between 30 days and 60 days. The levels of the 17β estradiol are highly variable.

The rate of cAMP increases after injection of leptin to the three ages. This increase is highly significant between ages 30 and 60 days, between 40 and 60 days.

The structural study of testes highlights in animals treated with leptin increasing the number of spermatocytes to 30 days, numerous meiotic divisions in 40 days and a high number of sperm in the tubal lumen.

These results allow us to conclude that leptin injected into the blood stream does not influence centrally gonadotropins; it potentiates the action of these two hormones locally by activating the enzymes of steroidogenesis in Leydig cells and factors of spermatogenesis in Sertoli cells through the second messenger cAMP

P189

Evaluation of an Electrophoretic Method for Microsatellite D19S884 Detection in Malay PCOS Women

Fazliana Mansor, Liyana Ahmad Zamri, Fatin S, Hanifullah Khan

Diabetes & Endocrine Unit, CDNRC, Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Malaysia; Department of Obstetrics and Gynaecology, Cyberjaya University College of Medical Sciences, JalanTeknokrat 3, Cyber 4, 63000 Cyberjaya, Selangor, Malaysia

Background: Polycystic Ovarian Syndrome (PCOS) confers a large clinical, social and economic burden on society due to its numerous cardio-metabolic and reproductive associations. Due to its underlying genetic influence, numerous efforts have been made to identify susceptibility loci by focusing on candidate genes and their relationship to the syndrome. So far, only D19S884 (a dinucleotide repeat polymorphism mapping to chromosome 19p13.2 and located in the fibrillin 3 gene) has been consistently associated with PCOS, even across different ethnic populations. At the onset of our novel research involving Malay women, we decided to evaluate the feasibility and practicality of our methods prior to full-scale study implementation. The aim of this study was to evaluate the performance of a test combining low-melting agarose (LMA) gel electrophoresis and fragment analysis by capillary electrophoresis to analyse the presence of the D19S884 microsatellite in Malay women with PCOS.

Materials and Methods: Blood from 16 Malay women with PCOS was used to detect DNA microsatellites which were then amplified by polymerase chain reaction (PCR) using a pair of specific primers tagged with fluorescence to yield products of 160–200 base pairs in length. Alleles were separated on 4% LMA gels; stained with a safe gel staining, GelRed™, used as an alternative to ethidium bromide; and visualised by ultraviolet illumination.

Results: The LMA gel method gave better separation of the bands compared to previous methods. Furthermore, there was precise identification of each allele using capillary gel electrophoresis for fragment analysis and utilizing the Applied Biosystem Genetic Analyzer for visual analysis. There was potential for allelic discrimination even in cases of 2 base pair differences between the alleles.

Conclusion: Our standardised method combining LMA gel electrophoresis and fragment analysis in the identification of the D19S884 microsatellite in Malay women with PCOS returned a precise and reproducible test.

P190

Incidence and Risk Factors for Post-Thyroidectomy Hypocalcemia among Filipinos

Michael Conrad L. Tongol, Roberto C. Mirasol

St. Luke's Medical Center, Quezon City, Philippines

Background: Hypocalcemia is the most common post-thyroidectomy complication. Studies were done to predict this but no concrete guideline exists and to the authors' knowledge, none has been done among Filipinos.

Objectives: This study aimed to determine incidence and risk factors for post-thyroidectomy hypocalcemia among Filipinos.

Methodology: This was a retrospective cohort study of 242 patients who underwent total or completion thyroidectomy from 2011-2014 at St. Luke's Medical Center, Quezon City, Philippines. Patients were divided: hypocalcemic and normocalcemic depending on post-operative serum ionized calcium (iCa) (normal: 1.00-1.30 mmol/L) and/or presence of hypocalcemic symptoms. Hypocalcemic group was divided: (a) symptomatic (serum iCa of 1.00-1.30 mmol/L with any of the following: perioral numbness, acral paresthesia, Chvostek's sign, Trousseau sign, cramps, carpopedal spasms, tetany); (b) biochemical (serum iCa of: <1.00 mmol/L without any hypocalcemic symptom/sign) and (c) symptomatic + biochemical (serum iCa of: <1.00 mmol/L with any hypocalcemic symptom/sign). Patient- and surgery-related factors were assessed and hypocalcemic events described.

Results: Incidence of hypocalcemia was 45.9% (n=111) distributed to: symptomatic (33.9%, n=82), symptomatic + biochemical (10.7%, n=26) and biochemical (1.2%, n=3). Mean post-operative iCa was lower in hypocalcemic (1.04±0.08 vs 1.11±0.05 mmol/L, p=<0.001). None of patient-related factors were significantly different: age (p=0.288), sex (p=0.102), thyroid disease [toxic, nontoxic, malignant] (p=0.226), thyroid gland weight (p=0.369). However, using multiple logistic regression, male sex was protective: OR 0.073 (90%CI: 0.192, 0.930). Among surgery-related factors, presence of concomitant complication of thyroidectomy (hoarseness and/or hematoma) was a significant risk factor [27.02%, n=30 vs. 9.92%, n=13; p=0.002; OR 3.47 (90%CI: 1.90, 6.35)]. Other surgery-related factors were insignificant: type of surgery (p=0.121); neck dissection (p=0.206); duration of surgery in hours (p=0.092); type of surgeon [consultant vs. trainee] (p=0.921), and inadvertent parathyroidectomy (p=0.459). Analysis of hypocalcemic group showed: symptoms occurred at mean 19.84±18.65 hours post-operatively, specific hypocalcemic symptoms: Chvostek's sign (67.6%, n=73), acral paresthesia (64.8%, n=70), perioral numbness (37.0%, n=40), carpopedal spasm (13.9%, n=15), Trousseau's sign (2.8%, n=3) and cramps (0.9%, n=1).

Conclusion: Analyzing post-thyroidectomy hypocalcemia may aid decisions on post-operative monitoring and prevention. In this study, male sex was protective while presence of concomitant complication of thyroidectomy was a significant risk factor.

P191

Vitamin D Deficiency and its Association with Sun Exposure and Bone Turnover Markers in Transfusion Dependent Thalassemia Patients in Malaysia

Fatimah Zaherah Mohamed Shah, Sharmila Sunita Paramasivam, Bee Ping Chong, Shireene Vethakkan

University Malaya; University Teknologi Mara

Background: Bone disease in thalassemia patients is being seen with increasing frequency as these patients now survive longer with improved treatment. Adequate Vitamin-D levels are essential for optimal skeletal health and reducing fracture risk. Data on vitamin-D status in thalassemia patients in equatorial Asian countries with year-long sunshine are scarce.

Objectives: To assess vitamin-D status in transfusion-dependent thalassemia patients, and evaluate its correlation with sun exposure and bone turnover markers.

Methods: A total of 40 transfusion-dependent thalassemia patients, aged between 18-40 years, were recruited from an adult hematology clinic in Kuala Lumpur, Malaysia. 21 (52.5%) were male, and 19 (47.5%) female. All participants had anthropometric measurements, sun-exposure evaluation, a complete biochemical profile including serum ferritin, calcium and phosphate, and measurement of serum 25-hydroxyvitamin-D levels as well as the bone formation marker s-P1NP and the resorption marker s-CTX. Serum 25-hydroxyvitamin D of more than 75nmol/l was taken as sufficient, and sun-index of more than 0.63 was considered adequate.

Results: The prevalence of vitamin-D deficiency was high, 95%, and there was significant negative correlation between vitamin-D and P1NP (r= - 0.364, p =0.024) and ferritin(r=-0.444, p=0.005), but the correlation between vitamin-D and CTX (r=0.168, p=0.308) and sun index (r=0.037, p= 0.824) were not significant. There was also no significant difference in vitamin -D levels between male and female gender (p=0.327), and between Malay and Chinese race (p=0.357). The mean sun-exposure index score (SI), indicating hours per week of total body skin exposure, was 0.523 + 0.2, with significantly more females (p=0.021) and Malays (p=0.003) with low SI.

Conclusion: This study revealed a very high prevalence of vitamin-D deficiency among thalassemia patients, and low sun exposure among females and Malays. High ferritin levels are associated with vitamin D deficiency perhaps secondary to cutaneous hemosiderosis, and this in turn leads to high bone formation markers reflecting increased bone remodelling. Cutaneous hemosiderosis may also explain the lack of correlation between sun index and Vitamin-D levels. It is important to recognize and treat vitamin-D deficiency early in these patients to prevent its deleterious effects on bone health.

P192

Total Parathyroidectomy with Autotransplantation in a Patient with Secondary Hyperparathyroidism and Renal Osteodystrophy

Katherine Anne Banal, Eduardo Thomas Aquino

The Medical City, Ortigas Avenue, Pasig City, Philippines

Introduction: Secondary hyperparathyroidism is a condition commonly associated with chronic kidney disease wherein hypocalcemia causes parathyroid hyperplasia and secretion of excessive amounts of parathyroid hormone. Renal bone disease is an important clinical consequence of secondary hyperparathyroidism that can cause significant morbidity. The management of this condition is predominantly medical, however, surgery may be required in refractory hyperparathyroidism.

Case: A 33-year old male, diagnosed with chronic kidney disease stage 5HD secondary to chronic glomerulonephritis, complained of a 2-month history of back pain and loss of 7 cm in height. He had been on hemodialysis for seven years, with persistently elevated phosphorus levels and low to normal calcium levels. Two months prior to admission, his iPTH was noted to be elevated at 4, 537 pg/mL and parathyroid scintigraphy showed three sestamibi-avid, extrathyroid nodules. Bone mineral density of the spine and forearm were below the expected range for age. Due to these findings and persistent back pain with progressive difficulty of walking, he underwent total parathyroidectomy with autotransplantation of the left inferior parathyroid gland into the right forearm. Ionized calcium levels were monitored every four hours and began to decrease immediately after surgery. He was started on intravenous calcium gluconate intra-operatively and was maintained until six days post surgery. Aside from prolonged QT and transient leg cramps on the 5th post-operative day, there were no other signs or symptoms of hypocalcemia despite persistently low calcium levels. Three weeks after surgery, the patient was still hypocalcemic, but phosphorus had normalized and back pain had improved.

Conclusion: This case illustrates the benefit of parathyroidectomy in a patient with secondary hyperparathyroidism refractory to medical treatment. Close perioperative monitoring is required to address possible complications such as hungry bone syndrome.

P193

Prolonged Hypocalcemia Post Subtotal Parathyroidectomy in a Woman with Parathyroid Carcinoma

Munirulanam Dalhari, R Bowo Pramono, Hemi Sinorita, M Robikhul Ikhsan

Endocrinology Sub Department of Internal Medicine, Medical Faculty of Gadjah Mada University – Jogjakarta

Parathyroid carcinoma is a rare disease, which accounts for less than 1% of all cases of primary hyperparathyroidism. Parathyroid carcinoma occurs equally in men and women. The cause of parathyroid carcinoma is unknown. The most frequent complaints are weakness, fatigue, anorexia, nausea, vomiting, loss of weight, dyspepsia, constipation, headaches, increased thirst and urination. Bone, joint, muscular pain, pathological fractures, and renal stones are frequent when hyperparathyroid state is severe. More than 90% of parathyroid carcinomas are functional, and clinical features are due to the effects of elevated serum PTH and calcium. The standard management of parathyroid carcinoma is radical excision; the place of adjuvant radiotherapy is not well established yet. Disease recurs after the initial operation in more than two thirds of patients. Recurrence is often delayed, sometimes for more than 20 years. We present a case of 22-year-old girl with bone pain for 2 years and history of fracture of femur sinistra. Bone survey revealed bone metastatic osteoblastic type in calvaria and general osteolytic. Laboratory examination showed elevated of calcium serum: 2, 98 mmol/L (2, 15-2, 55 mmol/L) and PTH: 1442 (15-65 pg/mL). Ultrasound and BNO/IVP revealed nephrolithiasis and hydronephrosis bilateral. Magnetic Resonance Imaging revealed a mass in inferior thyroid gland dextra suspect originates from parathyroid gland dextra. Patient underwent subtotal parathyroidectomy on the right side of parathyroid gland. Histopathological examination revealed parathyroid carcinoma. Five hours after operation she felt paresthesia around her mouth and muscle weakness of both lower extremities. Laboratory examaination revealed the level of calcium 1, 3 (2, 15-2, 55 mmol/L). After treatment with IV calcium gluconas, oral calcium and calcitriol her condition was better. Hypocalcemia after subtotal parathyroid surgery is uncommon but may occur. Those that have a subtotal parathyroidectomy need to be observed to make sure the calcium level is stable. Very rare patients with severe bone disease develop “hunger bone syndrome” where after the hyperparathyroidism is cured, , the bones avidly resorb calcium from the blood leading to sometimes severe hypocalcemia that may require IV calcium gluconas such as in this patient.

In our case, the diagnosis of parathyroid carcinoma was made on the basis of clinical symptomps, imaging, and histopathology examination. After 2 weeks course of intravenous calcium gluconas, oral calcium and calcitriol she improved symptomatically and was discharged home 3 weeks after admission. Evaluation of PTH revealed decrease from 1442 to 133 pg/mL (15-65 pg/mL). On review at the out-patient clinic she had sustained clinical improvement.

P194

Determination of Vitamin D Dose to Maintain Sufficiency Amongst Post Menopausal Osteoporosis Indian Women in the Tropic

Sharifah Faradila Wan Muhamad Hatta, Goh Kian Guan, Idris Zamhuri, Chan Siew Pheng, Shireene Vethakkan

Universiti Malaya; Universiti Teknologi MARA (UiTM)

Background: Calcium in combination with vitamin D is as an inexpensive treatment to prevent osteoporotic bone loss and fractures(1). The Institute of Medicine (IOM) 2010 guidelines, aiming 25(OH) D target of 20ng/ml, advocates maintenance doses of 600 IU/day in Postmenopausal women aged 51-70 and 800 IU/day for those aged >70 years(2). The Endocrine Society 2011 guidelines, aiming >30ng/ml suggest maintenance doses up to 1500-2000 IU/day(3). The 2014 National Osteoporosis Foundation Guidelines recommend daily requirement of 800-2000 IU/day, taking into account those with limited sun exposure, obese and dark-skinned individuals; to maintain Vitamin D levels at >30ng/ml.(4)

Objective: To compare efficacy and safety of a low (900 IU/day) and high (1800IU/day and 3300IU/day) maintenance dose of Vitamin D3 in maintaining 25(OH)D levels >30 ng/ml amongst community dwelling Indian women with PMO(Post-menopausal-osteoporosis) and darker skin-pigmentation living in Kuala Lumpur, Malaysia.

Design: In this randomized-controlled-trial, 27 PMO women of Indian ethnicity with baseline serum 25(OH)D >20 ng/ml were randomly allocated 3 different dosing regimens i.e. Group (a) 25 000 IU/monthly (≈900 IU/day), Group (b) 50 000 IU/monthly (≈1800 IU/day) and Group (c) 50 000 IU/fortnightly (≈3300 IU/day) for 8 weeks. Serum 25(OH)D, calcium, phosphate, iPTH, and 24-hour urine calcium were measured at baseline and again at 8 weeks.

Results: At baseline 74.1% of subjects had serum 25(OH)D levels of 20.1-29ng/ml and 25.9% had levels of ≥30ng/ml. There were no significant differences in baseline age, BMI, waist circumference, skin colour, sun exposure index, dietary vitamin D intake, vitamin D and iPTH level between the three arms. After 2 months, with all 3 dosing regimens, 100% of individuals who were insufficient (25(OH)D<30ng/ml) at baseline became sufficient (25(OH)D≥30ng/ml) and 6 out of 7 (86%) of those who had baseline 25(OH)D ≥30ng/ml remained sufficient. There were no significant differences in the mean increment in 25(OH)D of 13.68±15, 13.46±11.95 and 19.28±6.2 ng/ml in group (a), (b) and (c) respectively (p=0.2). Those in the high-dose group non significantly attained higher mean serum 25(OH)D levels than those in the lower-dose groups (p=0.161). The mean 25(OH)D after 2 months were 44.95±9.36, 39.1±7.7 and 46.9±9.19 ng/ml in group (a), (b) and (c) respectively. None of the doses resulted in hypercalcemia or vitamin D intoxication.

Conclusions: All three Vitamin D3 doses of 25, 000IU/month(~900IU/day), 50, 000IU/month(~1800IU/day) and 100, 000/month (~330IU/day) safely improve and maintain Vitamin-D sufficiency(≥30ng/ml) in Indian-Malaysian PMO women with darker skin-pigmentation from the tropics. It may not be necessary for Indian women with baseline levels >20ng/ml, to ingest >900IU/day to maintain sufficiency.

P195

Heterogeneous Presentations of Pseudohypoparathyroidism

Yau Ho-chung

Department of Paediatrics, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong SAR

Background: Pseudohypoarathyroidism (PHP) is a rare, heterogeneous group of disorders characterized by parathyroid hormone resistance.

Objective: We aim to evaluate the clinical presentations, treatment and mutational analyses of pseudohypoparathyroidism diagnosed in our unit.

Materials and Methods: We retrospectively reviewed 5 patients who were diagnosed with pseudohypoparathyroidism based on hypocalcaemia, hyperphosphatemia with increased phosphate tubular reabsorption and inappropriately high parathyroid hormone.

Results: Total five cases of pseudohypoparathyroidism were reported. Three girls and two boys presented at the age of 6 to 10 years. Out of the five patients, three presented with seizure and limbs numbness. One patient interestingly presented with multiple calcified soft tissue nodules and heterotrophic ossification at the age of 1 year. Two patients had short stature, round face and brachydactyly. Classical Trousseau's and Chovestek's sign were not demonstrated in our patients at presentation. However, all five patients had prolonged QT interval on electrocardiogram. Three patients were classified as PHP-1a as evidence by hereditary osteodystrophy and other hormone resistance. Two of them had congenital hypothyroidism on thyroxine replacement and the other patient had growth failure. One was genetically confirmed with mutation in exon 4 of GNAS1 gene. The rest were classified as PHP-1b with absence of the above features and both presented with seizure. One patient was confirmed with hypermethylation of GNAS gene. All patients were managed with calcitriol +/- supplemental calcium, and all PHP-1b patients required a higher dose of calcitriol together with supplemental calcium as compared to PHP-1a patients. None of them were complicated with nephrocalcinosis and recurrent convulsion due to hypocalcaemia.

Conclusion: Clinical presentations are different between different types of pseudohypoparathyroidism and some features may overlap. Pseudohypoparathyroidism should be considered early in patients with other endocrinopathies and skeletal features before hypocalcaemic attacks set in. Mutational analyses now enable a distinction between the two groups.

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A Case of Classic Primary Hyperparathyroidism with an Unusually Hyperviscous Synovial Fluid from Pseudogout and a Suspected Calciphylaxis

Ralph Jason S. Li, Jose Donato A. Magno, Geraldine Zamora-Racaza, Jesse Jane R. Roque, Edwin J. Cañete, John Daniel A. Ramos

Philippine General Hospital

With the advent of more frequent measurement of serum calcium, the clinical presentation of primary hyperparathyroidism has changed dramatically from a symptomatic disorder involving several organs such as kidneys, bones and even skin, to a largely mild or asymptomatic disease, particularly in developed countries. Pseudogout in hyperparathyroidism typically present with a low synovial fluid viscosity. There has been no reported case of a hyperviscous synovial fluid in pseudogout in the Philippines. We present a 38-year-old female who presented with the classic signs and symptoms of primary hyperparathyroidism and several end-organ complications involving the kidneys and bones. The diagnosis of a hyperfunctioning parathyroid adenoma was confirmed by findings from serum parathyroid hormone (PTH), parathyroid scintigraphy and biopsy after right inferior parathyroidectomy. Cure was documented postoperatively with normalization of PTH and serum calcium. The patient also had bilateral knee effusions. Synovial fluid analysis showed pseudogout with an unusually hyperviscous synovial fluid. The hyperpigmented, ulcerated skin lesions on the hands were clinically diagnosed as calciphylaxis after exclusion of peripheral arterial disease and with the observation of regression after lowering of the calcium-phosphate product. Classic presentation of primary hyperparathyroidism can still be seen, especially in developing countries. Due to the usually late course of the disease on initial consult of these patients, physicians should be vigilant regarding the organ complications present. Rare complications which vary from a benign pseudogout to the potentially lethal calciphylaxis can be seen in these uncontrolled cases.

P197

Pathologic Fractures in Chronic Kidney Disease (CKD): Is it Primary or Tertiary Hyperparathyroidism?

Von Edward Salcedo, Arch Anthony Reynoso, Prof. Maria Honolina Gomez

Capitol Medical Center, Philippines

Background: Chronic Kidney Disease and Mineral Bone Disorders (CKD-MBD) is often present in patients undergoing hemodialysis and is usually manifested by abnormalities in serum calcium, phosphate, parathyroid hormone (PTH) or vitamin D metabolism. Hyperparathyroidism is a dominant disorder of parathyroid structure and function in patients with chronic kidney disease (CKD).

Objective: This study aims to highlight the challenges in the evaluation of pathologic fractures in chronic kidney disease patients.

Materials and Methods: We report a case of a 54-year old Filipino woman diagnosed with End Stage Renal Disease (ESRD) on maintenance hemodialysis who presented with Pneumonia after being bed-ridden for a week after she had a non-traumatic hip fracture. Laboratory examination revealed marked hypercalcemia, hyperphosphatemia, elevated intact PTH at 3298 pg/mL (NV: 150 – 300pg/mL) and low Vitamin D assay of < 8.1 ng/mL (Sufficient level: 30 – 100 ng/mL). Treatment included IV antibiotics, saline solution and frequent hemodialysis with phosphate binders and calcitriol but were unsuccessful to lower the hypercalcemia. Soon after hip replacement surgery, patient had fractures of the thigh. A primary hyperparathyroidism on top of a tertiary hyperparathyroidism was suspected.

Results: Parathyroid imaging confirmed the presence of 2 large parathyroid adenomas. Parathyroidectomy along with maximal medical management improved calcium and phosphate levels. The intact PTH showed significant decline (3298 → 1933 → 1109 pg/mL), but nowhere near the normal levels.

Conclusion: This case illustrates the importance of understanding the etiology of pathologic fractures in CKD patients. A primary hyperparathyroidism secondary to parathyroid adenoma concomitant with tertiary hyperparathyroidism may exist. Hypercalcemia in the absence of culprit medications and/or non-suppression of PTH should direct clinicians toward “non-secondary” HPT, either primary or tertiary. In ESRD, the Vitamin D deficiency, hyperphosphatemia and markedly elevated, medical therapy-refractory PTH levels along with signs and symptoms, such as fractures, are generally referred for parathyroidectomy. However the presence of two large adenomas may suggest an unrecognized primary hyperparathyroidism. A high index of suspicion could have prevented the occurrence of multiple fractures by doing early parathyroidectomy.

P198

Diagnosis and Management of Patient with Bone Xanthomas and Hyperparathyroid

Andra Aswar, Em Yunir

Endocrine and Metabolic Division, Internal Medicine Departement, Faculty of Medicine University Indonesia - Dr. Cipto Mangunkusumo National General Hospital

Introduction: Xanthoma is a benign lesion whose origin is abnormal deposition of cholesterol deposits on parts of the body other than blood vessels. However the involvement of deep skeletal muscle is rare. The correlation between bone xanthomas and hyper-parathyroid is not yet fully understood.

Case Illustration: A 33-years-old male patient without history of significant diseases came with chief complaint of pain in the chest since 1.5 years ago, the pain progress to the hip so he couldn't walk properly. No abnormalities found from the physical examination. Laboratory examinations show normal results. X-ray results show multiple lesion in the costae and iliac bone. Bone Scan result shows multiple lesion in several costae and sacroiliac joint, suggest bone metastasis or multiple myeloma. Thorax CT show multiple lytic lesion in the costae. MRI of abdomen and pelvis show mass in the iliac bone causes destruction of the bone. Histopathologic finding from open bone biopsy confirm the diagnosis of bone xanthomas. Lipid profile: total cholesterol 234 mg/dl, Triglyceride 174 mg/dl, HDL 44 mg/dl, LDL 169 mg/dl. Evaluation from the BMD shows osteopenia (T score -2.0). Total serum calcium increase (13.1 mg/dl), evaluation of the parathyroid hormone (PTH) shows increased in PTH intact (934 pg/mL). The diagnosis are bone xanthomas and hyper-parathyroid. He got simvastatin 1x20 mg, calcium carbonate 3x500 mg, calcitriol 2x0.25 mcg.

Discussion: Xanthoma is a benign bone tumor but a little bit difficult to diagnose. Treatment including control of blood lipids and elimination of tumor by operation. This patient is planned for operation of the tumor and repair the hip bone that had been destroyed. Parathyroid scintigraphy is planned to evaluate hyper-parathyroid in this patient and to plan for the next treatment. No literatures has mention about the correlation between bone xanthomas and hyper-parathyroid.

Conclusion: Bone xanthomas should always be consider as a differential diagnosis for lesion in the bone. Early diagnosis and treatment can prevent further morbidity in the patient and increased their quality of Life. Hyper-parathyroid can be a comorbid disease in patient with bone xanthomas that can worsen the progression of the disease thus need further evaluation and treatment.

P199

Parathyroid Carcinoma in a Patient with Pituitary Tumor: A Variant of Multiple Endocrine Neoplasia?

Caprice Yang, Michael Rosario, Lora May Tinhay

St. Luke's Medical Center, Quezon City, Philippines

Parathyroid cancer (PTC) accounts for 0.4% to 5.2% of all reported cases of hyperparathyroidism, which is approximately 0.2% to 0.5% of malignant endocrine tumors overall. We report a case of pituitary adenoma in association with parathyroid cancer as a possible variant of multiple endocrine neoplasia (MEN). This is a case of a 55 year old male who underwent trans-sphenoidal surgery for excision of pituitary adenoma. Few months later, on follow-up, an incidental finding of hypercalcemia (13.7 mg/dL) was noted. Ultrasound of the neck revealed thyroid nodules on both lobes; solid mass with cystic spaces below the right lobe of the thyroid gland considering a right parathyroid mass. Further work-up showed an intact parathyroid hormone (PTH) of 2, 452 pg/mL and sestamibi scan done showed avid lesions right lobe are suspicious for parathyroid adenoma/ hyperplasia. He underwent focused parathyroidectomy and total thyroidectomy. Intact PTH decreased from (pre-excision) 1, 422pg/mL to 300 pg/mL (5 minutes post-excision). Histopathology report revealed parathyroid carcinoma, thyroid adenoma and nodular hyperplasia. Postoperative period was uneventful with normalization of serum calcium.

A diagnosis of PTC is difficult and includes the histologic diagnosis on the basis of capsular, vascular, or perineural invasion or metastasis. The suspicion for malignancy should be high with hypercalcemia greater than 14 mg/dL, extremely high serum PTH levels (>5x the upper limit of normal), as well as large masses and vocal cord paralysis. Nonsurgical therapies such as radiation and chemotherapy have yielded poor results in the treatment of PTC. En bloc resection with avoidance of capsular violation or tumor spillage should be the initial surgery if carcinoma is suspected. Recurrence is possible, and it is recommended that patients undergo long-term follow-up clinically and with measurements of serum calcium and PTH. This case illustrates the rare association of a malignant parathyroid tumor and a pituitary adenoma as a possible variant of MEN syndrome.

P200

Parathyroid Adenoma Presenting as Pathological Fracture and Brown Tumor

Norhaliza Mohd Ali, Jamie Teoh Hong Im, Loh Leh Teng

Medical Department, Hospital Sultanah Aminah

Background: Overt bone disease is an extremely rare presentation of primary hyperparathroidism as more patients were being diagnosed either incidentally or due to symptoms of hypercalcaemia. Pathological fractures have been described in patients with parathyroid carcinoma.

Methods: We described a 33-year-old man who presented with pathological fractures of right humerus and left femur after a trivial fall. Plain radiograph revealed presence of upper to mid zone right lung mass which was initially thought to be lung carcinoma. This mass is suggestive of brown tumor (osteitis fibrosa cystica) on CT Scan. Diagnosis of primary hyperparathyroidism was made due to the presence of hypercalcaemia and an elevated intact parathyroid hormone level. He underwent parathyroidectomy after the CT Scan showed the presence of a parathyroid mass, which was diagnosed as a parathyroid adenoma histologically

Conclusion: A high index of suspicion is necessary to diagnose this unusual presentation of primary hyperparathyroidism with severe bone manifestation

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Multiple Fractures in a Young Man Due to FGF23 Producing Tumour

Fatimah Zaherah Mohamed Shah, Lim Lee Ling, Jeyakantha Ratnasingam, Luqman Ibrahim, Shirene Vethakkan

University Malaya, Malaysia; University Teknologi Mara, Malaysia

We describe an interesting case of a previously healthy young man who presented with progressive weakness, reduced mobility, significant weight loss and a 15 centimetre height reduction over the period of 4 years. He was found to have multiple fractures involving the thoracic vertebrae, multiple ribs, both scapulae and bilateral femoral necks and severely reduced bone density with a Z-score of -7.3 (0.350 g/cm²) over his lumbar spine and -7.5 (0.086 g/cm²) over his femoral neck. Biochemical workup revealed persistent severe hypophosphataemia: serum phosphate 0.2mmol/l with renal phosphate wasting: TmP/GFR 8.96mmol/l (0.99 - 1.34), secondary hyperparathyroidism: parathyroid hormone level 23.5pmol/l with concurrent vitamin D deficiency: 25hydroxyvitamin-D: 42nmol/l, and inappropriately normal 1, 25 dihydroxyvitamin-D of 100pmol/l leading to a suspicion of tumour induced osteomalacia. A lytic tumour at his distal right femur was evident on plain radiograph and confirmed by Technetium whole body scintigraphy and Positron Emitting Tomography-Computed Tomography (PET-CT), with no evidence of any otherneoplastic lesions. FGF23 sampling from the tissue biopsy of the tumour and peripheral blood (15307 pg/ml, normal range <40) was markedly increased confirming the tumour as the cause of the osteomalacia. Removal of the tumour was followed by a rapid normalization of his biochemical parameters and gradual improvement of muscle strength and bone density, with lumbar spine Z-score of -3.7 (0.801g/cm²) and neck of femur Z-score of -2.1 (0.788g/cm²) one year after surgery. Tumour-induced osteomalacia (TIO) is a rare form of acquired osteomalacia characterized by systemic bone demineralization due to abnormal phosphate and vitamin D metabolism. FGF23 is a novel phosphatonin that has recently been described to be an important regulator of phosphate and Vitamin-D homeostasis, exerting its effects by inhibiting renal tubular reabsorption of phosphorus and down-regulating 25-hydroxyvitamin D–1α-hydroxlase, which in turn leads to secondary hyperparathyroidism. FGF23 is highly expressed in certain tumours leading to osteomalacia. This case illustrates the importance of recognizing this entity in patients with severe hypophosphatemia and osteomalacia, as removal of the source of the FGF23 overexpression leads to a rapid and satisfactory resolution of the osteomalacia and improvement in quality of life.

P202

Multiple Brown Tumors from Parathyroid Carcinoma

Daryl Jade Dagang, Frances Lina Lantion-Ang

University of the Philippines – Philippine General Hospital

The development of large multiple brown tumors is a rare complication of primary hyperthyroidism; and even rarer is parathyroid carcinoma as the cause. We report a case of a 29-year-old female who suffered from severe bilateral inguinal pain and left mandibular mass. Pelvic X-rays showed ill-defined lytic lesions in bilateral iliac bones and left ischial bone. Pelvic MRI showed 7.0 x 3.0 cm cystic foci and focal bone expansion on both iliac wings. Neck, chest, and abdominal CT-scan also showed innumerable expansile osteolytic bone masses on bilateral iliac wings, bilateral femur, ribs and vertebral bodies, diffuse skeletal osteopenia, calyceal lithiasis on the right kidney, and a 3.8 x 2.6 x 1.8 cm left thyroid mass. The Ionized calcium was at 1.66 mmol/L and intact PTH was at 681.3 pg/mL. Parathyroid sestamibi scan showed hyperfunctioning parathyroid gland inferior to the left thyroid lobe. Core needle biopsy of the left mandibular mass was read as peripheral giant cell granuloma which was also consistent with a brown tumor considering her clinical picture. The patient underwent focused parathyroidectomy of the enlarged parathyroid gland. Final histopathology however revealed parathyroid carcinoma, 4.7 cm widest tumor dimension, with capsular and vascular space invasion. She underwent repeat surgery, specifically, left thyroid lobectomy, isthmusectomy, and central node dissection. There was immediate decrease of intact PTH to 74 pg/mL post-operatively. The resection of the tumor resulted in severe hungry bone syndrome for which long-term calcium and calcitriol supplementation was required. Follow-up at six months showed normal serum calcium levels, reduction In the size of bone lesions, and improvement of quality of life as she became ambulatory and pain-free. Brown tumors should always be on the clinician's list of differential diagnoses when multiple osteolytic lesions are encountered. There should be a higher index of suspicion for a carcinoma when presented with very high calcium and intact PTH levels, and overt skeletal and renal complications rather than a benign cause. Surgery is the only effective and curative treatment of parathyroid carcinoma and it should be performed as en bloc tumor resection with ipsilateral thyroidectomy and central neck dissection.

P203

Severe Hypercalcaemia in Pregnancy, a Possible Case of Familial Hypocalciuric Hypercalcaemia

Foo Shi Xian, Mak Woh Wei, Tan Joo Ming, Raja Nurazni Raja Azwan

Department of Medicine, Hospital Sultan Haji Ahmad Shah, Temerloh Pahang, Malaysia

Background: Hypercalcaemia during pregnancy carry significant risks to both the mother and fetus. Diagnosis can be difficult as hypercalcaemia presents with non-specific symptoms such as nausea, weakness and lethargy. Hypercalcaemia is rarely diagnosed during pregnancy due to symptoms that may be unrecognised, misleading or masked by physiological changes in pregnancy. Earlier detection and better management are the key to decrease its complications.

Objective: We present a case of a 26 years old primigravida at 18 weeks gestation who presented with recurrent hyperemesis gravidarum and hypercalcaemia, to investigate the cause of the hypercalcaemia.

Material and Methods: This 26 years old primigravida had multiple admissions during 10-14 weeks of gestation for hyperemesis gravidarum. During her third hospitalisation, she was found to be hyperthyroid with serum thyroxine (T4) 44.0pmol/L (normal range: 9.14-23.81) and TSH 0.01mIU/ml (normal range: 0.32-5.00) and hypercalcemic, corrected serum calcium 3.0mmol/L (normal range 2.20-2.65), serum phosphate 0.57mmol/L (normal range: 0.87-1.45). She was treated with propylthiouracil, intravenous fluid hydration and was discharged well. A month later, she was readmitted for overt thyrotoxicosis precipitated by urosepsis with severe hypercalcemia (serum calcium of 3.8mmol/L on admission). Despite aggressive intravenous hydration with normalization of serum T4, corrected serum calcium remains more than 3.0mmol/L, hence she was given one course of intraveneous pamidronate. Serum calcium reduced to upper limit of normal range and patient was discharged well with advice to drink plenty of fluids and weekly appointment to review serum calcium and other pending investigations. Her corrected serum calcium remains persistently high between 2.7-2.85mmol/L during follow up.

Result: This patient had persistent hypercalcemia with nonsuppressed intact-parathyroid hormone (iPTH) 20pg/ml (normal range 5-39). Her 24 hours urine calcium is low 2.3 mmol/L (normal range 2.5-7.5). Both ultrasound neck and Computed Tomography (CT) neck showed normal thyroid gland, with no parathyroid lesion. Ultrasound kidney showed no renal stone. This raised the possibility of familial hypocalciuric hypercalemia (FHH) as a possible diagnosis while waiting for further investigations of FHH including screening of hypercalcaemia in family.

Conclusion: FHH is a rare, benign cause of hypercalcaemia which should be suspected in a patient who remained hypercalcaemic with nonsuppressed iPTH and reduce urine calcium excretion.

P204

Brown Cell Tumor from Parathyroid Carcinoma

Christian Cesar Esplana, Jerome Barrera

Zamboanga City Medical Center; Ateneo de Zamboanga University-School of Medicine

Introduction: Parathyroid carcinoma is a rare cause of hyperparathyroidism. In most cases, hyperparathyroidism is caused by a single benign adenoma. The vast majority of the remaining cases are caused by parathyroid hyperplasia or multiple adenomas. We present here a case of a young Filipina who presented with multiple fractures on all extremities with fixed hard masses on the left humerus and tibia and bilateral parathyroid adenoma.

Methodology: Corrected calcium was elevated at 15.4mg/dL, Phosphorus was decreased at .81 mmol/L. Intact PTH (iPTH) was extremely high at 2001 pg/ml (8.5-72.5). X-ray of the extremities showed osteopenia, endosteal resorptive changes and multiple pathologic fractures. Bone biopsy revealed brown cell tumor/multifocal polyostotic giant cell tumor and negative for malignancy. Ultrasonography of the neck revealed parathyroid adenoma inferior of left thyroid gland measuring 2.3 x1.1x1.0cm. Ultrasound-guided FNAB revealed findings consistent with parathyroid carcinoma.

Results: She was hydrated and was given diuretic to control the severe hypercalcemia. Fractures were treated conservatively with plaster reduction. She underwent 3 ½ gland parathyroidectomy with en-bloc left thyroid lobectomy. Intraoperative findings showed a 2.5(L)cmx1.7(T)cmx1.2(W)cm left mass with poorly circumscribed borders invading the capsule and local tissues and a right mass 2.7cm(L) x2cm(T)x1.3cm(W). Serum Calcium and iPTH immediately after OR decreased to 12.8 mg/dL and 211.8 pg/ml respectively. Further reduction was noted after 24 hr of surgery (iPTH, 48 pg/ml; Corrected Calcium: and 9.2 mg/dL). Histopathology result of the left parathyroid gland showed cytomorphologic features suspicious of neoplasm described as areas with monotonous nuclear atypia, fibrosis and focal trabecular growth with prominent nuclear pleomorphism and scant to ample amount of granular cytoplasm. The right parathyroid gland showed mild hypercellularity with benign epithelial cells with cystic degeneration consistent with adenoma. Immunohistochemistry results revealed TTF-1 –Negative, Calcitonin- Negative, Chromogranin- Negative and Ki-67 with low proliferation. Three months post-surgery, the patient was already ambulatory and had gained around 20 lbs. There was no recurrence of fractures nor bone pains.

Conclusion: Parathyroid carcinoma is a rare malignancy of the parathyroid glands. These tumors usually secrete parathyroid hormone, thereby producing hyperparathyroidism, which is usually severe. Surgery with en-bloc resection is the initial therapy, but when the tumor is no longer amenable to surgical intervention with intent to cure, treatment becomes focused on the control of hypercalcemia. Nonsurgical forms of therapy for parathyroid carcinoma generally have poor results. Patients rarely die from the tumor itself; rather, they die from the metabolic complications of uncontrolled hyperparathyroidism.

P205

Asymptomatic Hypoglycaemia in an Infant with Congenital Hypopituitarism

Law Huong Nai, Nor Azyati Yusoff, Karen Leong Sue Wan, Arini Idris, Janet, Yeow Hua Hong, Fuziah Mohd Zain

Hospital Putrajaya

Background: Congenital hypopituitarism involves deficiencies of multiple pituitary hormones. Early detection, monitoring and treatment of this condition is important to reduce risks of serious morbidities from hypoglycaemia, adrenal crisis, developmental delay and even death.

Case Report: We report a five-month-old girl with hypopituitarism. She was born term with a birthweight of 2.49kg at the referring hospital. Newborn check revealed dysmorphic features of right unilateral cleft lip and palate and right hand preaxial polydactyly. Work ups for hypopituitarism were done in view of her midline defects. She required treatment with anti failure medications and supplemental oxygen in the Neonatal Intensive Care Unit (NICU) for a month due to heart failure secondary to patent ductus arteriosus and atrial septal defect. No hypoglycaemic episodes were documented during her NICU stay. Central hypothyroidism was detected via newborn screening with a markedly low cord TSH and low FT4 levels within the first week of her life. Her FT4 levels normalized after starting L-thyroxine replacement. The pituitary gland, pituitary stalk and hypothalamus were not visualized on the MRI brain imaging which was done at one month old. As her ACTH level was low at <1.1 pmol/L, she was started on hydrocortisone replacement while awaiting for her ACTH stimulation test results. She was referred to our endocrine clinic for follow up of hypopituitarism. Her weight and height were both below the third percentiles, whereas her COH was below the second percentile. During a routine endocrine clinic review at five months old, asymptomatic hypoglycaemia was detected by a routine random blood sugar sampling (RBS 1.8 mmol/L). The hypoglycaemia episode was corrected by giving milk feeding via Ryle's tube. Subsequently, a critical sample sent during a hypoglycaemic episode revealed a low growth hormone (GH) level, following which she was started on GH replacement.

Conclusion: Routine monitoring of blood sugar level in an infant with hypopituitarism helps to detect asymptomatic hypoglycaemia and prevents long term adverse neurological outcome. This is particularly important in young infants as the signs and symptoms of hypoglycemia are non specific.

P206

Phaeochromocytoma and Paraganglioma in Children: A Follow Up Series of Three Cases

Nurshadia Samingan, Fatimah Harun, Azriyanti Anuar Zaini, Rashdan Mohamed Zaki, Muhammad Yazid Jalaludin

Paediatric Endocrine Unit, Paediatric Department, University Malaya Medical Centre, Kuala Lumpur

Phaeochromocytoma is an uncommon neuroendocrine tumour in children. It can arise either from chromaffin cells in adrenal medulla or extra adrenal from paraganglionic tissues, which is also known as paraganglioma. Due to the rare incidence, the pathogenesis, management and treatment outcome are still unclear. The clinical presentation of phaeochromocytoma can be variable, resulting in delayed diagnosis. We present three cases diagnosed between the year 2006 and 2012. All patients were male, aged 6 and 14 years old at diagnosis. Cases 1 and 3 are two Chinese boys with extra adrenal phaeochromocytoma, located at left para-aortic area and anterior bladder wall, respectively. Case 2 is a Malay boy with right adrenal phaeochromocytoma. All patients were hypertensive at presentation. Case 3 was initially treated for bilateral retinitis and Case 2 had a craniotomy for subdural effusion with residual uncontrolled hypertension. Urine catecholamines and abdominal imaging, either computed tomography (CT) or magnetic resonance imaging (MRI) scan were diagnostic in all cases. Surgical clearance was performed in all patients. They were followed up with urine catecholamines screening every 4 to 6 months. However, Cases 1 and 3 relapsed at 8 and 2 years respectively, noted from their rising urine catecholamines. Case 1 had an increased uptake at the right adrenal gland and at T12 and L2 vertebrae on a methyl-iodobenzylguanidine (MIBG) scan. Case 3 had an increased hotspots areas in the right lung and pelvis on a positive emission tomography (PET) scan. Both findings were further confirmed with MRI scans. Case 1 was referred to an adult neuroendocrine centre. Case 3 underwent another surgical clearance with normal urine catecholamine levels post operatively. His histopathology findings were consistent with paraganglioma relapse. Despite being asymptomatic and normotensive, his urine catecholamines increased 3 months post surgery. Case 2 remained disease free after 5 years of follow up. The clinical progression of phaechromocytoma can be difficult to predict as clinical symptoms may be absent. Urine catecholamines is a useful tool as an indicator of relapse. Although genetic testing is useful to predict outcome, this test is not readily available in Malaysia.

P207

Non-alcoholic Fatty Liver Disease (NAFLD) in Obese Children

Rashdan Zaki Mohamed, Azriyanti Anuar Zaini, Muhammad Yazid Jalaludin, Nurshadia Samingan, Fatimah Harun

Department of Pediatric, Hospital Putrajaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Professor, Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia

Introduction: Non-alcoholic fatty liver disease (NAFLD) in children with obesity is a universal problem, and is becoming more significant with the rise in prevalence of childhood obesity. NAFLD is associated with dysglycaemia including diabetes, insulin resistance, dyslipidaemia, and metabolic syndrome. It may lead to liver fibrosis and cirrhosis, hence, warrants screening and close observation.

Method: We studied obese children whom visited the Paediatric Obesity Clinic in University Malaya Medical Centre (UMMC) from January to September 2015, looking specifically for the characteristic of NAFLD (diagnosed via ultrasonographic evidence of fatty liver disease). Demographic, anthropometric data, clinical and biochemical parameters of each and every patient obtained, and patients were divided into 2 major groups: namely NAFLD group and without NAFLD group. Statistical analysis was carried out using SPSS version 22.

Result: A total of 79 patients were seen. Out of that, 33 patients (n=33), 24 male, 9 female, mean age 13.3 years (±3.2 years SD) had liver ultrasonography done within the previous 12 months. 21 (63.6%) patients had ultrasonographic evidence of fatty liver, while another 12 patients (36.4%) had normal liver on ultrasonography. In the NAFLD group (n=21), mean age was 14 years (±3.2 years SD), 16 male, 5 female, with mean body mass index (BMI) of 35.2 kg/m², fasting blood glucose of 4.9 mmol/L, HbA1C of 5.4%, total cholesterol 4.5 mmol/L, triglyceride (TG) 1.87 mmol/L, LDL 2.6 mmol/L, Alanine aminotransferase (ALT) of 80 U/L and Aspartate aminotransferase (AST) of 51 U/L. All patients with NAFLD (n=21) had insulin resistance (HOMA >2), significant waist circumference ranges 88 to 123cm with abnormalities in liver transaminases. As for those without NAFLD (n=12), the mean age was 12.8 years (±3 years SD), with mean fasting blood glucose of 4.7 mmol/L, HbA1C of 5.3%, total cholesterol 4 mmol/L, TG 0.95 mmol/L, HDL1.1 mmol/L, LDL 2.5 mmol/L, ALT 27 U/L and AST 26 U/L.

Conclusion: It is strongly recommended to screen all obese patients for NAFLD as NAFLD is significantly associated with higher waist circumference, raised liver transaminases and insulin resistance.

P208

Vitamin D Deficiency Causing Neonatal Hypocalcaemic Seizures: A Case Series

Joyce Hong Soo Synn, Wu Loo Ling

Universiti Kebangsaan Malaysia Medical Center

Hypocalcaemia is a known cause of neonatal seizures. We report 3 cases of neonatal hypocalcaemic seizures caused by vitamin D deficiency. In this case series, we also demonstrate vitamin D deficiency in the mothers. We explore the risk factors of vitamin D deficiency in these babies and their mothers, as well as any other adverse effects of vitamin D deficiency that they may have. It is known that a large proportion of our population is at risk of vitamin D deficiency. Considering that vitamin D deficiency causes adverse morbidities like hypocalcaemic seizures in neonates, we advocate the importance of adequate vitamin D supplementation in pregnant and breastfeeding mothers.

P209

Severe Neonatal Cholestasis in an Infant with Hypopituitarism and Concomittant Cytomegalovirus Infection

Rashdan Zaki Mohamed, Muhammad Yazid Jalaludin, Azriyanti Anuar Zaini, Nurshadia Samingan, Fatimah Harun

Department of Pediatric, Hospital Putrajaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia; Department of Pediatric, Faculty of Medicine, University Malaya, Malaysia

Introduction: Infants with hypopituitarism may present with prolonged and conjugated jaundice. The work-up for hypopituitarism may be delayed by concomittant neonatal hepatitis.

Case: The child was born at term after an uncomplicated pregnancy with birth weight of 2.6kg. He had early neonatal hypoglycemia and pathological jaundice, treated for presumed sepsis. Parents took dicharged against medical advice only to present at Day 6 of life with severe jaundice requiring exchange transfusion and intensive phototherapy. He responded to the therapy and was discharged well. On routine follow-up, noted to have progressively increased conjugated bilirubin level and hypothyroidism (fT4 6.6 pmol/L, TSH 3.95 mIU/L). Levothyroxine was started. Unfortunately, they defaulted follow-up only to present at 2.5 months of age with pale stool, conjugated hyperbilirubinemia and raised liver enzymes. He developed recurrent episode of fasting hypoglycemia. Clinically, he was jaundice, had faltering growth, with micropenis, but had no midline defect. Biochemical parameters confirmed raised conjugated hyperbilirubinemia, with raised liver transaminases, alkaline phosphatase and gamma glutamyl-transferase. Multiple pituitary hormone deficiencies was also confirmed (cortisol 78 nmol/L, LH 0.1 IU/L, FSH 0.8 IU/L, Testosterone 0.9 nmol/L, TSH 0.03 mIU/L, fT4 17 pmol/L). Ultrasonography of hepatobiliary system excluded biliary atresia. Infective screening was positive for Cytomegalovirus (CMV) IgM and liver biopsy was consistent with giant cell hepatitis. He was started on hydrocortisone on top of the existing Levothyroxine. He responded well to the hormonal replacement and neonatal cholestasis resolved.

Discussion: This case illustrates the importance of thorough history and physical examination, and the importance of pituitary hormones screening in a case of neonatal cholestasis. Adequate hormonal replacement leads to resolution of cholestasis.

P210

A Case of Congenital Nephrogenic Diabetes Insipidus Presented During Neonatal Period and Successfully Treated with Hydrochlorothiazide

Arini Nuran Idris, Janet Hong YH, Nai Law Huong, Nor Azyati Yusoff, Fuziah Md Zain

Department of Paediatrics, Hospital Putrajaya; Department of Paediatrics, University Putra Malaysia

Background: Congenital nephrogenic diabetes insipidus (NDI) is characterized by the resistance of the renal collecting tubules to the action of antidiuretic hormone. Polyuria can pass unnoticed in infants, other features such as failure to thrive and hypernatraemic dehydration can serve as clues to the diagnosis instead. Its diagnosis, treatment and monitoring can be challenging in small children.

Case Report: We report a 20 month old boy with congenital NDI. He was admitted to a hospital in the late neonatal period because of fever. The serum sodium (Na) and urea were high. Further inpatient observation showed static weight and polyuria (between 4 to 11 ml/kg/hour). Physical examination revealed dehydration with normal blood pressure. There was no dysmorphism, midline defect and microphallus. Testes have descended bilaterally. Investigation of the patient showed high serum osmolality (ranged between 300-330 mmol/kg water), low urine osmolality (87-120 mmol/kg water), hypernatraemia (155-172 mmol/L). He was given a trial of intranasal desmopressin. However, there was persistence of polyuria, hypotonic urine, hypernatraemia and serum hyperosmolality. Since he did not respond to intranasal desmopressin, possibility of NDI was entertained. Intranasal desmopressin was changed to oral hydrochlorothiazide. Subsequently his urine output normalized to 2ml/kg/hour and he started to gain weight. The serum Na and serum osmolality returned to normal range within 4 days of starting hydrchlorothiazide. Subsequent follow-up clinic visits showed normal neurodevelopment. However, there was a slow weight gain due to poor dietary intake, for which dietitian was involved in the management and the dose of hydrochlorothiazide was adjusted as he was growing. The serum sodium, urea and osmolality were almost normal.

Conclusion: Congenital NDI is an inherited disorder, with early expression, within the first weeks of life. Polyuria may not be obvious in infants with NDI and a high index of suspicion should be present in the assessment of neonates with failure to thrive and hypernatraemic dehydration. Genetic testing for NDI is not available in some countries. Poor clinical and biochemical response to synthetic antidiuretic hormone provides a clue to the diagnosis. Our patient responded well to hydrochlorothizide. Other medications that have been used in the treatment of congenital NDI include indomethacin and amiloride.

P211

20-Year Experience of Growth Hormone (GH) Treatment in King Chulalongkorn Memorial Hospital (KCMH), Bangkok, Thailand

Tansit Saengkaew, Suttipong Wacharasindhu, Suphab Aroonparkmongkol

Endocrine Unit, Department of Pediatrics, Faculty of Medicine, Chulalongkorn University, Bangkok

Introduction: KCMH started GH treatment since 1995. Until now, a large number of patients reach their adult height and discontinue of GH.

Objectives: Aims of this study are to evaluate the auxological outcomes of GH treatment and capacity of pituitary GH secretion after reaching final adult height.

Materials and Methods: Forty-eight GH-treated patients were retrospectively reviewed. Clinical characteristics, auxological data, biochemical and endocrine investigations were evaluated before and during GH treatment. GH retesting was performed in 24 patients (50%) by insulin tolerance test (ITT).

Results: Forty-five patients had GHD (21 complete GHD, 23 partial GHD, and 1 unspecified GH status) and three patients had normal GH secretion (2 Russell-Silver syndrome and 1 Turner syndrome). Thirty three of them (69%) of patients had idiopathic GHD and 15 (31%) patients had underlying diseases. At start of GH treatment, a median age was 7.6 yr in males and 9 years in females and a mean height standard deviation score (SDS) was -2.0±1.1 and -2.3±0.9, respectively. A mean duration of GH treatment was 4.5 years. Final height was 165.2±6.4 cm in males and 151±5.8 cm in females. In males, height SDS in complete GHD group was higher than that in partial GHD group (median, 2.2 vs 0.6, p=0.044). However, this was not demonstrated in females. Peak GH levels and height SDS at start treatment, height velocity within the first 6 months of treatment and peak GH levels at re-testing were correlated with height gain. At re-testing, percentage of normal GH secretion in idiopathic group was higher than that in underlying diseases group (79% vs 20%). Height SDS and height gain were not different in transient and persistence GHD.

Conclusion: Growth hormone can improve height outcome. More than a half of patients had normal GH secretion when they reach final height. However, patients who had underlying disease trend to have persistent GHD in adult life.

P212

Audit of Newborn Screening of Congenital Hypothyroidism in a Children's Hospital

Lim Song Hai, Matthew Chong Hon Loon, Soo Thian Lian

Sabah Women and Children's Hospital, Kota Kinabalu, Sabah, Malaysia.

Introduction: Newborn screening for congenital hypothyroidism (CH) has been one of the most successful screening to prevent mental retardation in children. Our hospital started screening for CH since 2003 by testing the cord blood thyroid-stimulating hormone (TSH), using a cut-off value of 25 mIU/l. In 2013, this value has been lowered to 20 mIU/l.

Aim: To assess our performance against national indicator for the past ten years, and to make an initial evaluation after altering the cut-off point for TSH.

Method: All live births will have the cord blood collected to test for TSH. Recall will be done if TSH > 60mIU/l, or TSH between 25 – 60 mIU/l with a total-thyroxine < 100 nmol/l. From 2013 onward, the TSH cut-off level was reduced to 20 mIU/l and free-thyroxine < 15 pmol/l was used. A database of CH screening was created and maintained by a designated nursing staff, and yearly report was sent to regional health department. Compilation of yearly statistics from this database was done. Certain parameters were compared between period of 2003 to 2012 and those in 2013.

Results: From 2003 – 2013, there were 142, 231 live births and thirty-five confirmed cases of CH, giving an incidence of 1 in 4063 live birth. There were 940 babies of born-before-arrival to hospital whom were not screened, resulted in total coverage of 99.3%. National indicator standard for coverage was >99%. 820 samples had been rejected, with a rate of 0.58%, meeting the standard of <1%. Abnormal results were detected in 429 samples; all were successfully recalled for retesting. After lowering the TSH cut-off value in 2013, recall rate for re-testing was 0.01%, contrasting to 0.002% for period 2003 – 2012. Of all cases of confirmed CH detected in 2013, none of the cases had a TSH between 20 to 25 mIU/l.

Conclusion: Incidence of CH in our hospital was lower compared to national and international references. Reducing the TSH cut-off value has increased the recall rate by five folds without further increment in case detection after one year of implementation. Further monitoring is needed to evaluate the usefulness of a lower TSH cut-off level.

P213

Myxedema Coma in Congenital Hypothyroidism: 2 Case Reports

Tee Pian Pian, Chin Pue Siah, Lim Song Hai, Soo Thian Lian

Paediatric Department, Sabah Women and Children Hospital, Kota Kinabalu, Sabah, Malaysia

Introduction: Congenital Hypothyroidism (CH) is the most treatable cause for mental retardation in children and prompted worldwide practice of newborn screening for CH. Unknown to many, myxedema coma may also occur in children from prolonged untreated hypothyroidism. Here, we report two cases of myxedema coma – a very rare but extreme presentation of CH.

Patient 1: SS, a 10 years old girl who was diagnosed with congenital hypothyroidism by national screening program, missed her treatment since 2 years old due to poor social support. She presented with altered consciousness and seizure with marked electrolyte abnormality. She was found to have severe developmental delay (corresponded to 2 years old) and growth failure (corresponded to 50th centile of 6 months old). She had features of severe hypothyroidism like coarse facies, sparse hair and dry skin in additional to non-pitting edema. Her blood pressure was persistently low. Blood investigation showed primary hypothyroidism (TSH 304.2, fT4 <5.15). Oral thyroxine was instituted slowly and she gradually improved. During follow up, she demonstrated catch up growth with marked improvement of her developmental milestones.

Patient 2: MS, a 6 months old boy that had never received health care service presented with encephalopathy, preceded by respiratory tract infection. He had failure-to-thrive and developmental delayed (corresponded to 2 weeks old). Physical examination showed macroglosia, large umbilical hernia, dry skin and sparse hair with non-pitting edema suggestive of severe hypothyroidism. There were marked electrolyte abnormality and metabolism disturbances including bradycardia and hypothermia. Blood investigation showed primary hypothyroidism (TSH 90.67, fT4 <5.15). He responded gradually with oral thyroxine.

Conclusion: Myxedema coma is a medical emergency. The incidence is extremely low in children. Poor socioeconomic status is a risk factor for myxedema coma to occur in a child with Congenital Hypothyroidism.

P214

Adrenal Hypoplasia Congenita in Association with Pseudohypertriglyceridaemia – A Spectrum of Contiguous Gene Deletion Syndrome

Rozita Abdullah, Rahmah Rasat, Chen Bee Chin

Faculty of Medicine, Pusat Perubatan Universiti Kebangsaan Malaysia

Adrenal insufficiency in childhood encompasses heterogeneous causes, phenotypes as well as age of presentation. Nowadays with advances in genetic testing, previously considered rare inherited forms of adrenal insufficiency become easier to confirm. Adrenal hypoplasia congenita (AHC) is caused by variety of mutations resulting in adrenal insufficiency. One of the cause is X-linked AHC where there is DAX-1 (NROB1) gene mutation. This gene mutation can occur in isolation or as part of contiguous gene deletion syndrome in which other gene deletions like glycerol kinase and/or Duchenne Muscular Dystrophy are involved. We describe an adolescent Chinese boy who illustrates this uncommon form of AHC.

A Chinese boy presented at 1 month old with acute adrenal insufficiency and hypotension. Clinically not dysmorphic features but had hyperpigmented skin and both testes were palpable in the scrotum, normal penile length with no hypospadias. Further investigations showed low cortisol high serum ACTH level consistent with diagnosis of primary adrenal insufficiency. The testosterone level, DHEAS and 17 OHP level were not raised. Hence diagnosis of AHC was entertained. Over the years, his problem was complicated with overweight. At the age of 11 he was noted to be obese and further investigation showed he had hypertriglyceridemia which persisted despite his ability to reduce his BMI with lifestyle modification. There was no history of dyslipidaemia in the family. A simple side laboratory test showed milky blood which cleared after spinning suggestive of pseudohypertriglyceridaemia. Urine gas chromatography mass spectrometry (GCMS) analysis identified high glycerol which was consistent with hyperglycerolaemia. In association with clinical history of AHC this profile is highly suggestive of glycerol kinase deficiency. Clinically this patient also exhibit hypogonadotropic hypogonadism which was confirmed by HCG and LHRH stimulation test. Hence these 3 features are consistent with contiguous gene deletion syndrome.

P215

A Rare Case of Maternal Parathyroid Carcinoma Diagnosed After Hypocalcaemic Seizures in Baby

Kuan Yueh Chien, Nurain Mohd Noor

Medical Department, Sarawak General Hospital, Malaysia; Endocrine Unit, Putrajaya Hospital, Malaysia

Background: Parathyroid carcinoma is rare and accounts for < 1% of hyperparathyroidism. Unrecognised hyperparathyroidism in pregnancy can result in significant hypocalcaemia in the baby manifesting as neonatal seizures.

Case Report: Herein, we describe the case of a 28 year-old lady, para 4, who was diagnosed to have primary hyperparathyroidism (hypercalcaemia 3.35 mmol/L, hypophosphataemia 0.6 mmol/L and markedly elevated iPTH 714 pg/ml) from medical investigations prompted by admission of her month-old baby for hypocalcaemic seizures. Further questioning revealed a 6-month history of polyuria, bone pain and progressive lower limb weakness requiring the use of walking frame. This was associated with an enlarging right neck swelling without local compressive symptoms which measured 3.8 x 3.8 x 7.0 cm on neck ultrasonography. She also had medullary nephrocalcinosis with bilateral renal calculi on ultrasound of the kidneys, multiple lytic lesions in the long bones from skeletal survey and osteoporosis (Total hip T-score -3.9, Z-score -2.9). CT scan of the neck and thorax showed a well-defined heterogeneously enhancing mass seen inferior to the right thyroid lobe measuring 3.8 x 4.0 x 5.7 cm, multiple subcentimetere cervical nodes bilaterally with displacement and mild compression of the trachea. There were also multiple enhancing expansile lytic bone lesions. Sestamibi scan showed a hyperfunctioning right parathyroid adenoma with multiple bony uptake and diffuse tracer uptake in the bowel possibly due to metastatic calcifications. She underwent right parathyroidectomy with right hemithyroidectomy. Intraoperatively, there was an enlarged, superior right parathyroid gland measuring 6 x 5 cm and weighed 40g. Histology confirmed parathyroid carcinoma. Postoperatively she experienced transient hypocalcaemia which responded well with oral calcium and vitamin D supplements.

Conclusion: We report here a rare case of parathyroid carcinoma missed during pregnancy and diagnosed only postnatally. It further highlights the need to consider maternal hyperparathyroidism in neonatal hypocalcaemia.

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FGF23 and DMP1 Mutations in a Malaysian Girl with Hypophosphatemic Rickets

Ting Tzer Hwu[1], Nurul Nadirah Razali[2], Thilakavathy Karuppiah[2]

[1]Department of Paediatrics, Faculty of Medicine and Health Sciences, University Putra Malaysia; [2]Genetic Medicine and Regenerative Research Centre, Clinical Genetics Unit, Department of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University Putra Malaysia

Background: Hypophosphatemic rickets (HR) is a rare disorder of bone mineralization due to defective phosphate reabsorption in the renal tubules. PHEX, FGF23 and DMP1 are the associated genes of familial HR that cause X-linked dominant, autosomal dominant and autosomal recessive HR, respectively.

Objective: To identify the genetic mutations in a young girl with clinical features of HR.

Materials and Methods: A 9-year-old Malay girl, first presented at 6 years of age with increasing bilateral leg bowing since 1-2 years of age. She was the first child of non-consanguineous parents. There was no family history of skeletal abnormalities. She had short stature, bilateral leg bowing and mild frontal bossing. Investigations showed low phosphate 0.78 mmol/L, raised alkaline phosphatase 436 U/L; normal calcium 2.16 mmol/L and 25-hydroxyvitamin-D 56.5 nmol/L. Renal function test and venous blood gas were normal. Radiography of lower limbs showed osteopenia and changes of rickets at distal femur and tibia. Blood was taken from the patient and parents. The extracted DNA were subjected to polymerase chain reaction and direct sequencing of coding exons & flanking intronic regions. Mutation screening for PHEX, FGF23 & DMP1 genes were performed. Bioinformatics softwares SIFT & PolyPhen-2 were used to predict the impact of amino acids substitution.

Results: The trio did not have any mutations in PHEX, however missense mutations were found in both FGF23 and DMP1. The patient and both parents were found to have a homozygous mutation in exon 3 of FGF23, c.716C>T. This mutation caused substitution of amino acid threonine to methionine, T239M. SIFT and PolyPhen-2 predicted the amino acid change to be tolerable and benign, respectively. In DMP1, the patient and her mother carried a heterozygous mutation in exon 6, c.309A>T. The father was a homozygous mutant for this specific mutation. This caused serine to be substituted by cysteine at position 69 of the DMP1 protein (S69C). SIFT and PolyPhen-2 predicted the change as damaging and probably damaging, respectively. Both mutations had been reported previously in HR patients in other countries.

Conclusion: The study suggests that the mutations found in FGF23 and DMP1 genes are the cause of HR in this child.