

Global
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Abstracts

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PM3-09-03 REPRODUCIBLE ORTHOSTATIC HYPERTENSION DETECTED BY SELF-MEASURED HOME BLOOD PRESSURE MONITORING: A NEW CARDIOVASCULAR RISK FACTOR IN HYPERTENSIVE PATIENTS? THE JAPAN MORNING SURGE-1 (JMS-1) STUDY

Satoshi Hoshide¹, Yoshio Matsui², Seiichi Shibasaki², Kazuo Eguchi¹, Joji Ishikawa¹, Shizukiyo Ishikawa¹, Tomoyuki Kabutoya³, Thomas G Pickering⁴, Kazuyuki Shimada¹, Kazuomi Kario¹
¹Jichi Medical University School of Medicine, Japan, ²Miwa municipal hospital, Japan, ³Chichibu municipal hospital, Japan, ⁴Columbia University, USA

hoshide@jichi.ac.jp

Objective: Orthostatic blood pressure (BP) dysregulation is a risk factor for cardiovascular events. Self-measured BP at home is highly reproducible, and is useful for evaluating antihypertensive treatment. However, there have been few reports on the clinical implications of orthostatic BP change in home BP measurement (HBPM). **Methods:** We developed the new HPBM device (Japan Patent Office No.2002-307787) to semiautomatedly measure orthostatic BP change at home, and compared orthostatic BP change measured at home and that by a head-up tilt test (HUT) in 65 hypertensive subjects. In addition, we recruited 611 medicated hypertensive outpatients in a part of Japan Morning Surge-1 (JMS-1) study, and monitored home BP in the sitting and standing positions both in the morning and evening for 6 months. **Results:** Orthostatic BP change evaluated using the HPBM device was positively correlated with orthostatic BP change evaluated by the HUT ($r=0.49$, $p<0.001$). Baseline home BP level in sitting position and orthostatic BP change were reproducible of every month for 6 months ($r=0.61-0.72$, $p<0.001$). When the patients were divided into 10 groups according to orthostatic BP change, those in the top decile ($n=60$; orthostatic BP increase >7.5 mmHg) had a higher urinary albumin excretion (geometric mean: 57.5 vs. 27.7 mg/gCr, $p=0.001$) and brain natriuretic peptide (geometric mean: 34.8 vs. 23.8 pg/ml, $p=0.001$) than the others ($n=543$), adjusted for age, sex, body mass index, and home BP level in sitting position. **Conclusion:** Orthostatic BP change detected by self-measured home BP monitoring is highly reproducible, and orthostatic hypertension evaluated at home was associated with hypertensive target organ damage independently of home BP level in sitting position.

PM3-09-04 CIGARETTE SMOKING INCREASES THE DIURNAL/NOCTURNAL BLOOD PRESSURE RATIO IN PATIENTS WITH GRADE 1-2 ESSENTIAL HYPERTENSION

Diana Ayala¹, Ramon Hermida¹, Carlos Calvo², Jose Lopez², Marta Rodriguez², Luisa Chayan², Artemio Mojon¹, Maria Fontao¹, Rita Soler¹, Jose Fernandez¹

¹Bioengineering & Chronobiology Labs., Univ. Vigo, Vigo, Spain,

²Hypertension and Vascular Risk Unit, Hospital Clinico Universitario, Santiago, Spain

rhermida@uvigo.es

Objectives: Some epidemiological studies have found that smokers have lower clinic and ambulatory blood pressure (BP) than non-smokers, while others have found a significant increase in daytime BP in smokers. The objective of this trial was to investigate the potential relationship between cigarette smoking and diurnal and nocturnal BP in a large cohort of untreated hypertensive patients. **Design and Methods:** We studied 1811 untreated hypertensive patients (866 men), 49.2 ± 13.4 years of age. Among those, 1020 patients never smoked, 321 were current smokers, and 470 were former smokers. BP of each participant was measured at 20-min intervals from 07:00 to 23:00h and at 30-min intervals at night for 48h. **Results:** Current smokers are characterized by an increase in diurnal mean and a decrease in nocturnal mean of systolic BP as compared to non-smokers ($P=0.028$). The prevalence of extreme-dippers thus increased from 5% in non-smokers to 11% in smokers ($P<0.001$). Diastolic BP and heart rate were significantly increased throughout the 24h in smokers ($P<0.001$). The double (pressure-rate) product was also elevated in smokers as compared to non-smokers ($P<0.001$). Former smokers presented BP values slightly higher than non-smokers and significantly lower than smokers. **Conclusions:** Smoking significantly increases the diurnal mean of systolic and diastolic BP, as well as the 24h means of heart rate and double-product, a marker of myocardial ischemia. Moreover, the day/night BP ratio and the morning rise of BP are also significantly increased in smokers. Smoking cessation restores BP

values to those found in non-smoker untreated hypertensive

PM3-09-05 NUTRITIONAL AND OTHER CAUSES OF HYPERTENSION IN DISTRICT LAKKI MARWAT, NWFP, PAKISTAN

Muhammad M.M.A.K. Khattak^{1,3}, Akbar Jan²

¹Department of Human Nutrition, Kulliyah of Allied Health Sciences, International Islamic University, Malaysia, ²District Headquarter Lakki Marwat, NWFP-Pakistan, ³Department of Human Nutrition, Agricultural University, Peshawar-Pakistan

mkbiol@

This study was designed to identify the causes of hypertension in Lakki Marwat, North West Frontier Province (NWFP)-Pakistan. A hundred individuals in the age range of 21 - 60 years (81% male, 19% female) from the urban & rural areas were randomly selected. A list was obtained from the Assistant Election Commissioner that every 7th person was randomly selected as a study case in the selected areas. The height, weight, blood pressure, socio-demographic and nutritional information was recorded on questionnaires. The data was compiled and assessed for nutritional status, height and other factors for any possible association. None of the subjects was in the category of optimal blood pressure. In the category of blood pressure, normal blood pressure, high normal blood pressure, hypertension stage 1, hypertension stage 2 and hypertension stage 3 on overall basis the percentages were 0.00, 71.75, 14.65 & 4.62 respectively, for the urban area the percentages were 70.84, 12.85, 7.52, 4.07 & 4.70 respectively and for the rural area the percentages were 0.00, 72.34, 15.80, 3.11, 3.95 & 4.78 respectively. The association of the hypertension was significant with 10 variables i.e. basal metabolic index (BMI), socioeconomic and family responsibilities, social problems & environment, nutrition (particularly excessive saturated fat & salt intake), smoking, and knowledge about the hypertension. This study suggests that the causes of hypertension are due to poor dietary habits, social and environmental problems in the District Lakki Marwat, North West Frontier Province (NWFP)-Pakistan.

PM3-09-06 ACUTE ADMINISTRATION OF CAFFEINE INCREASES VASCULAR FUNCTION IN HUMANS: ASSESSMENT OF THE BALANCE OF ENDOTHELIUM-DEPENDENT VASODILATOR AND ADENOSINE RECEPTOR ANTAGONIST

Takashi Umemura, Yukihito Higashi, Jyunko Soga, Hiroaki Takahashi, Takaaki Hidaka, Syuuji Nakamura, Daksuke Jitsuiki, Kenji Niimi, Chikara Goto, Masao Yoshizumi

Hiroshima University Graduate School of Biomedical Science

Caffeine is most widely used pharmacologically substance in the world and is found in common nonessential grocery items (e.g., coffee, tea, and chocolate). The effects of caffeine on cardiovascular function including hypertension remains controversial, especially the information concerning its direct effect on vascular function. The objective of this study was to determine the effect of caffeine on endothelial function in humans. We evaluated the forearm blood flow (FBF) response to acetylcholine (ACh), an endothelium-dependent vasodilator, and sodium nitroprusside (SNP), an endothelium-independent vasodilator, in healthy young male volunteers before and after oral administration of caffeine (300 mg) ($n=10$) or placebo ($n=10$). FBF was measured using strain-gauge plethysmography. Caffeine significantly increased systolic and diastolic blood pressure (6.0 ± 6.0 and 2.6 ± 3.0 mmHg respectively), but did not alter the heart rate and baseline FBF. Caffeine augmented the FBF responses to ACh from 21.2 ± 7.1 to 26.0 ± 7.1 ml per 100 mL tissue ($P<0.05$), while SNP-stimulated vasodilation was not altered after caffeine administration from 18.4 ± 4.5 to 19.5 ± 4.5 ml per 100 mL tissue. Intra-arterial infusion of NG-monomethyl-L-arginine, a nitric oxide synthase inhibitor, abolished caffeine-induced augmentation of the FBF response to ACh. In the placebo group, both the ACh- and SNP-stimulated vasodilation were similar before and after caffeine administration. These findings suggest that acute administration of caffeine augments endothelium-dependent vasodilation in healthy young men through an increase in nitric oxide production.

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Nutritional and Other Causes of Hypertension in District Lakki Marwat, NWFP, Pakistan

¹Muhammad Muzaffar Ali Khan Khattak, PhD and ²Akbar Jan, MBBS, PhD

¹Department of Human Nutrition, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Jalan Istana Bandar Indera Mahkota, 25200 Kuantan, Pahang Darul Makmur, Malaysia

²Medical Superintendent (MS), District Headquarters Hospital, Lakki Marwat, Department of Health, Government of North West Frontier Province (NWFP), Pakistan.

E-mail: mkbiol@yahoo.com

This study was designed to identify the causes of hypertension in District Lakki Marwat, North West Frontier Province (NWFP)-Pakistan. Eight hundred individuals in the age range of 21 - 60 years (81 % male and 19 % female) from the urban & rural areas were randomly selected. A voters list was obtained from the Assistant Election Commissioner's Office and every 7th person was randomly selected as a study case in each of the selected areas. The height, weight, blood pressure, socio- economic, demographic and nutritional information was recorded on questionnaire. The data was compiled and assessed for nutritional status, hypertension and other factors for any possible association. None of the respondents was in the category of optimal blood pressure. In the categories of optimal blood pressure, normal blood pressure, high normal blood pressure, hypertension stage 1, hypertension stage 2 and hypertension stage 3 on overall basis the percentages were 0.00, 71.75, 14.65, 4.87, 3.87 & 4.62 respectively, for the urban area the percentages were 0.00, 70.84, 12.85, 7.52, 4.07 & 4.70 respectively and for the rural area the percentages were 0.00, 72.34, 15.80, 3.11, 3.95 & 4.78 respectively. The association of the hypertension was significant with the different variables i.e. basal metabolic index (BMI), socioeconomic status (job and family responsibilities, social problems & enmity), nutritional habit (particularly excessive saturated fat & salt intake), smoking and lack of knowledge about the hypertension. This study suggests that the causes of hypertension are due to poor dietary habits, social and economic problems in the District Lakki Marwat, North West Frontier Province (NWFP)-Pakistan.