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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-I (JMS-I) STUDY

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**Objective:** Orthostatic blood pressure (BP) dysequilibrium is a risk factor for cardiovascular events. Self-measured BP (SBP) 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 (HBP). Methods: We developed the new HBP device (Japan Patent Office No.2002-307787) to semi-automatically measure orthostatic BP change at home, and then evaluated 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-I (JMS-I) study, and measured home BP in the sitting and standing positions both in the morning and evening for 6 months. Results: Orthostatic BP change evaluated using the HBP 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 > 7.5mmHg) had a higher urinary albumin excretion (glomerular mean: 57.5 ± 27.7μg/gCree, p = 0.001) and brain natriuretic peptide (geometric mean: 34.8 ± 23.8pg/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 hypotension evaluated at home was associated with hypertensive target organ damage independently of home BP level in sitting position.

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

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**Objective:** Some epidemiological studies have found that smokers have lower systolic 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 = 0.039). 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 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 patients.

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

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This study was designed to identify the causes of hypertension in District Lakki Marwat, North West Frontier Province (NWFP)-Pakistan. This was a cross sectional study and 1000 hundred individuals in the age range of 21 - 60 years (91.4 % female) from the urban & rural areas were randomly selected. The data was compiled and assessed for nutritional status, and other factors for any possible association. None of the cases were in the category of critical blood pressure. The criteria of blood pressure, normal blood pressure, high normal blood pressure, hypertension stage 1, hypertension stage 2 and hypertens 3 on overall basis the percentages were 0.00, 71.79, 14.98 & 4.62 respectively, for the urban area the percentages 70.84, 12.85, 5.72, 4.07 & 4.70 respectively and for the rural 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 variables i.e. basal metabolic index (BMI), socioeconomic and family responsibilities, social problems & emnity, nutri (particularly excessive saturated fat & salt intake), smoking knowledge about the hypertension. This study suggests that hypertension is due to poor dietary habits, social and problems in the District Lakki Marwat, North West Frontier (NWFP)-Pakistan.

**PM3-09-06** ACUTE ADMINISTRATION OF CAFFEINE INCREASES VASCULAR FUNCTION IN HUMANS: AN INTERVAL OF ENDOTHELium-DEPENDENT VASODILATION AND ADENOSINE RECEPTOR ANTAGONISM

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Caffeine is most widely used pharmacological substance and is found in common nonessential food items (e.g., coffee, and chocolate). The effects of caffeine on cardiovascular function including hypertension remains controversial, especially with information concerning its direct effect on vascular function. The aim of this study was to determine the effect of caffeine on endothelial function in humans. We evaluated the forearm blood flow (FBF) reactivity to acetylcholine (ACH), an endothelium-dependent vasodilator 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 reduced systolic and diastolic blood pressure (6.0 ± 6.0 and 3.6 ± 2.3 respectively), but did not alter the heart rate and baseline FBF. Following caffeine administration, the FBF responses to SNP were augmented with an increase in nitric oxide production. At the placebo group, both the SNP-stimulated vasoconstriction were similar before and after to detect the presence of an SNP-induced relaxation. The SNP-induced relaxation was not statistically different between the SNP-stimulated vasoconstriction following caffeine administration in either the placebo, indicating that caffeine did not influence the endothelial function.
Nutritional and Other Causes of Hypertension in District Lakki Marwat, NWFP, Pakistan

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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 & 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.