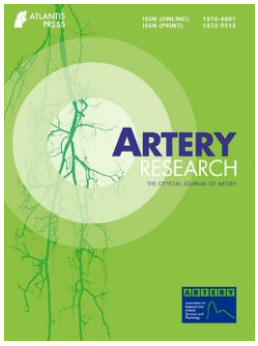

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P9.13: A STUDY ON AMBULATORY MEASUREMENT OF CENTRAL HEMODYNAMICS ON HEALTHY INDIVIDUALS WITH NO CARDIOVASCULAR RISK FACTORS

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nocturnal arterial pressure may induce changes throughout the vascular tree, including the retinal microvasculature. We therefore explored the relationship between retinal vessel calibre and dipping status in a cohort of African and Caucasian teachers.
Methods: 68 African and 81 Caucasian men were selected from those taking part in the follow-up phase of the SAPBA study. 24hr Ambulatory blood pressure measurements and dipping status were determined. The percentage mean arterial pressure (% MAP) dipping was calculated as: (diurnal MAP - nocturnal MAP)/diurnal MAP x 100. Retinal images were captured and the central retinal artery equivalent, central retinal vein equivalent (CRVE) and subsequent arteriolar-venular ratio (AVR) determined.
Results: African men demonstrated higher 24hr MAP and poorer % MAP dipping compared to Caucasian men. When sub-divided into non-dippers and dippers, African non-dippers demonstrated a reduced AVR and an increased CRVE ($p<0.001$) compared to their dipper counterparts. The AVR was positively ($R^2=0.34$, $\beta=0.38$; $p=0.001$) while the CRVE was negatively ($R^2=0.24$, $\beta=-0.50$; $p<0.001$) associated with % MAP during dipping. CRVE maintained a negative association with dipping status (non-dipper, yes/no) ($R^2=0.21$, $\beta=-0.38$; $p=0.001$). These associations were independent of 24hr MAP. No associations were observed in the Caucasian men.
Conclusion: In this group of African men, a non-dipping blood pressure profile was associated with a reduced AVR and larger CRVE, reflecting microvascular deterioration as a result of prolonged periods of increased arterial pressure.

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Introduction /Aim: Central blood pressure (BP) parameters arise as a novel tool in clinical practice. Mounting evidence demonstrates that central systolic BP has a closer correlation with target organ damage and a stronger value for predicting cardiovascular events. However, data regarding ambulatory measurement of central BP parameters and pulse wave velocity (PWV) are scarce including both healthy individuals and patients at risk for cardiovascular disease. In the latter group, a recent study has shown that central BP falls during night but less compared to peripheral BP. We sought to investigate whether this phenomenon is also observed in healthy individuals.
Methods: We recruited 50 healthy volunteers and performed 24h ambulatory measurement of PWV and central systolic BP using the validated Mobil-O-graph device.
Results: As expected, PWV correlated with 24 hour mean peripheral and central BP. However the strongest correlation presented between day PWV and day systolic BP ($r=0.441$, $p=0.001$). In addition, PWV decreased significantly during night following both peripheral and central BP ($p<0.001$). We also observed that central systolic BP exhibits a similar dipping profile compared to peripheral systolic BP but to a significant lesser degree ($p=0.001$).
Conclusion: The 24h ambulatory measurement of central hemodynamics provides important information regarding central BP and PWV.Central systolic BP decreases similarly, though at a smaller scale, compared with peripheral BP throughout the night, a phenomenon observed in both healthy individuals and patients at cardiovascular risk. Whether this phenomenon is a physiological response or an index of vascular pathology remains to be further investigated.

P9.14
INCREASED CAROTID ARTERY STIFFNESS DECREASES MEASURED CAROTID-FEMORAL PULSE WAVE VELOCITY AND EFFECTS THE ESTIMATION OF AGE DEPENDENCY OF AORTIC STIFFNESS

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Carotid-femoral pulse wave velocity (PWV_{cf}) is promoted as a clinical marker of aortic stiffness and is a measure utilising two sites where the pulse can be obtained non-invasively. PWV_{cf} calculation requires subtraction of the heart-to-carotid pulse transit time from the heart-to-femoral pulse transit time. This implies that an independent increase in carotid stiffness (PWV_c) will decrease PWV_{cf}. This study aims to quantify the effect of age dependent increase in PWV_c on PWV_{cf} compared to the age dependent increase in aortic stiffness, determined as aortic PWV (PWV_a). Comparison was made by using data from previous studies reporting increase in stiffness with age of the carotid artery[1] ($PWV_c=0.0009\times age^2-0.0465\times age+6.2$ m/s), femoral artery[2] ($PWV_f=0.0443\times age+7.18$ m/s), and PWV^3_{cf} ($PWV_{cf}=0.001\times age^2-0.017\times age+5.49$ m/s). Using these values and average distances for aortic, carotid, and femoral arterial lengths, PWV_a was calculated as a function of age ($PWV_a=0.0016\times age^2-0.0711\times age+5.43$ m/s). Comparison of PWV_a and PWV_{cf} demonstrates that the age dependency of PWV (m/s/year) is not the same when determined from PWV_{cf} and PWV_a. From 20 to 55 years, PWV_{cf} overestimates the age dependency of PWV_a by an average of 29%. From 55 to 90 years, PWV_{cf} underestimates age dependency of PWV_a by an average of 17%. These findings suggest that increased carotid stiffness can compromise the potential prognostic power of PWV_{cf} measurements.
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P9.15
THE ROLE OF LUNG FUNCTION ON ADOLESCENTS' BLOOD PRESSURE TRAJECTORIES IN A MULTI-ETHNIC COHORT: THE DETERMINANTS OF ADOLESCENTS SOCIAL WELLBEING AND HEALTH (DASH) STUDY

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Objectives: To investigate the relationship between baseline lung function (LF) and changes in blood pressure (BP) in multi-ethnic adolescent schoolchildren.
Methods: A multi-ethnic cohort (the DASH study) of 2525 children (80% ethnic minorities), aged 11-13y at baseline, were followed-up two years later (14-16y). Demographic details of ethnicity, socio-economic position and smoking were collected via self-completed questionnaires. Trained nurses measured BP (mean of last 2 of 3 readings) and anthropometry at both waves and spirometry (interpreted using Global Lungs Initiative reference equations) at baseline only. Associations between change in systolic and diastolic BP(ΔsBP, ΔdBP in mmHg) and lung function (LF) z-scores were assessed in multivariable linear regression models. The influence of correlates (age, room temperature, ethnicity, change in Z-scores of: body mass index, height, trunk length) on the LF-BP relationship was investigated.
Results: In males, adjusted for age and room temperature, one Z-score increase in FEV1 was associated with lower BP change between 11-13y and 14-16y (ΔsBP -1.09 ($p<0.001$) and ΔdBP -0.46 ($p=0.03$)); FVC was associated with ΔsBP only (-0.475, $p=0.004$). In females, similar patterns were seen for FEV1, with FVC associated with ΔdBP only. Adjustment for FEV1 (and to a lesser extent FVC) attenuated ethnic differences in BP changes for some groups (e.g. abolishing differences for Black Africans compared to Whites), but not others (e.g. South Asians), while other covariates did not.
Conclusions: FEV1, and to a lesser extent FVC, are correlates of BP changes in adolescence. Differences in adolescent LF may contribute to ethnic differences in BP trajectories during youth.

P10.1
ARTERIAL STIFFNESS AND THE "PHENOTYPE" METABOLIC SYNDROME: A CROSS-COUNTRY STUDY. THE MARE CONSORTIUM

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Specific clusters of metabolic syndrome (MetS) components impact differentially on arterial stiffness, indexed as pulse wave velocity (PWV). Of note,