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To link to this article: https://doi.org/10.1016/j.artres.2014.09.200

Published online: 7 December 2019
Increased lipid peroxidation and dyslipidemia are well known cardiovascular risk factors in renal transplanted (Tx) patients. Human serum paraoxonase (PON1) is the most potent high-density lipoprotein (HDL)-associated antioxidant enzyme. Previously decreased PON1 activity was shown in Tx recipients. Arterial stiffness parameters such as aortic augmentation index (Alx) and pulse wave velocity (PWV) are established markers of cardiovascular mortality in these patients. However, the association between PON activity and arterial stiffness has not been studied.

131 Tx patients and 63 age- and gender-matched healthy controls (C) were enrolled in the study. Lipid parameters and PON1 paraoxonase and arylesterase activities were measured. Arterial stiffness parameters (Alx, PWV, pulse pressure (PP), systolic and diastolic area indexes (SAI and DAI) and mean arterial pressure (MAP) were determined by arteriograph (Tensionomed).

Significantly lower paraoxonase and arylesterase activities were found in Tx patient compared to C subjects. Significantly higher MAP, PP, Alx and PWV, while significantly lower DAI and SAI were detected in Tx patients compared to C subjects. A significant negative correlation was found between arylesterase activity and PWV in Tx patients. Significantly higher total cholesterol (TC) and low-density cholesterol (LDL-C), while significantly lower HDL-C levels were found in Tx patients compared to C. Significant positive correlations were found between TC and PWV, and between LDL-C and PWV, while there were significant negative correlation between TC and DAI and between LDL-C and DAI in Tx patients. Dyslipidemia and decreased antioxidant capacity characterized by PON1 activity may contribute to increased arterial stiffness in kidney transplant recipients.

Aortic pulse wave velocity (aPWV), a major prognostic indicator of cardiovascular events, may be augmented in hypertension as a result of the aorta being stretched by a higher distending blood pressure or by a structural change. We used a novel technique to modulate intra-thoracic pressure and thus aortic transmural pressure (TMP) to examine variation of intra-thoracic aPWV with TMP in hypertensive (n = 20, age 55.5 ± 11.9 years, BP 124.5/72.6 ± 15.9 mmHg) and normotensive (n = 20, age 55.5 ± 11.1 years, BP 124.5 ± 11.9/72.6 ± 9.1 mmHg) subjects. aPWV was measured using dual Doppler probes to insonate the right brachiocephalic artery and aorta at the level of the diaphragm. Resting aPWV was greater in hypertensive compared to normotensive subjects (897 ± 50 cm/s versus 784 ± 43 cm/s, p < 0.05). aPWV was equal in hypertensive and normotensive subjects when measured at a TMP of 96 mmHg. However, dependence of aPWV on TMP in normotensive subjects was greater than in hypertensive subjects (9.6 ± 1.6 versus 3.8 ± 0.7 cm/s per mmHg increase in TMP, respectively, mean ± SEM, p < 0.01). This experimental behaviour was best explained by a theoretical model incorporating strain induced recruitment of stiffer fibres in normotensive subjects and fully recruited stiffer fibres in hypertensive subjects. These results explain previous contradictory findings with respect to isobaric aPWV in hypertensive compared to normotensive subjects. They suggest that hypertension is associated with a profound change in arterial wall mechanical properties possibly due to destruction of elastin leading to less strain induced stiffening and predisposition to aortic dissection.
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 arterial-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 (R² = 0.34, β = 0.38, p = 0.001) while the CRVE was negatively (R² = -0.24, β = -0.50, p = 0.001) associated with % MAP during dipping. CRVE maintained a negative association with dipping status (non-dipper, yes/no (R² = 0.21, β = -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.

**P9.13**

A STUDY ON AMBULATORY MEASUREMENT OF CENTRAL HEMODYNAMICS ON HEALTHY INDIVIDUALS WITH NO CARDIOVASCULAR RISK FACTORS


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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 = 0.44, p = 0.001). In addition, PWV decreased significantly during night both peripheral and central BP (p < 0.001). We also observed that central systolic BP exhibits a similar dipping 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 (PWVcf) is promoted as a clinical marker of aortic stiffness and is a measure utilising two sites where the pulse can be obtained non-invasively. PWVcf calculation requires subtraction of the heart-to-carotid pulse transit time from the heart-to-femoral pulse transit time. This renders an independent increase in carotid stiffness (PWVcf) will decrease PWVcf. This study aims to quantify the effect of age dependent increase in PWVcf on PWVcf compared to the age dependent increase in aortic stiffness, determined as aortic PWV (PWV). Comparison was made by using data from previous studies reporting increase in stiffness with age of the carotid artery (PWVcf = 0.0009 x age³ - 0.0465 x age² + 4.2 x m/s²), femoral artery (PWVf = 0.0443 x age⁷ - 7.18 x m/s), and PWV (PWV = 0.01 x age³ - 0.017 x age² + 5.49 x m/s). Using these values and average distances for aortic, carotid, and femoral arterial lengths, PWVcf was calculated as a function of age. PWVcf was maintained a negative association with dipping status (non-dipper, yes/no (-0.38; p < 0.001) while the CRVE was negatively associated with age and diastolic BP (β = -0.46 (p < 0.001). We also observed PWVcf overestimates the age dependency of PWV by an average of 17%. From 55 to 90 years, PWVcf estimates age dependency of PWV by an average of 1%. These findings suggest that increased carotid stiffness can compromise the potential prognostic power of PWVcf measurements.