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P9.8 ARTERIAL STIFFNESS AND PARAOXONASE ACTIVITY IN RENAL TRANSPLANT RECIPIENTS

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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 (Aix) and pulse wave velocity (PWV) are established markers of cardiovascular mortality in these patients. However, the association between PON1 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 (Aix, 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, Aix 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 HDL-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.

P9.9 ALTERED DEPENDENCE OF AORTIC PULSE WAVE VELOCITY ON TRANSURAL PRESSURE IN HYPERTENSION REVEALING STRUCTURAL CHANGE IN THE AORTIC WALL

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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 in aPWV in hypertensive compared to normotensive subjects. We aimed to explore the ACE activity in white and black South African men and establish the associations with a marker of inflammation.

Results: Pex and Pros were correlated with LV mass (r = 0.15 and 0.17, respectively; both p < 0.01) and RWT (r = 0.16, p = 0.01; r = 0.11, p = 0.02). After adjustment for age, sex, body mass index and 24-h systolic BP, subjects with LV hypertrophy had higher Pex (18.4 ± 10.3 vs 17.0 ± 5.4 mmHg, p = 0.02), but not Pros (39.8 ± 12.6 vs 37.5 ± 24.2 mmHg, p = 0.09). In a multivariate model adjusting for multiple cardiovascular risk factors and other confounders, an increased Pex independently predicted both LV mass (β = 0.08, p = 0.04, multiple R = 0.58) and RWT (β = 0.10, p = 0.02, multiple R = 0.40), while these relationships were not observed for Pros. Conclusions: LV mass and RWT are linearly and independently associated to Pex, but not to Pros in untreated hypertension. Structural cardiac abnormalities may be related to an increase in Pex.

P9.10 EXCESS PRESSURE IS INDEPENDENTLY RELATED TO LV MASS AND CONCENTRIC GEOMETRY IN ESSENTIAL HYPERTENSION

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Arterial blood pressure (BP) can be decomposed as the sum of reservoir (Pres) and excess (Pex) pressure. Pres is constant along the arteries and results in the minimum left ventricular (LV) hydraulic work, while Pex is linked to the excess work of the heart. We evaluated the relationship of Pres and Pex with cardiac structural features in hypertension.

Methods: 446 never-treated hypertensives (mean age 48 ± 11 years, 62% men, BP 148/92 ± 16/10 mmHg) were evaluated through echocardiography, radial application tonometry (Sphygmocor) and 24-h ambulatory BP monitoring (SpaceLab). Amplitudes and areas of Pres and Pex were calculated using proprietary algorithms based on central pressure curves. LV hypertrophy was defined as LV mass > 51 g/m2.7. Relative wall thickness (RWT) was expressed as 2 x posterior wall thickness/LV diameter, and concentric geometry as: RWT > 0.43.

Results: Pex and Pros were correlated with LV mass (r = 0.15 and 0.17, respectively; both p < 0.01) and RWT (r = 0.16, p = 0.01; r = 0.11, p = 0.02). After adjustment for age, sex, body mass index and 24-h systolic BP, subjects with LV hypertrophy had higher Pex (18.4 ± 10.3 vs 17.0 ± 5.4 mmHg, p = 0.02), but not Pros (39.8 ± 12.6 vs 37.5 ± 24.2 mmHg, p = 0.09). In a multivariate model adjusting for multiple cardiovascular risk factors and other confounders, an increased Pex independently predicted both LV mass (β = 0.08, p = 0.04, multiple R = 0.58) and RWT (β = 0.10, p = 0.02, multiple R = 0.40), while these relationships were not observed for Pros. Conclusions: LV mass and RWT are linearly and independently associated to Pex, but not to Pros in untreated hypertension. Structural cardiac abnormalities may be related to an increase in Pex.

P9.11 ANGIOTENSIN-CONVERTING ENZYME ACTIVITY IN NORMOTENSIVE WHITE AND AFRICAN MEN

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Background: The renin-angiotensin system (RAS) is a proteolytic cascade which consists of multiple enzymes and effector receptors. Angiotensin-Converting Enzyme (ACE) is one of the major enzymes in the RAS and catalyzing the decapptide Angiotensin I to the octapeptide Angiotensin II. There are other non-RAS effects of ACE like mediating and/or modulating inflammation. We aimed to explore the ACE activity in white and black South African men and establish the associations with a marker of inflammation.

Methods: In a bi-ethnic sample (n = 30) consisting of white and African men, the RAS-Fingerprinting was determined with LC-MS/MS quantification of Angiotensin peptides. Blood pressure and other variables were determined with known methods. Soluble urokinase Plasminogen Activator Receptor (suPAR) levels were determined using the suPARnostic™ ELISA kit.

Results: From the RAS-Fingerprinting and ACE activity (product-substrate ratio) it is evident that ACE activity is significantly lower in the normotensive African men compared to white men. The higher ACE activity found in the white men associated positively with reactive oxygen species (ROS) (r = 0.59; p = 0.02) and with suPAR (r = 0.63; p = 0.01) but not in the African men.

Conclusions: The ACE activity is higher in the white men and it seems that ACE may drive inflammation only in the white participants.

P9.12 THE RELATIONSHIP BETWEEN RETINAL VESSEL CALIBRE AND NOCTURNAL DIPPING STATUS: THE SABPA STUDY

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Introduction: The relationship between a non-dipping blood pressure profile and retinal vessel calibre is not well established. A sustained increase in leading to less strain induced stiffening and predisposition to aortic dissection.