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### **P6.15: ATTENUATION OF ARTERIAL STIFFNESS GRADIENT WITH AGE AND ITS IMPACT ON CENTRAL PULSE WAVE PROFILE IN DIALYSIS PATIENTS**

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method of BP measurement was more strongly associated with LVM in a young healthy normotensive population.

**Methods:** Forty-one adults ( $23 \pm 4$  years, 27% male) took part in the study. LVM was measured using 2-D echocardiography (Vividq, GE) and indexed to body surface area (LVMI). Both office and 24-hour pSBP and cSBP were measured using the Mobil-O-Graph system (IEM, Germany). cSBP's were calculated using brachial mean and diastolic pressures (MAP-cal).

**Results:** Participants had normal office pSBP ( $117 \pm 10$  mmHg) and LVMI ( $79 \pm 17$  g/m<sup>2</sup>) values. On average, office cSBP ( $128 \pm 19$  mmHg) was significantly higher than 24cSBP ( $123 \pm 14$  mmHg,  $P < 0.05$ ). LVMI was not associated with pSBP ( $r = 0.275$ ,  $P = 0.82$ ) and weakly associated with 24pSBP ( $r = 0.320$ ,  $P = 0.041$ ). However the strongest associations with LVMI were with cSBP MAP-cal ( $r = 0.506$ ,  $P = 0.001$ ) and 24cSBP MAP-cal ( $r = 0.556$ ,  $P < 0.0001$ ).

**Conclusion:** In the current young normotensive population, both office cSBP and 24cSBP were more closely associated with LVMI than peripheral measures of SBP. These findings may have implications for the progression and potential treatment of hypertension-induced target organ damage.

#### P6.14

##### THE EFFECT OF PHYSICAL ACTIVITY ON 24-HOUR AUGMENTATION INDEX

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**Introduction:** Augmentation Index (AIx) is a surrogate measure of systemic arterial stiffness and wave reflections. Clinic measures of AIx are considered to be a sensitive measure of risk in young adults and are lower in individuals who take part in high levels of physical activity (PA). The development of an ambulatory blood pressure monitoring (ABPM) system, which also calculates AIx, now allows usual AIx to be assessed. The aim of this study was to assess the association between 24-hour AIx and levels of physical activity in a young healthy cohort.

**Methods:** Forty-six adults ( $23 \pm 5$  years, 28% male) took part in the study. 24-hour AIx@75 (AIx at heart rate 75bpm) was measured using the ABPM device (Mobil-O-Graph, IEM). Weekly PA levels were recorded using a detailed PA questionnaire (total minutes per week).

**Results:** An inverse association between 24-hour AIx@75, Night-time AIx@75 and levels of PA ( $r = -0.420$ ,  $P < 0.01$  and  $r = -0.403$ ,  $P < 0.01$ , respectively) were observed. Interestingly, no associations were observed between 24-hour blood pressure and levels of PA.

**Conclusion:** These novel data, in a young normotensive cohort illustrate the beneficial effect of increased PA on 24-hour AIx. 24-hour measurements of vascular function may provide a more robust tool to understand the chronic effects of PA on vascular health. Further studies are needed to understand the use of ABPM for 24-hour monitoring of vascular stiffness.

#### P6.15

##### ATTENUATION OF ARTERIAL STIFFNESS GRADIENT WITH AGE AND ITS IMPACT ON CENTRAL PULSE WAVE PROFILE IN DIALYSIS PATIENTS

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**Background:** Arterial stiffness has been considered as an index of vascular ageing. However, the relationship between age and stiffness of various segments of the arterial tree is heterogeneous. Moreover, the hemodynamic impact of vascular stiffness is thought to be related to the attenuation or even reversal of the physiological arterial stiffness gradient. The objectives of the present study were to evaluate the impact of age on aortic (central elastic artery) and brachial (muscular conduit artery) stiffness and to assess hemodynamic correlates of the arterial stiffness gradient.

**Method/results:** In 310 dialysis patients (67 years [ $25^{\text{th}}$ - $75^{\text{th}}$  percentiles: 56-76], 185(60%) men, 134(43%) diabetes and 162(52%) cardiovascular disease), we measured aortic and brachial stiffness by pulse wave velocity of carotid-femoral (cf-PWV) and carotid-radial (cr-PWV) using direct distances (Complior). Arterial stiffness gradient was determined by cf-PWV/cr-PWV (PWV ratio). Central pulse wave parameters were obtained through generalized transfer function applied to the radial artery pulse profile (Sphygmocor). Mean cf-PWV, cr-PWV and PWV ratio were respectively of  $13.52 \pm 4.07$  m/s,

$8.76 \pm 1.68$  m/s and  $1.59 \pm 0.52$  m/s. Cr-PWV decreased with age ( $\beta = -0.031$ ,  $R = -0.274$ ,  $P = 0.001$ ), while cf-PWV ( $\beta = 0.144$ ,  $R = 0.529$ ,  $P = 0.001$ ) and PWV ratio ( $\beta = 0.021$ ,  $R = 0.613$ ,  $P = 0.001$ ) increased. In contrast to cf-PWV and cr-PWV, PWV ratio was not associated with MBP ( $P = 0.997$ ).

**Conclusion:** The use of PWV ratio may be a more logical choice for risk determination than aortic stiffness as it provides a better estimation of the loss of arterial stiffness gradient and is not influenced by MBP in this population.

#### P6.16

##### LEFT VENTRICULAR GEOMETRY AND CAROTID VASCULAR DAMAGE IN PATIENTS UNDERGOING CORONARY ANGIOGRAPHY

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**Background:** Vascular structural(intima-media thickness, IMT) and functional(carotid stiffness, cPWV)alterations are related to different pattern of left ventricular (LV) geometry in general populations and in hypertensives. The relationship between vascular damage and LV geometry has not been analyzed prospectively in patients undergoing coronary angiography.

**Methods:** 399 consecutive patients with clinical indication to coronary angiography, prospectively underwent standard ultrasound examination for the evaluation of LV mass index(LVMI g/m<sup>2</sup>), relative wall thickness(RWT), distal anterior descending coronary artery flow velocity(LADd\_vel), carotid ultrasound with real time echotracking system for measurement of central blood pressure(cSBP, cDBP), common carotid intima media thickness(cIMT) and carotid pulse wave velocity(cPWV) (Esaoe MyLab 70). The noninvasive evaluations were performed blindly to clinical information, before coronary angiography.

**Results:** cIMT and cPWV were higher in patients with concentric LVH(LVMI $\geq 49$  g/h<sup>2</sup> in men and  $\geq 47$  g/h<sup>2</sup> in women and  $RWT \geq 0.42$ ) as compared to N (normal LV mass and geometry) and CR (concentric remodeling, normal LVMI and  $RWT > 0.42$ ). LADd\_vel was greater in patients with concentric LVH than in other groups. The prevalence of coronary stenosis( $>50\%$ ) was greater in patients with concentric LVH and CR as compared to N. Patients with concentric geometry ( $RWT \geq 0.42$ ) showed higher values of cIMT( $773 \pm 169$  vs  $729 \pm 162$ ,  $p < 0.005$ ), cPWV( $8.9 \pm 2.7$  vs  $9.6 \pm 2.6$ ,  $p < 0.05$ ) and LADd\_vel( $40 \pm 22$  vs  $48 \pm 31$ ,  $p < 0.05$ ) and a greater prevalence of coronary stenosis( $>50\%$ ) than patients with  $RWT < 0.42$  (53 vs 69%,  $p < 0.005$ ).

**Conclusions:** Our results confirm that in patients undergoing coronary angiography concentric geometry is associated with structural and functional carotid alterations, with increased central blood pressure and anterior descending coronary artery flow velocity. In this large group of patients, concentric geometry is associated with a greater prevalence of coronary stenosis, as assessed by coronary angiography.

#### P6.17

##### CARDIOVASCULAR RISK FACTORS CONTRIBUTE TO THE VARIANCE OF WALL-TO-LUMEN RATIO

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**Background:** Common carotid artery intima-media thickness (cIMT) is an accepted ultrasound marker of subclinical atherosclerosis. It is argued that increase in cIMT may also reflect nonatherosclerotic thickening, thus, lumen diameter could be taken into account. A common approach to account for lumen diameter is wall-to-lumen ratio (WLR), however, its precise relations