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### **P6.12: AORTIC AND LOCAL CAROTID STIFFNESS: RELATIONSHIP WITH CARDIAC AND VASCULAR ORGAN DAMAGE IN A GENERAL POPULATION SAMPLE IN NORTHERN ITALY**

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cardiovascular disease in SCT remains to be determined. The present study sought to determine the arterial stiffness, an independent marker of sub-clinical atherosclerosis, between SCT and trained SCD.

**Materials and methods:** Twelve SCT (43±11yrs, 6 males) were compared to 14 trained younger SCD (29±9yrs, 2 males) and 26 controls with normal hemoglobin (36±11yrs, 13 males). Aortic (AoStiff-Physioflow) and peripheral arterial stiffness (pOpmetre-Axelle-France) assessed by foot-to-toe pulse wave velocity (ft-PWV), blood pressure (BP) and Framingham-Laurier cardiovascular risk score (CVR in %) were measured in each group.

**Results:** SCT exhibited stiffer arteries (AoStiff: 5.8±0.71 m/s, ft-PWV: 10.9±6.2 m/s) than controls (AoStiff = 4.8±0.5 m/s, ft-PWV: 7.7±2.6 m/s) and SCD (AoStiff = 4.9±0.6 m/s, p=0.001, ft-PWV: 6.1±0.9 m/s p=0.003). SCT were older (p=0.001) than controls and SCD. The systolic and mean AP were lower in SCD than controls and SCT. In the whole group, the CVR score was the major contributor to PerStiff ( $r^2=0.402$ ,  $p<0.0001$ ) while AoStiff was mainly associated to the hemoglobin abnormalities ( $r^2=0.291$ ,  $p<0.0001$ ).

**Conclusion:** Both central and peripheral arterial stiffness are increased in SCT compared to SCD. Our data suggest that hemoglobin abnormalities and CVR play a differential role in the observed changes.

#### P6.10

##### ALCOHOL INTAKE IS ASSOCIATED WITH 24-HOUR AORTIC BLOOD PRESSURE IN A YOUNG HEALTHY STUDENT COHORT

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**Objective:** Increased brachial (bBP) and aortic blood pressure (aBP) have been linked to increased arterial stiffness and cardiovascular risk in older individuals. Literature suggests that increased alcohol intake is associated with increased BP both acutely and long term in older adults and heavy alcohol drinkers. However, the effects of alcohol intake on 24-hour BP and aBP in young healthy adults remains unclear. The purpose of this study was to explore the relationship between weekly alcohol intake and 24-hour BP in a young healthy student cohort.

**Methods:** Forty-three (11 male, aged 24±5 yrs) healthy students were recruited. Age, height and weight were recorded and weekly alcohol intake reported via self-assessment questionnaire. 24-hour bBP and aBP were measured using the Mobil-O-Graph (IEM, Germany). Aortic BP was calculated using two calibration methods: brachial systolic and diastolic pressures (syst-cal) and mean and diastolic pressures (MAP-cal).

**Results:** 24-hour aSBP was associated with weekly alcohol consumption, using both calibration methods ( $r = 0.411$ , syst-cal;  $r = 0.54$ , MAP-cal; both  $P < 0.05$ ). In addition, 24-hour night-time aSBP (MAP-cal) was associated with weekly alcohol consumption ( $r = 0.39$ ;  $P < 0.05$ ).

**Conclusion:** Increased alcohol intake in young healthy students is associated with increased 24 hour and night-time aSBP. These data suggest that excessive alcohol intake at an early age could potentially increase cardiovascular risk via detrimental effects on the vascular system. Larger, longitudinal data are needed to investigate these associations further.

#### P6.11

##### THE FRAMINGHAM RISK SCORE IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Background:** Patients with chronic obstructive pulmonary disease (COPD) have increased risk of cardiovascular (CV) events and mortality beyond that attributable to smoking. Increased arterial stiffness has been identified in COPD, however its prognostic value has not been established. The Framingham risk score provides a validated estimate of an individual's future CV risk. We hypothesised that patients with COPD would have greater Framingham risk score and aPWV than controls and that aPWV would relate to the Framingham risk score.

**Methods:** At baseline 524 patients with COPD and 143 controls (free from lung disease) were assessed for; lung function (forced expiratory volume

(FEV<sub>1</sub>), forced vital capacity (FVC) and their ratio), BMI, blood pressure (BP) and aPWV. In addition, medical and smoking history were recorded and used to calculate the Framingham risk score and vascular age.

**Results:** Patients and controls were similar in age, gender and BMI, but patients had greater aPWV, Framingham risk score and vascular age which remained after adjustment for age, and MAP. In COPD, Framingham risk related to age  $r=0.295$ , aPWV  $r=0.234$ , SBP  $r=0.194$  and FEV<sub>1</sub>% predicted  $r=0.112$ , (all  $p<0.01$ ). In controls, Framingham risk score related only to age  $r=0.383$ , aPWV  $r=0.189$  and systolic BP  $r=0.195$   $p<0.05$ .

**Conclusions:** The association between the Framingham risk score and aPWV suggests that either may be useful to identify individuals with COPD at risk of future CV events. Further follow-up of this cohort will evaluate the prognostic utility of these measures of CV risk.

#### P6.12

##### AORTIC AND LOCAL CAROTID STIFFNESS: RELATIONSHIP WITH CARDIAC AND VASCULAR ORGAN DAMAGE IN A GENERAL POPULATION SAMPLE IN NORTHERN ITALY

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**Background:** Carotid-femoral pulse wave velocity (aoPWV), the gold-standard measurement of arterial stiffness, has been found associated with cardiac and vascular organ damage. Less information is available with regard to the correlation between local carotid stiffness (CS) and cardiac and vascular preclinical damage.

**Aim:** of the study was to analyse the correlation between aoPWV and CS and cardiac and vascular preclinical organ damage in a middle age general population in Northern Italy (Vobarno Study).

**Methods:** 245 subjects (57%female, age 56±4 years) underwent laboratory examinations, clinic and 24 hours BP measurement, cardiac and carotid ultrasound, aoPWV measurement (Complior-system). CS was determined from the relative stroke change in diameter (measured with a high-resolution echotracking system) and carotid pulse pressure (measured with applanation tonometry) and was expressed in the same dimensions as pulse wave velocity (m/s).

**Results:** Both aoPWV and CS were significantly related with age ( $r=0.29$ ,  $p<0.001$  and  $r=0.23$ ,  $p<0.001$ , respectively). A positive correlation was observed with clinic and 24 hours blood pressure parameters and both aoPWV and CS. AoPWV was significantly related to left ventricular mass index (LVMI,  $r=0.20$ ,  $p<0.05$ ), and was significantly higher in subjects with LV hypertrophy (LVMI>115 g/m<sup>2</sup> in men and >95 g/m<sup>2</sup> in women) as compared to subjects without LVH (9.1±1.5 vs 8.5±1.4 m/s,  $p<0.05$ ). On the contrary, CS was not related with LVMI and no difference in CS was observed between subjects with or without LVH (6.5±1.5 vs 6.3±1.2,  $p=ns$ ). AoPWV was also significantly related to vascular organ damage (carotid IMT Meanmax:  $r=0.16$ ,  $p<0.05$ ; CBMmax:  $r=0.16$ ,  $p<0.05$ ; Tmax:  $r=0.19$ ,  $p<0.005$ ), while CS was not.

**Conclusion:** Although carotid-femoral pulse wave velocity (AoPWV) and carotid stiffness provided similar information on the impact of aging and blood pressure on large artery stiffness, only AoPWV, and not CS, is related to cardiac (LVM) and vascular (IMT) damage in a general population sample.

#### P6.13

##### AMBULATORY AND OFFICE CENTRAL SYSTOLIC BLOOD PRESSURE IS MORE CLOSELY ASSOCIATED WITH LEFT VENTRICULAR MASS THAN AMBULATORY AND OFFICE PERIPHERAL SYSTOLIC BLOOD PRESSURE IN A YOUNG NORMOTENSIVE POPULATION

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**Background:** High blood pressure (BP) at a young age and increased left ventricular mass (LVM) are associated with increased risk of future cardiovascular mortality. In addition, ambulatory 24-hour central systolic BP (24cSBP) is more closely associated with LVM than either 24-hour peripheral SBP (24pSBP) or office measurements of pSBP and cSBP. However these associations have only been observed in older hypertensive patients. The purpose of this study was to determine (1) if BP was associated with LVM, and (2) which