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P1.30: DIFFERENTIAL MEANING OF RETINAL ARTERIAL REMODELING AND AORTIC DISTENSIBILITY IN YOUNG HYPERTENSIVES

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CARDIO-ANKLE VASCULAR INDEX, LEFT VENTRICULAR SYSTOLIC DYSFUNCTION AND INAPPROPRIATE LEFT VENTRICULAR MASS

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The relation between carotid-femoral pulse wave velocity (cfPWV) and LV remodeling/dysfunction is confounded by the effect of blood pressure (BP). We evaluated the relationship between cardio-ankle vascular index (CAVI), a less BP-dependent measure of the stiffness constant (β) of the aorta, iliac, femoral and tibial arteries, and prognostically relevant measures of LV structure and systolic function.

In 119 subjects with hypertension or high-normal BP (34% treated; 56 ± 16 years, BP $144/89 \pm 21/12$ mmHg), we measured CAVI and cfPWV, and LV mass and systolic function at echocardiography.

cfPWV had a direct association with SBP/DBP ($r=0.33/0.25$, $p<0.001/<0.01$), while no significant association was found between CAVI and SBP/DBP ($r=0.15/-0.02$, both $p>0.1$). Both CAVI and cfPWV had direct univariate relationships with LV mass index ($r=0.38$, $p<0.001$; $r=0.24$, $p=0.014$). The subjects with inappropriately high LV mass for a given cardiac workload ($n=36$) had a higher CAVI (9.0 ± 1.7 vs 7.6 ± 1.4 , $p<0.001$), but not a higher cfPWV (8.0 ± 1.7 vs 8.3 ± 2.3 , $p>0.1$). In a multivariate stepwise linear regression model, CAVI was an independent predictor of inappropriately high LV mass ($\beta=0.44$, $p<0.001$), along with body mass index. CAVI also showed a negative relation with LV midwall fractional shortening ($r=-0.41$, $p=0.001$), which was independent of age, sex, BP, and LV mass in a multivariate analysis.

We conclude that CAVI has a significant association with inappropriately high LV mass and LV systolic dysfunction. Our data suggest that pressure-independent stiffness constant (β), a marker of arterial diastolic-to-systolic stiffening, may have an impact on LV structure and function.

P1.30

DIFFERENTIAL MEANING OF RETINAL ARTERIAL REMODELING AND AORTIC DISTENSIBILITY IN YOUNG HYPERTENSIVES

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Objectives: Microvascular arterial remodelling has been linked with target organ damage and cardiovascular events. Our objective was to link retinal arterial remodelling assessed using a new interferometry technique (adaptive optics, AO) and ascending aortic function and geometry.

Methods: 9 patients (median age 43, range 30 to 58, 60% male) with primary hypertension underwent AO to measure retinal arteries wall to lumen ratio (WLR) index and a cardiovascular magnetic resonance exam (1.5T Siemens) of the proximal aorta. Ascending aortic diameters and strain were calculated using the ARTFUN software and an automated segmentation of SSFP cine acquisitions acquired in the axial view, during breath-holding, at the level of pulmonary bifurcation perpendicular to the aorta. Aortic strain was used to calculate aortic distensibility in each subject: distensibility (AD) = strain/cPP where cPP is the central pulse pressure obtained by tonometry (sphygmocor®). Home Blood pressure (hBP) records were used to define BP levels

Results: Characteristics of the population are shown in table 1. In univariate analysis, retinal WLR was linked to systolic hBP ($r=0.53$, $p=0.006$) and weight ($r=0.38$, $p=0.03$) but not with any other risk factors. AD was linked to age ($r=0.53$, $p=0.006$), systolic hBP ($r=0.53$, $p=0.006$) and tobacco status. In multivariate analysis, the only significant determinants remaining were age for AD and systolic hBP for WLR.

Conclusion: In young hypertensives, AD and WLR are representative of 2 different arterial aging factors: age for AD and hypertension for WLR.

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A COMPARISON OF THE POPLITEAL AND CAROTID ARTERIES IN YOUNG AND OLDER CAUCASIAN MEN AND WOMEN

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Objectives: The popliteal artery resemble the carotid artery in structure and function¹. The aim of this study was to determine whether the popliteal

artery resemble the carotid artery in structure and function in young and older Caucasian men and women.

Methods: Hundred and twenty Caucasian men and women were equally divided into four groups according to age (20-30; 40-60 years). A general health questionnaire were completed by the participants. Cardiovascular and anthropometric measurements were executed which included blood pressure, carotid femoral PWV (Complior SP Acquisition system) as well as popliteal and carotid IMT (Vivid E9, GE).

Results and conclusion: We observed an inverse association ($r=-0.60$; $P=0.001$) between popliteal IMT and c-fPWV in young men after adjusted for age, BMI and smoking with no association found in older men, young and older women. We also encountered a positive association between the carotid IMT and popliteal IMT ($r=0.44$; $P=0.02$) only in young women. Mean CSWA of the carotid artery differed significantly from the popliteal CSWA amongst the men (2.31 cm² vs. 1.91 cm²; $P=0.001$) and the younger women (1.71 cm² vs. 1.47 cm²; $P=0.048$). We concluded that popliteal and carotid arteries, in young and older Caucasian men and women, do not exhibit similar structural or functional properties.

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P1.32

THE HIGH DOSE ATORVASTATIN TREATMENT ALLOWS TO ACHIEVE ECHOLUCENT SYMPTOMATIC CAROTID PLAQUE STABILIZATION

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Background: Statins are widely used for atherosclerotic plaques stabilization due to their cholesterol-lowering properties and pleiotropic effects. However, the optimal drug regimens including dosage and length of treatment necessary to achieve significant improvement of ultrasound plaque morphology are still widely debated.

Methods: A total of 62 patients with carotid artery stenosis less than 60%, recruited prospectively in the current study, were divided into two groups. Patients of group 1 ($n=32$) were treated with 80 mg daily atorvastatin and patients of group 2 ($n=30$) were administered 20 mg daily atorvastatin. Plaque standardized gray scale medians (GSM) were measured in longitudinal ultrasound images to quantitate echolucency before and after 1 month treatment in all patients. Levels of cholesterol, low-density lipoproteins and C-reactive protein in serum were assessed.

Results: In group 1, a significant decrease of total cholesterol and low-density lipoproteins was observed after one month of treatment (up to 44% and 41%, respectively) while reduction in C-reactive protein levels was observed in both groups. GSM score was remarkably increased in both groups, but that augmentation was greater in group 1 (from 33.3 ± 16.5 to 99.4 ± 23.1) than in group 2 (from 35.9 ± 15.6 to 76.1 ± 21.7). No significant changes in the degree of carotid stenosis were detected in any group.

Conclusion: Aggressive high-dose lipid-lowering treatment is more effective than smaller dose one to achieve sustainable carotid plaque stabilization. Other positive effects of one month high dose statin treatment include stabilization of cholesterol levels, control of inflammatory response, and improvements in carotid arterial plaques morphology.

P1.33

DETERMINANTS OF THORACIC AORTA REMODELING BY USING CMR AND CAROTIDO-FEMORAL APPLANATION TONOMETRY

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Objectives: estimate determinants of thoracic aorta remodelling in healthy subjects.

Methods: 139 subjects (63 women, mean age 39.9) were included. Aortic diameters were calculated at the level sinuses of Valsalva, junction, ascending, arch and descending aorta. Aix, Pi, central blood pressure (CBP) and carotido-femoral (CF) PWV were assessed by tonometry, aortic flow and PWV by using phase contrast MR. Aorta impedance was calculated.

Results: Age, sex and BSA were the main determinants of the aortic diameters-DCBP for the tube ($p=0.018$), aortic arch ($p=0.04$) and descending aorta ($p=0.003$); Zci for aortic arch ($p=0.001$) and descending aorta ($p=0.002$) and