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P4.24: COMPLIANCE AND DISTENSIBILITY OF DIFFERENT SEGMENTS OF AORTA AND RELATIONSHIPS BETWEEN AORTA DISTENSIBILITY AND SYSTOLIC AND DIASTOLIC FUNCTIONS OF THE LEFT VENTRICULAR

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Table 2 Associations between carotid plaque mobility (S and SR values), echogenicity and degree of stenosis.

	Echogenicity (Spearman correlation analysis) <i>r</i> *	Degree of Stenosis (Univariate analysis) <i>r</i>
cap		
S	-0.24 <i>p</i> =0.00045	-0.12 <i>p</i> =0.049
SR	-0.13 <i>p</i> =0.029	-0.17 <i>p</i> =0.004
core		
S	-0.29 <i>p</i> =0.0004	-0.07 <i>p</i> =0.39
SR	-0.21 <i>p</i> =0.001	-0.20 <i>p</i> =0.15
base		
S	-0.24 <i>p</i> =0.0043	-0.14 <i>p</i> =0.086
SR	-0.18 <i>p</i> =0.035	-0.22 <i>p</i> =0.008

* negative correlation implies that hypo- and moderate echogenic plaques have lower S and SR values

P4.24**COMPLIANCE AND DISTENSIBILITY OF DIFFERENT SEGMENTS OF AORTA AND RELATIONSHIPS BETWEEN AORTA DISTENSIBILITY AND SYSTOLIC AND DIASTOLIC FUNCTIONS OF THE LEFT VENTRICULAR**

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Objective: to investigate compliance and distensibility of different segments of aorta and to assess the influence of systolic and diastolic function on distensibility.

Methods: Study population consisted of 33 healthy subjects (aged 16-26, median-18). Compliance and Distensibility were calculated using M-mode ultrasound measurements at five locations: the sinuses of Valsalva, the proximal ascending aorta, the aortic arch, the infrarenal aorta, the abdominal aorta before bifurcation and also in the left common carotid artery (CCA) using wall-tracking software. All subjects underwent comprehensive transthoracic echocardiography and Central BP measurement. Left ventricular peak wall stress (LVPS) was calculated as follows: $LVPS = 0.86 \times (0.334 \times SAP \times EDD) / [PWTdx(1 + (PWTd/EDD))] - 2$, where SAP- systolic blood pressure, PWTd- end-diastolic posterior-lateral wall thickness, EDD- end-diastolic diameter.

Results: Compliance gradually decreased from the proximal to the distal segments of aorta (table 1), whereas distensibility coefficient (DC) and β -stiffness index did not significantly differ in various aorta segments. By univariate analysis negative direct associations were found between DC and LVPS ($r = -0.48$, $p = 0.005$ for DC in proximal ascending aorta). This relation was tested by multivariate linear regression after adjusting for potential confounders (age, male sex, weight). The model demonstrated that LVPS and E/A ratio are the only independent determinant of aorta distensibility ($\beta = -0.41$ and -0.43 for LVPS and E/A accordingly $p < 0.03$, DC in the proximal ascending aorta).

Conclusions: Compliance gradually decreased from the proximal to the distal aorta segments (from the sinuses of Valsalva to the bifurcation of abdominal aorta) whereas stiffness does not differ significantly. Both systolic and diastolic parameters of left ventricular influence the distensibility.

Table 1 Compliance, Distensibility and Stiffness in the Different Aorta Segments and in the left CCA

	Compliance $C = \Delta D / (SBP - DBP)$ mm $\times$ mm Hg ⁻¹	Distensibility Coefficient $DC = 2 \times \Delta D / [Ddx(SBP - DBP)]$ mm Hg ⁻¹	Stiffness index $\beta = [\ln(SBP/DBP) \times Dd] / \Delta D$	Strain $CS = \Delta D / Dd \times 100\%$
Sinuses of Valsalva	0.16 ± 0.1	0.015 ± 0.009	2.62 ± 2.17	21 ± 7
Proximal Ascending Aorta	0.13 ± 0.09	0.012 ± 0.008	2.88 ± 2.08	17 ± 7
Aortic Arch	0.11 ± 0.08 *	0.013 ± 0.008	2.53 ± 1.32	20 ± 8
Infrarenal Aorta	0.09 ± 0.04 **, *	0.015 ± 0.007	2.34 ± 1.2	23 ± 5
Abdominal Aorta before Bifurcation	0.08 ± 0.04 **, *	0.015 ± 0.009	2.43 ± 0.92	21 ± 5
left CCA	0.016 ± 0.005 ***	0.005 ± 0.002 ***	6.51 ± 3.94 ***	7.7 ± 2 ***

Data are expressed as mean ± SD, * significant difference ($p < 0.05$) with Sinuses of Valsalva, ** - significant difference ($p < 0.05$) with Proximal Ascending Aorta, *** - significant difference between CCA and all aorta segments, $\Delta D = Ds - Dd$, where Ds and Dd – systolic and diastolic diameters, SBP and DBP – central systolic and diastolic blood pressure.

P4.26**ADIPOCYTOKINES LEVELS MARK ENDOTHELIAL FUNCTION IN NORMOTENSIVE INDIVIDUALS**

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Endothelial dysfunction is an independent risk factor for cardiovascular events. Inflammatory mediators released by the adipose tissue can lead to local insulin resistance and endothelial dysfunction. This study addressed the relationship of adipocytokines with endothelial function and blood pressure. In 92 newly diagnosed, drug-naïve essential hypertensive patients (HT) without organ damage and 66 normotensive subjects (NT), by an automated system, we measured endothelium-dependent and -independent vasodilation as brachial artery flow mediated dilation (FMD) before and after administration of glyceryl-trinitrate (GTN). Retinol binding protein-4 (RBP4) and resistin levels were determined by ELISA and RIA, respectively. Oxidative stress was evaluated by measuring serum malondialdehyde (MDA). FMD was significantly ($p = 0.03$) lower in HT ($5.3 \pm 2.6\%$) than NT ($6.1 \pm 3.1\%$), while response to GTN ($7.5 \pm 3.7\%$ vs $7.9 \pm 3.4\%$) was similar. RBP4 (60.6 ± 25.1 vs 61.3 ± 25.9 $\mu\text{g/ml}$), resistin (18.8 ± 5.3 vs 19.9 ± 6.1 ng/ml) and MDA levels (2.39 ± 1.26 vs 2.08 ± 1.17 nmol/ml) were not different in HT and NT.

RBP4 ($r = -0.25$; $p = 0.04$) and resistin levels ($r = -0.29$; $p = 0.03$) were related to FMD in NT, but not in HT ($r = -0.03$ and $r = -0.10$, respectively). In NT multivariate analysis, including RBP4 and confounders showed that only body mass index (BMI) or waist circumference remained related to FMD. In the multivariate model including resistin and confounders, BMI, age and resistin were significantly related to FMD, while only age remained a significant correlate of FMD when BMI was replaced by waist circumference.

In conclusion, adipocytokine levels, particularly resistin, are independent predictors of endothelial dysfunction in the peripheral circulation of healthy subjects, providing a pathophysiological link between inflammation from adipose tissue and early vascular alterations.

P4.27**AUTONOMIC NERVOUS SYSTEM REACTIVITY IN NORMOTENSIVE SUBJECTS WITH A FAMILY HISTORY OF HYPERTENSION DURING VALSALVA MANOEUVRE**

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Introduction: This study was designed to address alterations in autonomic nervous system activity in normotensive subjects with a family history of hypertension. We compared the autonomic nervous system activity in 11 normotensives with a family history of hypertension (age 23.3 ± 0.4) and 14 normotensives with no family history of hypertension (age 22.9 ± 0.3).

Methods: In all of the participants their cardiovascular parameters, including impedance cardiography, were measured at rest. In addition, the Valsalva manoeuvre was performed and Valsalva Index was obtained. On the basis of the arterial blood pressure change, provoked by the Valsalva manoeuvre, the latency of baroreflex response was determined.

Results: Normotensives subjects with a family history of hypertension, compared to the control group, showed significantly higher heart rate (75.0 ± 3.4 vs. 62.4 ± 1.8 beats/min), cardiac output (7.6 ± 0.4 vs. 6.7 ± 0.3 L/min), left ventricular weight index (4.6 ± 0.3 vs. 3.9 ± 0.1) and shorter