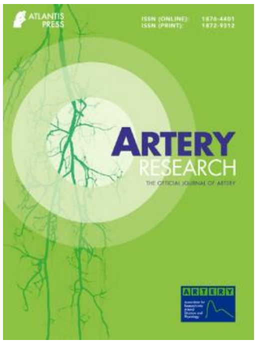

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P4.23: HYPOECHGENIC CAROTID PLAQUES ARE MORE MOBILE IN COMPARISON WITH HYPERECHOGENIC ONES

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The rare allele (C) was found in 16% of the affected and 10% of the non affected cases and it showed statistical significance [OR (95% CI): 1.64 (1.00-2.56), P = 0.03]. The TT genotype occurred more often in the control group compared with the patients with AMI [OR (95% CI): 0.58 (0.35-0.96), P = 0.039]. The heterozygous genotype of CYP2C8 was found to be significantly associated with a risk of myocardial infarction [OR (95% CI): 2.25 (1.06-4.75), P = 0.036] in women.
Possession of the rare genetic variant of CYP2C8 gene in Bulgarian population is associated with a modestly increased risk of AMI.
Key words: CYP2C8, risk, association

P4.21
CAROTID ELASTICITY BEHAVIOR DURING EXERCISE IS ALTERED IN PATIENTS WITH KNOWN OR SUSPECTED CORONARY ARTERY DISEASE

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Objective: The behavior of cardiovascular parameters during exercise remains unsettled. Our aim was to evaluate carotid elasticity during graded bicycle semi-supine exercise test, in patients with known or suspected coronary artery disease (CAD) and to compare it with a control group.
Methods: 36 consecutive patients (20 men, 61±8years), and 18 healthy volunteers (9 men, 34±3 years) were recruited. Right carotid diameter (D) and distension (ΔD) were estimated by ultrasound B-mode image processing, and central pulse pressure (PPa) by radial tonometry; then, carotid cross-sectional distensibility coefficient (DC) was obtained. All measurements were performed at rest and peak of age-dependent maximal heart rate.
Results: At rest, D and PPa were higher in patients than in controls (7.8±1.1 vs 6.2±0.6mm and 49±11 vs 27±5mmHg, $p<0.05$), whereas no significant differences were observed in ΔD and mean blood pressure (0.50±0.21 vs 0.54±0.24mm and 98±7 vs 97±5mmHg, p=ns); DC was lower in patients than in healthy volunteers (22.1±8.5 vs 59.7±20.6 10-3/KPa, $p<0.05$). At peak, D (8.1±1.3 and 6.4±0.7mm) and ΔD (0.65±0.31 and 0.79±0.24mm) were similar to rest in both groups; PPa (67±17 and 45±12mmHg) and mean blood pressure (128±9 and 123±13mmHg) increased both in patients and controls ($p<0.05$ vs rest); DC significantly decreased in healthy subjects (39.7±14.5 10-3/KPa, $p<0.05$ vs rest), but not in patients (21.2±7.9 10-3/KPa, p=ns vs rest).
Conclusions: In patients with known or suspected CAD, carotid distensibility, which at rest is lower than in healthy controls, remains unchanged during maximal exercise, despite a similar increase in mean blood pressure in the two populations.

P4.22
GUIDELINE BASED CARDIOVASCULAR RISK MANAGEMENT VERSUS IMAGING ATHEROSCLEROSIS

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Purpose: We wanted to compare the outcome of a newly implemented Dutch Cardiovascular Risk Management guideline (so called Prevention Consult) with the non-invasive measurement of Carotid Intima Media Thickness and Plaque visualization (CIMT+P) in a group of 313 employees (170 men and 143 women, mean age 42,9 ± 0,5 years range 22 − 65 years) in one organization.
Methods: At one and the same measure point we performed the Prevention Consult short questionnaire with 7 questions (www.testuwrisico.nl), measuring weight, height, waist circumference, blood pressure, total/HDL- cholesterol, glucose and made a CIMT + P.
Table 1 shows results:
The Pearson correlation between risk test and the CIMT + P was significant (r = 0,248, p < 0,01). The risk test identified only 17 people at a high risk level and the CIMT + P showed for 70 people distinct atherosclerotic lesions.
Conclusions: Although there is a significant correlation between the outcome of the PreventionConsult and the CIMT + P, the CIMT + P is far more sensitive for atherosclerotic lesions than the Prevention Consult. Especially, in a middle age population with intermediate risk, a CIMT + P offers more signs to warrant early prevention and effective intervention.

Table 1

		CIMT + P(A,normal risk, B 25% increased risk, C 50% increased risk and D 100% increased risk)				Total
		A	B	C	D	
Risk test	Low risk	17	10	3	1	31
	Intermediate risk	112	70	51	1	234
	High risk	1	2	12	2	17
Total		130	82	66	4	282

P4.23
HYPOECHGENIC CAROTID PLAQUES ARE MORE MOBILE IN COMPARISON WITH HYPERECHOGENIC ONES

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Background: Speckle Tracking Technology allows to assess multi-dimensional regional mechanics of carotid wall and carotid plaques. We hypothesized that hypoechogenic plaques are more mobile in comparison with hyperechogenic ones.
Objective: The objective of this study was to investigate the mechanical properties of carotid plaques using ultrasound speckle tracking.
Methods: Study population consisted of 43 patients with carotid atherosclerosis (aged 53-89, median-69). In total, 48 carotid plaques were analyzed. For each plaque, maximal circumferential strain (S) and strain rate (SR) were measured (in several points separately for plaque cap, core and base). According to grey scale median analysis all plaques were divided into hyperechogenic and low- and moderately echogenic ones. Degree of stenosis and plaque length were also assessed.
Results: S and SR were higher for all parts of hypo- and moderately echogenic plaques in comparison with hyperechogenic ones and for cap and core the difference was significant (table 1). Spearmen correlation analysis revealed significant negative associations between echogenicity and S and SR values (table 2). Multivariate linear regression confirmed that echogenicity is an independent determinant of S and SR after adjusting for potential confounders (degree of stenosis, plaque length). Univariant analysis found significant negative association between degree of stenosis and S and SR values (table 2).
Conclusion: Hypo-and moderately echogenic carotid plaques are more mobile in comparison with hyperechogenic ones. Degree of stenosis is negatively associated with increased mobility and this may explain the fact that many vulnerable, symptomatic plaques have relatively moderate degree of stenosis.

Table 1 S and SR values of hypo- and moderately echogenic and hyperechogenic carotid plaques.

	Hypo- and moderately echogenic plaques	Hyper- echogenic plaques	p
cap			
S	5.42±3,71	3.78±2.25	p=0.0006
SR	0.52±0.31	0.43±0.27	p=0.02
core			
S	6.3±3.55	4.22±2.60	p=0.0003
SR	0.59±0.28	0.46±0.25	p=0.008
base			
S	4.78±3.2	3.61±3.14	p=0.034
SR	0.47±0.27	0.42±0.37	p=0.32

Data are expressed as mean ± SD

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

	Echogenicity (Spearmen correlation analysis) r*	Degree of Stenosis (Univariant analysis) r
cap		
S	**-0.24 p=0.00045**	**-0.12 p=0.049**
SR	**-0.13 p=0.029**	**-0.17 p=0.004**
core		
S	**-0.29 p=0.0004**	-0.07 p=0.39
SR	**-0.21 p=0.001**	**-0.20 p=0.15**
base		
S	**-0.24 p=0.0043**	-0.14 p=0.086
SR	**-0.18 p=0.035**	**-0.22 p=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=0.86x (0.334xSAPxEDD)/[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 univariant 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 (β=-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.

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 malondyaldeide (MDA). FMD was significantly (p=0.03) lower in HT (5.3±2.6%) than NT (6.1±3.1%), while response to GTN (7.5±3.7% vs 7.9±3.4%) was similar. RBP4 (60.6±25.1 vs 61.3±25.9 μg/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

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

	Compliance C=ΔD/(SBP-DBP) mm × mm Hg^{-1}	Distensibility Coeffieicient DC= 2×ΔD/[Ddx(SBP-DBP)] mm Hg^{-1}	Stiffness index β=[ln(SBP/DBP)×Dd]/ ΔD	Strain CS=ΔD/D d × 100%
Sinuses of Valsalve	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 Valsalve, **-significant difference ($p<0.05$) with Proximal Ascending Aorta, *** - significant difference between CCA and all aorta segments, ΔD = Ds-Dd, where Ds and Dd — systolic and diastolic diameters, SBP and DBP — central systolic and diastolic blood pressure.