P.037: PRESSURE WAVEFORM ESTIMATION IN THE COMMON CAROTID ARTERY – DIFFERENT METHODS IN COMPARISON

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DM-1 does not appear to be COX2 mediated or acutely affected by hyperglycemia. Endothelial-independent vascular smooth muscle response in women may be sensitive to COX2 inhibition and warrants further investigation.

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BIOLOGICAL VARIABILITY OF THE ULTRASONOGRAPHIC ASSESSMENT OF ENDOTHELIAL DYSFUNCTION IN CHILDREN WITH HIGH RISK OF MANIFESTATION OF ATHEROSCLEROSIS☆,☆☆

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Background: Subclinical atherosclerosis should be detected before clinical symptoms of vascular complications occur. Varying reproducibility of currently used ultrasonographic methods makes diagnosis of endothelial dysfunction (ED) in children difficult.
Aim of the study: To assess flow mediated dilation (FMD) and deceleration index (DI), based on postocclusion changes in arterial bed in children with familiar hypercholesterolemia (FH) and diabetes mellitus of type 1 (DM1). Evaluation of the intraindividual variability of FMD and DI should than validate a predictive importance of these methods.
Methods: FH group, n$=$32, age 14,7($\pm$2.9) years, DM1 group, n$=$30, mean age 14.6 ($\pm$1,68) and group of healthy children, n$=$30, mean age 15.1($\pm$1.74) years were enrolled. The measurements were performed twice during the same day period one month apart from each other to assess intraindividual variability of FMD and DI with respect to possible diurnal and ovarian cycles.
Results: No significant differences in FMD and DI were found between the FH, DM 1 and control groups, the corresponding mean FMDs were 7.31, 7.30 and 6.34% respectively, while DIs 19.78, 16.51 and 21.49 %, respectively. Variability coefficients [median (interquartile range)] were in FMD and DI 1.77 (55-179) and 1.02 (0.68-1.53) respectively.
Conclusion: Statistically nonsignificant difference of FMD and DI between study groups could be partly explained by therapeutic interventions and short duration of DM1. Nevertheless, FMD and DI showed very high intra-individual variability, which decrease markedly its reliability to quantify the degree of endothelial dysfunction in children.

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ASYMMETRIC DIMETHYLARGININE AND OXIDIZED LDL — SENSITIVE BIOCHEMICAL MARKERS OF ENDOTHELIAL DYSFUNCTION IN CHILDREN WITH FAMILIAR HYPERCHOLESTEROLEMIA☆

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Background: Endothelial dysfunction (ED) as a sign of preclinical athero-sclerosis should be detected early in children with familiar hypercholester-olemia (FH). Varying sensitivity of many biochemical and ultrasonographic markers makes diagnosis of ED difficult.
Aim of the Study: To assess specific biochemical markers of ED and correlate them with flow mediated dilation (FMD) and deceleration index (DI) in children with FH.
Methods: FH group, n$=$32, age 14,7 ($\pm$2.9) years and group of healthy children, n$=$30, age 15.1 ($\pm$1.7) years were enrolled. The high selective CRP (hsCRP), oxidized LDL (oxLDL), malondialdehyde (MDA), asymmetric dime-thylarginine (ADMA), FMD and DI were assessed .
Results: ADMA levels in the FH group was higher than in healthy controls - 0.94 umol/l ($\pm$0.18) versus 0.77umol/l ($\pm$ 0.14), p$<$ 0.001. Levels of oxLDL were significantly higher in the FH group - 73,7 mU/l ($\pm$24,9) versus 55,7 mU/l ($\pm$30,5), p$<$ 0.01. FMD and DI did not show significant differences between the FH and control groups. No correlations between ADMA, oxLDL, hsCRP and ultrasonographic markers were found.
Conclusion: ADMA and oxLDL appear to be more sensitive markers in detection of ED in children with FH than FMD and DI. The absence of correlation between biochemical and ultrasound markers could be explained by high biological variability of FMD and DI. The combination of ADMA , oxLDL and advanced imaging methods could improve the prediction of cardiovascular risk in children with FH.

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PRESSURE WAVEFORM ESTIMATION IN THE COMMON CAROTID ARTERY — DIFFERENT METHODS IN COMPARISON

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Non-invasive blood pressure waveform estimation in the common carotid artery (CCA) would yield an indirect estimation of its mechanical properties. Assuming both diastolic (P_d) and mean arterial pressure (MAP) to be constant over the arterial tree and considering arteries as rotationally symmetrical, CCA pressure waveform ($P_{CCA}(t)$) can be estimated by rescaling the diameter waveform in the CCA ($D_{CCA}(t)$) on the radial artery (RaA) blood pressure waveform ($P_{RaA}(t)$), using either a linear or an exponential estimation method.

11 normotensive volunteers were included. For each subject, 3 repeated measurements over three days with a weekly interval were performed in the RaA and the CCA simultaneously. $P_{RaA}(t)$ was measured using applanation to-nometry, whereas $D_{CCA}(t)$ was measured with ultrasound.
Linear Estimation: $D_{CCA}(t)$ was linearly rescaled over $P_{RaA}(t)$ by equaliz-ing diastolic and mean values of both waveforms: $P_{CCA}(t) = \delta * D_{CCA}(t) + P_d$. *Exponential Estimation:* the CCA cross sectional area waveform, A(t), was exponentially rescaled over $P_{RaA}(t)$ according to: $P_{CCA}(t) = P_d * Exp(\alpha * ((A_{CCA(t)/Ad,CCA}) - 1))$, iteratively adjusting α (stiffness index) to equalize RaA and CCA mean pressures.

The difference between systolic pressure values estimated by means of the two methods in the CCA is on average 2.6 ± 1.1 mmHg, approximately pressure-independent. The mean difference between the systolic pressure in the RaA and the CCA, using the exponential method, is 17.6 ± 6.3 mmHg. The difference between the radial MAP computed as integral mean and the one estimated with $[1/3 * P_s + 2/3 * P_d]$ is -0.3 ± 3.4 mmHg. Estimation quality is not depending on the MAP value.

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INTERRELATION BETWEEN DYNAMICS OF CHANGES ENDOTHELIUM-DEPENDENT DILATATION AND LOCAL RIGIDITY OF THE BRACHIAL ARTERY IN PATIENTS WITH HYPERLIPIDEAMIA ON A BACKGROUND OF RECEPTION STATINS WITHIN 6 MONTHS

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Aim: To estimate and contrast the marks of a flow-mediated dilatation (FMD) and distensibility coefficient (DC) of the brachial artery in patients with primary hyperlipideamia on a background of statins within 6 months.
Materials and Methods: 25 patients, age 58 (51;64) years, with drug-controllable hypertensions and not received lipid-lowering therapies at least 4 weeks prior to the beginning of research. Patients accepted the statins (6 months) in dozes which were defined by titration before achievement of target levels of low density lipoprotein.
Results: FMD of the right brachial artery has been increased significantly after 3 and 6 months of therapy. DC and Blood pressure level changes were not significant within 6 months. Positive dynamics of FMD has been noted in 16 patients (64%), among them in 8 person (50%) negative dynamics DC is noted. The correlation analysis has revealed statistically significant nega-tive interrelation between dynamics FMD and DC (r$=$-0,47; p$=$0,043). Significant correlation between marks of FMD and DC it has not been revealed.
Conclusion: Improvement endothelial functions can be accompanied by increase local rigidity the main arteries of muscular type in the early period of therapy of statins in consequence of decrease basal tone and carry of loading on stiffness layers of an arterial wall, which demands the further researches.

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THE NUMBER OF CD34+ CELLS IN PATIENTS WITH STABLE ANGINA PECTORIS: INFLUENCE OF ABNORMAL GLUCOSE METABOLISM AND CORONARY ANGIOPLASTY

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Background: Circulating progenitor cells (CPCs) play an important role in endothelial repair. We evaluated numbers of CD34+ cells in patients with