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### **P5.08: INVESTIGATING THE DETERMINANTS OF IMPAIRED DIASTOLIC FILLING IN ELDERLY FEMALE HYPERTENSIVES**

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and in children following treatment for acute lymphoblastic leukemia (ALL) in comparison with healthy controls (HC). RHI was further correlated with anthropometric and biochemical parameters.

**Research design and methods:** 35 eligible study participants were enrolled in the study (14 T1DM (16±2.2yrs) and 11 ALL patients (14.7±2.2yrs), matched with 10 HC (16±1.7yrs)). As part of new non-invasive plethysmographic technique, an Endo-PAT2000® recorder was used for the determination of RHI by measuring postocclusive endothelium-dependent changes in vascular tone (PAT) in subjects fingertips.

**Results:** Significantly lower RHI were revealed in T1DM patients in comparison with HC (1.50±0.56, 1.99±0.68;  $p < 0.05$  respectively), implying impaired endothelial-dependent dilation. ALL subjects tended to have lower RHI compared with HC (1.58±0.48, 1.99±0.68;  $p > 0.05$  respectively), although this difference was statistically insignificant. No association was revealed between RHI and anthropometric parameters, arterial blood pressure or glycated haemoglobin in both T1DM and ALL groups.

**Conclusion:** Detection of endothelial dysfunction using RHI in T1DM children is in concordance with results of previously published studies. Our study demonstrated that a non-invasive method such as RHI is a promising future prospect for the assessment of EF in children with high risk of premature atherosclerosis.

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#### P5.06

### DIABETES MELLITUS (DM) (II TYPE) AGGRAVATES THE ENDOTHELIAL DYSFUNCTION (ED) AND INCREASES THE ARTERIAL STIFFNESS IN PATIENTS WITH LACUNAR INFARCTION (LI)

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The aim was to study endothelial function (EF) and the arterial wall (AW) stiffness in patients with DM and LI.

**Methods:** Nine patients with DM and LI as defined by clinical characteristics and MRI findings were compared with 35 age and gender-matched patients with LI without DM. EF was assessed using the brachial flow-mediated vasodilatation (FMD) on the first day after stroke onset in both groups. Carotid stiffness index  $\beta$  was calculated as follows:  $\ln(\text{systolic}/\text{diastolic blood pressure})/[(\text{Dmax}-\text{Dmin})/\text{Dmin}]$ , where Dmax/Dmin are maximum and minimum common carotid lumen diameters measured by carotid ultrasound. Carotid intima-media thickness (IMT) was also measured. FMD was categorized according to ROC analysis and ED was defined as  $\text{FMD} \leq 6.0\%$ .

**Results:** Eight patients (89%) in the first group and twenty-two (63%) in the second had ED ( $p=0.006$ ). Seven patients (78%) in the first group and none in the second had a distinctive feature – the presence of the additional hyperechogenic layer in the AW. Carotid stiffness was higher in first group (17.3±3.4 versus 10.5±2.2,  $p=0.04$ ), while FMD was lower (3.4±1.5% versus 6.1±2.5%,  $p=0.03$ ). There was no significant difference in IMT between two groups (0.95±0.15 in the first group versus 0.91±0.17). Moderate correlation was observed between stiffness and IMT ( $r=0.33$ ,  $p=0.01$ ). No correlations were found between FMD and IMT, FMD and stiffness.

**Conclusion:** Patients with DM and LI are characterized by the marked impairment of the structural-and-functional properties of the AW and they have a distinctive feature (additional hyperechogenic layer in the AW). The IMT thickening influences the arterial stiffness.

#### P5.07

### MAXIMUM-IMT, PLAQUE SCORE, PLAQUE NUMBER AND PERCENT AREA STENOSIS ARE HIGHER AMONG ADULT PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA THAN THEIR ADULT FIRST-DEGREE RELATIVES

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**Backgrounds and aim:** Familial hypercholesterolemia (FH) is associated with not only severe coronary-artery disease but with accelerated carotid atherosclerosis. We compared the severity of carotid atherosclerosis at adult patients with FH and their adult first-degree relatives using high-resolution ultrasound methods.

**Subjects and methods:** The study included 32 patients with FH (mean±SD age, 35,44±9,9 years) and 21 their first-degree relatives (32,24±11,22 years). All patient were not older than 53. The level of the total cholesterol and LDL-cholesterol was significantly higher among FH patients than their relatives (9,98±2,93 mmol/l vs 5,08±0,89 mmol/l,  $p < 0,001$  and 7,07±3,07

mmol/l vs 3,14±0.87 mmol/l,  $p < 0,001$  respectively). Carotid atherosclerosis was evaluated by the following indices: mean-IMT, maximum-IMT, plaque score, plaque number and percent area stenosis.

**Results:** Mean-IMT have not differed in groups. Maximum-IMT, plaque score, plaque number and percent area stenosis were significantly higher among FH patients than their relatives.

**Conclusions:** Carotid atherosclerosis in adult patients with familial hypercholesterolemia is more severe than in their adult first-degree relatives.

Subjects (mean±SD)	First-degree relatives (n=21)	Patients with FH (n=32)	p value
Age, years	32,24±11,22	35,44± 9,9	0,158
Mean-IMT, mm	0,577±0,125	0,635±0,183	0,349
Maximum-IMT, mm	0,757±0,193	0,988±0,348	0,006
Plaque number	1,1±1,9	3,2±2,6	0,0009
Plaque score, mm	1,57±3,1	5,14±4,97	0,001
Percent area stenosis, %	11,9±19,6	37,6±22,4	0,0004

#### P5.08

### INVESTIGATING THE DETERMINANTS OF IMPAIRED DIASTOLIC FILLING IN ELDERLY FEMALE HYPERTENSIVES

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**Background:** Impaired diastolic filling is an important problem among elderly female hypertensives (EFH) which can lead to overt heart failure. High afterload may impair rapid relaxation of the left ventricle (LV) which delays LV filling. Over time, remodelling (LV hypertrophy, altered repolarisation) may add to the problem. We studied the determinants of impaired filling in EFH.

**Methods:** 17 stable EFH without clinical heart failure (age [mean ± SD] 66 ± 10 years; blood pressure [BP] 158±16 / 85±9 mmHg) underwent wave intensity analysis (WIA; NA: negative area produced by returning wave reflections during systole; Aloka SSD-5500, Tokyo, Japan), ECG (QTc: QT-interval indexed for heart rate [Bazett's formula]; QRS-T angle: angle between QRS and T-wave axes in the frontal plane), and echocardiography (EDT: E-deceleration time, an index of LV filling; e': tissue Doppler early diastolic lengthening at mitral annulus, an index of LV relaxation [averaged septal and lateral]).

**Results:** Subjects with delayed EDT had larger NA ( $r = -0.62$ ,  $p = 0.01$ ), higher systolic BP ( $r = -0.51$ ,  $p = 0.038$ ), higher heart rate ( $r = 0.68$ ,  $p = 0.004$ ), impaired relaxation ( $e' : r = -0.50$ ,  $p = 0.049$ ), wider QRS-T angle ( $r = 0.59$ ,  $p = 0.021$ ) and longer QTc (0.53,  $p = 0.042$ ). Multivariable analysis showed that NA ( $\beta = -0.71$ ,  $p < 0.001$ ) and  $e'$  ( $\beta = -0.42$ ,  $p = 0.02$ ) predicted delayed EDT, but not systolic BP ( $p = 0.62$ ) nor heart rate ( $p = 0.82$ ).

**Conclusion:** After adjusting for intrinsic impairment of relaxation ( $e'$ ), NA remains a strong predictor of delayed diastolic filling in EHF. This underscores the importance of optimising systolic wave reflections in this group and suggests that WIA should be tried for monitoring of treatment effects.

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#### P6.01

### WALL-TO-LUMEN RATIO OF RETINAL ARTERIOLES IS RELATED TO ALTERATIONS OF AORTIC PULSE WAVE IN PATIENTS WITH A HISTORY OF A CEREBROVASCULAR EVENT

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**Objective:** Wall-to-lumen ratio of retinal arterioles represents a potential future parameter for vascular damage. We hypothesized that changes in wall-to-lumen ratio of retinal arterioles is associated with alterations of aortic pulse wave in patients with a history of a cerebrovascular event.

**Methods:** In this pilot study 14 patients (5 female and 9 male patients) with a mean age of 60.2±9.8 years, mean blood pressure levels of 132±14/