P3.5: TYPE 2 DIABETES EXACERBATES CAROTID ARTERY ECHOGENICITY AND CENTRAL ARTERY STIFFNESS IN MIDDLE-AGED AND OLDER INDIVIDUALS

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relative work (low-fitness) (154±22 vs. 133±15 mmHg, p<0.001). The high-fit- ness group had greater stroke volume, lower heart rate and LV longitudinal strain compared to the low-fitness group (72±18 vs. 59±15 ml, 61±9 vs. 68±10 bpm, p<0.05 for all). Exercise systolic BP was associated with LV mass index independent of resting BP, age and sex in the low-fitness group during stage one of the PWIC70 (β=0.13, 95% CI=0.01-0.3) but not in the high-fitness group at any stage.

Conclusions: Sub-maximal exercise systolic BP independently relates to LV mass index in those with low, early stage-relative aerobic capacity. BP measured during submaximal exercise testing (light-intensity) may reveal early changes in hypertension-related organ damage that are more evident in people with low-fitness.

P3.2

ROGOZA INDEX IN HEALTHY VOLUNTEERS AS A FUNCTION OF AGE
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Background: Recently, prof Anatoly N Rogoza proposed a new vascular index calculated from one-channel volume sphygmonography of brachial artery, Rogoza's Index or Rogoza Index. It may be useful as a new indicator of asymptomatic vascular damage associated with cardiovascular risk in patients with hypertension.

Objective: This study provides just an idea about the Rogoza Index in healthy volunteers as a function of age and sex.

Methods: The object of the study was the set of 120 bpw-flies (BPlab format) with oscillometric ambulatory (24-h) blood pressure readings in age-matched group of 60 male and 60 female healthy volunteers. Rogoza Index (ms/cm) was calculated as RWTT/L where RWTT is reflected wave transit time (ms) and L is height (cm).

Results: Averaged 24-h Rogoza Index was 1.1885–0.0063 Age (r=−0.30 for men and 0.9327–0.0025 Age (r=−0.27 for women; averaged daytime Rogoza Index was 1.2054–0.0067 Age (r=−0.32 and 0.90998–0.0022 Age (r=−0.22) and nighttime 1.1412–0.0049 Age (r=−0.24 and 1.0076–0.0033 Age (r=−0.31 accordingly. All correlations are significant, p<0.05.

There was also a significant difference between Rogoza Indices in male and female subgroups: for 24-h period Rogoza Index was of 0.88 vs 0.80 ms/cm (mean, p=0.002); for daytime of 0.79 vs 0.87 ms/cm (p=0.001); and for nighttime of 0.84 vs 0.90 ms/cm (p=0.002).

Conclusions: Rogoza Index is sex- and age- dependent like other surrogate markers of arterial stiffness.

P3.3

THE CKD273 URINARY PROTEOMIC BIOMARKER FOR EARLY DIAGNOSIS OF DIABETIC NEPHROPATHY DOES NOT INDICATE GENERALISED SUBCLINICAL VASCULAR DISEASE IN NORMOALBUMINURIC TYPE 2 DIABETIC PATIENTS
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Introduction: Patients with Marfan syndrome may suffer from a variety of symptoms, including changes of the cardiovascular system. The aim of this study was to perform ambulatory 24 h blood pressure and pulse wave measurements in a group of Marfan patients and a group of healthy controls and to analyse wave reflections.

Methods: All measurements were obtained with the Mobi-O-Graph device. Reflection magnitude (RM) was calculated with the inbuilt ARC Solver algorithms and averaged during daytime and nighttime. The study included 27 patients with Marfan syndrome and 27 healthy controls. Matching criteria were age (39 years mean in both groups), sex (14 female) and daytime brachial systolic blood pressure (119 mmHg mean in both groups). Patients with Marfan syndrome were significantly taller than controls (190 cm vs. 174 cm).

Results: Reflection magnitude increased significantly during night in both groups (Marfan: 57.8 day, 66.6 night; controls: 56.8 day, 68.7 night). Differences between groups were not significant both day and night. Correlations between RM and body height were positive in Marfan patients (R=0.36 day, R=0.33 night) but negative in controls (R=−0.47 day, R=−0.66 night), showing a significantly different trend (p<0.01).

Conclusions: There are similar levels and diurnal changes of reflection magnitude in patients with Marfan syndrome and healthy controls, but correlations of RM to body height are significantly different in Marfans and controls. This finding may relate to structural changes of the cardiovascular system associated with Marfan syndrome.

P3.5

TYPE 2 DIABETES EXACERBATES CAROTID ARTERY ECHOGENICITY AND CENTRAL ARTERY STIFFNESS IN MIDDLE-AGED AND OLDER INDIVIDUALS
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Grey scale median of the common carotid artery intima-media complex (IM- GMS) characterises the composition of the arterial wall and low IM-GMS reflects more generalized atherosclerosis vulnerability. However, it is unclear whether the presence of DM itself affects IM-GMS, similar to that observed with aortic stiffness. We measured IM-GMS and aortic stiffness in middle-aged and older individuals with and without DM. We included 264 individuals with DM (DM+: 67.0±8.9yrs, 83F) and 226 individuals without DM (DM−: 66.3±9.3yrs, 81F). Ultrasound images of the common carotid artery intima-media thickness (IMT) were obtained and IM-GMS was assessed using semi-automated edge-detection software. Aortic stiffness was assessed by carotid-femoral pulse wave velocity (cfPWV) using a SphygmoCor device. IM-GMS was significantly lower in DM+ than DM− (103.6±1.5au vs 113.4±1.6au, p<0.05) after adjustment for age and sex. Adjustments for cardiovascular disease (CVD), hypertension (HT), statin treatment and IMT did not change the finding. cfPWV was significantly higher in DM+ than DM− (10.2±1.0m/s vs 9.3±1.0m/s, p<0.05) after adjustment for age, sex and mean arterial pressure. Adjustments for CVD, HT, statin treatment and heart rate did not change the finding. With further adjustment for Hba1c, cfPWV became similar between the groups, but IM-GMS remained lower in DM+ than DM− (p<0.05). These results demonstrate that the presence of DM...
unfavourably alters both IM-GSM and cFPWV in middle-aged and older individuals, and that impaired glycaemic control (HbA1c) only accounts for the difference in cFPWV. These findings suggest the presence of an additional factor(s) together with glycaemic control that influence IM-GSM in DM.

**P3.6 EVALUATION OF DIFFERENT METHODS FOR DETERMINING THE TIME DELAY OF THE ARTERIAL PULSE WAVE: APPLICATION TO THE POPMETRE**

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**Objective:** Pulse Wave Velocity (PWV) can be measured between different sites. Here we used two different aspects to assess the PWV; the standard method Carotid-Femoral (CF) Sphygmocor (AtCorMedical – Australia) and the pPopmetry 3 (Axelife SAS – France) which uses the Finger to Toe (FT) signals. The aim of this study was to evaluate the agreement between FT-PWV and CF-PWV and to test the robustness of pPopmetry 3 build-in algorithm.

**Design and method:** CF and FT PWV was measured in 150 subjects. MatLab was used to calculate FT-PWV from pPopmetry 3 waveforms using four methods: maximum of second derivative (used by pPopmetry 3), intersecting tangents, 10% threshold and the cross correlation method.

**Results:** Using built in algorithms, the comparisons of the PWVs and transit times showed a good agreement between the two methods. FT-PWV correlated with CF-PWV (r² = 0.51, p < 0.001) and transit time (r² = 0.62, p < 0.001). The best correlation between FT and CF was observed with the maximum of the second derivative algorithm (PWV: r² = 0.56, p < 0.001), transit time (r² = 0.61, p < 0.001). Other algorithms showed weaker correlations: for PWV, intersecting tangents, r² = 0.37, 10% upstroke, r² = 0.35, cross-correlation, r² = 0.22.

**Conclusions:** This study showed that pPopmetry 3 is well correlated with reference methods and the wave foot detection algorithm used by pPopmetry 3 gave the best correlation comparing to other algorithms. The FT-PWV technique has correct agreement with the reference technique, however further studies are needed to validate FT-PWV method in larger populations.

**P3.7 ARTERIAL STIFFNESS IS ASSOCIATED WITH LOWER PERFORMANCE ON THE COGNITIVE TESTS AT DIFFERENT DOMAINS IN HYPERTENSIVE PATIENTS**

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**Background:** Cognitive impairment and elevated arterial stiffness are described in patients with arterial hypertension (AH), but its correlations are not well studied.

**Objectives:** To study the cognitive function at different domains and arterial properties in patients with AH stage 1 to 3 compared to normotensives and to evaluate the correlations between these variables.

**Methods:** We evaluated 162 subjects, 42 normotensives (44.7 ± 11.9 yrs, 69% male, 88% white) and 120 patients with stage 1-3 AH (51 ± 11.9 yrs, 66% male, 69% white) under treatment. The global cognitive function was assessed by Mini Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA). was done A validated comprehensive battery of neuropsychological tests assessed the following main cognitive area- tive Assessment (MoCA). was done A validated comprehensive battery of neuropsychological tests assessed the following main cognitive areas: memory, language, visuospatial and visuospatial properties in patients with different stages of AH. Arterial functional and structural properties were diversely associated with cognitive performance at different domains.

**Results:** Mean BP of the normotensive group (121.9 ± 7/76.1 ± 7 mmHg) was significantly lower than hypertensive patients (141.6 ± 23/87.2 ± 13 mmHg). Hypertensive group had worse performance in cognitive evaluation either by MoCA (27.2 ± 2 vs. 28.6 ± 1, p < 0.05) or MoCA test (23.8 ± 1 vs. 26.7 ± 2, p < 0.05). On the neurophysiological tests hypertension patients had worse performance mainly in visuospatial and visuospatial capacities and executive function. On the multivariate regression analysis, the following independent associations were observed: PWV-memory, executive function and attention parameters; IMT-memory and executive function; AxIA-axial neuro- psychological domains except memory.

**Conclusions:** Cognitive impairment at different domains was more frequent in patients with different stages of AH. Arterial functional and structural properties were diversely associated with cognitive performance at different domains.

**P3.8 ARTERIAL STIFFNESS AND LEFT ATRIAL VOLUME IN HYPERTENSIVE AND NORMOTENSIVE SUBJECTS**

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**Aim:** Investigation of relationship between arterial stiffness indices and LAVI in hypertensive and normotensive subjects.

**Materials and methods:** A total of 122 subjects recruited among Morawica town inhabitants. Study group (AH) consisted of 41 untreated hypertensives (20 men). Control group (NonAH) consisted of 60 normotensives (32 men). Anthropometric and demographic data were collected via questionnaire. Following examinations were performed: office blood pressure measurement (SBP, DBP) using Omron M5-I; arterial stiffness measurements i.e. carotid-femoral pulse velocity wave (PWV) and central blood pressure (cSBP, cDBP) using SphygmoCor device; echocardiographic left atrium volume determination (LAV) using VIVID-7 GE device followed by LAVI calculation (LAVI = LAV/body surface area).

**Results:** AH group was older (56.9 ± 6.9 vs 50.2 ± 7.9 yrs, p = 0.0002) exhibiting higher BMI (28.2 ± 9.0 vs 26.3 ± 5.9 kg/m², p = 0.03) and higher office SBP (149.5 ± 15.7 vs 138.6 ± 20.1 mmHg, p = 0.04) and DBP (91.1 ± 8.4 vs 85.7 ± 12.8, p = 0.02). PWV did not differ in investigated groups, while cSBP (136.3 ± 15.0 vs 126.8 ± 20.0 mmHg, p = 0.02) and cDBP (90.8 ± 7.0 vs 84.9 ± 12.3 mmHg, p = 0.01) were higher in AH group. LAVI was significantly higher in AH group than in NonAH group (27.8 ± 9.5 vs 24.3 ± 6.6 ml/m², p = 0.003). Among AH group LAVI correlated positively with only cSBP (r = 0.33, p = 0.04). Among NonAH group, LAVI correlated positively with age (r = 0.27, p = 0.03), BMI (r = 0.39, p = 0.02) and cSBP (r = 0.27, p = 0.35).

**Conclusions:** Hypertensive subjects represent higher values of LAVI. In this group LAVI mainly depends on central systolic blood pressure, while in the group of normotensives LAVI is additionally determined by age and body mass index.

**P3.9 PROGRESSION OF ARTERIAL STIFFNESS AND VASCULAR LESIONS ACCORDING TO THE DEGREE OF GLYCAEMIC ABNORMALITIES. A WARNING IN PATIENTS WITH METABOLIC SYNDROME**

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**Introduction:** Metabolic Syndrome (MS), is postulated as intermediate stage in the way to overt DVT, and probably the degree of vascular compromise in this stage could explain the higher proportion of CV complications in diabetics. If so, it should deserve an intensive prevention in MS to reduce DVT complications.

**Objective:** To compare the vascular patterns in MS and DVT patients (p.).

**Methods:** From our Vascular Lab database (2007–2012) we selected 3297 p. in primary prevention, first evaluated with data of central BP (Arihteriograph), IMT, plaques in carotid and femoral arteries (P), PWV (Complior) and forearm endothelial test. We compared 215 control (C) p. ( normal BP, NO risk factors, evident CV disease , ), 91 p. with MS according to IDF (2014) and 193 type 2 diabetic p. (DVT).

**Results:** DVT2 were older, less men and closer with MS p. in terms of BP, HR, PP, CAaP and AxIA. Vascular patterns were quite similar between MS and DVT2 and significantly different from C. MS and DVT2 showed a higher proportion of P,