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

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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 pOpmetre ® (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 pOpmetre ® build-in algorithm.

Design and method: CF and FT PWV was measured in 150 subjects. MatLab was used to calculate FT-PWV from pOpmetre ® waveforms using four methods: maximum of second derivative (used by pOpmetre ®), 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 ($r^2=0.51$; $p<0.001$) and transit time ($r^2=0.62$; $p<0.001$). The best correlation between FT and CF was observed with the maximum of the second derivative algorithm (PWV: $r^2=0.56$; $p<0.001$), transit time ($r^2=0.61$; $p<0.001$). Other algorithms showed weaker correlations: for PWV, intersecting tangents, $r^2=0.37$, 10% upstroke, $r^2=0.35$, cross-correlation, $r^2=0.22$.

Conclusions: This study showed that pOpmetre ® is well correlated with reference methods and the wave foot detection algorithm used by popmetre ® 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. Compared to CF-PWV, FT-PWV is faster, simpler to perform and more acceptable to patients.

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±11yrs,69% male,88%white) and 120 patients with stage 1-3 AH (51±11yrs,46% 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 areas:memory, language, visuoperceptual and visuospatial, praxia, gnosia, executive function, attention, judgment. Pulse wave velocity(PWV) was measured by Complior device. Carotid properties were assessed by radiofrequency ultrasound(WTS®). Central arterial pressure and augmentation index(AIx) were obtained using applanation tonometry(Sphygmocor®).

Results: Mean BP of the normotensive group (121.9±7/76.1±7 mmHg) was significantly lower than hypertensive patients (141.4±23/87.2±13 mmHg). Hypertensive group had worse performance in cognitive evaluation either by MMSE (27±2 vs. 28.6±1, $p<0.05$) or MoCA test (23.8±3 vs. 26.7±2, $p<0.05$). On the neuropsychological tests hypertensive patients had worse performance mainly in visuoperceptual 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; AIx-all neuropsychological 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.

Material and methods: Patients were 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 wave velocity (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/m^2, 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/m^2, p=0,003). Among AH group LAVI correlated positively only with 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 depends mainly 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 GLYCEMIC 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 DBT, 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 DBT complications.

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

Methods: From our Vascular Lab database (2007−2012) we selected 3297 p. in primary prevention, first evaluated with data of central BP (Arteriograph), 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 or drugs), 91 p. with MS according to IDF (2014) and 193 type 2 diabetic p. (DBT2).

Results: DBT2 were older, less men and closer with MS p. in terms of BP, HR, PP, CAoP and AIX. Vascular patterns were quite similar between MS and DBT2 and significantly different from C. MS and DBT2 showed a higher proportion of P,