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PP.19.113 INFLUENCE OF ATRIAL FIBRILLATION ON PULSE WAVE VELOCITY IN PATIENTS WITH ARTERIAL HYPERTENSION

M. Deshko[1], V. Snezhitskiy[1], T. Dolgoshey[2], T. Stempen[2], G. Madekina[2], A. Naumov[1]. *[1]Grodno State Medical University, Grodno, Belarus, [2]Grodno Regional Cardiologic Dispensary, Grodno, Belarus*

Background: Increase of pulse wave velocity (PWV) represents arterial stiffening and it is considered as predictor of adverse cardiovascular events. Atrial fibrillation (AF) has negative impact on hemodynamics and endothelial function and may affect PWV.

Objective: The aim of research was to assess effect of AF on PWV in patients with arterial hypertension (AH).

Design and Method: 54 Patients with AH were enrolled (16 patients – 1st degree, 31 patients – 2nd degree, 7 patients – 3rd degree). 32 patients (aged 51 (44–56) years, 56.3% males) developed AF: 7 – paroxysmal, 8 – persistent, 17 – permanent. 22 patients without AF were used as control subjects (aged 48 (40–52) years, 63.6% males). Patients with advanced heart failure, valvular heart disease, diabetes mellitus, obesity, coronary heart disease, cardiomyopathy, hyperthyroidism, alcohol abuse were excluded. Carotid-femoral PWV was measured under comparable blood pressure (BP) and heart rate (HR) level in both groups: 24-h mean BP was 94 (91–109) and 94 (88–98) mmHg as well as HR was 71 (63–85) and 70 (64–76) bpm in patients with and without AF respectively. Recordings with the most regular rhythm were used, 15 beats were averaged.

Results and Conclusion: PWV in patients with AF was significantly higher: 10.4 (9.3–12.0) vs. 9.5 (8.3–9.8) in only AH group ($p = 0.0009$). PWV was associated with age ($\beta = 0.25$, $p = 0.04$), blood oxygenation ($\beta = -0.30$, $p = 0.04$), left ventricle (LV) posterior wall ($\beta = 0.30$, $p = 0.03$), LV end-diastolic diameter ($\beta = 0.30$, $p = 0.04$) and volume ($\beta = 0.32$, $p = 0.02$), creatinine level ($\beta = 0.40$, $p = 0.005$), mean BP ($\beta = 0.31$, $p = 0.03$), diastolic BP ($\beta = 0.39$, $p = 0.007$), 24-h mean HR ($\beta = 0.34$, $p = 0.01$), AF ($\beta = 0.46$, $p = 0.0006$). However AF ($\beta = 0.42$, $p = 0.004$), diastolic BP ($\beta = 0.38$, $p = 0.009$) and 24-h mean HR ($\beta = 0.30$, $p = 0.02$) were independently associated with PWV elevation during multiple stepwise regression. Thus, AF development in patients with AH results in increased PWV independently of BP and HR level.

PP.19.114 CENTRAL VERSUS PERIPHERAL BLOOD PRESSURE IN MALIGNANT HYPERTENSION: EFFECTS OF ANTIHYPERTENSIVE TREATMENT

B. Van Den Bogaard[1], R.V. Immink[1], B.E. Westerhof[2], G.A. Van Montfrans[1], J.J. Van Lieshout[1], B.J.H. Van Den Born[1]. *[1]Academic Medical Center, Amsterdam, The Netherlands, [2]BMEYE BV, Amsterdam, The Netherlands*

Objective: Sodium nitroprusside and labetalol are recommended for the immediate treatment of malignant hypertension. Both intravenous agents have different effects on systemic hemodynamics and they might have differential effects on pulse wave reflection and pulse pressure amplification with consequences for peripheral vs. central blood pressures.

Design and Methods: We studied 8 patients treated with sodium nitroprusside (44 ± 14 years, 6 males, $225 \pm 22/135 \pm 8$ mmHg) and 6 patients with intravenous labetalol (39 ± 15 years, 4 males, $232 \pm 22/138 \pm 17$ mmHg) before and after treatment, aiming at a 25% reduction in mean arterial pressure. We measured peripheral pressures using an intra-arterial catheter in the radial artery and derived central pressures by a generalized transfer filter.

Results: Mean arterial pressure was similarly reduced with sodium nitroprusside and labetalol (27 and 30%, $p = 0.76$). There was a nonsignificant greater reduction in peripheral systolic blood pressure with labetalol compared to sodium nitroprusside ($29 \pm 11\%$ vs. $18 \pm 7\%$, $p = 0.08$). The decline in peripheral diastolic pressure was comparable, whereas the reduction in peripheral pulse pressure was $8 \pm 16\%$ with sodium nitroprusside and $33 \pm 17\%$ with labetalol ($p = 0.01$). The decline in reflection magnitude was larger with sodium nitroprusside than labetalol treatment. There were no significant differences in central blood pressure reduction. Pulse pressure amplification increased with sodium nitroprusside, but did not change with labetalol.

Conclusion: We found no difference in central systolic and pulse pressure between sodium nitroprusside and labetalol, whereas labetalol gave a greater reduction in peripheral systolic and pulse pressure during the immediate treatment of malignant hypertension.

PP.19.115 COGNITIVE FUNCTION IN PATIENTS WITH ARTERIAL HYPERTENSION AND CONCOMITANT ATRIAL FIBRILLATION

V.Z. Netiazhenko, V.V. Taranchuk, N.V. Netiazhenko. *NMU named after O.O. Bogomolets, Kiev, Ukraine*

Purpose: Patients with arterial hypertension have decreased cognitive function. Concomitant atrial fibrillation may deteriorate cerebral perfusion in these patients. But the effect of addition influence of atrial fibrillation on cognitive function and its components remains indefinite.

Objective: To evaluate severity of cognitive dysfunction and compare frequency of mild cognitive impairment (MCI) in patients with arterial hypertension and concomitant atrial fibrillation.

Methods: We studied 125 persons with arterial hypertension and concomitant atrial fibrillation. Main outcome measure we administered to all participants a history of memory complaints by interview, ECG, echocardiography, Mini-Mental State Examination, Frontal Assessment Battery, Clinical dementia rating, Clock Drawing Test, Shults table, Beck Depression Inventory.

Results: We compared 70 subjects with arterial hypertension (group 1) and 55 subjects with concomitant atrial fibrillation (group 2). Average age, main structural-functional rates of myocardium and education level were not different between groups. Patients in both groups take the same groups of antihypertensive treatment. The frequency of MCI was significantly higher in group of patients with concomitant atrial fibrillation – 7 patients in group 1 (10%) and 7 patients in group 2 (12.7%). Thereby, atrial fibrillation is associated with higher rate of incidents of MCI (OR, 1.76; 95%CI, 1.16–2.68). Main impaired domains were memory (by Mini-Mental State Examination and Frontal Assessment Battery) and reaction rate (by Shults table).

Conclusion: These findings suggest an association of atrial fibrillation with higher level of incidents of mild cognitive impairment in patient with arterial hypertension. Main changes were founded in memory and reaction rate domains of cognitive function.

PP.19.116 OBESITY, BLOOD PRESSURE AND ARTERIAL STIFFNESS INDICES IN 12 YEAR CHILDREN

C. Lydakis[1], E. Stefanaki[1], I. Koumpa[1], S. Stefanaki[1], E. Thalassinos[1], D. Lydaki[2], A. Tsilimigaki[1]. *[1]Venizelion General Hospital, Heraklion, Greece, [2]Medical School Athens, Athens, Greece*

Introduction: Although increased arterial stiffness in adults is a recognized cardiovascular risk factor, there is less convincing documentation in children.

Aim: The aim of this study was to assess the hypothesis that obesity and blood pressure are related to indices of arterial stiffness (AS) in childhood.

Methods: Two hundred and seventy seven children aged 12.8 years from three schools were measured with the R6.5 monitor (Pulsecore@) which performs suprasystolic measurements. The augmentation index (AI) in the brachial artery, the peripheral to central pulse pressure (PPP/CPP) ratio and the reflected wave transit time to height ratio (RWTT/Height) were analyzed.

Results: Forty three percent of the children in our cohort were overweight and obese, which is one of the highest ever reported prevalence of obesity. Girls had higher AI values than boys ($27.8 \pm 11.0\%$ vs. $25.1 \pm 11.9\%$, $p = 0.052$) and higher RWTT/Height (1.122 ± 0.071 s/cm vs. 1.098 ± 0.076 s/cm, $p < 0.001$)., Overweight and obese children with waist circumference >90th percentile had significantly lower PPP/CPP and RWTT/Height in comparison to children with normal BMI and waist circumference values. In multivariate regression models, indices of AS were related to mean peripheral blood pressure, heart rate and height, while BMI had an independent relation to PPP/CPP.

Conclusion: Obesity and blood pressure are related to indices of increased AS (especially PPP/CPP) even from the early age of childhood.

PP.19.117 SPIROERGOMETRIC CHANGES IN YOUNG PEOPLE WITH ESSENTIAL HYPERTENSION

V. Podzolkov, I. Loriya, V. Matveev. *First MSMU, Moscow, Russia*

Purpose: To study spiroergometric data changes in young people with essential hypertension.

Methods: 32 Young people with I stage essential hypertension were studied (mean age 21.1 ± 4.1 years). 26 normotensive volunteers (mean age 20.2 ± 3.7 years)