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P4.16: THE MYOTROPHOBLAST OF THE RAT PLACENTA: EX VIVO STUDY OF NITRIC OXIDE SYNTHASE INHIBITION

Ilana Ariel, Galina Skarzinski, Vitali Belzer, Wiessam Abu-Ahmad, Zaid Abassi,
Michael Bursztyn*

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P4.15 BLOOD PRESSURE, BODY MASS INDEX AND ARTERIAL ELASTIC PROPERTIES IN YOUNG PEOPLE

Vasyl Yagensky
National Medical O.O. Bogomolets University, Kyiv, Ukraine

Pulse wave velocity (PWV) is widely used for arterial stiffness assessment. Increased arterial stiffness is a predictor of cardiovascular risk in adults. There are limited data on PWV and its determinants in young people. Study was performed to compare PWV and its association with blood pressure (BP) and body mass index (BMI) in healthy high school and university students.

Methods: First group – 42 high school students (22 males) 14-15 years ($14,8 \pm 0,3$ years), the second group – 38 university students (18 males) aged 17-21 years ($18,8 \pm 1,1$ years). To study velocities in elastic (Ve) and muscular (Vm) arteries sphygmomanometry was performed on carotid, femoral and radial arteries. **Results:** Older students had higher BMI $22,2 \pm 2,8$ vs $20,06 \pm 2,05$ kg/m²; $p=0,002$) and trend to higher systolic BP ($126,2 \pm 16,6$ vs $119,6 \pm 10,2$ mm Hg; $p=0,07$) No difference between groups in Vm was found ($7,28 \pm 1,18$ m/s in 1st group; $7,09 \pm 1,14$ m/s in 2nd). Ve was higher in older group ($6,24 \pm 1,06$ vs $5,57 \pm 0,67$ m/s in younger group; $p=0,001$). No gender difference was found in Ve or Vm in either group. Correlation analysis performed in both groups revealed that Ve significantly correlated with age ($r=0,26$), BMI ($r=0,34$), systolic ($r=0,29$), diastolic ($r=0,30$) and mean BP ($r=0,33$). Vm correlated only with height ($r=0,28$). Pulse BP did not correlate with Ve no Vm. Multiple regression found only BMI as independent factor associated with Ve ($\beta=0,27$; $p=0,04$).

Conclusions: Elastic arteries stiffness increased with age in young people with no gender difference. It depends on BP and BMI. The main determinant of Ve is BMI.

P4.16 THE MYOTROPHBLAST OF THE RAT PLACENTA: EX VIVO STUDY OF NITRIC OXIDE SYNTHASE INHIBITION

Ilana Ariel¹, Galina Skarzinski¹, Vitali Belzer¹, Wiessam Abu-Ahmad¹, Zaid Abassi², Michael Bursztyn^{1,*}
¹Hadassah-Hebrew University Medical Center, Mount-Scopus, Jerusalem, Israel
²Rappaport Faculty of Medicine, Technion, Haifa, Israel

Introduction: Endovascular trophoblasts (EvasT) of the rat express smooth muscle (SM) proteins and contract ex vivo upon exposure to endothelin-1 (ET1). Contraction is mediated via ET1 receptors A and B (ETA, ETB). In vascular SM ETB, in variance from ETA, exerts relaxation through activation of nitric oxide synthase (NOS). We investigated the role of NOS expressed by EvasT in reaction to ET1 exposure.

M&M: Cut surface area of remodeled spiral artery rings devoid of SM was measured ex vivo exposed to (a) L-NAME alone, (b) L-NAME and ET1 representing the combined contractile effect of both receptors, and (c) L-NAME with ET1 and ETA antagonist, representing the isolated contractile effect mediated by ETB. These curves were compared with ET1-induced contraction in the presence of receptor antagonists without L-NAME. Statistical analysis was performed 2-way mixed ANOVA.

Results: L-NAME alone reduced lumen cut surface area by $2.2 \pm 0.3\%$ ($p=0.002$). ET1+L-NAME, representing the sum of constrictive effect via ETA and ETB reduced vascular lumen area immediately, compared with a plateau at 60min by addition of ET1 alone, $p=0.004$. ET1 + ETA inhibitor + L-NAME, representing the isolated constrictive effect of ETB ($5.9 \pm 0.6\%$), demonstrated similar vasoconstriction via ETA ($5.3 \pm 0.5\%$) ($p=0.018$).

Conclusions: EvasT of the rat remodeled spiral artery react to ET1 exposure similar to vascular SM of non-modified arteries: contract via ETA and ETB and relax via ETB through NOS activation. This phenomenon may play a role in situations of dysregulation of the vasoactive systems in rat models of pre-eclampsia and IUGR.

P4.17 ARTERIAL STIFFNESS IN YOUNG PATIENTS WITH PERIPHERAL ARTERIAL DISEASE

Mariella Catalano^{1,*}, Giovanni Scandale¹, Gabriel Dimitrov¹, Marzio Minola¹, Martino Recchia³, Francesca Galli², Gianni Carzaniga¹, Maria Carotta¹
¹Research Center on Vascular Diseases and Angiology Unit, University of Milan, Milan, Italy

²Laboratory of Clinical Research, Department of Oncology, IRCCS—Istituto di Ricerche Farmacologiche Mario Negri, Milan, Italy

³Medistat s.a.s, Milan, Italy

Increased arterial stiffness occurs in older patients with peripheral arterial disease (PAD). In this study we compared arterial stiffness and central hemodynamic parameters in young (< 60 years of age) PAD patients and controls. In 31 PAD patients with an ankle-brachial index ($ABI \leq 0.9$) and 42 controls, aortic Pulse wave velocity (aPWV), Augmentation index corrected for heart rate (Alx@75HR), aortic Pulse Pressure (aPP), Pulse Pressure Amplification (PPA), were measured using the SphygmoCor device. In young PAD patients aPWV and Alx@75HR were similar ($p=0.10$) ($p=0.58$) With respect to controls but aortic PP was higher ($p=0.02$) and the PP amplification ratio was lower ($p=0.005$). PAD in young subjects is associated with central hemodynamic alterations but not with degenerative stiffness of the large arteries.

P4.18 THE ASSUMPTION THAT BLOOD PRESSURE DECREASES OVER CONSECUTIVE MEASUREMENTS IS FALSE: MAJOR IMPLICATIONS FOR HYPERTENSION DIAGNOSIS AND GUIDELINES

Panagiota Veloudi^{1,*}, Leigh Blizzard¹, Velandai Srikanth^{1,2}, Martin Schultz¹, James E. Sharman¹
¹Menzies Institute for Medical Research, University of Tasmania, Hobart, Tasmania, Australia
²Dept. of Medicine, School of Clinical Sciences at Monash Health, Monash University, Melbourne, Victoria, Australia

Background: There is anecdotal belief that clinic blood pressure (BP) drops over consecutive measurements. This has led to guideline recommendations to discard the first BP reading, or take only one reading if systolic BP (SBP) <140 mmHg. However, the magnitude and direction of change in SBP over consecutive measurements is not clear, and the effect of age and BP level on this change in SBP is unknown. We investigated these issues, and their effect on hypertension diagnosis.

Methods: Duplicate BP (or triplicate if large BP differences) was recorded by oscillometry among 20,752 participants (aged 45[95CI; 45,46] years; males 50%) from the 2011-13 Australian Health Survey. SBP change was defined as the difference between measurements.

Results: SBP decreased between the first two measures in only 56%, whereas it increased in 37% and did not change in 7% of the population. There was a strong, age-dependent, J-curved relationship between SBP change and SBP level ($p<0.001$), with the smallest SBP change corresponding to controlled SBP (100 – 140 mmHg). The age-dependent SBP changes resulted in significant diagnostic reclassification compared with the approach of discarding the first reading; 63% and 35% reclassified from hypertension to normal BP, and 4% and 13% reclassified from normal to hypertension among those aged <50 years and ≥ 50 years respectively.

Conclusions: The assumption that SBP drops over consecutive measurements is false, and significant age- and BP-dependent reclassification of hypertension diagnosis will result if the first SBP is discarded. These findings highlight the need for change to some international hypertension guidelines.

P4.19 CARDIOVASCULAR RISK FACTORS AND LEFT VENTRICULAR HYPERTROPHY IN CHILDREN WITH CHRONIC KIDNEY DISEASE

Dorota Drozd^{1,*}, Przemko Kwinta², Zbigniew Kordon³, Katarzyna Zachwieja¹, Monika Miklaszewska¹, Krystyna Sztefko⁴, Andrzej Rudzinski³, Jacek Antoni Pietrzyk¹
¹Dialysis Unit, Jagiellonian University Medical College, Krakow, Poland
²Dpt. of Pediatrics, Jagiellonian University Medical College, Krakow, Poland
³Dpt. of Pediatric Cardiology, Jagiellonian University Medical College, Krakow, Poland
⁴Dpt. of Clin. Biochemistry, Jagiellonian University Medical College, Krakow, Poland

Cardiovascular diseases are substantial causes of mortality among patients with chronic kidney disease (CKD). The aim of the study was an assessment of the impact of cardiovascular risk factors on left ventricular hypertrophy (LVH) in children with CKD.

Material and methods: The study was conducted in a group of 71 children with mean age 11 years and CKD stage 1 to 5. Serum cystatin C, albumin