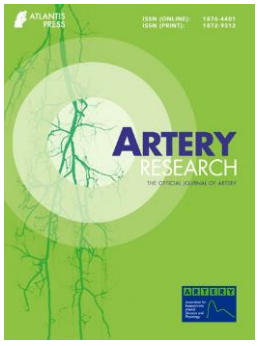

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P117: ARTERIAL STIFFNESS, CAROTID REMODELING AND OTHER RISK FACTORS DETERMINING CORONARY ARTERY DISEASE IN HYPERTENSIVE PATIENTS

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Results: Black men and women had higher blood pressure ($p < 0.001$), higher IL-6 ($p \leq 0.016$), shorter telomeres ($p < 0.001$) but similar NOx levels when compared to their white counterparts. GPx activity was higher and L-citrulline lower in black compared to white groups ($p \leq 0.002$). Independent positive associations of telomere length with NOx (adj $R^2=0.21;\beta=0.249;p=0.03$) and GPx activity (adj $R^2=0.21;\beta=0.229;p=0.03$) were indicated in white men and TNF-α (adj $R^2=0.33;-\beta=0.274;p=0.01$) in white women. These associations were absent in the black groups.
Conclusion: Telomere length of black men and women was shorter but not associated with NOx and age or markers of oxidative stress and inflammation, as observed in the white groups. Therefor it seems that the less favourable cardiovascular and inflammatory profiles of blacks were unrelated to shorter telomere lengths. The lower L-citrulline levels indicate decreased NO synthesis that may affect the association between telomere length and NOx.

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CARDIAC OUTPUT IS INCREASED IN YOUNG PEOPLE WITH ELEVATED BP

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Background: The relationship between Blood Pressure (BP) and cardiovascular risk is continuous. Here, we examined haemodynamic characteristics across a range of BP categories, to determine kihaemodynamic mechanisms associated with early elevations of BP and whether these differ by gender.
Methods: 2618 apparently healthy subjects aged 18–40 years were grouped according to gender and BP category, following the recent reclassification of BP as part of AHA/ACC 2017 guidelines. All individuals undertook a lifestyle and medical history questionnaire, together with detailed metabolic and haemodynamic assessments.
Results: Hypertension (HT), stage 1 was the most common BP phenotype in males (29%), whereas normal BP was the most common BP phenotype in females (68%). In both males and females, cardiac output (CO) was significantly increased in subjects with elevated BP and HT versus normotensives ($P < 0.001$ for all). Stroke volume (SV) was increased in hypertensive males compared with those with elevated or normal BP. In contrast, peripheral vascular resistance (PVR) and pulse wave velocity (PWV) were significantly increased in hypertensive females ($P < 0.001$ for all) compared with the other BP categories.
Conclusion: In young adults, increased CO is evident at the elevated BP stage and this could represent an initiating mechanism involved in the onset of HT. SV, PVR and PWV might play different roles in females and males in the development of later sustained HT. Elevated CO may be an important risk stratifier for future HT in young people.

Poster Session II – Hypertension VI

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ARTERIAL STIFFNESS, CAROTID REMODELING AND OTHER RISK FACTORS DETERMINING CORONARY ARTERY DISEASE IN HYPERTENSIVE PATIENTS

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Increased arterial stiffness and carotid artery Intima-Media Thickness (IMT) are associated with atherosclerosis and Coronary Artery Disease (CAD), but their correlation with the anatomic extent of atherosclerosis in hypertensive patients is not completely known. We aim to evaluate whether Pulse Wave Velocity (PWV), carotid IMT and Vascular Aging Index (VAI) predict CAD in hypertensives. We enrolled 76 consecutive patients (36 males; mean age 58.2 years) with arterial hypertension who were undergoing elective coronary angiography for the diagnosis or exclusion of CAD. Carotid-femoral pulse wave velocity (PWV), vascular aging index (VAI) calculated from the second derivative of photopletismography, and carotid IMT and diameter (CD) measured by high definition echotracking device were done in all subjects. Correlations between hemodynamic data, traditional cardiovascular risk factors and the presence or absence of CAD were analyzed. CAD (stenosis $\geqq$ 50% in at least one coronary) was observed in 52 patients.
Results: Concerning clinical, demographic and laboratory parameters there were no significant differences between patients with and without CAD. PWV in patients with CAD were significantly higher (10.7 vs. 11.87 m/s)($p = 0{,}01$), but the correlation disappeared after adjustment for age. Carotid IMT and CD were similar in patients with and without CAD. Logistic regression analysis showed that patients older than 60 years, with PWV $>$ 12 m/s, CD $>$ 7.67 mm, VAI > -0.05, and cholesterol levels $>$ 200 mg/dl had a significantly higher percentage of CAD than its counterparts. In conclusion, the presence of CAD enhances age-induced changes of arterial stiffness in hypertensive patients. Besides classical cardiovascular risk factors, significant changes in PWV and CD could identify CAD in high risk hypertensive patients.

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CXCL13 AS A NOVEL POTENTIAL BIOMARKER OF ESSENTIAL HYPERTENSION

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Background: Arterial hypertension is the main modifiable risk factor of cardiovascular disease. Inflammation and endothelial dysfunction contribute to arterial wall remodeling and blood pressure elevation, leading to the development of age-associated changes of cardiovascular system that limit the lifespan.
Objectives: Our aim was to explore the role of inflammatory mediators in blood pressure regulation, and to identify potential biomarkers of essential hypertension (EH) in the study group including individuals with enhanced survival (beyond 80 years).
Methods: We performed gene expression analysis in peripheral blood leukocytes of EH patients and healthy individuals using RT^2 Profiler PCR Array (Qiagen) in the group of 30 EH patients and 32 control subjects aged between 30 and 60 years, and 12 individuals aged between 82 and 113 years (6 EH patients, 6 normotensive controls). Next, we performed genotyping of polymorphic markers located in differentially expressed genes, and analysed associations with EH in the study group consisting of 1724 individuals aged between 30 and 108 years.
Results: In the group of middle-aged hypertensive patients, we found altered transcriptional activity of 21 gene. Relative expression level changes in EH patients were more pronounced for CXCL13 (13.8-fold), IL1F6 (12.9-fold), CD40LG (8-fold), CXCL1 (7.2-fold). In the elderly hypertensive individuals compared to healthy controls, transcriptional activity of NFKB1 and IL18R1 genes was increased (FC, fold change, 3.21 and 2.41, respectively, $P<0.05$). The association analysis demonstrated the association between EH and CXCL13 rs355689*C allele (OR = 0.61, $P_{Bonf} = 5*10^{-4}$).
Conclusions: Our results suggest that CXCL13 might contribute to the development of hypertension.

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LDL CHOLESTEROL IS ASSOCIATED WITH SYSTEMIC VASCULAR RESISTANCE AND WAVE REFLECTION IN SUBJECTS NOT USING MEDICATIONS WITH HAEMODYNAMIC INFLUENCES

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