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P1.26: THE INFLUENCE OF ENDOTHELIAL NITRIC OXIDE SYNTHASE POLYMORPHISMS AND CURRENT SMOKING ON LARGE ARTERY STIFFNESS

J. Filipovsky, O Mayer, M. Pesta, R. Cifkova

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adjustments, excepted on BP, HR for all-cause mortality risk associated with PWV was 1.12 (1.03-1.22), but after adjustment on all variables, relationship was no longer significant: HR=1.08 (0.98-1.18). Before 60 years, after adjustments, PWV-related risk was 1.09 (0.95-1.24), (NS), but it reached 1.22 (1.08-1.38), $p<0.02$, in patients >60 years.

Conclusion: In a low to moderate risk population, aortic PWV was significantly and independently associated with all-cause mortality only among subjects after 60 years. In such population, the direct impact of BP on aortic stiffness overcomes the intrinsic stiffness alterations which are linked to all-cause mortality, at least in young, low risk, subjects.

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P1.25

ARTERIAL PROPERTIES IN RELATION TO GENETIC VARIATIONS IN THE ADDUCIN SUBUNITS IN A WHITE POPULATION

J. Seidlerova², J.A. Staessen¹, M. Bochud⁴, T. Nawrot¹, N. Casamassima⁵, L. Citterio⁵, T. Kuznetsova¹, Y. Jin¹, P. Manunta⁵, T. Richart³, H.A. Struijker-Boudier⁶, R. Fagard¹, J. Filipovsky², G. Bianchi⁵.

¹ The Studies Coordinating Centre, Division of Hypertension and Cardiovascular Rehabilitation, Department of Cardiovascular Diseases, University of Leuven, Leuven, Belgium

² the Faculty of Medicine in Pilsen, Charles University, Pilsen, Czech Republic

³ Genetic Epidemiology Unit, Department of Epidemiology, Maastricht University, Maastricht, Netherlands

⁴ Institute of Social and Preventive Medicine, Centre Hospitalier Universitaire Vaudois and University of Lausanne, Lausanne, Switzerland

⁵ Divisione di Nefrologia Dialisi e Ipertensione, Ospedale San Raffaele, Dipartimento di Scienze e Tecnologia Biomediche, Università Vita Salute, Milan, Italy

⁶ the Department of Pharmacology and Toxicology, Cardiovascular Research Institute, University of Maastricht, Maastricht, Netherlands

Background: Adducin is a membrane skeleton protein, which consists either of α - and β - or α - and γ -subunits. We investigated whether arterial characteristics might be related to the genes encoding *ADD1* (*Gly460Trp*), *ADD2* (*C1797T*) and *ADD3* (*A386G*).

Methods: We randomly recruited 1126 Flemish subjects (mean age, 43.8 years; 50.3% women). Using a wall-tracking ultrasound system, we measured the properties of the carotid, femoral and brachial arteries. We studied multivariate-adjusted phenotype-genotype associations, using a population- and family-based approach.

Results: In single-gene analyses, brachial diameter was 0.15 mm ($P=0.0022$) larger, and brachial distensibility and cross-sectional compliance were 1.55×10^{-3} /kPa ($P=0.013$) and $0.017 \text{ mm}^2/\text{kPa}$ ($P=0.0029$) lower in *ADD3 GG* than *ADD3 AA* homozygotes with an additive effect of the *G* allele. In multiple-gene analyses, the association of brachial diameter and distensibility with the *ADD3 G* allele only occurred in *ADD1 GlyGly* homozygotes. Otherwise, the associations between the arterial phenotypes in the 3 vascular beds and the *ADD1* or *ADD2* polymorphisms were not significant. In family-based analyses, the multivariate-adjusted heritability was 0.52, 0.38 and 0.30 for brachial diameter, distensibility, and cross-sectional compliance, respectively ($P<0.001$). There was no evidence for population stratification ($0.07 \leq P \leq 0.96$). Transmission of the mutated *ADD3 G* allele was associated with smaller brachial diameter in 342 informative offspring ($-0.12 \pm 0.04 \text{ mm}$; $P=0.0085$) and in 209 offspring, who were *ADD1 GlyGly* homozygotes ($-0.14 \pm 0.06 \text{ mm}$; $P=0.018$).

Conclusions: In *ADD1 GlyGly* homozygotes, the properties of the brachial artery are related to the *ADD3* (*A386G*) polymorphism, but the underlying mechanism needs further clarification.

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P1.26

THE INFLUENCE OF ENDOTHELIAL NITRIC OXIDE SYNTHASE POLYMORPHISMS AND CURRENT SMOKING ON LARGE ARTERY STIFFNESS

J. Filipovsky¹, Mayer Jr. O¹, M. Pesta¹, R. Cifkova².

¹ Charles University Medical Faculty, Pilsen, Czech Republic

² Institute of Clinical and Experimental Medicine, Prague, Czech Republic

Background: Nitric oxide belongs to the most important factors influencing structural and functional properties of vessel wall. Both genetic and environmental factors may influence its metabolism. The aim of this study was to explore whether two common polymorphisms of endothelial nitric

synthase (eNOS) may, jointly with smoking, influence the stiffness of large arteries, quantified by pulse wave velocity (PWV).

Methods: One hundred ninety four subjects free of manifest atherosclerosis or chronic cardiovascular pharmacotherapy were selected from population-based post-MONICA study. PWVs were measured using Sphygmocor® device between carotid and femoral arteries (aortic PWV) and between femoral and tibialis-posterior arteries (peripheral PWV). Two common eNOS polymorphisms, T786C and G894T, were assessed.

Results: Among current smokers ($n=70$), homo- or heterozygous carriers of T786C mutation ($n=42$) showed significantly higher peripheral PWV than normal genotype carriers (14.0 vs 10.7 m/sec , $p<0.002$); the same applied to the carriers of G894T mutation ($n=41$; 13.9 vs 11.0 m/sec , $p<0.015$). No differences were found in non-smokers, and neither of the eNOS polymorphisms influenced aortic PWV in our setting.

Conclusion: Genetically determined disorder of nitric oxide metabolism was associated with increased stiffness of peripheral muscular-type arteries in generally healthy, untreated subjects, but only in interaction with active smoking.

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P1.27

INTERRELATIONSHIPS OF MONOCYTE COUNT WITH CAROTID INTIMA-MEDIA THICKNESS, AORTIC STIFFNESS AND PENILE DOPPLER FINDINGS, IN PATIENTS WITH VASCULOGENIC ERECTILE DYSFUNCTION

D. Terentes-Printzios, C. Vlachopoulos, N. Ioakeimidis, N. Alexopoulos, A. Bratsas, I. Dima, K. Rokkas, C. Stefanadis.

1st Department of Cardiology, Athens Medical School, Athens, Greece

Background: Erectile dysfunction (ED) has been associated with both systemic inflammation and generalized vascular disease. Monocyte count (MNC) represents a sensitive marker of inflammatory activity in atherosclerosis. We examined the possible associations between MNC, penile vascular damage and early atherosclerosis.

Methods: 145 consecutive ED patients were divided into three groups according to pharmacologically stimulated peak systolic velocity (PSV) values of cavernous arteries: Group A (venous occlusive disease), group B (mild arterial insufficiency) and group C (severe arterial insufficiency, $PSV<25 \text{ cm/s}$). PSV shows the greatest flow velocity detectable in an artery throughout the systole. Ultrasound-determined intima media thickness (IMT) of carotid arteries and carotid-femoral pulse wave velocity (PWV) as an index of aortic stiffness were used to assess subclinical atherosclerosis.

Results: Patients with severe arterial insufficiency ($n=44$) compared to subjects in group B ($n=41$) and A ($n=60$) had increased IMT (0.96 vs 0.93 vs 0.87 mm , $P<0.05$) and PWV (9.3 vs 8.9 vs 8.5 m/s , $P<0.05$). They also exhibited higher MNC, compared to those of groups A and B (0.47 vs 0.44 vs $0.39 \times 10^9/\text{L}$, $P<0.05$), whereas there were no significant differences between the 3 groups as regards white cell counts. Furthermore, MNC remained significantly different between groups after adjustment for CRP, fibrinogen and risk factors, ($P<0.05$). MNC correlated with IMT ($r=0.23$, $P<0.05$), PWV ($r=0.27$, $P<0.01$) and PSV ($r=-0.26$, $P<0.01$).

Conclusions: Our study shows that there is an augmentation in MNC throughout increasing penile vascular damage and subclinical atherosclerosis. These findings may reflect the potential role of MNC as a marker of early atherosclerosis in ED patients.

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P1.28

INFLUENCE OF AGE ON CAROTID ENDOTHELIAL FUNCTION AS DETERMINED BY HYPERCAPNIA INDUCED VASODILATATION

N.P. Saeed¹, G. Esquivel², I.M. Graf¹, A.P.G. Hoeks¹.

¹ Maastricht University, Department of Biophysics, Maastricht, Netherlands

² Department of Psychiatry & Neuropsychology, Maastricht, Netherlands

Background: An increase in blood velocity-associated shear stress results in release of endothelial factors, causing endothelium-dependent flow mediated dilatation (FMD). Hypercapnia strongly stimulates cerebral blood flow velocity in the common carotid artery (CCA).

Objective: Test the reliability of hypercapnia induced FMD of the CCA and evaluate the stimulus response relationship (changes in blood velocity and diameter) for different age populations.

Methods: Hypercapnia was induced with inhalation of a gas mixture of 6.8% CO₂, 74.5% N₂, and 18.6% O₂ for a period of 2 minutes in 19 healthy young