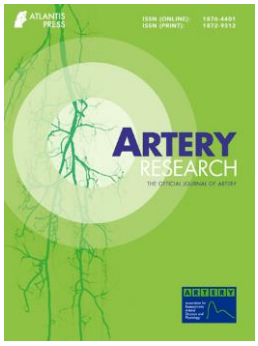

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P2.12
THE ROLE OF INSULIN ON FUNCTION OF RESISTANCE ARTERIES FROM OBESE YOUNG WOMEN AT RISK OF 'DIABETES' AND CONTROLS

M. Banerjee [1], C. Austin [1], V. Charlton-Menys [1], W. F. Fraser [2], P. Pemberton [1], R. A. Malik [1], J. K. Cruickshank [1]
[1]*Manchester University, Manchester, United Kingdom*
[2]*Royal Liverpool Hospital, Liverpool, United Kingdom*

Objectives: Vascular dysfunction is common in type 2 diabetes and obesity. The functional role of hyperinsulinaemia on human blood vessels in obese individuals remains unclear. We hypothesised that in young women, change in vessel function in a hyperinsulinaemic milieu would be influenced more by adiposity than plasma glucose.
Methods and Results: Women in a pregnancy cohort were stratified into upper & lower quartiles of fasting plasma glucose (FPG) when seen at follow-up 20 months after delivery. After subcutaneous biopsy, small arteries were tested ex-vivo by wire myography for vasoconstrictor [Noradrenaline (NA)] and vasodilator [carbachol and sodium nitroprusside (SNP)] responses before and after incubation with 100 mU/ml human insulin.
Results: Women with higher FPG had attenuated NA-contractile responses [0.8 (0.4-1.39) vs. 0.6 (-0.5 to 1.7) mN/mm, $p = 0.011$), but differences in maximum response to carbachol (ΔEDD_{max}) before and after insulin incubation did not increase [26.8 (4.8-48.7) vs. 18.5 (-3.3 to 30.2) %, $p = 0.55$) compared with those with lower FPG. Insulin reduced NA-induced contraction in those with higher [3.5 (2.4-4.6) vs. 2.4 (1.4-3.4) mN/mm: $p = 0.004$] but not in those with lower BMI [4.1 (2.8-5.3) vs. 3.7 (2.5-5.0) mN/mm: $p = 0.33$]. ΔEDD_{max} was greater in the high than low BMI group [37.7 (18.0 to 57.3) % vs.6.3 (-6.5 to 19.1) %, $p = 0.007$].
Conclusions: Small arteries from women with greater adiposity and fasting glucose, exhibited reduced contraction with NA but only the former showed improved EDD, when tested in a hyperinsulinaemic milieu. Hyperinsulinaemia may be important in maintaining endothelial function in obesity.

Epidemiology 2

P3.01
CAROTID ARTERY INTIMA-MEDIA COMPLEX INCREASE IN PATIENTS WITH METABOLIC SYNDROME AND DIFFERENT BRACHIAL ARTERY REACTIVITY DURING REACTIVE HYPERAEMIA TEST: 2 YEARS FOLLOW-UP RESULTS

V. V. Vikentyev, O. A. Polikina
Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Patients having different risk factors for coronary heart disease (CHD), as well as those with metabolic syndrome, are known to have increased carotid artery (CA) intima-media complex thickness (IMT) index, comparing to healthy subjects. Recently, the significant correlation between IMT, changes in flow-mediated dilatation (FMD) of the brachial artery (BA), different CHD risk factors and such important components of metabolic syndrome (MS), as insulin resistance and hyperglycaemia was shown. Nevertheless, the relationship between IMT and FMD and their role in atherogenesis are still ill defined.
Our aim was to investigate the dynamics of IMT and number of newly found CA atherosclerotic plaques (ASP) in patients with normal and lowered FMD.
Study group comprised of 89 men with lowered FMD (less then 5%) and 92 men with normal FMD (more, then 5%), 31-52 years of age. All the participants have undergone clinical examination according to standardized protocol, including physical examination. Blood samples for lipid profile and glucose levels were taken. Using high definition ultrasound IMT was measured and CA ultrasound scan was performed.
Results: at two-years follow-up in patients with initially lowered FMD the IMT increase was significantly higher, then in those with normal FMD at baseline (delta S = 5.39% vs 1.12%, $p = 0.0001$, respectively). In the group with initially lowered FMD number of newly found ASP was 31 (34.8%), whereas in group with initially normal FMD there were only twelve new cases (13%).
Conclusions: there is a positive correlation between initially impaired (lowered) FMD and increased IMT and higher number of new ASPs in the CA after two years follow-up.

P3.02
GLUCOSE METABOLISM IMPAIRMENT IN METABOLIC SYNDROME IS LINKED WITH INCREASED PULSE WAVE VELOCITY

A. L. Lieber [1], C. Vesin [1], M. E. Safar [1], B. I. Levy [2], J. Blacher [1]
[1]*Hotel Dieu, Paris, France*
[2]*Hopital Lariboisiere, Paris, France*

Introduction: Metabolic syndrome (MetS) is a cluster of cardiovascular risk factors. The specificity of each component of metabolic syndrome improves its management.
Objective: Do patients with MetS have arterial modifications? Which MetS components are they most closely linked to?
Materials and methods: Our population recorded 348 patients (185 men and 163 women). These patients entered the day hospital in order to have a cardiovascular check-up. We measured brachial and central blood pressure, augmentation index, and pulse wave velocity (PWV).
Results: 150 patients did have a metabolic syndrome (MetS+) and 198 did not (MetS-). PWV is higher in MetS+ patients, but it does not sustain after adjustment with confounding factors. Within this population, 93 have diabetes mellitus and *multiple parameter correlation of PWV with each of MetS components in this population show a significant association with glucose metabolism impairment only.*

	MetS+	no diabetes	diabetes	p
	(n = 150)	(n = 57)	(n = 93)	
PWV (m/s)	13.74 ± 3.66	12.71 ± 3.49	14.35 ± 3.65	**0.0027**
PWV (m/s) (*)		12.94 ± 3.06	14.11 ± 2.99	**0.0259**
PWV (m/s) (*) & MetS_HDL		12.96 ± 3.15	14.15 ± 3.02	**0.0261**
PWV (m/s) (*) & MetS_WC		13.07 ± 3.50	14.22 ± 3.55	**0.0283**
PWV (m/s) (*) & MetS_TG		12.96 ± 3.07	14.08 ± 3.11	**0.0371**
PWV (m/s) (*) & MetS_HTA		13.79 ± 11.34	15.00 ± 15.06	**0.0227**
PWV (m/s) (*) & MetS_Glyc		12.93 ± 3.07	13.88 ± 4.98	*0.1484*

Conclusion:
MetS+ patients have a higher PWV than MetS- patients but this difference disappears after adjustment to classic factors.
Diabetic patients have a significantly higher PWV even after adjustment.
When performing multiple parameter relationship with different components of MetS, we find that only glucose metabolism impairment is independently and positively correlated to PWV.

P3.03
IMPACT OF SMOKING ON ERECTILE FUNCTION AND ARTERIAL STIFFNESS IN MIDDLE-AGED SMOKERS WITHOUT OTHER MAJOR CARDIOVASCULAR RISK FACTORS

N. Ioakeimidis, C. Vlachopoulos, D. Terentes-Printzios, A. Aggelis, K. Baou, G. Antoniou, K. Rokkas, C. Stefanadis
Hippokration General Hospital of Athens, Athens, Greece

Purpose: Erectile dysfunction (ED) may be an early manifestation of generalized vascular disease. Cigarette smoking is an important modifiable cardiovascular risk factor and pathophysiological mechanisms may include a stiff vascular tree. The association of smoking with ED and functional changes in smokers without clinical atherosclerosis has not been defined yet.
Methods: 56 smokers without other major risk factors and with no clinical atherosclerosis who suffered from ED and 49 smokers without ED, matched for age, body mass index, systolic and diastolic blood pressure were studied. ED diagnosis and score were evaluated according to the International Index of Erectile Function (IIEF) questionnaire. Lower IIEF score indicates severe ED. Carotid-femoral Pulse Wave Velocity (PWV) was measured as an index of aortic stiffness and Augmentation Index (AIx) as a measure of wave reflections.
Results: PWV was higher in patients with ED than in the control group (left figure); AIx did not differ (26.7 vs 25.6%, p = NS). A linear inverse relationship between PWV and IIEF score was observed ($r = -0.39$, $p < 0.01$). In ED patients, smoking more than 40 pack years of cigarettes was associated