P4.16: INSULIN RESISTANCE IS ASSOCIATED WITH INCREASED LARGE ARTERY STIFFNESS IN NORMOTENSIVE HEALTHY ADULTS


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where the strongest correlate was central systolic BP (r = 0.587; p < 0.001). aPWV was not related to Alx in either group (p = 0.05 both).

Conclusions: Haemodynamic determinants of Alx in T2DM patients are significantly different to healthy people where BP is a dominant factor. In patients with T2DM, however, a high output, low resistance haemodynamic environment is associated with Alx.

P4.14 EXERCISE AORTIC RESERVOIR FUNCTION IN PATIENTS WITH TYPE 2 DIABETES IS ASSOCIATED WITH BRAIN ATROPHY

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Objectives. Vascular mechanisms underlying brain atrophy and white matter lesions (WML) in patients with type 2 diabetes (T2DM) are unknown. Increased exercising blood pressure (BP) is associated with end-organ damage and could explain these brain abnormalities. This study examined associations between exercise central haemodynamics and brain structure.

Methods: Forty healthy participants (53 ± 9 years; 50% male) and 40 T2DM (62 ± 9 years; 50% male) were examined at rest and during light exercise. Resting and exercise central haemodynamics, including systolic BP (SBP), pulse pressure (PP) augmented pressure (AP), augmentation index (Alx), aortic stiffness and aortic reservoir function (including excess pressure integral [xsP]) were recorded by tonometry. Segmented grey (GM) and white matter (WM) volumes were derived from magnetic resonance imaging. PWV results were derived from magnetic resonance imaging.

Results: T2DM participants had lower WM (p < 0.006) and WML volumes were derived from magnetic resonance imaging. Increased exercising blood pressure (BP) was associated with end-organ damage and could explain these brain abnormalities. This study examined associations between exercise central haemodynamics and brain structure.

Conclusions: In T2DM, aortic reservoir function and transmission of excess pressure during exercise is associated with brain atrophy. These findings suggest that vascular mechanisms underlying structural brain changes may differ between healthy individuals and those with T2DM.

P4.16 INSULIN RESISTANCE IS ASSOCIATED WITH INCREASED LARGE ARTERY STIFFNESS IN NORMOTENSIVE HEALTHY ADULTS

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Aim: At present there is limited evidence on the relationship between insulin resistance (IR) and measures of large artery stiffness (AS) and wave reflections in normotensive healthy adults. Aim of the present study was to explore this issue in a group of 90 normotensive, non-obese, healthy adults (mean age 48 ± 10 yrs, 50% F).

Methods: IR was assessed with HOMA-Index and subjects were classified into IR tertiles, based on the distribution of HOMA-index values. Recordings of pulse waveform were obtained by means of a validated oscillometric device (Mobil-O-Graph NG, IEM, Stolberg, Germany) for ambulatory BP monitoring with in-built transfer-function like method. Aortic pulse wave velocity (PWV, m/s) and other measures derived from pulse wave analysis such as augmentation index (Alx, %), central SBP (cSBP), central DBP (cDBP) and central pulse pressure (cPP) were computed. Peripheral SBP and DBP, and heart rate (HR) were recorded and pulse pressure (PP) calculated as the difference between SBP and DBP.

Results: After multiple regression analysis adjusting for age, sex, HR and BMI, there was a significant overall effect of IR on measures of large artery stiffness and in central and peripheral BP levels. IR was associated with increased aortic PWV, and with higher central and peripheral SBP and DBP levels. See table.

Conclusion: Our results indicate that in normotensive, healthy adults, IR may induce significant increases in large artery stiffness (as assessed with aortic PWV) and in central and peripheral BP levels.
P4.17  
INFLUENCE OF ESTIMATED WALL SHEAR RATE INDICES ON CAROTID ARTERY INTIMA-MEDIA THICKNESS AND INTIMA-MEDIA COMPLEX ECHOCENTRY

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Introduction: Grey scale median of the carotid artery intima-media complex (IM-GSM) is a recently introduced measurement to characterise the arterial wall. Wall shear stress is thought to influence intima-media thickness (IMT) and to play a major role in the development of atherosclerosis. However, the relationship between wall shear stress and IM-GSM is not well understood. This study examined the relationship between estimated wall shear rate (WSR) indices and IMT as well as estimated WSR indices and IM-GSM.

Methods: Data from 156 middle-aged and older individuals (66.1±9.5yrs, 58F) were included in this analysis. Common carotid artery diameter, IMT, and indices and IM-GSM.

Results: Hemodynamic variables by tertiles of HOMA index*:

<table>
<thead>
<tr>
<th>Variable</th>
<th>T1 (&lt; 0.94) (n = 32)</th>
<th>T2 (0.94-1.90) (n = 28)</th>
<th>T3 (&gt; 1.90) (n = 30)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral SBP (mmHg)</td>
<td>111.7 ± 2.0</td>
<td>114.3 ± 1.8</td>
<td>123.2 ± 2.0</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Peripheral DBP (mmHg)</td>
<td>76.8 ± 1.4</td>
<td>79.8 ± 1.3</td>
<td>84.7 ± 1.5</td>
<td>0.001</td>
</tr>
<tr>
<td>Peripheral PP (mmHg)</td>
<td>33.5 ± 1.0</td>
<td>35.0 ± 0.9</td>
<td>38.4 ± 1.0</td>
<td>0.004</td>
</tr>
<tr>
<td>Central SBP (mmHg)</td>
<td>103.7 ± 1.7</td>
<td>106.7 ± 1.5</td>
<td>115.3 ± 1.6</td>
<td>0.001</td>
</tr>
<tr>
<td>Central DBP (mmHg)</td>
<td>77.8 ± 1.5</td>
<td>81.1 ± 1.3</td>
<td>86.1 ± 1.5</td>
<td>0.001</td>
</tr>
<tr>
<td>Central PP (mmHg)</td>
<td>25.5 ± 1.5</td>
<td>28.1 ± 1.3</td>
<td>29.2 ± 1.0</td>
<td>0.071</td>
</tr>
<tr>
<td>MBP (mmHg)</td>
<td>92.5 ± 1.5</td>
<td>95.7 ± 1.3</td>
<td>102.3 ± 1.5</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>HR (bpm)</td>
<td>61.3 ± 1.9</td>
<td>65.0 ± 1.7</td>
<td>66.0 ± 1.9</td>
<td>0.212</td>
</tr>
<tr>
<td>PWV (m/s)</td>
<td>5.64 ± 0.17</td>
<td>5.71 ± 0.10</td>
<td>6.34 ± 0.9</td>
<td>0.012</td>
</tr>
<tr>
<td>Augmentation Index (%)</td>
<td>6.7 ± 3.2</td>
<td>6.1 ± 3.8</td>
<td>6.9 ± 2.2</td>
<td>0.082</td>
</tr>
</tbody>
</table>

*Values are expressed as means ± SEM

Conclusions: These results support the relationship between serum OPT and arterial stiffness in postmenopausal women, independent of the traditional cardiovascular risk factors and inflammation. At the same time, MGP was not found to be a predictor of arterial stiffness.

P4.18  
OSTEOPROTEGERIN AND ARTERIAL STIFFNESS IN POSTMENOPAUSAL WOMEN

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Background: Many recent data support the hypothesis that circulating osteoprotegerin (OPT) levels are associated with arterial calcification and may serve as a potential predictor of cardiovascular disease and mortality. Matrix Gla Protein (MGP) is considered an inhibitor of vascular calcification. However, the role of these molecules in the arterial wall is still unclear. Arterial stiffness increases in postmenopausal women. The aim of our study was to determine the relation between circulating OPT and MGP and vascular parameters of arterial stiffness in postmenopausal women.

Materials and Methods: One hundred forty-four postmenopausal women, aged (61.4±10.6 years) were included in the study. PWV was measured using an oscillometric device. OPT, MGP, C-reactive protein and parameters of lipid and glucose metabolism were also determined.

Results: OPT correlated with aortic PWV (r=0.32, p=0.006), and C-reactive protein (r=0.37, p=0.002). In multiple regression models, after adjustment for potential confounders, OPT was independently associated with aortic PWV. No correlation was found between MGP and aortic PWV. There were 61% hypertensives, 34% patients with diabetes, 35.4% with hyperlipemia and 41.6% with obesity or overweight, in this study.

Conclusion: This study suggests that blood pressure at inclusion increases the risk of developing acute hypertension with AAD. It also shows that effective vasodilatation could be achieved despite small vessels disruption by AAD.

P4.20  
ASSOCIATION OF A SINGLE NUCLEOTIDE POLYMORPHISM IN CYP2C8 WITH MYOCARDIAL INFARCATION IN BULGARIAN POPULATION

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5Vanya Mitev, Sofia, Bulgaria

Cytochrome P450 2C8 is a polymorphic enzyme responsible for the biosynthesis of vasoactive substances from arachidonic acid. Inter-individual differences in the action of these substances might be important in the pathogenesis of cardiovascular diseases such as acute myocardial infarction (AMI). In the present study we analyzed the association of a genetic variant in CYP2C8 and the morbidity of AMI in Bulgarian population. The study included 99 AMI patients and 370 control subjects. To determine the genotypes of the samples real time PCR with predesigned TaqMan SNP Genotyping Assays (Applied Biosystem) was used.