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

R.E. Climie, V. Srikanth, R. Beare, L.J. Keith, J.E. Davies, J.E. Sharman


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

Conclusions: Haemodynamic determinants of AIx 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 AIx.

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Diabetes is associated with brain atrophy.

patients with T2DM, however, a high output, low resistance haemodynamic environment is associated with AIx.

Results: In multiple linear regression analysis of AIx, the strongest effect on BPV variation was observed for a reduced cardiac baroreflex sensitivity (BRS) and the associated increase in 24h blood pressure (BPV). A similar independent analysis showed a significant inverse relationship between BRS and daytime systolic BP (beta=-0.23; p=0.036).

Conclusion: Our findings suggest that in normotensive, otherwise healthy adults, reduced BRS and, indirectly, the associated increased day-time systolic BPV might be largely explained by an increased AS, independently of age and BP levels.

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

J. E. Gallo1,3, M. M. Correa2, A. M. Valencia2, J. G. McEwen2,

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 (AIx), aortic stiffness and aortic reservoir function (including excess pressure integral [xP]) were recorded by tonometry. Segmented grey (GM) and white matter (WM) and WML volumes were derived from magnetic resonance imaging.

Results: T2DM participants had lower WM (p=0.004) and GM (p=0.07) volumes, and significant elevation of all central haemodynamic variables during exercise (p<0.01 all). At rest, greater central (not brachial) haemodynamics (SBP, AP, AIx and PP) were independently associated with greater WM volumes (p=0.05) and GM (p=0.01) volumes only in T2DM independent of age, sex, heart rate, and 24-hour ambulatory SBP.

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.

P4.15 RELATIONSHIP BETWEEN ARTERIAL STIFFNESS, CARDIAC BAROREFLEX SENSITIVITY AND BLOOD PRESSURE VARIABILITY IN NORMOTENSIVE HEALTHY ADULTS

J. E. Ochoa1,2, J. M. Correa1,2, A. M. Valencia1, J. G. McEwen2,

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Predictors of cardiac BRS (Multiple linear regression analysis)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Regression Coefficient</th>
<th>95% CI Beta</th>
<th>P value</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWV (6.12±1.53 m/s)</td>
<td>-3.619</td>
<td>-5.0, -2.2</td>
<td>&lt;0.0001</td>
<td>0.25</td>
</tr>
<tr>
<td>HR (64.2±9.4 bpm)</td>
<td>-0.426</td>
<td>-0.6, -0.2</td>
<td>&lt;0.0001</td>
<td>0.14</td>
</tr>
<tr>
<td>Sex (male)</td>
<td>-4.373</td>
<td>-8.4, -0.3</td>
<td>0.029</td>
<td>0.04</td>
</tr>
<tr>
<td>Age (48±11 yrs)</td>
<td>-0.187</td>
<td>-0.7, 0.3</td>
<td>0.547</td>
<td>-</td>
</tr>
<tr>
<td>MAP (97.9±8.6 mmHg)</td>
<td>-0.019</td>
<td>-0.4, 0.2</td>
<td>0.759</td>
<td>-</td>
</tr>
<tr>
<td>R-Squared for the model including only significant variables (PWV, sex, HR)</td>
<td></td>
<td></td>
<td></td>
<td>0.342</td>
</tr>
</tbody>
</table>

Objective: 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.