Sympathetic Mechanisms in White Coat Hypertension


Background: The development of target organ damage in essential hypertension (EHT) adversely affects prognosis, and has been partly attributed to sympathetic hyperactivity. It has also been reported in white coat hypertension (WHT), yet little is known about sympathetic neural discharge in this condition. We planned to establish whether sympathetic hyperactivity occurs in WHT patients in the clinic setting, relative to matched groups with EHT and normotension (NT).

Methods: WHT and NT were examined and compared to EHT and NT subjects matched for age and body mass index (BMI). We further matched for daytime ambulatory (Amb), MBP, and clinic mean blood pressure (MBP, as in Table). WHT was defined as a clinic blood pressure of ≥140/90 mmHg (a level separating EHT from NT) with a daytime ambulatory blood pressure of ≥130/80 mmHg. Muscle sympathetic nerve activity (MSNA) was measured by microneurography from the peroneal nerve and its mean frequency was expressed as bursts per 100 cardiac beats (b/100b).

Results: As data are a SEM for the 3 groups in Table.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>BMI (kg/m^2)</th>
<th>Clin MBP (mmHg)</th>
<th>Daytime Amb.MBP (mmHg)</th>
<th>MSNA (b/100b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT</td>
<td>52</td>
<td>24</td>
<td>120 (±10)</td>
<td>35 (±5)</td>
</tr>
<tr>
<td>WHT</td>
<td>56</td>
<td>26</td>
<td>130 (±15)</td>
<td>45 (±6)</td>
</tr>
<tr>
<td>EHT</td>
<td>58</td>
<td>28</td>
<td>140 (±20)</td>
<td>50 (±7)</td>
</tr>
</tbody>
</table>

**Conclusions:**

The effects of 6 months intensified blood pressure (BP) and (where appropriate) lipid-lowering treatment were investigated.

**Results:** TF correlated positively with blood pressure, as well as CHD/CVA risk scores (r = 0.001), and negatively with FMD (p < 0.001). Plasma levels of TF correlated positively with VEGF (Spearman's, r = 0.640) and AVF (r = 0.382), with a negative correlation between TF levels and FMD (r = 0.578; all p < 0.001).

**Conclusion:** In hypertension, the processes of thrombogenesis, endothelial function and angiogenesis are abnormal, and correlate with cardiovascular risk and with each other. Indices of endothelial dysfunction, thrombogenesis and angiogenesis might therefore be useful tools to identify patients at risk. These indices are beneficially affected by intensive BP/lipid treatment.

**References:**


**Disclosure:** None of the authors have conflicts of interest to disclose.