The grading of a carotid bruit and its relationship to carotid artery peak systolic velocities.

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There are no disclosures for any of the Authors.

Purpose.

The purpose of our study was to determine if the clinical grading of a carotid bruit was in any way predictive of the peak systolic velocity (PSV) in either the internal carotid artery (ICA) or the external carotid artery (ECA).

Methods.

CARDIOfile, our cardiology database and reporting system was searched for all carotid Doppler examinations where the presence or absence of a carotid bruit was documented.

For all carotid Doppler examinations a vascular history is taken, blood pressure measured in both arms and finally the neck is auscultated for carotid bruits. This is performed by the vascular technologist before carotid duplex imaging.

Carotid bruits were graded as absent (0/3), soft (1/3), loud (2/3) or very loud (3/3).

Statistics.

ANOVA was used to assess overall differences in the mean values for all groups and the Tukey-Kramer inter-comparison test was used to assess differences between the individual groups. A p value of <0.05 was considered to be statistically significant.

Results.

For the ICA PSV there was a definite progressive increase in PSV with increasing grade of a carotid bruit. This was highly statistically significant using both ANOVA and the Tukey-Kramer inter-comparison testing.

For the ECA PSV there was a progressive increase in PSV from grade 0/3 to 2/3, but a more flat response from grade 2/3 to 3/3. Although the ANOVA testing was also highly significant, the Tukey-Kramer inter-comparison testing for ECA PSV was not able to differentiate a grade 2/3 from a grade 3/3 carotid bruit. A similar finding to the ECA PSV was seen with age.

Table.

<table>
<thead>
<tr>
<th></th>
<th>0/3 carotid bruit</th>
<th>1/3 carotid bruit</th>
<th>2/3 carotid bruit</th>
<th>3/3 carotid bruit</th>
<th>ANOVA</th>
<th>Tukey-Kramer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>5,818</td>
<td>671</td>
<td>176</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>66.2 ± 11.0</td>
<td>72.3 ± 8.8</td>
<td>74.1 ± 7.7</td>
<td>74.0 ± 5.0</td>
<td>&lt;0.0001</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>ICA PSV (cm/sec)</td>
<td>95.1 ± 34.0</td>
<td>180.0 ± 89.6</td>
<td>285.6 ± 148.0</td>
<td>412.1 ± 120.0</td>
<td>&lt;0.0001</td>
<td>All &lt;0.001</td>
</tr>
<tr>
<td>ECA PSV (cm/sec)</td>
<td>111.0 ± 42.5</td>
<td>190.2 ± 104.6</td>
<td>264.1 ± 156.4</td>
<td>282.1 ± 105.1</td>
<td>&lt;0.0001</td>
<td>&lt;0.001**</td>
</tr>
</tbody>
</table>

*Age. Only 0/3 versus 1/3 and 0/3 versus 2/3 are significant. **ECA PSV. All significant at p<0.001 except 2/3 versus 3/3.

ICA = Internal carotid artery. ECA = external carotid artery. PSV = Peak systolic velocity.

Conclusion.

For patients with a carotid bruit we were able to show a progressive increase in both ICA and ECA PSV with increasing severity of the carotid bruit.

The Tukey-Kramer inter-comparisons test indicated that the progressive increase in ICA PSV was significant for all groups.