Guidelines, Policies and Statements

D14

Duplex Ultrasound: Extracranial Carotid Artery Disease

*Adopted by Council May 2006,*

*Reaffirmed July 2007, Revised May 2008*

*(Currently under revision)*

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Colour Duplex Doppler Ultrasound Extracranial Carotid Artery Disease


(Currently under revision)

These guidelines for the reporting of extracranial carotid artery disease have been adopted by ASUM to assist those performing and reporting these examinations. The threshold values are recommendations only and other values may have similar validity. Laboratories should attempt to audit the results they obtain with the criteria they choose to use.

<table>
<thead>
<tr>
<th>Stenosis Grade</th>
<th>Ultrasound Criteria - ICA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal waveform and image</td>
</tr>
<tr>
<td>&lt; 15% diameter reduction</td>
<td>Deceleration spectral broadening PSV &lt; 125 cm/sec</td>
</tr>
<tr>
<td>16 - 49% diameter reduction</td>
<td>Pansystolic spectral broadening PSV &lt; 125 cm/sec</td>
</tr>
</tbody>
</table>
| 50 - 69% diameter reduction | - Pansystolic spectral broadening  
- PSV > 125 cm/sec and EDV < 110 cm/sec or  
- ICA/CCA > 2 |
| 70 - 79% diameter reduction | - Pansystolic spectral broadening  
- PSV > 270 cm/sec or  
- EDV > 110 cm/sec or  
- ICA/CCA > 4 |
| 80 - 99% diameter reduction | As above plus  
- EDV > 140 cm/sec |
| Occluded        | No flow Terminal thump |

ICA  
CCA  
PSV  
EDV  
ICA/CCA  

Internal carotid artery  
Common carotid artery  
Peak systolic velocity  
End diastolic velocity  
Ratio of ICA PSV to CCA PSV
Plaque Classification  Surface  Bifurcation  Tortuosity  Technical
echogenic  smooth  normal  minimal  poor
hypoechoic  irregular  high  moderate  good
mixed  indeterminate  low  maximum  excellent
calcification  indeterminate

For grades 15 - 50%, attempt to estimate per cent diameter reduction by visual assessment and preferably caliper measurements of lumen. Diameter reduction is measured according to ECST method (see diagram above).

Evidence suggests greatest benefit from surgery in > 70% and possibly > 50% stenosis grades but the need for intervention is influenced by patient's symptoms and other factors.