How To Pick High Risk Asymptomatic Carotid Stenosis Patients For CAS Or CEA: The Importance Of Transcranial Doppler Hits
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Historical risks based on studies which had a medical arm are being used to justify routine carotid endarterectomy (CEA) and stenting (CAS) for patients with asymptomatic carotid stenosis (ACS) based on more recent studies with no medical arm. This approach is not valid\(^1\). With more intensive medical therapy, the risk of stroke or death with medical therapy is now lower with medical therapy (~0.5% per year)\(^1\) than with stenting or endarterectomy: In CREST\(^2\), the procedural (30-day) risk of stroke or death for asymptomatic patients was 2.5% for stenting and 1.4% for endarterectomy; the 4-year risk was 4.5% with stenting and 2.7% with endarterectomy. In real-world practice, risks of stenting or endarterectomy are much higher: The 2011 report of Wang et al.\(^3\) documents in Medicare patients a 1-year risk of stroke or death of 16.7% for stenting, and 11% for endarterectomy. It is now clear that stenting carries a higher risk of stroke than does CEA, and a higher risk than that with intensive medical therapy. Some have objected that the risk is higher in patients with more severe stenosis, but Naylor has recently shown that this is not the case\(^4\). On average, therefore, patients with ACS are better served by intensive medical therapy than by either CAS or CEA. Nevertheless, because some patients with asymptomatic carotid stenosis do go on to stroke despite intensive medical therapy, it would be useful to have methods to identify which patients might benefit from CEA or CAS.

The best validated method for this purpose is monitoring for microemboli on transcranial Doppler, shown in two prospective studies to predict risk of stroke. Spence et al. reported in 2005\(^5\) that 10% of patients with ACS had microemboli during one hour of monitoring at baseline, and their 1-year risk of stroke was 15.6%, versus a 1% risk of stroke in those without microemboli; virtually all these strokes were ipsilateral. This was validated in 2010 by the ACES study\(^6\), a multicenter international trial that showed a somewhat higher prevalence of microemboli (16% of patients) and a lower risk: the two year risk of ipsilateral stroke was 3.62% in patients with embolic signals and 0.70% in those without. The lower risk may relate to repeat monitoring and/or more intensive medical therapy, as the study was carried out 5 years later.

Additional methods for identifying higher-risk patients include plaque ulceration on 3-D ultrasound\(^7\) and echolucency of plaques\(^8\). Under study are PET/CT imaging of plaque inflammation, vascularity of plaques with contrast ultrasound, and intraplaque hemorrhage on MRI\(^9\).

Only 10% of patients with ACS can possibly benefit from CEA or CAS; these can be identified by TCD microemboli, and they are the only patients who should be offered these procedures. CEA is to be preferred, as it carries half the stroke risk of CAS.

References:


