DEBATE: Near Total Occlusion Of The Internal Carotid Artery (ICA) – A “String Sign” Should Not Be Treated Invasively Even If Symptomatic: Medical Treatment Is Best

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Disclosures

• None

Carotid guidelines, Recommendation 39, ESVS 2017

• Carotid endarterectomy or carotid stenting are not recommended in symptomatic patients with a chronic internal carotid near-occlusion, unless associated with recurrent ipsilateral symptoms (despite optimal medical therapy) and following multidisciplinary team review.

• Class III, Level C

Hypothesis:

• Reduction of flow across a near total occlusion, may decrease the shear stress on the plaque and the risk of embolization.
• TCD has shown a significant reduction of microemboli from ICA stenosis>90%

Molloy and Markus, Stroke 1999

Hypothesis:

– The clinical behavior of near total occlusion may be significantly different from lesser degrees of severe carotid artery stenosis, hence there is a need for closer scrutiny of this group of patients.
– Reduction of the ICA diameter compared to the ipsilateral ECA
– Reduced diameter of the ICA compared with the opposite ICA
– Intracranial collaterals seen as crossfilling contralateral vessels or ipsilateral contrast dilution
– Delayed cranial arrival of ICA contrast compared to the ECA


Delayed ICA filling and intracranial dilution from collaterals. A, Lateral carotid angiogram (neck view) shows delayed ICA filling (larger arrow) beyond the nearly occluded bulb stenosis. B, There is dilution of contrast of middle cerebral branches (small arrows)

Analysis of pooled data from randomized controlled trials of CEA for symptomatic carotid stenosis
– Pooled data from ECST, NASCET and VA trial 309 were analysed.
– Pre-randomization of carotid angiograms from ECST were re-measured by methods used by the other 2 trials.
– Data from 6092 patients with 35000 patient years of follow up were pooled

Rothwell et al; Lancet 2003

The lower risk for cerebrovascular events in patients with near total occlusion, is probably related to the presence of a good collateral circulation.
Best medical treatment has vastly improved over the last years and the risk of stroke and death has declined. Therefore, the benefit of the conservative treatment for near total occlusion shown on historical trials performed more than 20 years ago, is likely to be much greater today.

Conclusions

Patients with near total internal carotid artery occlusion are distinct from patients with 70-99% stenosis and have a lower risk of stroke on medical treatment. There is no level one evidence to support that a carotid endarterectomy is beneficial for this group of patients.

Till future carotid trials clarify best management, the treatment for the majority of these patients should be with best medical treatment.