Does CEA or CAS reduce cognitive decline in patients with asymptomatic carotid disease?

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I have no disclosures relating to this talk

rationale

asymptomatic carotid stenosis is associated with progressive cognitive decline, attributed to silent embolisation or chronic hypoperfusion

prophylactic CEA/CAS can reverse/prevent cognitive impairment

silent embolisation & cognitive impairment?

cognitive impairment not attributable to embolisation as there was no significant increase in silent ischaemic lesions on MRI.  

>50% ACS present in only 13% of dementia patients with embolisation on TCD, compared to 14% patients with no embolisation.  

>70% ACS present in only 2% of dementia patients with embolisation on TCD.  

venous to arterial shunts present in 35% of dementia patients with embolisation.

hypoperfusion & cognitive impairment?

As the ACS becomes more severe, patients with inadequate collateralization via the circle of Willis compensate by progressive dilatation of intracranial arteries/arterioles in the ipsilateral hemisphere.

This maintains cerebral blood flow, but a point arises where the vessels cannot vasodilate any more; ie they enter a state of impaired/exhausted cerebral vascular reserve (CVR) with limited capacity to dilate further.

9/10 studies supported the association between asymptomatic carotid stenosis (ACS) and cognitive impairment  
(or does this mean that carotid stenoses and cognitive decline share similar risk factors?)
159 patients with bilateral 70-99% ACS
cognitive decline least in patients with no impaired CVR
cognitive decline increased with unilateral impaired CVR
maximum cognitive decline with bilateral impaired CVR

Stroke 2014;45:2072

150 unilateral ACS, 127 bilateral ACS + 56 controls
ACS associated with cognitive impairment versus controls
maximum cognitive deficit associated with impaired CVR
no difference in cognition between controls and patients with bilateral ACS but NO CVR impairment.

Neurology 2012;79:1788

15 studies analysed effect of CEA on cognition
deterioration in cognition in 5 studies
improvement in cognition in 4 studies
no change in cognition in 6 studies

Stroke 2008;39:1116

6 studies found no difference in post-operative cognition when CEA was compared with CAS
in 3 studies, cognition was significantly worse after CAS, compared with after CEA
in 1 study, cognition deteriorated after both CEA and CAS

EJVES 2014;47:221

why is it difficult to evaluate cognition?
“learning effect” because of repeated testing
complexity of neuropsychological test employed
lack of involvement of a neuropsychologist
tests inappropriate to hemisphere being tested
type of patient (symptomatic/asymptomatic)
lack of controls
short duration of follow-up
small sample size, underpowered studies
no standardised timing of postop assessments

EJVES 2003;26:529
Management of Atherosclerotic Carotid and Vertebral Artery Disease: 2017 Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

CEA/CAS in preventing dementia

**Recommendation 20**

**Class Level**

Until a causal association between severe asymptomatic carotid stenoses and cognitive decline has been established, carotid interventions are not recommended for the prevention of cognitive impairment in patients with severe asymptomatic carotid stenoses

- **III**
- **C**

**Keywords**:
- Carotid, Vertebral, Stroke, Transient ischemic attack, Endarterectomy, Dieting, Medical therapy, Screening, Dementia, Aneurysm, Symptoms, Thrombosis, Imaging,レビュア, Surgical techniques, Complications, Path infection, Endovascular