

## **ARE THERE ANY RELEVANT INDICATORS FOR INTERVENTION IN ASYMPTOMATIC CAROTID ARTERY STENOSIS - YES**

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Asymptomatic significant ( $\geq 50\%$ ) carotid stenosis (ASCS) is a frequent finding in the aging population. The prevalence of moderate stenosis (50-70%) increases from 3.6% for those less than 70 years to 9.3% in those  $\geq 70$  years. The (additional) prevalence of severe (70-99%) stenosis is around 2%.

Although the natural history of ASCS is quite benign interventions such as carotid endarterectomy (CEA) has been advocated after being evaluated in several studies, mainly ACAS and ACST. An overall modest benefit of about 1% risk reduction (per year) was found for CEA (with a peri-operative risk of less than 3%) versus medical treatment, over a five year period.

A better "natural history" for patients with ASCS was shown in the more recent study (ACST) and this observation adds to other reports suggesting a better outcome for patients with ASCS in recent years, probably because of better medical treatment mainly due to the significant increase in the use of statins.

The suggested guideline that results from the above mentioned studies is that CEA should be considered in every patient with significant ( $\geq 60\%$ ?,  $\geq 70\%$ ?) stenosis who has a life expectancy of more than five years (& is less than 75 years?).

Taking this advice as such would mean that we should screen for ASCS and operate on all appropriate candidates. This will result in a surge of CEA's!

Such a recommendation is not in place because the observed benefit of CEA by numbers needed to treat (NNT) per year to prevent any stroke is very high (about 80 as compared with symptomatic patients in whom the NNT is less than 10). This high figure (i.e. low yield) results from failure of these studies to identify specific risk factors (including the degree of stenosis within the wide range [60 to 99%] allowed in the studies) in patients with ASCS.

Therefore, without specific indicators, especially with the nowadays low risk, it is not clear which patient should be offered CEA and in whom best medical treatment is the best option.

Yet, during the years, and more so in recent years, few markers have emerged that help us in identifying patients with higher stroke risk and these patients are more likely to benefit from carotid intervention.

1. Micro-embolic signals (MES) have been clearly shown to be associated with increased stroke risk. It was first shown in smaller studies (e.g. Spence D et al 2005) and more recently by the ACES study (Markus H et al 2010). An overall 5.8 fold increase in stroke risk was found in ASCS patients in whom MES were detected by regular monitoring with TCD.
2. Silent or previous brain infarcts were also found to be associated with an increased stroke risk and CEA was associated with a greater reduction in this risk as compared to the group of patients without identified brain lesions (ACSRS 2009, ACST-1 ISC, Feb. 2013).
3. Carotid plaque constituents, especially atheromatous (vs. fibrous) type.
4. Cerebro-vascular reactivity, when severely impaired.

These and other markers will be dealt with in the presentation