

Review: Carotid endarterectomy for asymptomatic carotid stenosis does not reduce stroke or death

Chambers BR, You RX, Donnan GA. Carotid endarterectomy for asymptomatic carotid stenosis. Cochrane Review, latest version 19 Oct 1999. In: The Cochrane Library. Oxford: Update Software.

QUESTION

In patients with asymptomatic carotid stenosis, is carotid endarterectomy (CEA) effective for reducing stroke and death?

DATA SOURCES

Studies were identified by searching MEDLINE (1966 to March 1998), Current Contents (1995 to January 1997), and the Cochrane Stroke Group Specialised Register of Controlled Trials (June 1998) and by consulting experts at scientific meetings.

STUDY SELECTION

Studies were selected if they were randomized controlled trials (RCTs) that compared CEA with medical management in patients with asymptomatic carotid stenosis and if they reported on stroke or death. Asymptomatic patients included patients with no history of cerebrovascular symptoms, patients with previous symptoms in the vertebrobasilar circulation, and patients with previous carotid territory symptoms or a history of CEA on the contralateral side. Transient ischemic attack was not included as an outcome. Studies that involved coronary artery bypass or other types of surgery were also excluded.

DATA EXTRACTION

2 reviewers independently extracted data on participants, interventions, outcomes,

and methods. Agreement was found for all outcome measures. The quality of study methods was assessed (i.e., randomization, blinding, and follow-up).

MAIN RESULTS

4 RCTs that involved 2203 patients (approximate mean age 66 y, 73% men) met the selection criteria. Follow-up ranged from 24 to 48 months (approximately 6473 person-y of follow-up). Meta-analysis was done by using an intention-to-treat analysis of study results. Patients in the CEA group had more perioperative strokes or deaths than did those in the medical-management group (3 RCTs, $P < 0.001$) (Table). CEA led to statistically nonsignificant reductions in perioperative stroke or death or subsequent ipsilateral stroke (4 RCTs, $P = 0.06$),

in any stroke or perioperative death (3 RCTs, $P = 0.07$), or in any stroke or death (4 RCTs, $P = 0.13$) (Table).

CONCLUSIONS

In patients with asymptomatic carotid stenosis, carotid endarterectomy (CEA) leads to more perioperative strokes or deaths than does medical management. Overall rates of death or stroke are reduced by CEA, but the effect is not statistically significant.

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Carotid endarterectomy (CEA) vs medical management in asymptomatic carotid stenosis*

Outcomes at 24 to 48 mo	Weighted event rates		RRI (95% CI)	NNH (CI)
	CEA	Medical		
Perioperative stroke or death	3.1%	0.4%	552% (166 to 1496)	38 (27 to 63)
			RRR (CI)	NNT (CI)
Perioperative stroke or death or subsequent ipsilateral stroke	4.9%	6.8%	27% (-2 to 48)	Not significant
Any stroke or perioperative death	8.2%	10.4%	21% (-2 to 40)	Not significant
Any stroke or death	20.6%	23.2%	11% (-4 to 24)	Not significant

*Abbreviations defined in Glossary; RRI, NNH, RRR, NNT, and CI calculated from data in article.

COMMENTARY

This meta-analysis by Chambers and colleagues highlights the lack of recent high-quality clinical trials in this complex area. The inclusion of trials done before data were available from the North American Symptomatic Carotid Endarterectomy Trial and the European Carotid Surgery Trial leads to difficulties in that patients with $< 70\%$ stenosis were included, whereas we now know that the degree of asymptomatic carotid stenosis should have been, at a minimum, $> 70\%$. The inclusion of 2 studies in which aspirin was not given to the surgically treated group is also likely to bias the results against surgery. Furthermore, most cerebral events in the surgical group of the Asymptomatic Carotid Endarterectomy Study were related to angiography or took place before surgery but after randomization (1).

Recent validated multicenter audit data have shown that stroke and death rates from CEA done for symptomatic stenosis can be as low as 3% (2). The Asymptomatic Carotid Surgery Trial is still recruiting patients, particularly those with tight stenoses, and is looking at plaque morphology. Echolucent plaques on duplex imaging are associated

with a higher incidence of cerebral infarcts detected on computed tomography. The role of emboli detected on transcranial Doppler ultrasonography also needs to be assessed because unstable plaques are likely to cause cerebral infarction. Both plaque morphology and emboli on transcranial Doppler ultrasonography may identify a high-risk group who would benefit from surgery. The use of non-invasive imaging, such as duplex scanning and magnetic resonance angiography, to grade the degree of carotid stenosis needs to be quantified with respect to outcome. Further study is required to identify which patients with asymptomatic carotid disease would benefit from surgery.

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References

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2. McCollum PT, da Silva A, Ridler BD, de Cossart L. Eur J Vasc Endovasc Surg. 1997;14:386-91.