

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

[www.elsevier.com/locate/semvascsurg](http://www.elsevier.com/locate/semvascsurg)

# Medical treatment strategies to reduce perioperative morbidity and mortality after carotid surgery

A. Ross Naylor

Department of Vascular Surgery Division of Cardiovascular Sciences, Clinical Sciences Building, Leicester Royal Infirmary, Leicester LE27LX, UK

## ARTICLE INFO

## ABSTRACT

There is a paucity of high-quality evidence regarding what constitutes “optimal medical therapy” for the purposes of reducing morbidity/mortality after carotid endarterectomy (CEA). All patients should be prescribed antiplatelet therapy. Low-dose aspirin (75 to 325 mg) should be continued throughout the perioperative period and there is no evidence that higher doses confer additional benefit. There is emerging evidence that early implementation of dual antiplatelet therapy in recently symptomatic patients (aspirin 75 mg plus clopidogrel 75 mg) can reduce recurrent cerebral events before CEA and that dual antiplatelet therapy will significantly reduce stroke due to early postoperative carotid thrombosis. Evidence suggests that dual antiplatelet therapy is not associated with a significant increase in bleeding complications, although it is essential to aggressively treat post-CEA hypertension. Antiplatelet therapy should be withheld for 24 hours after completion of thrombolysis. Statins should be started preoperatively; the rationale being that they will reduce perioperative myocardial infarction and stroke (especially in symptomatic patients), as well as reduce recurrent cerebral events before CEA. Heparin reversal using protamine is becoming increasingly common and there is no evidence that this significantly increases perioperative thromboembolic stroke, but it does seem to reduce the prevalence of neck hematomas, which can be associated with an increased risk of stroke/death after re-exploration. Post-CEA hypertension is especially common in recently symptomatic patients undergoing surgery within the first 7 to 14 days after onset of symptoms. Untreated, it is associated with high rates of intracerebral hemorrhage, stroke due to the hyperperfusion syndrome, and major cardiac events. Each unit should have written guidance for treating this condition promptly. This is especially important when CEA is performed in the first few days after onset of symptoms and, especially, when CEA is performed soon after thrombolysis.

© 2017 Elsevier Inc. All rights reserved.

## 1. Introduction

The Society for Vascular Surgery (SVS) recommendations [1] for medical therapy in patients undergoing carotid endarterectomy (CEA) are summarized in Table 1. Most, however, relate to the long-term prevention of ischemic stroke, rather than how novel adjuvant medical therapies might reduce perioperative morbidity and mortality.

## 2. Antiplatelet therapy

According to the SVS, perioperative antiplatelet therapy for CEA should include aspirin (81 to 325 mg). They also advise that the use of clopidogrel in the perioperative period should be decided on a “case-by-case” basis. By the late 1980s, it was accepted that patients should take aspirin long term (in order to prevent late stroke), but there was uncertainty about

E-mail address: [ross.naylor@uhl-tr.nhs.uk](mailto:ross.naylor@uhl-tr.nhs.uk)

<http://dx.doi.org/10.1053/j.semvascsurg.2017.04.006>

0895-7967/\$ - see front matter © 2017 Elsevier Inc. All rights reserved.

**Table 1 – Society for Vascular Surgery recommendations regarding medical therapy in patients undergoing carotid endarterectomy.<sup>a</sup>**

1. In patients with carotid artery stenosis, treatment of hypertension, hypercholesterolemia, and efforts at smoking cessation are recommended to reduce overall cardiovascular risk and risk of stroke regardless of whether intervention is planned. Targets are those defined by the National Cholesterol Education Program guidelines (GRADE 1, Level of Evidence A).
2. Aggressive treatment of hypertension in the setting of acute stroke is not recommended; however, treatment of hypertension after this period has passed is associated with reduced risk of subsequent stroke. The target parameters are not well defined (GRADE 1, Level of Evidence C).
3. Treatment of diabetes with the goal of tight glucose control has not been shown to reduce stroke risk or decrease complication rates after CEA and is not recommended for these purposes (GRADE 2, Level of Evidence A).
4. Anticoagulation is not recommended for the treatment of TIA or acute stroke, unless there is evidence of a cardioembolic source (GRADE 1, Level of Evidence B).
5. Antiplatelet therapy in asymptomatic patients with carotid atherosclerosis is recommended to reduce overall cardiovascular morbidity, although it has not been shown to be effective in the primary prevention of stroke (GRADE 1, Level of Evidence A).
6. Antiplatelet therapy is recommended for secondary stroke prevention: aspirin, aspirin combined with dipyridamole, and clopidogrel are all effective. Clopidogrel combined with aspirin is not more effective than either drug alone (GRADE 1, Level of Evidence B).
7. Perioperative medical management of patients undergoing carotid revascularization should include blood pressure control (140/80 mm Hg),  $\beta$ -blockade (heart rate, 60 to 80 beats/min), and statin therapy (low-density lipoprotein 100 mg/dL) (GRADE 1, Level of Evidence B).
8. Perioperative antithrombotic therapy for CEA should include aspirin (81 to 325 mg) (GRADE 1, Level of Evidence A). The use of clopidogrel in the perioperative period should be decided case-by-case (GRADE 2 Level of Evidence B).

Abbreviations: CEA, carotid endarterectomy; LDL, low-density lipoprotein; TIA, transient ischemic attack.

<sup>a</sup> Recommendations derived from the Updated Society for Vascular Surgery guidelines for management of extracranial carotid disease [1].

whether it should be started before or after CEA. This was largely because of concerns about postoperative bleeding. Boysen et al [2] reported that starting aspirin a week or 2 after CEA was not associated with any reduction in late stroke. However, a 1993 randomized controlled trial (RCT) showed that starting 75 mg aspirin before CEA was associated with a significant reduction in strokes in the perioperative period (that did not recover within 7 days), as compared with placebo [3], without increasing perioperative bleeding risks. Thereafter, debate moved toward determining the optimal dose.

In the North American Symptomatic Carotid Endarterectomy Trial (NASCET), patients were advised to take 1,300 mg aspirin, where tolerated [4]. In an unplanned subgroup analysis, NASCET reported that patients taking 0 to 325 mg aspirin incurred a 30-day death/stroke rate of 6.9%, compared to 1.8% in patients taking 650 to 1,300 mg aspirin [5]. To investigate this further, the Aspirin and Carotid Endarterectomy (ACEs) trial randomized 2849 CEA patients to 81 mg, 325 mg, 650 mg, and 1,300 mg aspirin throughout the perioperative period [6]. Patients receiving 81 mg or 325 mg aspirin were termed *low dose*, while 650 mg or 1,300 mg was termed *high dose*. The risk of stroke, myocardial infarction (MI) or death at 30 days was nonsignificantly lower in patients randomized to low dose aspirin (5.4% v 7.0%;  $P = .07$ ). However, it was then recognized that the data were potentially biased by including patients who were taking >650 mg aspirin daily before randomization alongside patients who had only started taking aspirin the day before surgery. In a subsequent efficacy analysis (excluding the latter patients), the risk of stroke, MI, or death at 30 days was 3.7% (low dose) versus 8.2% (higher dose) ( $P = .002$ ).

The debate about adopting a “case-by-case” role for clopidogrel is multifactorial. The National Institute for Health and Care Excellence guidelines now recommend that all patients suffering a stroke or transient ischemic attack (TIA) should receive clopidogrel long term [7], but they exclude patients

awaiting CEA, where the advice remains to take aspirin throughout the perioperative period. National Institute for Health and Care Excellence guidelines advise that clopidogrel should be started before discharge and aspirin therapy stopped. However, there is emerging evidence that the addition of clopidogrel (ie, dual antiplatelet therapy) before surgery may not only prevent thrombotic stroke after CEA [8], but it may also prevent recurrent events before CEA as well [9].

In a series of themed research projects, it was shown that patients destined to suffer a stroke due to carotid thrombosis in the early postoperative period had increasing rates of embolization detected on transcranial Doppler monitoring, before any evidence of a neurological deficit evolving [8]. A subsequent study showed that patients with higher rates of postoperative embolization had platelets that were more sensitive to adenosine diphosphate (ADP) [10] and a randomized trial, thereafter, showed that adding 75 mg clopidogrel to regular aspirin on the night before surgery significantly reduced embolization rates in the first 3 hours after CEA [11], with virtual abolition of stroke due to postoperative carotid thrombosis [8].

In parallel, there has been a worldwide drive toward performing CEA as soon as possible after onset of TIA/minor stroke, primarily because of the very high risk of recurrent stroke in the first few days after onset of symptoms [12]. In Leicester, the median delay from symptom to CEA is 8 days [9]. Five days represents the average delay between the patient suffering their index symptom, seeking help, and being seen in the daily single-visit TIA clinic. Those found to have a 50% to 99% stenosis are then transferred to the vascular unit for expedited surgery, after work-up. However, in the 2- to 3-day period between transfer from the TIA clinic to undergoing CEA, 13% suffered recurrent neurologic symptoms [9], emphasizing the extent of plaque instability and overlying thrombus formation during this very-high-risk period. A 2013 systematic review and meta-analysis had

Download English Version:

<https://daneshyari.com/en/article/5621722>

Download Persian Version:

<https://daneshyari.com/article/5621722>

[Daneshyari.com](https://daneshyari.com)