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## **Antithrombotic Drugs for Carotid Artery Dissection**

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Section Editor: Graeme J. Hankey, MD, FRACP

## Antithrombotic Drugs for Carotid Artery Dissection

Philippe Lyrer, MD; Stefan Engelter, MD

**E**xtracranial internal carotid artery dissection can lead to occlusion of the artery and hence cause an ischemic stroke. It is the underlying stroke mechanism in approximately 2.5% of all strokes. It is the second leading cause of stroke in patients younger than 45 years of age. Anticoagulants or antiplatelets may prevent arterial thrombosis in extracranial internal carotid artery dissection, but these benefits may be offset by increased bleeding.

### Objectives

To determine whether antithrombotic drugs (antiplatelet drugs, anticoagulation) are effective and safe in treatment of patients with extracranial internal carotid artery dissection (eICAD), and which is the better treatment.

### Search Strategy

We searched the Cochrane Stroke Group Trials Register (last searched October 3, 2002). In addition we performed comprehensive searches of the Cochrane Central Register of Controlled Trials (Cochrane Library Issue 2, 2002), MEDLINE (January 1966 to May 2002), and EMBASE (January 1980 to June 2002), and checked all relevant papers for additional eligible studies.

### Selection Criteria

Randomized controlled trials, controlled clinical trials assessing the efficacy of anticoagulants or antiplatelets for the treatment of extracranial internal carotid artery dissection, and nonrandomized trials, eg, case series (studies), that reported on any antithrombotic treatment with at least 4 patients, were eligible to be analyzed. Data from all eligible studies were extracted independently by 2 reviewers. Disagreements were resolved by discussion.

### Data Collection and Analysis

Data on the primary outcome measures were extracted systematically. These were death (all causes) and death or disability. Secondary outcomes were first stroke occurrence,

stroke recurrence, any stroke during reported follow-up, extracranial hemorrhage, and intracranial hemorrhage. The first choice treatment was taken for analyses.

### Results

No randomized trials were identified. No reliable comparisons of antiplatelet drugs or anticoagulants with control were available. Twenty-six eligible studies including 327 patients (who received either antiplatelet drugs or anticoagulants) were to be included in the comparative analysis. There was no significant difference in odds of death comparing antiplatelet drugs with anticoagulants (Peto odds ratio [Peto OR] 1.59, 95% CI 0.22 to 11.59). There was also no significant difference in the odds of being dead or disabled (Peto OR 1.94, 95% CI 0.76 to 4.91) (see Figure). Few intracranial hemorrhages (0.5%) were reported for patients on anticoagulants, none for patients on antiplatelets.

### Implications for Practice

There is no evidence to support the routine use of antithrombotic agents in eICAD. The available evidence does not reliably establish whether or not anticoagulants are better than antiplatelet drugs in patients with eICAD.

### Implications for Research

(1) A randomized trial comparing aspirin and anticoagulants is needed. (2) The available evidence does not provide a strong rationale for randomized trials of surgical intervention in eICAD.

### Conclusions

There were no randomized trials comparing either anticoagulants or antiplatelet drugs with control. There is, therefore, no evidence to support their routine use for the treatment of extracranial internal carotid artery dissection. There were also no randomized trials that directly compared anticoagulants with antiplatelet drugs, and the reported nonrandomized studies did not show any evidence of a significant difference between the two. We suggest that a randomized trial including at least 1400 patients in each treatment arm with this condition is clearly needed.

Note: The full text of this review is available in the Cochrane Library (for subscribers: [www.update-software.com/Cochrane](http://www.update-software.com/Cochrane)). The full article should be cited as: Lyrer P, Engelter S. Antithrombotic drugs for carotid artery dissection (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2003. Oxford: Update Software. © Cochrane Library, John Wiley & Sons Ltd.

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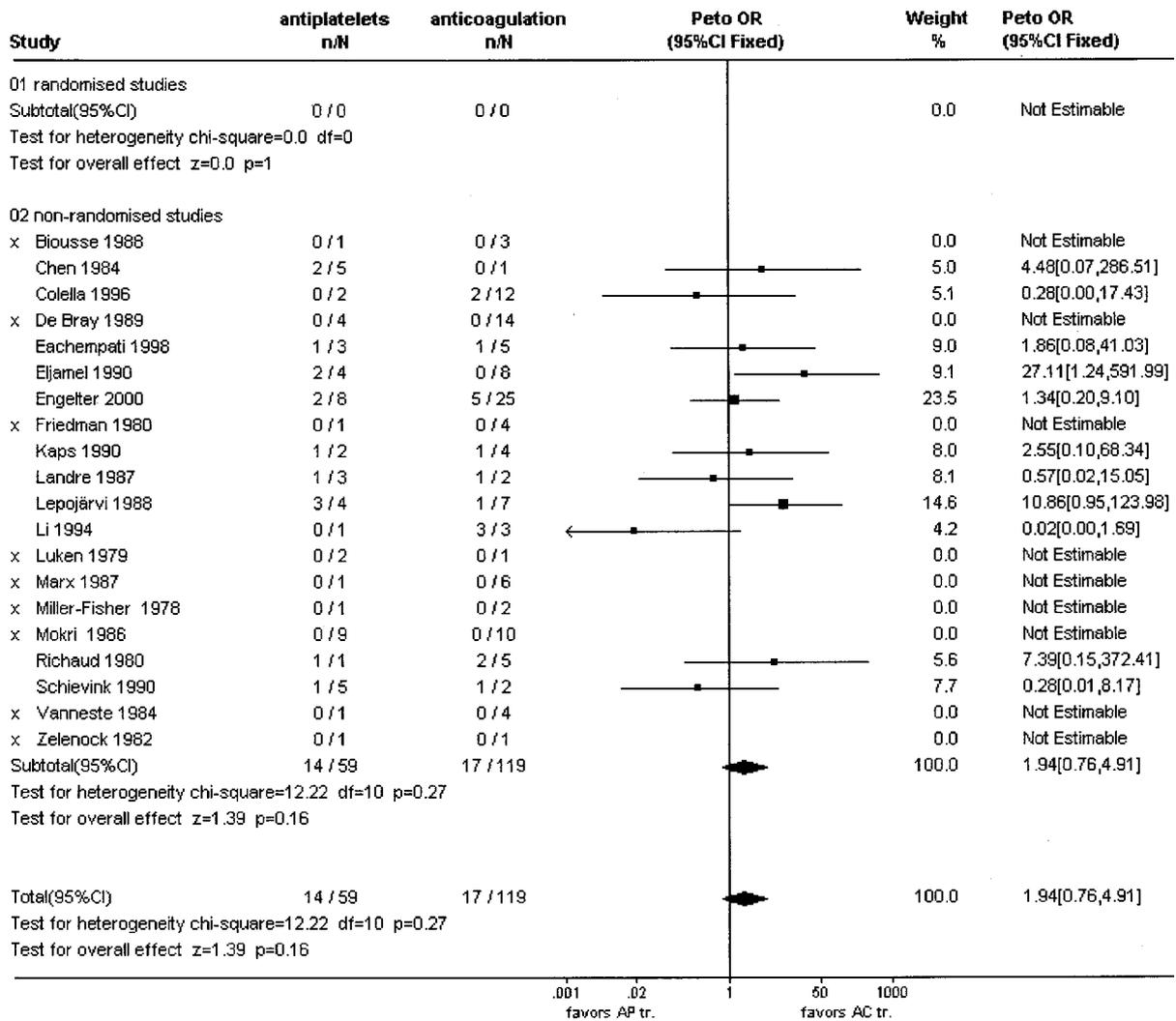
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Comparison: antiplatelet drugs versus anticoagulations; outcome: dead or disabled



Systematic review of nonrandomized studies comparing antiplatelet drugs with anticoagulants for patients with extracranial internal carotid artery dissection. Results are expressed as Peto odds ratio (OR) with a fixed-effects model. OR <1 suggest antiplatelets to be superior to anticoagulants. (From Lyrer P, Engelter S. Antithrombotic drugs for carotid artery dissection (Cochrane Review). In: The Cochrane Library, Issue 3, 2003. Oxford: Update Software. Reproduced with permission from John Wiley & Sons Ltd.)