Treatment of cervical artery dissection: a systematic review and meta-analysis

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CRD summary
The authors concluded that there was no evidence of therapeutic benefit favouring either antiplatelet or anticoagulant treatment in cervical dissection. However, given limitations in the evidence, definite conclusions could not be made. Despite the methodological limitations of the review, the authors' cautious conclusions appear to reflect the results.

Authors' objectives
To assess the effectiveness of antithrombotic drugs, thrombolysis and stenting in cervical artery dissection.

Searching
MEDLINE and PubMed were searched from 1966 to April 2007. Search terms were reported. Reference lists of relevant publications were also searched for additional studies. Three separate searches were conducted for each treatment type.

Study selection
Prospective and retrospective studies that evaluated anticoagulation versus antiplatelet therapy, thrombolysis and stenting in cervical, vertebral or carotid dissection were eligible for inclusion. Only anticoagulation studies including acute treatment (within one month of symptom onset) were included. Studies that evaluated both intra-arterial and intravenous thrombolysis treatment were included. Studies with less than four patients, and studies that evaluated interracing or intracranial extension of extracranial dissection, were excluded from the review. Studies that did not clearly specify treatment groups were also excluded.

A number of outcomes of interest were presented for each type of therapy. The majority of included studies evaluated carotid dissection.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data on the number of outcomes in the intervention and comparator groups were extracted. Risk difference (RD) and 95% confidence intervals (CIs) were calculated.

Two reviewers independently extracted the data, with any disagreements resolved by consensus.

Methods of synthesis
Where possible, meta-analyses examining pooled risk differences and 95% confidence intervals were performed using a fixed-effect model. The authors did not state that they assessed heterogeneity, although results from \( \chi^2 \) tests and the \( I^2 \) statistic were presented in the forest plots.

Results of the review
Forty-six studies (n=914) were included in the review; these included one prospective and 45 retrospective studies (no RCTs were identified).

Anticoagulation versus antiplatelet therapy: There were no significant differences between groups for death (RD 0, 95% CI -0.04 to 0.05; 34 trials), stroke (RD -0.01, 95% CI -0.06 to 0.04; 34 trials), combined transient ischaemic attack and stroke (RD 0.05, 95% CI 0.01 to 0.11; 33 trials), and stroke or death (RD -0.02, 95% CI -0.07 to 0.3; 34 trials). There was no significant statistical heterogeneity between the studies for any of the outcomes.
Thrombolysis in cervical artery dissection: There was insufficient data of efficacy (four trials).

Angioplasty and stenting in cervical artery dissection: There was insufficient data of efficacy (eight trials).

Authors’ conclusions
There was no evidence of a therapeutic benefit favouring either antiplatelet or anticoagulant treatment in preventing stroke, transient ischaemic attack or death in cervical dissection. However, given limitations in the evidence, definite conclusions could not be made. There was insufficient evidence to draw conclusions on thrombolysis and stenting in dissection.

CRD commentary
The review addressed a clear question and was supported by appropriate inclusion criteria. The authors did not state if they searched for unpublished papers, or non-English papers, potentially introducing publication and language biases, so some relevant studies may have been missed. More than two reviewers were involved in data extraction, so some steps were taken to minimise bias, but in only some aspects of the review process. The authors did not assess the validity of the studies, so that the results (and any synthesis of them) may not be reliable. A meta-analysis of the included studies appears to have been appropriate given the lack of statistical heterogeneity. Information on the individual studies was not provided. Despite methodological limitations of the review, the authors' cautious conclusions appear to reflect the results.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that efficacy of stenting in dissection needs to be evaluated in randomised controlled trials that stratify stent insertion according to indication, separating treatment of acute lesions from chronic dissecting aneurysms.

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