Surgical Decompression for Cerebral Edema in Acute Ischemic Stroke

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Background
The high mortality that follows a large cerebral infarction is in part due to brain edema. Edema causes mass effect with raised intracranial pressure and herniation. Medical therapies are used to reduce intracranial pressure, but outcome is poor despite treatment. Decompressive surgical techniques that attempt to relieve high intracranial pressure due to edema have been described, but their efficacy in reducing case fatality and disability is uncertain.

Objectives
To compare medical therapy plus decompressive surgery with medical therapy alone on the outcomes death and “death or dependency” in patients with an acute ischemic stroke complicated by clinical and radiologically confirmed cerebral edema.

Search Strategy
We searched the Cochrane Stroke Group Trials Register (October 4, 2001). In addition, we searched the following electronic databases: the Cochrane Controlled Trials Register (Cochrane Library, Issue 3, 2001), MEDLINE (1966–April 2002), EMBASE (1980–April 2002), and SCISEARCH (to April 2002). We also searched the reference lists of all relevant articles retrieved and contacted individual investigators and experts in the field.

Selection Criteria
Randomized controlled studies comparing the outcome of treatment with decompressive surgical intervention with treatment not involving surgery. We aimed to include only those studies with low or moderate risk of bias.

Data Collection and Analysis
Titles retrieved by searching were assessed for relevance by one author. Data were extracted independently by 2 authors with discussion to resolve differences. Relevant subgroup analyses were planned, and we planned to calculate Peto odds ratios with 95% CIs.

Main Results
More than 9000 citations were retrieved and inspected for relevance. We identified no randomized controlled trials to include in a meta-analysis. Five observational studies reporting comparative data were found along with a number of small series and single case reports. Two ongoing randomized controlled trials were identified.

Reviewers’ Conclusions
There is no evidence from randomized controlled trials to support the use of decompressive surgery for the treatment of cerebral edema in acute ischemic stroke. Evidence from randomized controlled trials is needed to accurately assess the effect of decompressive surgery.

The full text, data tables, results, analyses, and reference lists of this review are available in the Cochrane Library. The full-text article should be cited as follows: Morley NCD, Berge E, Cruz-Flores S, Whittle IR. Surgical decompression for cerebral edema in acute ischemic stroke (Cochrane Review). In: The Cochrane Library, Issue 3, 2002. Oxford: Update Software.
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