Mannitol for Acute Stroke

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Mannitol is an osmotic agent and a free radical scavenger and thus might decrease edema and tissue damage in stroke, and has been given a Class 2a recommendation (ie, probably indicated to decrease brain edema after large cerebral infarctions) for use in acute stroke in recent guidelines.1

Objectives
To test whether treatment with mannitol reduces short and long-term case fatality and dependency after acute ischemic stroke or intracerebral hemorrhage (ICH).

Search Strategy
We searched the Cochrane Stroke Group Trials Register, the Chinese Stroke Trials Register, the China Biological Medicine Database, MEDLINE (1966 to 2006), and the Latin-American database LILACS (1982 to December 2006). In addition we searched the database of Masters and PhD degree theses at Sao Paulo University and abstracts of medical congresses on neurology and neurosurgery from 1965 to 2006 in Brazil. We searched reference lists and contacted authors of published trials. Last searches were performed between September 2006 and February 2007.

Selection Criteria
Truly randomized unconfounded clinical trials comparing the effect of mannitol with placebo or open control in patients with acute ischemic stroke or nontraumatic intracerebral hemorrhage were eligible for inclusion.

Data Collection and Analysis
Two reviewers independently selected the trials for inclusion, extracted, and analyzed the data. Included trials were tabulated for methodological quality. Data synthesis and analysis was performed using RevMan version 4.3.1.

Main Results
Three trials fulfilled the inclusion criteria. The number of included patients was small (21, 77, and 128 patients). One trial with 77 subjects randomized patients with presumed ischemic stroke without CT verification, and the other 2 trials included patients with CT verified ICH. Data on the primary outcome measure (ie, death and dependency) were not available in any of the trials. Death and disability could be calculated in the larger trial on ICH, without differences between the mannitol and the control groups (Peto OR: 1.28, 95% CI: 0.64 to 2.56). Of the secondary outcome measures, case fatality was not reported in the single trial on ischemic stroke.

Figure. The effect of mannitol on case fatality in intracerebral hemorrhage.

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stroke and data were not available from the investigators. Case fatality did not differ between the mannitol and the control groups in the 2 small trials on ICH (Peto OR: 1.03, 95% CI: 0.47 to 2.25; Figure). Clinical improvement was not more frequent after mannitol treatment in any of the trials. Adverse events were either not found or not reported in the trials. Based on these 3 small trials neither beneficial nor harmful effects of mannitol could be proved. Although no statistically significant differences were found between the mannitol treated and the control groups, the confidence intervals for the treatment effect estimates were wide and included both clinically significant benefits and clinically significant harms as possibilities.

Reviewers’ Conclusions

There is currently not enough evidence to decide whether the routine use of mannitol in acute stroke would result in any beneficial or harmful effect. The routine use of mannitol in all patients with acute stroke is not supported by any evidence from randomized controlled clinical trials. Further trials are needed to confirm or refute whether the routine use of mannitol is beneficial in acute stroke. This is a brief summary of our review with the full text available in the Cochrane Library.2

Disclosures

None.

References


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