Body temperatures above 37.5°C have been observed in 4% to 25% of patients within the first 24 to 36 hours after stroke onset and are associated with poor long-term outcome. In the observational Copenhagen Stroke study, a 1°C increase in body temperature measured within 12 hours after stroke onset doubled the odds of poor outcome.

In animal models of focal cerebral ischemia, cooling reduces infarct volume. Hypothermia is successfully used in cardiac surgery and has been associated with a more favorable neurological outcome in patients who were resuscitated after cardiac arrest.

These observations suggest that reduction of body temperature and prevention of fever may improve functional outcome after stroke. However, the potentially beneficial effects of temperature-lowering therapy might be offset by side effects such as infections, cardiac arrhythmias, hemorrhagic transformation of infarcts, and deep venous thrombosis.

**Objectives**
The aim of this review was to assess the relation between interventions to reduce body or brain temperature and functional outcome or death in patients with acute stroke, and to determine whether there is any clear evidence that temperature reduction of any kind is beneficial, or whether the intervention is sufficiently promising to merit further trials.

**Search Strategy**
We updated the 1999 Cochrane review “Cooling Therapy for Acute Stroke.” Relevant trials were identified in the Specialized Register of Controlled Trials (last search, December 2007). Additional searches were performed in MEDLINE and EMBASE (January 1998 to December 2007). We scanned references and contacted authors of included trials.

**Selection Criteria**
We considered all completed randomized or nonrandomized controlled clinical trials, published or unpublished, where pharmacological or physical strategies to reduce body or brain temperature were applied in patients with acute ischemic stroke or intracerebral hemorrhage and the effect on clinical outcome was reported.

**Data Collection and Analysis**
Two reviewers independently selected trials for inclusion. Thereafter, 2 of 3 reviewers assessed the methodological quality of each identified trial and extracted the data. Outcome measures were death or dependency (modified Rankin Scale score >2) and death at the end of follow-up, and adverse effects.

**Main Results**
Five pharmacological temperature reduction trials and 3 physical temperature reduction trials involving a total of 423 patients were included. We found no statistically significant effect of pharmacological or physical temperature-lowering...
therapy in reducing the risk of death or dependency (OR 0.9, 95% CI 0.6 to 1.4) or death (OR 0.9, 95% CI 0.5 to 1.5). Both interventions were associated with a nonsignificant increase in the occurrence of infections (OR 1.5, 95% CI 0.8 to 2.6).

Implications for Practice and Future Research
There is currently no evidence from randomized trials to support routine use of physical or pharmacological strategies to reduce temperature in patients with acute stroke.

Large randomized clinical trials are needed to study the safety, optimal duration, and the effectiveness of both physical and pharmacological temperature reduction in patients with acute stroke. Note: The full text, data tables, analyses, results and reference list of this article are available in the Cochrane Library.1

Disclosures
None.

Reference

Key Words: stroke □ body temperature □ temperature-lowering therapy □ clinical outcome
Temperature-Lowering Therapy for Acute Stroke
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