Surgery for Primary Supratentorial Intracerebral Hematoma

A Meta-Analysis of 10 Randomized Controlled Trials

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There is considerable international variation in the rate and indications of surgery for primary supratentorial intracerebral hematoma (PSIH), reflecting the uncertainty about the effects of surgery. Recently, some large randomized trials have appeared in the literature, but the controversy over its role continues. This systematic review aims to evaluate randomized evidence to assess the effects of surgery plus routine medical management, compared with routine medical management alone, in patients with PSIH.

Methods

We searched the Cochrane Stroke Group Trials Register (up to June 2007), monographs, and reference lists of relevant articles and contacted authors of relevant trials. Studies were eligible for inclusion if they were randomized trials of routine medical management plus intracranial surgery (includes craniotomy, stereotactic, or endoscopic evacuation) compared with routine medical management alone in patients with CT-confirmed PSIH. Two review authors independently applied the inclusion criteria, assessed trial quality, and extracted the data. We assessed heterogeneity using $\chi^2$ test and $I^2$. Meta-analysis was done using fixed effects model with odds ratio as effect measure. Primary and secondary outcomes were death or dependence (Barthel Index of 60 or less) and death, respectively.

Results

Ten trials with 2059 participants were included. The quality of most of the trials was acceptable but not high. Surgery was associated with statistically significant reduction in the odds of being dead or dependent at final follow up (odds ratio [OR] 0.71, 95% confidence interval [CI] 0.58 to 0.88; $2P=0.001$; Figure 1) with no significant heterogeneity ($P=0.22$; $I^2=24.7\%$) among the study results. Surgery was also associated with significant reduction in the odds of death at final follow up (OR 0.74, 95% CI 0.61 to 0.90; $2P=0.003$; Figure 2); however, there was significant heterogeneity ($P=0.04$; $I^2=49\%$) for death as outcome. Because the STICH trial had surgery in 26% of patients randomized to the medical arm, we examined whether this could be a source of heterogeneity. Excluding this trial, indeed, decreased the $I^2$ to 0% for death/d dependence and to 13% for death as outcome.

Implications for Practice

This updated review provides evidence that the surgical treatment of PSIH is associated with a reduction in the odds of being dead or dependent. Patients who have altered consciousness or neurological deterioration are likely to benefit from surgery. The review does not provide evidence to support surgery after 72 hours.

Implications for Research

This review has demonstrated the need for further studies of surgical treatment of PSIH to identify those patients most likely to benefit, and to find effective but less invasive methods of removing the hematoma. This is a brief summary of our systematic review, with the full text available in the Cochrane Library (www.thecochranelibrary.com).

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References

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