Evacuation of Intracerebral Hematoma Is Likely to Be Beneficial

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A new era has begun for acute ischemic stroke since the success of a clinical trial of hyperacute thrombolytic therapy. By contrast, there is yet time before daybreak in the management of acute intracerebral hematoma (ICH). Although many therapeutic options, including surgical evacuation, are described in stroke textbooks and guidelines for patients with acute ICH, nothing has yet been proven in large-scale randomized clinical trials. Only a few subgroups of patients with ICH are listed as candidates for surgical treatment. They are patients with large (>3 cm) cerebellar hematoma and young patients with a lobar hematoma who are clinically deteriorating. Patients with small hematoma and with deep coma should not be treated surgically. For all other ICH patients, the best therapeutic option remains unclear.

In the first and largest controlled trial by McKissock et al., no benefit from surgical evacuation was demonstrated in regard to either mortality or morbidity. However, many patients with ICH have been treated surgically since this negative study. For example, more than 7000 patients with ICH per year are estimated to receive surgical treatment for hematoma evacuation in the United States. The situation is similar in Japan.

In a retrospective, nonrandomized study in Japan, Kana and Kuroda compared the effects of surgical evacuation on mortality and morbidity in 3638 patients with spontaneous supratentorial ICH. On the basis of the results, they recommended surgical treatment if the hematoma is larger than 30 mL in extent and the level of consciousness is somnolent to semicomatose. They also found that functional outcome was better in patients undergoing stereotaxic aspiration than in those with conventional evacuation, if the patient’s preoperative consciousness was normal or stuporous. Most of neurosurgeons and neurologists in Japan accept their opinion that hematoma evacuation can reduce the early mortality. The conclusion of this study, particularly concerning the beneficial effect of surgical evacuation on functional outcome, has been criticized, mainly because of the lack of randomized comparisons.

Recently, results of several randomized clinical trials were published. Their sample sizes were small, and therefore their results were inconclusive. In a systematic review by Hankey and Hon, the pooled results of the 3 randomized trials of open craniectomy and 1 trial of endoscopic evacuation for supratentorial ICH indicated a nonsignificant increase in odds of death and dependency at 6 months for patients treated surgically. More recent meta-analysis by Fernandes et al. suggested a benefit from surgery, with a reduction in the chances of death and dependency after surgical treatment by a factor of 0.63. This meta-analysis excluded the study by McKissock et al and a Chinese trial, because of problems of quality.

The Surgical Trial in Intracerebral Hemorrhage (STICH), a multicenter, randomized controlled trial, is in progress to evaluate the role of surgery in a total of 1000 patients with spontaneous supratentorial ICH. Unfortunately, the study protocol is rather ambiguous. A patient can be included when the surgeon is uncertain about the need for surgical evacuation. The neurosurgeon can use the method preferred for surgical evacuation. The study may have a danger of surgeon’s or institutional bias.

It is a reasonable concept that brain damage due to ICH may be minimized by removal of the hematoma. It may reduce the mass effect, block the release of toxic products from the hematoma, and prevent early hematoma enlargement occurring early after onset of ICH. I believe that hematoma evacuation can reduce not only mortality but also morbidity if several critical conditions are optimized. They are clinical and neurological conditions of patients, the extent and site of hematoma, the method of hematoma evacuation (conventional versus stereotactic or endoscopic evacuation), the time window of surgery, and additional medications to facilitate complete evacuation (use of thrombolytic agents). In order to establish the best therapeutic option for acute ICH patients, further studies will be needed even after the STICH study.

References


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