

Editorial

Comment on ‘Time window for clinical effectiveness of mass evacuation in a rat balloon model mimicking an intraparenchymatous hematoma’

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The article by Valdes et al. [1] re-emphasises that there is salvageable brain around an intracerebral haematoma (ICH). This suggests that the nihilism that has prevailed in clinical neurosurgical practice for almost half a century now may therefore be misconceived. The management of patients with ICH remains uncertain because clinical trials have so far failed to show that surgical removal of a clot improves the outcome as is demonstrated in the meta-analysis (Fig. 1) [2]. This uncertainty has been exacerbated by the experimental data from ICH models, which have shown that there is a large ischaemia penumbra around an ICH in the rat.

Valdes et al. now confirm our earlier observations, which suggested that early removal of a mass lesion would limit brain damage [3]. The volume of the balloon in their study was large (100 μ l), but despite this, the death rate was dramatically and significantly reduced when the balloon was deflated compared with when it was left

inflated. Furthermore, clinical disability was evaluated in survivors and, even after two hours, complete wakefulness occurred soon after deflation of the balloon. Their careful experiments also suggest that the sooner the mass is removed the better. Also, their studies reflect only the mass effects of a rapidly expanding lesion; there may be additive effects from blood and its breakdown products. Surgical removal of a haematoma may therefore do more than just reduce these mass effects: it may remove the vasoactive and cytotoxic chemicals that are released from the breakdown products of haemoglobin.

There is evidence that haemorrhaging continues for several hours after the initial ictus [4,5]. This increase may be by as much as 40% and occurs within the first few hours of the onset of ictus. Mayer et al. [6] have also confirmed with Single Photon Positron Emission Tomography (SPECT) that there is an ischaemic penumbra in patients with ICH. Taken together with our own recent

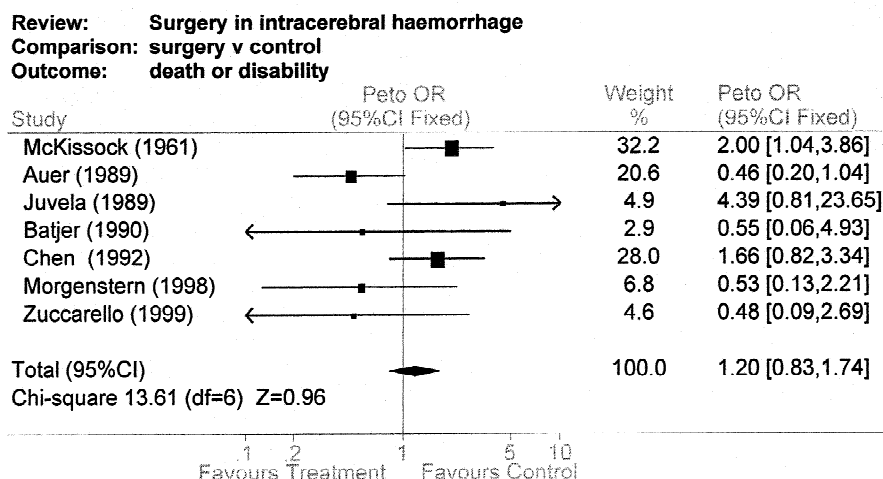


Fig. 1. Meta-analysis of 7 trials of surgery in ICH [2,8–14].

clinical measurements of cerebral blood flow using SPECT in patients with ICH [7], these clinical and experimental studies have suggested that the penumbra and the oedema produced by blood (rather than just the mass lesion) may perpetuate and extend the development of ischaemic neuronal damage. For these reasons the time window may be longer than is suggested by these and our own experiments with balloons [1,3]. They also strengthen the case for randomising patients in the multicentre Surgical Trial in Intracerebral Haemorrhage (STICH) in which the time window has been extended to 72 h, although about half of the patients so far have been randomised within 24 h.

STICH has now randomised 240 patients with spontaneous supratentorial intracerebral haemorrhage to 'early surgery' or 'initial conservative management'. This is a difficult trial because of the inability of many such patients to give consent. However, it is important to resolve this issue as soon as possible to ensure that the correct treatment for all future patients is carried out according to proper clinical evidence from a large controlled trial. The article by Valdes et al. makes this even more urgent. The power calculations for STICH have indicated that approximately 1000 patients with spontaneous supratentorial ICH need to be recruited to show whether early surgery is beneficial or not. More centres are needed to complete this trial in as short a time as possible. Centres interested in joining the trial should contact our offices in Newcastle upon Tyne, England by post or email at STICH@ncl.ac.uk

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