

## Treatment of intracerebral hemorrhage: where do we stand?

The recent well-written overview of the advances in stroke over the last decade by Dr. Silver<sup>1</sup> has highlighted the controversy over a few options for the treatment of intracerebral hemorrhage (ICH); a result of its complex nature and the variability of its clinical manifestation. Unfortunately, the ICH ADAPT protocol has recently suggested that lower cerebral perfusion and blood pressure do not affect the ICH-induced oedema growth,<sup>2</sup> while Starke *et al.*<sup>3</sup> underline that thrombolysis-assisted clot evacuation might be more beneficial for certain ICH types (such as deep clots, specific superficial ICH types and those involving intraventricular hemorrhage). On the other side, a 9-point prediction score for hematoma expansion was just published<sup>4</sup> aiming toward an individualized treatment and improved trial design in the case of ICH patients; a development of paramount importance in light of the ongoing debate over the criteria leading to a beneficial choice of the nature of ICH treatment studied (amongst others) by the STICH II trial.<sup>5</sup> In view of the above, basic and clinical research should be more attentive to the ICH parametropoiesis, neuroimaging and neuromonitoring, while it should by no means abandon the quest for novel, combinatorial and effective conservative approaches.

### References

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### Disclosures

The authors acknowledge that no conflict of interest exists.

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## Reply to Authors

Drs. Bimpis and Zarros highlight the challenges faced in the treatment of intracerebral haemorrhage, and suggest valuable means of achieving success. Approaches undergoing testing include early surgical evacuation in carefully selected individuals,<sup>1</sup> microsurgical thrombolysis with evacuation,<sup>2,3</sup> blood pressure reduction,<sup>4,5</sup> and chelation.<sup>6</sup> For most of these potential treatments, with the notable exception of microsurgical thrombolysis and evacuation, time to treatment will likely be the most important factor, as it is in acute ischemic stroke. Getting patients to active emergency medical services and rapid triage after activation will result in the largest overall benefit.

Brian Silver, MD

[Ed.'s note: Dr. Silver is Associate Professor of Neurology at the Alpert Medical School of Brown University and Director of the Stroke Center at Rhode Island Hospital.]

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