Correspondence

Deliberate hypotension for intracranial aneurysm surgery: changing practices

To the Editor:

I enjoyed Dr. Wong's review of perioperative stroke.¹ However, the discussion of deliberate hypotension may leave readers with a misimpression. Dr. Wong states: "The risks of brain damage are minimal with deliberate hypotension provided that hypotensive anaesthesia is carefully administered." This statement follows mention of an investigation of CBF during nitroprusside-induced hypotension in aneurysm surgery.² The measurements were made contralateral to the aneurysm in patients who were at least ten days post-subarachnoid haemorrhage, who were in good neurological condition, and who had no angiographic vasospasm. I believe this study was cited as confirmation that the normal brain is very tolerant of nitroprusside-induced hypotension. However, the juxtaposition of this information with the quoted statement may be misinterpreted as an endorsement of deliberate hypotension during aneurysm clipping. By contrast, I believe that the evolving opinion of the neurosurgery-anaesthesia community is that it is preferable to minimize blood pressure reduction and to reserve hypotension for the control of intraoperative rupture or perhaps for brief periods preceding clip application.

This changing attitude is related in part to the recent practice of "early" clipping after subarachnoid haemorrhage and to the simultaneous development of an awareness of the brain's vulnerability in the post-injury period to damage by events that would, in isolation, be subcritical. This vulnerability to "secondary insult" by minor episodes of hypotension, hypoxia or ischaemia has been demonstrated in the laboratory for both previous ischaemic³ and mechanical insult.⁴ Furthermore, subclinical vasospasm can occur. Patients of good neurological grade may have focal areas of substantial CBF reduction,⁵ and it is a logical concern that lowering perfusion pressure in these patients may cause reduction of CBF to critical levels. In addition, neurosurgeons increasingly use temporary occlusion to accomplish local decompression of technically difficult aneurysms^{6,7} and blood pressure may be critical in maintaining collateral flow.

The impact on neurological outcome of blood pressure management during aneurysm surgery has not been

studied systematically. However, a recent review of intraoperative rupture concluded that patients in whom hypotension was used in the control of bleeding had poorer neurological outcome than those in whom normotension was maintained.⁸ This study may be inconclusive in that the use of hypotension may have correlated with more difficult technical circumstances. Nonetheless, it reflects an attitude of restraint in the use of hypotension in the care of these patients.

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