Cerebral and Renal Blood Flow Autoregulation

To the Editor:
I was delighted to see our work cited in the recent editorial, “Intraoperative hypotension and patient outcome: Does one size fit all?”1,2 Unfortunately, the authors made unsupported claims about the differences between renal and cerebral blood flow autoregulation. Indeed, the editorial’s conclusion that cerebral blood flow is determined by cerebral perfusion pressure and independent of changes in cardiac output is contradicted by our laboratory studies in nonhuman primates.3–5 In our laboratory model, cardiopulmonary bypass flow was varied by adjusting pump output, whereas arterial blood pressure was independently manipulated by administration of intrathecal lidocaine. Furthermore, this finding that cerebral perfusion is dependent on mean arterial pressure and not dependent on cardiac output is strongly supported by the clinical data in cardiac surgery patients.6

In stark contrast, the editorial claim that, “the kidney can be hypoperfused at normal mean arterial pressure if cardiac output is compromised,” is not supported by the cited reference.7 In that study’s piglet model, renal blood flow decreased during hemorrhagic hypotension. Although cardiac output was not measured at all, one would presume that the hemorrhage resulted in both decreased cardiac output and decreased arterial blood pressure. That decrease in renal blood flow may have been a consequence of hypotension, low cardiac output, or both. Whether or not changes in cardiac output, independent of arterial blood pressure, alter renal blood flow remains largely an open question.

Competing Interests
The author declares no competing interests.

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References

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