Reviewer's report

Title: Changes of cerebral regional oxygen saturation during pneumoperitoneum and Trendelenburg position under propofol anesthesia: a prospective observational study

Version: 0 Date: 02 Sep 2018

Reviewer: George Hoffman

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This study examines the changes in cerebral oxygenation, as measured by the Masimo near-infrared tissue oximeter, during the conduct of anesthesia with propofol/remifentanil in male patients undergoing robotic prostatic surgery, with physiologic stresses of pneumoperitoneum and trendelenburg positioning that are expected to induce changes in cerebral perfusion pressure or cerebral vascular resistance. The overall study data acquisition and sampling methodology seem appropriate for the aims. However, more detail is required about analysis methodology, and certain specific questions should be addressed to enhance the interpretation of the data.

In the clinical methods: was the conduct of anesthesia altered in any way by the rSO2, or was this measure blinded to the anesthesiologist? was there active management of blood pressure, or was the BIS the only target? if BP was managed, what methods and targets?

Was the transducer placed at the pleostatic axis, the level of the ear, and was the transducer position standardized between patients?

For the multiple regression analysis, what techniques or models were used to account for repeated samples from individuals? were the coefficients 'fixed effect' or within-patient coefficients, or were they estimated using random-effects (within and between) models? you should provide some description of the hierarchical model employed.

Where is the regression output? a table of coefficients for the measured independent variables pco2, map, and an indicator variable indicating trendelenburg position would be essential to allow the reader to accept your conclusion that MAP and pCO2 affect rSO2.

In the discussion, you explore the potential competing effects of autoregulation (expected to keep cerebral blood flow constant) and the possibility that CBF might depend on MAP, especially if perfusion pressure were too low (below the lower limit of autoregulation, LLA). you report group effects, but individual variation in BP while anesthetized and the LLA might make the rSO2-BP relationship different for different individuals.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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