Reviewer’s report

Title: Estimation of central arterial pressure from the radial artery in patients undergoing invasive neuroradiological procedures

Version: 0 Date: 28 Jun 2019

Reviewer: Brenton Alexander

Reviewer's report:

The larger concern for this manuscript is what you stated just prior to your discussion of limitations:

"In the present study, we were not able to clearly demonstrate that the reconstructed pressures obtained by PRAM were closer to central pressures than were the peripheral measurements. In fact, we found similar correlations and biases between central and reconstructed, and central and peripheral pressures.". If your function did absolutely nothing but copy the peripherally measured pressures your correlations would be just as strong to Aortic pressures… This unfortunately significantly diminishes the validity of your novel multiple linear regression model derived transfer function…You need to think of better ways to validate your PRAM software, and this requires patients with larger differences between Aortic and peripheral pressures (which is also a good idea because this software is most clinically relevant is people with comorbid cardiovascular conditions as opposed to healthy patients such as those measured here). Potential areas of focus could be vascular surgical or diabetes patients moving forward. As long as the differences between measure peripheral and measured aortic pressures is small, no validation of your function can occur. I recommend significantly changing the conclusion to indicate this less decisive result.

Assuming that values over a 2 minute period, even without stimulation or changes in ventilation/anesthetic, can be averaged may not be completely accurate.

Some short of deviation measurement should take place when reporting blood pressure values measured over a 2 minute period

Make the abstract and introduction more clear to explain that the PRAM method used here only uses peripherally obtained arterial pressures and the centralled obtained pressures are only used for "gold standard" comparison to evaluate the efficacy of the PRAM method

Discuss the approach used to create the transfer function of taking peripheral arterial pressures and deriving central aortic pressures (how many patient values were used to validate this function? What type of patients? Where? When? Errors?)
The section of the results describing the differences greater than 10 mmHg is confusing and hard to read, I would summarize it more succinctly and create a table (or something else that is easier to interpret)

Bland Altman analysis could be useful for comparing your peripherally derived aortic pressures to centrally derived

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**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 recommend additional statistical review

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

Acceptable

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