Reviewer’s report

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

Version: 0 Date: 10 Jul 2019

Reviewer: Luisa Briesenick

Reviewer's report:

I appreciate the opportunity to review the manuscript "Estimation of central arterial pressure from the radial artery in patients undergoing invasive neuroradiological procedures". It reports the results of an open, monocentric, observational study which compared the measured central arterial pressure, the measured peripheral arterial pressure and, generated by a pressure recording analytical method (PRAM), the estimated central arterial pressure in 21 patients undergoing invasive neuroradiological procedures. The accurate, non-invasive measurements of peripheral and especially central pressures is clinically highly relevant. Your study is a pragmatic and well-conceived approach to this topic, the manuscript very well scripted and the conclusions substantiated by the results are dissected delicately and put into the context of current literature. I only have some, mainly minor, comments.

Comments:

- Was the 20G peripheral arterial line inserted just before the procedure or already in place? Could an arterial line placed hours or days before the procedure have affected the quality of the measurements?

- Does the current literature give insight how the difference in catheter size could affected the measurements?

- Were patients excluded if they showed exclusion criteria (e.g. arrhythmias) during the measurement? You state that the measurements were collected during periods of hemodynamic stability. You also eliminated values from the average measurements if extrasystolic heart beats affected the blood pressure values. Did you use a predefined cut-off for the number of extrasystoles during the measurement to exclude patients?

- Was the general anesthesia maintained with Propofol infusion pumps?
Repeated measurements were performed in single patients. Did you account for multiple measurements per subject when calculating the mean of the differences with SE and 95% CI?

You state that the central arterial measurements are exact measurements of the "true" pressure (without intrinsic error), therefore you refrained from performing a Bland-Altmann-Analysis and calculated the correlation coefficient instead. Bland and Altmann state, that the correlation coefficient \( r \) measures the strength of a relation between two variables, not the agreement of them (Bland & Altmann, 1986). One may argue, that two methods that were designed to measure the same quantity (pressure) are by definition related. Thus, how much the new method differs from the old one cannot be derived from the correlation coefficient. Did you consider that the central pressure measurements with the established technique in itself are already indirect measurements, transduced into a signal we collect externally of the patients' body? One might argue that the measurements actually display the "true quantity" of the pressure (Bland & Altmann, 1986). Is there more literature to back up the use of the correlation coefficient in comparing PRAM with central arterial pressure measurements instead of using Bland-Altman analysis? (In doubt, a statistical reviewer might need to be consulted).

**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.

Yes

**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
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Please indicate the quality of language in the manuscript:

Acceptable

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