Reviewer’s report

Title: Evaluation of a new arterial pressure-based cardiac output device requiring no external calibration

Version: 1 Date: 31 May 2007

Reviewer: Alwin Eduard E Goetz

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Prasser C, et al.

Thank you for giving me the opportunity to review this extensively revised paper by Prasser and colleagues.

Abstract: This conclusion is still too speculative. The major finding of your study was that the limits of agreement between the CO measurements derived by PA thermodilution and this pulse contour approach were unacceptably high. Whether this can be improved by the refinement of the algorithm, or not (this might be also a principle problem of analyzing a peripheral AP signal) still remains speculative. This can be discussed in the discussion section (as you did), but not in the abstract.

Results: Including delta CO has improved the message of the presented data. However, I would suggest also including correlation coefficients between absolute values of CO derived by both methods, as well as the correlation between delta CO of both techniques. I would prefer to present those data also as figures – together with the Bland-Altman Plots. These data are needed to make your results comparable to other studies in this field.

Why did you include only 144 out of 164 measurements in the analysis of delta CO? What happened to the other 20 measurements?

Discussion: p. 11/12: It is still not proven that an auto-calibrating algorithm, as it is used in the Flow-Trac can correct for changes in arterial tone. This is in particular of great importance, when a peripheral AP-signal, such as the radial artery is used. Also in your study, changes in vascular tone have not been induced nor assessed. This remains a crucial point in your discussion and cannot be avoided. Setting down a time window from 10 to 1 minute does not solve the problem, when changes are maybe not adequately recognized by an algorithm. This key question can (and needs) to be answered in an interventional/experimental study vs. a reliable gold standard.

p.13, limitations: I would suggest to leave out the second paragraph: in your study, you evaluated the algorithm V1.03, so anything about a subsequent version is speculative. Also here accounts that, specifically regarding the effect of changes in vascular tone, specific clinical/experimental evaluation is necessary – and not just only the adjustment of a time interval.

Conclusion

The conclusion of your study is stated in the very first sentence: It can become a potentially helpful tool, but clinically unacceptably inaccurate in this version – I would recommend to leave it with this, because anything else is not supported by your data.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

Member of the MAB Pulsion