Reviewer's report

Title: Predictors of the accuracy of pulse-contour cardiac index and suggestion of a calibration-index: a prospective evaluation and validation study.

Version: 1

Reviewer number: 2

Referee's comments to the author(s)

Only this section of the report will be returned to the authors. Do not comment in this section on the interest/importance level of the manuscript, or whether or not the manuscript should be accepted.

Huber and coworkers found that the bias between pulse contour analysis-derived cardiac index (Clpc) and thermodilution cardiac index (Clttd) was not related to the time since previous calibration but to the Clpc value of the Clpc-Clttd measured at baseline. The study raises some important concerns.

Main comments
1. The results are mainly based on the correlation between Clpc-Clttd and various factors. How did the authors choose such factors?
2. It is obvious Clpc-Clttd is correlated with Clpc, and with Clpc-Clttd (baseline), since Clpc is one of the two determinants of the Clpc-Clttd values. In other words, correlation may more result from mathematics than from hemodynamic factors.
3. The bias between Clpc and Clttd may be associated with changes in arterial compliance. Although it is not possible to assess compliance at the bedside, one could perhaps approach it by calculating the ratio of stroke volume variation over pulse pressure variation. What would provide such an analysis?

Specific comments
1. Materials and methods. If I am right, each patient participated to the study at 8 instances: One time when the second TPTD was performed one hour after the baseline TPTD, another time when it was performed 2 hours avec baseline TPTD etc. If so, it is hard to understand in the present version. Please clarify.
2. The number of words of the abstract exceeds the number recommended by the Journal.
3. Please change the unit of measure of CI for “L/min/m²”.
4. How was the sample size calculated?
5. Results. “Mean bias values were -0.06061+0.60276 and 0.00261+0.60961 L/min*m², respectively. ».Please reduce the number of decimals.
6. “Fig. 1 and Table 3 … To avoid repeated measurements and different…” The second sentence is more related to methods than to results.
7. “Obviously, in both collective”, “bias-values also demonstrate”, “this is ‘strong evidence’ that”… Such terms interpreting the results should be removed from the Results paragraph and rather belong to the discussion.

8. The discussion is too long and could be easily shortened.

9. The discussion lacks hypotheses explaining why the present results are in contradiction with the previous ones.

10. Page 13: “In our merged data, percentage-error… None of these analyses provided evidence for time-dependency of the agreement of Clpc and Cltd.” This is unclear to time. Please reformulate.