Reviewer’s report

Title: Cardiac Surgical Outcome Prediction by Blood Pressure Variability Indices Poincaré plot and Coefficient of Variation: an Observational Study

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Reviewer: Khosro Hekmat

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Title: Cardiac Surgical Outcome Prediction by Blood Pressure Variability Indices Poincaré Plot and Coefficient of Variation: an Observational Study

The authors sought to evaluate predictors of 30-day mortality for patients undergoing CABG, CABG + Valve, Valve and other cardiac surgical procedures. This study included 3687 patients, who underwent cardiac surgery between 2008 and 2013. This study aims to assess the reliability and the validity of blood pressure variability (BPV) during on-pump cardiac surgery on postoperative outcomes.

The paper should not be published:

1. The authors present a retrospective, observational, cohort study with 3687 patients. The data were obtained from the STS database from the anesthesia information management systems. The quality of the data is not clear.

2. Given the lack of pulsatility, systolic blood pressure (SBP) was not measured during CPB. Cross clamp time was 71 minutes for the entire cohort. BP variability was calculated in terms of coefficient of variation. So, most of the time no BP variability was calculated. How can the authors expect valid results here?

3. The authors found that BPV in terms of CV, SD1 and SD2 did not add much value to the risk predictive performance of conventional models. This sounds very logic to me.

4. The models for risk prediction (EuroSCORE, NBI, etc.) are missing.

5. The conclusion is not supported by the presented data.

6. It would be beneficial, if the authors compare their scoring system with a risk model like the CASUS (J Cardiothorac Vasc Anesth. 2019 Apr 3. doi: 10.1053/j.jvca.2019.03.066 [Epub ahead of print]).

7. CABG and Valve patients should not be mixed in a study regarding 30-day mortality.
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.

No

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

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