Reviewer's report

Title: Soluble receptor for advanced glycation end products as an indicator of pulmonary vascular injury after cardiac surgery

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Reviewer: Damiano Magri

Reviewer's report:

Authors evaluated and compared variations in sRAGE and PLI (a measure of pulmonary vascular permeability) in 60 consecutive before and after cardiac surgery patients, taking into account also the amount of blood transfusion. Their main objective was to elucidate a possible role of sRAGE in determining an alveolar-capillary damage in this setting of patients.

Authors found sRAGE as a specific (but not sensitive) marker of PLI values and suggest that sRAGE may serve as an indicator of lung injury and, possibly, that it could contribute itself to this condition.

I found the study of certain interest but I would like to give some little suggestions to improve some aspect of data presentation and discussion.

Minor essential revisions:

Introduction
- only specify between as a possible cause of ALI in cardiac surgery also the mechanical ventilation.

Methods
- why table I is presented as a supplementary file?
- dichotomize the left ventricular ejection fraction as preserved or reduced using a cut-off value of 50% (bad, moderate or good do not sound at all!)
- supply a more punctual timing for sRAGE, PLI and BALF…not just before and after but 1, 2 or 3 hours before and after but 1, 2 or 3 hour (±SD)
- Figure 3 is not necessary. It is enough to give data into the Results

Statistics
- why ANOVA? You have only two data sets to compare
- I think you forgot to write how you compare all categorical variables (I think with chi-square method or fisher)
- to correlate two variables with a linear (normal) distribution is enough to use the Pearson method rather than the Spearman one

Discussion
- An emerging marker of alveolar-capillary unit “health” is represented by
surfactant protein type B. With respect to sRAGE, SPB owns a more “simple” underlying release-mechanism (leakage in the bloodstream because of an alveolar-capillary damage/stretch). Indeed SPB was found to increase in chronic alveolar-capillary damage (i.e. chronic heart failure: Magri D, et al. Circulating plasma surfactant protein type B as biological marker of alveolar-capillary barrier damage in chronic heart failure. Circ Heart Fail. 2009;2(3):175-80) as well acutely during major surgery (your actual reference 12).

As Authors acknowledged, sRAGE has certainly a conflicting meaning because it could be marker and/or part of lung injury. Supporting this potential bias, an increase in SRAGE circulating values was also observed in a recent study conducted in patients undergoing vascular but not cardiac surgery (Agostoni PG et al. Kinetics of plasma SPB and RAGE during mechanical ventilation in patients undergoing major vascular surgery. Respir Physiol Neurobiol. 2011 Sep 15;178(2):256-60). Because I can imagine that Authors cannot supply data about SPB for the current study, I would like they stress (in the Discussion or, at least, in the limitation) the lack of data on this novel biomarker in order to investigate the alveolar-capillary unit.

**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:**

I declare that I have not competing interest.