Reviewer's report

Title: Influence of tidal volume on pulse pressure variation and stroke volume variation during experimental intra-abdominal hypertension.

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Reviewer: Pedro Silva

Reviewer's report:

In the present study of Diaz et al, the authors aimed to investigate the effect of tidal volume (VT) on PPV and SVV, and prediction of fluid responsiveness in a model of intra-abdominal hypertension (IAH). This reviewer has major and minor comments:

Major comments:

The authors could better describe the rationale to reach the study hypothesis. The end of introduction, they talk about the dynamic indexes in the context of increase in IAP. This is very interest, and to me represents the fortress of the paper. For example, in a condition of increase in IAP, with reduced respiratory system compliance, the low tidal volume (6ml/kg) could be used to detect fluid responsiveness, since the repercussion in airway pressure would be higher? The authors could formulate a hypothesis.

The authors should not put attention on the effect of crescent tidal volumes in euvolemic animals. This is not very new.

The authors used piglet. What is chest wall compliance of these animals? or references about it?

What was the background to use SVI greater that 15% as fluid responder, what reference?

It was not induce hemorrhage in these animals. I think that the authors could avoid the term fluid resuscitation, and use fluid challenge.

This is an important issue. At the beginning, in the baseline, the animals were theoretically euvoletic. The high variability in SVV(%) in figure 2 at the baseline, mainly at high VT, may represent different positions in LV function curve among the animals. This could be the reason, that in some animals there was positive response in SVI (>15%) or negative response in SVI (<15%). This is in line after the fluid boluses 1 and 2 without IAH. The dispersion is reduced among the animals at the highest VT. Probably, now they are at the flat part of the LV function curve. The authors could discuss better this point. The apparent baseline imbalance.

In table 2, the authors could include data about respiratory parameters, as: respiratory system compliance, tidal volume, driving pressure, and Plateau pressure.

Minor comments
Abstract:

Methods section:
The authors could better describe the experimental protocol. Only looking at this part it’s difficult to understand.

Results section:
The authors should provide the main p values for important comparison, and also insert the main information as quantitative data.

Conclusion section:
The main message could be clearer. For example, in a condition of IAH, the dynamics indexes should be used or not. What we can infer from the experiment settings. The increase in VT leading to increase of dynamic indexes accuracy is not very new information.

Introduction:
Please write respiratory rate. Change lung compliance to respiratory system compliance. (line 18, first page of introduction, and line 15, second page of introduction)

Methods:
If the data behaved as normal distribution, the authors could use mean +/- SD., and not SEM.

Results:
The levels of IAP along the experiment could be introduced in table 2.
Please check figure 3. It is very similar compared to figure 2. In the legend it is written PPV (%), but the values are quite closer.

Key messages
The second message is not very new. It should be removed. Once more, the authors could highlight the IAH condition at low, mean and high VT. This is line with the hypothesis. In a condition of low respiratory system compliance, the tidal volume did or did not influence the repercussion of forces across the thorax? When IAH is present neither using high VT would predict fluid responsiveness, by the dynamic indexes.

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

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests