Reviewer's report

Title: Effect of individualized PEEP titration guided by intratidal compliance profile analysis on regional ventilation assessed by electrical impedance tomography – a randomized controlled trial

Version: 1 Date: 03 Nov 2019

Reviewer: Gaetano Scaramuzzo

Reviewer's report:

Dear Editor,

I would like to congratulate dr. Weber and all the coauthors for the work done to improve the manuscript. Specifically, I appreciated the new EIT analysis and the modification of the manuscript's conclusions. The technique and the results are interesting, but I still have some concerns about the overall manuscript.

General comment: the primary aim of the study (compare two groups) is not in line with the variable selected to calculate the sample size (frequency of intratidal profiles). This should be stated in the limitation section. Moreover, the results coming from the new EIT analysis were not fully discussed in the paper and do not justify the title and the abstract conclusions. Finally, the abstract's conclusion and the manuscript's conclusion are in conflict.

Specific comments

* Please revise the title of your manuscript according to your findings which are not completely converging on the improvement of ventilation (Effect of PEEP titration guided by intratidal compliance analysis on regional ventilation assessed by electrical impedance tomography, for example).

* Page 2, line 22: the abstracts conclusion and the manuscript conclusion are in conflict ("promising approach to patient-individual ventilation settings" and "limited importance in patients without impaired respiratory mechanics"). Please fix.

* Page 7 line 13: baseline measurements. Which measurement? Was EIT recorded also in this step? Is this the baseline step you refer to when you calculate the gain/loss of regional ventilation?

* Page8, line 22. It is not clear which where the two time points to calculate gain/loss of ventilation. Baseline/end of surgery?
* Page 9, line 18: please specify when data collection was conducted.

* Page 11 line 21: in the results, loss of ventral ventilation in the intervention group is 29.3(17.6)% while in the table 4 is 29.7(17.6%). Please correct.

* Page 14, line 25. The authors report an improvement in regional ventilation. This improvement was shown only by one of the parameters analyzed (gain/loss of ventilation) but no differences where seen in impedance distribution and tidal ventilation in the dorsal and ventral lung. Can the authors discuss this point in the paper? How do they justify a gain in regional ventilation also in the control group where PEEP was kept the same trough all the surgery? Can they add two representative EIT images for the patients in the 2 groups?

* Table 1, gender, intervention. Summing the patients (21+6=27) the number of patients in the intervention group does not correspond the one stated by the authors (25). Please correct.

* Table 4: it seems that the loss of ventilation both in the intervention and in the control group was more pronounced in the ventral lung (41% vs 25.9% and 29.7% vs 16.4%) while atelectasis usually distributes in the dorsal lung. How do the authors justify this finding?

* Figure 3: please consider putting this data in table 4 and substitute it with gain/loss of ventilation, which is the main positive finding of your study.

* Please specify in the tables’ description how data are expressed (mean (SD)?)

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**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
Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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