Reviewer’s report

Title: Morphological and molecular effects induced by repeated endotracheal suctioning in a rabbit model of ARDS

Version: 1 Date: 23 July 2013

Reviewer: Peter Spieth

Reviewer’s report:

Major Revisions:

1) I believe that the model is not suitable to answer the research question. The saline lavage model is known to be highly recruitable and a PEEP level of 10 cmH2O is very high for rabbits considering their very elastic chestwall. The research question could have been answered much better using a large animal model.

2) The observation period is maybe too short. I’m fully aware that longer experiments are difficult, but the differences in interventions (open vs. closed suction maneuvers) need probably more time to develop biologically meaningful results. A more suitable time course would have been at least 24 or 48h. Of course I know that this is hard to realize in experimental research but in the end the study should reflect clinical standards and requirements.

3) I think a healthy control group is missing to differentiate the effects of the suction maneuvers and the lung injury.

4) Please comment on the spontaneous breathing activity. You wrote that the animals were paralyzed. How is it then possible that you have respiratory rates ranging from 4-40 (page 10, last sentence)? In a well controlled model this is far too much variation.

5) 6h observation period is maybe too short for a response on the protein level. I suggest to check for mRNA expression of the same markers.

6) You disclosed in your limitations the lack of compliance or FRC measurements. Indeed this is a very big problem and makes the interpretation of your data difficult.

Minor Revisions:

1) page 5 and following: please change shaearing force to atelectrauma

2) page 5, last sentence: It’s not MOV that is associated with biotrauma, biotrauma leads to MOV. Please revise this part and clarify the connection among baro-, volu-, atelec- and biotrauma.

3) page 7, 1st sentence: what do you mean by "..in the fall of end-expiratory .." ?
Do you mean "in the case"?

4) page 9, last sentence: please change "rocked" to another more scientific description.

5) Did you really packed your samples on dry ice? the standard is to snap freeze them in liquid nitrogen, that’s important for some of the mediators you measured.

6) page 26, please change numbering from 1-3 instead of three time 1).

7) Please let the manuscript check for grammar and style by an native speaker or professional language editing service.

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

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