Reviewer’s report

Title: Sustained inflation and incremental mean airway pressure trial during conventional and high-frequency oscillatory ventilation in a large porcine model of acute respiratory distress syndrome.

Version: 1 Date: 19 March 2006

Reviewer: Bernd Klosterhalfen

Reviewer’s report:

General

The treatment of severe hypoxemia in ARDS is highly dependent on the recruitment and maintenance of lung volume. This is related to the dynamic reopening of previously collapsed lung units by increasing transpulmonary pressure. The aim of the present study was to evaluate the immediate effect of a sustained inflation (50cmH2O) followed by an incremental and matched mean positive airway pressure titration in a large porcine model of severe ARDS with two different lung protective ventilation strategies (low-tidal pressure controlled ventilation versus HFOV) on gas exchange and hemodynamics. The major findings of the study are: 1) Combination of HFOV and sustained inflation with rising mPaw improved oxygenation and resulted in normalisation of pulmonary shunt fraction at a lower mPaw than during conventional lung protective ventilation. 2) The sustained inflation and rising mPaw resulted in normocapnia in the HFOV but not in the PCV group 3) Both groups exhibited a continuously decrease in cardiac output with rising mPaw.

Overall the study is well designed and of interest for all readers working in the field of intensive care medicine.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

After t90 animals of the HFOV group seem to have a higher mortality compared to controls. This point is not adequately adressed by the authors.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The tables are difficult to read. Hemodynamical data of main interest (e.g. CO) should be presented in an extra figure.

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No
Declaration of competing interests:
'I declare that I have no competing interests'