CRITICAL CARE

LETTER

Outcome measures for manual lung hyperinflation: not there yet!

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See related research by Paulus *et al*., http://ccforum.com/content/16/4/R145

The recent systematic review by Paulus and colleagues provides an insight into manual lung hyperinflation (MHI) [1], but deserves further comment.

MHI research has generally focused on surrogate measures of secretion clearance, such as lung/thorax compliance [2]. Investigation into the effects of MHI on airway secretion clearance is warranted to elucidate the mechanistic and hence potential therapeutic role.

Volpe and colleagues [3] and Li Bassi and colleagues [4] have reported mechanical ventilation flow-bias thresholds that can move airway secretions both towards (expel) and away (embed) from the mechanical ventilator. These measurement methods may be useful to identify the optimal MHI technique [4]. Van Aswegen and colleagues recently demonstrated that MHI with a positive end-expiratory pressure of 7.5 cmH_2O in a supine position resulted in a preferential airflow distribution (using technetium-99m) to the right lung as compared with the left lung [5]. Hence, for left lung collapse the combination of patient positioning (for example, lying on the right side) with MHI may both optimise lung recruitment and/or secretion clearance.

Owing to the requirement for airway disconnection, Paulus and colleagues allude to the potential for MHI to result in airway contamination and cause ventilator-associated pneumonia [1]. Along similar lines, however, closed suction has often been advocated as a means to prevent ventilator-associated pneumonia (also by preventing circuit disconnection). A recent meta-analysis on closed versus open suction demonstrated no changes in the rates of ventilator-associated pneumonia [6], but closed suction was associated with increased duration of mechanical ventilation and airway contamination. The optimal MHI technique and outcome measures require identification.

Abbreviations
MHI, manual lung hyperinflation.

Competing interests
The author declares that he has no competing interests.

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