

Category : **Respiratory: mechanical ventilation**

A294 - lateralization can work as a recruitment maneuver without hemodynamic side effects; but its success depend on peep.

G Alcalá¹; AC dos Santos²; M Tucci²; C Lima²; E Rodrigues²; S Gomes²; M Mlček³; E Kuriscak³; JB Borges³; M Amato²

¹University of São Paulo, Pulmonary Division, Heart Institute (INCOR), Sao Paulo, Brazil, ²University of São Paulo, Sao paulo, Brazil, ³Charles University, Prague, Czech Republic

Introduction:

Deleterious hemodynamic effects of recruitment maneuvers (RM) has caused some concern. Lateral positioning changes the distribution of forces within the lung, increasing the transpulmonary pressures of the lung repositioned upwards, potentially working as a RM for this upper lung. By alternating this procedure between both lungs, we could promote bilateral recruitment without the need of high airway pressures.

Methods:

We enrolled six animals with lung injury and mechanically ventilated. The open-lung-PEEP level was chosen by decremental PEEP titration guided by EIT (lowest PEEP generating < 3% collapse). After promoting massive lung collapse at low PEEP (5 cmH₂O), all animals were kept in supine position, with PEEP slowly raised up to open-lung-PEEP without RM. Keeping the same PEEP, they were tilted to left lung down, back to supine, tilted to right lung down, and back to supine, 20 minutes in each position. Four of the six animals repeated the same sequence at a lower PEEP (6cmH₂O lower than open-lung PEEP). P/F ratio were measured at the end of each 20-minute period and lung volume (EELZ) was continuously recorded by EIT.

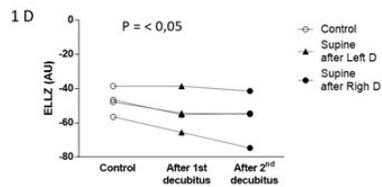
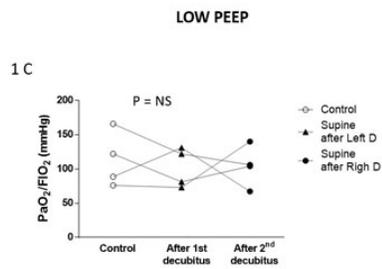
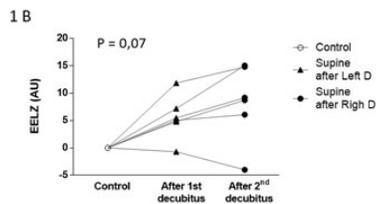
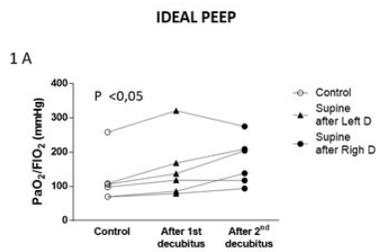
Results:

Sequential lateral turns at open-lung PEEP resulted in significant improvements in P/F ratio (mmHg) (P <0,05; figure 1A) and EELZ (P =0,07; figure 1B). In contrast sequential lateral turns at lower PEEP did not increase P/F ratio (mmHg) (P> 0,05; 1 C). and resulted in decreased EELZ after each step of the lateralization (P = 0,04; figure 1D).

Conclusion:

Sequential turns of lateral position can work as a traditional recruitment maneuver, resulting in better oxygenation and lung aeration, and not causing any deleterious hemodynamic effect . The success of the procedure depends on some interaction with PEEP levels: lateralization at lower PEEP seems to promote more collapse at the lung repositioned downwards. In contrast, lateralization at open-lung PEEP promotes progressive recruitment of the lung repositioned upwards (but keeping the lower lung stable).

Image :



Changes, during sequential lateral position, in PaO₂/FIO₂ ratio (1A; 1C), global End Expiratory lung impedance (EELZ) (1B; 1 D) estimated by EIT in ideal PEEP and low PEEP. Paired T tests were performed to compare the first supine with the last supine position. IDEAL PEEP presented increase in P/F ratio and EELZ. The LOW PEEP presented decrease in EELZ in P/F ratio and EELZ.