

PEEP titration is markedly affected by trunk inclination in mechanically ventilated patients with ARDS: a physiologic, cross-over study.

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

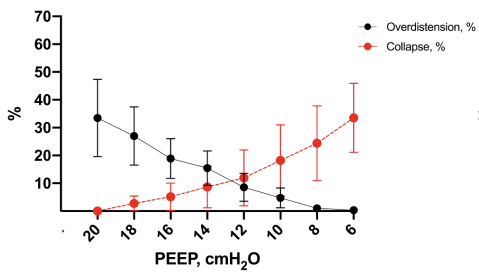
Background: Trunk inclination affects respiratory mechanics and gas exchange in patients with ARDS. The impact of changing trunk inclination on titration of positive end-expiratory pressure (PEEP) is currently unknown. Primary aim of this study was to assess, in mechanically-ventilated patients with COVID-19 ARDS, the effects of trunk inclination on PEEP titration. Secondary aim was to compare respiratory mechanics and gas exchange in semi-recumbent (40° head-of-the-bed) and supine-flat position (0°) following PEEP titration.

Methods: In this physiologic, cross-over study, 12 patients were positioned both at 40° and 0° trunk inclination (randomized order). In both positions, PEEP associated with the best compromise between overdistension and collapse guided by Electrical Impedance Tomography (PEEP_{EIT}) was identified and set after a recruitment maneuver. After 30 minutes of controlled mechanical ventilation, data regarding respiratory mechanics, gas exchange, and EIT parameters were collected. The same procedure was repeated for the other trunk inclination.

Results: PEEP_{EIT} was significantly lower in semi-recumbent than in supine-flat position (8±2 vs. 13±2 cmH₂O, p<0.001). Semi-recumbent position with optimized PEEP resulted in a higher PaO₂:FiO₂ (141±46 vs. 196±99, p=0.02) and a lower global inhomogeneity index (46±10 vs. 53±11, p=0.008) compared to supine-flat position. Supine-flat position was associated, over the study period, with a loss of aeration (measured by EIT), while this was not the case in semi-recumbent position (-153±162 vs. 27±203 ml, p=0.007).

Conclusions: Changes of trunk inclination have marked effects on PEEP titration. Semi-recumbent position is associated with a significantly lower PEEP_{EIT} and results in better oxygenation, less derecruitment, and more homogenous ventilation as compared to supine-flat position.

Supine-flat



Semi-recumbent

