A755 - Distribution of ventilation in obese and non-obese patients: obesity greatly attenuates peep-induced hyperdistension.

G Alcala 1 ; C Morais 1 ; R De Santis 2 ; M Tucci 1 ; M Nakamura 1 ; E Costa 1 ; M Amato 1
1University of Sao Paulo School of Medicine, Pulmonary Division, Heart Institute (INCOR), Sao Paulo, Brazil,
2Massachusetts General Hospital, Department of Anesthesia, Critical Care and Pain Medicine, Boston, United States

Introduction:
Atelectasis develops in critically ill obese patients submitted to mechanical ventilation. The pressure exerted by the abdominal weight on the diaphragm causes maldistribution of ventilation with increased pleural pressure and diminished response to PEEP. Our objective was to analyze the effects of PEEP in the distribution of ventilation in obese and non-obese patients according to BMI (obese ≥ 30 kg/m², or non-obese: 20 to 29,9 kg/m²), using electrical impedance tomography (EIT).

Methods:
We assessed the regional distribution of ventilation of surgical and clinical patients submitted to a decremental PEEP iteration monitored by EIT. We calculated the percent ventilation to the nondependent (anterior) lung regions at the highest and lowest PEEP applied. The highest compliance of respiratory system was consistently observed at intermediate values of PEEP (between those extreme values), indicating that the highest PEEP caused pulmonary overdistension, whereas the lowest PEEP likely caused dependent lung collapse.

Results:
Were enrolled 37 patients, with 15 non-obese patients (25,7±2 kg/m²) and 22 obese patients (32,4± 1,7 kg/m²). All patients presented progressively decreased ventilation to dependent (posterior) lung regions when PEEP was lowered (P<0.001). Obese patients consistently presented higher ventilation to the anterior lung zones (when compared no nonobese), table1, at equivalent PEEP levels: (68±2 % vs 59±1 %, P<0,001 at the lowest PEEP; 40±0,1 % vs 32±0,1%, P<0,001 at the highest PEEP). The Higher and Lower PEEP levels applied were similar in obese vs. non-obese.

Conclusion:
Obese patients present a displacement of ventilation to the anterior region when compared to non-obese patients.

Image 1:

Distribution of ventilation to non-dependent lung regions. Red= obese patients; Blue
"= non-obese patients."