

Category : **Respiratory: mechanical ventilation**

A183 - Effects of anterior external chest wall compression on respiratory mechanics and gas exchange in covid-19 ards patients.

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Introduction:

Beneficial effects of prone position on outcome in ARDS may be related to decreased anterior chest wall compliance, which facilitates lung recruitment. The effects of anterior external chest wall compression (AEC) in supine position on respiratory mechanics and gas exchange are less well known[1]. We aimed to evaluate the effects of AEC in invasively ventilated Covid-19 patients.

Methods:

In 10 sedated and paralyzed Covid-19 patients ventilated in volume control mode, airway and esophageal pressures, driving pressure (DP) and lung compliance (Clung) were recorded before (baseline) and during (5kg,10kg) AEC (10-min epochs). AEC was performed by placing one or two 5L fluid bags on anterior chest. Repeated arterial blood gas analysis was available in 6 patients.

Results:

Patients' (9/1 M/F, age 65 [range 53–74] yrs, BMI 29.2 [range 23.2–50.5] kg/m², PEEP median 11.8 (IQR 9.7-13.9) cmH₂O) Clung at baseline (median 21.3; IQR 15.0-32.6 ml/cmH₂O) increased >10% with 5kg AEC (mean 20.7±7.3%, max. increase 30.9%) and additionally increased with 5.9% (range -2.9–19.3%) with 10kg AEC (*Fig. 1a*, p<0.001). Better response was related to an anteriorly located baby lung on CT imaging. At baseline, median transpulmonary DP (PI DP) was 17.46 (IQR 11.50-25.07) cmH₂O and decreased with 16.2±4.9% and 20.6±8.2% during 5kg and 10kg AEC, respectively (*Fig. 1b*, p<0.001). pCO₂ decreased in 4 patients and remained equal in 2 patients (*Fig. 1c*). The latter group also had minimal change in PI DP and Clung. In all patients pO₂ decreased with need for increasing FiO₂. Median P/F ratio of 124 (IQR 104-143) mmHg at baseline decreased to 105 (IQR 92-124) mmHg and 86 (IQR 78-114) mmHg during 5kg and 10kg AEC respectively.

Conclusion:

This preliminary data demonstrates improved compliance of the aeriated lung by decreasing hyperinflation. No evidence for recruitment was found in contrast to existing literature showing improved oxygenation[2].

References:

1. Marini JJ, Crit Care. 2021, PMID: 34321060
2. Carreaux G, Crit Care. 2021, PMID: 34074334

Image :

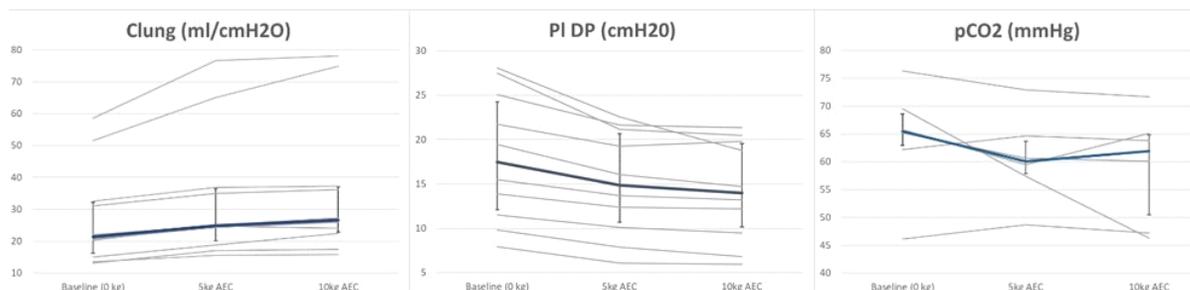


Fig 1: a. Clung during baseline, 5kg AEC and 10kg AEC (n=10) b. PI DP (n=10) c. pCO₂ (n=6). Grey: individual patients. Blue line: median values + IQR.