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Delivering evidence-based critical care for mechanically ventilated patients with COVID-19

Dear Editor:

We read the paper by Salluh et al[1] with great interest and congratulate the authors for emphasizing the need for evidence-based management of mechanically ventilated patients with coronavirus disease 2019 (COVID-19) pneumonia. During a pandemic, evidence is often neglected, and procedures based solely on the medical staff intuition can be potentially harmful and susceptible to cognitive biases. However, we believe that the recommendation of using a tidal volume (V_t) of <6 mL/kg predicted body weight in all patients with COVID-19 should be reconsidered. The use of a low V_t in acute respiratory distress syndrome (ARDS) is the cornerstone of the protective ventilation strategy, as evidenced by classic studies that found a reduction in mortality with this approach.[2,3] In fact, clinical evidence have shown that a V_t of 4–8 mL/kg predicted body weight compared to higher ranges, might yield better results in patients with COVID-19, as currently recommended by medical and intensive-care societies.[4] Although a higher V_t has been used in the past, this may cause overdistension in the small aerated lung of patients with ARDS ("baby lung"),[5] with a higher risk of promoting mechanical ventilation-induced lung injury (VILI).[6] In patients without ARDS, with higher compliance, the use of a V_t of 6–8 mL/kg can reduce the risk of developing ARDS [7]. There is no evidence that a V_t of <6 mL/kg can be more beneficial than 6–8 mL/kg. Recently, Gattinoni et al[8]. recommended the use of a V_t of >6 mL/kg PBW in patients with type 1 or "non-ARDS" COVID-19 (Crs > 50 mL/cmH_2O) to relieve dyspnea and avoid hypoventilation[9]. Generalization of a V_t of <6 mL/kg in patients with COVID-19 can lead to respiratory acidosis and increased respiratory drive and can also trigger patient-ventilator asynchrony which can be potentially damaging to the lungs and increase the mortality risk.[10,11] Therefore, we do not support the general recommendation of a V_t of <6ml/kg PBW for all patients with COVID-19, but targeted according to plateau pressure. In fact, the use of a V_t in the range of 6–8 mL/kg predicted body weight is supported by a physiological logic in mammals, as reported by Villar (6·3 mL/kg predicted body weight)[12] and Stahl (7·69 mL/kg predicted body weight)[13]. For these reasons, we suggest starting mechanical ventilation with 6 mL/kg predicted body weight, and if pulmonary protection parameters allow, V_t can be adjusted up to a maximum of 8 mL/kg predicted body weight, according to plateau pressure.

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