Presentation Abstracts

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Respiratory effort during pressure support variation in COVID-19 patients

Marcos Borges Amorim[1], Ana Carolina Cardoso dos Santos[1], Larissa Bertacchini de Oliveira[1], Carmen Silvia Valente Barbas[2]

[1] Universidade de São Paulo, São Paulo, SP, Brazil.
[2] Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.

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Marcos Borges Amorim - https://orcid.org/0009-0009-0599-081X
Ana Carolina Cardoso dos Santos - https://orcid.org/0000-0002-4368-5375
Larissa Bertacchini de Oliveira - https://orcid.org/0000-0001-9509-4422
Carmen Silvia Valente Barbas - https://orcid.org/0000-0002-3922-6256

Corresponding author
e-mail: mba.amorimcm@gmail.com

Introduction: The weaning phase in mechanically ventilated patients with COVID-19 seems to be difficult. Many patients seem to present an unappropriated muscular effort response to variation on pressure support (PS).[1,2] This fact can leads to lung injury.[3] requiring high sedative doses4 resulting in a difficult in weaning process and long mechanical ventilation length.

Objective: Assess the variation of respiratory muscular pressure during pressure support variation in COVID-19 patients.

Methods: This transversal study, approved by the institutional ethics committee, enrolled fifteen mechanically ventilated patients with ARDS due to COVID-19 during the weaning phase. The group was submitted to four levels of pressure support (15-10-5-0cmH2O). Respiratory muscular pressure was measured using esophageal balloon, considering Baydur maneuvers, the relation Esophageal Pressure (Pes)/ Air way occlusion pressure (Paw) were in an adequate range (0.8–1.2). The variation in esophageal pressure tracings were considered proportional to respiratory muscle effort. The values were obtained at 10 and 20 minutes from the start of each level of pressure support (4 steps). The tracings were analyzed with software LabVIEW. The measures of Pes were obtained from one minute mean cycle at 10 minutes from start of pressure support step and in the end of each pressure step. Two-way ANOVA test repeated measures was performed using GraphPad Prism version 8.0.1 for windows. P values <0.05 was considered statistically significant.

Results: Fifteen patients tracings were analyzed during mechanical ventilation weaning phase, at total 120 measures were performed. The mean values of Delta Pes were inversely proportional to PS decrease. Delta Pes mean with PS15 was 5.67, PS10 5.70, PS5 8.94 and PS0 10.58cmH2O (Figure 1). Two Way ANOVA ($p<0.0001$).

Conclusion: A good bed-side evaluation is essential to guide the mechanical ventilation settings during weaning phase. The adequation and vigilance of PS level is crucial to avoid over or under assistance, that can lead to poor outcomes.

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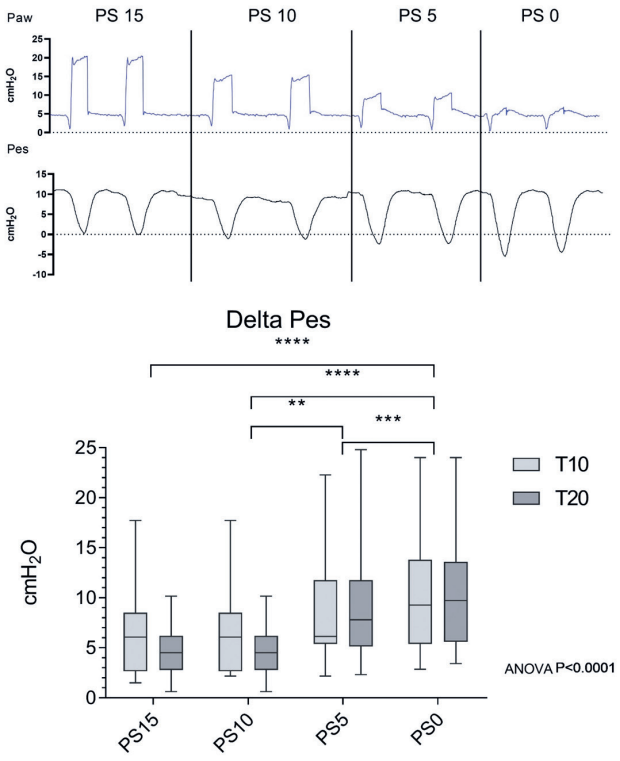

Figure 1. Top: Example of tracing analysis (airway pressure and esophageal pressure. Bottom: Boxplot of the values of esophageal pressure variation accordingly to each pressure support step