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Title: Systemic inflammatory response in the weaning process from mechanical ventilation (VM) in COPD & non-COPD

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Body: The aim of this study was to assess the changes in different parameters during weaning in a population of COPD & non-COPD ventilated patients and with SBTs of different duration. METHODS: A study was conducted in 93 patients under MV during weaning. Blood samples were drawn before, at the end of the SBT, at 2 hours and at 24 hours after the first trial. SBT lasted from 30-120 min. Samples were processed for the assessment of IL-1, IL-6, IL-10, IL-8, TNF-α and CRP. RESULTS: Patients were classified as COPD (n=41; failure = 14, success = 27) and non-COPD groups (n=52; failure=21, success=31). Baseline levels of markers before the SBT were similar in failure and success groups. COPD developed a higher increase of levels of CRP (p = 0.004), IL-6 (p = 0.005), IL-8 (p = 0.068) and TNF-α (p = 0.066) during a failed SBT compared to the success group. No changes were observed during the trial in non-COPD with SBT failure and success. In COPD, CRP increase during the SBT was significantly associated with increases in physiological parameters (fC, fR, BP, pH, PaCO2 and fR/Vt). The increase of CRP levels during the first SBT was significantly higher in COPD population who developed prolonged weaning (n = 7) compared to non-prolonged (p = 0.013). IL-8 levels during the SBT were associated with increased lengths of hospital stay, ICU stay and weaning. CONCLUSION Diverse markers increased during a failed SBT in COPD patients. The correlation between CRP and physiological parameters suggests that the cardiopulmonary stress during the SBT may explain the increase in these markers in COPD. More studies are needed to confirm the correlation of inflammatory markers levels with clinical outcomes.