



013

Prone position in patients with acute respiratory failure due to SARS-CoV-2

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Introduction: COVID-19 is an infection that can cause Acute Respiratory Distress Syndrome (ARDS).⁽¹⁾ Prone positioning in patients with ARDS has been shown to be beneficial in mechanically ventilated individuals.⁽²⁾ However, the classification between responders and non-responders to the maneuver based on gas exchange, either by improving oxygenation or reducing PaCO₂, does not predict mortality, but factors related to the reduction of lung injury related to mechanical ventilation have shown excellent results, with prone one of the ways to avoid large increases in pulmonary pressure.⁽³⁻⁵⁾

Objective: Thus, this study aims to verify changes related to the prone position in patients with COVID-19 with different degrees of pulmonary impairment.

Methods: Prospective cohort study in patients with COVID-19 under invasive respiratory support in the Intensive Care Unit (ICU). Patients with hemodynamic

or spinal instability, facial or pelvic fractures, open or flail chest, delirium, confusion, inability to change position and pregnancy over 32 weeks were excluded from the study. Immediately before prone and 1 hour after the maneuver, arterial blood gases and ventilatory mechanics data were evaluated.

Results: A total of 249 individuals aged 58.2±13.7 years, 57% male and BMI of 29.1±8.1 kg/m² were included. When comparing the SpO₂/FiO₂ and PaO₂/FiO₂ indices in supine and prone positions, there was an improvement. The paired difference of supine (115.6) *versus* prone (154.4) SpO₂/FiO₂ was 27.7, $p < 0.001$, and the paired difference of supine (92.9) *versus* prone (131.7) PaO₂/FiO₂ was of 38, $p < 0.001$. Patients in the prone position showed improvement in mean arterial pressure (MAP) values; Supine MAP was 80 mmHg and prone 83 mmHg, $p < 0.001$. The in-hospital mortality of all patients submitted to the prone position was 59.8%, the better the SpO₂/FiO₂ and PaO₂/FiO₂ indices in the prone position, the lower the risk of death; on the other hand, the greater the age, the worse the prognosis, respectively OR=0.98 (95%CI:0.98-0.99) and OR 1.02 (95%CI:1.01-1.04).

Conclusion: The prone position in individuals with COVID-19 under invasive ventilatory support can improve oxygenation regardless of lung compliance, and patients who respond to the maneuver even with greater lung impairment have lower mortality.

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