Prone Positioning: A Comparison Between COVID-19 ARDS and non-COVID-19 ARDS

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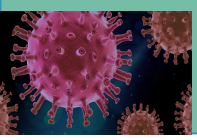

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Background

- The clinical problem is the unknown of whether pronation can benefit Coronavirus 2019 (COVID-19) acute respiratory distress syndrome (ARDS).
- In Wuhan, China, severe COVID-19 disease progressed to ARDS in 67% to 85% in the ICU.
- No clear evidence is available to assess the impact of pronation on intensive care unit (ICU) length of stay (LOS) and hospital LOS.
- Prone positioning involves 5 health care workers either using bed sheets or a special ICU bed to laterally rotate a patient.
- This optimizes ventilation of the dorsal regions in the lungs, reduces intrapulmonary shunting, and improves oxygenation and mortality in moderate to severe acute respiratory distress syndrome (ARDS).

Objective

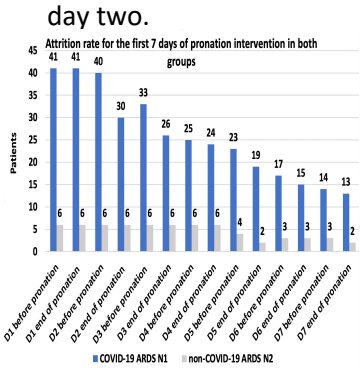
- To evaluate the effects of pronation and compare COVID-19 ARDS with a historical control group Non-COVID-19 ARDS.
- The specific aim is to assess whether there is a positive effect on oxygenation, intubation days, ICU LOS, and days intubated.

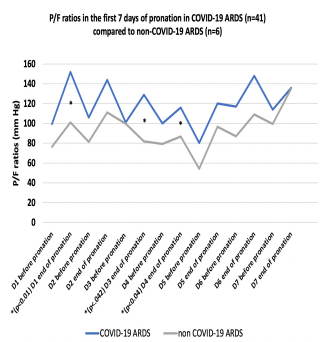
Methods

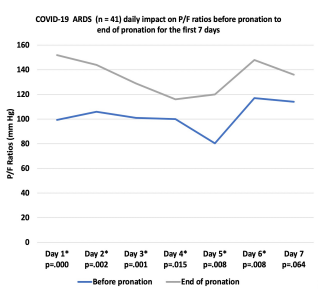
- A retrospective descriptive chart review of COVID-19 ARDS versus non-COVID-19 ARDS adult patients ages 18 to 80 years at a quaternary academic center in Los Angeles, California. A convenient sample of intubated COVID-19 patients with moderate to severe ARDS based on the Berlin criteria.
- A historical control was age and gender matched of non-COVID-19 ARDS patients. Statistical analysis utilized Mann Whitney U, and the Wilcoxon Signed Rank Test.

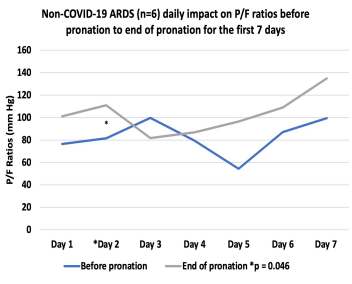
Results

- A total of 41 patients met criteria in the COVID-19 ARDS group, and six patients in the non-COVID-19 ARDS group for a total sample size of 47 subjects. Pronation showed a positive impact on oxygenation (P/F ratios) at the end of pronation on day one ($p < 0.01$), day three ($p < .042$), and day four ($p < 0.04$) in the COVID-19 ARDS group compared to the non-COVID-19 ARDS group. The Wilcoxon Signed Rank Test found a positive impact on P/F ratios by pronation from day one through day six in the COVID-19 ARDS group while the non-COVID-19 group showed a positive impact on day two.









Conclusion

- ICU LOS and intubation days were not impacted by pronation. Oxygenation improvement was possibly related to assertive prone protocols instituted early during the exudative phase of ARDS. Pronation in the latter stages may not be beneficial due lung fibrosis and may lead to further risks like pressure injury.

References

- Please scan here for full manuscript and references.