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Prone to survive and the priority rule in science

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In 2005 we published the first study to show that mortality can be reduced by prone ventilation [1]. This study followed the large trial by the Prone-Supine Study Group of Gattinoni and colleagues published in the NEJM in 2001 [2] and another in 2005 that failed to show benefit [3].

We have speculated that the earlier trials failed to show benefit because the protocols of these studies stipulated that physicians do not change ventilator settings during the period of prone ventilation (in order to standardize the changes in gas exchange induced by this maneuver). As per protocol, both the prone and supine groups were subjected to the same mean airway pressures (MAP) and tidal volumes even after it was noted that the $\text{PaO}_2:\text{FiO}_2$ had improved in the prone group and they could be managed with lower MAP [4]. Gattinoni responded to our criticism of his study and conceded that, in retrospect, our approach of reducing ventilation as oxygenation improved was more appropriate [4].

Now a new study by the PROSEVA group has found that prone ventilation does indeed save lives. The stated rationale for the new study by the PROSEVA Study Group of Guérin and colleagues, in severe acute respiratory syndrome (ARDS) [5], was the meta-analysis data showing improved survival with prone position in patients with severe hypoxemic ARDS. The authors overcame the drawback of the older studies by targeting the a tidal volume of 6 ml per kilogram and the PEEP level selected from a PEEP- FiO_2 table and they have demonstrated a survival advantage for prone ventilation. However, analysis stratified according to quartile of $\text{PaO}_2:\text{FiO}_2$ ratio at enrollment showed no significant differences in outcome in this study.

They assumed a priori that benefits will accrue only to those with severe ARDS and so they report that prone ventilation helps this group, although their analysis shows severity of ARDS has little to do with improved survival. The authors do not acknowledge our previous communications in the literature. We point to more than a matter of priority in science, which is important in itself. Our findings suggest that prone ventilation may be beneficial in reducing ventilator-induced lung injury in all ventilated patients and this needs to be investigated in a wider context.

References:

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