Commentary

Mechanical ventilation in CoVID-19 patients: A point of view

Keywords: CoVID-19, SDRA, Mechanical Ventilation

Abbreviations: MV, mechanical ventilation; ICU, intensive care unit; VILI, ventilator induced lung injury; ARDS, acute respiratory distress síndrome; SILI, self-inflicted lung injury; TC, computed tomography; LRM, lung recruitment maneuvers; VT, tidal volumen

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Vinko Tomicic[1,2]
[1]Intensive Care Unit, Regional Clinical Hospital of Antofagasta, Chile
[2]Professor of Surgery, University of Antofagasta, Chile

Correspondence: Vinko Tomicic, Unidad de Cuidados Intensivos 2° piso Hospital Clínico Regional de Antofagasta, Azapa 5935, Antofagasta, Chile, Tel +56227583969, Email vtomicic@gmail.com

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Coronavirus infection can lead to severe acute respiratory failure, whose hospital mortality can reach 40% in patients requiring mechanical ventilation (MV).[1] As it is an emerging pathology, we have just learned that it is a steroid-modulable disease, which has a high thrombotic potential, a high prevalence of delirium and infectious complications, that determine a long stay in the intensive care unit (ICU). A long weaning process forces us to use tracheostomy.[2]

There are few data regarding ventilatory management, however, volume control and pressure control ventilation are the most common ventilatory modes used, similar to classic acute respiratory distress syndrome (ARDS). But independent of the ventilatory modes, plateau pressure, driving pressure and PEEP are the cornerstone target to adjust MV for avoids ventilator induced lung injury (VILI). Avoiding the indiscriminate use of C-NAF and awake prone position we could also limit self-inflicted lung injury (SILI).[3,4]

Ongoing studies indicate that the pathophysiological mechanisms of oxygenation disorders in patients with CoVID-19 are related to the redistribution of blood flow, which may differ from other forms of ARDS.[5] For the same reason, the magnitude of the compromise in the computed tomography (TC) is not faithfully related to the oxygenation compromise. This characteristic could favor the response of these patients to prone position (PP). In classic ARDS, PP has shown good results and in COVID-19 has also been used with good response.[6–8]

The different pulmonary phenotypes (H and L) make difficult adjust mechanical ventilation because these patients show different potencial of recruitment and forces us to adjust the ventilation individually.[9] In fact, lung recruitment maneuvers (LRM) have been widely incorporated into the therapeutic armamentarium in ICU, however, the concept that these maneuvers and decremental PEEP titration in patients with classic ARDS who need vasopressor drugs, were associated with higher mortality has recently emerged.[10]

The L phenotype (Low elastance/high compliance) does not benefit from LRM and high levels of PEEP, because the potential of recruitment is low, therefore these patients should be ventilated with moderate levels of PEEP (around 10 cmH2O) and a tidal volumen (VT) around 6 to 8ml/kg PBW, always trying to maintain a driving pressure less than 15cmH2O. To the other hand, H phenotipe (High elastance/low compliance) early in the evolution could respond to LRM, however, at a late stage of evolution (greater than 7days) these maneuvers could be deleterious.[9] It should be noted that these patients are especially susceptible to developing pneumomediastinum and pneumothorax.[11]

At the second week, on the CT appear peribronchovascular and subpleural condensation, named "crazy pavement pattern" and traction bronchiectasis, determining a organizing pneumonia.[12] A CT in this period it is essential to determine the degree of organization and consequently decide additional use of steroids as metilprednisolone.[13,14]

Conclusion

A significant percentage of patients (50-70%) require early PP to overcome hypoxemia and although most respond, it does not ensure a good hospital outcome, late prone position has uncertain results. If the prone position fails, the use of extracorporeal oxygenation support should be considered.[15]

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Conflicts of interest

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