

Non-Invasive Ventilatory Support Versus High-Flow Oxygen Therapy in a Patient with Mild and Moderate ARDS Hypoxemia in Time of Pandemic

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The gigantic mortality due to acute respiratory failure due to ARDS in the context of a pandemic, forced us to seek early levels of treatment, in an attempt to reduce the great collapse and overflow in intensive / invasive treatment centers.

There are two groups of patients:

- Those who arrive in respiratory failure and require immediate invasive support (invasive mechanical ventilation)
- Those who arrive asymptomatic in the first instance, but require vigilance and early non-invasive ventilatory support.

Within this latter group, there is a subgroup of patients who benefit from supportive therapies with continuous positive airway pressure (CPAP), when they are investigated early and present the described clinical-radiological / gasometric dissociation; that is, being asymptomatic and without signs of bellows exhaustion, they present progressive gastric deterioration, which goes hand in hand with great lung parenchymal damage (ground glass due to viral pneumonitis).

Continuous positive airway pressure (CPAP) is a type of positive pressure that is achieved by administering a continuous (theoretical) and high flow of air, generating in the airway, a positive pressure effect at the end of expiration (PEEP), which allows alveolar recruitment to be achieved during spontaneous ventilation; this, in turn, increases the gas exchange surface, avoids and opens atelectasis and improves the V / Q ratio, which translates into an increase in oxygenation (correction of hypoxemia) and as a consequence, clinical improvement of the patient. This pressure is measured in cmH₂O and the ideal value to achieve this goal fluctuates between 8 and 10 cmH₂O.

Ferreyro et al, recently published a meta-analysis and systematic review, where it was shown that in hypoxemic acute respiratory failure in adults, treatment with non-invasive strategies compared to conventional oxygen therapy, was associated with decreased mortality, but also showed less incidence in failure and need for intubation.

In fact, the benefits of the use of non-invasive therapy in hypoxemia have a physiological basis: decreased respiratory work, improves

oxygenation and reduces the need for intubation and its inherent complications. In fact, the FLORALI study published the benefits of the use of non-invasive therapy and showed that the use of NIV could decrease mortality associated with hypoxemic respiratory failure in immunocompromised patients. Contradictory, this same study, in post hoc analysis, showed supposed greater benefit from the use of HFNC over NIV; This was welcomed by various societies, who used this study as a reference to recommend the use of OAF (high flow oxygen therapy) over NIV. Fortunately, González-Castro et al. Demonstrated that the FLORALI TRIAL suffers from major design errors, so, aligned with the WHO, they concluded that the benefit of non-invasive therapy with NIV (CPAP) has the same and even greater benefit of use. in patients with hypovidic acute respiratory failure due to Covid-19. So much is the rationale for the use of NIV, that the recommendation by the Japanese Society of Respiratory Care Medicine and the Japanese Society of Intensive Care Medicine and the European Respiratory Society / American Thoracic Society recommend its use in the context of hypoxemic respiratory failure for any reason. Its benefit is so standardized in hypoxemia, that even overcoming resource depletion barriers, in Bangladesh for example, Chisti et al developed an "artisanal" CPAP, a system based on continuous positive pressure by bubbles (Bubble CPAP), using only columns of water that provide pressure; This study was so forceful, compared to conventional oxygen therapy, that it had to be terminated earlier than proposed due to excess benefit, in the context of decreased mortality in children with hypoxemia due to pneumonia.

Main objective of the study:

- To demonstrate that the use of CPAP reduces the need for invasive mechanical ventilation versus prone in spontaneous ventilation + OAF (high flow oxygen therapy) in patients with mild-moderate hypoxemia due to Covid-19.