Reply to ''Pulmonary toxicity by oxygen and COVID-19''☆

Respuesta a «Toxicidad pulmonar por oxígeno y COVID-19»

Dear Editor,

We read with great interest the letter in which the authors talk about the deleterious effect of using a high fraction of inspired oxygen (FiO_2) in patients with acute respiratory distress syndrome (ARDS) due pneumonia caused by SARS-CoV-2 where they advocate for the use of continuous positive airway pressure (CPAP) to reduce the high FiO_2 used in high-flow nasal oxygen (HFNO) therapy.[1]

We agree with the authors when they talk about planning CPAP or non-invasive ventilation (NIV) as an alternative to HFNO. However, clinical practice guidelines say otherwise and they recommend HFNO and choose invasive mechanical ventilation (IMV) in cases of failed HFNO.[2] Based on these recommendations,[2] a Spanish multicenter registry (n = 876 patients) showed a wide use of HFNO (49%) vs NIV, and CPAP (<5% in both modalities). We should mention the high rate of failure in the HFNO group (60%) with mortality rates > 30% in patients who required intubation.[3]

The efficacy of NIV in SARS-CoV-2-induced pneumonia was demonstrated in an Italian multicenter registry (N = 110 patients) that compared the NIV-helmet to HFNO. Although the registry primary endpoint—ventilation-free days (20 days vs 18 days, $P = .26$)—was not achieved the NIV group had lower rates of intubation on day 28 vs the HFNO group [28% vs 51%; OR, 0.37 (0.17—0.82), $P = .02$]. At the same time, the NIV-helmet had better oxygenation, and less dyspnea compared to the HFNO group.[4] Consistent with one of the arguments that support the use of HFNO,[2] the patients' tolerance was higher with HFNO compared to NIV.[4] Similarly, in our series of 27 hypoxemic patients due to SARS-CoV-2-induced pneumonia, NIV was used as the first-line therapy in 21 patients (80.8%) basically with NIV specific ventilators in CPAP mode. CPAP failed in 10 patients (48%) with an associated mortality rate of 50%. No health personnel became infected in relation to the NIV as opposed to what has been reported in the clinical practice guidelines.[2]

Therefore, based on these guidelines,[2] we believe that the HFNO plays a key role in the early ventilatory therapy of hypoxemic patients. Unfortunately, the rate of failure in hypoxemic patients is high,[3] which may have overestimated the true efficacy of HFNO in advanced stages of ARDS. Like the authors say, a high FiO_2 in HFNO added to the pulmonary damage caused by the virus worsens ARDS, and eventually leads to IMV.[1] On the contrary, results from the latest clinical trials,[3] and observational studies[4] pave the way for the safe use of NIV in its different modes (CPAP or NIV) by applying positive end-expiratory pressure (PEEP) that recruits the damaged lung, which allows reaching a non-detrimental FiO_2[1] while avoiding IMV and its deleterious effect.[3,5]

References

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https://doi.org/10.1016/j.medine.2022.04.005

☆ Please cite this article as: Belenguer-Muncharaz A, Hernández-Garcés H. Respuesta a «Toxicidad pulmonar por oxígeno y COVID-19». Med Intensiva. 2022;46:354.