



## Importance of a patent upper airway, prior to the use of a high-flow nasal cannula in obese patients with COVID-19

### Importancia de una vía aérea superior permeable, previo al uso de cánula nasal de alto flujo en pacientes obesos con COVID-19

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Mr. Editor, we carefully read the article: COVID-19 disease in hospitalized young Mexican adults.<sup>1</sup> The authors point out that obesity is a predictor of hospitalization and poor prognosis in young patients with COVID-19. While hypertension and type II diabetes mellitus are the main comorbidities associated with a torpid presentation, obesity, which is increasing, is also an important factor to consider in the management of oxygenation in hospitalized patients with COVID-19. One of the oxygenation management strategies in patients with SARS-CoV-2 hypoxemia is the use of high-flow nasal cannula (HFNC), proposed as a safe and effective alternative.

The use of oxygen therapy with HFNC has increased from 12 to 49% in hospital

centers during the first and third waves of the pandemic, respectively;<sup>2</sup> decreasing the use of mechanical ventilation and its complications.<sup>3</sup> Likewise, its correct use significantly decreases aerosol production, making it a great alternative for oxygen therapy during COVID-19. However, the increased use of HFNC is not accompanied by knowledge of the type of patients who may have success or failure during its application; likewise, there is no solid information to know whether its application in obese patients would have the same results as in non-obese patients.<sup>2</sup>

Obesity is perhaps one of the comorbidities that could alter airflow patency in the upper airway on its way to the lower airway, producing inadequate oxygenation in the face of the use of HFNC. The reported treatment failure with HFNC, mainly in male and obese patients, rates of 60.9 and 52.2% respectively, suggest the presence of other additional factors in obese patients that may justify the cautious use of HFNC. This begs the question: is it necessary to assess upper airway patency prior to the use of HFNC in obese patients with COVID-19?

In obese patients with COVID-19 using HFNC, possible causes of failure related to inadequate airflow passage in the upper airway could be: 1) higher resistance to airflow throughout the upper airway in obese compared to non-obese, which could alter airflow passage to the lower airway; 2) higher nasal resistance in patients, mainly obese males; where retrolingual air collapse and lower pharyngeal patency at the level of the soft palate could decrease transnasal oxygenation of the hfnc; 3) association between obesity, obstructive sleep apnea and hypertension, considering that inadequate oxygenation in obese patients with obstructive sleep apnea could worsen hypertension,<sup>4</sup> and increase the risk as comorbidity in patients with COVID-19; and 4) the presence of the association of obesity, age and male gender (greater number of male COVID-19 patients with greater complications,<sup>3</sup> directly associated with nasal obstruction).

These possible causes of failure reinforce the need to ensure a patent upper airway through the evaluation of the entire upper airway in obese patients with COVID-19 prior to the use of HFNC. We propose that such evaluation of the upper airway should allow the identification of possible anatomical or functional factors that alter adequate airflow to the lower airway. An alternative would be the endoscopic evaluation of the entire upper airway, which can be performed in a simple and ambulatory manner by means of a flexible nasolaryngoscopy procedure; which, when performed through a posterior approach to the patient, decreases the possibility of infection by COVID-19.<sup>5</sup> The performance of such a procedure in the different hospital settings (admission unit, inpatient unit, intensive care unit) in all obese COVID-19 patients would contribute to a better decision on the use of HFNC, would allow early use (within the first 24 hours), indicated as a factor associated with the reduction of intubation and mortality,<sup>5</sup> or directly decide on mechanical ventilation.

Finally, future large-scale studies are needed to identify and protocolize the evaluation of the upper airway in obese patients prior to the initiation of HFNC, which would help to ensure a patent upper airway, strengthening the early and safe application of HFNC in obese patients with COVID-19.

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