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LETTER TO THE EDITOR

Noninvasive mechanical ventilation and COVID-19. Minimizing dispersion[☆]

Ventilación mecánica no invasiva y COVID-19. Minimizando la dispersión

To the Editor,

The current Coronavirus 19 (COVID-19) pandemic is a whole new challenge for the Intensive Medicine services. This new pandemic is similar to other pandemics of the past due to its high levels of infectiousness.¹

The use of non-invasive mechanical ventilation (NIMV) has become very popular in our units even in patients with hypoxemic respiratory failure.² Therefore, NIMV be another resource to give respiratory support to patients with active COVID-19 infections. However, its high infectiousness and particle dispersion capabilities generate controversy regarding its use, and it can be seen as a risk factor of contagion for other patients and treating health professionals. Given the early appearance of this disease, the current experience is still scarce on this regard. However, the first data coming from China confirmed the infection of 1716 health professionals. Of these, 5 had died (0.3%).³ Therefore, when considering the NIMV support option, it should be done responsibly and specific protocols for every unit on how to set up the ventilator should be implemented.

Particle dispersion in patients on NIMV with single-limb breathing circuit is a fact due to the presence of an intentional leak plus the leaks happening around the mask. In this sense, the greater the support required by the patient the greater the leak. However, leaks decrease when the helmet interface type with dual-limb breathing circuit is used.⁴ Also, in a recent study of patients with acute respiratory distress syndrome, compared to the oronasal interface, the use of the helmet interface type was associated with a lower mortality rate, and shorter ICU stays and intubation rates.⁵ Therefore, suggesting the use of the helmet interface with dual-limb breathing circuit and antiviral/antibacterial HEPA

filters both in the inspiratory and expiratory limbs can be an acceptable measure. The downside is its high cost compared to other interfaces, which makes it unavailable in many ICUs. In these units the alternative to this is to keep using the dual-limb breathing circuit with a full face or oronasal mask. A union elbow connected to the breathing circuit should be used without intentional leak or anti-suffocation valve.

If a specific NIMV ventilator is used, the number of leaks that occur around the mask should be reduced as much as possible. Here an antiviral/antibacterial filter fully adapted to the breathing circuit exhalation port may be used.

Minimizing the risk of contagion due to particle dispersion when using NIMV is the challenge we face when we use this therapy. The standard protocols we have today for setting up the ventilators should change to make a reasonable and safe use of the resources available.

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