Letters to the Editor

Extravascular Lung Water Index as a Predictive Factor for Non-Invasive Ventilation Failure. The Last Chance to Make the Right Decision?☆

Índice de agua pulmonar extravascular y fracaso de la ventilación no invasiva. ¿Es la última frontera para una correcta decisión?

To the Editor,

The use of non-invasive mechanical ventilation is recommended for treating acute respiratory failure in patients in the post-operative period and for avoiding reintubation.[1] However, very few studies are available on objective methods for the early detection of post-operative respiratory failure.

In their article entitled "Elevated extravascular lung water index (ELWI) as a predictor of failure of continuous positive airway pressure via Helmet (Helmet-CPAP) in patients with acute respiratory failure after major surgery", the authors performed a subanalysis to evaluate the correlation between the PICCO monitoring parameters and reintubation.[2] They analyzed patients undergoing abdominal surgery, and concluded that respiratory rate, PaO_2/FiO_2 index, extravascular lung water index (EVLWI), pulmonary vascular permeability index (PVPI) are all sensitive and specific indicators of the need for reintubation in patients initially treated with NIV. Moreover, EVLWI and PVIP would be earlier prognostic factors.

We believe that this study is a very interesting discussion of models for predicting post-operative respiratory failure. Moreover, these diagnostic factors would be of great value if incorporated into post-operative intubation protocols. However, in our opinion, 3 aspects must be taken into consideration in order to correctly interpret pulmonary water levels measured by EVLWI and PVPI and to decide on the use of NIV.

Firstly, it is surprising that a significant difference in respiratory rates and the PaO_2/FiO_2 index between intubated patients and non-intubated patients is observed only after 1 h of NIV, but not at the beginning of treatment, since these values are equally altered in respiratory failure.

Secondly, it would be interesting to specify why the intubated group received a significantly higher level of CPAP and FiO_2, considering that the severity criteria before starting NIV were similar. Moreover, it would be very useful to know the cause(s) of NIV failure.[3] Taking into account that EVLWI and PVPI values would be primarily altered by a parenchymal lesion, rather than fluid overload, other factors and mechanisms might have to be taken into account in NIV failure, such as concomitant lung disease, intraoperative complication, fluid overload, or persistence of the residual effect of sedation and analgesia.

Lastly, in their final conclusions, the authors recommend "immediate early intubation" without previous application of NIV if EVLWI and PVPI rise to values associated with an increase in lung water. We are of the opinion that this approach may be contemplated in real-life practice in extreme cases, but in mild-moderate forms of inflammatory lung lesions (acute lung injury-acute respiratory distress syndrome), NIV could be administered by trained staff to highly selected patients, with an acceptable chance of success, thus avoiding the mortality associated with reintubation or prolonged mechanical ventilation.[4,5] Further studies are needed to establish whether EVLWI and PVPI values can be used as early prognostic factors of NIV failure.

References

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