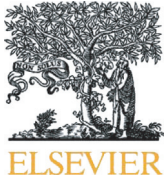




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How can we predict the failure of awake proning in acute hypoxemic respiratory failure associated with COVID-19?



To the Editor:

We have read with great interest the article by Downing et al. “Predictors of intubation in COVID-19 patients undergoing awake proning in the emergency department” recently published in the Journal [1]. The authors demonstrated that respiratory oxygenation (ROX) index and partial pressure of oxygen (PaO_2)/fraction of inspired oxygen (FiO_2) ratio measured 24 h after admission were the most valuable predictors of intubation in COVID-19 patients undergoing awake proning in the emergency department. This study is very timely since the prone position in awake and spontaneously breathing COVID-19 patients is now used universally and extensively [2]. Besides, it is of great importance to elucidate the characteristics of patients in whom the prone position leads to a significant improvement in oxygenation and helps avoid invasive mechanical ventilation [3,4]. However, we have some concerns about the interpretation of the results of this study.

Firstly, unfortunately, there is no information on how long the patients were in the prone position. This paper provides the guide on awake proning to be followed by patients but there is no data on the actual performance of this protocol. In addition, the authors note that in one of the three centers, the protocol utilization was left to the discretion of attending physicians, and therefore it is not certain whether the patients were actually in the prone position.

Secondly, it is not clear what kind of respiratory support the patients received: Section 3.1 states that 48% of patients received high flow nasal cannula (HFNC) at the time of admission, but Table 1 only mentions “non-rebreather”. Did the patients in the study receive HFNC or non-invasive ventilation? Based on the reported initial gas exchange data, many patients might have required non-invasive respiratory support.

Thirdly, it is not clear how the oxygenation parameters were estimated, in the prone position or in the supine position? How were FiO_2 values calculated? The authors refer to a source [53], but there is no such data in it. Meanwhile, the correct calculation of FiO_2 is very important, since FiO_2 is the most vulnerable parameter when assessing the ROX index. Tobin et al. stressed that FiO_2 in a non-intubated patient is quite difficult to determine [5], and we completely agree with them.

Finally, as a predictor of tracheal intubation, the authors propose to use the threshold value of ROX index of 11.8 (after 24 h), which seems to be little justified (both on the basis of real practice and on the basis of already performed and published studies). Indeed, the proposed cut-off value for the ROX index is more than two times higher than the values presented in the first original study by Roca et al., where a ROX index greater than 4.88 measured at 2, 6, and 12 h was consistently associated with a lower risk for intubation [6]. Despite the

fact that the authors state in the discussion that the ROX index has not been investigated especially in patients with COVID-19, the studies presented below suggest the opposite. In a multicenter observational cohort study by Chandel et al., the cut-off value of the ROX index for identifying the subsequent HFNC success in patients with acute respiratory failure secondary to COVID-19 was greater than 3.67 at 12 h after initiation of HFNC [7]. In another multicenter retrospective observational study by Vega et al., the most accurate predictor of HFNC failure for COVID-19 patients treated outside the intensive care unit was the ROX index with a threshold value of <5.99 [8]. Despite the different cut-off values for the ROX index in these two studies, they are nevertheless much closer to the values of the index presented in the article by Roca et al. (differences no more than 1.2) than to the value of 11.8.

We thank the authors for this useful study, and would greatly welcome clarification on the above issues.

Author contributions

All authors contributed equally to the conception, drafting, and final editing of this manuscript.

Declaration of Competing Interest

None.

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