



## Reply to: Prone position in nonintubated hypoxemic respiratory failure. New tool to avoid endotracheal intubation? ☆☆☆☆



Dear Editor,

We read with interest the letter by Dikmen and Esquinas that refers to our recently published article [1]. We will try to summarize their criticisms and to discuss them point by point.

First, Dikmen and Esquinas state that the 2 prone positioning (PP) runs during which patients were shifted from high-flow nasal cannulas and helmet continuous positive airway pressure to noninvasive mechanical ventilation (NIMV) after pronation should be described as treatment failures.

In our opinion, however, shifting patients from PP to NIMV makes a strong pathophysiologic and clinical sense, based on the assumption that in nonintubated patients, a short run of PP may be viewed as a sort of "recruitment maneuver." Thus, applying some form of positive pressure ventilation (being it NIMV or helmet continuous positive airway pressure) to nonintubated patients after pronation has the same rationale as increasing positive end-expiratory pressure after any successful recruitment maneuver [2]. However, we agree that the mechanism of action of PP in this particular subset of patients is not completely understood (eg, as suggested, clearance of airway secretions may play an important role) and deserves further investigation.

Second, it is suggested that the death of 2 nonintubated patients should be considered as a finding that failure to intubate a subject leads to increased mortality.

We acknowledge that timely intubation may be lifesaving because it has been shown in several studies that delaying intubation in patients unresponsive to noninvasive ventilatory support is associated with increased mortality [3]. However, we would rather consider the death of only 3 subjects in an overall population of 13 nonintubated immunocompromised or chronic obstructive pulmonary disease patients with respiratory failure as an important clinical outcome, given the usually poor prognosis of these patients' categories [4,5]. Notably, the 2 young patients who died had a very similar clinical course: they both had hematologic malignancies complicated by pneumonia, and after an unsuccessful PP trial, we tried to rescue them with extracorporeal membrane oxygenation. One of them was later intubated while on extracorporeal membrane oxygenation, but despite our efforts, they both died. The third patient who died was an old woman with advanced cancer and we decided that in her case, intubation would have been futile or even an unnecessary overtreatment.

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Third, we fully agree with Dikmen and Esquinas that objective measurements of breathlessness may be useful to study the effect of PP in awake spontaneously breathing patients. Nevertheless, none of the cited scores is widely used in clinical settings [6]. Thus, we decided to describe the patients' comfort by a sound clinical approach, based on the assessment of the need of sedation, respiratory rate, hemodynamics, and need for vasoactive drugs. None of these parameters changed during the application of PP.

Finally, we would like to deserve a further reflection on our study. With this work, we did not want to propose pronation as an alternative to intubation *tout court*. Most of the patients in our study were immunocompromised: we believe that our results suggest that it may be worth attempting a trial of PP in this particular patient category, with the goal of recruiting the lung and improving oxygenation, while indirectly limiting or delaying the need for intubation and invasive mechanical ventilation.

Given the retrospective nature of our study and the limited number of patients, we share the recommendation of Dikmen and Esquinas that further prospective clinical trials are warranted to confirm our results.

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