

CORRESPONDENCE



# Potential confounders affecting the reintubation rate

Discussion on “Reconnection to mechanical ventilation for 1 h after a successful spontaneous breathing trial reduces reintubation in critically ill patients: a multicenter randomized controlled trial”

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## Initial correspondence from Drs. Kikutani, Ohshimo and Shime

Dear Editor,

We read with great interest the article by Fernandez et al. [1] in a recent issue of *Intensive Care Medicine*, demonstrating the beneficial effect of reconnection to mechanical ventilation for 1 h after a successful spontaneous breathing trial (SBT). However, we believe that several factors may have affected these results.

First, the proportion of patients who received SBT with a T-tube seemed very high (90%), suggesting possible deviation from current standard practice. Esteban et al. estimated that about 40% of patients underwent T-tube SBT [2]. Loss of humidification and tube compensation during a T-piece trial could inhibit ciliary movement and increase respiratory muscle fatigue, thus potentially confounding the results.

Furthermore, there is no information about concurrent treatments that might have induced an intensive care unit-acquired weakness. The use of corticosteroids and neuromuscular blockers and poor glycemic control may be associated with intensive care unit-acquired weakness. In addition, Jaber et al. demonstrated that the use of mechanical ventilation caused a rapid deterioration in diaphragmatic force [3]. Information on the ventilator settings before SBT could improve our understanding of ventilator-induced diaphragmatic dysfunction.

Finally, the precise evaluation of the upper airway before SBT, which could also affect the risk of reintubation, was unclear. Post-extubation laryngeal edema can induce extubation failure and the need for subsequent reintubation, while dysfunctions of the glottis and larynx could also be associated with aspiration risk and resultant extubation failure.

## Reply from Drs. Fernandez and Fernandez

We thank Ohshimo et al. for their comments. The issue of different work of breathing with different techniques is indisputable, but their impact on the spontaneous breathing test success remains debatable. At present, the latest weaning guidelines only suggest that PSV may be somehow preferable, but without enough evidence. Nevertheless, we studied the possible confounding role of SBT type and duration. We included a multivariable logistic regression in the manuscript that discarded these factors and demonstrated that only rest has an independent effect on reintubation (see Supplementary material) [1].

We want to reinforce that even in this heterogeneous scenario with many different clinical approaches remaining at the discretion of attending teams according to evidence-based local protocols, rest for 1 h showed a significant reduction in the extubation failure and reintubation rate.

Patients with airway-related problems, such as laryngeal edema, were included in “others” (Table 2), and the numbers were similar in both groups, without a statistically significant difference (15% of the patients reintubated in the control group vs. 17% in the rest group). Certainly, this kind of problem should not improve with

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rest, accounting for the residual extubation failure. We agree that patients at risk for postextubation stridor, such as patients with traumatic intubation and those intubated for more than 1 week, could be subjected to the cuff leak test, as recommended by The American Thoracic Society, but “with very low certainty in the evidence” [4].

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#### Compliance with ethical standards

#### Conflicts of interest

The authors have no potential conflicts of interest to declare.

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