Dear Editor:
We have read with great interest the article by Alam et al. [1] that analyzes the utility of diaphragm ultrasound (DU) to predict the success of extubation after a spontaneous breathing trial (SBT). We think that the results, which are consistent with similar studies [2], demonstrate a useful and accurate tool to detect diaphragmatic dysfunction in critically ill patients. However, there are some important data that should be further analyzed for a proper extrapolation.

From a methodological point of view, we noticed that there were three observation points for DU: at the start of 30 minutes of T-piece trial (II) after 10 minutes from beginning of T-piece trial (III) before extubation. However, in clinical practice, in a high-risk population with a longer period of mechanical ventilation, more than one SBT is usually performed [2]. It is unknown whether patients participating in this study were in their first SBT or if the observation period was prolonged for a subsequent SBT.

The results provide limited details about causes of extubation failure. We know from previous studies that the mechanisms that lead to reintubation can differ among patients (circulatory, respiratory, and neurological) [3]. However, Alam et al. [1] do not well define the involved mechanisms, and it is not clear if they were different in patients who required reintubation at 6–12 or 24 hours. Also, it would be interesting to evaluate DU findings before or after endotracheal tube re-positioning in order to establish if there is any relationship between the observed causes and results of diaphragm excursion (DE) or diaphragm thickening fraction (DTF).

Moreover, we noticed that the initial causes of respiratory failure leading to mechanical ventilation are not specified, but chronic obstructive pulmonary disease (COPD) is described as a comorbidity in 10 patients (32%). It would be useful to know if there was a correlation between this comorbidity and extubation failure [4] since patients with COPD usually have pulmonary hyperinflation that impairs diaphragmatic function; this could be a determining factor for the results observed [5].

We agree with the authors that the results are not generalizable. Lung ultrasound and particularly DU is an operator-dependent technique that requires experience and a learning curve. In this study, even if the technique is described, the authors did not clarify if they assessed the intra-observer and inter-observer reproducibility of DU measurements using statistical analysis. Also, as specified in the discussion, standard cut-offs for DE and DTF were not identified, and different cut-offs showed different sensitivity and specificity values in pre-
vious papers. Moreover, different studies provided conflicting results in identifying the best approach between DE and DT.

In conclusion, we think that the authors emphasized the importance of DU as a useful tool for respiratory muscle monitoring in critically ill patients, but further clinical trials are needed to confirm its efficacy in predicting extubation success compared to traditional parameters or to create a combined score (both clinical and ultrasonographic) to identify an ideal predictive index that could reflect pathophysiological pathways leading to extubation failure.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

ORCID

Domenica Di Costanzo https://orcid.org/0000-0003-0041-6471
Mariano Mazza https://orcid.org/0000-0001-5259-1648
Antonio Esquinas https://orcid.org/0000-0003-0571-2050

AUTHOR CONTRIBUTIONS

Conceptualization: all authors. Formal analysis: AE. Project administration: AE. Writing—original draft: all authors. Writing—review & editing: AE.

REFERENCES