

## References

1. Tseng H, Tseng Y-C, Hsu H-S, Chang S-C. Different spontaneous breathing trials in patients with atrial fibrillation. *Rev Portug Pneumol*. 2015.
2. De Backer D, Cholley BP, Slama M, Vieillard-Baron A, Vignon. Hemodynamic monitoring using echocardiography in the critically ill. Springer; 2011.
3. Lichtenstein DA, Mezière GA. Relevance of lung ultrasound in the diagnosis of acute respiratory failure, The BLUE Protocol. *Chest*. 2008;134:117–25.
4. Mas A, Masip J. Noninvasive ventilation in acute respiratory failure. *Int J Chronic Obstruct Pulm Dis*. 2014;9:837–52.

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## Reply to the Letter: Different spontaneous breathing trials in patients with atrial fibrillation



Dear Editor,

We are grateful to Dr. Blanco and Dr. Esquinas for their comments regarding our article published recently in the Portuguese Journal of Pulmonology.<sup>1</sup> We do agree that increased cardiac workload may occur in patients with atrial fibrillation (AF) during weaning process with T-piece which may result in impending heart failure (HF) and/or HF and subsequent weaning failure from mechanical ventilation. Nevertheless, it is difficult to estimate the role of T-piece used as a spontaneous breathing trial (SBT) in weaning the patients with AF.

AF is the most common arrhythmia in particular in critically ill patients. The coexistence of AF and HF is well known, but the causative relationship between both conditions has not yet been well elucidated.<sup>2</sup> AF is able to facilitate HF in several ways. For example, the increasing heart rate causing a shorter diastolic filling time, the irregular heart beat, and impaired atrial systolic function may reduce cardiac output. Accordingly, when weaning the patients with AF, the potential risk of AF in impairing cardiac function of the patients with AF during weaning and after extubation of endotracheal tube should always be kept in mind, although it is difficult to evaluate the attribution of AF alone in causing HF and/or subsequent weaning failure.

In the clinical setting of weaning AF patients, the loss of positive pressure support during SBT using T-piece might impair cardiac function and result in subsequent weaning failure. However, our study enrolled AF patients who received two different SBT, including PSV and T-piece for only 30 min, before weaning from mechanical ventilation. It is not able to know how much loss of heart function during a short period of SBT with T-piece. Continuing positive pressure ventilation with non-invasive ventilation may be beneficial for weaning patients with HF. Up to the present time, the role of non-invasive ventilation after weaning AF patients from mechanical ventilation remains undetermined.<sup>3</sup> The patient who needed non-invasive

ventilator after extubation of endotracheal tube was defined as failure to be weaned in this study.

Previous studies indicated that positive pressure ventilation reduced preload and afterload for patients with HF.<sup>4</sup> These could all improve cardiac function. The intrathoracic pressure became negative, which induced increased venous return and impaired left ventricular ejection pressure gradient, when weaning HF patients with T-piece.<sup>4</sup> Therefore, when start SBT, PSV may be beneficial for patients with HF. However, it is not clinically practical to use PSV for patients with AF and T-piece for patients without AF. This was why we performed the study. In addition, the continuous use of non-invasive ventilator including CPAP and BiPAP after extubation of endotracheal tube in patients with AF or impaired cardiac function is beyond the scope of this retrospective study.

As for weaning from mechanical ventilation for the patients with a variety of underlying morbidities, there are still a lot of questions waiting for resolution. Further prospective, randomized control studies with large population and/or multicenter studies are needed to find the best or optimal way or strategies to wean the AF patients from mechanical ventilation.

## Conflict of interest statement

The authors have no conflicts of interest.

## References

1. Tseng YH, Tseng YC, Hsu HS, Chang SC. Different spontaneous breathing trials in patients with atrial fibrillation. *Rev Port Pneumol*. 2015;21:245–52.
2. Anter E, Jessup M, Callans DJ. Atrial fibrillation and heart failure: treatment considerations for a dual epidemic. *Circulation*. 2009;119:2516–25.
3. Boles JM, Bion J, Connors A, Herridge M, Marsh B, Melot C, et al. Weaning from mechanical ventilation. *Eur Respir J*. 2007;29:1033–56.
4. Teboul JL, Monnet X, Richard C. Weaning failure of cardiac origin: recent advances. *Crit Care*. 2010;14:211.

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