

## Letters to the Editor

# Esophageal pressure-guided positive end-expiratory pressure in acute respiratory distress syndrome: The jury is still out!

Sir,

We read with interest the article written by Sehgal *et al*<sup>[1]</sup> and want to raise certain issues pertaining to the important topic:

1. In Case 1, an end-expiratory transpulmonary pressure of 0–10 cm of H<sub>2</sub>O and end-inspiratory transpulmonary pressure of <25 cm of H<sub>2</sub>O were targeted. As a result, the patient received positive end expiratory pressure (PEEP) of 13 [transpulmonary pressure (Ptp) PEEP of 3 or 4] though his FiO<sub>2</sub> was 1 throughout the hospital course. Should a higher PEEP and hence a higher Ptp PEEP been targeted in this case (though the patient had hypotension)? Talmor *et al.*<sup>[2]</sup> had studied application of esophageal pressure values for titration of ventilator strategies in acute respiratory distress syndrome (ARDS) patients and had used an algorithm to determine the Plexp (end-expiratory pleural pressure) and PEEP (targeting a minimum PaO<sub>2</sub> of 55 mm of Hg) which is provided in Table 1. Trials such as ALVEOLI have also suggested a higher PEEP at a FiO<sub>2</sub> of 1. Table 2 portrays the PEEP–FIO<sub>2</sub> combination used in the said trial (in the lower PEEP group). Thus, it seems that the authors have measured the esophageal pressures but have not used them for appropriate PEEP titration
2. The authors have attempted to tailor the ventilator strategy based on the esophageal pressure monitoring, but they have not indicated how the strategy should be altered based on the subtype, namely, ARDSp versus ARDSexp. It is seen that application of PEEP results in increased recruitment and decreased elastance of the respiratory system in ARDSexp as compared to the ARDSp as suggested by Gattinoni *et al.*<sup>[3]</sup> However, whether the above findings should dissuade intensivists to apply PEEP in cases of ARDSp can be ardently debated due to lack of

**Table 1: FiO<sub>2</sub> and Plexp combination used by Talmor *et al*<sup>2</sup>**

FiO <sub>2</sub>	Plexp
0.4	0
0.5	0
0.5	2
0.6	2
0.6	4
0.7	4
0.7	6
0.8	6
0.8	8
0.9	8
0.9	10
1	10

**Table 2: FiO<sub>2</sub> and PEEP combination used in ARDSNet trial**

FiO <sub>2</sub>	Positive end-expiratory pressure
0.3	5
0.4	5
0.4	8
0.5	8
0.5	10
0.6	10
0.7	10
0.7	12
0.7	14
0.8	14
0.9	14
0.9	16
0.9	18
1	18-24

evidence in its favor. ARDSNet and ALVEOLI had consistently used PEEP in all ARDS patients (both ARDSp and ARDSexp) based on Table 2. Talmor *et al.*<sup>[2]</sup> had around 23% patients having ARDSp in the esophageal pressure group for which they had used the same strategy as in ARDSexp

3. Of the two cases described by the authors, poor chest wall compliance in Case 2 appears to be predominantly due to increased abdominal pressures (as a result of hemoperitoneum). This, however, might not be true for all extrapulmonary ARDS patients, as also highlighted in a study by Pelosi *et al.*<sup>[4]</sup> indicating that ARDSexp may not be a homogenous group by itself
4. Finally, a few caveats about using esophageal pressure for titrating PEEP – the esophageal pressure may not represent the pleural pressures in normal individuals as also in critically ill patients. Arbitrarily, correction factors (Talmor *et al.* had subtracted 5 cm of H<sub>2</sub>O from the esophageal pressure value to correct for the effects of mediastinal weight and

balloon air volume on the observed pressures) have been used which can be variable and can make the interpretation difficult.<sup>[5]</sup> Furthermore, esophageal pressures can lead to increased PEEP administration and better oxygenation parameters in subjects but its effect on mortality, ventilator-free days, etc., is still unclear.<sup>[5]</sup>

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### Conflicts of interest

There are no conflicts of interest.

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