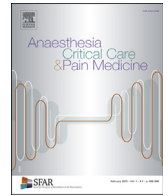




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## Letter to the Editor

## Patient self-induced lung injury risk in severe COVID-19



## ARTICLE INFO

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## To the editor,

We read with interest the recent comment by J Schmitt et al. on our study [1,2] and thank them for their interest and valuable insights.

The authors pointed out the phenomenon of patient self-induced lung injury (P-SILI), which is described in non-COVID-19 patients with acute respiratory distress syndrome. P-SILI is characterised by shift of brain homeostasis towards a lower PaCO<sub>2</sub> threshold in response to hypoxaemia resulting in increased patient respiratory effort (increased minute ventilation) and hypocapnia. Patients with P-SILI are at increased risk of progressive lung injury due to abnormal increase in transpulmonary pressure leading to baro- and volutrauma, and possibly negative pressure lung oedema. Hence, the authors suggest that early hypocapnia would be a sensitive predictor of the need for ventilatory support and/or poor patient outcomes.

In our current report concerning diaphragmatic excursion in patients with severe COVID-19 [2], we did not encounter any patient with exaggerated diaphragmatic function and the maximum diaphragmatic excursion was 45- and 37 mm in the right and left sides, respectively. In our earlier report, we evaluated diaphragmatic excursion at weaning from invasive mechanical ventilation; however, we did not assess the patients at hospital admission [3].

Unfortunately, we did not record PaCO<sub>2</sub> values during our two studies [2,4]; however, previous literature showed that patients with severe COVID-19 have lower inspiratory effort in comparison to matched non-COVID-19 cohort with respiratory failure, suggesting lower risk of P-SILI in patients with COVID-19 [4]. Furthermore, data from COVID-19 patients showed that PaCO<sub>2</sub>

was not significantly lower in patients who later needed mechanical ventilation, and that PaCO<sub>2</sub> showed low accuracy in predicting the need for mechanical ventilation and/or death with area under receiver operating characteristic (95% confidence interval) of 0.57 (0.51 to 0.68) [5]. Thus, we suggest that the level of PaCO<sub>2</sub> on hospital admission is unlikely a predictor of severity of the disease. However, we agree that direct comparison between the diaphragmatic excursion and PaCO<sub>2</sub> level as risk predictors warrants further research.

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## Conflict of interests

The authors have no competing interest to declare.

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Maha Mostafa, Mina Adolf Helmy, Lydia Magdy Milad,  
Ahmed Hasanin\*  
Department of Anaesthesia and Critical Care Medicine, Cairo University,  
Egypt

\*Corresponding author at: Anaesthesia and Critical Care Medicine,  
Faculty of Medicine, Cairo University, Cairo, Egypt  
E-mail address: [ahmedmohamedhasanin@gmail.com](mailto:ahmedmohamedhasanin@gmail.com) (A. Hasanin)

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