

Commentary: Barotrauma in critically ill patients with COVID-19: miles to go to unwrap the pathophysiology

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Dear Editor,

We read with great interest the retrospective case-control study of Venkateswaran *et al.* [1]. However, we consider that there are certain points that need further clarification, and that the provision of more data in the methodology would make it even more interesting.

Firstly, the authors did not mention what flow was used during use of a high-flow nasal cannula (HFNC) for their patients. Lower flow rates (35–40 L min⁻¹) may be advantageous for better patient comfort and initial adaptation, while a higher flow rate (60 L min⁻¹) can provide a faster relief of dyspnoea. One might start with 60 L min⁻¹ and individualise the flow to the highest value tolerated by the patient [2]. The decrease of transoesophageal pressure fluctuations can be used as a measure of patient effort and work of breathing. HFNC may be a fruitful therapy when personalised bedside titration to optimum flow is ensured.

Secondly, we are curious to know about the maximum level of positive-end-expiratory pressure (PEEP) (the PEEP maximum) used during invasive mechanical ventilation, and whether they utilised any lung-protective strategy and ventilator modes in their cases. Low tidal volume lung protective ventilation remains the cornerstone of supportive therapy in patients with acute respiratory distress syndrome (ARDS), thereby yielding a considerable improvement in outcomes [3]. Higher maximum PEEP has been observed among patients who suffered barotrauma compared with non-barotrauma patients [4].

Finally, in the present study, the authors relied on clinical examination findings and utilised chest radiography, computed tomography (CT), ultrasonography, or a combination thereof to diagnose pneumothorax. It would be interesting to know the details of how many patients were diagnosed using which diagnostic modality. In any study assessing barotrauma, a plausible cause of reported higher incidence of pneumothorax could be the broader use of chest CT with its higher sensitivity to detect extra-alveolar gas collections [5].

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REFERENCES

1. Venkateswaran V, Soni K, Chaturvedi Chaturvedi A, *et al.* Barotrauma in critically ill COVID-19 patients: a retrospective case-control study. *Anaesthesiol Intensive Ther* 2022; 54: 18-22. doi: 10.5114/ait.2022.114034.
2. Mauri T, Alban L, Turrini C, *et al.* Optimum support by high-flow nasal cannula in acute hypoxemic respiratory failure: effects of increasing flow rates. *Intensive Care Med* 2017; 43: 1453-1463. doi: 10.1007/s00134-017-4890-1.
3. Simioli F, Annunziata A, Polistina GE, Coppola A, Di Spirito V, Fiorentino G. The role of high flow nasal cannula in COVID-19 associated pneumomediastinum and pneumothorax. *Healthcare (Basel)* 2021; 9: 620. doi: 10.3390/healthcare9060620.
4. Elsaaran H, AlQinai S, AlTarrh D, *et al.* Prevalence and risk factors of barotrauma in Covid-19 patients admitted to an intensive care unit in Kuwait; a retrospective cohort study. *Ann Med Surg (Lond)* 2021; 63: 102141. doi: 10.1016/j.amsu.2021.01.089.
5. Kafle S, Shrestha E, Pokharel N, Budhathoki P, Shrestha DB, Vittorio T. Pneumomediastinum and subcutaneous emphysema in an adult male from Nepal infected with COVID-19. *Cureus* 2021; 13: e16306. doi: 10.7759/cureus.16306.

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