

[PICTURES IN CLINICAL MEDICINE]

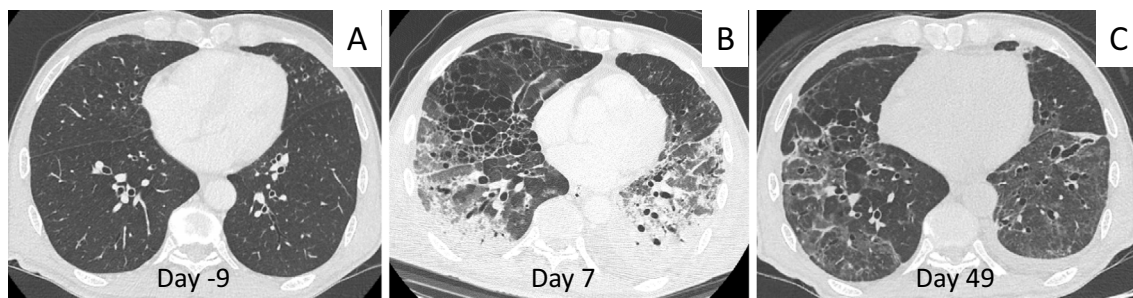
Development of Lung Emphysema Due to APRV

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Key words: emphysema, pneumothorax, acute respiratory distress syndrome, airway pressure release ventilation, barotrauma, pneumococcus

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Picture.

A 69-year old man was diagnosed with acute respiratory distress syndrome (ARDS) due to invasive pneumococcal disease and underwent airway pressure release ventilation (APRV). Initially, his respiratory condition gradually improved, but on day 7, chest CT showed newly developed lung emphysema (Picture A and B). On day 8, right-side pneumothorax occurred and thoracic drainage was initiated. Eventually, his condition was ameliorated and respirator support was terminated on day 13. Follow-up CT revealed diminished emphysema on day 49 (Picture C).

APRV is usually applied to ARDS patients (1); however, continuous high pressure sometimes causes barotrauma. Indeed, Lim et al. reported that 4% of ARDS patients treated with APRV developed pneumothorax (2). The mechanism remains unknown and there are no previous reports of prelesion resulting in pneumothorax. This case suggests that the invasive nature of pneumococcus in addition to continuous high airway pressure by APRV might trigger lung emphysema, which might be an important indicator of the develop-

ment of pneumothorax. Physicians should therefore be mindful of the development of emphysema in ARDS patients treated with APRV.

The authors state that they have no Conflict of Interest (COI).

References

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2. Lim J, Litton E, Robinson H, Das Gupta M. Characteristics and outcomes of patients treated with airway pressure release ventilation for acute respiratory distress syndrome: a retrospective observational study. *J Crit Care* **34**: 154-159, 2016.

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