



Internal Medicine Flashcard

Shortness of breath after thoracentesis: Did we do something wrong?

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A 73-year-old male presented to the emergency department (ED) with worsening shortness of breath (SOB) and cough over two weeks. One week ago, he was seen in clinic for similar symptoms and was prescribed amoxicillin. His symptoms got worse and he came to the ED next week. Physical examination was significant for dullness on percussion and decreased breath sounds on the left side of chest. His oxygen saturation was 70% by pulse oximetry on ambient air; was started on oxygen via non-rebreather mask at flow of 11 L/min with improvement to 88%. Chest radiograph (CXR) showed large left-sided pleural effusion with mediastinal shift to the right (Fig. 1A). He underwent placement of a pigtail catheter on the left under ultrasound guidance for pleural fluid removal. Over 1 h, a total of 2.5 L were removed. His SOB improved and oxygen requirement decreased to 2 L/min. Repeat CXR confirmed expansion of the left lung (Fig. 1B). Two hours later, patient developed tachypnea, tachycardia, and respiratory distress, resulting in the need for BiPAP with FIO₂ of 100%. CXR showed severe left sided pulmonary congestion (Fig. 1C).

What is the diagnosis for worsening shortness of breath after thoracentesis?

2. Discussion

Re-expansion pulmonary edema (REPE) is a complication that occurs after rapid re-expansion of a collapsed lung within 1 to 24 h. It has been reported < 1% in most studies [1] with variable mortality rate even up to 20% in one study. Risk factors associated with REPE include: age < 40, lung collapse for > 7 days, degree of lung collapse, rapid re-expansion of collapsed lung, and presence of large hydrothorax or pneumothorax. The pathophysiologic mechanism of REPE is unknown [1]. Clinical features vary from cough and chest tightness to acute respiratory failure [3]. Treatment is usually supportive and includes continuous non-invasive positive pressure ventilation or mechanical ventilation in severe cases; some patients also require vasopressors, steroids and diuretics [2].

It remains uncertain how much fluid can be safely drained since occurrence of REPE does not correlate well with the volume of fluid removed after thoracentesis [1]. Studies have shown that pleural

pressure (Ppl) monitoring during thoracentesis helps to prevent REPE. In cases where Ppl is not being monitored, consensus is to terminate thoracentesis after removal of 1 L of fluid [1].

Our case highlights the importance of identifying risk factors for development of REPE during large volume thoracentesis. It also highlights the importance of considering usage of pleural manometry during thoracentesis and having a heightened awareness of development of new symptoms during the fluid removal.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Written consent was obtained from patient.

Competing interests

Authors declare that they do not have competing interests.

Availability of data and material

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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Authors' contributions

All authors contributed equally to manuscript. They have read and approved the final manuscript.

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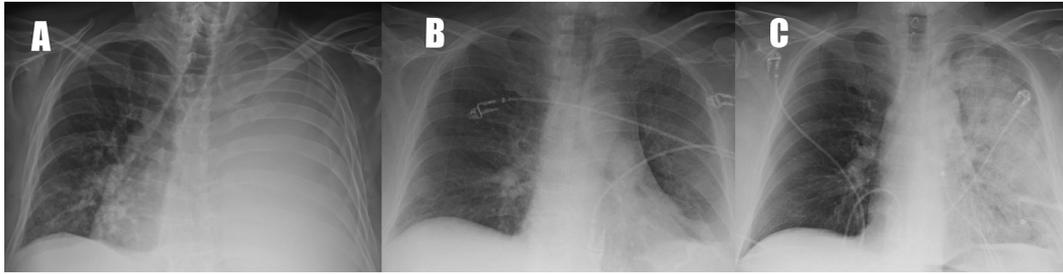


Fig. 1. A: Chest radiograph at the time presentation to the emergency department, showing left sided pleural effusion with mediastinal shift to right. B: Chest radiograph after removal of 2.5 l of pleural fluid, showing left lung re-expansion. C: Chest radiograph 2 h after removal of pleural fluid, showing diffuse pulmonary congestion.

References

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