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## A Bair's Crushing Hug: An Unusual Cause of Pseudo pneumothorax

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### Abstract

A pneumothorax can present as a medical emergency requiring urgent intervention. Although the incidence of a primary spontaneous pneumothorax is low, it is an especially serious complication in patients on positive pressure ventilation, and carries a high mortality. However, closely mimicking them are pseudo-pneumothoraxes, which must be differentiated because they are almost always benign and interventions in such patients may be catastrophic including the formation of a tension pneumothorax. We review a similar case and discuss methods to differentiate the two.

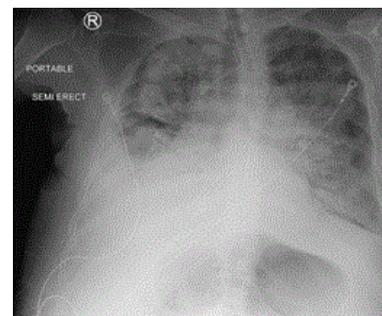
**Keywords:** Pseudo-pneumothorax; Antibiotics; Radiologist

### Case report

A 64-year-old male with a history of smoking and recurrent pleural effusions with multiple chest tube placements in the past was admitted to the ICU with anasarca, bilateral moderate pleural effusions, dyspnea and hypothermia of 30.4°C. He was slowly rewarmed with a Bair Hugger warming blanket, started on empiric antibiotics and diuresed with intravenous furosemide. Supplemental oxygen was also provided via nasal cannula. Despite this, he developed worsening respiratory failure (Arterial blood gas: pH 7.22, PaCO<sub>2</sub> 57 mmHg, PaO<sub>2</sub> 48 mmHg, Oxygen saturation of 75% on FiO<sub>2</sub> 0.6) and was placed on Bi-level Positive Airway Pressure (BiPAP).

Intubation was contemplated, but the family refused, and further management continued on BiPAP. On clinical examination he was hemodynamically stable, tachypnic (respiratory rate of 36 breath/min) and in respiratory distress with poor inspiratory effort and coarse but equal breath sounds bilaterally. A portable chest X-ray showed right lung hyperlucency with lung volume loss (**Figure 1**), which was read as an occult pneumothorax by the radiologist. An emergent chest tube placement was indicated and during its preparation, the Bair Hugger warming blanket was noticed, unknown if it had been removed for imaging [1-4]. A repeat chest X-ray without

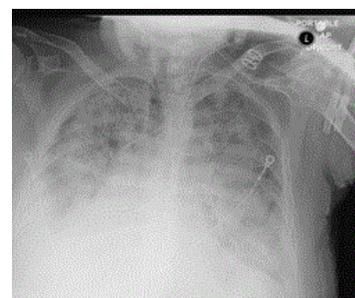
the blanket was obtained which showed a spontaneously 'resolved' pneumothorax (**Figure 2**).



**Figure 1** Reported pneumothorax with right lung hyperlucency and lung volume loss.

### Discussion

Although suspicion for a pneumothorax should remain high in patients on positive pressure ventilation, esp. with increased oxygen requirements and appropriate radiographic findings, it is important to correlate with the patient's clinical exam [5].



**Figure 2** Resolved pneumothorax.

A pseudo-pneumothorax may closely mimic a true pneumothorax, even to an experienced radiologist, and can be caused by skin folds, pleural cysts, colonic interposition or herniated abdominal viscera, and as in this case, a Bair Hugger

warming blanket. Clues to correctly identifying a pseudo-pneumothorax include:

- Presence of lung markings distal to the pseudo-lung border.
- A distally fading or broad lung border in contrast to a distinct hair-like pleural line seen in a pneumothorax.
- The color contrast across the lung border in a pneumothorax is much more dramatic and sharp compared to a pseudo-pneumothorax.
- A lung ultrasound (LUS) to identify B-lines and lung sliding.
- A pseudo-lung border extending beyond the anatomical chest wall.

Accurate and timely identification can prevent unnecessary interventions which may lead to complications including the formation of a pneumothorax.

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