



A Rare Cause of Severe Dyspnea and Right Upper Quadrant Pain: Tension Hydrothorax

IMAGE

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A 59-year-old male with lung adenocarcinoma was presented at the emergency department with temporary loss of consciousness, right upper quadrant pain, progressive dyspnea, and a cough. He was afebrile with a blood pressure of 107/56 mmHg, heart rate of 118 beats/minute, respiratory rate of 24 breaths/minute, and an oxygen saturation rate on room air of 94%. A physical examination revealed no respiratory sounds in the right hemithorax. A chest X-ray showed total opacification of the right hemithorax with a mediastinal shift (Fig. 1). Contrast-enhanced computed tomography (CT) of the chest revealed a necrotic mass in the right upper lung lobe and massive right pleural effusion, causing total atelectasis in the right lung, mediastinal shift to the left, and compression of the superior vena cava, consistent with tension hydrothorax. In addition, CT images showed that the liver had shifted to the lower midline of the abdomen due to massive right pleural effusion (Fig. 2). A chest tube was inserted and 1000 mL of hemorrhagic fluid was drained. The chest tube was then clamped to prevent pulmonary re-expansion edema. The respiratory distress and right upper quadrant pain decreased following drainage.

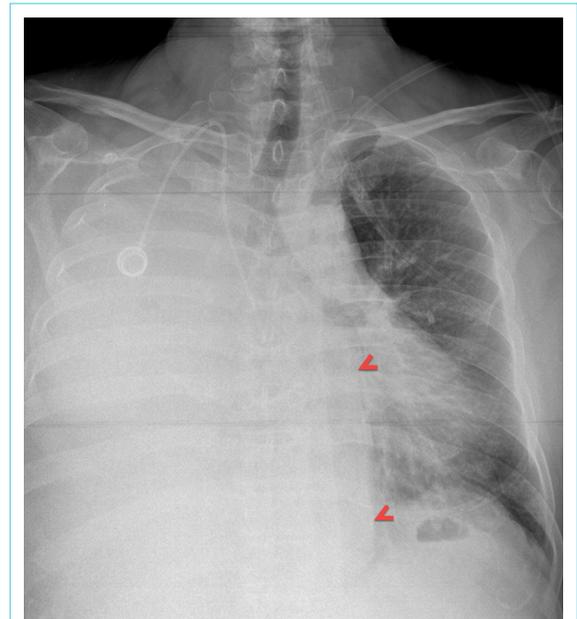


Figure 1. Posteroanterior chest X-ray shows total opacification of the right hemithorax with a mediastinal shift (arrowheads)

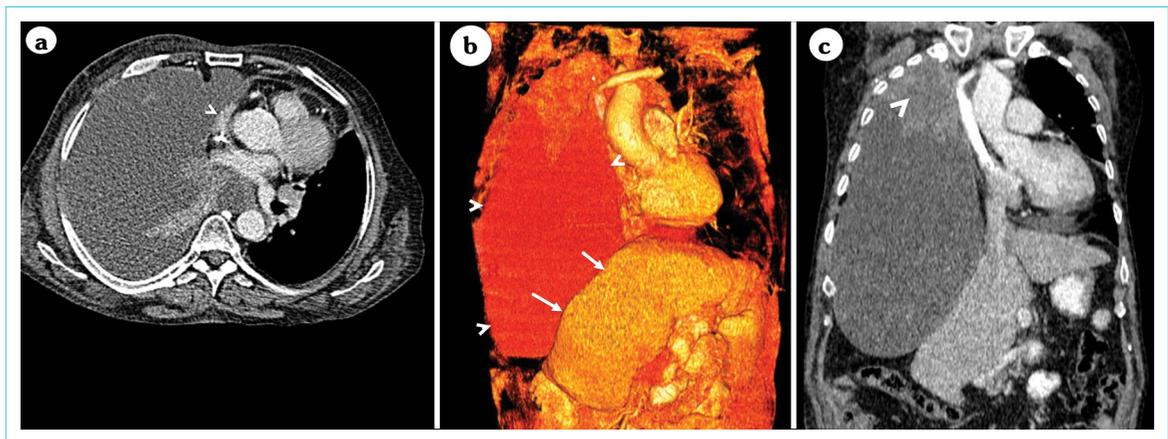


Figure 2. (a) Axial chest computed tomography (CT) image shows massive right pleural effusion compressing the superior vena cava and right atrium (white arrowhead). (b) Volume-rendered 3-dimensional reconstruction from chest CT shows massive right pleural effusion (arrowheads) compressing the diaphragm and liver (arrows). (c) Coronal chest CT image shows a necrotic mass in the right upper lung lobe (white arrowhead) and massive right pleural effusion

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The pleural fluid analysis revealed exudate-type fluid, which contained fibrin, blood elements, and malignant cells. The patient was discharged on the 10th day of hospitalization with a plan for pleurodesis.

As many as two-thirds of cancer patients develop pleural effusion at some stage of their disease, which is associated with a poor prognosis and lower life expectancy, particularly in lung adenocarcinoma (1). Almost 70% of exudative pleural effusions are secondary to malignancy and pleural infections, and these are also the most common causes of tension hydrothorax (2, 3). The pathophysiology of malignant tension hydrothorax is associated with the affected large pleural surface, obstruction of lymphatic drainage, and low serum oncotic pressure (1, 2). Rarely, patients with massive pleural effusion present with tamponade-like symptoms and tension hydrothorax (1, 3). Tension hydrothorax is a life-threatening condition that must be recognized and treated urgently. Patients with tension hydrothorax usually present at the emergency department with symptoms secondary to progressive dyspnea and hypotension (1–3). A chest X-ray is used as an initial diagnostic tool, and CT can confirm the diagnosis. Moreover, CT can demonstrate the underlying cause of tension hydrothorax and related complications (2). Understanding of the imaging findings is essential for radiologists and clinicians to diagnose and provide adequate treatment.

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