Primary Pulmonary Tuberculosis: An Uncommon Presentation

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A 53-year-old man has had malaise, intermittent cough, and occasional fever and night sweats for 2 weeks. He has also lost some weight during this time but denies hemoptysis and sputum production; he has not traveled abroad recently. His only significant medical condition is hypertension, which is well controlled with medication.

Temperature is 37.2°C (99°F); heart rate, 88 beats per minute; respiration rate, 18 breaths per minute; and blood pressure, 135/84 mm Hg. Results of cardiac, abdominal, and neurologic examinations are normal. Breath sounds are decreased in the middle and lower lobes of the right lung.

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1. Cough, fever, and malaise: The frontal (A) and lateral (B) radiographs reveal ill-defined opacities in the middle and upper lobes of the right lung (A and B, white arrows) and thickening in the right apex (A, yellow arrow). You order a CT scan of the chest. An axial image at the level of the middle third of the left ventricle shows an opacity in the superior segment of the right lower lobe (C, arrow). An axial image at the level of the pulmonary outflow tract shows ill-defined opacities in both the superior segment of the right lower lobe and the right middle lobe (D, arrows). Soft tissue windows from just below the level of the aortic arch reveal a lymph node with a low-density center (a necrotic lymph node) posterior to the trachea, slightly above the carina (E, arrow). Soft tissue windows at the level of the thoracic inlet confirm the pleural thickening in the right apex (F, arrow). Based on the findings of a necrotic lymph node and multifocal air-space opacity, tuberculosis and fungal disease are included in the differential diagnosis. Sputum samples are positive for Mycobacterium tuberculosis, and primary pulmonary tuberculosis is diagnosed. A presentation such as this man's typically occurs in children, but it has also been seen in previously unexposed adults. The vast majority of patients have no symptoms. Radiographic features of primary pulmonary tuberculosis include:

- Areas of ill-defined air-space opacity, as seen here.
- Cavitation (in a minority of patients).
Pleural effusions, which more commonly occur in adults.

On CT, the adenopathy associated with tuberculosis appears as a low-density center of necrosis, as in this man. **Outcome of this case.** The patient received multidrug therapy. At 6-month follow-up, he was doing well and sputum samples were negative. **2. Right-sided chest pain after a car accident** A 32-year-old man is brought to the emergency department after another vehicle hit the right side of the car in which he was a passenger. He has significant pain, particularly on the right side of his chest. Medical history is noncontributory. This man is in moderate respiratory distress; his blood pressure, heart rate, and oxygen saturation have been normal since the accident. Results of a neurologic examination are normal; there are no visible injuries to the head or neck. Heart, abdomen, and extremities are also normal. A large hematoma is present on the right side of the chest. Palpation of the right side of the chest reveals crepitus and significant pain in the posterior aspect. Breath sounds are significantly reduced at the right lung base. The right posterior hemithorax exhibits paradoxical mobility compared with the other segments of the chest. A supine radiograph of the chest is obtained. What does this film reveal about the extent of the patient’s injuries, and what further investigation is warranted? **2. Right-sided chest pain after a car accident:** The radiograph (A) reveals diffuse opacity throughout the right hemithorax, posterior rib fractures (yellow arrows), and right lateral subcutaneous gas (white arrow). The mediastinum is unremarkable. You order a CT scan of the chest to further evaluate these findings. Lung windows at the level of the pulmonary outflow tract (B) and at the level of the left ventricle (C) show a large area of parenchymal opacity. Given the history of trauma and the adjacent rib fractures, this finding is most consistent with lung contusion. There is also a small pleural effusion (black arrows), which likely represents hemothorax, and evidence of subcutaneous gas (yellow arrows), which suggests pneumothorax. The fifth, sixth, and seventh ribs are each fractured posteriorly in 2 places (some of the fractures are not readily visible on the chest radiograph because of the overlying parenchymal lung opacity). These findings--coupled with the paradoxical motion of this portion of the chest--establish the diagnosis of *flail segment*, which is almost always associated with contusion. The CT images also show a 5% anterior pneumothorax (B and C, white arrows), which was not visible on the conventional chest radiograph; it is best seen in B. If you suspect pneumothorax based on clinical findings, a tangential beam radiograph in the upright or decubitus position can help confirm the diagnosis. In this patient, the rib fractures and crepitus prompted a diligent search for pneumothorax; because the decision had been made to obtain a CT scan, a tangential beam radiograph was not ordered. A chest tube was placed to manage the pneumothorax and drain the hemothorax. The pulmonary contusion increased in severity during the next 48 hours and resolved within 72 hours of its peak. **Outcome of this case.** A follow-up upright chest radiograph (D) was obtained on day 4, after the chest tube was withdrawn. The parenchymal lung opacity had diminished significantly. The rib fractures were more easily seen (arrows), which confirmed the diagnosis of flail segment. The patient was discharged on day 6 without sequelae.

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