CHEST Postgraduate Education Corner

CASE RECORDS OF THE UNIVERSITY OF COLORADO

A 31-Year-Old Woman With Hemoptysis and an Intrathoracic Mass

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A 31-year-old woman presented with 3 months of hemoptysis (one-half cup daily), left chest pain, and intermittent expectoration. The sputum was described as having a "cheeselike" appearance, occurring every 5 to 6 days. She reported mild shortness of breath for 2 months but no weight loss, night sweats, or fevers. Her chest pain was episodic in nature and occasionally pleuritic. She denied nausea, vomiting, rashes, or joint pain. Her menses were regular and of normal quantity. Six years prior, she presented to another institution with an acute onset of hemoptysis and underwent left internal mammary arterial embolization. A diagnosis was not established, and she was lost to follow-up. The hemoptysis had subsided following the embolization but now returned.

She underwent a left eye enucleation at age 4 years for retinoblastoma. She received no radiation, chemotherapy, or subsequent genetic evaluation. She reported no pneumonia, foreign-body aspiration, or coagulopathy. She was a former smoker (5 years), occasionally drank alcohol, and denied illicit drug use. She was from Denver and had not traveled outside of the United States. There were no risk factors for TB. She took no medications. There was no family history of retinoblastoma, other malignancies, or pulmonary disease.

The physical examination included: temperature, 37.8°C; pulse, 64 beats/min; BP, 122/70 mm Hg; respiratory rate, 14 breaths/min; and oxygen saturation, 97% while breathing room air. She was thin and in no acute distress. There was a left prosthetic eye. An oropharyngeal examination revealed normal dentition and an absence of mucosal lesions. The neck was supple without masses or lesions. Cardiovascular exam revealed a normal S1, physiologically split S2, and no gallops, murmurs, or pericardial rub. Lung examination revealed decreased breath sounds over the anterior left thorax with early inspiratory crackles. The abdominal, lymphatic, and skin examinations were normal. Strength was normal.

The WBC count was 10.0×10^3 cells/μL with 64% neutrophils, 24% lymphocytes, 6% monocytes, and 6% eosinophils; hemoglobin 14.1 g/dL; hematocrit 42.2%; and platelet count 296×10^3 cells/μL. The serum electrolytes, liver function tests, coagulation studies, and urinalysis were normal. HIV testing was negative. The chest radiograph is shown in Figures 1 and 2, and the CT scan is shown in Figure 3.

What Is the Differential Diagnosis?

The patient has a large, solitary, parenchymal mass in the left hemithorax. The chest radiograph (Figs 1, 2) showed a heterogenous left paracardiac mass with central calcifications and embolization coils within the left internal mammary artery. A chest CT scan (Fig 2) showed a large 7×7 cm complex mass in the left anterior hemithorax containing fat, nonfat soft tissue, and osseous structures with partial lingular atelectasis. The thyroid gland appeared normal, and there were small bilateral axillary reactive lymph nodes. The presence of continued hemoptysis suggested a communication between the mass and an adjacent bronchus, and her transient improvement following embolization of the left internal mammary

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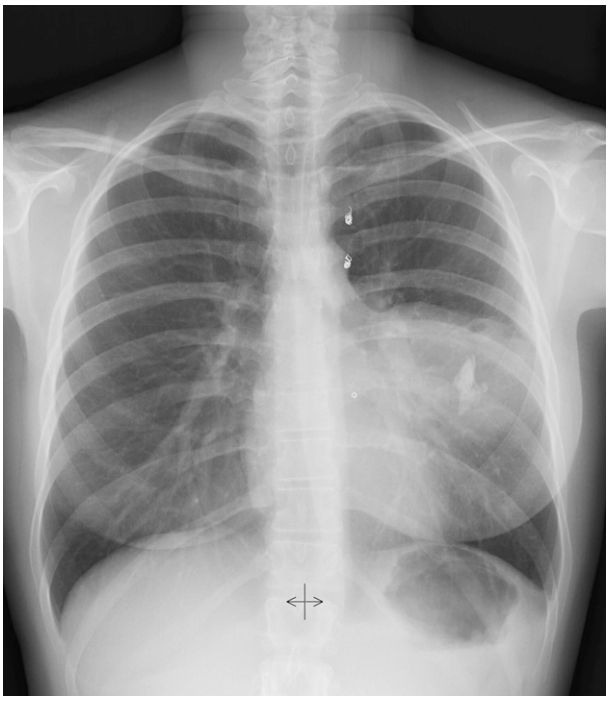

FIGURE 1. Posteroanterior chest radiograph.

artery suggested altered vascular architecture. The possibilities include the following: (1) a benign or malignant parenchymal tumor, (2) a tumor located in the anterior mediastinum, (3) a fungal or mycobacterial infection, (4) a lung abscess, or (5) a hydatid cyst.

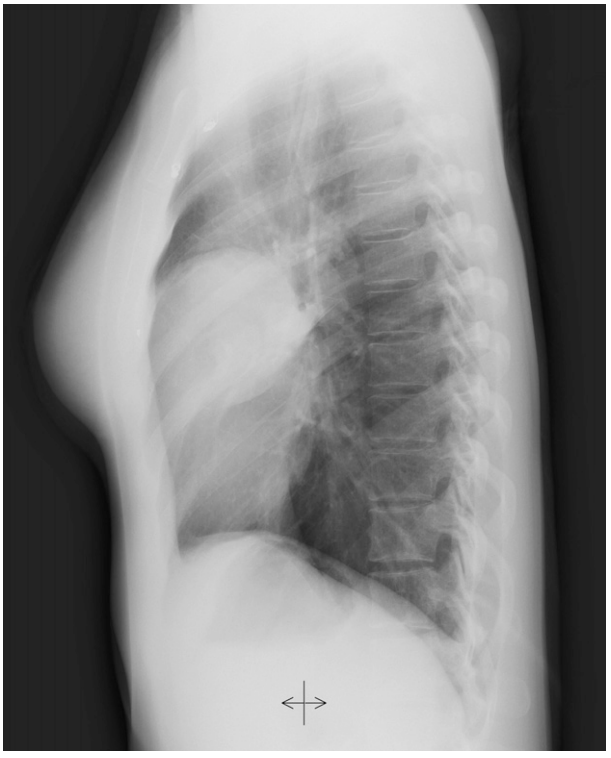

FIGURE 2. Lateral chest radiograph.

The leading possibilities are an anterior mediastinal mass or a benign solitary parenchymal tumor. The absence of constitutional symptoms, lymphadenopathy, and further radiographic lesions argued against a diffuse or rapidly growing metastatic disease. The patient had no history of exposure to TB, and the mass involved the inferior and anterior aspect of the thorax, making TB less likely. A lung abscess of this size with bronchial communication more likely than not would result in fevers, purulent and foul-smelling sputum, and weight loss. In addition to the solid structure and marked heterogeneity of the computed tomographic image, there was no exposure history suggesting the possibility of a hydatid cyst.

Hamartoma is the most common benign lung tumor, accounting for 75% of all benign lung nodules and 5% to 10% of solitary pulmonary nodules. Hamartomas most often present in the sixth or seventh decades[1,2] but can occur in young adults as well. The diameter is usually < 6 cm,[1,3] but they have been reported as large as 25.5 cm.[4] The mass in this patient had a heterogenous appearance with a radiographically apparent focus of calcification. Calcification has been reported to occur in 3% to 32% of hamartoma cases but tends to have a punctate or "popcornlike" pattern.[1,5,6] Calcification can also occur in other benign pulmonary tumors, including plasma cell granulomas and desmoid tumors. Plasma cell granulomas, also referred to as an inflammatory pseudotumor, most often present in childhood or adolescence and usually do not exceed 6 cm in transverse diameter.[7] Desmoid tumors most often arise from the chest wall and invade surrounding structures, although they sometimes arise from the lung parenchyma.[8]

An intrapulmonary or mediastinal lipoma is unlikely to have this CT scan appearance because they tend to have uniform fatty attenuation. Additionally, intrapulmonary lipoma more often occurs on the right and in middle-aged men.[9] Pulmonary leiomyoma would also have a homogenous radiographic appearance.[10] Finally, in a young woman with recurrent, episodic hemoptysis, pulmonary endometrioma should be considered. Radiographically this presents as small pulmonary nodules and not a large heterogenous mass.[11,12]

It was difficult to determine based on the CT scan appearance whether this large complex mass originated from the anterior mediastinum or from the lung parenchyma. Thymoma, the most common anterior mediastinal mass, rarely has calcification, and if it occurs, the calcifications are small, curvilinear, or punctate.[13] Invasive thymomas are rare, but