A 48-year-old white man was admitted 3 times within a month with symptoms of malaise, retrosternal chest pain, and fever up to 38.5°C. The chest pain increased during inspiration and was relieved by sitting up. C-reactive protein was mildly elevated during those admissions, ranging from 6.1 to 85.1 (normal range, <5.0 mg/L), and cardiac enzymes were normal. The ECG demonstrated sinus rhythm with no significant abnormalities (Figure 1). Cardiac structure and function were reported as normal by echocardiography except for a small pericardial effusion (Figure 2 and Movies I and II in the online-only Data Supplement). A presumptive diagnosis of pericarditis was made.

Chest roentgenogram (Figure 3) showed the presence of an infrahilar mass compressing the right lower lobe pulmonary bronchus, raising the question of mediastinal lymphadenopathy. Computed tomography (Figure 4) revealed a sharply delineated, rounded, homogeneous, hypodense structure in a mediastinal infracarinal location measuring 8.9 × 7.5 × 8.2 cm with mass effect on the left atrium, left pulmonary veins, superior vena cava, and right pulmonary artery. Magnetic resonance imaging (MRI) was subsequently performed. T1- and especially T2-weighted axial fast-spin-echo MRI revealed high intrallesional signal intensity, consistent with a cystic nature. Moreover, a horizontal fluid-fluid level was apparent that was maintained when the patient was placed in the right lateral decubitus position (Figure 5). Compression of both left pulmonary veins, the left atrium, the superior vena cava, the right lower bronchus, and the right pulmonary artery was confirmed. There was no enhancement of the lesion or pericardial layers by contrast-enhanced MRI.

Because of its location and imaging characteristics, the structure was thought most likely to represent a bronchogenic cyst. Differential diagnosis included esophageal duplication or pericardial cysts. On resection, the lesion was found to be fixed to the posterior pericardium, carina, and esophagus (although it was easily peeled from the esophagus). The estimated volume was 600 mL. It contained chocolate-colored fluid that was proteinaceous and aseptic and contained both blood cells and vibrating hair cells. Histological examination of sections through the cyst showed the presence of respiratory epithelium, numerous cartilage islands, and vibrating hair cells. There was no evidence of malignancy. These findings were reported as being compatible with a bronchogenic cyst.

Bronchogenic cysts, although relatively rare, are the most common cystic lesions of the mediastinum. They arise from the primitive ventral foregut as an anomalous budding of the laryngotracheal groove. Often discovered incidentally while asymptomatic, if discovered at a later stage by compression, infection, hemorrhage, or rupture, they may follow a less
benign course. They most commonly are unilocular, fluid filled, and lined with ciliated epithelium, but they may also contain bronchial mucous glands and cartilage. The fluid contained may separate into a denser layer of proteinaceous debris (eg, resulting from mucus, hemorrhage, or infection) underlying a more aqueous component, which T2-weighted MRI imaging is particularly able to distinguish. Treatment by complete resection is preferred for diagnosis and for the prevention of complications, although some debate remains for the asymptomatic patient.

Disclosures

None.

References

Figure 4. Computer tomography in the axial (A) and coronal reformatted (B) plane demonstrating a large homogeneous structure (*) compressing the superior vena cava (arrow), left pulmonary veins, left atrium, and esophagus.

Figure 5. T1-weighted axial fast-spin-echo MRI in the supine (A) and right lateral decubitus (C) positions and T2-short-time inversion-recovery (STIR) weighted MRI in the supine (B) and right lateral decubitus (D) positions. On T1-weighted MRI, the lesion shows a homogeneous bilayer appearance with the highest signal intensity in the dependent portion (A), whereas on T2-STIR weighted MRI, the opposite is found (B). Signal intensities are consistent with fluid nature and the presence of a horizontal fluid-fluid level, suggesting greater protein content of the dependent layer (arrow). The horizontal fluid-fluid level was maintained after patient repositioning (C and D, arrows).
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