Acute Pleuritic Chest Pain and Lung Mass in an Elderly Woman*

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This 67-year-old black woman presented to the emergency room with a three-day history of acute left-sided pleuritic chest pain, radiating into the left axilla. She was otherwise asymptomatic. The medical history was remarkable only for essential hypertension well controlled on metoprolol, hydrochlorothiazide, and enalapril. The patient denied a history of smoking; however, she had had previous industrial exposures to fiberglass and plastic dust for 23 years while employed as a factory worker.

Physical examination revealed the following vital signs: temperature, 38.7°C (101.7°F); respiratory rate, 12 breaths per minute; blood pressure, 146/94 mm Hg; and heart rate, 88 beats per minute. The lungs were clear, but breath sounds were diminished at the left base. The WBC was 8,100/cu mm, with a normal differential cell count. On room air, arterial blood gas levels were as follows: pH 7.46; PaCO₂, 36 mm Hg; and PaO₂, 57 mm Hg. The ECG demonstrated normal sinus rhythm with a normal axis and nonspecific ST-T-wave changes. The PA chest roentgenogram was characterized by an elevated left hemidiaphragm, a new left-sided pleural effusion, and a 4 × 4-cm left lower lobe mass obscured by the cardiac silhouette (Fig 1).

A diagnostic thoracentesis was performed, revealing the following values: pH 7.58; RBC, 13,600/cu mm; WBC, 5,000/cu mm (64 percent segmented neutrophils, 13 percent lymphocytes, and 24 percent monocytes); glucose, 139 mg/dl; protein, 4.6 g/dl; and LDH, 167 units/ml (LDH PF/LDH S, 0.8). A V/Q scan was obtained and reported low probability for pulmonary embolus. A CT scan of the chest demonstrated a 3 × 3-cm mass in the anterior left side of the chest, abutting the left cardiac margin. The mass was nonhomogeneous, with a density consistent with fat (Fig 2). Cope needle biopsy was attempted, but no fluid or tissue could be obtained. Without a tissue diagnosis of this mass lesion, the patient was taken to the operating room for an exploratory thoracotomy.

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Figure 1. Posteroanterior (A, left) and lateral (B, right) chest roentgenograms demonstrating left lower lobe mass, with associated elevated left hemidiaphragm and new left-sided pleural effusion.
Diagnosis: Acute pericardial fat necrosis

The patient had a complete metastatic workup prior to surgical exploration, including mammography and CT scan of the abdomen and head, all of which were negative. As noted previously, the patient was taken to the operating room. She underwent flexible bronchoscopy, which was negative for an endobronchial lesion or other abnormal findings. A left thoracotomy was thereafter performed, which revealed a well-circumscribed mass measuring approximately 3 × 3 cm, with an associated inflammatory reaction entrapping the left phrenic nerve, pericardium, and lingula. The mass, with the entrapped portion of the left phrenic nerve, was resected and sent for frozen sections, permanent sections, and cultures. Frozen and permanent sections concurred with acute pericardial fat necrosis. Cultures were negative for growth. The patient’s postoperative course was uneventful. She was discharged to home, free of symptoms, on the fifth postoperative day. Final pathologic diagnosis on the specimen revealed acute pericardial fat necrosis. The patient remained free of symptoms at six months of follow-up.

The differential diagnosis of a juxta cardiac mass on the chest roentgenogram includes the following: primary pericardial neoplasm; secondary pericardial neoplasm; pericardial cyst; primary lung cancer; granulomatous lesions; abscess; diaphragmatic herniation; bronchogenic or enteric cyst; or pulmonary sequestration.

Acute pericardial fat necrosis, a benign process, is a rare clinical entity first reported by Jackson et al in 1957. Behrendt and Scannell,2 in a review of the literature, found only eight reported cases; however, most recently, Wychulis et al3 reported four additional cases.4-6 The clinical findings and symptoms are characterized consistently in the reported cases as the onset of severe pleuritic chest pain in a previously well patient, associated with a juxta cardiac mass on the chest roentgenogram. The symptoms may mimic the symptoms of myocardial infarction or pulmonary embolism; however, the ECG is usually normal or may suggest resolving pericarditis. The lesions are predominantly left-sided but may occur on the right side. The diagnosis is rarely made before surgery, and findings at thoracotomy reveal a yellow-tan mass affixed to the pericardium, with surrounding inflammatory reaction. Pathologic examination usually reveals fat associated with the findings of fat necrosis, lipid-filled macrophages, variable degrees of inflammatory reaction, extravasation of blood, hematoma, and intravascular thrombosis.2,3 The pathogenesis is unknown, and there appears to be no known predisposing factors. Jackson et al initially proposed that obesity might be a predisposing factor, but this has not found to be true in more recently reported cases, including our own.

The appearance of the lesion, location, compression, or invasion of surrounding structures are readily visualized by CT. In addition, using density measurements, the nature of the tissue mass may be inferred.5 A lipoma generally has a density of −55 to −120 HU (normal fat, −55 HU); however, caution must be exercised, particularly with the presence of stranding within the fat. This finding might suggest a more malignant lesion, such as liposarcoma.6 As in this report, the CT scan demonstrated a mass of fat density, but due to the presence of stranding, liposarcoma (or other malignancy) could not be excluded. In this setting, we believe that exploratory thoracotomy should be performed.

In summary, pericardial fat necrosis remains a rare clinical entity which should be considered in the differential diagnosis in any patient who presents with the characteristic findings of sudden pleuritic chest pain associated with a mass adjacent to the heart which cannot be distinguished from the pericardium on the chest roentgenogram.

REFERENCES

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