

CLINICAL VIGNETTE

Cardiac Mass in the Left Atrium

Helen C. Huang, MD

A 60-year-old female with a history of diabetes and hyperlipidemia initially presented to her primary care physician for cough and weight loss for the last two months. Outpatient chest X-ray revealed a mass in the lung that was suspicious for cancer and she was admitted. She did not have a history of tobacco use or family history of cancer. Review of systems included occasional palpitations.

On physical examination, the patient was afebrile, normotensive, respiratory rate 20/min and heart rate 116/min. She was not in any acute distress and was alert and fully oriented. Lungs were clear to auscultation. Cardiac exam revealed tachycardia, with an irregularly irregular rhythm with trace systolic murmur at the apex. No S4 or S3 was present and no peripheral edema. Abdomen was soft and non-tender with intact bowel sounds. Her neurological exam was non-focal with cranial nerves intact.

EKG showed atrial fibrillation in rapid ventricular rate. Laboratory including complete blood count, comprehensive metabolic panel, and coagulation panel were within normal limits. Chest X-ray revealed a right lower lobe mass that measured 6.8 x 5.0 cm in the posteroanterior view (Figure 1).

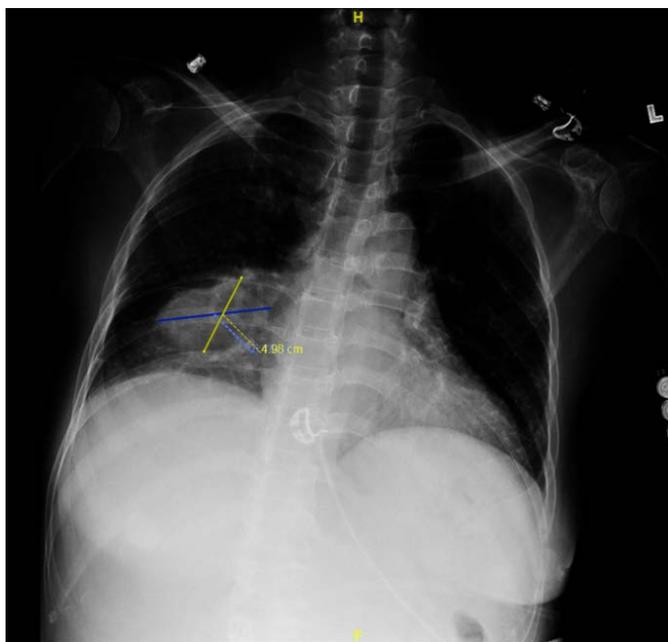


Figure 1. Chest X-ray posteroanterior view showed a right lower lobe mass and atelectasis.

Chest CT revealed a 6.1 x 9.8 x 6.7 cm heterogeneous mass within the right lower lobe of the lung with occlusion of the right lower lobe bronchus and pulmonary artery. There was also a 1.1 x 0.9 cm extension of the mass into the left atrium. CT of the abdomen and pelvis showed multiple hypo-dense solid masses throughout the liver and bilateral adrenal glands. MRI of the brain showed multiple bilateral brain metastases with the largest one in the right cerebellum. MRI of the spine showed compression fracture of the fifth cervical vertebrae and lesions in the left posterior third rib and the right posterior fifth rib.

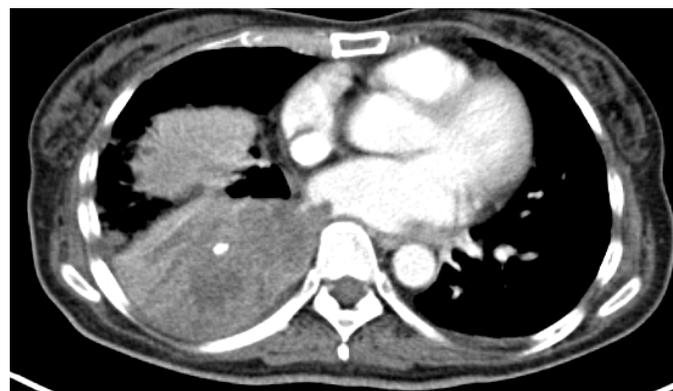


Figure 2. CT chest showed 6.1 x 9.8 x 6.7 cm heterogeneous mass within the right lower lobe of the lung with occlusion of the right lower lobe bronchus and pulmonary artery. There was also a 1.1 x 0.9 cm extension of the mass into the left atrium.

Transthoracic echocardiogram showed a mobile echo-density measuring 1.4 x 0.6 cm in left ventricle that appeared to be attached to mitral valve cords. It also showed another echo-density measuring 0.4 x 0.3 in the left atrium. (Figure 3).

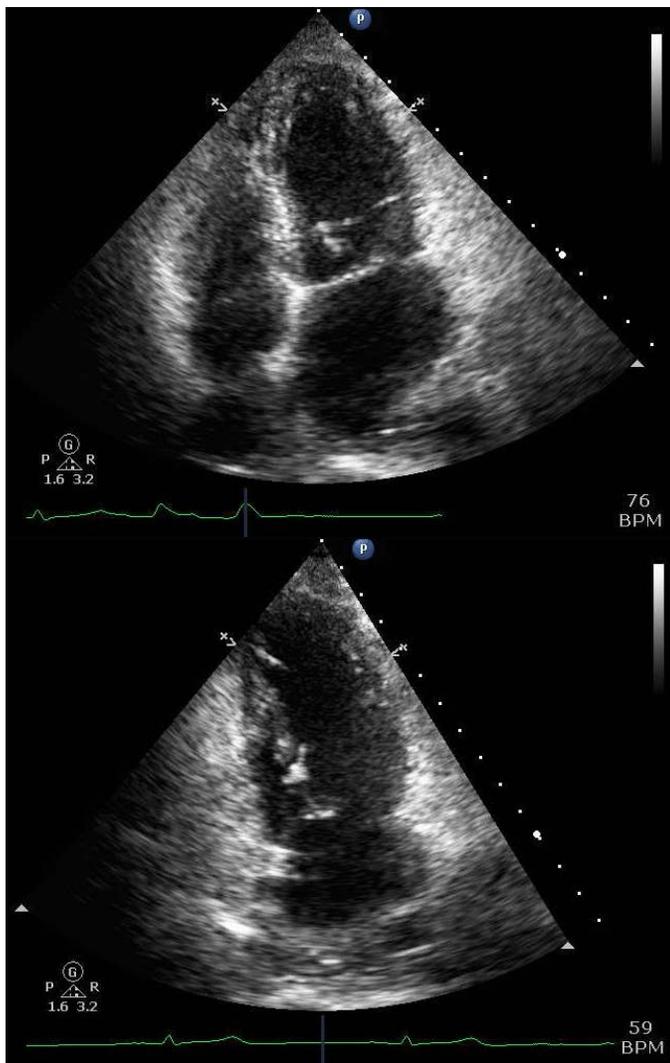


Figure 3. Transthoracic echocardiogram showing mobile echo density in the left ventricle.

The patient was started on metoprolol and spontaneously converted to normal sinus rhythm overnight. She underwent ultrasound-guided biopsy of a liver lesion with histology consistent with small cell neuroendocrine carcinoma.

The patient was discharged from the hospital and started on anti-coagulation dabigatran with concern for thrombus formation from the left atrial mass. However, she did not tolerate the medication due to presumed drug-induced esophagitis and was switched to low dose aspirin. She started outpatient chemotherapy which was poorly tolerated. Cardiac MRI, which showed interval resolution of the previously seen peri-centimeter mass invading into the left atrium and improved patency of the inferior right pulmonary vein (Figure 4). There was also interval decrease of the mass in the right lower lobe.

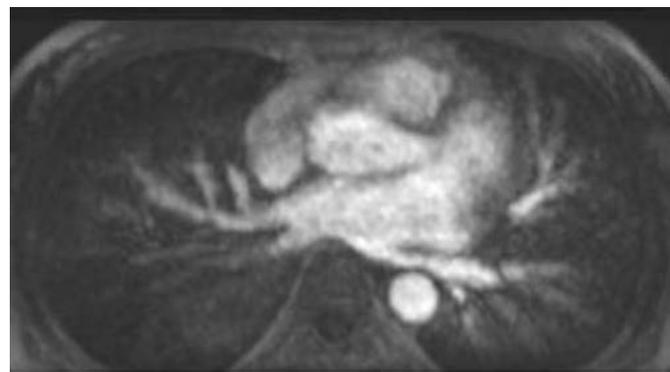


Figure 4. Cardiac MRI showing resolution of left atrial mass.

Although primary cardiac tumors are rare, secondary cardiac tumors from metastases to the heart and pericardium are fairly common. The incidence of the cardiac metastases is reported between 2.3% to 18.3%.¹ The most common primary malignancies are lung, breast, melanoma, and lymphoma. Most patients are asymptomatic and cardiac metastasis is often incidentally found on surveillance imaging. However, any new cardiac symptom that arises in a patient with known malignancy should raise concern for cardiac metastasis.

Tumors can involve the heart via four different pathways: hematogenous spread, direct extension, lymphatic spread, and transvenous extension. Melanoma, lymphoma, and sarcoma typically spread hematogenously to the myocardium and endocardium. Pericardial and epicardial tumor involvement often arises from lymphatic spread from lung and breast cancer.² Tumors can directly extend into the heart and pericardium include large bronchogenic carcinomas, esophageal carcinomas, mediastinal lymphoma, or breast carcinoma that erodes into the chest wall. Transvenous extension can arise from extension of tumor thrombus, typically from kidney or liver, into the right atrium from the inferior vena cava or extension of some lung cancers into left atrium from the pulmonary veins.²

Primary lung cancer comprises of 36% to 39% of cardiac metastases.³ Bronchogenic tumors can spread to the heart and pericardium via direct extension or dissemination by lymphatic and hematogenous means. Tumor metastasis to the pericardium is the most common cardiac metastasis, and can initially cause pericarditis and lead to serosanguinous or hemorrhagic pericardial effusion or constrictive pericarditis.

Unfortunately, the patient continued to tolerate chemotherapy poorly. She was hospitalized for abdominal pain and vomiting several months after her initial diagnosis. She developed tumor lysis syndrome and transitioned to palliative care.

REFERENCES

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