

CARDIOVASCULAR IMAGES

A joint publication of the Department of Radiology and Heart Center

35 Year-old Woman Presenting with Dyspnea and Chest Pain

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Clinical History

A 35 year-old woman with no prior medical history presented to an outside hospital with pleuritic chest pain. A non-gated chest CTA scan showed a cardiac mass and pericardial pleural effusions. She was referred to Mass General Hospital, where an echocardiogram demonstrated a mass extending through the inferolateral wall of the left ventricle. A gated CT study was requested, to evaluate the mass, and rule out pulmonary embolus. Further workup with cardiac MRI and PET/CT revealed additional masses in the retroperitoneum and an inguinal lymph node, in addition to the cardiac and lung masses. A CT-guided retroperitoneal mass biopsy yielded the diagnosis of undifferentiated sarcoma.

Findings

Echocardiography demonstrated an invasive mass in the inferior left ventricle with an associated pericardial effusion. Axial gated CT angiography demonstrated an enhancing mass with central necrosis, invading the inferior-posterior wall of the left ventricle. There is a moderate pericardial effusion with peripheral enhancement. The cardiac CT also demonstrated a left pulmonary mass, invading a bronchiole and pulmonary vein (not shown). Delayed-enhanced inversion-recovery short-axis MR image confirmed an invading myocardial tumor with central necrosis and a rim-enhancing pericardial effusion with heterogeneous signal, suggesting fibrinous adhesions. Tissue characterization of the ventricle on multiple different sequences (not shown) allowed definition of the full extent of the mass. A whole-body FDG PET/CT demonstrates intense hypermetabolic activity of the cardiac mass, a left pulmonary mass, a right retroperitoneal mass, and a right inguinal lymph node, consistent with a metastatic process.

Discussion

Cardiac tumors are rare (incidence between 0.0017% and 0.019%), and 25% of cardiac tumors are malignant, and usually metastatic (lung, breast, melanoma, lymphoma). Sarcomas are the most common primary malignant cardiac tumors, accounting for 15% of all malignant cardiac tumors. Cardiac sarcomas can obstruct blood flow, interfere with valves, invade the pericardium, and cause embolic phenomena, and occasionally present only with nonspecific symptoms. This case demonstrates the complimentary information offered by the multimodality workup of a rare myocardial tumor.

REFERENCES

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2. Zhang PJ, Brooks JS, Goldblum JR, et al. Primary cardiac sarcomas: a clinicopathologic analysis of a series with follow-up information in 17 patients and emphasis on long-term survival. *Hum Pathol* 2008;39:1385-95.

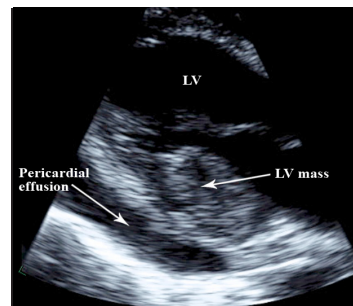


Figure 1

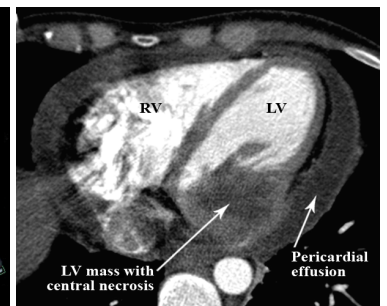


Figure 2

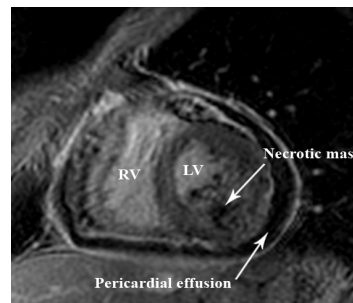


Figure 3

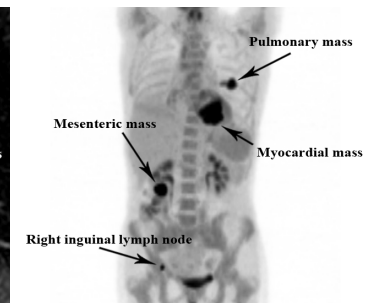


Figure 4

Figure 1. Parasternal long axis grayscale echocardiography demonstrates the inferior wall mass.

Figure 2. Axial gated CT angiography demonstrates an enhancing mass with central necrosis invading the infero-posterior wall of the left ventricle. A moderate pericardial effusion with peripheral enhancement is demonstrated.

Figure 3. Delayed-enhanced inversion-recovery short-axis MR image demonstrates enhancing visceral and parietal pericardium separated by pericardial effusion. The necrotic mass is again demonstrated. The tissue characterization of the ventricle on multiple different sequences (not shown) allowed definition of the full extent of the mass.

Figure 4. Coronal PET image from a whole-body FDG PET/CT demonstrates intense hypermetabolic activity in the cardiac mass, a pulmonary mass, a right mesenteric mass, and a right inguinal lymph node.