

Right Ventricular Outflow Tract Obstruction due to a Leiomyosarcoma

Abstract

A 65-year-old female presenting with worsening dyspnea and notable weight loss were found to have a systolic murmur on physical examination. On workup with computed tomography (CT) angiogram, a solid mass was found extending from the inferior vena cava into the right ventricle. Transesophageal echocardiography demonstrated this mass extension causing right ventricular outflow tract obstruction. After surgical removal, the pathology of the mass was endometrial leiomyosarcoma.

Keywords: *Inferior vena cava, sarcoma, transesophageal echocardiography*

A 65-year-old female was referred for evaluation of worsening dyspnea. She had a 20-pack year smoking history and an unintentional 20-pound weight loss in the previous 6 months. On physical examination, she was noted to have an IV/VI systolic murmur over the pulmonic area. Her blood pressure (BP) was 100/64 mmHg and oxygen saturation was 95% on room air. She has a heart rate of 120 beats/minute. Her electrocardiogram (ECG) demonstrated sinus tachycardia. The computed tomography (CT) angiogram demonstrated no evidence of pulmonary embolism. However, it did demonstrate a solid mass occupying the most of the inferior vena cava extending into and occupying most of the right ventricle [Figure 1]. Transthoracic echocardiogram (echo) was of limited quality. A transesophageal echo was then performed, and it demonstrated a mass extending from the inferior vena cava into the right atrium, right ventricle, and into the pulmonary artery, causing right ventricular outflow tract obstruction [Figures 2, 3 and Video 1]. The patient underwent surgical removal of the mass, which showed that it was an endometrial leiomyosarcoma.

Discussion

Uterine leiomyosarcomas are rare with an incidence of 0.36 per 100,000 woman-years in the USA, accounting

for 3–9% of all uterine malignant neoplasms.^[1] Cardiac metastases from uterine leiomyosarcoma have been infrequently reported with only a handful of cases in literature.^[1] This unique pathology behaves in an unpredictable fashion from the disease progression to presenting symptomatology.^[2] In our patient, her cardiac symptoms preceded uterine symptoms, as she was unaware of the primary endometrial leiomyosarcoma lesion. Transesophageal echocardiography is considered the best form of imaging due to the superior resolution and the spatial location to the cardiac chambers.^[1,3] Cardiac magnetic resonance imaging (MRI) and

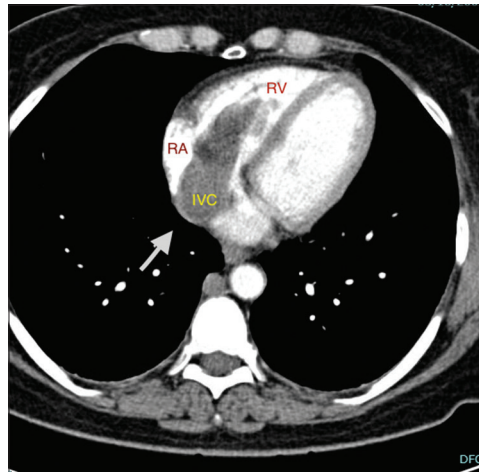


Figure 1: CT angiogram demonstrating a solid mass occupying most of the inferior vena cava extending into and occupying most of the right ventricle. Arrow demonstrates the extension of tumor into right ventricle. CT = Computed tomography, LA = Left atrium, RA = Right atrium, IVC = Inferior vena cava

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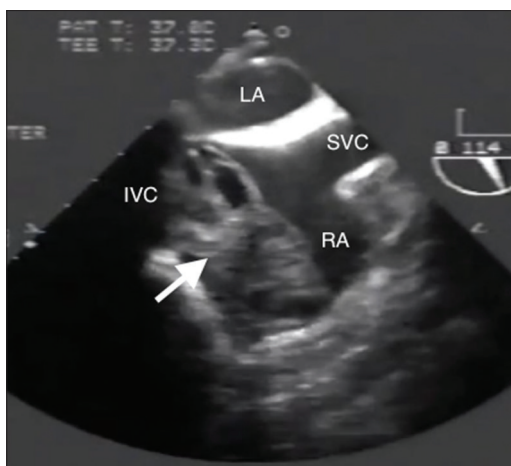


Figure 2: Transesophageal midesophageal bicaval view demonstrating the tumor (arrow) in the inferior vena cava, extending into the right atrium, nearly totally obliterating it and going into the right ventricle. LA = Left atrium, RA = Right atrium, IVC = Inferior vena cava, SVC = Superior vena cava

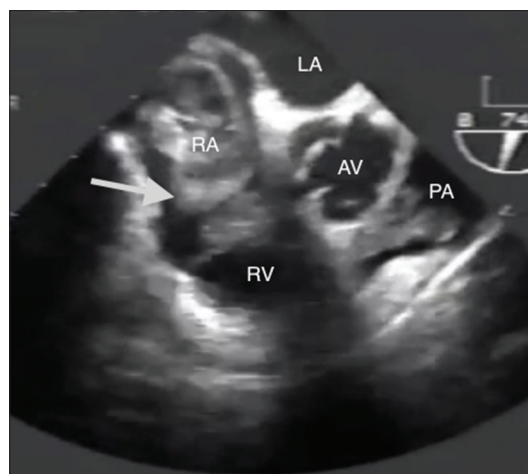


Figure 3: Transesophageal midesophageal RV-inflow and RV-outflow view, demonstrating the tumor (arrow) occupying most of the RA and ventricle, extending into the pulmonary trunk. RV = Right ventricle, LA = Left atrium, RA = Right atrium, AV = Aortic valve, PA = Pulmonary artery

CT are also used as noninvasive modalities to assess this cardiac tumor, with MRI being slightly superior as it can help determine the type of tumor. If there is concern for metastatic spread when a primary tumor is established, a positron emission tomography (PET) has also been useful. Other invasive modalities include coronary angiography and transvenous biopsy.^[1] When complete resection is feasible, surgical excision can be used to provide symptomatic palliation and alleviate potential acute life-threatening cardiac events.^[3,4] In our patient, surgical removal of the cardiac mass was successful with a resolution of her symptoms.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and

due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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