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Visual Case Discussion

Shortness of breath with an aortic valve mass

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1. Visual case discussion

A 54-year-old male with a past medical history of coronary artery disease with 4 stents, antiphospholipid syndrome (APS) with prior inferior vena cava (IVC) thrombus, pneumonia, and a history of leaving against medical advice re-presented to the Emergency Department for worsening exertional shortness of breath, headache, abdominal discomfort, and cough for 3–5 days. He was not vaccinated for COVID-19 and had just left from inpatient against medical advice recently. The patient was in moderate respiratory distress and was diaphoretic. He was brought to the resuscitation bay and started on oxygen therapy. Stat labs were sent, and a chest x-ray was performed. The patient had been admitted to the hospital before and had computed tomography angiography of the chest was negative for acute pathology at that time. He had never had an echocardiogram done due to having left against medical advice. A stat bedside point-of-care ultrasound was performed, which demonstrated a small to moderate pericardial effusion without evidence of tamponade (Fig. 1). His-heart was noted to be hypodynamic indicating poor contractility but tachycardia limited evaluation. There was a large echogenic partially mobile mass without shadowing on the anterior leaflet of the aortic valve (Figs. 2-4), for which there were multiple differentials including a thrombus vs. aortic valve myxoma vs. non-bacterial thrombotic endocarditis vs. endocarditis. The patient also had diffuse bilateral B-lines with moderate pleural effusions bilaterally. Due to his prior IVC thrombus and underlying APS, thrombus was the most likely diagnosis, and the patient was started on heparin drip and admitted to the coronary care unit. Cardiology echocardiogram found that the patient had a large echogenic mass on aortic valve as well as a moderate size layered thrombus on the apical wall of the left ventricle.

Aortic valve masses have many differentials. Thrombi are far more common than tumors. Valvular thrombus is also mobile and small extending about 1 cm in size. Most thrombi are sessile without a stalk. There have also been reports of thrombi with stalks, although rare.[3] Prosthetic valves have a much higher propensity for thrombosis, with native valve thrombosis being incredibly rare. Malignancy in the heart is mostly metastatic, from direct invasion from lungs or breast to hematogenous spread from cancers such as renal cell carcinoma. Primary tumors that are also in the differential are myxomas or papillary fibroelastomas although they are far rarer. Vegetations are also possible, including both infective and non-infective vegetations (Libman-Sacks endocarditis).[3]

Native aortic valve thrombosis is a rare disorder and difficult to differentiate from other masses.[2] Antiphospholipid syndrome carries a high prevalence of non-bacterial thrombotic endocarditis. Hypercoagulable states such as antiphospholipid syndrome were the most common cause of native aortic valve thrombosis.[1] Degree of mobility may help differentiate between tumors and non-tumors. Cardiac MRI with gadolinium can help delineate the etiology of cardiac masses further. The most common presentation of an aortic valve thrombus is myocardial infarction.[1] Cardiology consultation should be obtained, and patient admitted to the appropriate monitored unit. Management may include anticoagulation and possible surgical intervention based on underlying diagnosis.[1] Management should be performed in conjunction with cardiology as this is an incredibly rare entity with complex management that is still not well delineated.

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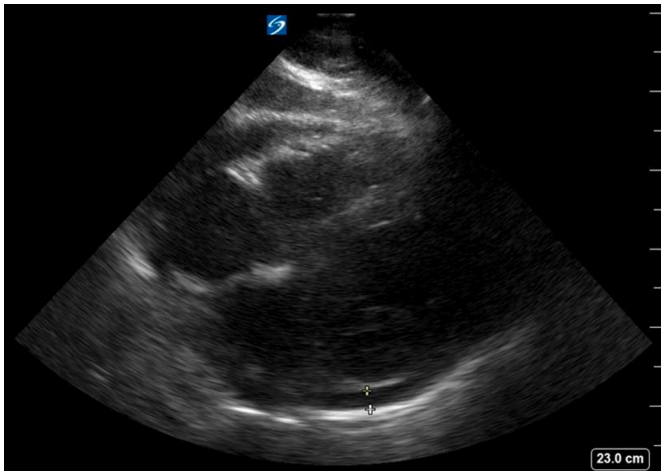

Fig. 1. - Small to moderate pericardial effusion demonstrated in parasternal long.

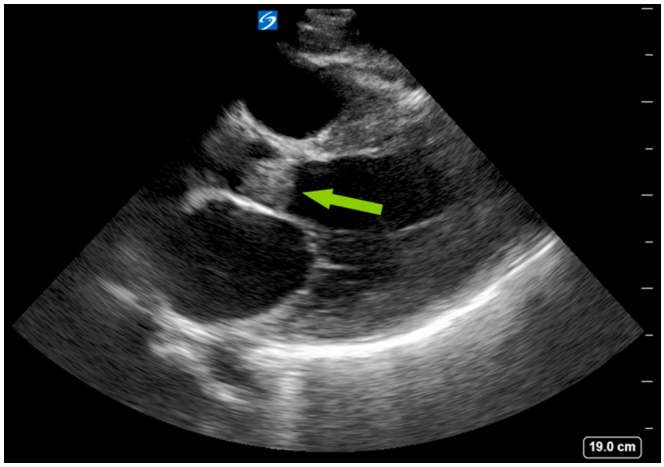

Fig. 2. - Aortic valve mass in parasternal long.

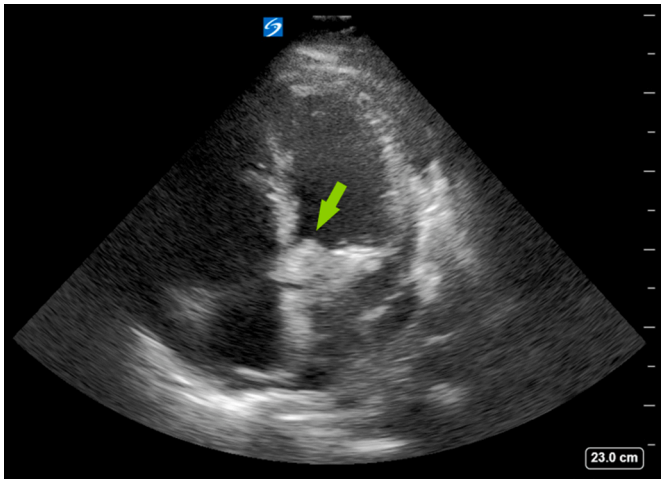

Fig. 3. - Apical 4 chamber view demonstrating aortic valvular mass.

2. Question 1

Question Type multiple choice

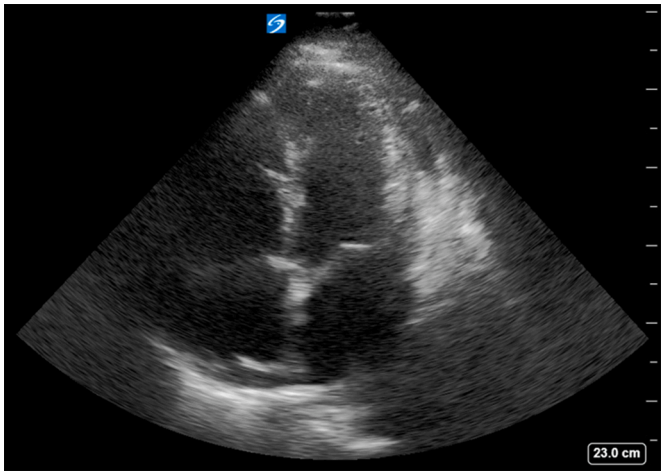

Fig. 4. - Apical 4 chamber view with aortic valve open, demonstrating just how much space the mass occupied.

What is the most common presentation of an aortic valve thrombus?
Answer Options

a) Congestive heart failure
b) Aortic dissection
c) Myocardial infarction
d) Acute ischemic stroke
e) Pulmonary embolism

Correct Answer = C

The most common presentation of an aortic valve thrombus is a myocardial infarction at approximately 36% with asymptomatic presentation being second most common. Limb ischemia and stroke are less common.[1]

3. Question 2

Question Type multiple choice
What is the most common cause of a native aortic valve thrombus?
Answer Options

a) Pulmonary embolism
b) Atrial fibrillation
c) Hypercoagulable state
d) Myocardial infarction
e) Non-bacterial endocarditis

Correct Answer = C

Hypercoagulable states such as antiphospholipid syndrome were the most common cause of native aortic valve thrombosis.[1]

References

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