

Case Report

Approach to a Left Ventricular Intra Cardiac Mass

Mohammed Ahmed Zahrani MD, FRCPC

Section of Internal Medicine, Section of Cardiology, Department of Internal Medicine, College of Medicine, Faculty of Health Sciences, University of Manitoba, Winnipeg, Canada

Section of Internal Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

***Corresponding Author:**

Mohammed Ahmed Zahrani

Email: zahrani_mohd@yahoo.com

Abstract: Left ventricular intracardiac masses are relatively rare. Accurate diagnosis by radiographic imaging can be challenging. Transthoracic echocardiogram is the primary modality for diagnosis. We present a case of a large 60 millimeter left ventricular thrombus. We will review the diagnostic work-up and pertinent clinical use required obtaining the correct diagnosis.

Keywords: LV thrombus, LV mass.

INTRODUCTION

The incidence of left ventricular (LV) mass is rare and is estimated to be less than 1%. The differential diagnosis includes LV thrombus, benign or malignant tumor, cyst and artifact. Differentiating between types of LV mass based on radiological images can be challenging. Correct diagnosis is essential, as it carries important clinical and prognostic implications.

CASE PRESENTATION

An 80 year old male presented with 2 weeks of shortness of breath, weight gain, orthopnea and paroxysmal nocturnal dyspnea. The patient was admitted to our local hospital with a diagnosis of congestive heart failure. Past medical history is significant for ischemic

cardiomyopathy with ejection fraction of 35%, coronary artery disease with remote myocardial infarction, hypertension and hyperlipidemia.

The patient underwent transthoracic echocardiogram (TTE) to assess left ventricular function and valvular heart disease. Apical 3 chamber view (Figure 1) revealed large a LV mass attached to LV apex, measured 31 mm x 61 mm. Anticoagulation was initiated with heparin while bridging to warfarin. A repeat TTE is scheduled in 3-6 months to assess for resolution; however, he will require lifelong anticoagulation because of a reduced LV ejection fraction with no chance of LV recovery.

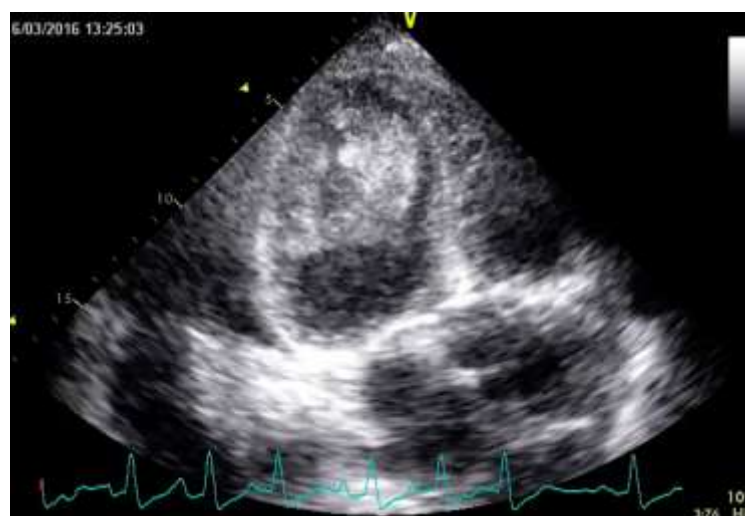


Fig. 1: Apical 3 chamber shows large LV mass attached to the apex

Intravenous definite contrast was given to delineate the etiology of LV mass (Figure 2). There was no uptake of contrast, which is indicative of an avascular mass. A previous transthoracic echocardiogram (TTE) 4 months prior to the most recent presentation was reviewed and revealed no LV mass. Given the presence

of reduced ejection fraction, akinesis of apex and anterior wall, relatively new LV mass that was not seen in the previous TTE (4 months ago) and lack of contrast uptake, we concluded that LV mass is consistent with an LV thrombus.



Fig. 2: Apical 4 chambers shows LV filling defect with contrast echocardiogram

DISCUSSION

The incidence of intracardiac LV mass is rare. The differential diagnosis includes LV thrombus, primary benign or malignant tumor, metastasis and artifact. Normal structures can be mistaken for a LV mass such as multilobed papillary muscles, redundant mitral chordae and trabeculations.

TTE is the primary modality to diagnose LV mass, as it is readily available, inexpensive and non-invasive. It has high sensitivity and specificity. Contrast echo helps to confirm diagnosis and enhance sensitivity and specificity of TTE. Complete lack of enhancement of LV mass on contrast echo suggests thrombus, while partial enhancement suggests myxoma and complete enhancement suggests intracardiac tumor. In a study by Mansencal *et al* in 2009, 31 patients with intracardiac mass had a contrast echocardiogram and cardiac MRI to identify the etiology of intracardiac mass. Contrast TTE has 100% sensitivity and specificity in correctly identifying location and type of mass when interpreted by experienced echocardiographers in the study [1].

Other features that increase the likelihood of a cardiac mass being a thrombus includes: presence of reduced ejection fraction, the mass being attached to an akinetic segment and resolution with anticoagulation.

Cardiac MRI is considered the gold standard for diagnosing cardiac masses. It can be used as complementary modality to echocardiograms or to assist with making a diagnosis if it remains unknown after TTE.

Cardiac MRI features that suggest thrombus include: low signal intensity on T1 and T2 weighted

images compared to most cardiac tumors which depict high signal intensity on T2 weighted images and lack of contrast enhancement [2].

Cardiac MRI with gadolinium is contraindicated in patients with chronic kidney disease with glomerular filtrate rate less than 30 ml/kg/body surface area (BSA). Cardiac MRI is contraindicated in patients with cardiac devices not compatible with MRI such as pacemakers or defibrillators. Other factors that may limit the use of cardiac MRI include respiratory artifact and claustrophobia.

TREATMENT

The LV thrombus necessitated anticoagulation with warfarin for 3-6 months. Discontinuation of anticoagulation after 3-6 months may be considered if LV function recovers such as in the setting of anterior ST segment elevation myocardial infarction (STEMI), Takotsubo cardiomyopathy or myocarditis with normalization of LV function. However, if a patient continues to have reduced LV function with no chance of recovery then he or she will require lifelong anticoagulation after careful consideration of its risks and benefits.

CONCLUSION

LV thrombus should be included in the differential diagnosis of an intracardiac mass. TTE is the first line modality for diagnosis. Clues to suggest thrombus include: reduced ejection fraction, presence of akinetic segment adjacent to LV mass and lack of enhancement on contrast echocardiogram. Prompt and accurate diagnosis is essential as it carries important therapeutic and prognostic implications. Delayed or incorrect diagnosis often leads to unnecessary

investigations and therapy.

ABBREVIATION

Left Ventricle (LV), Transthoracic Echocardiogram (TTE), Body Surface Area (BSA), Magnetic Resonance Imaging (MRI)

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