CARDIAC IMAGING QUIZ

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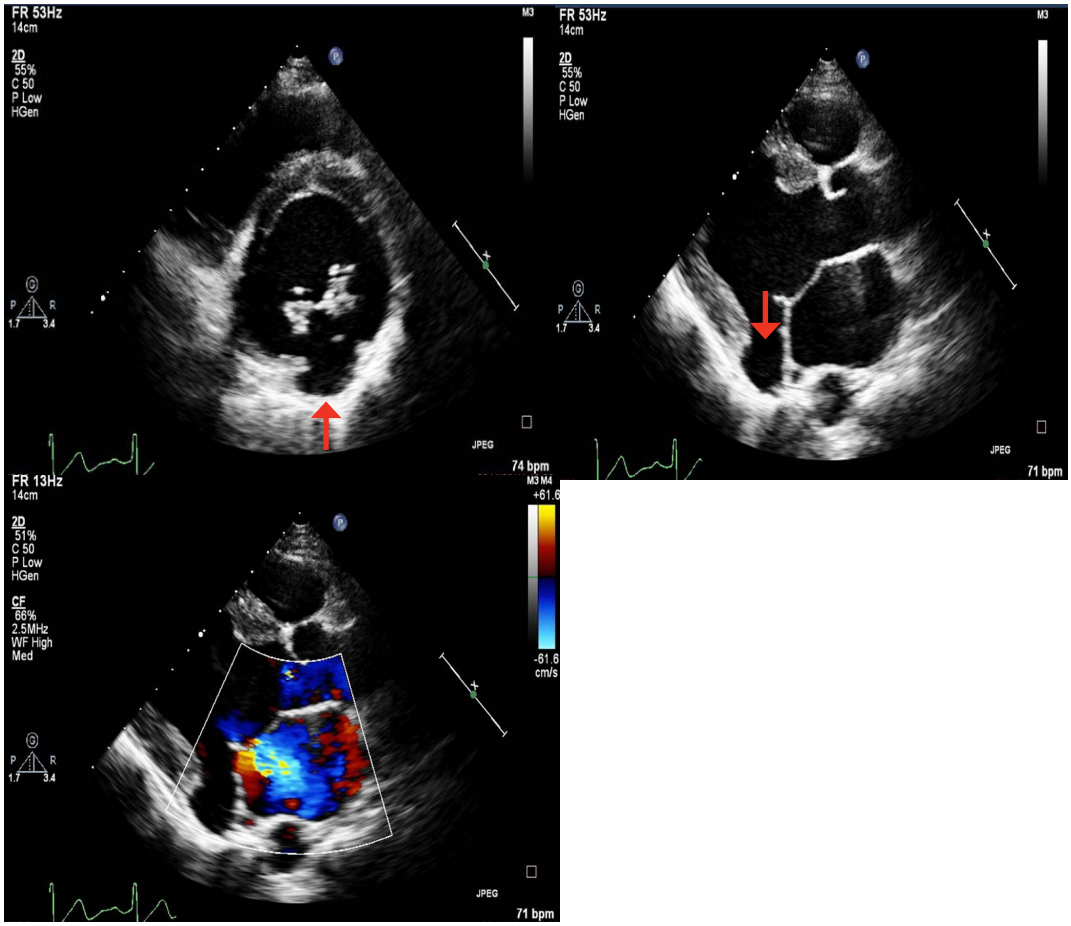

QUESTION: What is the diagnosis?

A Rheumatic heart disease

B Infective endocarditis

C Submitral aneurysm

D Coronary artery disease

ANSWER

Correct answer: C. Submitral aneurysm

CASE PRESENTATION

The images are from a 29-year-old woman of mixed ancestry who presented with atypical chest pain and exertional dyspnoea. She had a history of human immunodeficiency virus (HIV) infection treated with antiretroviral therapy. She had no history of rheumatic fever or tuberculosis.

On examination, the patient was clinically not in heart failure, euvolaemic, with a grade 3/6 pansystolic murmur radiating to the axilla, consistent with mitral regurgitation. Transthoracic echocardiography demonstrated significant mitral regurgitation (bottom panel) and an inferobasal left ventricular aneurysm (top panel, arrows), consistent with a submitral aneurysm (SMA). The aneurysm caused displacement of the posterior mitral leaflet, resulting in the failure of leaflet coaptation. No thrombus was identified within the aneurysm. Additional findings included left atrial enlargement and left ventricular systolic dysfunction, with an ejection fraction of 42%.

There were no clinical or laboratory features of infective endocarditis, with normal inflammatory and septic markers. Screening for autoimmune and connective tissue disease was negative. A 12-lead electrocardiogram showed sinus rhythm with features of left ventricular hypertrophy. Coronary angiography was normal, excluding obstructive coronary artery disease. A diagnosis of congenital SMA complicated by severe mitral regurgitation was established.

DISCUSSION

SMAs are rare cardiac abnormalities, and most are considered congenital; however, genetic susceptibility and acquired inflammatory or infective causes, including tuberculosis, have been described. SMAs occur predominantly in individuals of African descent, making recognition particularly relevant in the southern African context.

Congenital SMAs arise from a defect in the fibrous portion of the posterior mitral annulus, resulting in aneurysmal outpouching of the adjacent left ventricular myocardium. Its clinical presentation is heterogeneous and includes arrhythmias, heart failure, thromboembolism, circumflex coronary artery compression, and mitral regurgitation. The latter results from mechanical distortion or displacement of the posterior mitral leaflet.

Echocardiography is the diagnostic modality of choice, typically demonstrating a left ventricular outpouching adjacent to the posterior mitral leaflet, best visualised in the parasternal long-axis (right, top panel image) and basal short-axis views (left, top panel image), as illustrated in this case. Multimodality imaging, including cardiac computed tomography or cardiac magnetic resonance imaging, may be useful to further define aneurysm anatomy, assess its relationship to adjacent structures, and exclude thrombus.

Management is guided by symptomatology, aneurysm size, and associated complications. Treatment options include medical therapy for heart failure, anticoagulation when indicated, and surgical repair in selected patients, particularly those with severe mitral regurgitation or progressive ventricular dysfunction.

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