Dynamic left atrial echo contrast in rheumatic mitral stenosis

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DESCRIPTION

A woman in her 20s presented with progressively worsening dyspnoea in New York Heart Association (NYHA) class II and reduced exercise tolerance for the past 6 months. The patient had a history suggestive of rheumatic fever 10 years ago. Clinical examination was notable for a loud first heart sound and a mid-diastolic murmur with pre-systolic accentuation at the apex. An ECG showed atrial fibrillation with a controlled ventricular rate. There was severe mitral stenosis on echocardiography with thickened mitral valve leaflets, doming of the anterior mitral leaflet and restricted motion of the posterior mitral valve leaflet. The left atrium was dilated with a dynamic smoke-like signal secondary to the stagnant blood flow in the left atrium caused by the stenotic mitral valve orifice. The back-and-forth motion of this grade 4 spontaneous echogenic contrast was akin to a 'traffic jam' in the left atrium. The red cells were competing to move from left atrium to left ventricle, the passage of which was getting obstructed by the stenotic mitral valve (figure 1 and video 1). There was no left atrial or appendage clot. The transmitral gradient was 15 mm Hg and mitral valve area was 0.6 cm^2 (figure 2). The patient was started on oral anticoagulation and is awaiting percutaneous transvenous mitral commissurotomy.

Though rheumatic heart disease is a common cardiovascular disease in this part of the world, patients with left atrial spontaneous echo contrast have become a rarity now in developed nations.[1] Left atrial spontaneous echo contrast (LASEC), classically seen in rheumatic severe mitral stenosis, is a strong predictor of thrombus formation and systemic thromboembolism.[2] The predictors of the development of LASEC include the severity of mitral stenosis, atrial fibrillation, left atrial size

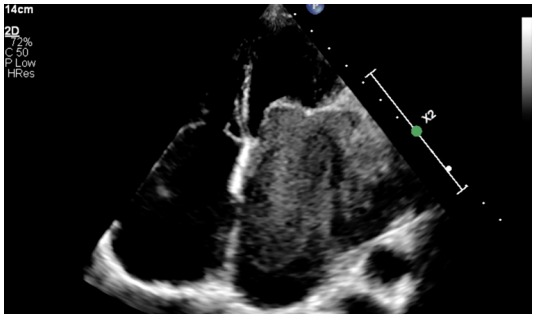
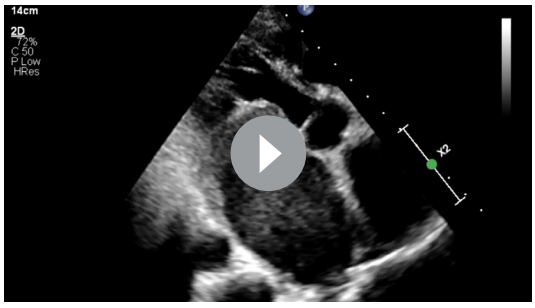


Figure 1 Apical four-chamber view demonstrating severe mitral stenosis with grossly dilated left atrium and dense spontaneous echo contrast.



Video 1 Echocardiography in apical four chamber, apical three chamber and short axis view showing swirling to and fro blood movement (traffic jam sign) within a hugely dilated left atrium.

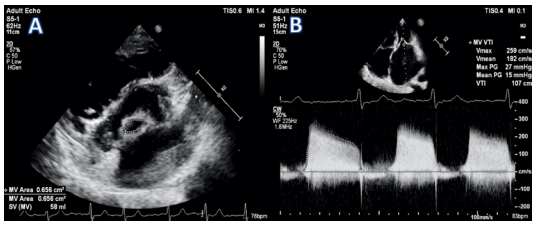


Figure 2 (A) Planimetry of mitral valve in the parasternal short axis view showing severe mitral stenosis. (B) Continuous wave Doppler across the mitral valve.

Patient's perspective

This imaging helped me in understanding the importance of compliance to anticoagulation and severity of my valvular heart disease.

Learning points

- Traffic jam sign in left atrium is a marker of critical mitral stenosis.
- Left atrial spontaneous echo contrast (LASEC) seen in patients with severe mitral stenosis is a strong predisposition for left atrial thrombus and systemic embolism.
- Anticoagulation with oral vitamin K antagonist can be considered in LASEC to avoid formation of left atrial thrombus and embolism.

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and the adequacy of anticoagulation.[3] The severity of LASEC can be qualitatively assessed as proposed by Fatkin *et al*.[4] The increasing echogenicity of LASEC is associated with a proportionate increase in the risk of left atrial thrombus formation and systemic embolisation. 'Traffic jam' sign may also be seen in conditions with high right atrial pressure like constrictive pericarditis and severe pulmonary valvular stenosis with right ventricular dysfunction.[5]

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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