

Dynamic left atrial echo contrast in rheumatic mitral stenosis

Ramanathan Velayutham, Chinmay Parale, Saurav Banerjee, Ahamed Shaheer Ahmed 

Department of Cardiology,
Jawaharlal Institute of
Postgraduate Medical Education
and Research, Puducherry, Tamil
Nadu, India

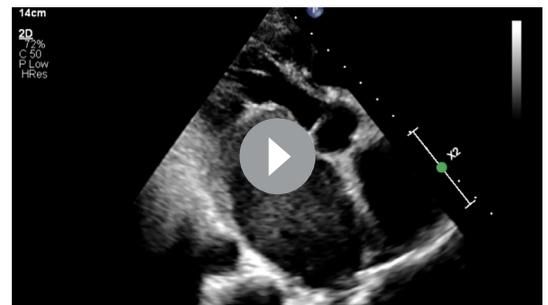
Correspondence to
Dr Ahamed Shaheer Ahmed;
ahmedshaheer53@gmail.com

Accepted 14 August 2022

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 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 cm² (figure 2). The patient was started on oral anti-coagulation 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



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.

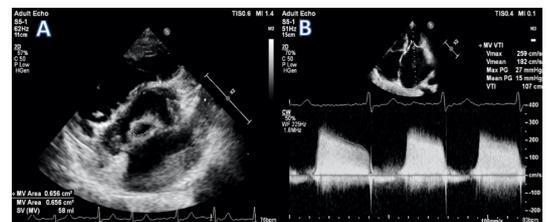


Figure 2 (A) Planimetry of mitral valve in the parasternal short axis view showing severe mitral stenosis. (B) Continuous wave Doppler across the mitral valve.

the development of LASEC include the severity of mitral stenosis, atrial fibrillation, left atrial size

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.

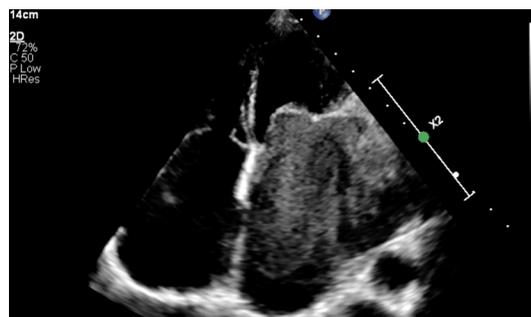


Figure 1 Apical four-chamber view demonstrating severe mitral stenosis with grossly dilated left atrium and dense spontaneous echo contrast.



© BMJ Publishing Group Limited 2022. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Velayutham R, Parale C, Banerjee S, et al. *BMJ Case Rep* 2022;**15**:e251284. doi:10.1136/bcr-2022-251284

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

Contributors RV and CP were involved in the conceptualisation and writing of the manuscript. SB was involved in patient care, data collection and editing of the manuscript. ASA was involved in patient care and conceptualisation, and gave final approval to the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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.

ORCID iD

Ahamed Shaheer Ahmed <http://orcid.org/0000-0002-2512-4689>

REFERENCES

- 1 Manjunath CN, Srinivas P, Ravindranath KS, *et al.* Incidence and patterns of valvular heart disease in a tertiary care high-volume cardiac center: a single center experience. *Indian Heart J* 2014;66:320–6.
- 2 Ito T, Suwa M. Left atrial spontaneous echo contrast: relationship with clinical and echocardiographic parameters. *Echo Res Pract* 2019;6:R65–73.
- 3 Black IW, Hopkins AP, Lee LC, *et al.* Left atrial spontaneous echo contrast: a clinical and echocardiographic analysis. *J Am Coll Cardiol* 1991;18:398–404.
- 4 Fatkin D, Kelly RP, Feneley MP. Relations between left atrial appendage blood flow velocity, spontaneous echocardiographic contrast and thromboembolic risk in vivo. *J Am Coll Cardiol* 1994;23:961–9.
- 5 Barik R, Akula SP, Damera SR. Use of dobutamine stress echocardiography for periprocedural evaluation of a case of critical valvular pulmonary stenosis with delayed presentation. *J Cardiovasc Echogr* 2016;26:56–60.

Copyright 2022 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <https://www.bmj.com/company/products-services/rights-and-licensing/permissions/>
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

Customer Service

If you have any further queries about your subscription, please contact our customer services team on +44 (0) 207111 1105 or via email at support@bmj.com.

Visit casereports.bmj.com for more articles like this and to become a Fellow