*Images in Cardiovascular Medicine*

# Spontaneous Echo Contrast

## in a 73-Year-Old Man with Mitral Stenosis and a Giant Left Atrium

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A 73-year-old man was admitted to the emergency department with acute-onset orthopnea. He had a history of rheumatic mitral stenosis and permanent atrial fibrillation (AF), and he was taking warfarin. His prothrombin time (33.3 s) and international normalized ratio (2.83) were within therapeutic limits. Transthoracic echocardiograms revealed rheumatic mitral leaflets, gross pericardial effusion (Fig. 1), marked left atrial (LA) enlargement (15.6 × 8.3 cm), grade 4 spontaneous echo contrast (SEC) (Fig. 2), and mild mitral insufficiency (Fig. 3). The mitral valve area was 0.8 $cm^2$, and the LA volume was 1,966 mL. A transthoracic echocardiogram showed dense SEC flowing through the stenotic mitral valve and disappearing immediately after entering the left ventricle.

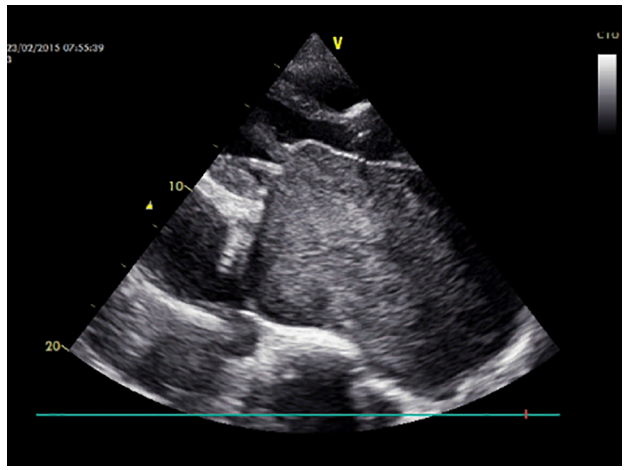


***Fig. 1*** *Transthoracic echocardiogram (parasternal long-axis view) shows rheumatic mitral leaflets, gross pericardial effusion, dense left atrial spontaneous echo contrast, and thickened pericardium.*

*Supplemental motion image is available for Figure 1.*

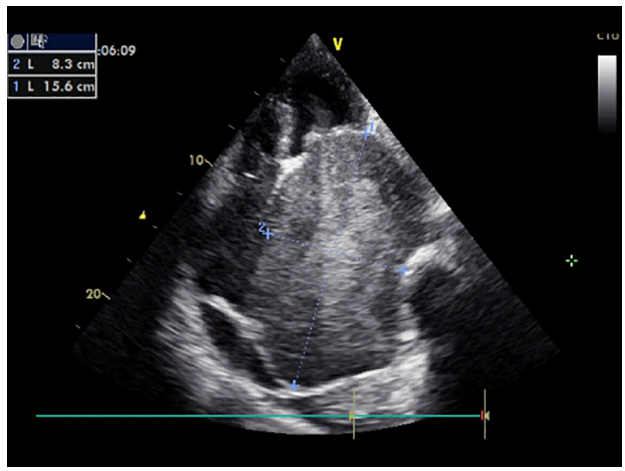


***Fig. 2*** *Transthoracic echocardiogram (apical 4-chamber view) shows severe left atrial enlargement and flow of spontaneous echo contrast through the mitral valve.*

*Supplemental motion image is available for Figure 2.*

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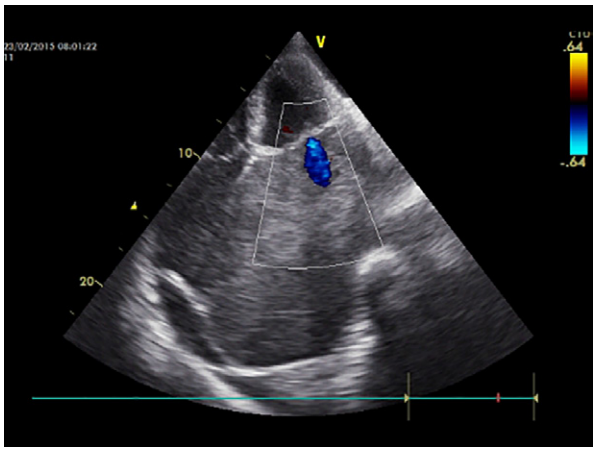

***Fig. 3*** *Transthoracic echocardiogram of the left atrium (apical 4-chamber view in color-flow Doppler mode) shows mild mitral insufficiency.*

## Comment

Spontaneous echo contrast, an echogenic swirling motion of blood, is thought to be related to a reversible, protein-mediated aggregation of erythrocytes in conditions of blood stasis or low-velocity blood flow.[1] The presence of SEC in the LA and LA appendage is an independent predictor of thromboembolic risk in patients with mitral stenosis.[2] Anticoagulation is indicated when they also have new-onset or paroxysmal AF. If patients are in sinus rhythm, oral anticoagulation should be considered when transesophageal echocardiograms show dense SEC or an enlarged LA.[3] However, SEC seems to be independent of activation of the clotting system.[4] In patients with nonvalvular AF, anticoagulation therapy has not prevented SEC, and—despite continued oral anticoagulation—these patients have an increased risk of cerebral embolism or death.[5,6]

Our patient was taking effective anticoagulant medication and had dense SEC in the LA, with flow through the mitral valve. The disappearance of the SEC as soon as it passed through that valve appears to be associated with decreased velocity of blood flow in the LA. Nevertheless, in patients with mitral stenosis and dense left atrial SEC, anticoagulation should be considered, even if the patient is in sinus rhythm.

## References


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