

## Case of the Month



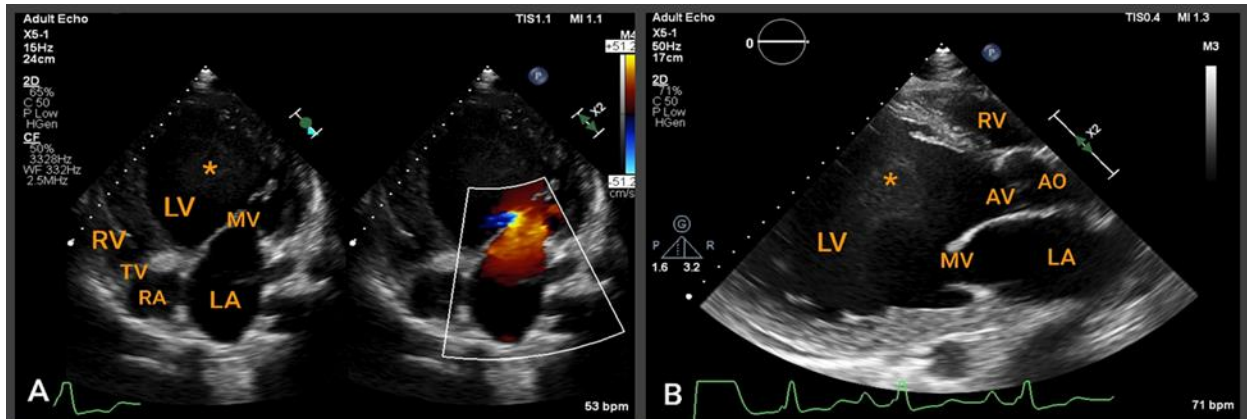
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### **‘Wisp Of Smoke’ Sign– Spontaneous Echogenic Contrast in a Patient with Dilated Cardiomyopathy**

#### Case Description

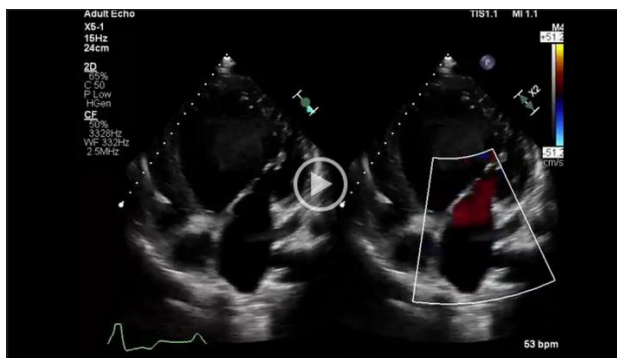
A 44-year-old male, diagnosed with Dilated Cardiomyopathy 3 years prior to current visit, presented with worsening symptoms of Congestive Cardiac Failure, prompting a consideration for upgrade from his Internal Cardiac Defibrillator to Cardiac Resynchronization Therapy with a Defibrillator (CRT-D). A transthoracic echocardiogram (TTE) done at admission revealed a severely dilated Left Ventricle (LV), with severe systolic dysfunction, diffuse hypokinesia, an Ejection Fraction (EF) of 15%, grade III diastolic dysfunction and increased filling pressures. Additionally, the images showed the presence of Spontaneous Echo Contrast (SEC) in the LV. (see **Figure 1 A-B, Video 1 and Video 2**)

Worsened cardiac dysfunction suggested the need for possible heart transplant rather than simply CRT-D in this patient. He was counselled accordingly and referred to a heart transplant center for further evaluation and definitive management.



**Figure 1 - A)** Apical four-chamber view on transthoracic echocardiography (TTE), showing a dilated left ventricle (LV) in diastole, with spontaneous echogenic contrast (SEC) "smoke sign" (\*) in the left ventricle. **B)** Parasternal long-axis view on TTE, showing a dilated LV in diastole, with SEC(\*) in the LV.

**Abbreviations:** LA (left atrium), RA (right atrium), AO (Aortic Outflow), MV (mitral valve), TV (tricuspid valve), AV (Aortic valve), SEC(Spontaneous Echogenic Contrast).



**Video 1)** Apical four-chamber view on Transthoracic Echocardiography, showing a dilated left ventricle in diastole, with Spontaneous Echogenic Contrast "smoke sign" in the left ventricle.



**Video 2)** Parasternal long-axis view on Transthoracic Echocardiography, showing a dilated Left Ventricle in diastole, with Spontaneous Echogenic Contrast in the Left Ventricle.

## Discussion

Spontaneous Echo Contrast (SEC) is visualized as a swirling 'wisp of smoke' within the cardiac chambers when viewed through ultrasound. Often seen in the Left Atrium of patients with mitral stenosis or Atrial Fibrillation (AF),<sup>1-3</sup> it may be seen in any region where blood components aggregate in the setting of low-velocity blood flow.<sup>4</sup> Its presence is an independent predictor of thromboembolic events.<sup>5</sup> In patients with Dilated Cardiomyopathy, the finding is more commonly seen when heart rate and LVEF is low, CRP is high, and in patients with larger Left Ventricle End-Systolic Diameters (LVESD) and dilated Left Atria (LA). Visualization is frequently encountered during Transesophageal Echocardiography (TEE) rather than Transthoracic Echocardiography (TTE) studies, likely owing to enhanced clarity of imaging and proximity to cardiac chambers with TEE.

## References

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