Intracardiac Thrombus-in-Transit

Characterized on 3-Dimensional Transesophageal Echocardiography

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A 60-year-old woman presented with fever and shortness of breath of one week's duration. Physical examination disclosed a right-lower-quadrant abdominal mass and pretibial edema. A chest computed tomogram showed bilateral pulmonary embolism, and venous Doppler ultrasonographic imaging of the lower extremities revealed acute deep vein thrombosis (DVT) of the right common femoral vein. Abdominal ultrasonograms showed a large right ovarian mass. A 2-dimensional transthoracic echocardiogram (2D TTE) showed an echogenic mass in the atria. Two-dimensional transesophageal echocardiograms (TEE) revealed an aneurysmal interatrial septum and a large, mobile mass in the right atrium. The mass was in transit through a patent foramen ovale and extended into the left atrium (Fig. 1). Three-dimensional (3D) TEE helped to characterize the mass as a thrombus-in-transit that extended through the interatrial septum (Fig. 2). Upon sequential cropping of the images, echolucent components seen inside the mass were consistent with an intracardiac thrombus.[1] The ovarian mass was found to be malignant. The patient was prescribed long-term anticoagulation. After 6 months, 2D TTE revealed complete resolution of the thrombus and no evidence of left-sided emboli.

Comment

Thrombus-in-transit is rarely reported and is often associated with pulmonary embolism or paradoxical systemic embolism when an intracardiac shunt is present. In our patient, DVT associated with a hypercoagulable state of malignancy was thought to be responsible for the thrombus-in-transit and the pulmonary emboli.

Thrombi-in-transit have almost exclusively been diagnosed with the use of echocardiography.[2] Using 3D TEE enables the sequential sectioning of an intracardiac mass and inspection of its inner aspects from multiple angles. This in turn helps to establish a more accurate diagnosis and more specific therapeutic interventions. The most appropriate therapy for thrombus-in-transit has not been clearly defined; antico-

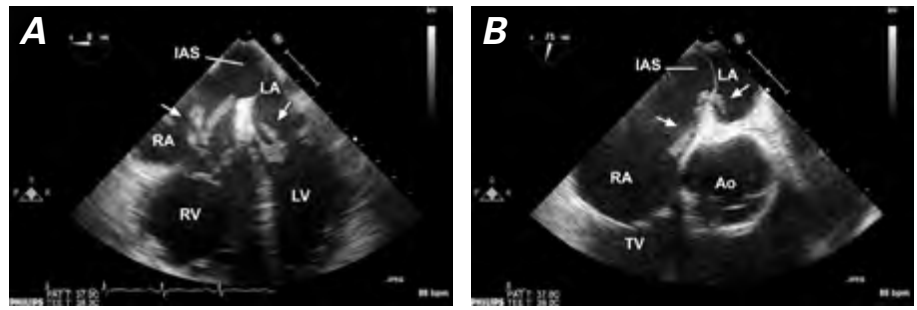

Fig. 1 *Two-dimensional transesophageal echocardiograms show an aneurysmal interatrial septum and the large intracardiac thrombus (arrows) in* ***A****) apical 4-chamber view and* ***B****) short-axis view at the aortic valve level.*

Ao = aorta; IAS = interatrial septum; LA = left atrium; LV = left ventricle; RA = right atrium; RV = right ventricle; TV = tricuspid valve

Supplemental motion image is available for Figure 1B.

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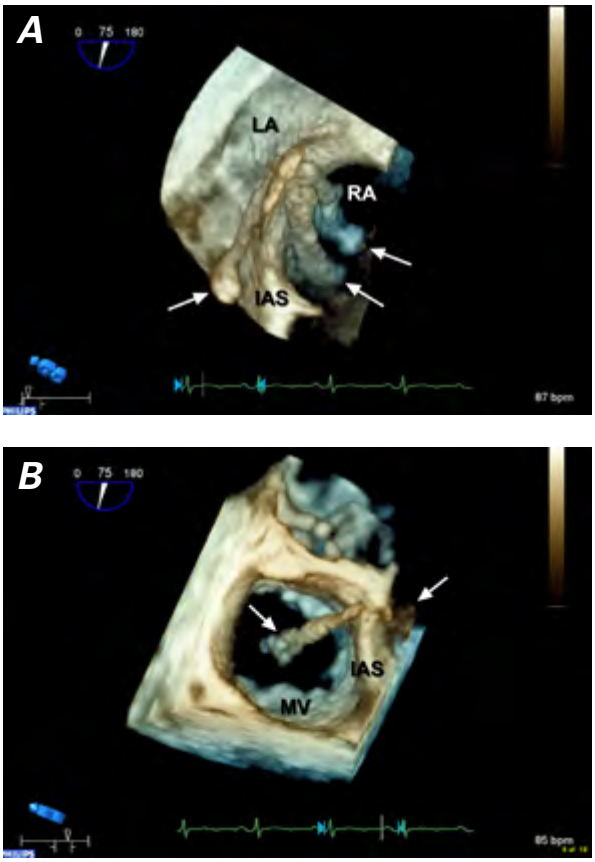

Fig. 2 *Three-dimensional transesophageal echocardiograms show the intracardiac thrombus-in-transit (arrows) at the levels of **A**) the interatrial septum and **B**) the mitral valve.*

IAS = interatrial septum; LA = left atrium; MV = mitral valve; RA = right atrium

Supplemental motion image is available for Figure 2B.

agulation, thrombolysis, and surgery have each brought about successful outcomes.[3] In our patient, anticoagulation resolved the thrombus.

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References

1. Reddy VK, Faulkner M, Bandarupalli N, Nanda NC, Singh P, Dutta R, et al. Incremental value of live/real time three-dimensional transthoracic echocardiography in the assessment of right ventricular masses. Echocardiography 2009;26(5):598-609.
2. Aboyans V, Lacroix P, Ostyn E, Cornu E, Laskar M. Diagnosis and management of entrapped embolus through a patent foramen ovale. Eur J Cardiothorac Surg 1998;14(6):624-8.
3. Shah DP, Min JK, Raman J, Lodato JA, Van Kley D, Lang RM, Ward RP. Thrombus-in-transit: two cases and a review of diagnosis and management. J Am Soc Echocardiogr 2007;20(10):1219.e6-8.