A Floating Right Atrial and Ventricular Thrombus in a Patient with Syncope

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Abstract

Here, we describe a rare echocardiographic finding of a floating right heart thrombus in an elderly woman who presented with an unexplained syncope. Our case demonstrates the pivotal role of echocardiography in the workup of patients admitted with syncope.

Keywords: Echocardiography, pulmonary embolism, right heart, syncope, thrombus

INTRODUCTION

We present a case of an elderly patient who presented with unexplained syncope and found to have a floating thrombus between the right atrium (RA) and right ventricle (RV) secondary to venous thromboembolic disease.

CASE REPORT

An 89-year-old female patient presented with a 12-h history of central heavy chest pain followed by three episodes of syncope. Each episode lasted about 30 s and followed by full recovery. Three weeks earlier, she noticed left leg swelling that resolved spontaneously. She denied headache, visual aura, nausea, cough, or hemoptysis. She has hypertension, paroxysmal atrial fibrillation, and a remote history of deep-vein thrombosis.

Physical examination on admission to the coronary care unit showed a well-looking elderly patient. Her heart rate was 81/min, blood pressure was 120/80 mmHg, respiratory rate was 18/min, and the oxygen saturation was 94% in room air. Heart examination showed normal heart sounds and no murmurs. Chest examination was within normal limits.

Her initial electrocardiogram showed normal axis, sinus rhythm, and nonspecific ST-T changes. Transthoracic echocardiography (TTE) showed a large longitudinal thrombus measuring 9.0 cm × 1.0 cm free floating between the RA and the RV [Video 1]. Moreover, there was paradoxical septal motion and right heart dilatation [Video 2]. The end-diastolic RV dimensions were 50 mm at the base and 40 mm at the midelevel in the apical four-chamber view. The RA area measured 20 cm². The patient had moderate tricuspid regurgitation with an estimated systolic pulmonary artery pressure of 70 mmHg. The RV function was severely impaired (tricuspid annular plane systolic excursion = 11 mm). The diameter of the inferior vena cava was 2.6 cm with <50% variation in the diameter with respiration. In a follow-up TTE 2 h later, the thrombus was no more visible [Video 3]. A computed tomography angiography of the chest was done on the same day which showed bilateral central pulmonary emboli [Figure 1].

The patient remained hemodynamically stable and had a PaO₂ of 68 mmHg and oxygen saturation of 95% in room air. Doppler ultrasound study of the lower extremities showed a residual deep-vein thrombosis in the left posterior tibial vein. She received in-hospital intravenous unfractionated heparin. She declined further investigations to rule out malignancy or thrombophilia and was discharged after 4 days on rivaroxaban 15 mg twice daily for 21 days and then a lifelong therapy with 20 mg once daily.

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Discussion

Syncope was reported in 0.8% to 17.3% of patients with pulmonary embolism (PE). While PE is an unlikely diagnosis in patients presenting to the emergency room with syncope, one in six of the hospitalized patients with syncope had PE. Elevated troponin and the presence of dilated RV were predictors of having PE in patients admitted with syncope. Furthermore, syncope in the context of PE is associated with increased 30-day mortality. Several mechanisms may explain why some patients with PE present with syncope. Massive PE may cause acute RV failure, impaired left ventricular filling, and consequently reduced cerebral perfusion. A second mechanism that may be implicated is the presence of hemodynamically unstable tachydyssrhythmias or bradydyssrhythmias. Finally, PE may trigger a vasovagal reflex that may lead to syncope on a neurogenic basis. In this case, the most likely cause of syncope was an intermittent occlusion of the RV outflow tract through the floating thrombus with consequent impairment of the left ventricular filling, transient decrease in the cardiac output, and cerebral hypoperfusion.

Echocardiography has been utilized as a diagnostic and prognostic tool in patients with suspected PE. At least one study showed that while echocardiographic finding of right heart thrombi is uncommon in patients with acute PE, its presence is associated with worse prognosis.

In this case, the reported echocardiographic findings of a mobile right heart thrombus highlight the importance of performing TTE, as a rapid and noninvasive tool, in evaluating patients who are admitted with an otherwise unexplained syncope.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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