

## CASE REPORT

# Fatal evolution of a huge right atrial free-floating thrombus

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## Introduction

For a 52-year-old patient with a fatal right atrial free-floating mass, at autopsy the presence of a heterogeneous mass in the pulmonary artery trunk was found. In this case we stress the importance of maintaining a high degree of alert for right atrial thrombus in all suspected pulmonary embolism.

Free-floating right atrial thrombus is a rare entity [1]. It often appears as an irregular, curvilinear mass, moving from the right atrium to the right ventricle, simulating a myxoma [1]. It can come from an embolus from a deep vein thrombosis, thus called “emboli-in-transit” [2]. We describe the case of a patient with a large free-floating thrombus of the right atrium, whose evolution was fatal.

## Case Report

A 52-year-old patient with a history of a long travel (720 km) by road, 1 month prior to presentation and which was followed by a painful swelling of the left lower limb that resolved spontaneously, was admitted for a left-

### Key Clinical Message

Right atrial thrombus is a rare medical emergency that should be suspected in all cases of pulmonary embolism, and rapid action should be taken to ensure a timely, proper management.

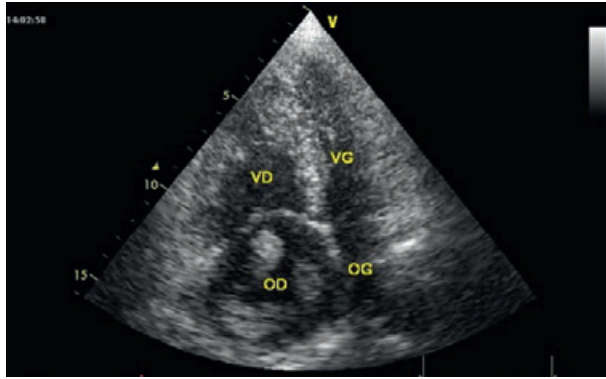
### Keywords

Autopsy, free-floating thrombus, pulmonary embolism, right atrium.

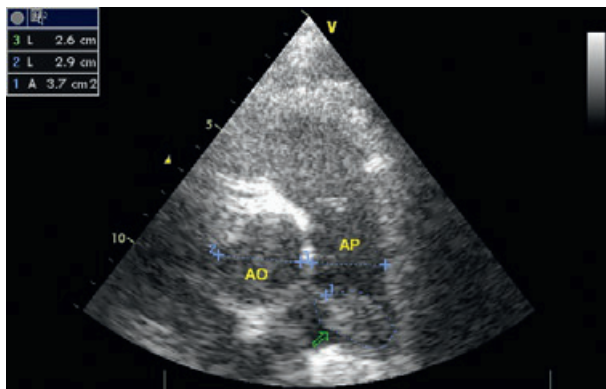
sided chest pain of moderate intensity radiating to the epigastrium and associated with dyspnea at rest. Blood pressure was 100/60 mmHg in both arms, a heart rate of 115 beats per min, respiratory rate of 36 breaths per min, and a temperature of 36.5°C. Cardiovascular examination revealed regular heart sounds with no murmurs, a slightly raised jugular venous pressure, and pulses of good volume. There was a slight increase in volume of the left lower limb with discrete inflammatory signs. There were no signs of heart failure.

Laboratory studies found a normal hemoglobin level at 15 g/dL, thrombocytopenia of 51,000/mm<sup>3</sup>, an elevated serum C-reactive protein of 24 mg/L, and prothrombin level of 50.9%. Transthoracic electrocardiogram inscribed a regular sinus tachycardia with a heart rate of 114 cycles per min, an anterior hemiblock, an S<sub>1</sub>S<sub>2</sub>S<sub>3</sub> pattern, and a low voltage in the limb leads.

Chest X-ray showed a slight cardiomegaly (cardiothoracic index = 0.56) with the apex above the diaphragm. Venous Doppler ultrasound of the lower limbs showed thrombosis in the left limb veins – middle and distal – superficial femoral veins, popliteal, peroneal, and posterior tibial.



**Figure 1.** A transthoracic echocardiographic image; apical four-chamber view showing a dilatation of right chambers and a voluminous heterogeneous, polylobulated horseshoe-shaped mass, in the right atrium.



**Figure 2.** Parasternal short axis showing a rounded heterogeneous mass (arrow) of 3.7 cm<sup>2</sup> in the trunk of the pulmonary artery (AO = 29 cm, AP = 26 cm). AO, aorta; AP, pulmonary artery.

Transthoracic echocardiography (Figs. 1 and 2) showed:

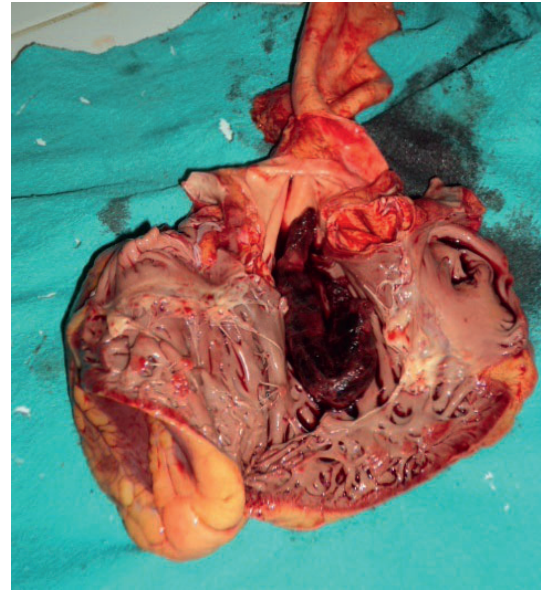
A huge heterogeneous, polylobulated, horseshoe-shaped mass, floating in the right atrium, protruding into the right ventricle in diastole;

A rounded heterogeneous mass of 3.7 cm<sup>2</sup> in the pulmonary artery trunk;

A moderate dilatation of the right heart chambers (right ventricle = 34 mm; right atrium = 25 cm<sup>2</sup>); and

Mild pulmonary hypertension (pulmonary arterial systolic pressure of 42 mmHg).

The patient received oxygen therapy, anticoagulation with low-molecular-weight heparin (Lovenox 0.8 mL twice daily), vitamin K antagonist in the form of acenocoumarol (Sintrom) 4 mg daily, and Tramadol (Trabar) 50 mg thrice daily. He did not receive any treatment prior to admission. Given the high probability of pulmonary embolism



**Figure 3.** At autopsy, section of RV showing the presence of a nonadherent clot (arrow) in the right ventricle placed like a loop completely obstructing the opening of the pulmonary artery trunk.

associated with a huge thrombus in the right atrium, the indication for surgery was made. However, the evolution was marked by the sudden death of the patient. Autopsy done revealed the presence of a nonadherent clot in the right ventricle, completely obstructing the opening of the trunk of the pulmonary artery (Fig. 3). The heart size was big with left ventricular hypertrophy of 2 cm. Furthermore, there were no signs of pulmonary embolism.

## Discussion

Intracavitary masses, including primitive or metastatic tumors, thrombi, vegetations, and calcification of a tricuspid valve or annulus, are uncommon in the right cavities [1]. Similarly, free-floating thrombus of the right atrium is rare [1, 3]. The first cases were reported in the 1980s in patients with pulmonary embolism [1]. It can come from emboli from deep vein thrombosis which are temporarily trapped in the right chambers and which are on their way toward the pulmonary circulation, thus called “emboli-in-transit” [2]. Such was the case in our patient with extensive deep vein thrombosis of the left lower limb, probably lasting for a month.

Free-floating right atrial thrombus is almost exclusively found in the presence of clinical manifestations of pulmonary embolism [3], and in this context, transthoracic echocardiography is the technique of choice for detection [2, 4]. Transesophageal echocardiography can be performed in case of doubt [3]. It appears as an irregular

mass, curvilinear, floating freely in the right atrium and then moving from the atrium to the right ventricle through the tricuspid valve, so it can simulate a myxoma [1]. In our patient who presented with a clinical picture suggestive of pulmonary embolism, echocardiography was able to detect such a mass.

Free-floating thrombus of the right atrium is a medical emergency because of the high risk of mortality [2, 3]; however, the most appropriate treatment is yet to be determined [2, 5]. In a series by Chartier *et al.* [3], 21.1% of patients died the same day of admission, and among those who had a very huge mobile thrombus, the hospital mortality rate was 44.7% due to the occurrence of a sudden pulmonary embolism.

Thrombolysis may be recommended as a first choice in the treatment of right atrial thrombus [6–9], and can cause the complete disappearance of the thrombus [10] and hence recommended as a bridge to surgery. [3] In case of large mobile thrombi, it is advisable to do an emergency surgery [2].

Any delay between the diagnosis and the treatment can be fatal for the patient, as was the case in our report.

## Conclusion

Free-floating thrombus of the right atrium is a rare entity, and must be sought in all cases of suspected pulmonary embolism. Transthoracic echocardiography is the technique of choice for detection; transesophageal echocardiography can be used in case of doubt. It requires urgent management due to the high risk of mortality. Thrombolysis may result in the complete disappearance of the thrombus; however, emergency surgery is justified in the case of a large thrombus.

## Conflict of Interest

None declared.

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