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Case Report

Clinical Case: Direct Diagnosis of Pulmonary Embolism on Echocardiography

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ABSTRACT

Ultrasound diagnosis of pulmonary embolism by direct visualization of a thrombus in the pulmonary artery is exceptional.

In this work, we report a case of pulmonary embolism revealed by thrombi in the right atrium and in the common trunk of the pulmonary artery, discovered on echocardiography.

A 65-year-old patient admitted with predominantly right heart failure. Echocardiography shows a large, floating right intraauricular thrombus and thrombus in the common trunk of the pulmonary artery. The patient's hemodynamic status was stable. Long-term anticoagulation allowed the thrombi to disappear.

It is rare to find a thrombus directly in the pulmonary artery on ultrasound. There is no recommendation for the management of right intracavitary thrombi. Our patient received long-term anticoagulation with K antivitamins.

Keywords: Floating thrombus; Pulmonary embolism; Echocardiography

INTRODUCTION

Pulmonary embolism is the obstruction of the pulmonary artery or its branches by a clot, usually fibrino-cruoric, and secondary to deep vein thrombosis of the lower extremities or the right heart. The multibarette thoracic CT angiography remains the gold standard in the diagnosis of pulmonary embolism. The discovery of a floating thrombus in the right cardiac chambers on echocardiography is rare, but almost associated with pulmonary embolism (in 99%) and strikes the prognosis with a mortality of 27 to 44% [1]. Ultrasound diagnosis of pulmonary embolism by direct visualization of a thrombus in the pulmonary artery is exceptional.

In this work, we report a clinical case of pulmonary embolism in a patient referred for management of global heart failure. The patient's informed consent was obtained.

OBSERVATION

A 65-year-old rural patient admitted with predominantly right global heart failure. Symptoms were dominated by exertional hepatitis and edema of the lower limbs, progressing for over a month. She had no known cardiovascular risk factor. The physical examination found turgor of the jugular veins, congestive hepatomegaly, edema of the bilateral lower limbs, soft keeping the cup. Cardiopulmonary auscultation noted regular heart sounds with a sound of a straight gallop, an inspiratory reinforcing xiphoid systolic murmur and fine rattles under crackles in the lungs. The hemodynamic constants were as follows: Blood pressure: 108/76 mmHg; heart rate: 110 beats per minute; Oxygen saturation: 77% in ambient air.

The EKG showed a sinus rhythm at 86 beats per minute, a right axis (+131°), a Mc Gin-White monkey (S1Q3T3), right atrial hypertrophy and right ventricular hypertrophy (Figure 1).

Our diagnostic hypotheses were acute cor pulmonale with heart failure, tricuspid failure complicated by right heart failure.

The assessment below has been made.

The cardiac echo-Doppler revealed: a significant dilation of the right cardiac chambers, the presence of a thrombus floating in the right atrium of 8 mm and of a thrombus adhering to the wall of the pulmonary artery, at the level of the bifurcation, 12 mm (Figure 2).

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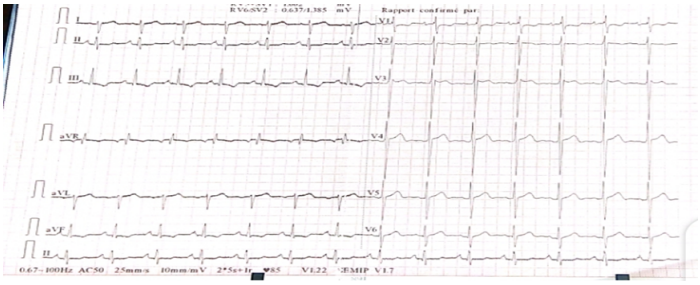

Figure 1: Surface ECG which recorded a sinus rhythm at 86 beats per minute, a right axis (+131°), the Mc Gin-White monkey (S1Q3T3), a right atrial hypertrophy and a right ventricular hypertrophy.

Figure 2: Echocardiography (Vivid 3), short-axis parasternal section centered on the pulmonary artery, showing a thrombus at the bifurcation.

Longitudinal systolic function of the right ventricle was impaired and there was severe pulmonary arterial hypertension with PAPS at 68mmHg from significant TI. LV filling pressures were high (Figure 3).

The chest x-ray showed cardiomegaly with an overhang of the lower right arch.

Biology did not reveal any particularity. The D-Dimers were not dosed.

Vascular Doppler ultrasound of the lower limbs did not reveal any venous thrombosis.

The diagnosis of acute pulmonary embolism complicated by predominantly right heart failure was retained.

The patient was hospitalized and treated with effective anticoagulation with overlap low molecular weight heparin and ant vitamin K (Fluinedione) and treatment for congestive heart failure.

Evolution: After one month of anticoagulation, the floating thrombus in the right atrium had disappeared, that in the pulmonary artery disappeared by the sixth month of treatment (Figures 4 & 5). Treatment of the heart failure resulted in the resolution of the congestive signs.

The patient did not exhibit hemodynamic instability. She is currently (eighth month) stable, without signs of congestion, eupneic at rest.

DISCUSSION

We report the case of pulmonary embolism revealed by direct ultrasound evidence of thrombi in the right atrium and in the pulmonary artery in a 65-year-old patient admitted for global heart failure.

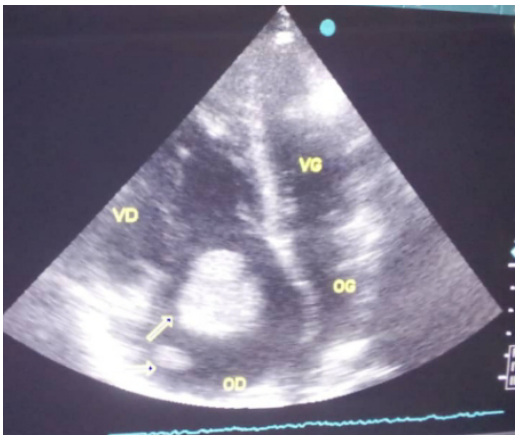

Figure 3: Echocardiography (Vivid 3), apical 4-chamber section which shows dilation of the right cardiac chambers and intra-OD thrombi.

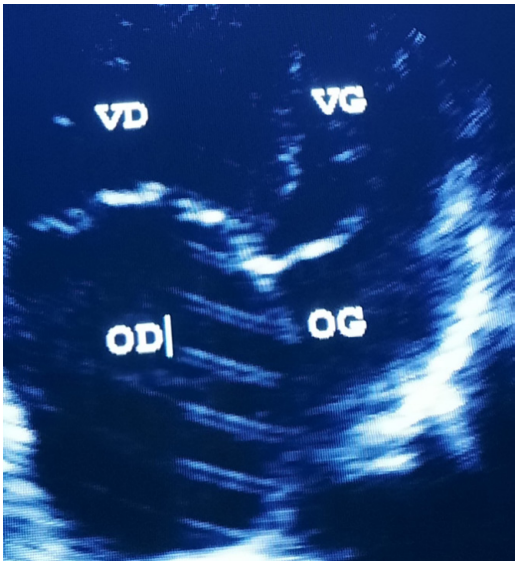

Figure 4: Echocardiography (Sono Site Micromax), section 4 cavities which shows the disappearance of thrombi in the right atrium (OD).

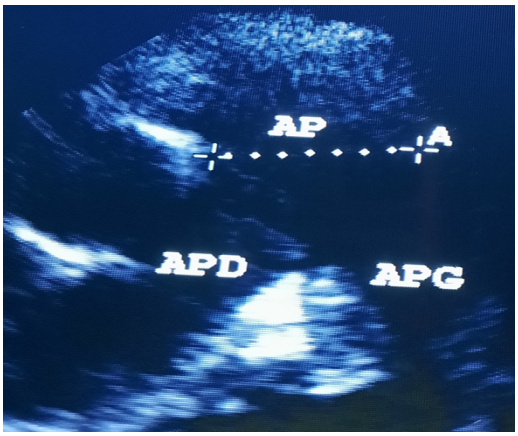

Figure 5: Echocardiography (Sono site Micromax), short axis section centered on the pulmonary artery which shows the disappearance of the thrombus.

In our practice, the diagnostic hypotheses are not all clarified because of the lack of a well-equipped technical platform. The performance of a CT angiogram is often done in private at an expensive cost for the majority of our patients. Scintigraphy is also not available in our hospitals. Clinical scores, D-Dimers (for their negative predictive value), ultrasound are very useful in patients at low or intermediate risk.

The presence of a floating thrombus of the right atrium is systematically associated with pulmonary embolism [1]. Ultrasound detection of a thrombus in the pulmonary artery is exceptional. This explains the originality of the clinical case that we report in this present work. Indeed, this is a 65-year-old patient admitted for management of global heart failure and as part of this workup that we discovered pulmonary embolism on ultrasound. More authors [1,2] have described the poor prognosis linked to the discovery of thrombus floating in the right cardiac chambers with severe pulmonary embolism (state of cardiogenic shock).

As part of the assessment of heart failure, echocardiography should be performed early because it allows the diagnosis to be oriented and the management to be adapted [3,4]. In our clinical case, echocardiography was performed upon admission of the patient. This started the anticoagulation. It should be noted that the patient had not been thrombolysed for lack of thrombolytics on admission. There is no recommendation on the management of right intracavitary thrombi; however thrombolysis remains the first choice [2-5]. These same authors describe a good clinical course of cases treated by thrombolysis. In our clinical case, despite the severity of the right heart failure, our patient's hemodynamic status was stable. She did not have cardiogenic shock. Long-term anticoagulation allowed the disappearance of intracavitary thrombi. However, the long-term prognosis remains poor with the cor pulmonale, the large tricuspal leak and pulmonary arterial hypertension.

CONCLUSION

The presence of a floating thrombus in the right chambers of the heart is almost always associated with pulmonary embolism. It is rare to find a thrombus directly in the pulmonary artery on ultrasound. There is no therapeutic strategy between thrombolysis, anticoagulation and surgery.

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