

## Short PR, Palpitation and Syncope: An A Typical Presentation of A Massive Pulmonary Embolism

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### ABSTRACT

*Pulmonary embolism is a common condition that can be difficult to diagnose due to clinical polymorphism. Doppler echocardiography, beyond the evaluation of hemodynamic repercussion on the right ventricle, may reveal intra-cardiac thrombi. If the unfavorable prognosis of these situations is well established, their management is far from being consensual. We report the case of a 70-year-old patient who was referred to us for electrophysiological exploration in the face of a brief, repetitive, syncope, spontaneously resolving loss of consciousness without biting of the tongue or loss of urine, associated with intense palpitations. The initial electrocardiogram recorded a short PR and broad QRS. Upon physical examination we found a right heart failure syndrome. During the clinical evaluation, an episode of syncope had occurred with cardiovascular collaps. The per-critical electrocardiogram recorded an isorhythmic dissociation with enlarged QRS and a progressive shortening of the PR interval. Transthoracic Doppler echocardiography showed dilatation of right cavities with moderate alteration in right ventricular systolic function, presence of numerous mobile thrombi in the right atrium, and a serpentine thrombus at the bifurcation of the pulmonary artery. Fibrinolysis was initiated with streptokinase and was followed by anticoagulation. The immediate progress was favorable with a disappearance of the syncope and normalization of the electrocardiogram. Subsequent computed tomography (CT) revealed massive bilateral proximal and segmental pulmonary embolism associated with signs of pulmonary hypertension. Venous Doppler ultrasound showed a right popliteal thrombosis. Doppler echocardiography of control performed on the third day noted the disappearance of thrombi; the size of the right ventricle and its systolic function had returned to normal.*

### Keywords

Pulmonary embolism, Syncope, Isorhythmic dissociation, Thrombus, Fibrinolysis.

### Introduction

Pulmonary embolism is a common affection in which diagnostic may be difficult due to his various clinical presentation such as syncope, dyspnoea or respiratory distress, chest pain, circulatory chock or fatal disease. Electrocardiography findings are

nonspecific in this affection. Most time they are dominated by an acute pulmonary heart's signs.

Echocardiography is an important screen test to assess impacts on the right ventricular such as right ventricular overload, hypokinetic and right ventricular systolic dysfunction. So it is important to assess a short term prognostic [1]. Beyond, it could show intracavities' thrombi, as these of 4-18% patients with a growing proportion due to accessibility and the performance of echocardiography [1,2].

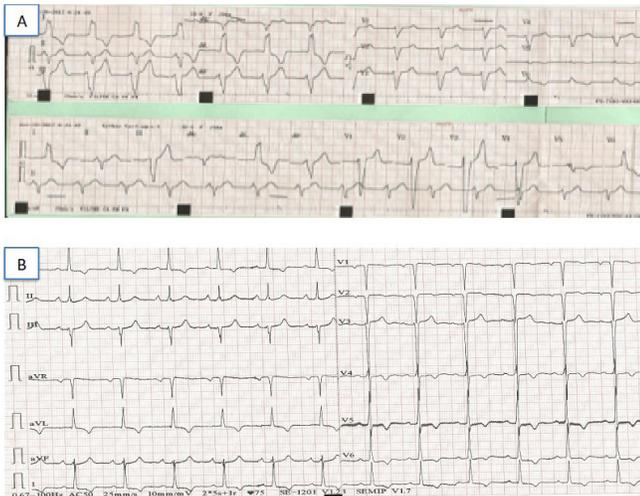
If the disadvantageous prognosis of this situation is established, their management is far to be consensual. Between the treatment by heparin, fibrinolysis and surgery embolectomy, reported cases and meta-analyses' data seem to be disparate [1].

Because of the lack of large studies, a case by case therapeutic approach is needed. We report a case of a 70-year-old woman, with an atypical clinical presentation whom echocardiography revealed intracavities' thrombi.

### Clinical Presentation

A 70-year-old woman with a history of hypertension for seven years, but defaulted on treatment. She has not risk factor for thromboembolism disease. She presents with a shortness and repetitive loss of consciousness for about two minutes spontaneously resolve, associated with severe palpitations without tongue injuries nor urine loss.

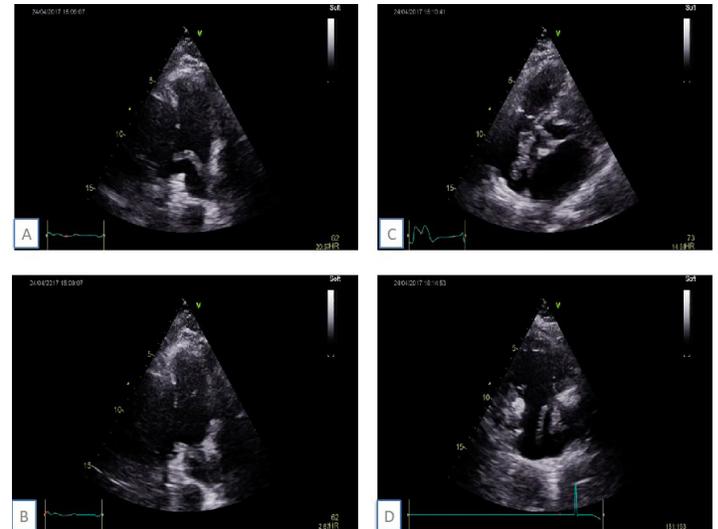
Initial electrocardiogram showed a short PR interval associate with a wide QRS duration. An electrophysiological test was demanded. At the admission, her general condition looks well, her vitals parameters included blood pressure of 110/70mmHg and heart rate of 110 beats per minute. Clinical examination findings included a right hear failure syndrome with jugular venous distention and a moderate hepatomegaly. An episode of loss of consciousness occurred during the clinical assessment with and impregnable blood pressure. Per-critical electrocardiogram was performed and showed a dissociated isorythmic with enlarged QRS duration and a progressive shortening of PR interval (Figure 1A). Post critical electrocardiogram showed sinus ryhm with a thins QRS, a left ventricular hypertrophy (Figure B) and QS aspect in anteroseptal leads and apico-lateral repolarization abnormally.



**Figure 1:** Electrocardiography showing: (A) a dissociation isorythmic with an enlarged QRS, a progressive shortness of PR; (B) basic sinus rhythm with a thin QRS.

Transthoracic echocardiogram showed a dilatation of right heart cavities with moderate deterioration of the right ventricular systolic function (Tricuspid Annular Plane Systolic Excursion= 11 mm; Sat= 9 cm/s), numerous movables thrombi in the right auricle

and a thrombus near the pulmonary artery bifurcation. The latter was partially enclosed by the pulmonary's right artery. The other part remained movable near the bifurcation and had come to close partially the pulmonary artery contralateral during the systole like a valve (Figure 2). There was a medium tricuspid failure with moderate pulmonary arterial hypertension in 58mmHg.



**Figure 2:** Transthoracic echocardiogram imaging showing movable thrombus of the pulmonary artery's bifurcation (A, B) and near the right auricle in apical 4 cavities (C) and 2 cavities (D).

The left ventricle was normal except a non-obstructive septa roll under-aortic. In view of these clinical and echocardiographic findings making think of a severe pulmonary embolism and the presence of thrombi in the heart cavities, a treatment by fibrinolytic was performed using streptokinase (1.5 million international unit during two hours) without incident nor injuries.

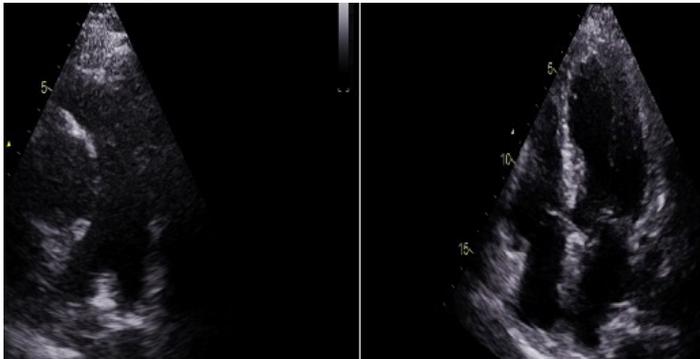
The outcome for the time being was favourable, none other syncope occurred. The patient underwent computed tomography angiography of the pulmonary arteries, which showed massive pulmonary embolism of bilateral proximal and segmental pulmonary branches associated with pulmonary hypertension (Figure 3).



**Figure 3:** Thoracic computed tomography imaging showing a bilateral pulmonary embolism.

A venous echocardiography of lower limbs performed revealed a thrombosis in the right popliteal vein. She was started on subcutaneous low-molecular-weight heparin, and subsequently discharged oral anticoagulation medication.

Three days later, a follow up echocardiography was performed and showed the absence of the thrombi, the right ventricular size and his systolic function has become normal again. A month later, the patient was asymptomatic, the clinical examination and the electrocardiogram has become normal.



**Figure 4:** Doppler echocardiography follow up showing missing thrombi in pulmonary embolism (A) and in the right auricle (B).

### Comments

Pulmonary embolism sometime is a puzzling clinical presentation. In our case, a syncope link with a rhythm abnormalities was the first diagnostic hypothesis in view of pre-excitation evoked from the first electrocardiography findings. It was rather an isorhythmic dissociation with a ventricular location which is explained by the hyperexcitability occurring during the pulmonary embolism. This hyperexcitability is due to many factors which the most important are neurohormonal stimulation and myocardial ischemia [1].

Echocardiography is an accurate mean of diagnosis when pulmonary embolism is suspected in a situation of hemodynamic instabilities. It may also be used searching thrombi in the main arterial branches. Transthoracic echocardiogram can be used for that [3,4].

We estimate a proportion of 4% patients who came in the echocardiogram room for pulmonary embolism whom present thrombi in the right ventricular cavities. However, this rate could reach 18% of patients monitored in the intensive care [5,6].

The presence of thrombosis is associated with a high rate of mortality. The mortality rate is 44% [7]. Atheppan et al., in their recent study reported a rate of mortality of 23, 2% [8]. Short term prognosis seem to be link with clinical impact and hemodynamic but not to the characteristic of thrombi (size, morphology, immovableness) [9].

Echocardiogram has allowed to evoke the mechanism of the syncope which is usually link with hemodynamic failure due to right ventricular systolic dysfunction. In our case, an episodic obstruction of left pulmonary artery by the floating part of clot involved in the other side seem to be the plausible hypothesis.

The management of pulmonary embolism with right intracavities' thrombi is not consensual due to the lack of randomised studies. Many therapeutic method exist in fact. It concerns using heparin alone, fibrinolysis, catheter embolectomy and surgical embolectomy.

Fibrinolysis dissolve clots in the pulmonary artery, in the vein, even in intracardiac. It's a simple, accessible treatment and easy to commence [10]. Some studies reported good results with fibrinolysis [11,12]. Surgical embolectomy combined with right ventricular and pulmonary artery exploration is a possible therapeutics' method [1].

However, it is a heavy treatment and unavailable in our center. Instrumentals method use several technics such as fibrinolysis in situ, fragmentation or aspiration [13,14]. These technics are efficient but it requires materials and specialized knowledges [15]. In a study from 177 cases, Rose and et al., showed a significant improvement of survival with fibrinolysis compared to surgery [16]. In another study concerning 328 cases, Athappan et al. showed the superiority of fibrinolysis compared to surgery. Differential prognosis was more important in the group of patients with hemodynamic instabilities. The mortality rate without treatment is 90.9%. Fibrinolysis didn't present more complications [8] in the other hand others studies has not shown mortality rate difference [2,5].

### Conclusion

Pulmonary embolism is sometime a puzzling clinical case. Echocardiogram is imaging method of choice in the diagnosis. Even if the management of pulmonary embolism associated with intracavities's thrombi is not consensual, fibrinolysis seems to be an efficient method of treatment improving the prognosis.

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