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Visual Case Discussion

A direct echocardiographic sign of pulmonary embolism after percutaneous embolectomy in a female patient

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A 42-year-old female presented to ED with worsening exertional dyspnea. On examination she was tachypneic, oxygen saturation 99%; blood pressure 110/70 mmHg, pulse 115 beats per minute, D-dimer level of 3.80 mcg/mL. CT of the chest showed massive pulmonary embolism. An acute phase treatment was started for pulmonary embolism hemodinamically stable (unfractioned heparin and apixaban).[1] On the third day she became hemodinamically unstable: she performed percutaneous embolectomy (Fig. 1). Bedside echo[2] after procedure showed a rare direct sign of pulmonary embolism: a partially floating thrombotic formation at the biforcation of pulmonary artery (Video 1 and Fig. 2). A second computed tomography of the chest confirmed the persistence of thrombotic formation in the same location.

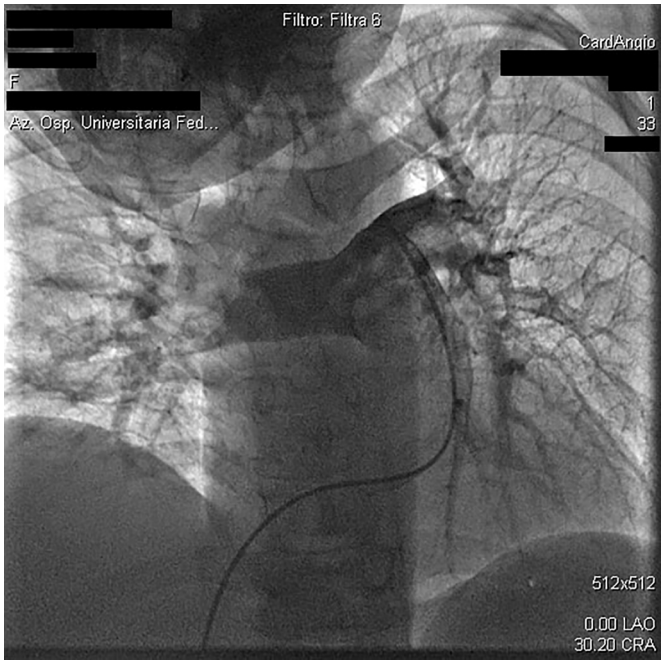

Fig. 1. Percutaneous catheter directed embolectomy. Reolithic trombectomy was performed with better opacification/final flow in both pulmonary arteries while persistent diffuse thrombotic apposition not susceptible to further treatment.

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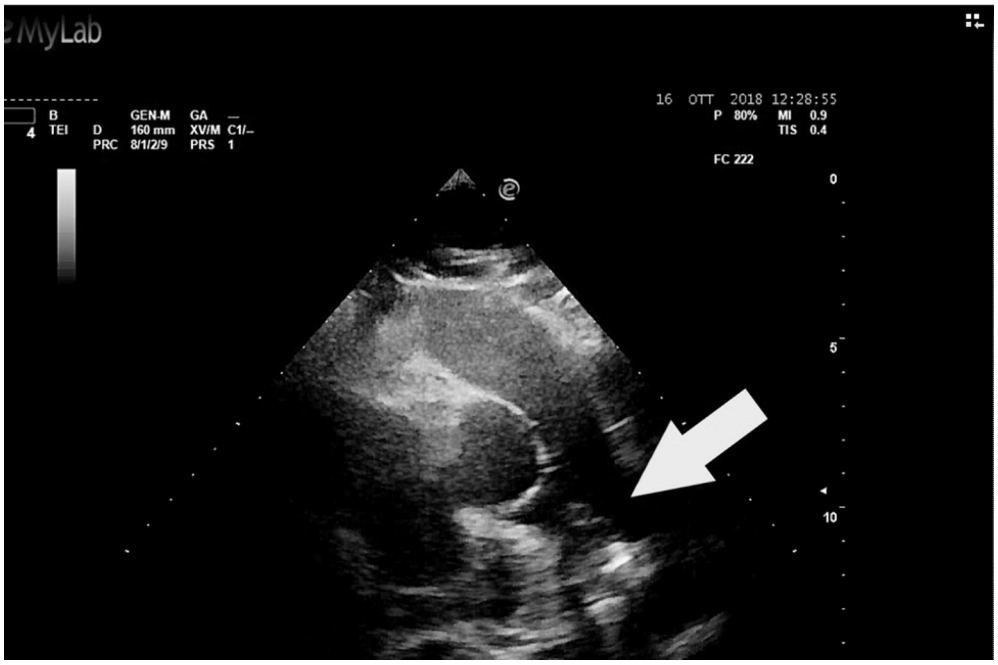

Fig. 2. Bedside echo showing thrombus at pulmonary artery biforcation.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.visj.2019.01.001.

References

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2. Lancellotti P, Price S, Edvardsen T, et al. The use of echocardiography in acute cardiovascular care: recommendations of the European Association of Cardiovascular Imaging and the Acute Cardiovascular Care Association. *Eur Heart J Cardiovasc Imaging.* 2015;16(2):119–146.

Questions

1. In patient with high or intermediate clinical probability of pulmonary embolism when anticoagulant therapy should be initiated?
   a. Only in presence of clear signs of deep vein thrombosis.
   b. After results of chest-CT.
   c. In presence of of haemodynamic instability.
   d. Immediately. Diagnostic investigation shold not delay empirical anticoagulation therapy.
   e. After the second episode of pulmonary embolism.

2. What is the better diagnostic strategy in suspected pulmonary embolism with shock or hypotension?
   a. Performing Chest-CT angiography if D-Dimer level is high.
   b. Performing transoesophageal echocardiography which permit direct visualization of thrombi in the pulmonary artery and its branches.
   c. The most useful initial test in this situation is bedside transthoracic echocardiography.
   d. Perform plasma D-dimer measurement, combined with clinical probability assessment.
   e. Perform D-dimer testing and lower limb compression ultrasonography to confirm the main cause of pulmonary embolism.

Answers

1. Immediately. Diagnostic investigation shold not delay empirical anticoagulation therapy. Explanation: Parenteral anticoagulation should be initiated whilst awaiting the results of diagnostic tests. The parenteral anticoagulants (immediate anticoagulation) that can be used are intravenous UFH, subcutaneous LMWH, or subcutaneous fondaparinux.

2. The most useful initial test in this situation is bedside transthoracic echocardiography. Explanation: The most useful test in the initial phase, in presence of signs of haemodynamic instability, is bedside transthoracic echocardiography, which will provide evidence of acute pulmonary hypertension and RV dysfunction if acute PE is the cause of the patient's haemodynamic instability. In a highly unstable patient, echocardiographic evidence of RV dysfunction is sufficient to perform immediate reperfusion without other testing. This decision may be strengthened by visualization (rare) of right heart or pulmonary artery thrombi.