

Medical Image of the Week: Pulmonary Thromboembolism Complicated by Free Floating Atrial Thrombus



Figure 1. Thoracic CT angiogram showing filling defects in the right pulmonary arterial system (arrows).

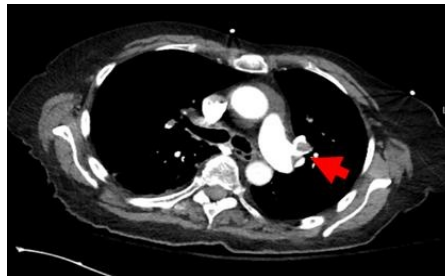


Figure 2. Thoracic CT angiogram showing filling defects in the left pulmonary arterial system (arrow).

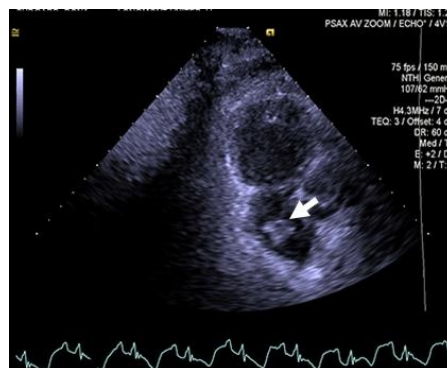


Figure 3. Static image from transthoracic echocardiogram showing thrombus in the right atrium (arrow).

An 82-year-old female presented to the emergency department four days after suffering a fall at home. She complained of left hip pain, weakness and shortness of breath.

Physical exam demonstrated a blood pressure of 82/60 mm Hg, pulse of 120 bpm, and room air oxygen saturation measured by pulse oximetry of 81%. Exam was otherwise remarkable for pain on movement of the left hip. Laboratory exam was remarkable for troponin of 2.5 ng/ml and pro-beta natriuretic peptide of 31,350 pg/ml. Chest radiograph demonstrated elevation of the right hemidiaphragm. EKG demonstrated sinus tachycardia with a rightward axis and an interventricular conduction defect. Left hip film disclosed a non-displaced femoral neck fracture. CAT-angiography of the chest revealed pulmonary emboli involving all five lobes with significant bilateral proximal pulmonary arterial filling defects (Figures 1,2). Venous Doppler examination demonstrated left lower extremity deep vein thrombosis. Trans-thoracic echocardiogram demonstrated right ventricular enlargement and a large unattached, right atrial thrombus (Figure 3). The patient was treated with 100 mg of tissue plasminogen activator (tPA) administered over 2 hours, followed by intravenous unfractionated heparin, with subsequent improvement of both her hemodynamic and oxygenation status. A repeat echocardiogram 48 hours after the administration of tPA demonstrated complete resolution of the right atrial clot. The patient has continued to do well.

Discussion

Free floating right heart thrombi (FFRHT), also known as “emboli in transit”, are mobile, unattached masses, and may be present in up to 18% of patients with pulmonary emboli (1). Untreated, the mortality of FFRHT approaches 100%. Therapeutic options include anticoagulation (28.6% mortality), surgical embolectomy (23.8% mortality), and thrombolysis (11.3% mortality, survival benefit ($p < 0.05$))(2). There are case reports of percutaneous catheter directed therapies, with varying degrees of success described (1,3). Floating right heart thrombi represent a severe subset of pulmonary thromboembolic disease and warrant immediate intervention. Although therapy must be individualized, thrombolysis appears to offer improved survival when compared to anticoagulation or surgical embolectomy.

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References

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3. Maron B, Goldhaber SZ, Sturzu AC, Rhee DK, Ali B, Pinak BS, Kirshenbaum JM. Catheter-directed thrombolysis for giant right atrial thrombus. *Circulation: Cardiovascular Imaging* 2010;3:126-7. [\[CrossRef\]](#) [\[PubMed\]](#)