CASE STUDY

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Restoration of Hemodynamics Following EKOS® Therapy in Bilateral PE with Saddle Embolus: Immediate Results and 6-month Follow-up

Patient History

A 44-year-old previously healthy female presented to the ED with complaints of progressive shortness of breath and chest discomfort.

- Patient reported having severe dyspnea with minimal walking at home
- No prior history of venous thromboembolism, with oral contraceptive use considered as the only risk factor
- No syncopal episodes; BP and HR normal on admission
- CT angiography demonstrated bilateral PE with saddle embolus and thrombus extending into most lobar and segmental branches (Fig. 1)
- CT evidence of right ventricular strain with RV/LV ratio > 1
- Echocardiography showed dilated right ventricle with RV overload

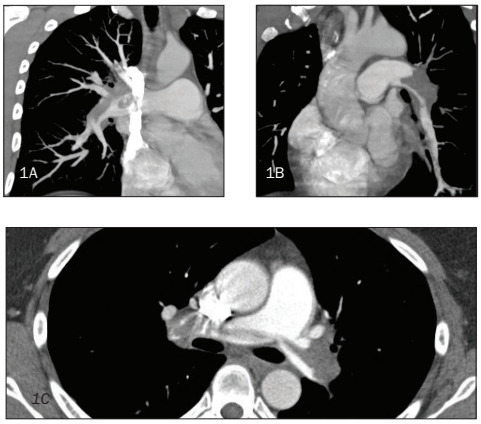

Figure 1. Pre-treatment CT angiography showed (A) thrombus in the right interlobar PA, (B) thrombus in the left PA, and (C) saddle embolus.

Treatment

Patient was admitted to the ICU, and weight-based UFH protocol for PE initiated. On hospital day 1, patient was brought to the Interventional Radiology suite for Acoustic Pulse Thrombolysis™ with EKOS®

- Selective pulmonary arteriography showed:
  - obstructive thrombus in the right interlobar artery with no flow into the basal trunk and a right PASP of 60 mmHg (Fig. 2A)
  - Partial obstruction in the left interlobar artery and segmental branches with a left PASP of 58 mmHg (Fig. 2B)
- The patient underwent Acoustic Pulse Thrombolysis™ using:
  - 10 mg rt-PA bolus infusion
  - a 6 cm EkoSonic® device placed in the right PA thrombus
  - a 12 cm EkoSonic® device in the left PA thrombus
  - Bilateral rt-PA infusion of 0.5 mg/hr/catheter for 24 hours (total dose of 34 mg including initial bolus)
- Weight-based UFH protocol was maintained during thrombolysis

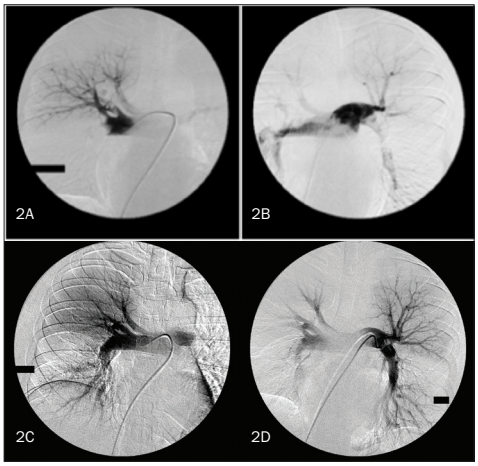

Figure 2. Pulmonary arteriogarphy confirmed occlusive thrombus in the (A) right and (B) left PA. Immediately following EKOS® therapy, thrombus was cleared and flow restored in both the (C) right and (D) left PA.

Results

- Repeat pulmonary arteriography showed restored flow into the right interlobar artery with near complete thrombolysis (Fig. 2C)
- Left pulmonary interlobar artery also demonstrated near complete lysis with minimal nonocclusive residual thrombus (Fig. 2D)
- The patient's dyspnea resolved and she no longer required supplemental oxygen
- Repeat echocardiography obtained on day 3 revealed normal right ventricle size and function
- Six month follow-up CT pulmonary arteriography showed no residual thrombus and normal RV/LV ratio (Fig. 3)

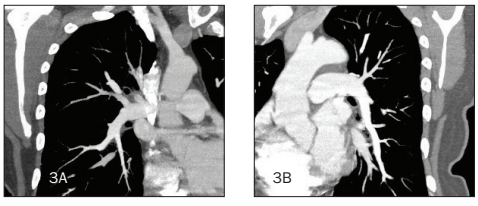

Figure 3. Follow-up CT angiography at 6 months demonstrated normal (A) right and (B) left PA with no evidence of thrombus.

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