

A Case Study on Pulmonary Embolism

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Acute Pulmonary Embolism

- Pulmonary embolism (PE) is the obstruction of a pulmonary artery or one of its branches by thrombus, tumor, air, or fat that originated from other parts of the body.
- Approximately 600, 000 PE cases per year; 10% will not survive the initial PE event.
- If a prompt diagnosis is made, the mortality rate will reduce from 30% to 10%.

Case Study Presentation

KW is a 51-year-old male with a history of left arm melanoma status post Mohs procedure, morbid obesity, hypertension, pre-diabetes and recent immobility from acute knee pain secondary to osteoarthritis. He presented to the emergency room with a one-day history of acute onset dyspnea, substernal chest pain and diaphoresis. He denied fever, cough or leg swelling.

Clinical Presentation: BP- 70/32 mmHg; HR- 130/min, RR- 32/min; SaO2- 87% on RA, increased to 95% w/ 2L of O2.

Exam: No heart murmurs, bilateral lung crackles at bases, JVD was difficult to assess due to the patient's obesity, no lower extremity edema noted

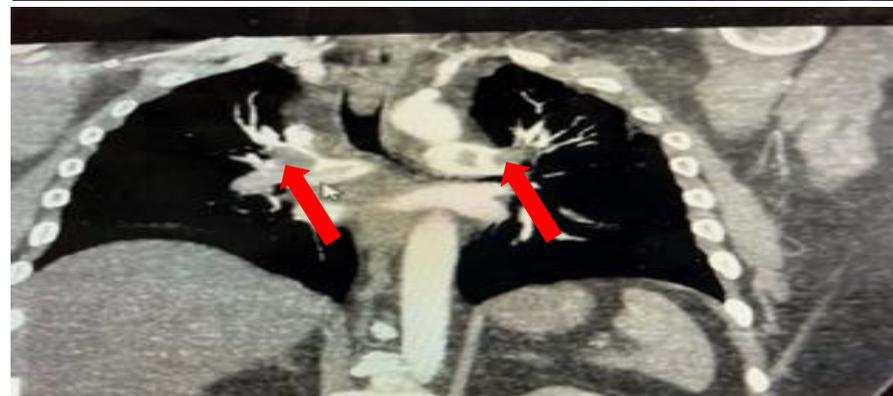
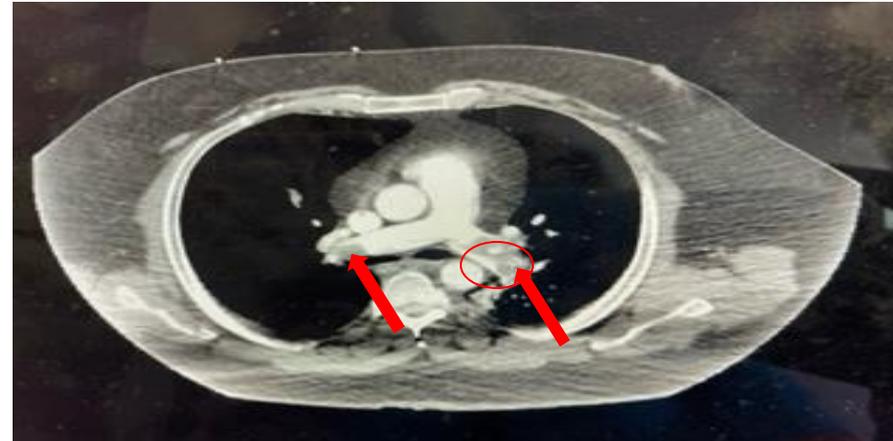
Lab Results: Normal CBC, Creatinine- 0.9 mg/dl, BNP- 180 pg/mL, D-dimer- 1900 ng/mL, troponin- 4.77 ng/IL, CKMB 15.8, CPK-184 U/L
Blood gas analysis: Ph 7.18, PaCO2 31 mmHg, PaO2 55 mmHg

EKG: Sinus tachycardia

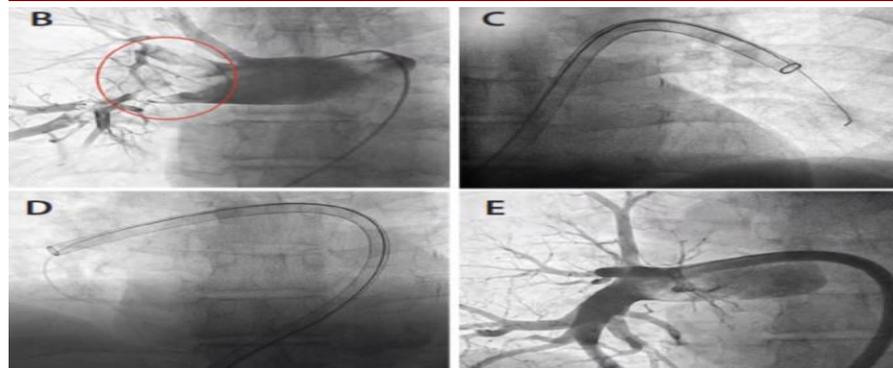
Echocardiogram Results: There is flattening of the intraventricular septum w/ asymmetric dilation of the right ventricle and right atrium relative to the left, consistent w/ right heart strain.

CT Pulm Angiogram: Acute saddle pulmonary emboli extends across the midline into the right & left pulmonary arteries with extension into multiple lobar segmental and subsegmental pulmonary arteries w/ evidence of right heart strain

Pre-op CT images



Intra-op images



Outcome



The case study represents a patient with "High Risk PE" - hemodynamically unstable (acute dyspnea, hypotension, tachycardia, elevated biomarkers, found to have acute saddle PE in the right & left pulmonary artery w/ right heart strain. He underwent successful mechanical thrombectomy (removal of pulmonary artery clot w/ catheter). Postoperatively, he was normotensive, SaO2- 98% on RA & reported complete resolution of dyspnea immediately post procedure and one-month post-procedure. **According to ACC Guidelines, patients with the presence of hypotension, RV strain by biomarkers and imaging indicates high risk PE, have a poor prognosis, and are recommended catheter-directed thrombectomy.**

Discussion

Advanced practice providers that understand the clinical presentation of a patient with symptoms of acute PE and order and interpret the appropriate test will allow prompt assessment, intervention and save patient lives from VTE complications.

References- Can be provided upon request to JLewis8@mdanderson.org