

Modern Management of Massive Pulmonary Emboli with Concurrent Splenic Hematoma:

Navigating treatment challenges in a high-risk patient

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BACKGROUND

Massive pulmonary embolism (PE) carries a high risk of mortality. While anticoagulation and rescue thrombolysis are the first-line treatments, they carry a high risk of major bleeding. Pulmonary Embolism Response Team (PERT) allows for early evaluation and team-based decision-making in treatment of high-risk PE. Catheter-directed treatments offer safer alternatives to relieve obstructive shock and minimize bleeding risk.

PRESENTATION & HOSPITAL COURSE

A 59-year-old female experienced a syncopal episode and fall. She presented to the ED with BP 70/40, HR 150, and O₂ saturation >90% on 6L O₂. EKG showed sinus tachycardia with diffuse ST depressions. Hs-Troponin was 364. Thoracic CTA confirmed bilateral saddle emboli in the right and left main pulmonary arteries with right heart strain. Transthoracic echocardiogram (TTE) revealed a dilated right ventricle (RV:LV >1.2). Abdominal CT found a grade 3 splenic laceration with subcapsular hematoma. Norepinephrine was required to maintain MAP > 65. PERT was activated. Given the high bleeding risk with thrombolytics, emergent catheter-directed thrombectomy was performed successfully, resulting in rapid hemodynamic improvement. Successful coil embolization of the proximal splenic artery was performed immediately after thrombectomy. The patient's condition stabilized, and anticoagulation was resumed. After eight days, she was discharged home on oral anticoagulation. TTE performed two months later revealed normal RV size and function.

CONCLUSION

Catheter-directed thrombectomy is an attractive alternative in patients at high risk of major bleeding in massive PE. A robust PERT allows early recognition and utilization of individualized treatment strategies.

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While anticoagulation and rescue thrombolysis are first line treatments for massive pulmonary embolism, they are contraindicated in patients with a high risk of bleeding.

In patients complicated with high bleeding risk or active bleeding, catheter-directed treatments offer safer alternatives to relieve obstructive shock.

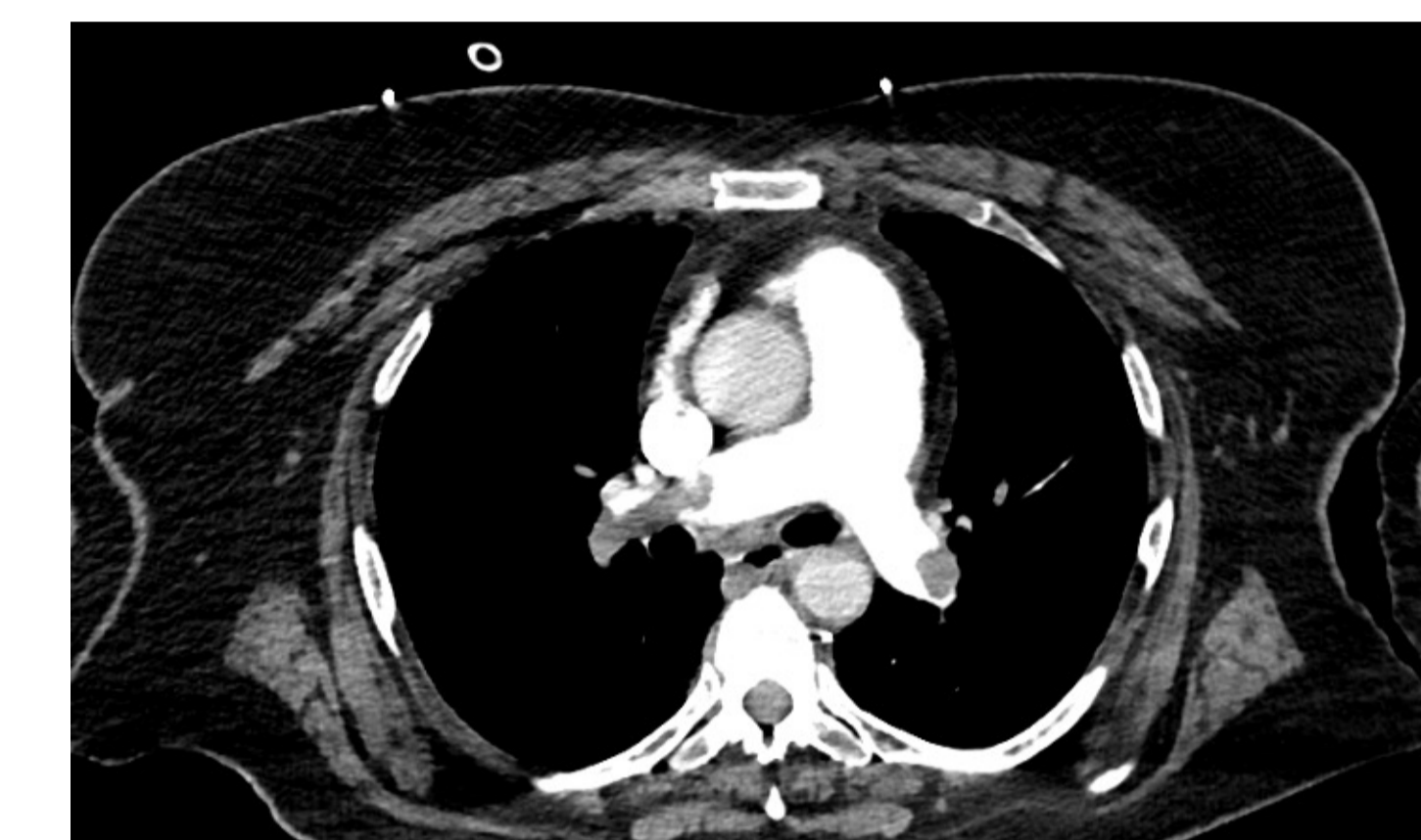
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DISCUSSION

Massive PE carries a mortality rate exceeding 30%. Thrombolytics are the recommended first-line treatment, but they were contraindicated due to the high risk of intra-abdominal bleeding. The multidisciplinary PERT approach allowed for a modern and timely alternative treatment strategy. Catheter-directed thrombectomy for PE followed by coil embolization of the splenic artery resulted in the resolution of obstructive shock and a safe discharge home.

IMAGING

CTA chest w/ contrast



Day 1, 6:22pm: Bilateral saddle emboli in the right and left main pulmonary artery extending into the lobar and segmental upper and lower lobe branches. The main pulmonary artery is dilated measuring 3.7 cm. There are findings of elevated right heart strain with flattening of the interventricular septum and reflux of contrast into the hepatic veins.

CT ab/pelvis w/ contrast



Day 1, 6:23pm: There is an area of ill-defined decreased attenuation in the medial aspect of the spleen concerning for laceration.

CTA ab/pelvis w/wo contrast



Day 2, 5:46pm: Imaging taken status post splenic artery coil embolization and PE thrombectomy. Previously seen splenic laceration is redemonstrated with no interval changes. No CT findings of complication.

REFERENCES

- 1) Silver M, Giri J, Duffy A, Toma, C, Tu T, Horowitz J. Incidence of Mortality and Complications in High-Risk Pulmonary Embolism: A Systematic Review and Meta-Analysis. *Journal of the Society for Cardiovascular Angiography and Interventions*. 2023; 2(1). doi.org/10.1016/j.jscai.2022.100548.

DISCLOSURES

Bret K Farrow-Cypel: no relevant disclosures