Management of acute severe pulmonary embolism in pregnancy: Case report

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BACKGROUND

The risk of venous thromboembolism (VTE) is higher in pregnant women as compared to the non-pregnant women; the risk increases during pregnancy and peaks during the early postpartum period. While the prevalence of confirmed PE remains low, reported at 2-7%, severe acute PE in pregnancy can be a devastating event with high mortality risk [1]. The algorithm for work-up and treatment will need to be tailored to the stage of pregnancy, balancing fetal and maternal well-being and the risks of interventions beyond anticoagulation when necessary.

CASE

26 year-old G1P0 pregnant woman in her first trimester (10+5 weeks gestational age) presented with acute shortness of breath and one unwitnessed episode of syncope. On arrival, she is normotensive but tachycardic with heart rate of 110 beats/min and 2L nasal cannula for oxygen supplementation. Cardiac biomarkers (troponin I, BNP) were elevated. CT pulmonary angiogram confirmed saddle embolism with occlusive clots within bilateral main pulmonary artery and features of right heart strain (Fig 1A-D.).

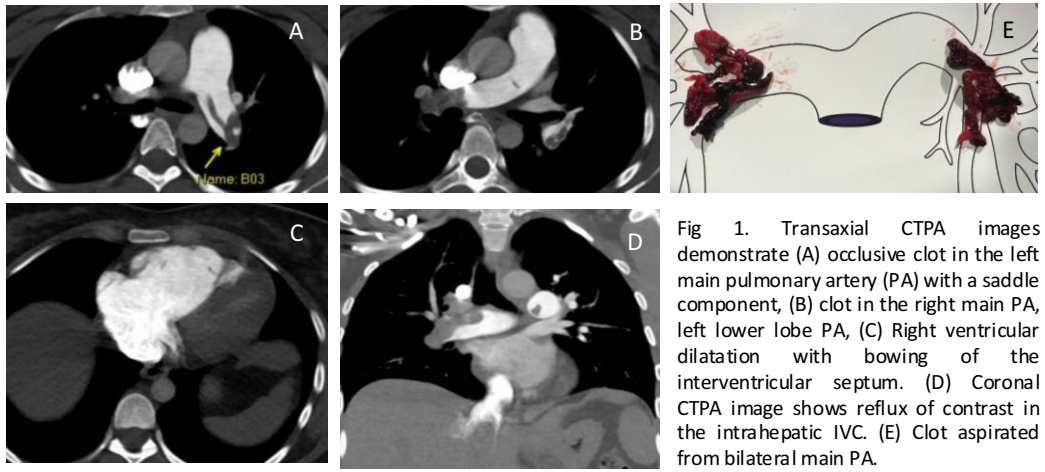

Fig 1. Transaxial CTPA images demonstrate (A) occlusive clot in the left main pulmonary artery (PA) with a saddle component, (B) clot in the right main PA, left lower lobe PA, (C) Right ventricular dilatation with bowing of the interventricular septum. (D) Coronal CTPA image shows reflux of contrast in the intrahepatic IVC. (E) Clot aspirated from bilateral main PA.

The patient was initiated on weight-based low molecular weight heparin upon confirmation of diagnosis and PE response team (PERT) was activated. While patient remained normotensive, tachycardia and oxygen requirement worsened; she was referred for mechanical thrombectomy for rapid clot debulking per PERT recommendations. Patient underwent uncomplicated thrombectomy without use of any thrombolytics (Fig 1E). She was discharged well, compliant on anticoagulation at follow up and continued with a normal pregnancy.

DISCUSSION

Management of PE in pregnancy is challenging as it can be difficult to distinguish presenting symptoms from "physiological" symptoms of pregnancy. There is also limited data and established algorithms for diagnosis and treatment in available guidelines [2]. Treatment of hemodynamically stable patients is similar to non-pregnant patients, but diagnostic algorithm may vary [2,3]. For unstable patients, thrombolytic therapy should be considered if there are no absolute contraindications. Bleeding risk remains high in peripartum and early post partum period, especially in patients with spinal or epidural anesthesia. Systemic thrombolysis should only be considered in life threatening condition. Catheter directed treatment (i.e. low dose thrombolytics or mechanical thrombectomy) and surgical thrombectomy are alternative options (Fig 2) [2-4]. ECMO for mechanical circulatory support can be used as bridging therapy until thrombolysis or mechanical embolectomy is applied. If clinical suspicion for PE is high, anticoagulation should be initiated while work up is ongoing.

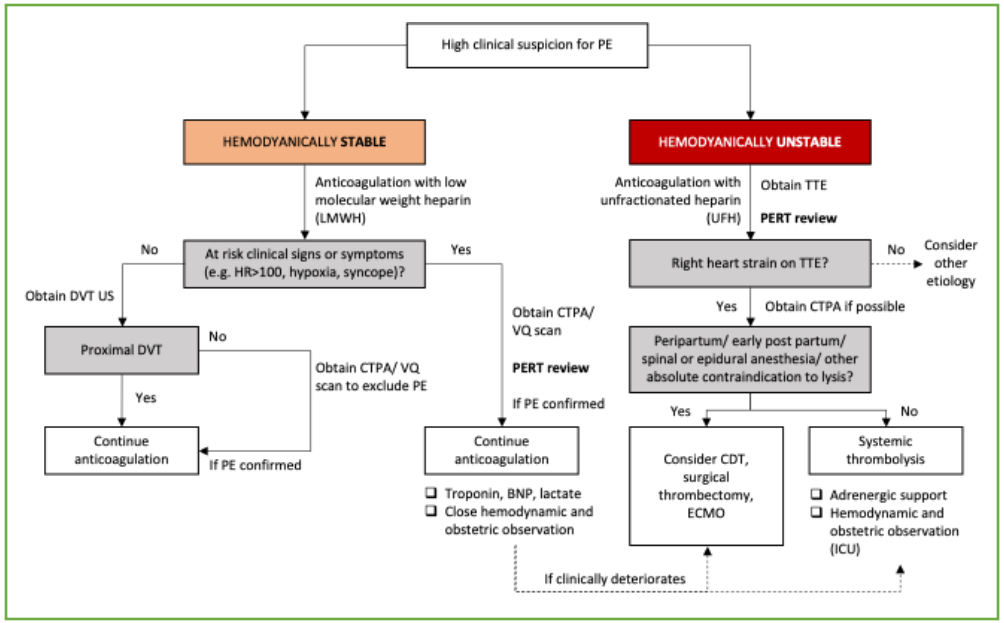

Fig 2. Proposed diagnostic and treatment algorithm in stable and unstable pregnant patients with PE

KEY LEARNING POINTS

1. Severe acute PE in pregnancy remains rare but carries high mortality risk. Work up and treatment need to be tailored to stage of pregnancy and severity of PE.
2. A multidisciplinary approach in form of PERT with specialty expertise is greatly beneficial.
3. Given high bleeding risk, especially in peripartum and early post partum, and with spinal or epidural anesthesia, advanced therapies beyond anticoagulation should be reserved for borderline high risk/high risk PE patients for rescue reperfusion. Catheter directed therapies can be an effective alternative to systemic thrombolysis.

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