

Hemorrhagic regional pericardial tamponade following CPR and the Power of POCUS

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Background

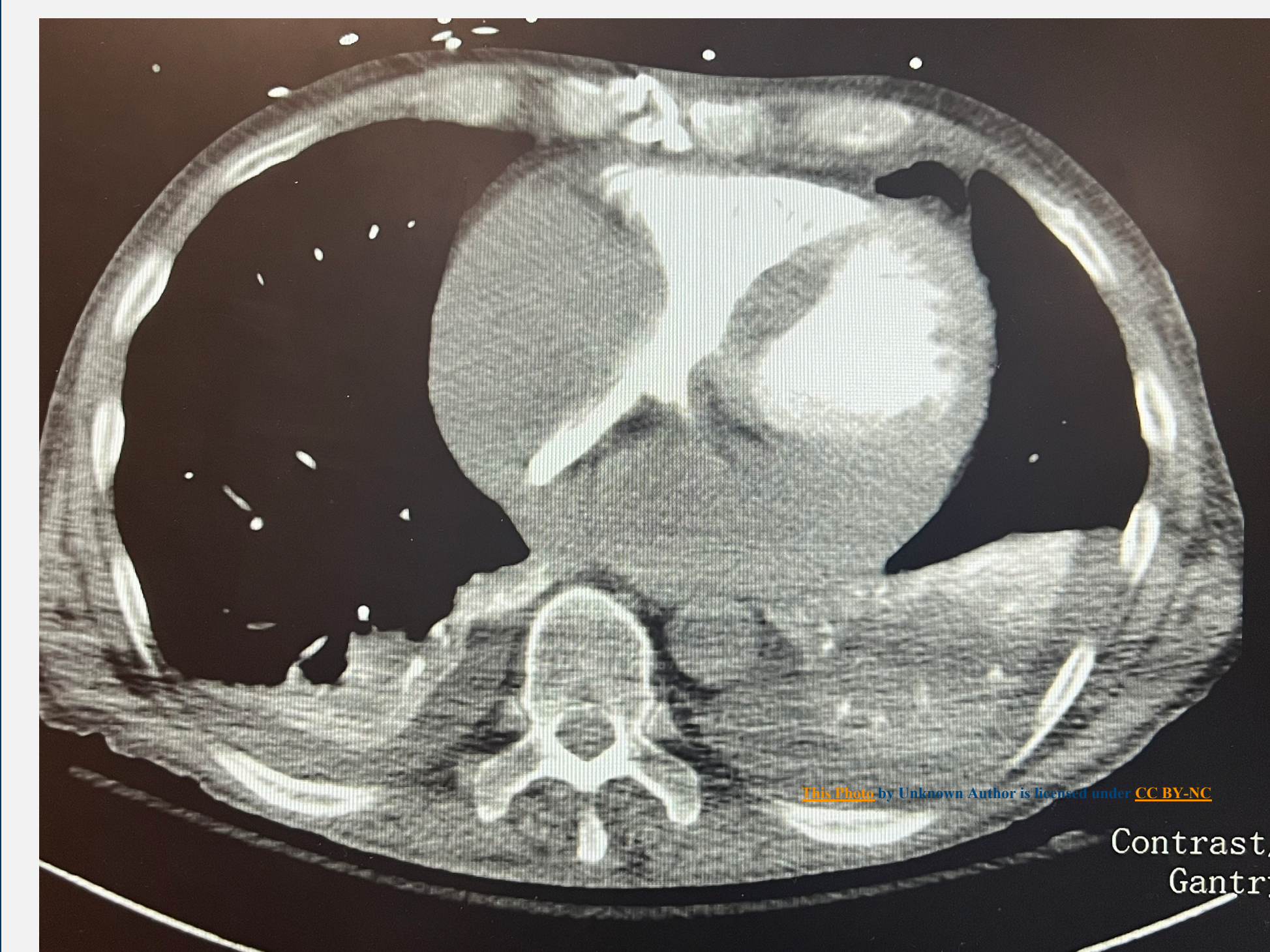
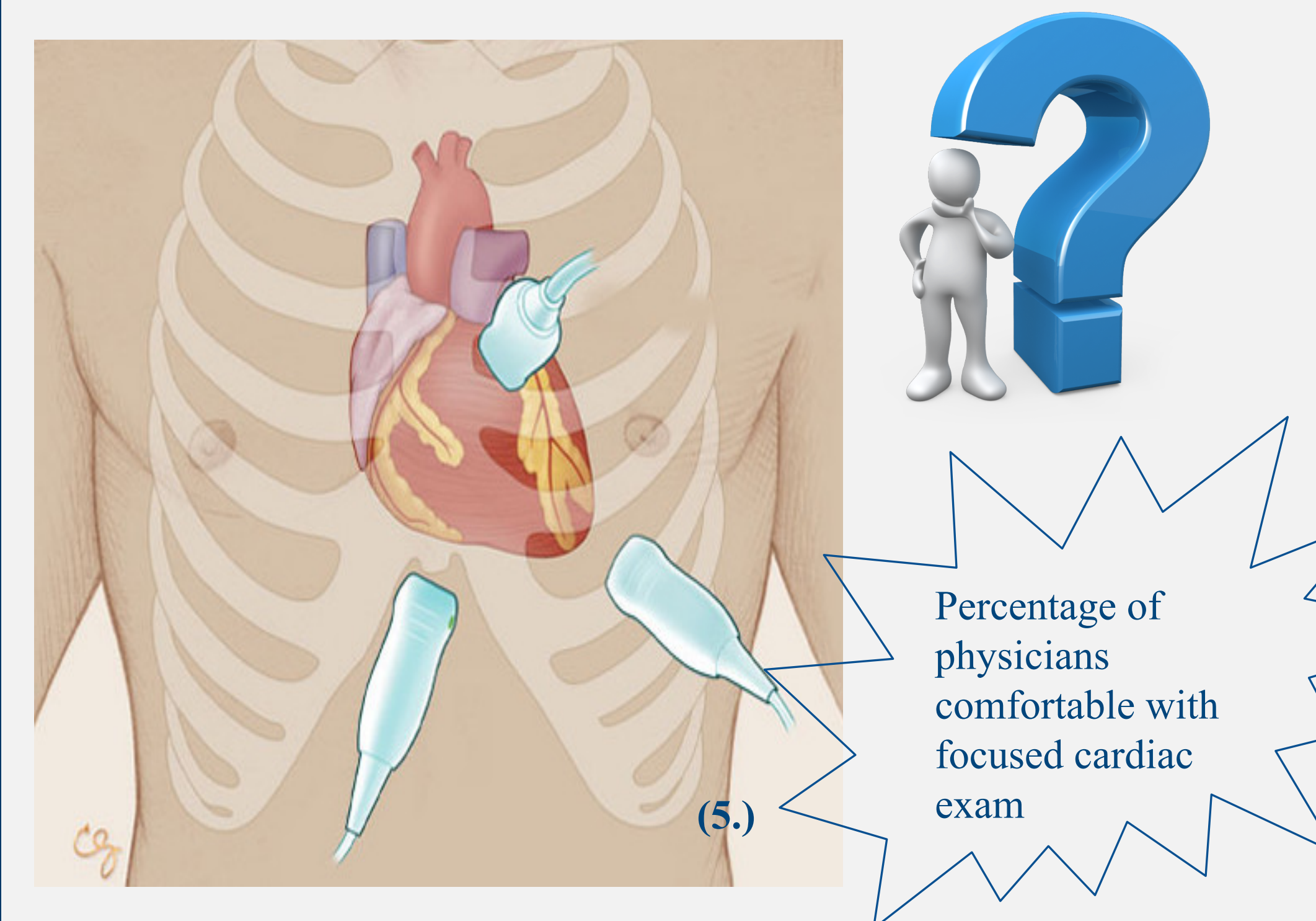
The incidence of thoracic injuries from cardiopulmonary resuscitation is not well characterized and varies widely.¹ Serious complications are often associated with unsuccessful out-of-hospital resuscitation.² There are no guidelines available for the assessment of CPR complications during in hospital cardiac arrest specifically those involving patient on full dose anticoagulation. Furthermore, increasingly more physicians are incorporating POCUS to guide medical management however it is not yet widely accepted despite the diagnostic value.

Case Presentation

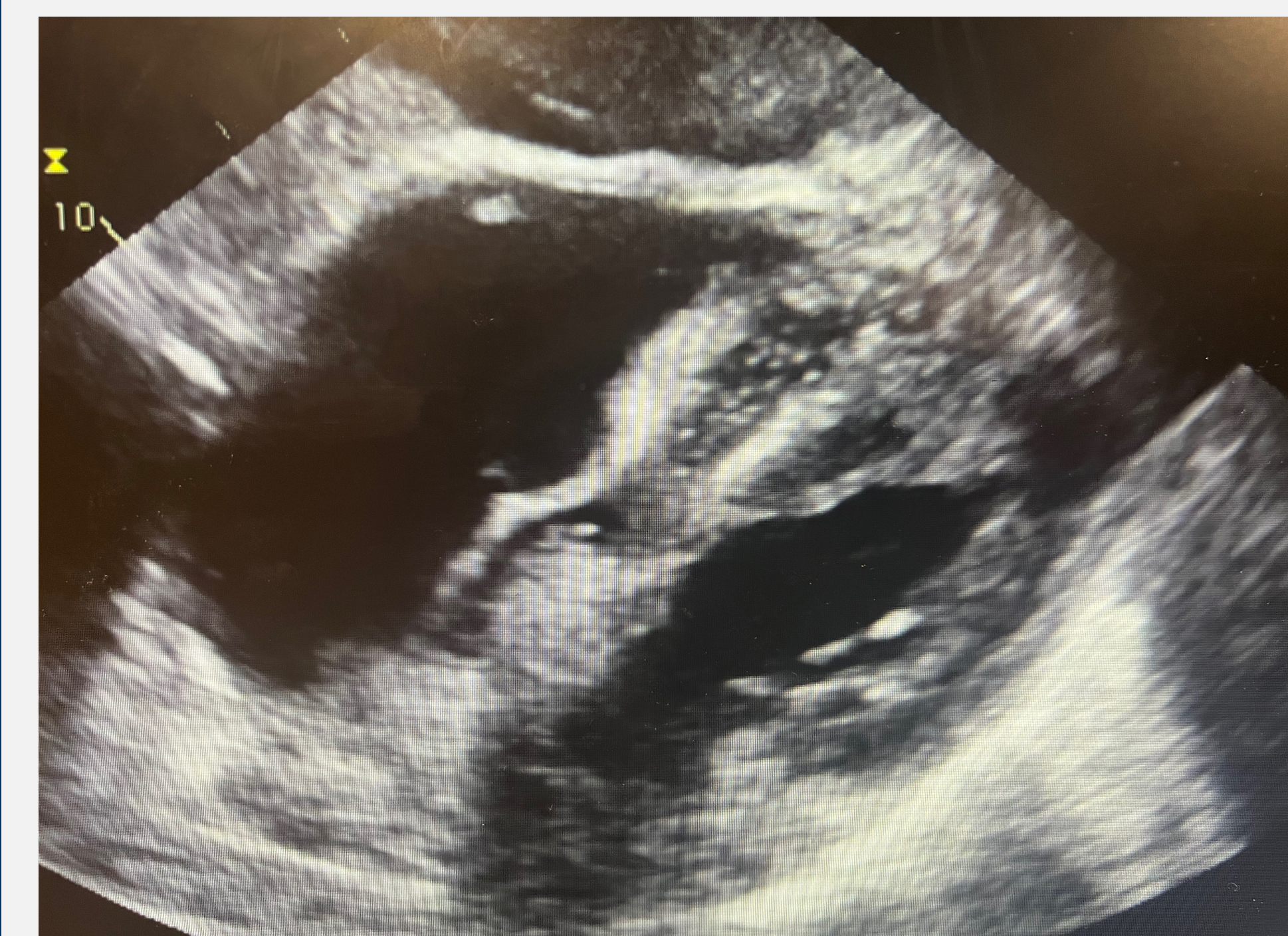
73-year-old male with a past medical history of ESKD, thoracic aortic aneurysm status post open surgical repair, tracheal stenosis secondary to prolonged endotracheal intubation, atrial fibrillation on DOAC was admitted to the hospital for repair of AV graft. The hospital course was complicated by an aspiration event resulting in a four-minute PEA arrest requiring ACLS and emergent intubation.

- Post-cardiac arrest patient was hemodynamically stable. Twelve hours later, patient became bradycardic and hypotensive requiring vasopressor support.
- Prompt bedside point-of-care ultrasound (POCUS) revealed pericardial effusion around the right ventricle causing tamponade physiology. Interventional cardiology (IC), interventional radiology (IR) and cardiothoracic surgery (CTS) were consulted immediately.
- Consultants requested formal imaging prior to next steps in management
- CTA of chest and ECHO revealed large loculated pericardial effusion in the right and posterior aspects of the heart causing right ventricular collapse and mass effect on the right atrium and SVC.
- CTS and IC deemed patient was too high risk to undergo intervention. IR performed an emergent bedside pericardial drainage, aspirating 500cc dark frank blood with immediate improvement in hemodynamics.

Imaging



CTA Chest: abnormal soft tissue density in the right and posterior aspects of the heart with mass effect on the right atrium, SVC and pulmonary veins.



ECHO: Severe collapse of RV secondary to localized large anterior pericardial effusion

Discussion

Our patient had delayed hemopericardium resulting in cardiac tamponade following CPR. Being on full dose anticoagulation likely played a role in the development of cardiac tamponade. Guidelines regarding complications of CPR on a patient on full anticoagulation do not exist and are needed.

Prompt utilization of point of care ultrasound by internal medicine residents during pre-rounds allowed for the rapid identification of severe right ventricular collapse and led to rapid escalation of care and involvement of multidisciplinary care team. Prognosis of cardiac tamponade depends on early recognition and treatment and is rapidly fatal if not considered early in the patient's encounter. This case illustrates the utility of POCUS as an extension of the physical exam, and we hope physicians across all fields continue to become more comfortable with its practice.

References

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Timeline

