Traumatic Aortic Injury

Lucas Frickey July 19, 2021
Focused patient history and workup

- 63 y/o man who presents to ED as a red trauma transfer from OSH following pedestrian vs. vehicle trauma
- GCS 15 on scene but GCS 7 after arrival at OSH requiring intubation
- CT showed descending aortic injury
- Prior to transfer, OSH placed chest tube and initiated massive transfusion protocol
- Shortly after arrival, patient lost pulse. Return of spontaneous circulation (ROSC) obtained after chest compressions, epinephrine, PRBC’s, and FFP
- Received total of 6 units PRBC’s, 5 units FFP, and 1 unit platelets before being taken to OR
List of imaging studies

• All from OSH
  • CXR
  • X-ray Pelvis
  • CT Chest, Abdomen, and Pelvis
  • CT Face
  • Cervical Spine CT
  • Non-Con Head CT
ET Tube

Chest Tube

Fracture

Widened Mediastinum
Hemothorax

Periaortc Hematoma
Contrast Extravasation from Aortic Rupture
Patient treatment or outcome

- Upon ROSC, he was immediately taken to OR for exploratory thoracotomy and TEVAR by Vascular Surgery. Left sided chest tube was also placed.
- Bilateral renal infarcts resulting in acute renal failure and continuous renal replacement therapy.
- Discharged to rehab facility after ~2 months.
Chest CT vs Transesophageal Echocardiography (TEE)

- Both are highly sensitive for aortic injury
- CT
  - Requires contrast
  - Equivocal study necessitates angiography
  - Scanner availability
- TEE
  - Can be performed at bedside
  - May be preferred in hemodynamically unstable patient who is intubated
  - No radiation
  - Limited in proximal ruptures
Imaging Findings of Traumatic Aortic Injury (w contrast)

- Intimal flap
- Periaortic hematoma
- Intramural hematoma (seen in image A)
- Luminal filling defect
- Aortic contour abnormality (seen in image B)
- Pseudoaneurysm
- Vessel wall disruption
- Active extravasation

Imaging Findings of Traumatic Aortic Injury (CXR)

Normal trauma mediastinum for comparison

- Widened mediastinum >8cm level arch
- Obscured irregular aortic arch
- Deviation of the trachea to right of T4 spinous process
- Deviation of NGT to right of T4 spinous process
- Left apical cap
Aortic Injury Grading

In a study of 332 patients with blunt thoracic aortic injuries:
- Aortic related mortality for Grades I & II = 0%
- Aortic related mortality for Grade III = 1.6%
- Aortic related mortality for Grade IV = 37.5%

**However, 86 patients excluded from study d/t death prior to CT scan**

Take Away Points

1. CT and TEE are preferred tests when there is concern for aortic injury
2. Very low mortality for grade I and II aortic injuries, but they may progress to higher grades
3. The (literal) downstream effects of aortic injury result from ischemia, as in this case
References


