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Visual Case Discussion

Back pain and aortic dissection

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Visual Case Discussion

A 55 year old African American male smoker presents with severe midline lower lumbar pain, constant, dull, with radiating pain to the left abdominal area and left lower extremity for 5 days. Reports nausea, diaphoresis, and shortness of breath. Denies any chest pain, numbness or weakness, passing out, inability to walk, bowel or bladder incontinence, decreased urine production or hematuria. His medical history is significant for uncontrolled hypertension, DVT of the left lower extremity with an IVC filter and venous stent.

Vitals at triage were T 36.7 °C, HR 76, BP 165/102, RR 17, Sat 98%. On physical exam, the patient appeared to be in distress from pain, and was diaphoretic. Cardiovascular and pulmonary exam were normal. Abdominal exam was soft without bruising or palpable masses. Epigastric and left lower abdominal tenderness was elicited with both guarding and rebound tenderness. Pain was elicited in the lower thoracic and upper lumbar regions without costovertebral angle tenderness. His upper and lower extremities were neurovascularly intact.

A point of care ultrasound was immediately performed looking at the abdominal aorta, with video shown in Fig. 1.

The patient was found to have an abdominal aorta measuring 5.52 cm in the sagittal view and 4.86 cm in the transverse view with evidence of an intimal flap as well as bidirectional blood flow. A vascular surgery consult was placed. After the initial encounter and POCUS, further chart review was performed. It was found that the patient was diagnosed with an incidental abdominal aorta measuring 4.2 cm during a workup for left lower extremity aneurysms one month prior to ED presentation. The patient went on to have a CT chest, abdomen and pelvis which demonstrated a type B dissection originating just inferior to the SMA origin and into the left common iliac artery and origin of the IMA Figs. 2 and 3. He was medically managed with blood pressure control and ultimately went on to have definitive surgical repair.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.visj.2018.10.003.

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Questions

1. Which medication is a considered first line agent for blood pressure control in a patient with an aortic dissection?
   a. Esmolol
   b. Nitropruside
   c. Lisinopril
   d. Lasix

2. The risk of rupture increases significantly when an aneurysm exceeds how many cm?
   a. 1 cm
   b. 2 cm
   c. 3 cm
   d. 4 cm
   e. 5 cm

Answers

1. Esmolol. Explanation: The goal in acute management is to control both heart rate and blood pressure. Maintain a heart rate of < 60 BMP and systolic pressure between 100-120 mmHg. Initial beta blockade is the cornerstone of medical management. Esmolol is a good choice because it is short acting enabling clinical use when there are relative contraindications to beta blockade. Labetalol is an excellent choice as it has both beta 1 and beta 2 blockade as well as alpha blockade. Nitroprusside can be used, but never before heart rate is controlled by beta blockade first. Lisinopril would is an ace inhibitor and lasix is a diuretic and are not considered first line agents. Reference: Tintinalli, Judith; Stapczynski, J.; Ma, O. John; Cline, David; Cydulka, Rita; Meckler, Garth. Chapter 62 Aortic Dissection and related aortic syndromes. Tintinalli's Emergency Medicine: A Comprehensive Study Guide, Seventh Edition (Book and DVD): A Comprehensive Study Guide, 7th Edition McGraw-Hill Educatio.

2. 5 cm. Explanation: Abdominal aortic aneurysm is defined as a dilation equal to or greater than 3 cm in diameter, measured from outer wall to outer wall in the transverse AP view. Repair is considered when an aneurysm exceeds 5 cm due to increase risk of rupture. In studies emergent POCUS had a high degree of accuracy in detecting the presence or absence of an aneurysm, as high as 98% in one study. Reference: Shuman, W.P., et al. Suspected Leaking Abdominal Aortic Aneurysm: Use of Sonography in the Emergency Room. Radiology. 1988 July; 168(1): 117-119.