

AMSER Case of the Month: December 2018

Widened Mediastinum on CXR

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Patient Presentation

- 57 y/o M presents to the ED for 3 days of cough, subjective fever, and pleuritic chest pain.
- PMHx:
 - CAD with NSTEMI and 3 vessel PCI (refused CABG) in 2003
 - HTN, HLD
- SHx: Alcohol use disorder (5 drinks nightly), cocaine use, active ½ ppd smoker with 30 pack year history
- FHx: Non-contributory
- Physical Exam: T 37.1, HR 71, BP 149/92, RR 16, SpO2 96%
 - No positive physical exam findings

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

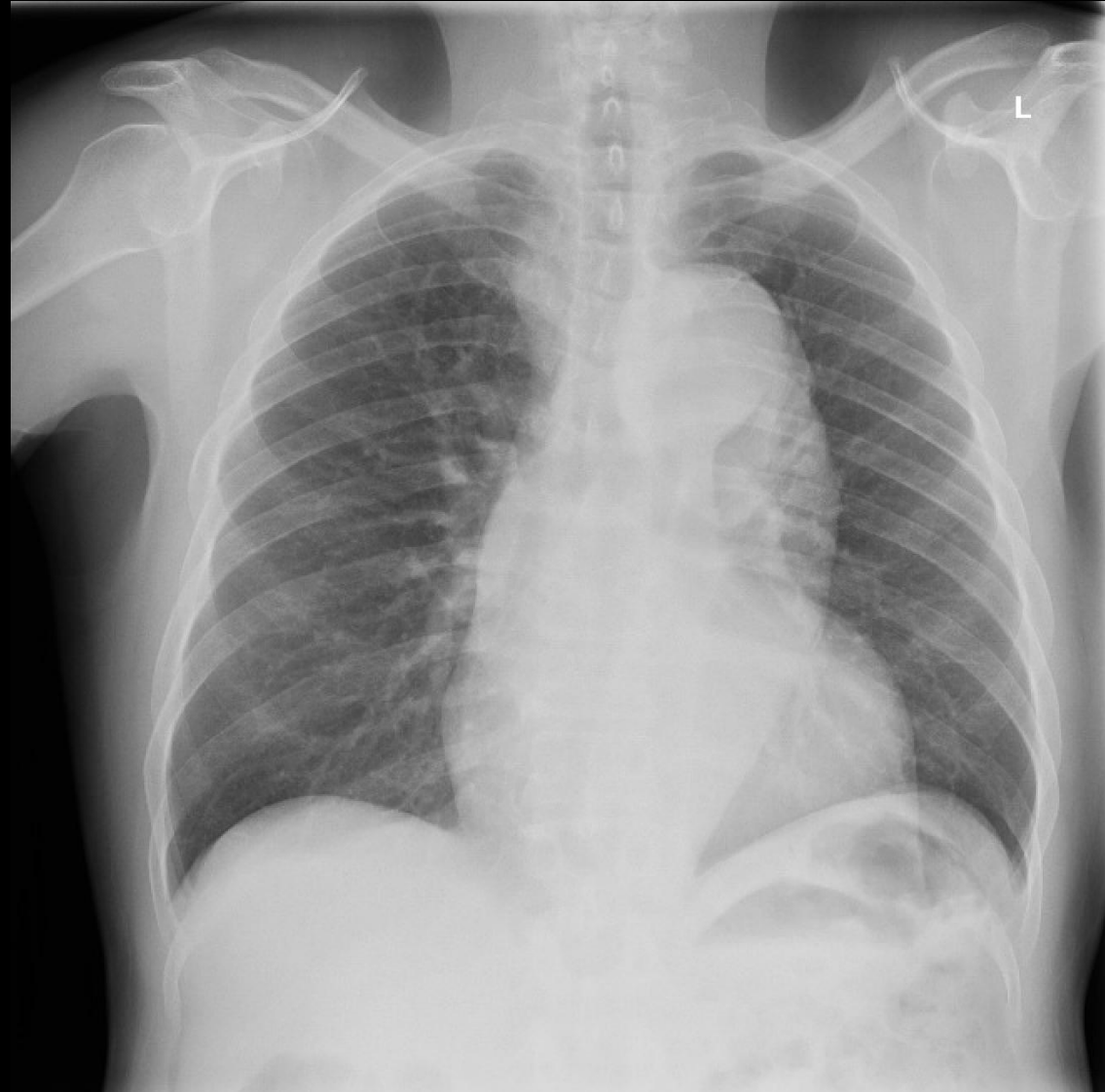
**American College of Radiology
ACR Appropriateness Criteria®
Acute Respiratory Illness in Immunocompetent Patients**

Variant 1: **Acute respiratory illness in immunocompetent patients with negative physical examination, normal vital signs, and no other risk factors. Initial imaging.**

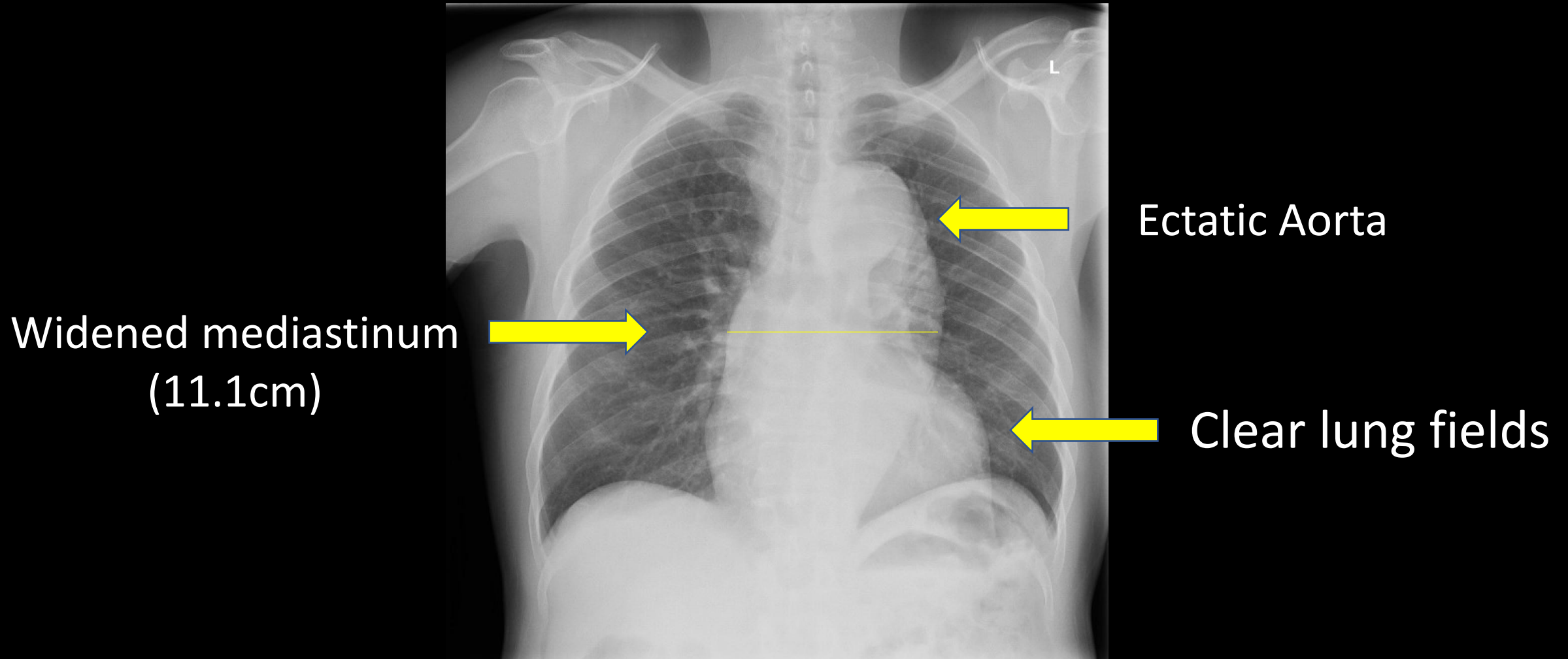
Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	☼
CT chest with IV contrast	Usually Not Appropriate	☼ ☼ ☼
CT chest without and with IV contrast	Usually Not Appropriate	☼ ☼ ☼
CT chest without IV contrast	Usually Not Appropriate	☼ ☼ ☼
MRI chest without and with IV contrast	Usually Not Appropriate	○
MRI chest without IV contrast	Usually Not Appropriate	○
US chest	Usually Not Appropriate	○

This imaging modality was ordered by the ER physician

Findings



Findings (labeled)



Is additional imaging needed?

Select the applicable ACR Appropriateness Criteria

Complaint of chest pain and widened mediastinum on CXR raised suspicion of aortic dissection

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Clinical Condition: Acute Chest Pain — Suspected Aortic Dissection

Radiologic Procedure	Rating	Comments	RRL*
X-ray chest	9	This procedure should be performed if readily available at the bedside and if it does not cause delay in obtaining a CT or MRI scan. Alternative causes of chest pain may be discovered. This is not the definitive test for aortic dissection.	☼
CTA chest and abdomen with IV contrast	9	This procedure is recommended as the definitive test in most patients with suspicion of aortic dissection.	☼☼☼☼
MRA chest and abdomen without and with IV contrast	8	This procedure is an alternative to CTA for contraindication to CT (iodinated contrast), multiple prior chest CTA for similar symptoms, and in patients showing no signs of hemodynamic instability. Scanner availability and local expertise limit widespread use, as there is potential for delay in diagnosis.	○
US echocardiography transesophageal	8	Consider this procedure if a skilled operator is readily available.	○
MRA chest and abdomen without IV contrast	7	This procedure is an alternative to CTA for patients with contraindication to both iodinated and gadolinium contrast agents, such as in patients with renal failure, patients with multiple prior chest CTA for similar symptoms, and in patients showing no signs of hemodynamic instability. Scanner availability and local expertise limit widespread use, as there is potential for delay in diagnosis.	○
Aortography chest and abdomen	5		☼☼☼☼
US echocardiography transthoracic resting	4		○
FDG-PET/CT skull base to mid-thigh	3	This procedure is not recommended as the initial test. It may be useful for prognostication and for distinguishing acute from chronic dissection.	☼☼☼☼

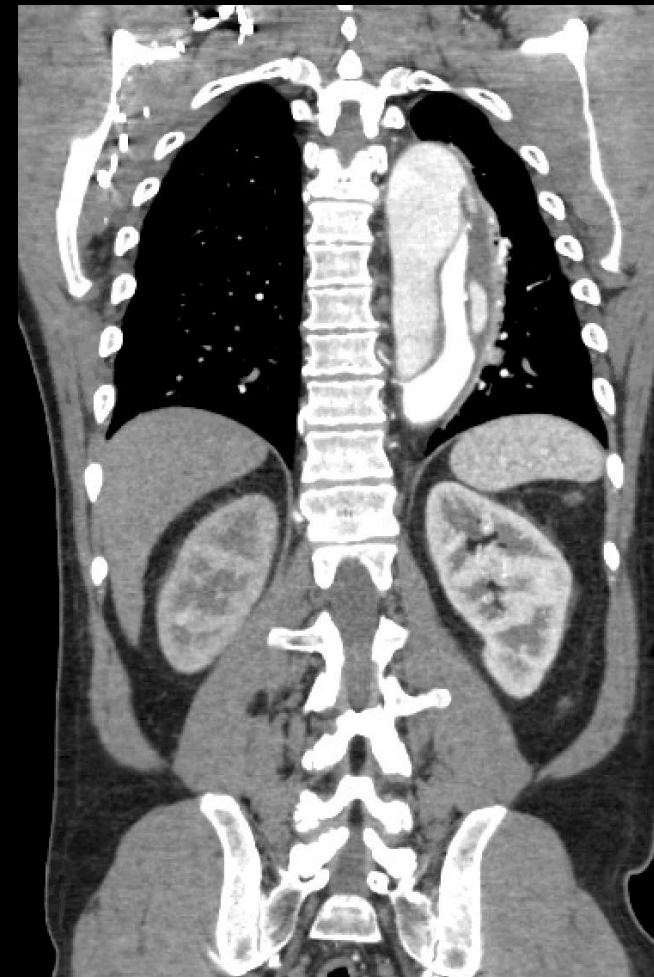
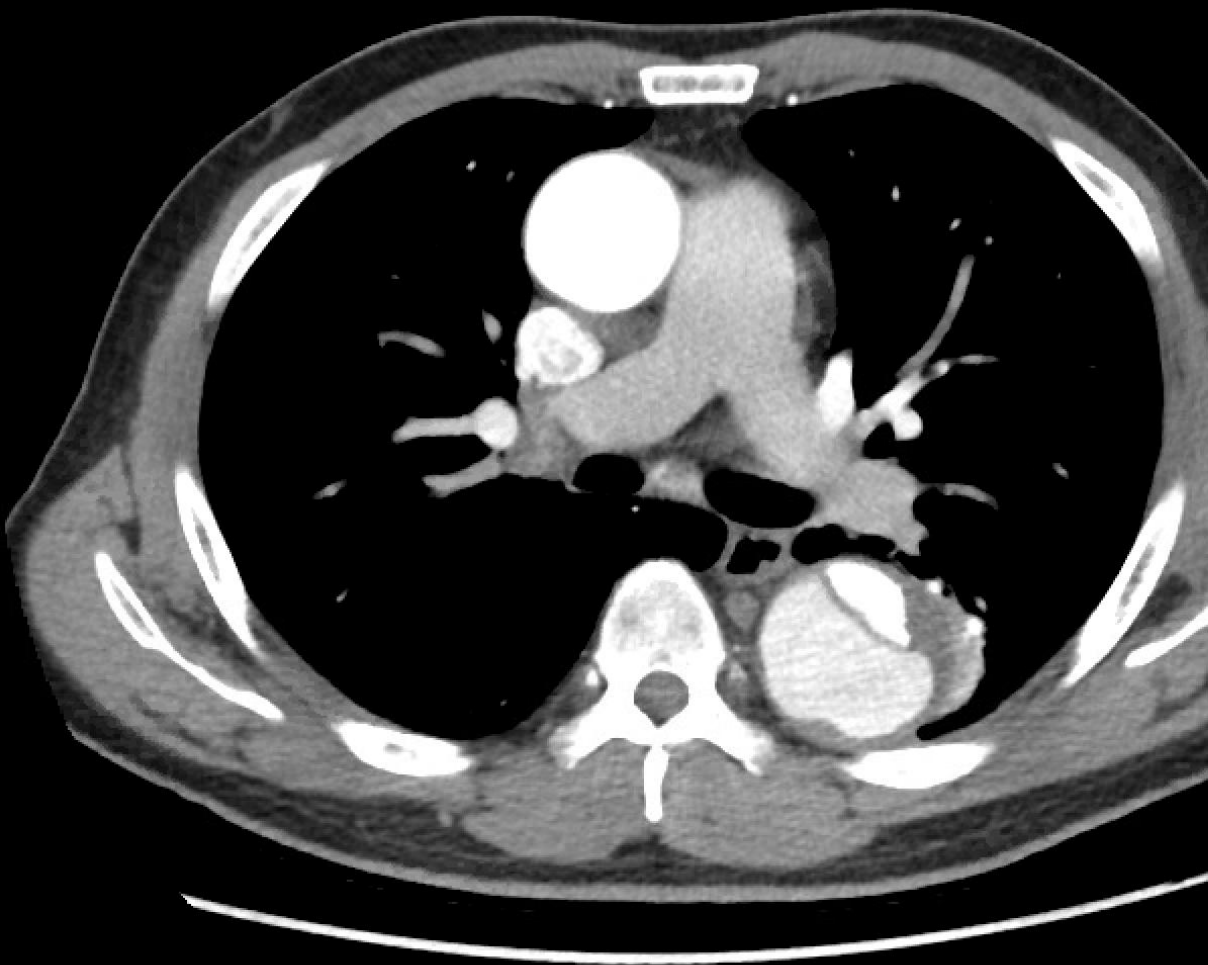
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level

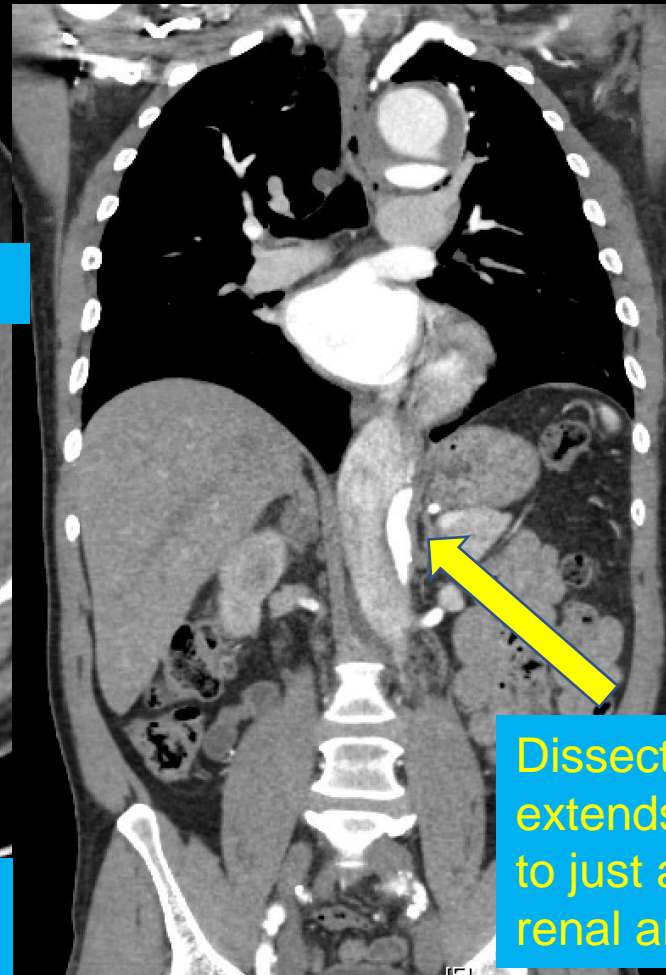
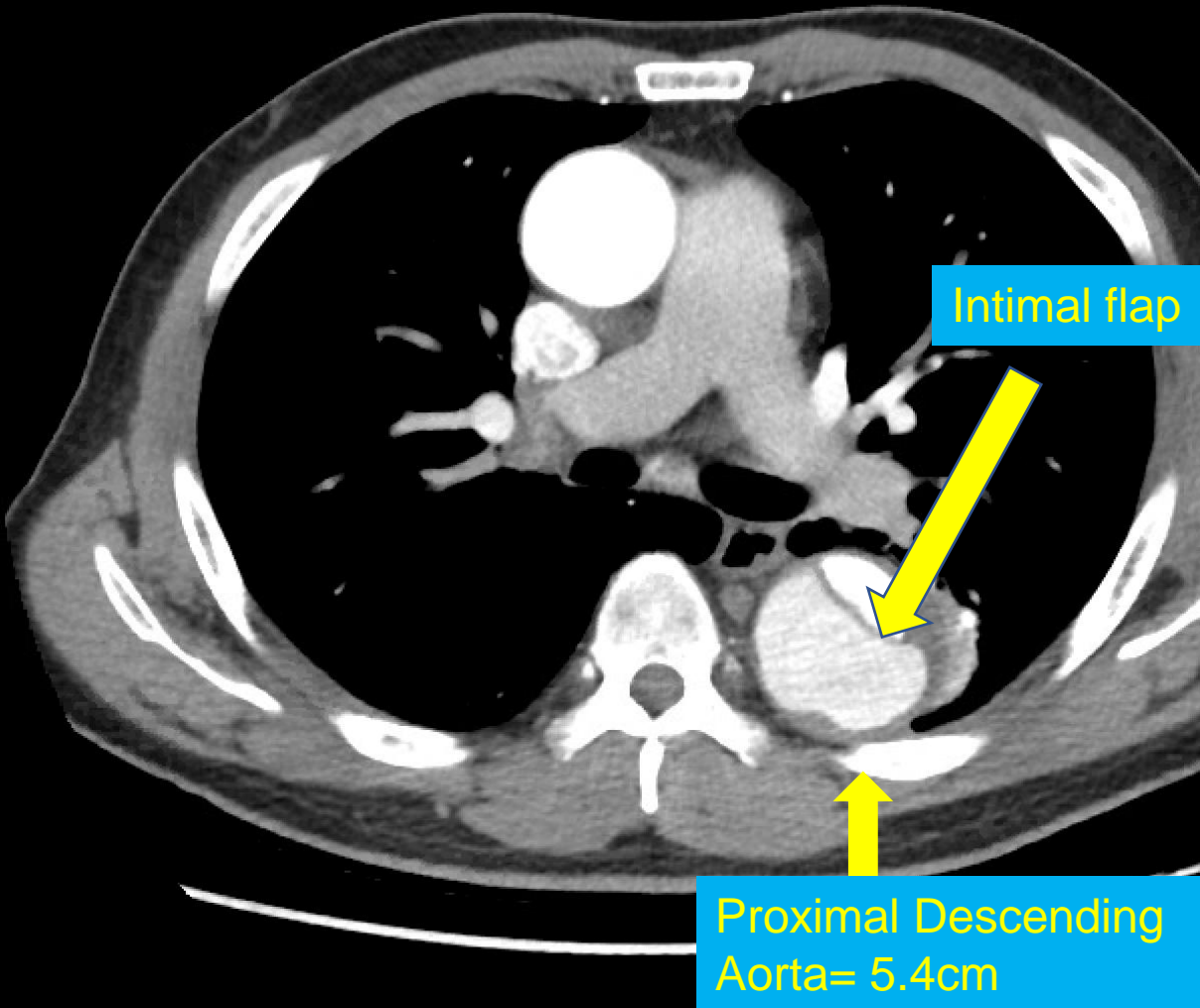
This imaging modality was ordered by the ER physician



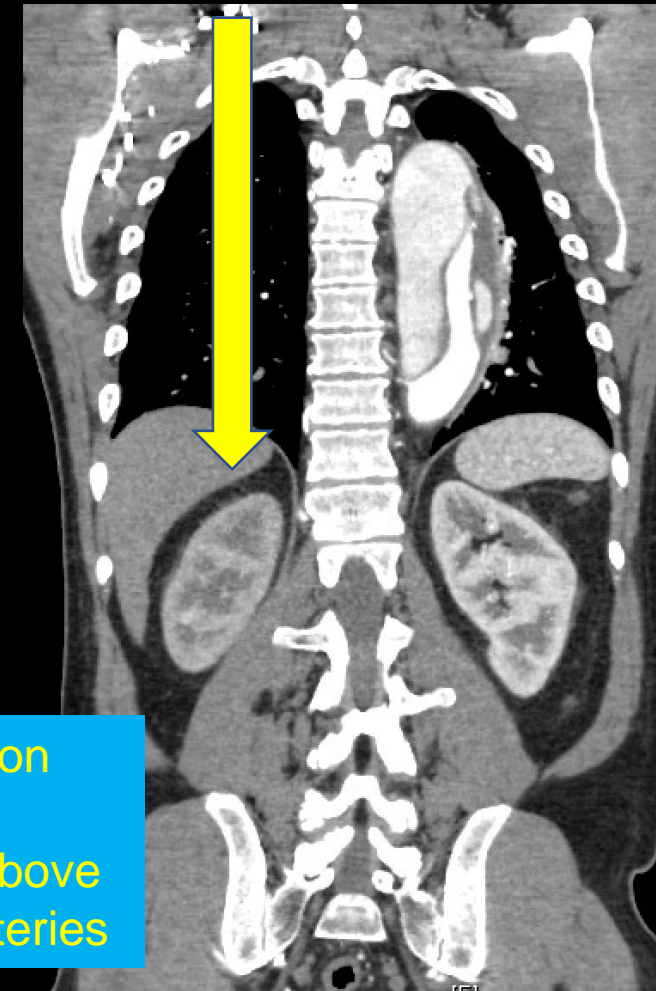
Findings



Findings



Hypoperfusion of the right kidney in early arterial phase



Final Dx:
Dissecting type B Aortic Aneurysm

Case Discussion: Aortic Dissection

- Typical presentation: sharp, sudden onset, tearing chest pain and hemodynamic instability
- Pathophysiology: A tear in the aortic intima allowing for blood to pass through tear into the media or “false lumen”
- Classification: Stanford type A (ascending aorta and arch) or B (descending aorta)
- Risk Factors: Hypertension, connective tissue disorders (Marfan’s, Ehler Danlos, preexisting aortic aneurysm, aortic coarctation)
- Imaging DDX: Must differentiate from intramural hematoma (better visualized on non-contrast CT which will show hyperattenuating crescent and no intimal flap)
- Treatment: Type A: endovascular repair. Type B: medical management

References:

- Jokerst C, Chung JH, Ackman JB, et al. Acute Respiratory Illness in the Immunocompetent Patient. Available at <https://acsearch.acr.org/docs/69446/Narrative/>. American College of Radiology. Accessed 10/28/18.
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- Larson EW, Edwards WD. Risk factors for aortic dissection: a necropsy study of 161 cases. Am J Cardiol 1984;53:849-55.
- Chao CP, Walker TG, Kalva SP. Natural history and CT appearances of aortic intramural hematoma. Radiographics 2009;29:791-804.