AMSER Case of the Month
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HPI: 48 y.o. male with HTN presenting to the ED with chest pain

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Patient Presentation

- HPI: 48 y.o. male presenting to the ED with sharp chest pain radiating to his right shoulder upon waking.

- Vitals: BP - 250/140, HR - 60, SaO2 - 96%

- PMHx / PSHx:
  - HTN on multiple medications with poor compliance.
  - Chronic Type B Aortic Dissection s/p TEVAR
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Scenario Id</th>
<th>Procedure</th>
<th>Adult RRL</th>
<th>Peds RRL</th>
<th>Appropriateness Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>3194179</td>
<td>US echocardiography transesophageal</td>
<td>0 mSv O</td>
<td>0 mSv [ped] O</td>
<td>Usually appropriate</td>
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<tr>
<td></td>
<td>Radiography chest</td>
<td>&lt;0.1 mSv</td>
<td>&lt;0.03 mSv [ped]</td>
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<td>MRA chest abdomen pelvis without and with IV contrast</td>
<td>0 mSv O</td>
<td>0 mSv [ped] O</td>
<td>Usually appropriate</td>
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<tr>
<td></td>
<td>CT chest with IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually appropriate</td>
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<td>MRA chest without and with IV contrast</td>
<td>0 mSv O</td>
<td>0 mSv [ped] O</td>
<td>Usually appropriate</td>
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<tr>
<td></td>
<td>CT chest without and with IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually appropriate</td>
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<tr>
<td></td>
<td>CTA chest with IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually appropriate</td>
</tr>
<tr>
<td></td>
<td>CTA chest abdomen pelvis with IV contrast</td>
<td>30-100 mSv</td>
<td>Not Assigned</td>
<td>Usually appropriate</td>
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<td>US echocardiography transthoracic resting</td>
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<td>0 mSv [ped] O</td>
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<td></td>
<td>Aortography chest</td>
<td>1-10 mSv</td>
<td>Not Assigned</td>
<td>May be appropriate</td>
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<tr>
<td></td>
<td>MRA chest abdomen pelvis without IV contrast</td>
<td>0 mSv O</td>
<td>0 mSv [ped] O</td>
<td>May be appropriate</td>
</tr>
</tbody>
</table>
AP Radiograph (unlabeled)
AP Radiograph Findings: (labeled)

- Initial CXR demonstrating mild widening of mediastinum (orange arrow)
- TEVAR stent graft in place (red arrow)
CTA TAP sagittal and axial (labeled)

- Acute Type A aortic dissection
  - False lumen = orange arrow
  - True lumen = blue arrow
    - Smaller lumen size and higher contrast density
- Chronic Type B with stent graft in place (green arrow)
- Chronic dissection of common iliac (yellow arrow)
• Flap occlusion of the right common carotid (orange arrow)

• Dissection extending up the left common carotid (blue arrow)
Final Dx:

Type A Aortic Dissection
Case Discussion: Type A Aortic Dissection

• Epidemiology / Risk Factors
  • Classically seen in elderly (>60 y.o.) hypertensive patients or underlying connective tissue disease (i.e: Marfan / Ehlers-Danlos)
    • Increased risk with:
      • HTN
      • Atherosclerosis, vasculitis
      • Pregnancy

• Pathogenesis
  • Excessive stress on the aortic wall resulting in tearing of the intimal wall, creating both a true and false lumen.

• Clinical Presentation
  • Hypertensive with possible discrepancies in left vs right UE blood pressures
  • Sudden severe chest pain with tearing quality.
    • Radiation to the neck, jaw or back
Case Discussion: Type A Aortic Dissection

• D\textsubscript{x}
  • Imaging of choice = CTA
    • Should include chest, abdomen and pelvis to assess mesenteric and iliac involvement
  • Stanford Classification
    • Type A – Proximal to the left subclavian origin
    • Type B – Distal to the left subclavian origin

• Imaging
  • Plain Radiographs: Widened mediastinum / mediastinal shifting / irregular aortic contours
  • CT:
    • True Lumen: Smaller in size due to compression and will likely have outer wall calcifications
    • False Lumen: Larger in size with lower contrast density.
      • Typically located anterolateral to the true lumen in Type A
      • Typically located posterolateral in Type B
Case Discussion: Type A Aortic Dissection

• **Treatment**
  
  • Type A Dissection = surgical emergencies
    
    • Aggressive reduction in HR and blood pressures with BB, nitroprusside, or CCB to prevent further dissection

  • This patient was immediately transferred for urgent surgery with Cardene drip. He underwent sternotomy with graft placement.

• **Prevention**
  
  • Blood pressure control and regular surveillance with imaging
References:


