AMSER Case of the Month
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53 y.o. female with anasarca

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PNWU-COM

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Patient Presentation

• HPI: 53 y.o. female presented to the ED with shortness of breath, upper and lower extremity edema, and leg erythema.

• Past Medical History: DM2, CHF (EF 25%), CV, methamphetamine abuse.

• Past Surgical History: None.

• Allergies: NKDA.

• Medications: Apixaban, aspirin, carvedilol, lisinopril, nitroglycerin.

• Social History: Daily methamphetamine use. Medication non-compliance.
Patient Presentation

- Physical Exam
  - Vitals: BP: 143/94, Pulse: 105, Temp 36.7 C (98.1), resp 21, SpO2 100% on room air, BMI 40.74
  - General: Acute distress
  - HEENT: No edema of head and neck
  - Cardiopulmonary: RRR, no murmurs. Wheezing present.
  - MSK: Upper and lower extremity edema, bilaterally.
Pertinent Labs

- CBC:
  - WBC 20.5
- BNP: 2,847
- Troponin: negative
- D-dimer: Not obtained.
- INR: 2.2
- aPTT: 37
- Urine toxicology: Positive for amphetamines.
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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</thead>
<tbody>
<tr>
<td>CTA pulmonary arteries with IV contrast</td>
<td>Usually Appropriate</td>
<td>🌟🌟🌟🌟</td>
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<tr>
<td>V/Q scan lung</td>
<td>Usually Appropriate</td>
<td>🌟🌟🌟</td>
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<tr>
<td>US duplex Doppler lower extremity</td>
<td>May Be Appropriate (Disagreement)</td>
<td>🌟🌟</td>
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<td>US echocardiography transthoracic resting</td>
<td>May Be Appropriate</td>
<td>🌟</td>
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<tr>
<td>MRA pulmonary arteries without and with IV contrast</td>
<td>May Be Appropriate</td>
<td>🌟</td>
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<tr>
<td>US echocardiography transesophageal</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>Arteriography pulmonary with right heart catheterization</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>MRA pulmonary arteries without IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>CT chest with IV contrast</td>
<td>Usually Not Appropriate</td>
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<td>CT chest without and with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>CT chest without IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>CTA chest with IV contrast with CTV lower extremities</td>
<td>Usually Not Appropriate</td>
<td>🌟🌟</td>
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<tr>
<td>CTA triple rule out</td>
<td>Usually Not Appropriate</td>
<td>🌟🌟</td>
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Well’s Criteria score was 4.5.
Findings (Unlabeled)

CT angiogram chest, coronal
Findings labeled

Findings: Occlusive thrombus from L subclavian extending to SVC. No pulmonary embolism.
Findings labeled (cont)

Findings: Note the engorged venous collaterals in the head, neck, chest.
Next step? IR thrombolysis.
Findings (Unlabeled)

Left UE, subclavian, BCV, and SVC angiography
Findings: Abrupt loss of flow involving left brachiocephalic vein
Findings (s/p interventions)

Balloon angioplasty of L-BCV

L-BCV lytic catheter placement

Findings: Improved flow of L BCV, near resolution of thrombus.
Final Dx:

Thoracic central venous obstruction, venous thoracic outlet syndrome
Thoracic central venous obstruction

• TCVO is a syndrome referring to obstruction of central thoracic veins - Subclavian, internal jugular, brachiocephalic, SVC, suprahepatic IVC.

• Etiology: (non-exhaustive)
  • Upper extremity DVT
  • Extrinsic compression – venous thoracic outlet syndrome, tumor/malignancy
  • Systemic hypercoagulability – thrombophilia, malignancy
  • Luminal narrowing – prior instrumentation

• Clinical features:
  • Head/neck/extremity edema, chest pain, arm pain, engorged superficial collateral veins.
There are four patterns, classified anatomically based on the location of affected veins:

- **Type 1**: One IJV or SCV is obstructed, both BCVs and the SVC are patent
- **Type 2**: Unilateral BCV obstruction or ipsilateral obstruction of the IJV and SCV
- **Type 3**: Both BCVs are obstructed, but flow to the right atrium passes through the SVC
- **Type 4**: Total SVC obstruction with no contribution to right atrium

Each type is associated with development of collateral circulation, the pattern of which is different for each category and typical for the location of the obstruction.
References:
