Cavitary Lung Lesions

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RAD 4001: Diagnostic Radiology
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Clinical Presentation

• 28 y/o male with T1DM, substance use disorder, depression, presented initially to urgent care with flu-like symptoms, polyuria

• At OSH, found to be tachycardic, hypoxemic, thrombocytopenic, elevated lactate.

• Eventually transferred to MHH for refractory acute hypoxic respiratory failure, septic shock.
Initial CXR

2 Years Prior (DKA)
6 Days Later
5 Days Later

3 Days Later
Imaging Discussion – Cavitary Lung Lesions

• Cavity = gas filled space; wall > 4mm
• Cyst = wall <4mm, diameter typically < 1cm
• Important characteristics:
  • Single vs. multiple
  • Distribution
  • Progression
  • Rim enhancement, wall thickness
  • History & Clinical Scenario
Differential Diagnosis: Infection

- Pulmonary Abscess
- TB
Differential Diagnosis: Infection

• Septic Emboli

• Other:
  • Atypical Mycobacteria
  • Aspergillosis
  • PJP, Nocardia
Differential Diagnosis: Malignancy

- Primary Malignancy
- Metastases
Differential Diagnosis: Systemic Illness

- GPA

- Other:
  - Rheumatic Nodules
  - Cystic Lung Disease
Back to clinical case

- Multiple rapidly developing cavities, more peripheral than central
Diagnosis: Septic Emboli

- Substance use disorder includes IV drug use
- Blood CX: MSSA
- Echo showed pulmonic and tricuspid vegetations
- DX: MSSA Endocarditis causing septic emboli
At MHH...

- TVR / PVR, PEA arrest
- Hemothorax requiring embolization, thoracotomy
- Refractory respiratory failure and septic shock
- Veno-venous ECMO initiated
- Remains in critical condition

Medical procedures:
- Tricuspid replacement
- Tracheostomy
- Sternotomy
- ECMO
- ICD shock coil
- Embolization coil
- Thoracotomy staples
- Chest tube
- SVC
- RA
- IVC
- RV
- LV
### ACR Appropriateness Criteria

#### Suspected Infective Endocarditis

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
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<tbody>
<tr>
<td>US echocardiography transthoracic resting</td>
<td>9</td>
<td>This is the preferred modality.</td>
<td>O</td>
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<tr>
<td>X-ray chest</td>
<td>8</td>
<td>This procedure is useful for monitoring cardiopulmonary status.</td>
<td>☯</td>
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<tr>
<td>CT chest with IV contrast</td>
<td>5</td>
<td>This procedure can be helpful to evaluate pulmonary findings such as septic infarcts.</td>
<td>☯ ☯ ☯</td>
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<tr>
<td>CT chest without IV contrast</td>
<td>1</td>
<td>This procedure cannot be used to evaluate vascular structures for complications.</td>
<td>☯ ☯ ☯</td>
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</tbody>
</table>

- Echocardiogram Cost: $210-$1,830
- CT: $250-$1,500
## MHH Chargemaster Costs:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Cost</th>
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<td>65700506</td>
<td>CT CHEST W/CON</td>
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<tr>
<td>65700514</td>
<td>CT CHEST W/O CON</td>
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<td>3D ECHO SEPERATE W/S</td>
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<td>86310147</td>
<td>ECHO 2D M MODE LIMITED</td>
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<td>TRANSESOPHAGEAL ECHO</td>
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<td><strong>ECMO A DAILY</strong></td>
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<td>ANES SRVS GENERAL 1ST 30MIN</td>
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<td>DX BRONCHOSCOPE W OR W/O WASH</td>
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<td>BRONCHOSCOPY W/BRONCHIAL LAVAG</td>
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Take Home Points

• DDx of cavitary lesions: infection, malignancy, systemic illness
• Location, number, size are helpful but not definitive
• CT Vascular imaging? = Contrast
• History and clinical picture are key for interpreting (all) images
References

**Background info:**


**GPA Image:**

**Healthcare Costs:**

Questions?