

Cavitary Lung Lesions

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March 2nd, 2020

RAD 4001: Diagnostic Radiology

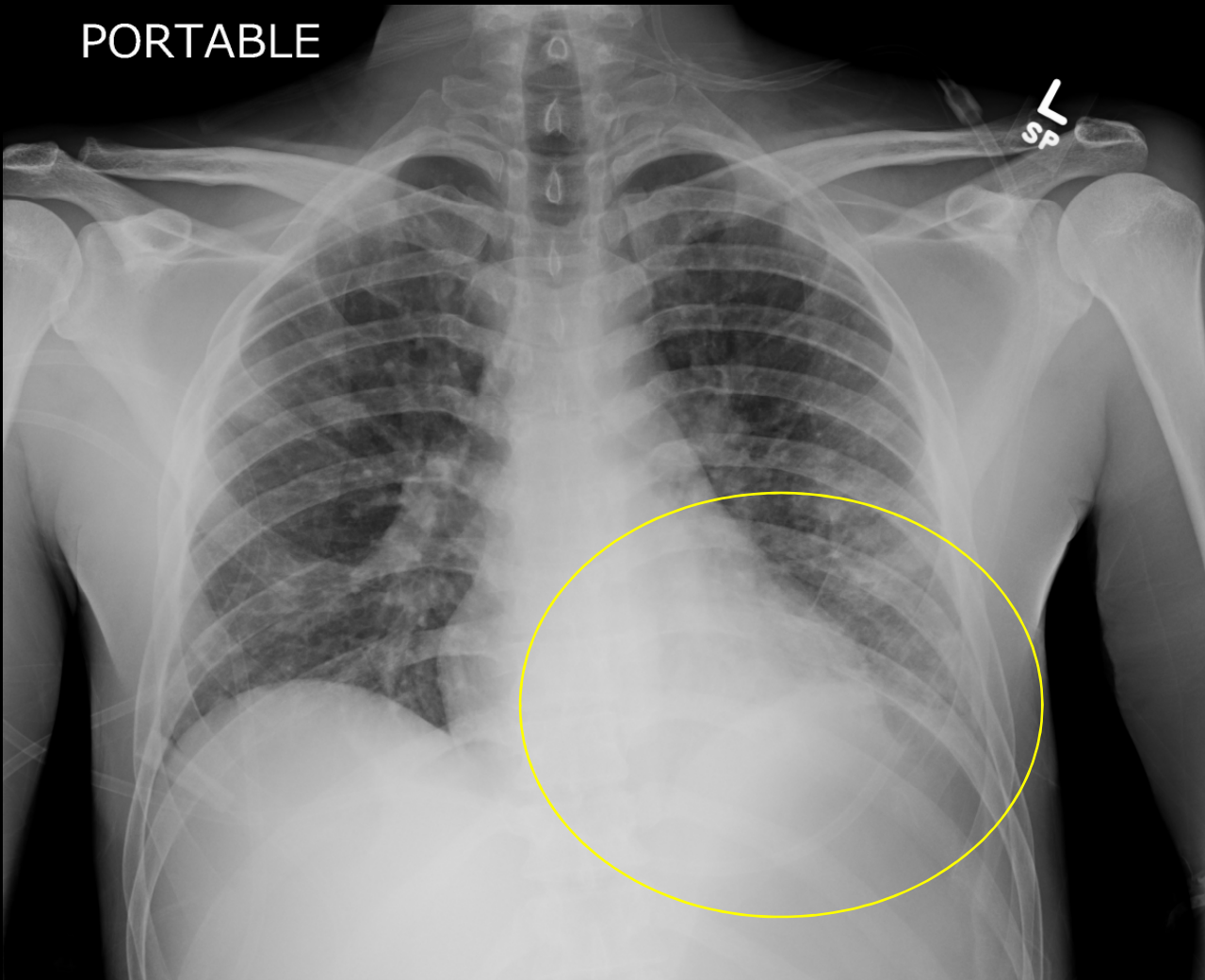
Dr. Pritish Bawa



Clinical Presentation

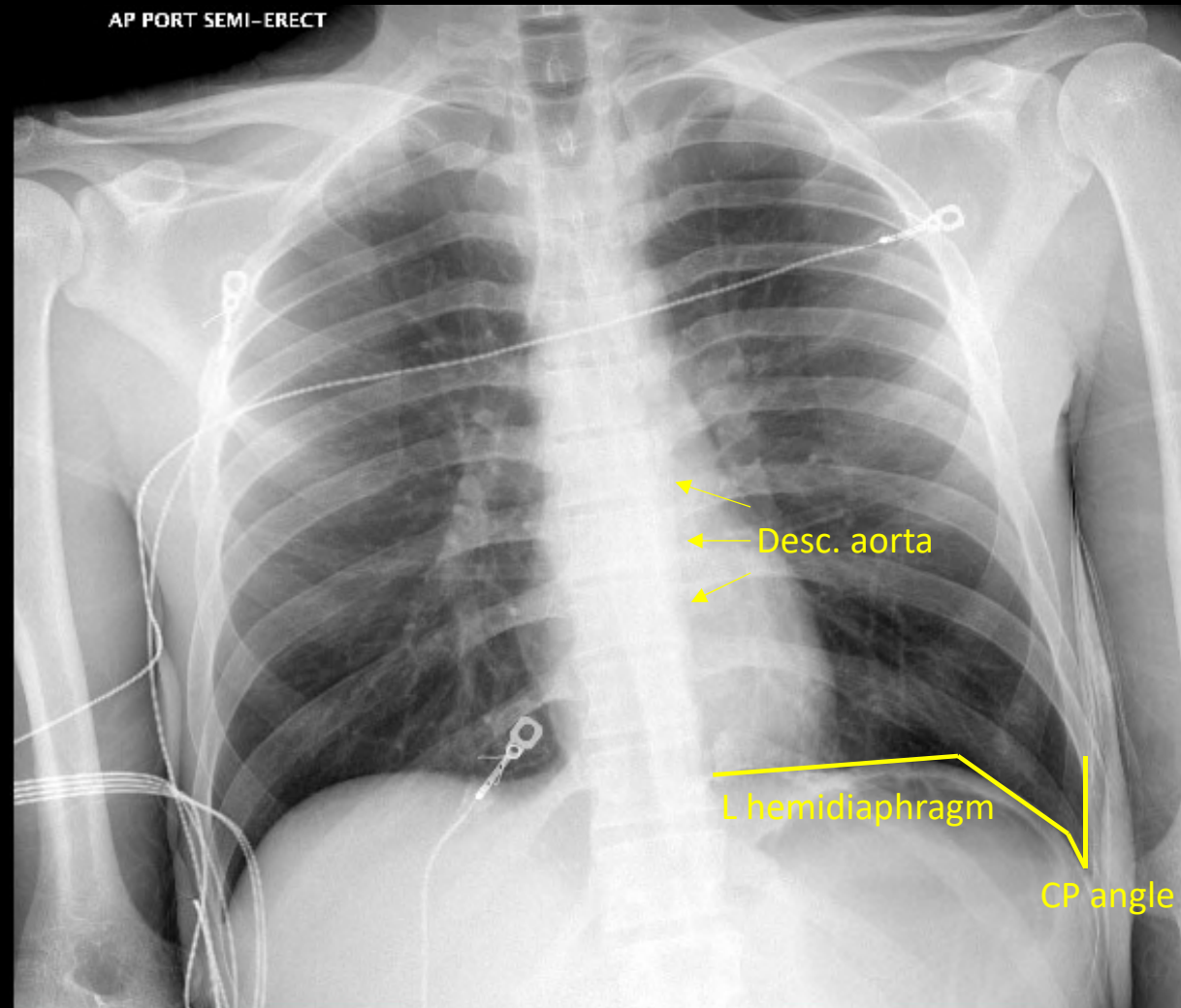
- 28 y/o male with T1DM, substance use disorder, depression, presented initially to urgent care with flu-like symptoms, polyuria
- At OSH, found to be tachycardic, hypoxemic, thrombocytopenic, elevated lactate.
- Eventually transferred to MHH for refractory acute hypoxic respiratory failure, septic shock.

PORTABLE

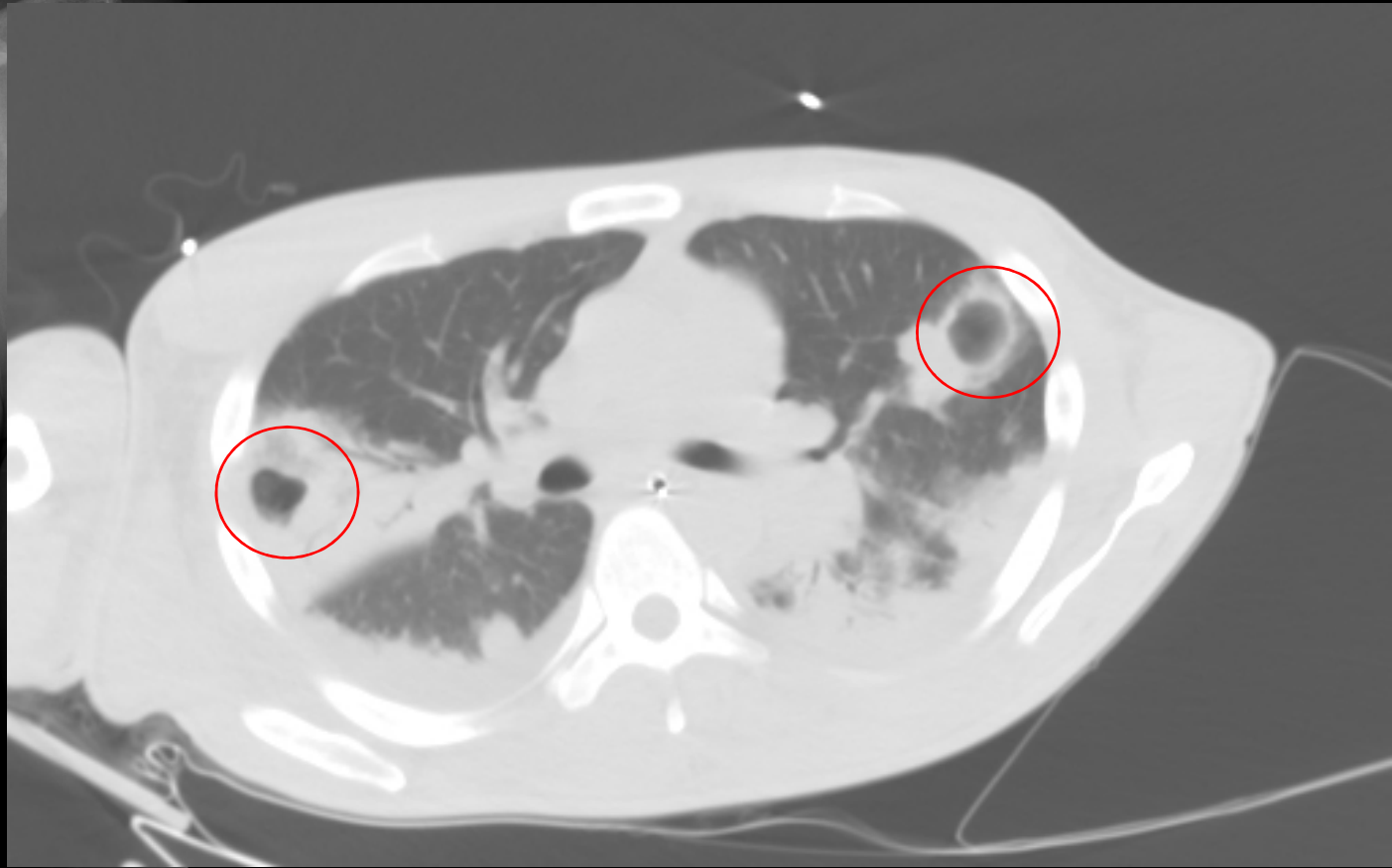
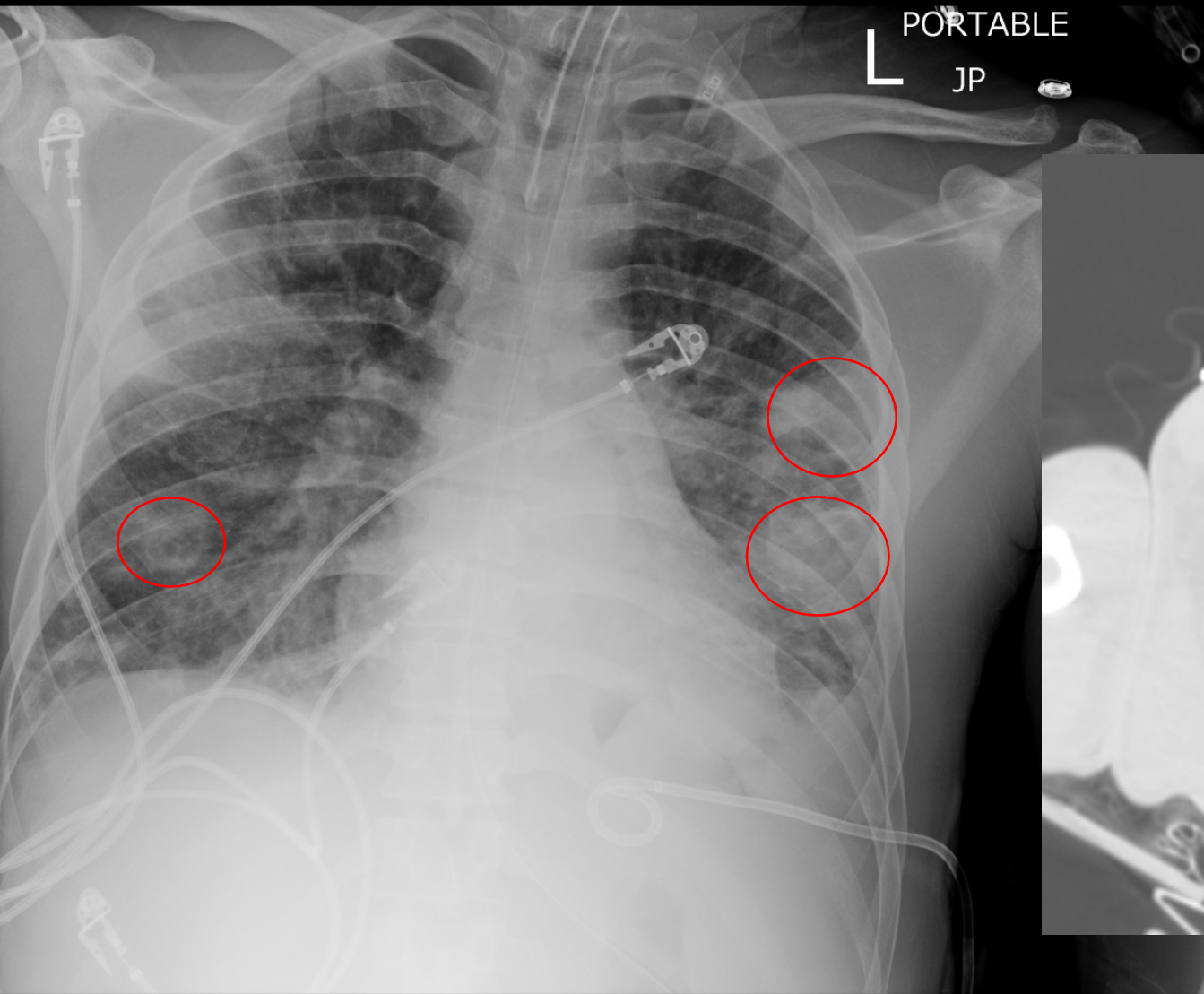


Initial CXR

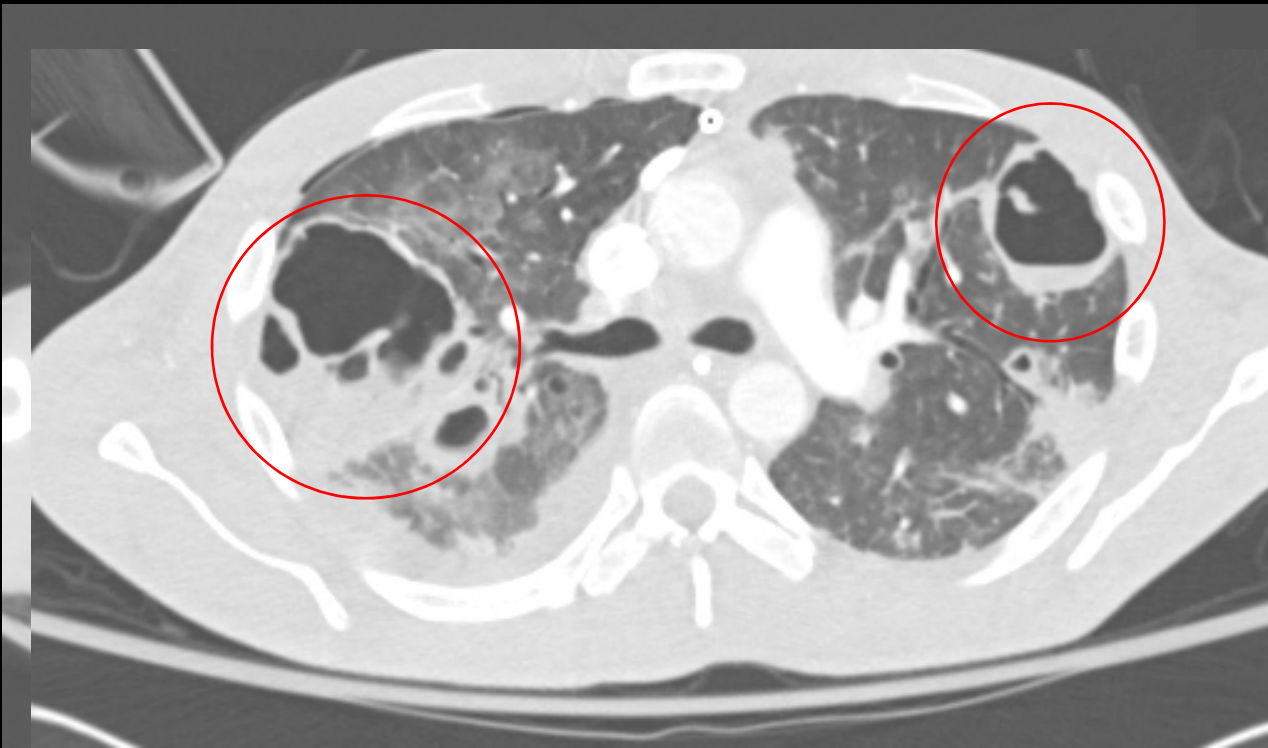
AP PORT SEMI-ERECT



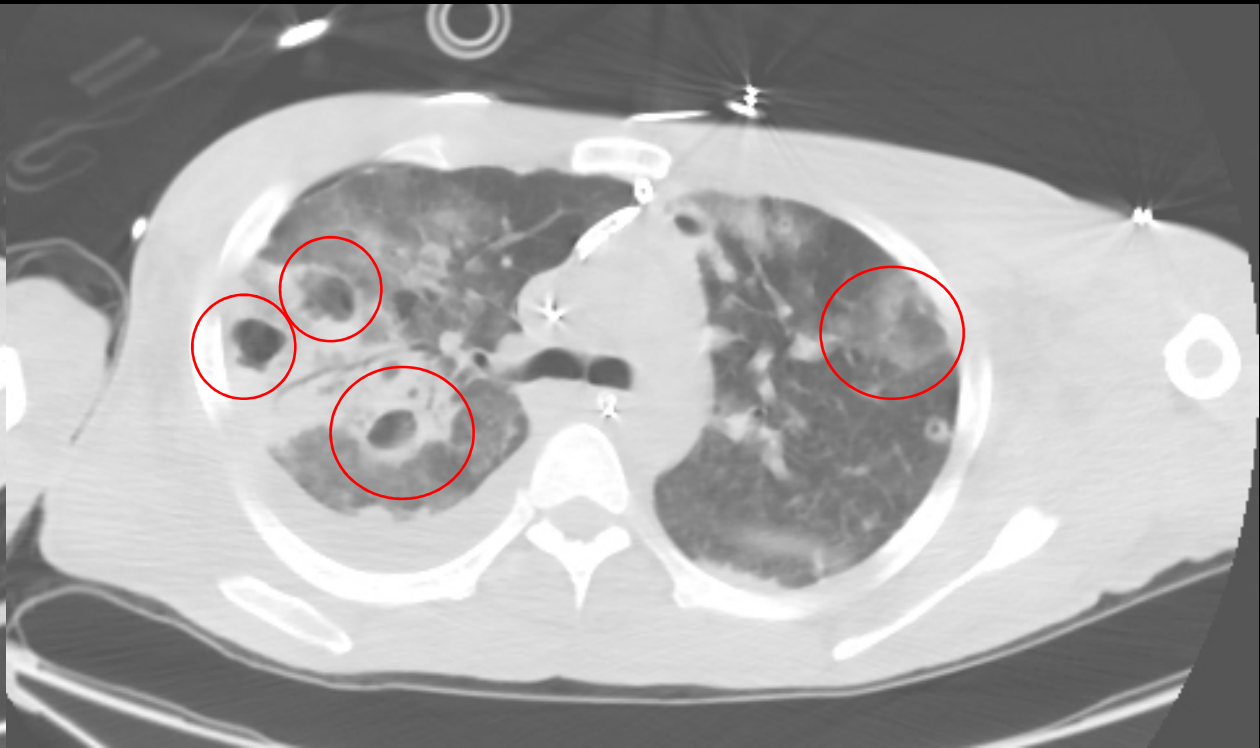
2 Years Prior (DKA)



6 Days Later



5 Days Later



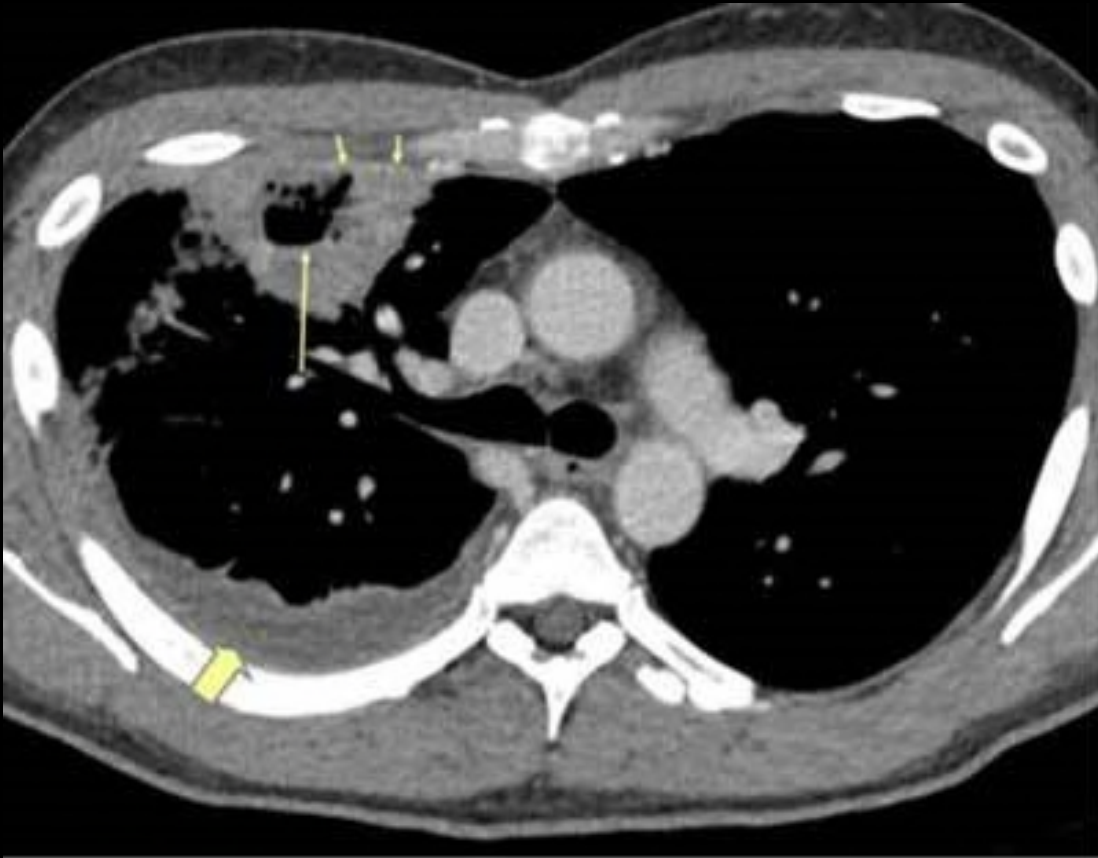
3 Days Later

Imaging Discussion – Cavitory 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

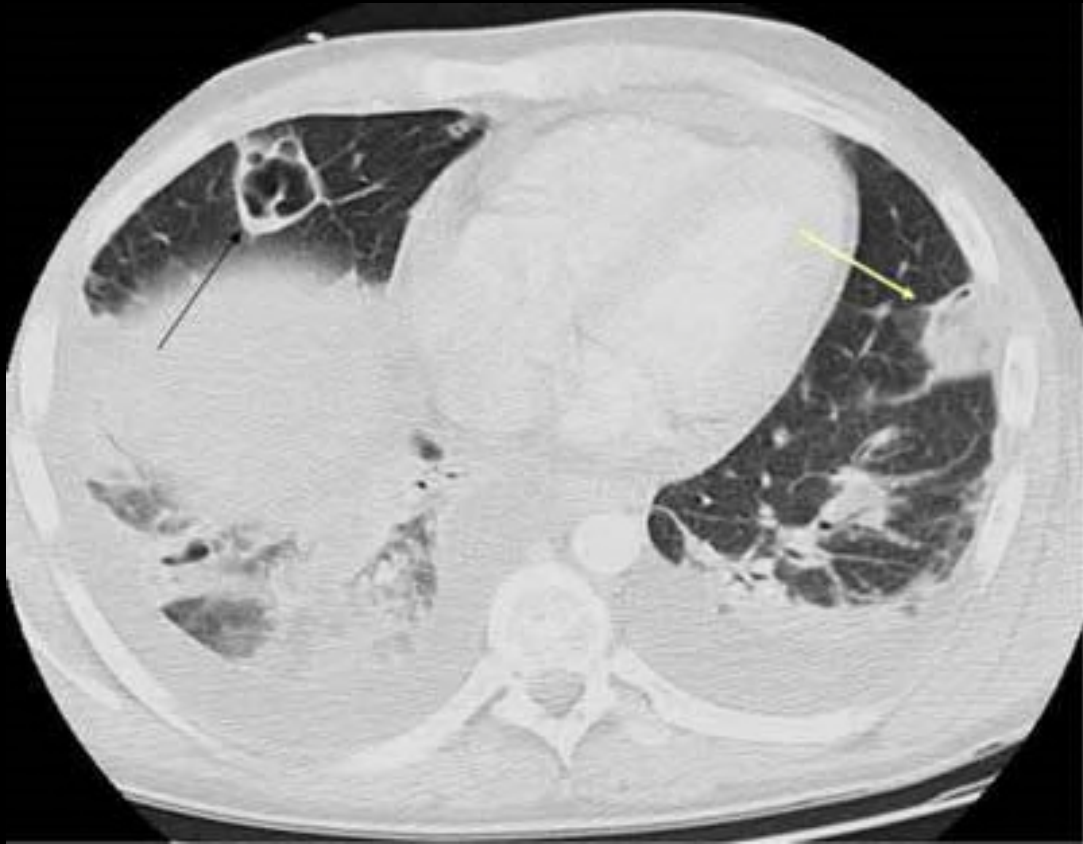


- TB



Differential Diagnosis: Infection

- Septic Emboli

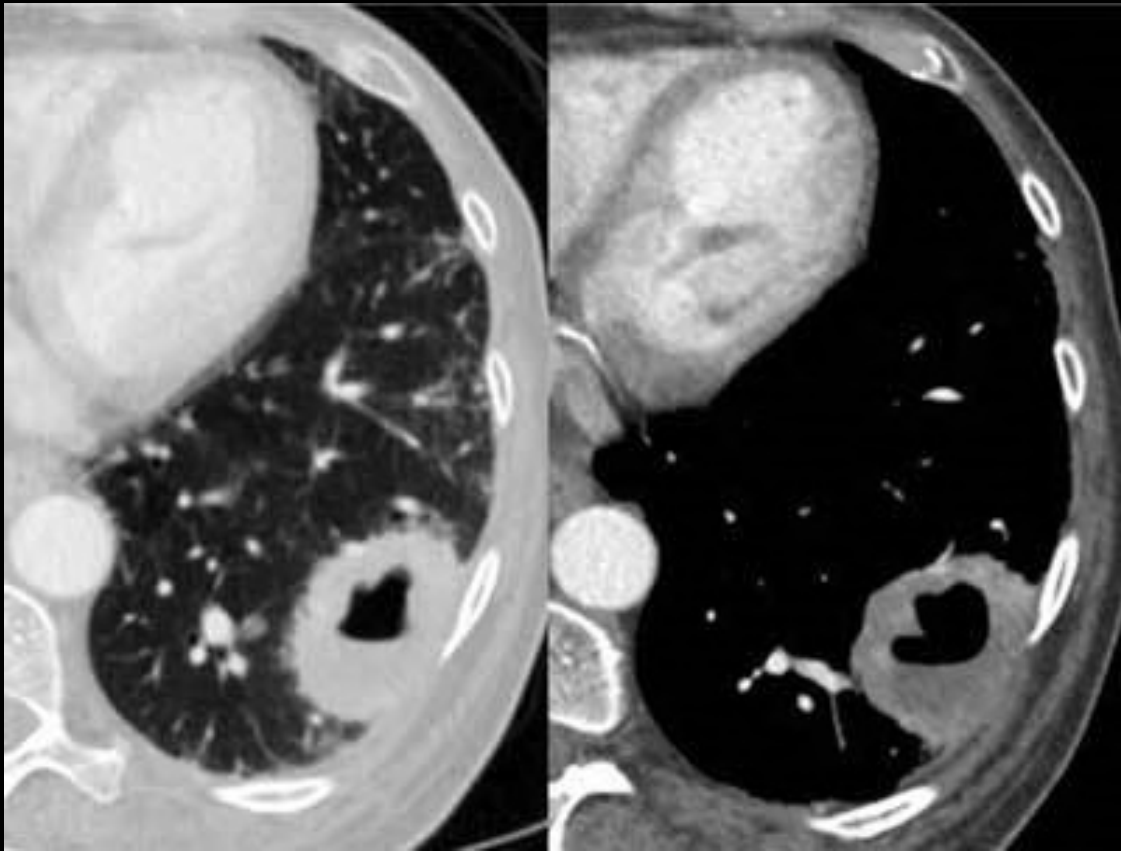


- Other:

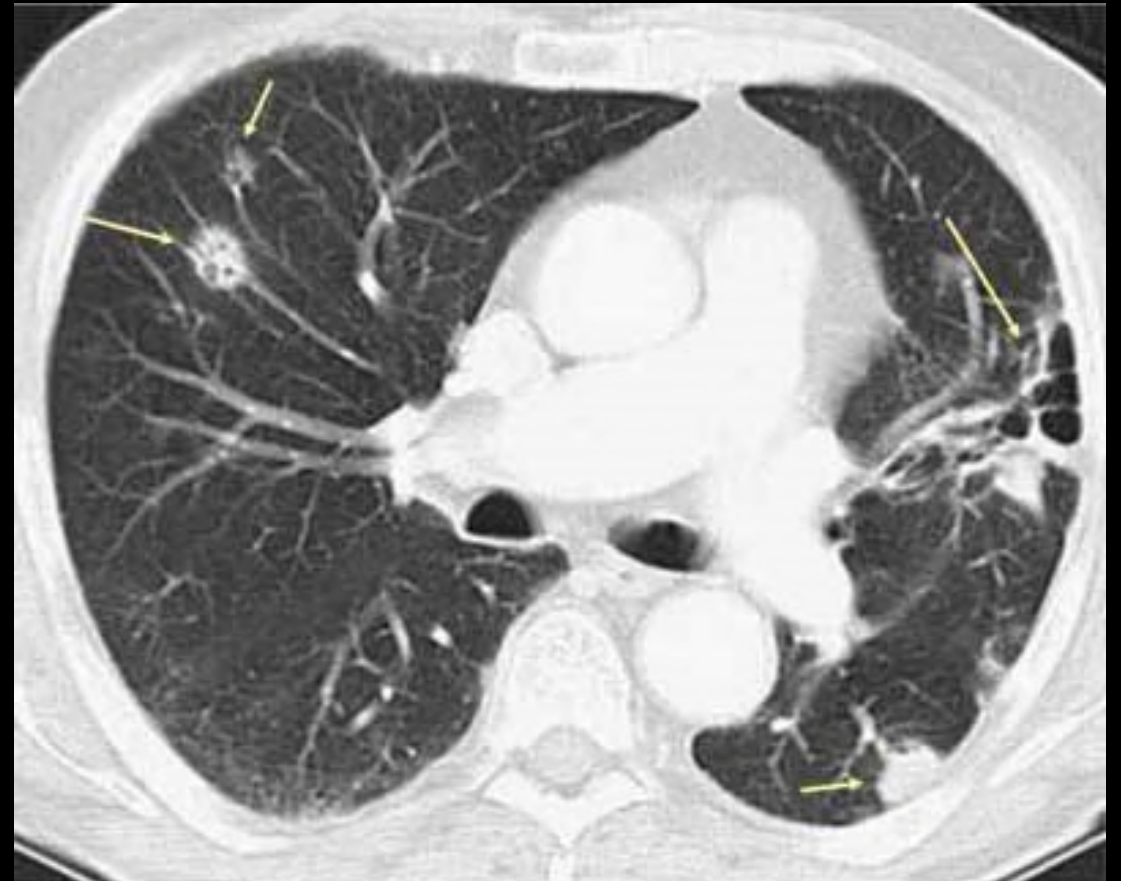
- Atypical Mycobacteria
- Aspergillosis
- PJP, Nocardia

Differential Diagnosis: Malignancy

- Primary Malignancy

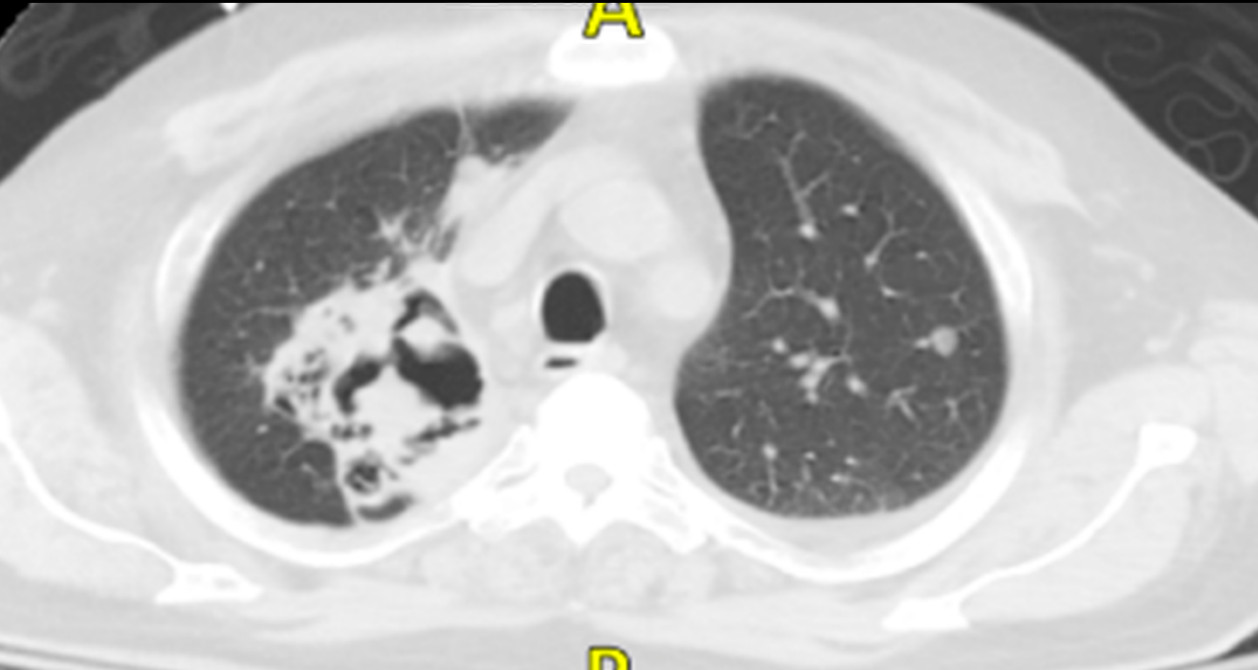


- Metastases



Differential Diagnosis: Systemic Illness

- GPA

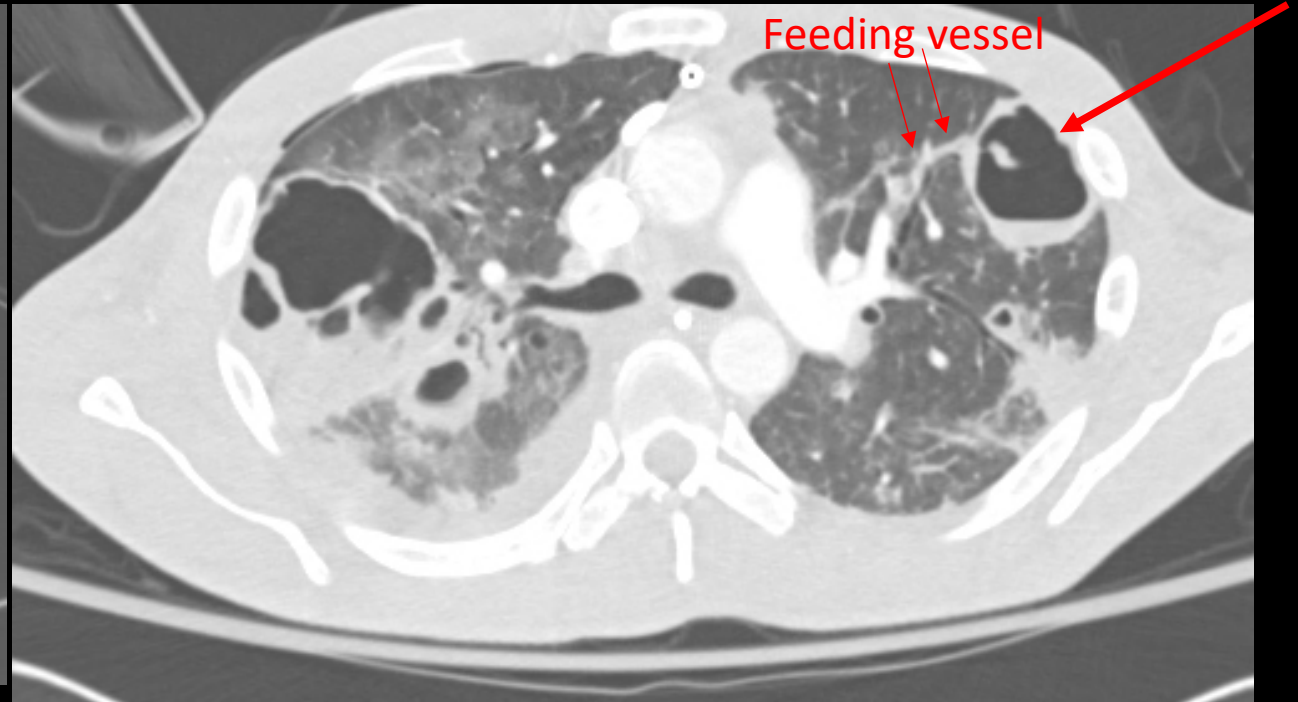
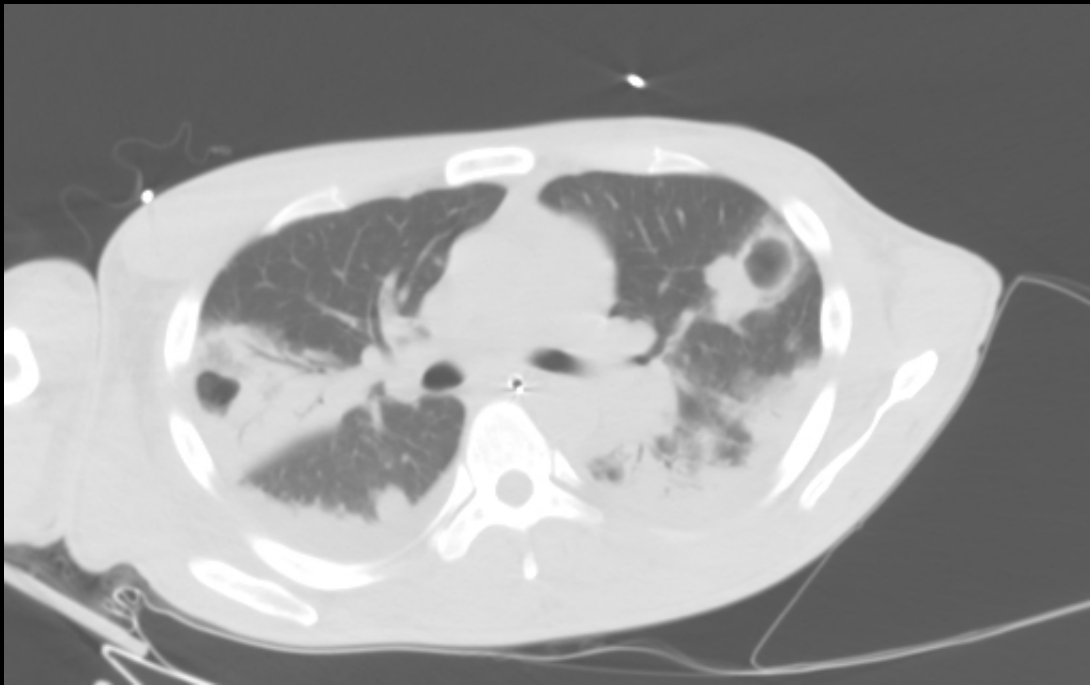


- Other:
 - Rheumatic Nodules
 - Cystic Lung Disease



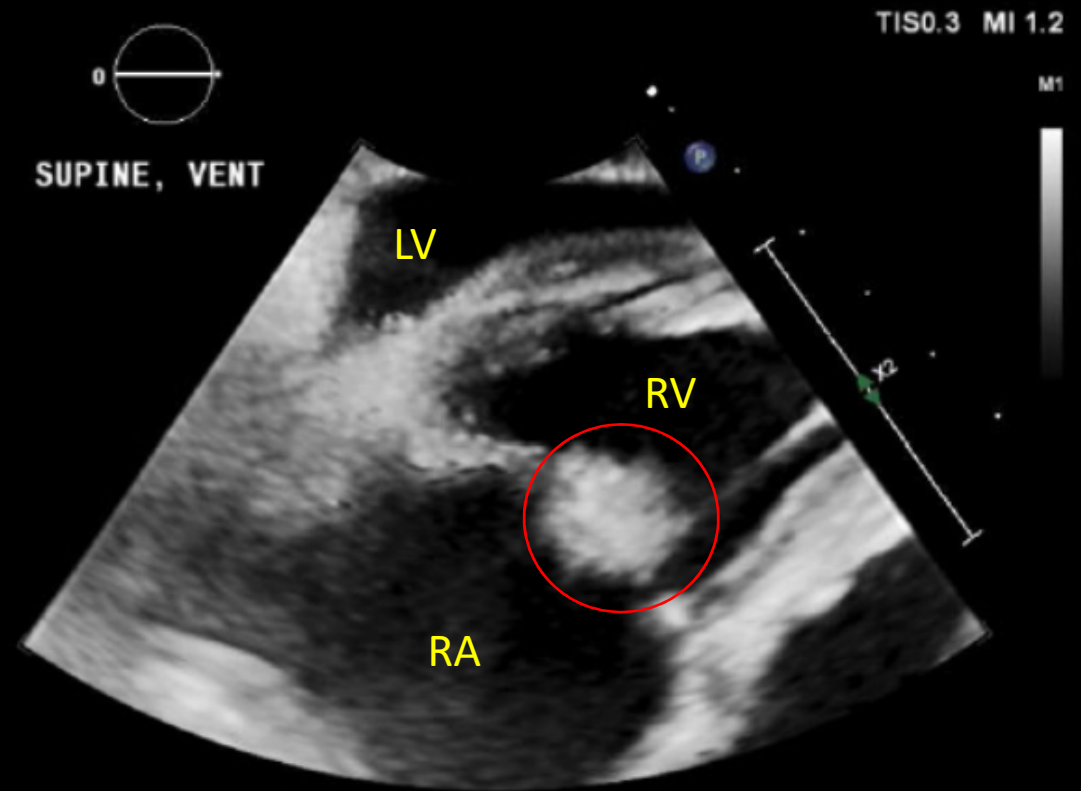
Back to clinical case

- Multiple rapidly developing cavities, more peripheral than central

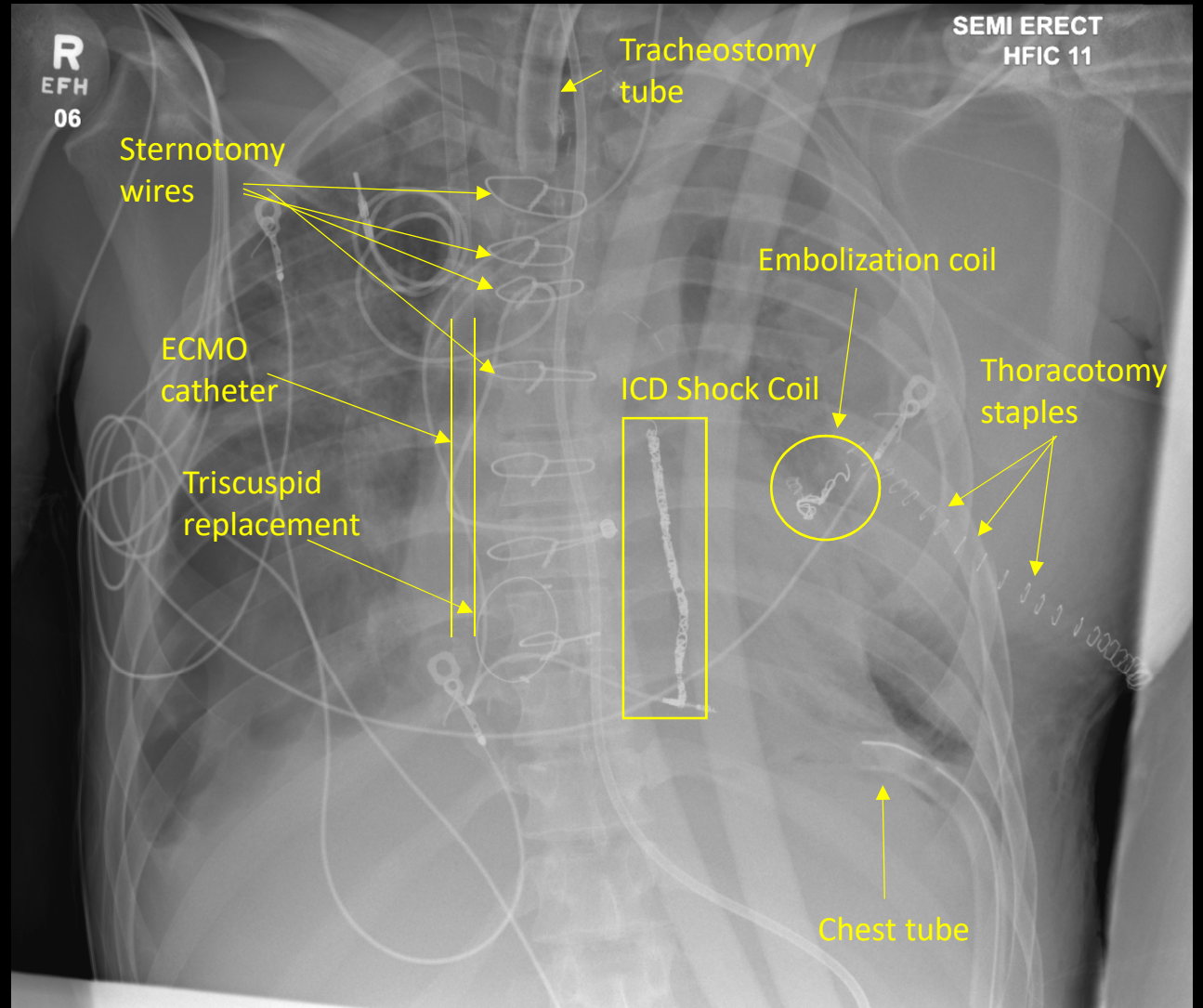
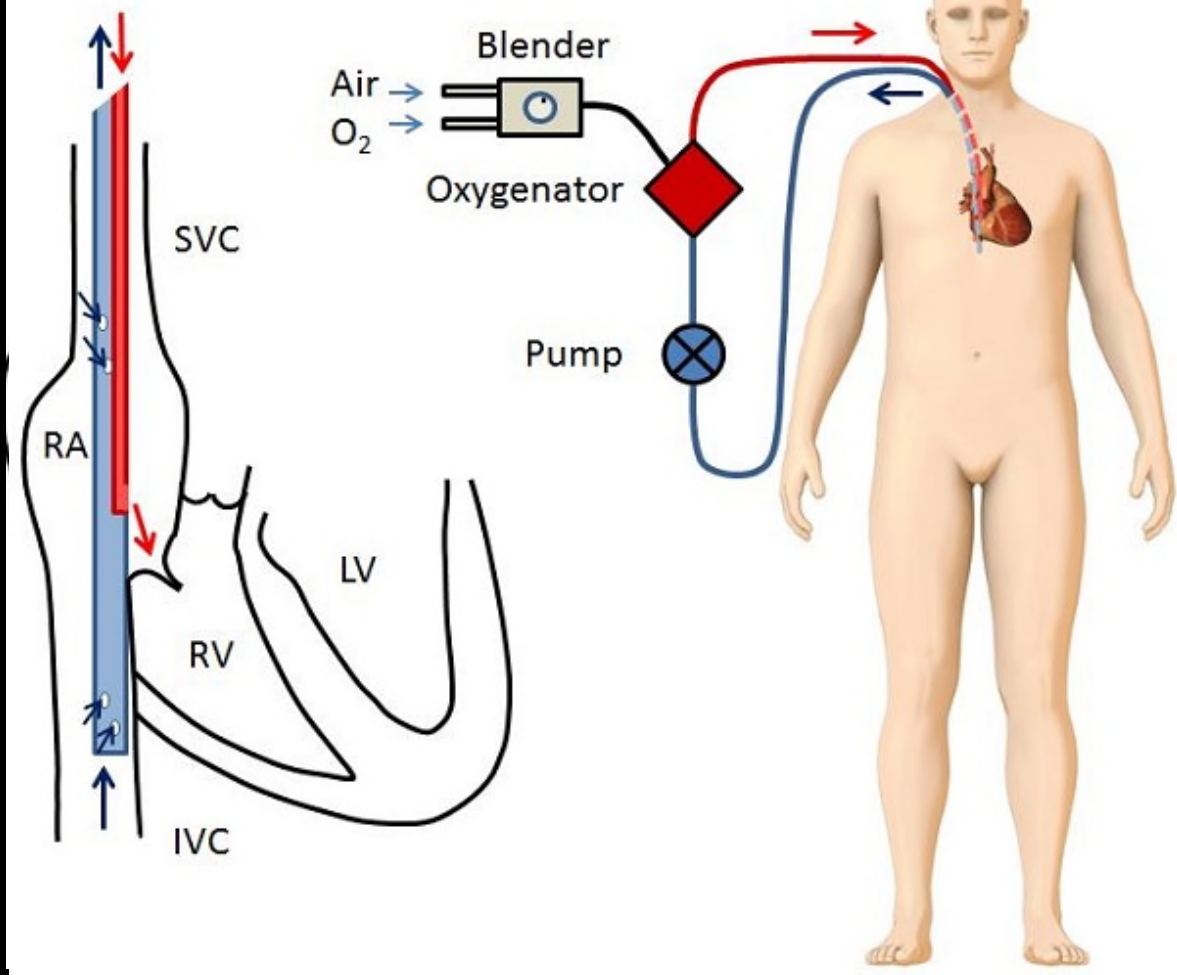


Diagnosis: Septic Emboli

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



V-V ECMO - Avalon



ACR Appropriateness Criteria

American College of Radiology
ACR Appropriateness Criteria®

Clinical Condition: Suspected Infective Endocarditis

Radiologic Procedure	Rating	Comments	RRL*
US echocardiography transthoracic resting	9	This is the preferred modality.	0
X-ray chest	8	This procedure is useful for monitoring cardiopulmonary status.	☒
CT chest with IV contrast	5	This procedure can be helpful to evaluate pulmonary findings such as septic infarcts.	☒ ☒ ☒
CT chest without IV contrast	1	This procedure cannot be used to evaluate vascular structures for complications.	☒ ☒ ☒

- Echocardiogram Cost: \$210-\$1,830
- CT: \$250-\$1,500

MHH Chargemaster Costs:

65700506	6570	CT CHEST W/CON	3936.25
65700514	6570	CT CHEST W/O CON	3788.25
62001207	6200	3D ECHO SEPERATE W/S	1666
86310147	8631	ECHO 2D M MODE LIMITED	861
62001089	6200	TRANSESOPHAGEAL ECHO	3773
ECMO A DAILY			10221.25
ROOM CHRG - ICU ADULT LEVEL 2			6461
ROOM CHRG - ICU ADULT LEVEL 1			12315
67341126	6730	ANES SRVS GENERAL 1ST 30MIN	2096
VASC EMBOLIZE/OCCLUDE ARTERY			13786.5
TRACHEOSTOMY			5779
DX BRONCHOSCOPE W OR W/O WASH			3465
BRONCHOSCOPY W/BRONCHIAL LAVAG			7034

Take Home Points

- DDX of cavitory 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:

Parkar AP, Kandiah P. Differential Diagnosis of Cavitory Lung Lesions. J Belg Soc Radiol. 2016;100(1):100.

Deng F, Gaillard F. Cystic Lung Disease. Accessed 2/26/20 <https://radiopaedia.org/articles/cystic-lung-disease-1?lang=us>

Skalina T, Niknejad MT. Feeding Vessel Sign. Accessed 2/26/20. <https://radiopaedia.org/articles/feeding-vessel-sign?lang=us>

GPA Image:

Zagelbaum N et al. Granulomatosis with Polyangiitis (GPA) Case Report Outlining the Importance of Urinalysis in Patients Presenting with Pulmonary Cavitory Lesions.

https://oatext.com/Granulomatosis-with-Polyangiitis-GPA-Case-Report-Outlining-the-Importance-of-Urinalysis-in-Patients-Presenting-with-Pulmonary-Cavitory-Lesions.php#Article_Info

Healthcare Costs:

Liss, Samantha. Does an echocardiogram cost \$210 or \$1,830? UnitedHealth calls out price variation. Healthcaredive.com. Published 5/24/2019.

Scott, Dylan. A CT scan costs \$1,100 in the US — and \$140 in Holland. Vox.com. Published 12/17/2019.



Questions?