AMSER Case of the Month: October 2022

51-year-old female presenting with productive cough of brown and pink sputum

Gaston Min, MS-IV

Drexel University College of Medicine

Gaurav Watane, MD; Matthew Hartman, MD; Danielle Miller, DO, PGY 4; Stephen Chang, DO, PGY2

Allegheny Health Network

AMSER

Patient Presentation

- 51-year-old female presenting with recurrent episodes of productive cough as well as fatigue for the past year. Patient received a chest X-ray from an outside hospital that could not be obtained that showed nodules.
- PMHx: diabetes mellitus, GERD
- PSHx: hysterectomy, cholecystectomy, breast reduction
- SHx: pack day smoker for 30 year

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Examination ordered →

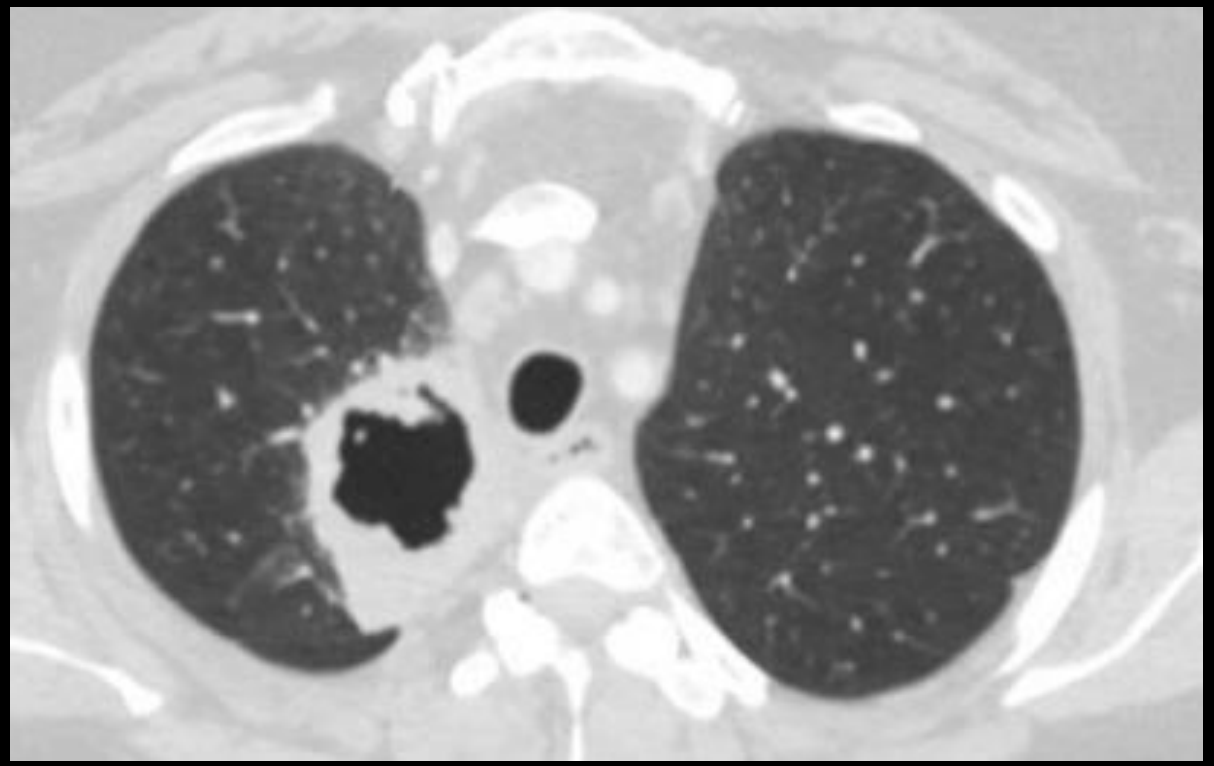
Variant 2: **Solid nodule ≥1 cm, moderate to high clinical suspicion for cancer.**

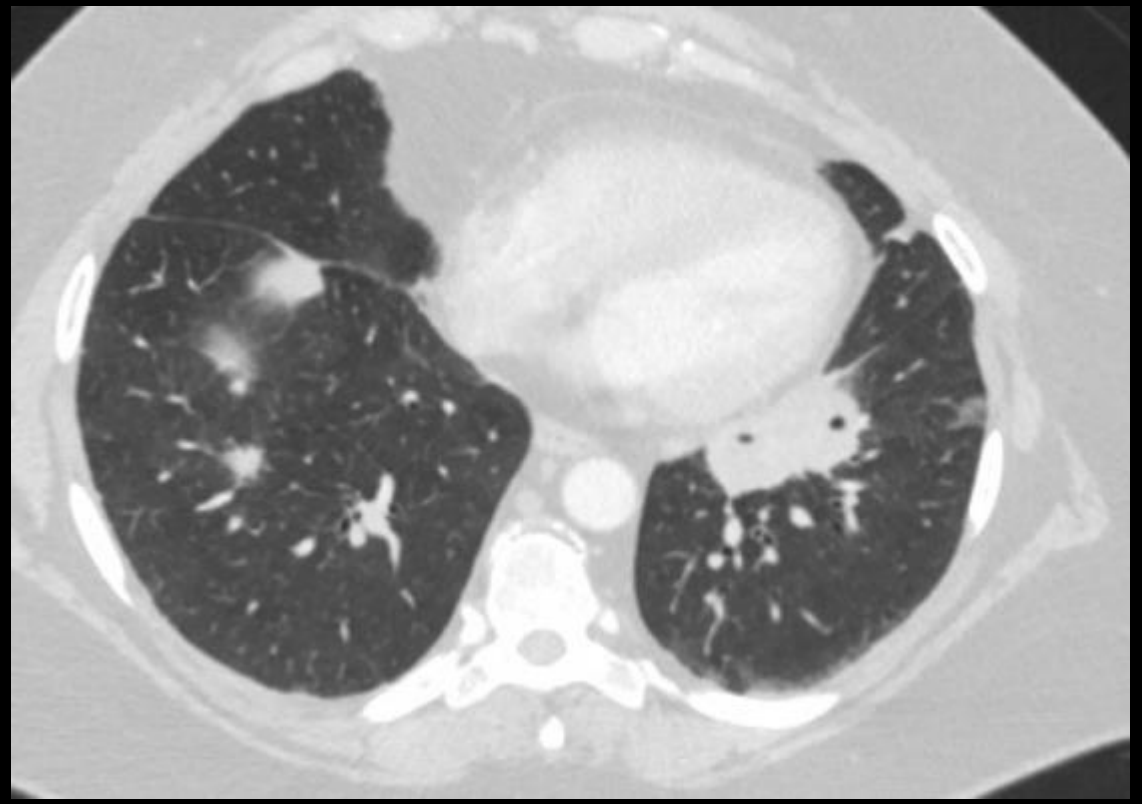
Radiologic Procedure	Rating	Comments	RRL*
CT chest without IV contrast	8	To detect occult calcifications, fat, bronchus sign, etc.	☢☢☢
FDG-PET/CT whole body	8	If nodule is indeterminate on HRCT.	☢☢☢☢
Transthoracic needle biopsy	8	If nodule shows contrast enhancement or PET scan is positive.	Varies
CT chest with IV contrast	6	Probably not indicated if PET is performed.	☢☢☢
CT chest without and with IV contrast	6	Can look at washout.	☢☢☢
Watchful waiting with CT follow-up	2		Varies
MRI chest without IV contrast	2	Limited data.	O
MRI chest without and with IV contrast	2	Limited data.	O

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

*Relative Radiation Level

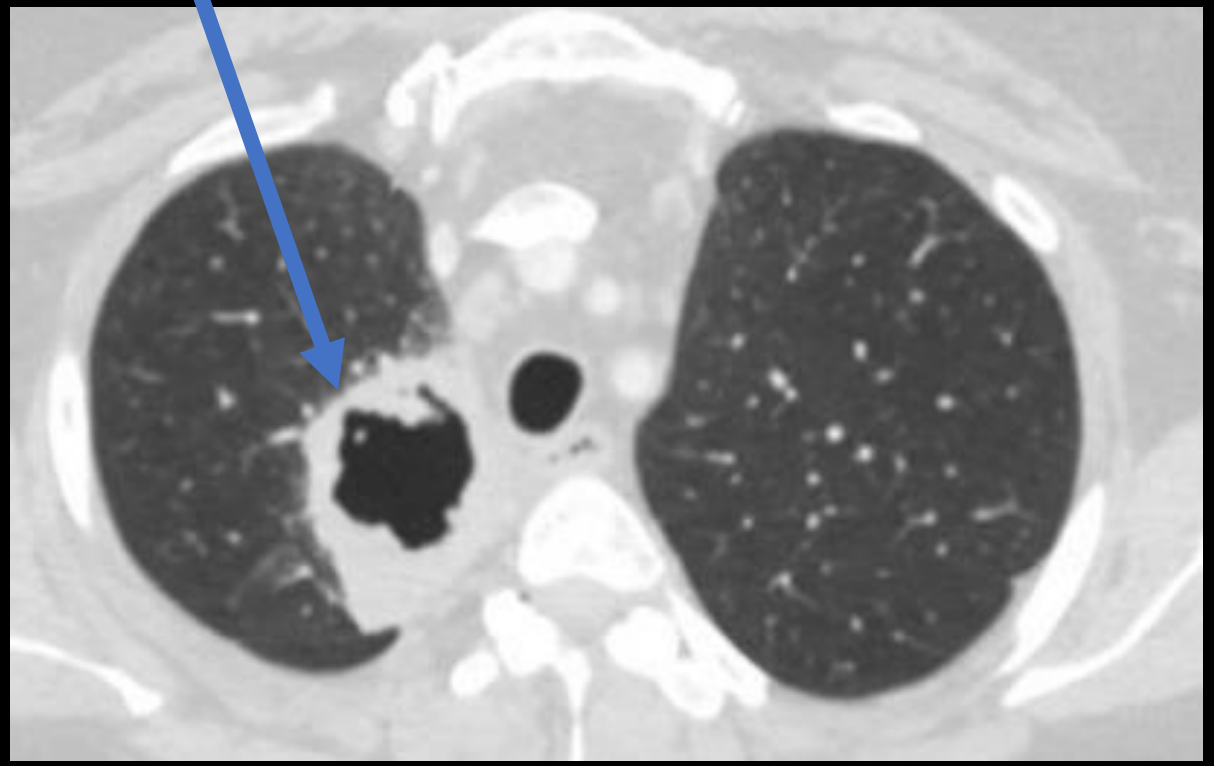
Findings (unlabeled)



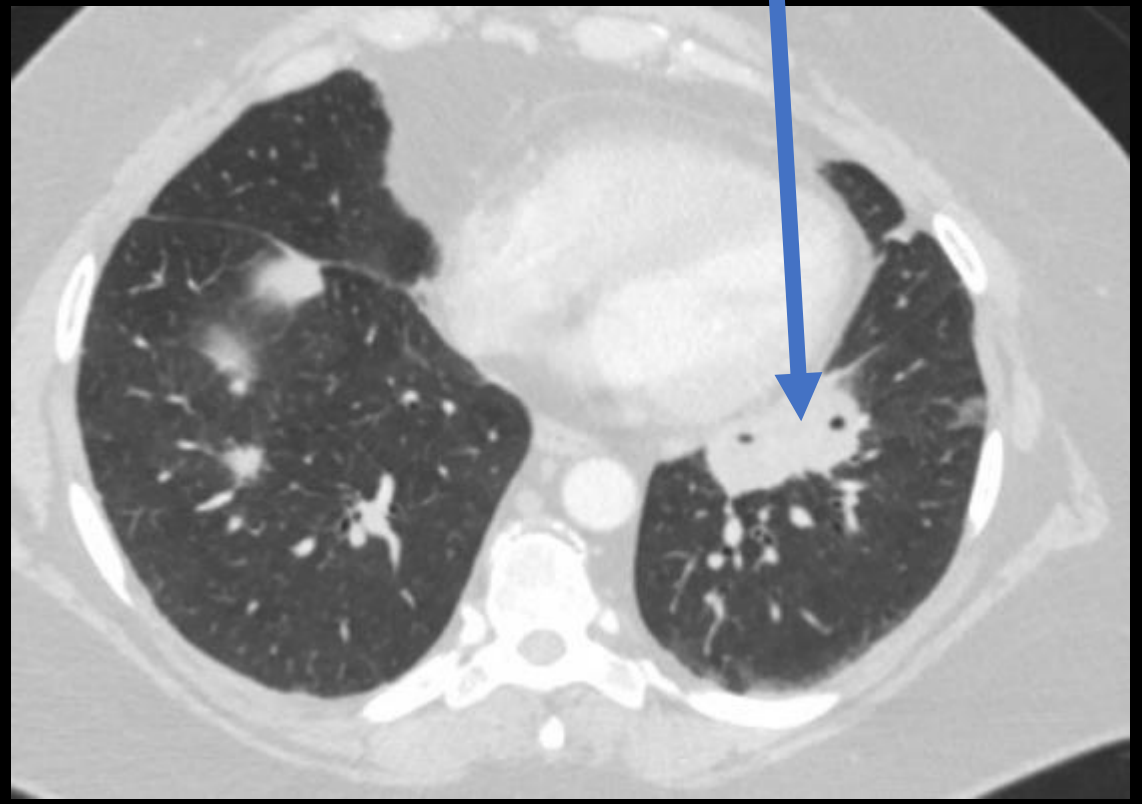


Findings: (labeled)

Chest CT with IV contrast showing cavitary masslike consolidation in the medial right upper lobe with thick and irregular walls



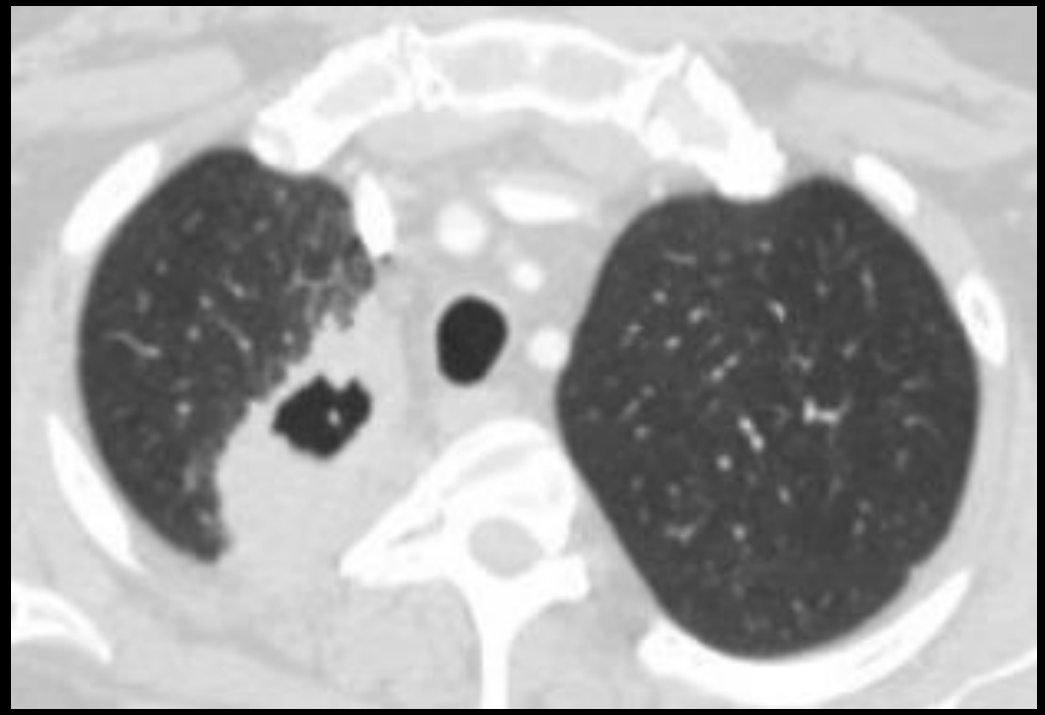
Cavitary consolidation at base of left lower lobe

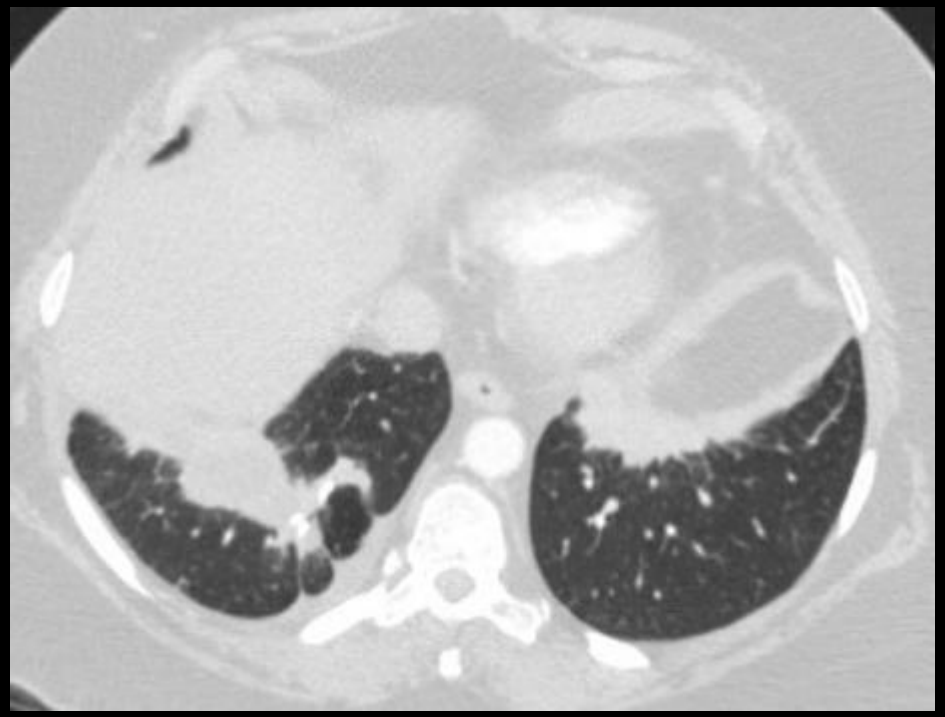


Patient Clinical Course

At this point, patient had already completed a course of antibiotics, had an unremarkable bronchoscopy, and all cultures were negative. Differential included mycobacterial infection, cavitating malignancy, granulomatosis with polyangiitis, rheumatoid nodules, septic pulmonary emboli. She underwent right lung wedge biopsy; follow up CT one month later is shown on next slide.

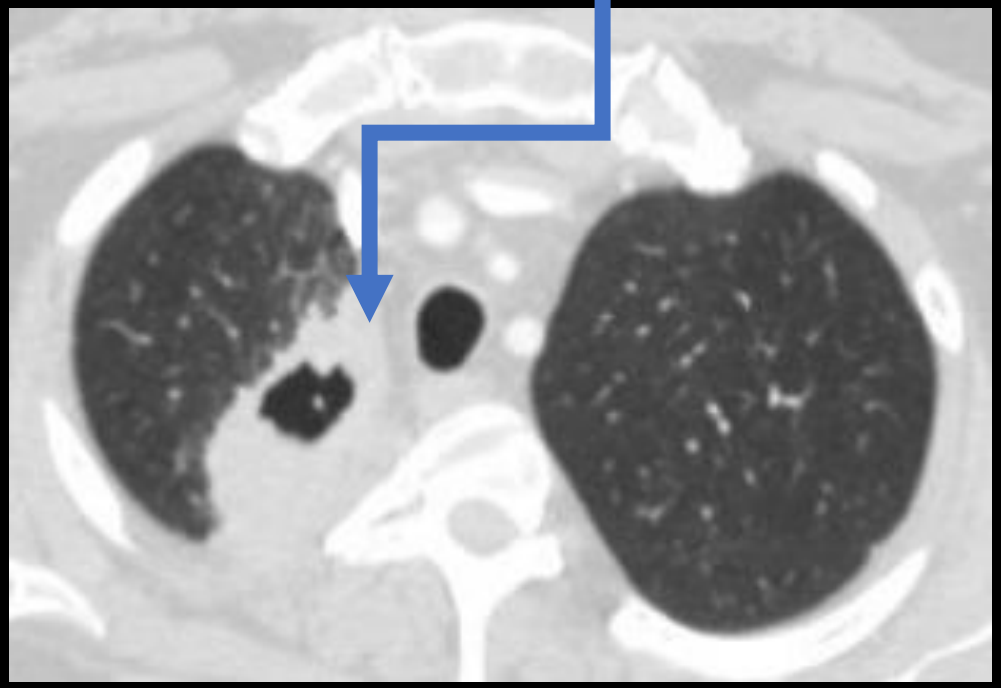
Findings (unlabeled)

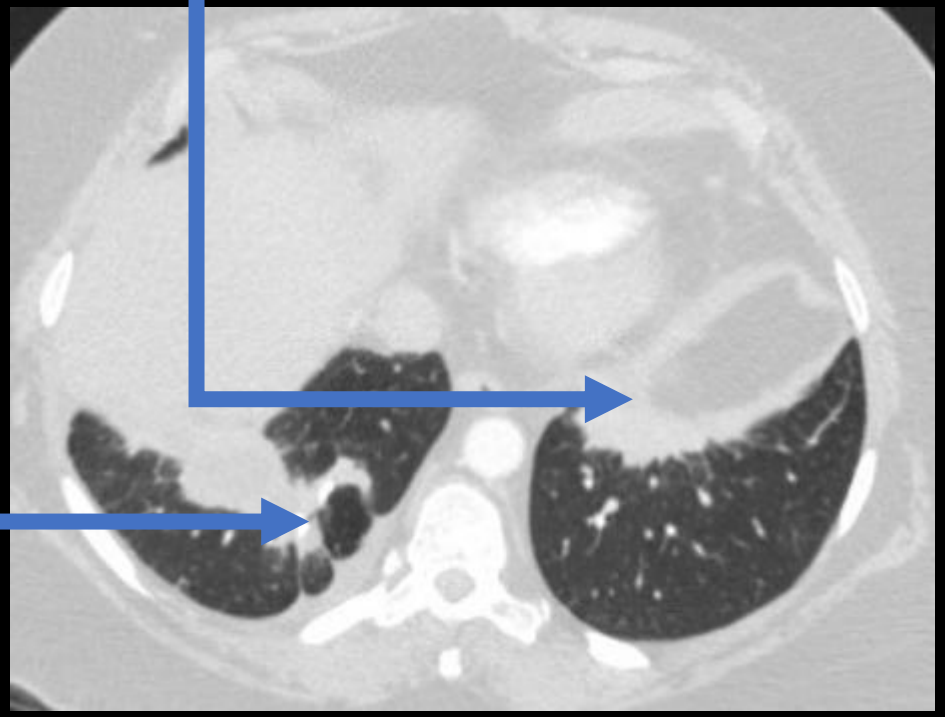




Findings (labeled)

Interval increase in size of both cavitary masses seen 1 month prior



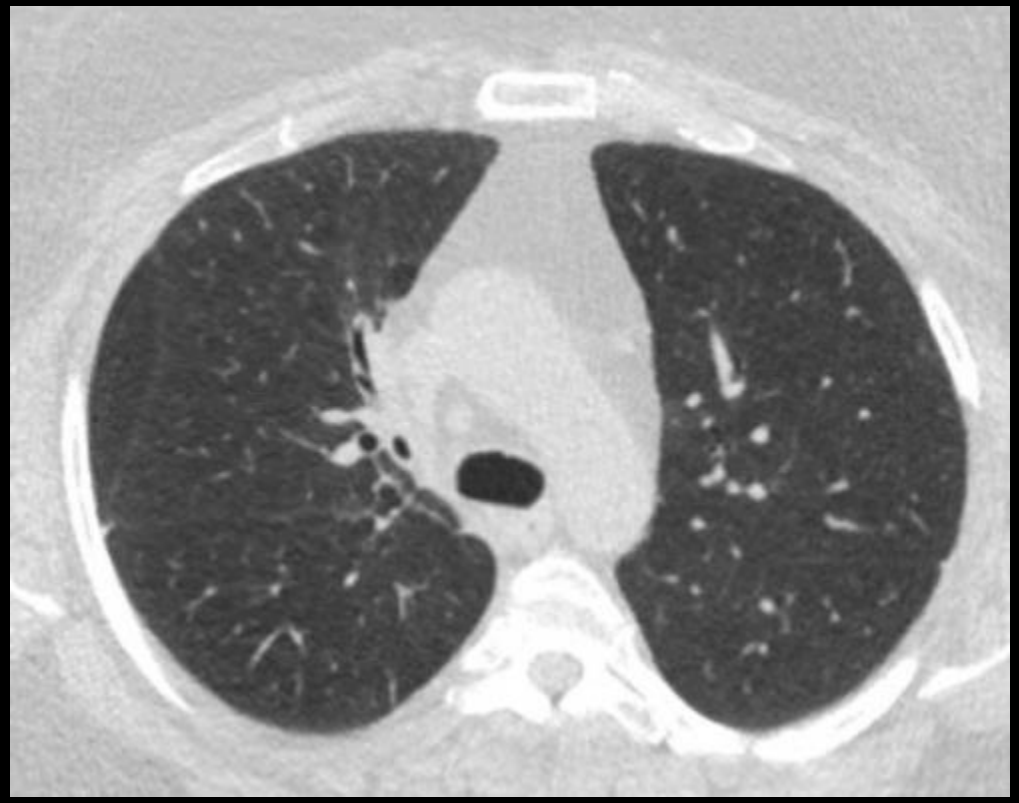


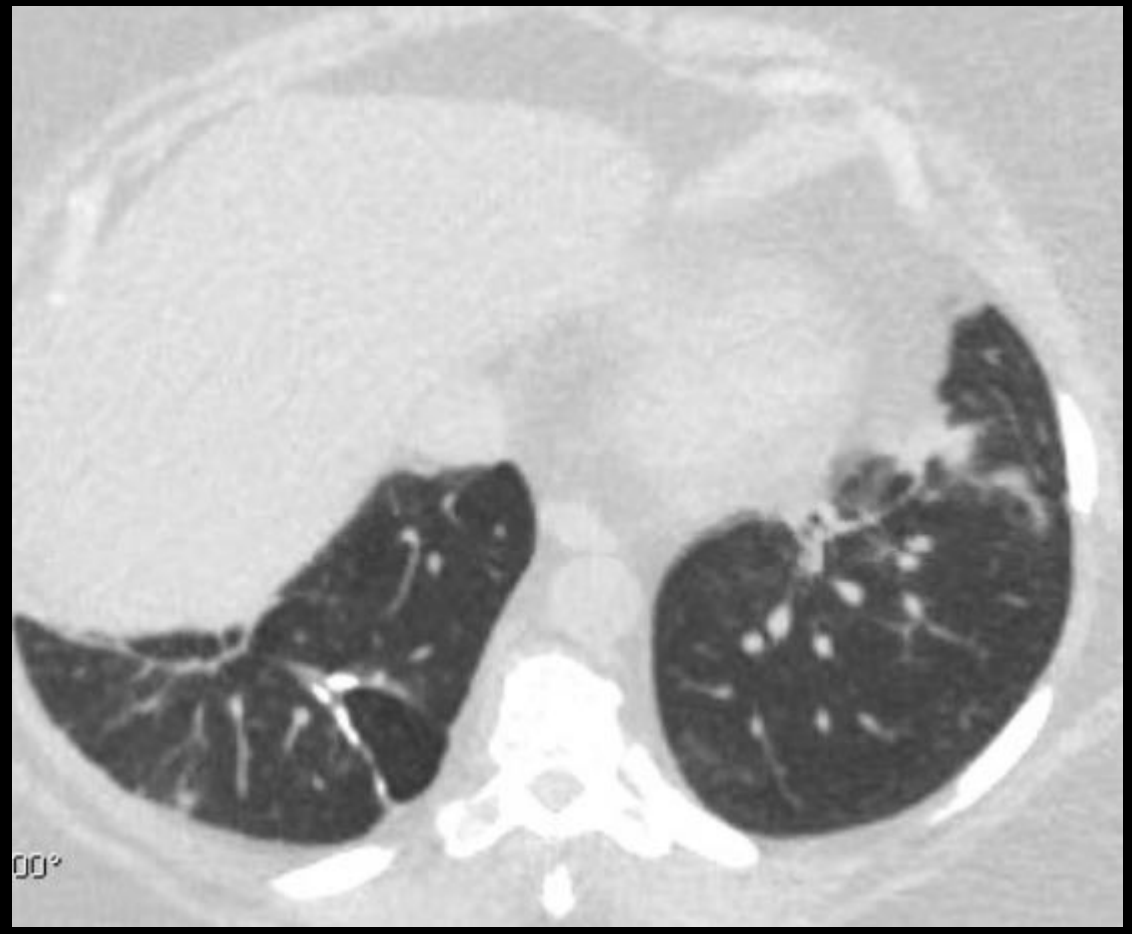
New subpleural nodule in right lower lobe

Patient Clinical Course

- Biopsy from wedge biopsy showed pneumonia with abscess and necrosis, but patient continued to worsen on antibiotics. Labs were sent for c-ANCA which revealed that the patient was positive for granulomatosis with polyangiitis. She was started on steroids and rituximab; CT after treatment is shown on next slide

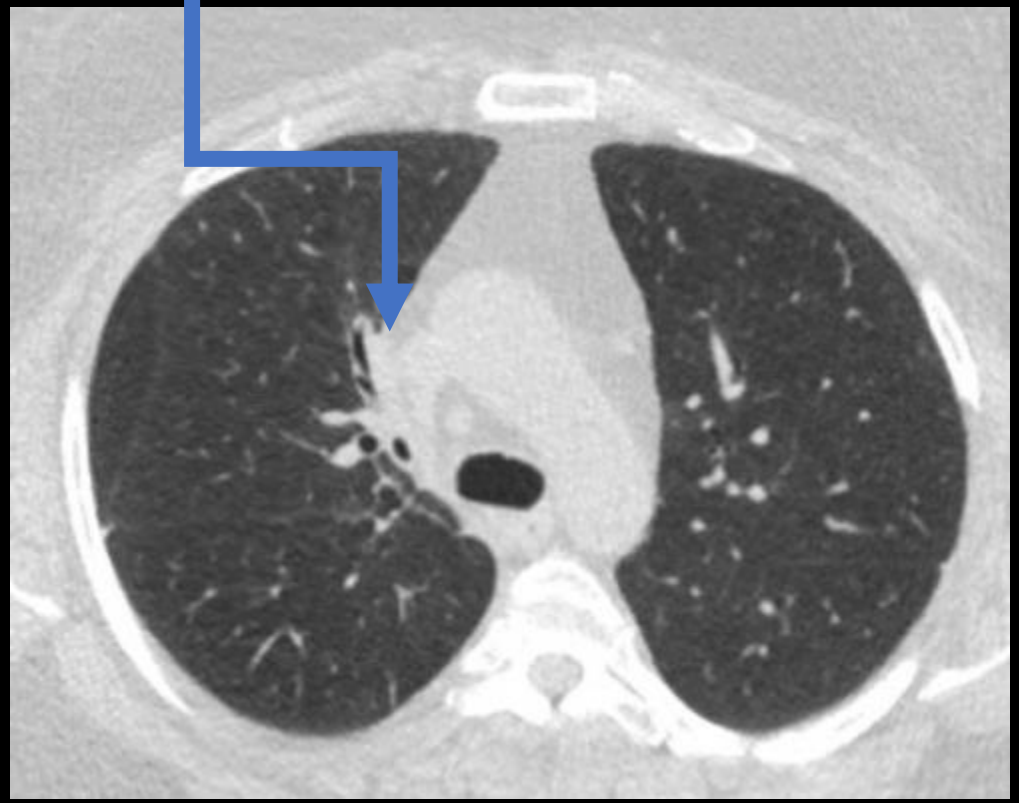
Findings (unlabeled)

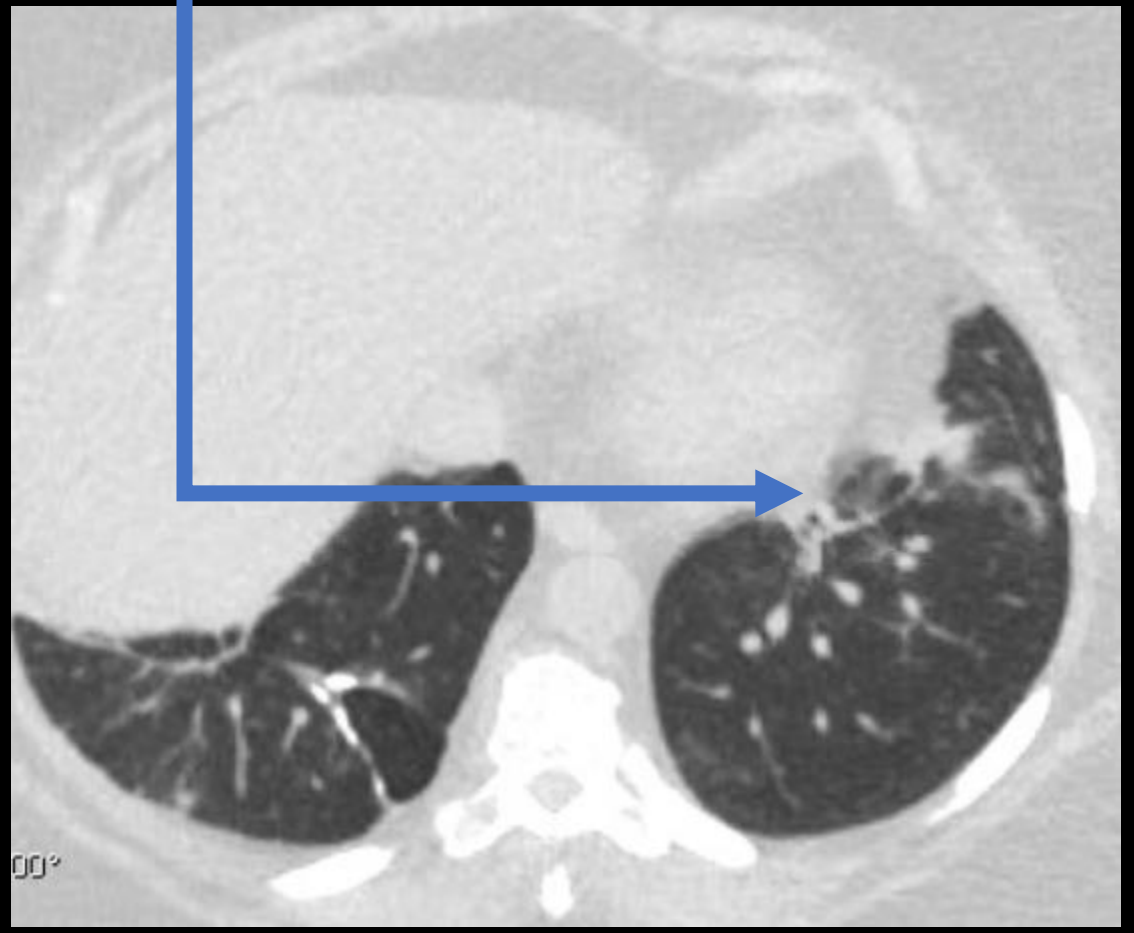




Findings (labeled)

Cystic spaces in right upper and left lower lobes with surrounding scarring, likely due to healed cavitation





Final Dx:

Granulomatosis with polyangiitis

Case Discussion

- Granulomatosis with polyangiitis (GPA) is a small/medium-vessel vasculitis characterized by inflammation of mainly sinuses, lungs, and kidneys
  - Lungs are involved in 95% of cases, sinuses in 75-90% of cases, and kidneys in 80% of cases
- Radiographic pulmonary findings can include multiple bilateral cavitating nodular lesions with irregular margins, air space consolidation, ground glass changes, and pleural effusion
- PR3/c-ANCA is positive in >90% of cases
- Treatment includes steroids, cyclophosphamide, methotrexate, and/or rituximab
  - Prognosis without treatment is less than 20% five-year-survival rate. Prognosis with proper treatment is over 80% five-year-survival rate, although many will have long-term complications
  - Most common cause of death is diffuse alveolar hemorrhage

References:

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