

# AMSER Case of the Month

## March 2024

HPI: 60 y.o. male presents for chronic dry cough for 6 months

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# Patient Presentation-Subjective

- 60 y.o. male smoker presents with chronic dry cough for 6 months
- PMHx: Anxiety, Chronic constipation, GERD

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

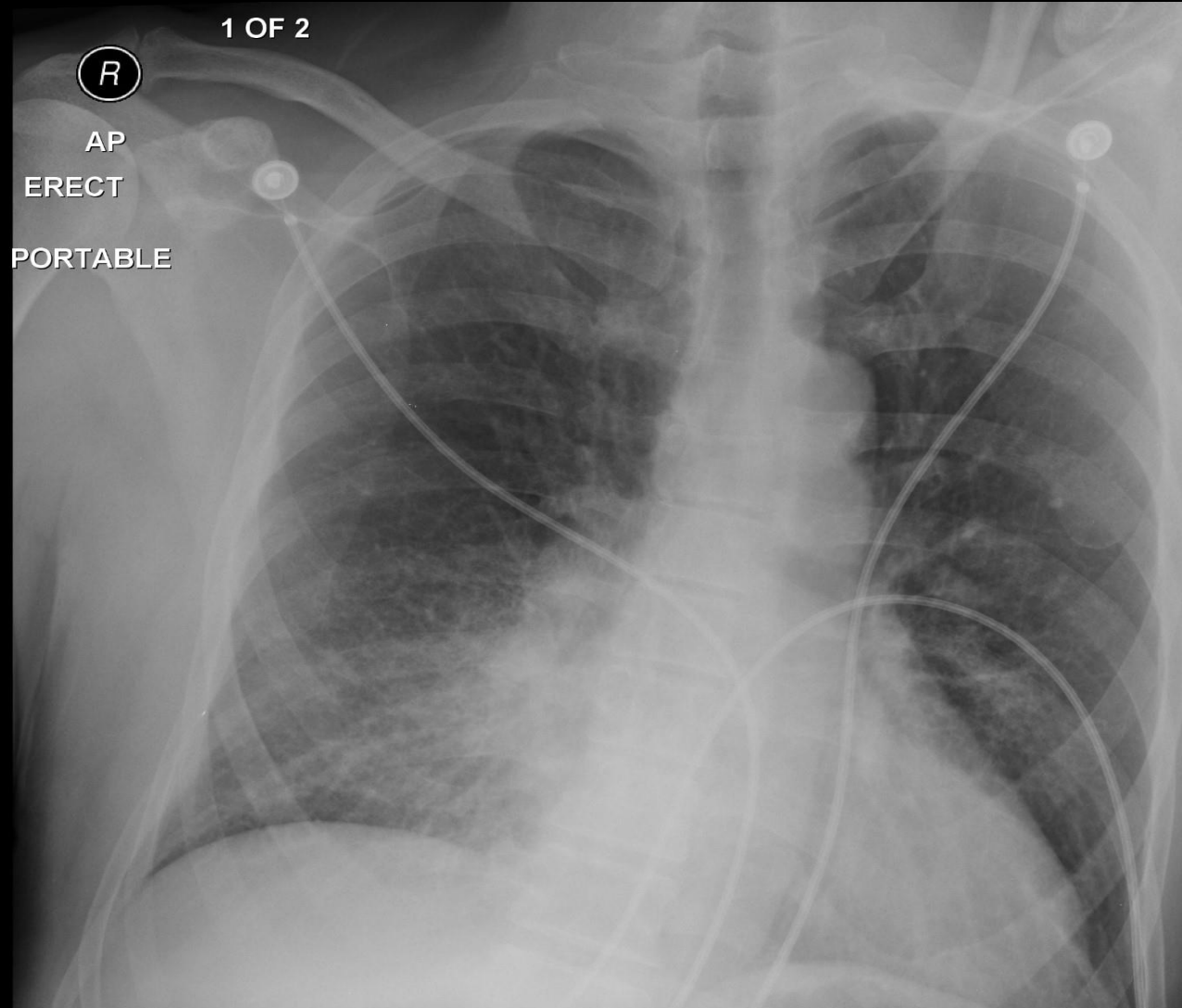
## Variant 2:

Chronic cough lasting more than 8 weeks. Increased risk for lung cancer. Initial imaging.

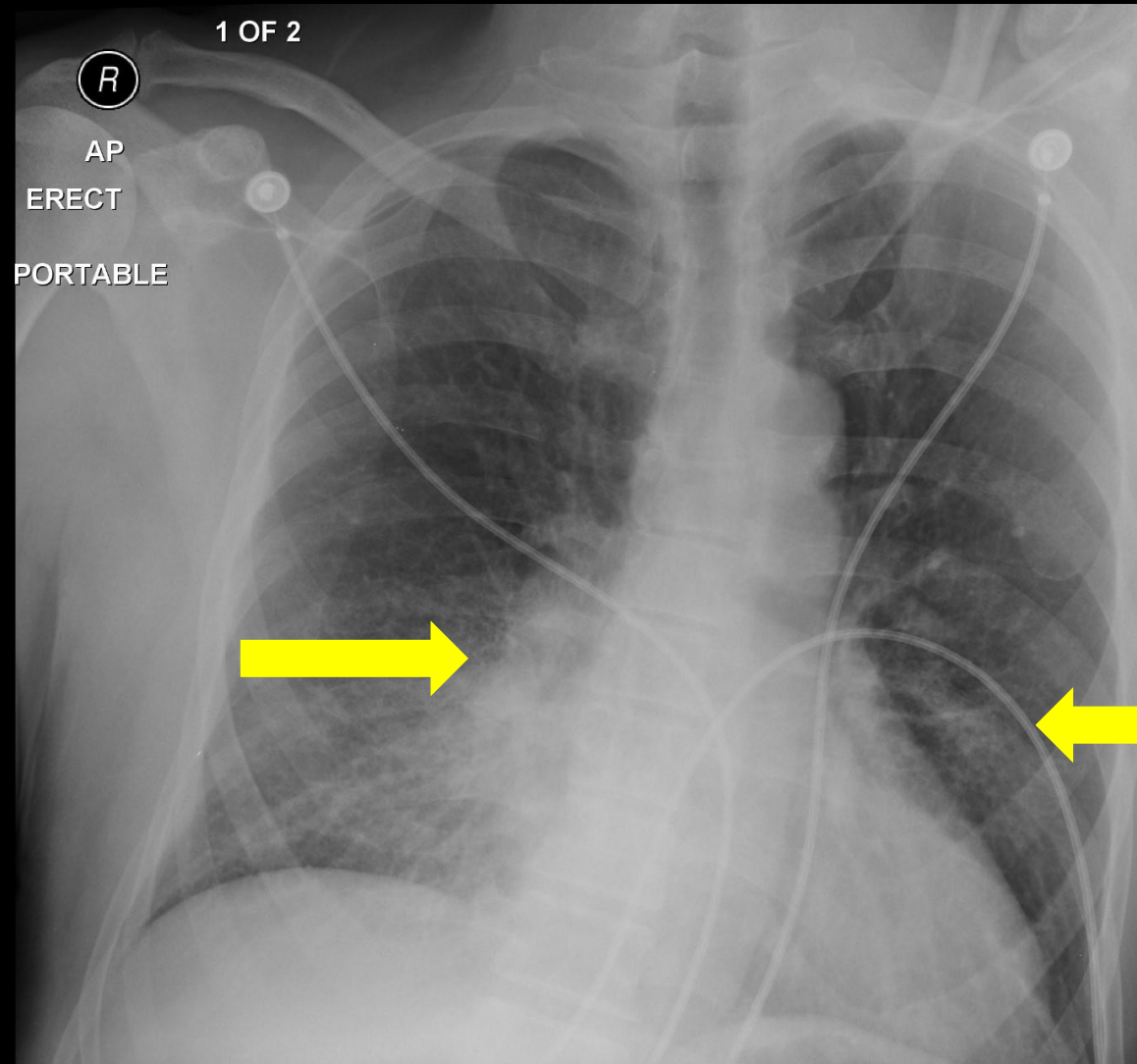
Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	⊕
CT chest with IV contrast	May Be Appropriate	⊕⊕⊕
CT chest without IV contrast	May Be Appropriate	⊕⊕⊕
MRI chest without and with IV contrast	Usually Not Appropriate	○
MRI chest without IV Contrast	Usually Not Appropriate	○
CT chest without and with IV contrast	Usually Not Appropriate	⊕⊕⊕
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	⊕⊕⊕⊕

This imaging modality was ordered by the physician

# Findings (unlabeled)



# Findings: (labeled)



Airspace consolidation in the right lower lung.

Focal opacity in the left lower lung.

What is the next step?

Order Chest CT to better evaluate the radiographic findings



# Select the applicable ACR Appropriateness Criteria

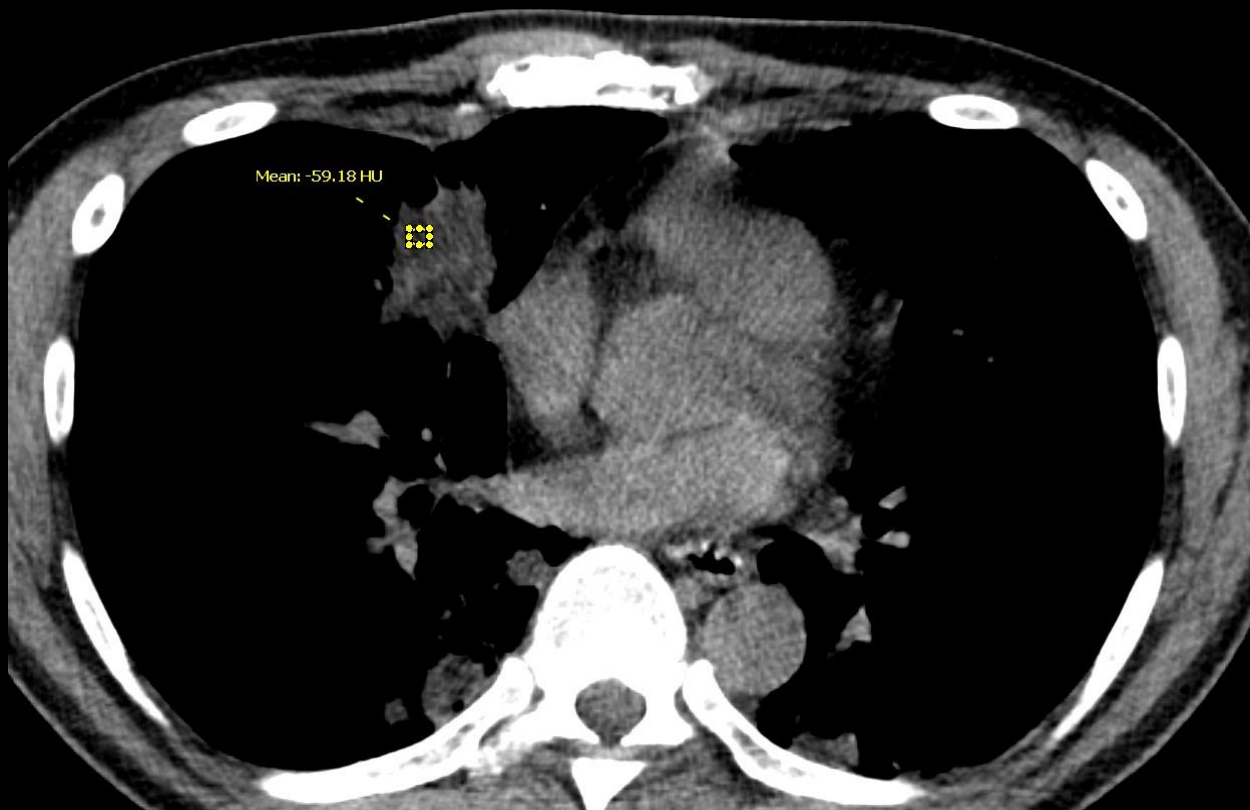
**Variant 2: Chronic cough lasting more than 8 weeks. Increased risk for lung cancer. Initial imaging.**

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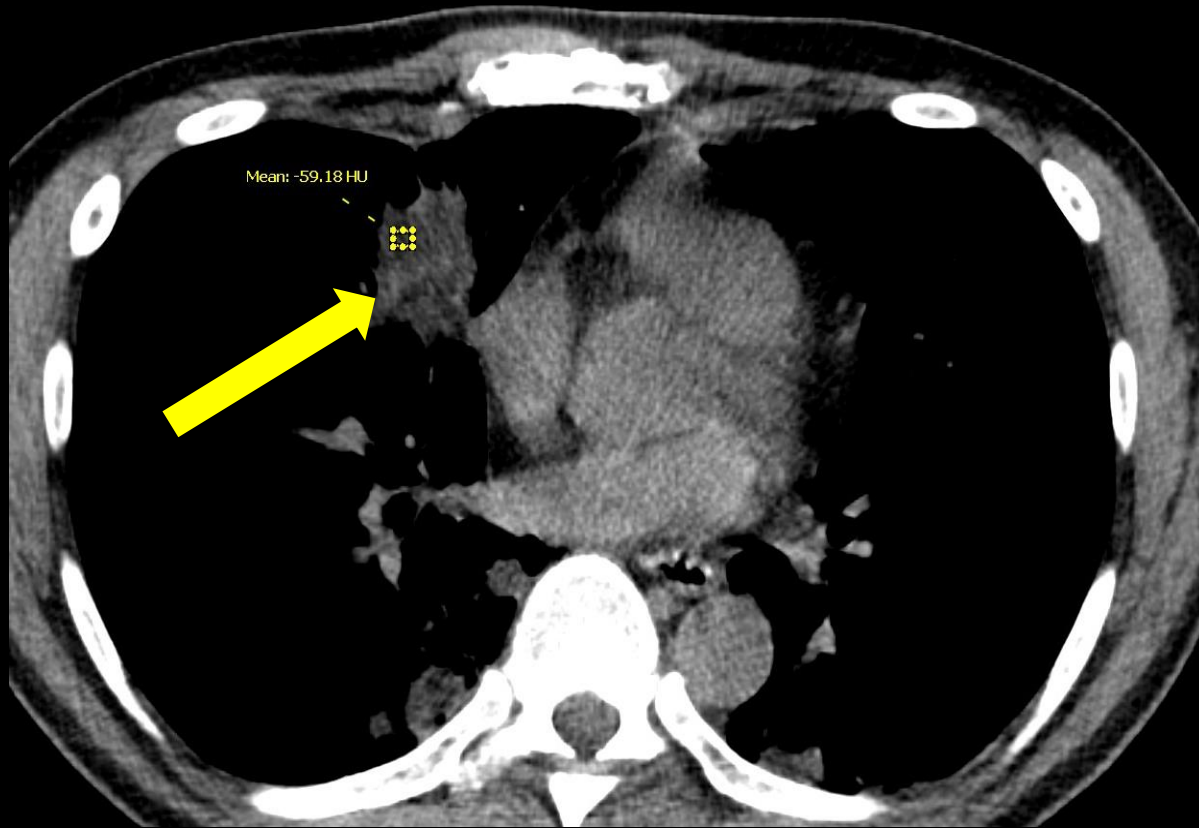
CT is reserved for indeterminate chest radiograph findings or for those with abnormalities on PFT



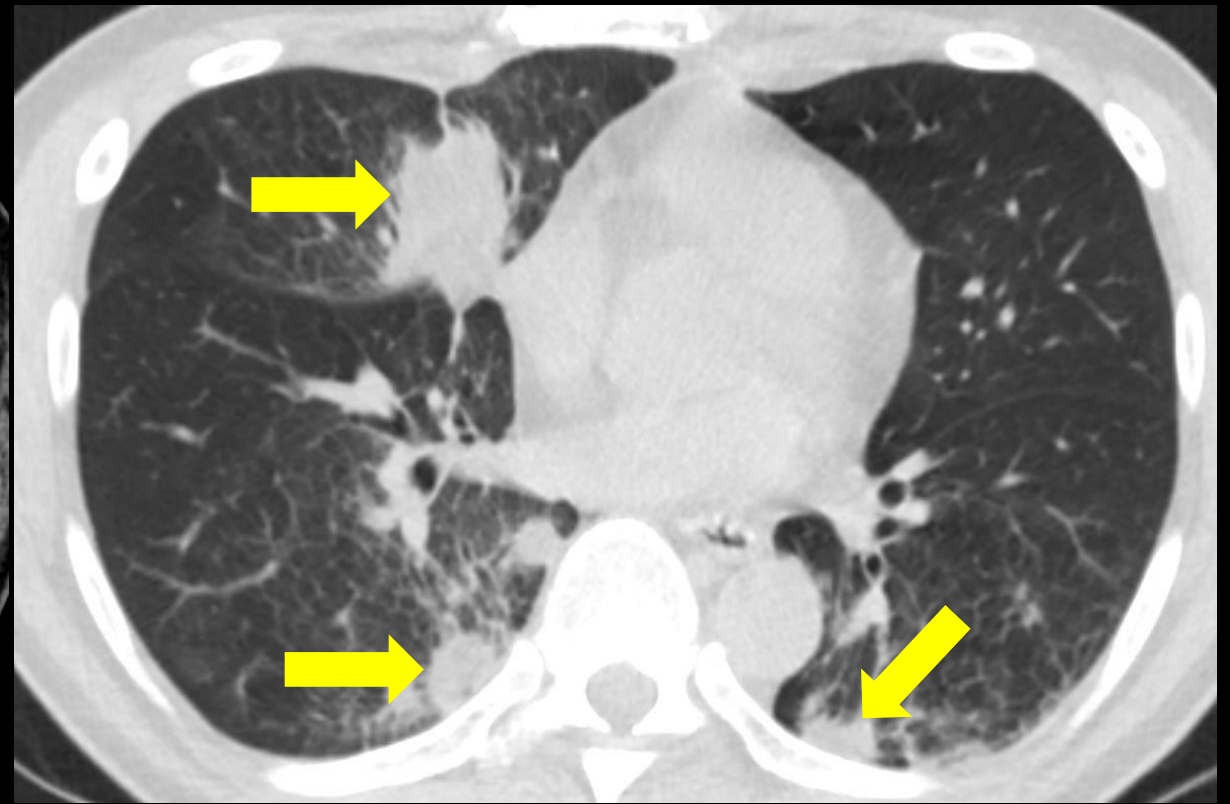
# Findings (unlabeled)



# Findings (labeled)



Rounded mass like opacities in the right middle and lower lobes , measuring -59 Hounsfield units in density, suggesting fat content.



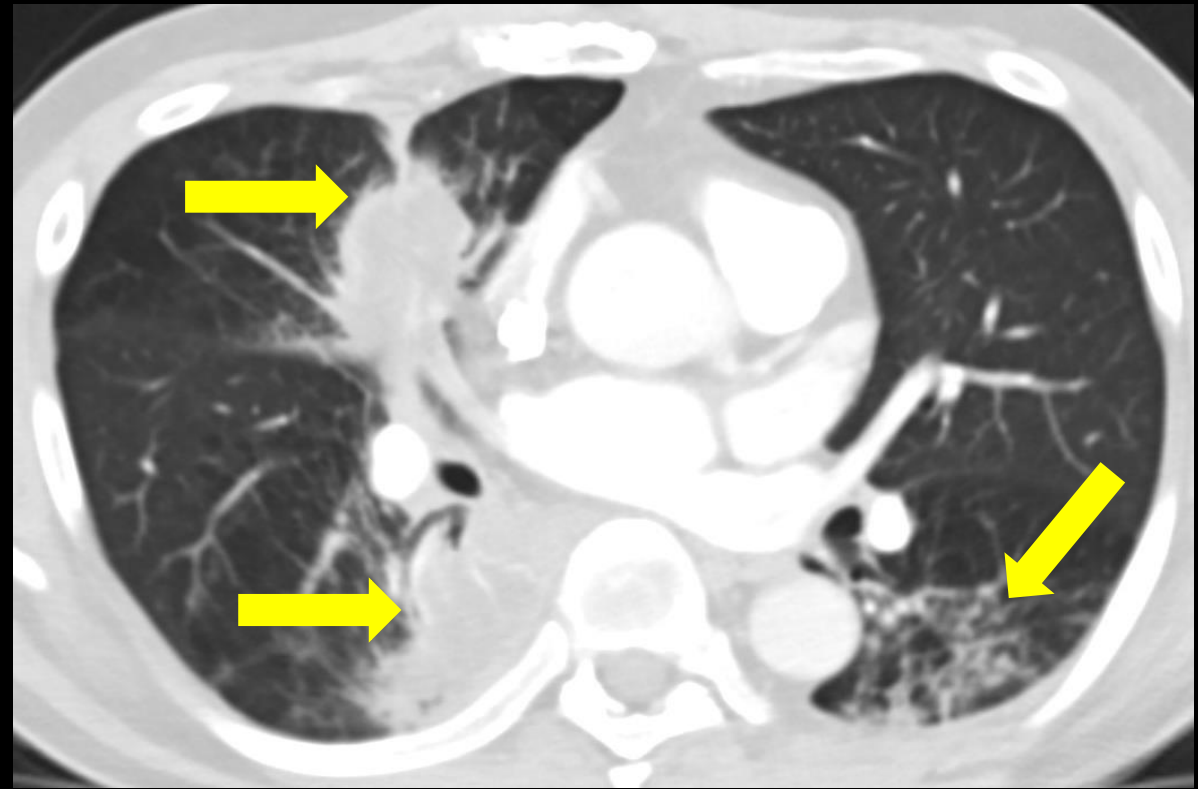
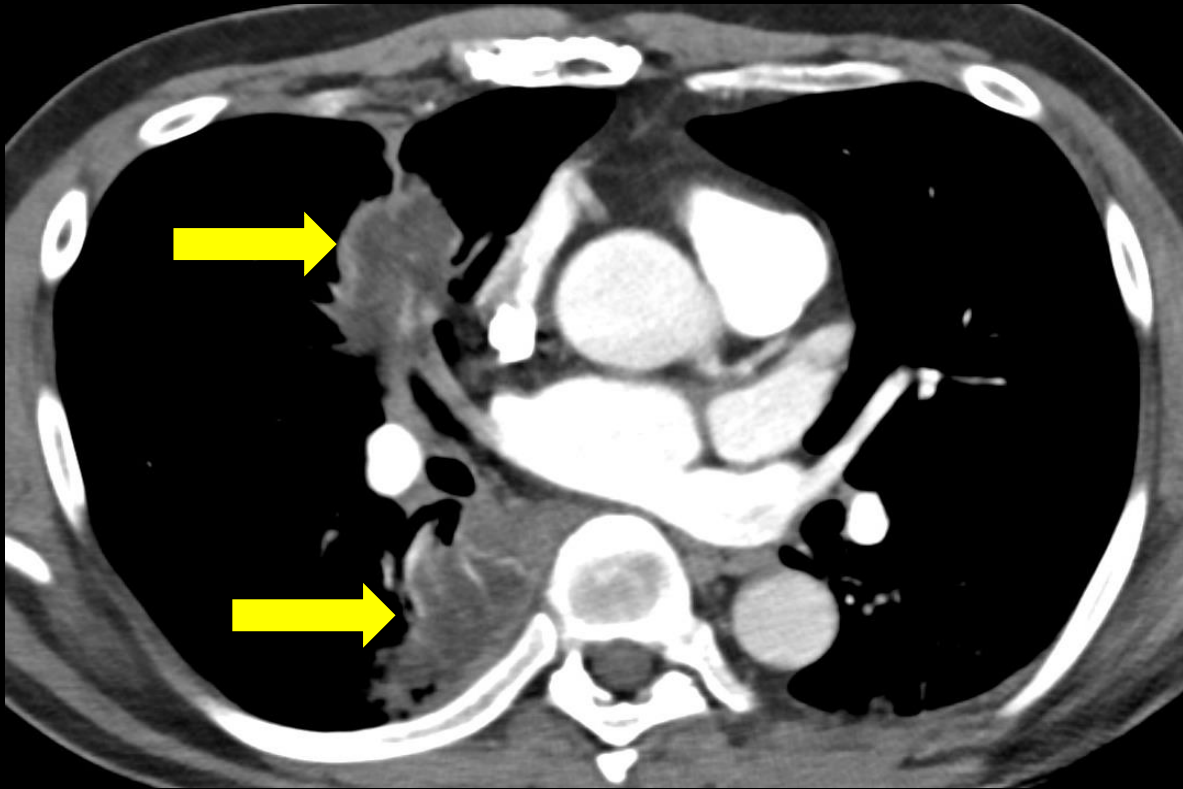
Multifocal, irregular areas of consolidation in the bilateral lower and right middle lobes with surrounding ground glass and septal thickening.

Transbronchial lung biopsy was done

# Findings (biopsy result)

- Transbronchial lung biopsy:
  - Fragments of lung tissue with **lipid laden macrophages** and accompanying reactive septal fibroinflammatory changes.
  - No evidence of malignancy.

## Findings (labeled)



Chest CT 3 years later shows persistent areas of consolidation showing fat content.

## Final Dx:

Lipoid pneumonia

Secondary to chronic aspiration of mineral oil (used for chronic constipation)

# Case Discussion

- Lipoid pneumonia results from accumulation of lipids in the alveoli and can be either exogenous or endogenous in cause based on the source of the lipid.
- Endogenous lipoid pneumonia results from lipid accumulation within intraalveolar macrophages in the setting of bronchial obstruction, chronic pulmonary infection, pulmonary alveolar proteinosis, or fat storage diseases.
- Exogenous lipoid pneumonia is caused by inhalation or aspiration of animal fat or vegetable or mineral oil.
- Exogenous lipoid pneumonia can be acute (caused by an episode of aspiration of a large quantity) or chronic (results from repeated episodes of aspiration or inhalation).
- It is uncommon, autopsy series have reported a frequency of only 1.0–2.5%.



# Case Discussion

- Risk factors:

- Prolonged history of laxative ingestion
- Use of oil-based nose drops
- Performers (fire-eaters)
- Children with intellectual disability or cleft palate
- Functional or anatomic abnormality in swallowing
- Chronic use of mineral oil or petroleum-based lubricants and decongestants

# Case Discussion

- Clinical findings

- Asymptomatic (chronic lipoid pneumonia)
- Cough
- Dyspnea
- Low-grade fever
- Weight loss
- Chest pain
- Hemoptysis

Less common

- Normal lung auscultation in most patients, sometimes can reveal crepitations or wheezes

# Case Discussion

- Radiologic manifestations
  - Acute exogenous lipoid pneumonia:
    - Pulmonary ground-glass or consolidative opacities, bilateral, and segmental or lobar in distribution and predominantly involve the middle and lower lobes can be seen in most patients within 24 hours
    - CT can reveal areas of fat attenuation as low as  $-30$  HU within the consolidative opacities and nodules, a finding diagnostic of lipoid pneumonia

# Case Discussion

- Radiologic manifestations
  - Chronic exogenous lipoid pneumonia:
    - Lipid-containing typically irregular or spiculated mass
    - Pulmonary ground-glass or consolidative opacities involving one or more segments, typically with a peribronchovascular distribution and predominant involvement of the lower lobes
    - Architectural distortion, and thickening of the interlobular septa or fibrosis in the adjacent lungs can occur in the later stages due to the transportation of oils from the alveoli into the lung interstitium

# Case Discussion

- Management
  - ✓ Discontinuing exposure to the offending agent
  - ✓ In asymptomatic patients, treatment remains controversial
  - ✓ In patients with diffuse pulmonary damage, aggressive therapies have been reported:
    - ✓ Whole lung lavage
    - ✓ Systemic corticosteroids
    - ✓ Thoracoscopy with surgical debridement

# References:

- Betancourt SL, Martinez-Jimenez S, Rossi SE, Truong MT, Carrillo J, Erasmus JJ. Lipoid pneumonia: spectrum of clinical and radiologic manifestations. *AJR Am J Roentgenol*. 2010 Jan;194(1):103-9. doi: 10.2214/AJR.09.3040. PMID: 20028911.
- Expert Panel on Thoracic Imaging; Kuzniewski CT, Kizhner O, Donnelly EF, Henry TS, Amin AN, Kandathil A, Kelly AM, Laroia AT, Lee E, Martin MD, Morris MF, Raptis CA, Sirajuddin A, Wu CC, Kanne JP. ACR Appropriateness Criteria® Chronic Cough. *J Am Coll Radiol*. 2021 Nov;18(11S):S305-S319. doi: 10.1016/j.jacr.2021.08.007. PMID: 34794590.
- Marchiori E, Zanetti G, Mano CM, Hochegger B. Exogenous lipoid pneumonia. Clinical and radiological manifestations. *Respir Med*. 2011 May;105(5):659-66. doi: 10.1016/j.rmed.2010.12.001. Epub 2010 Dec 23. PMID: 21185165.