AMSER Case of the Month October 2026

62-year-old man with productive cough and dyspnea in the setting of chronic respiratory failure

Krishnan Shyamkumar MS4
Wayne State University School of Medicine

Zachary Dewyer MD (PGY-3) and Dharshan Vummidi MD (attending)
Department of Radiology
Henry Ford Hospital, Detroit MI

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Patient Presentation: HPI

- 62-year-old man with a pertinent history of Mounier-Kuhn syndrome associated with bullous bronchiectasis, recurrent respiratory tract infections, and multiple hospitalizations for hypoxic respiratory failure with increasing O_2 requirements, awaiting bilateral lung transplant.
- Two weeks prior, patient was admitted and completed treatment for Pseudomonas PNA but continued to have residual cough productive of green sputum following discharge.
- Patient presented to the ED after 1 day of worsening dyspnea and cough associated with increased production of green and yellow sputum (darker than usual).

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Patient Presentation: Past Histories

- PMH: Mounier-Kuhn syndrome with bronchiectasis, right upper lobe lung nodule concerning for aspergillus, hypertension, OSA, ventricular trigeminy, hyperlipidemia, iron deficiency anemia, pancreatitis, vitamin B12 deficiency
- PSH: Prostatectomy for prostate CA
- Medications: Home oxygen (8 L at rest, 10-12 L during exertion), CPAP, colistimethate 150 mg injection, diltiazem 120 mg daily, rosuvastatin 20 mg daily, cyanocobalamin 100 mcg weekly, alendronate 70 mg weekly
- SH: Former smoker with 20 pack-year history (quit 25 years ago), no current EtOH consumption, no current recreational drug use, able to perform ADLs without assistance but unable to exercise due to exertional dyspnea

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Objective Findings

- Vitals: T 36.3°C, HR 111, BP 106/73, RR 16, SpO2 95%
- Pertinent PE Findings: Diffuse crackles and rales
- Pertinent Lab Findings: Microcytic anemia (Hb 11.2 ,MCV 74.5); VBG notable for acidemia (pH 7.30), hypercapnia (pCO_2 78.2), bicarbonate 37 (↑), lactate 1.0; Sputum Gram stain revealed few Gram+ cocci in pairs and few Gram- bacilli; COVID/Flu negative
- EKG: Sinus tachycardia

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What Imaging Should We Order?

ACR Appropriateness Criteria

2 Confirmed diffuse lung disease. Suspected acute exacerbation or acute deterioration. Initial Imaging. 7

Name	Category	Adult RRL	Peds RRL
Radiography chest	Usually appropriate	☢ <0.1 mSv	☢ <0.03 mSv [ped]
CT chest without IV contrast	Usually appropriate	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]
CT chest with IV contrast	May be appropriate	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]
MRI chest without and with IV contrast	Usually not appropriate	O 0 mSv	O 0 mSv [ped]
MRI chest without IV contrast	Usually not appropriate	O 0 mSv	O 0 mSv [ped]
CT chest without and with IV contrast	Usually not appropriate	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]

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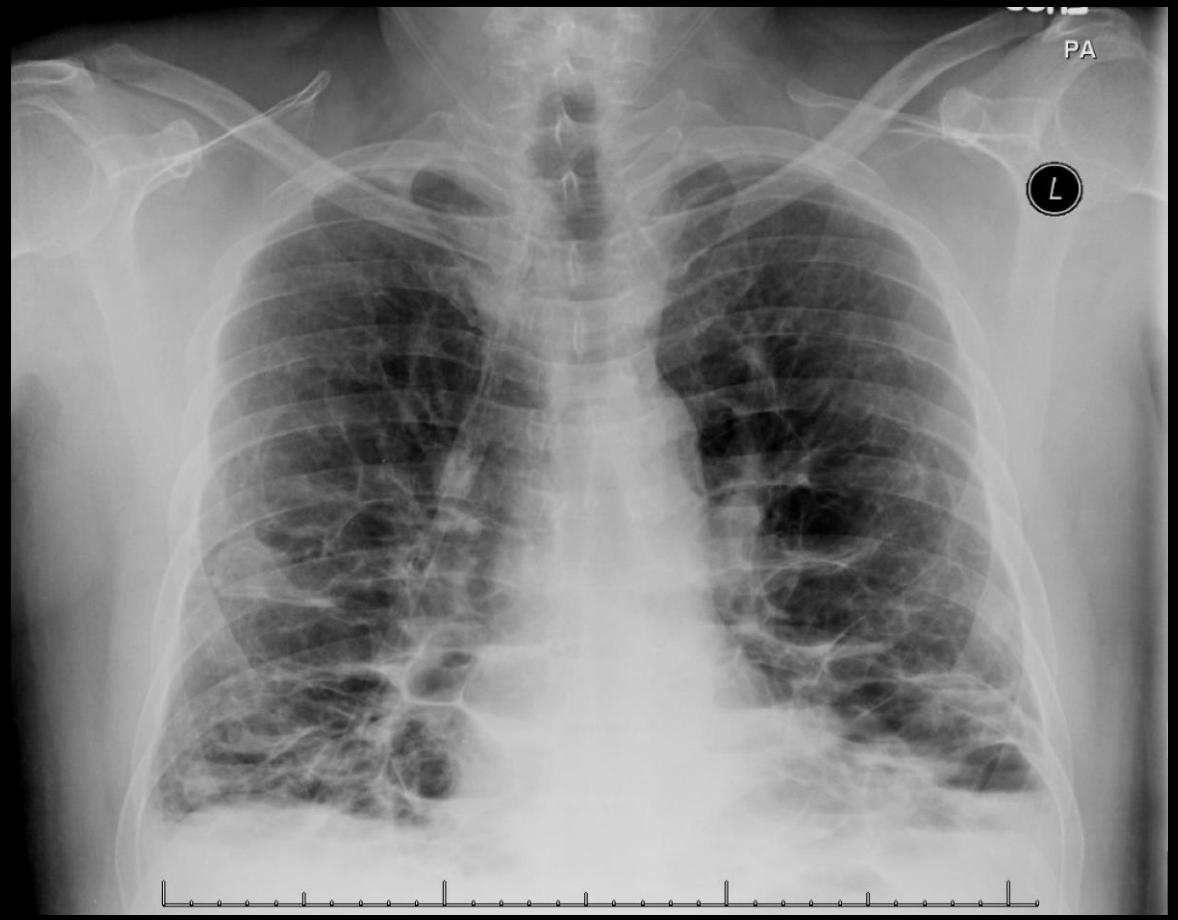
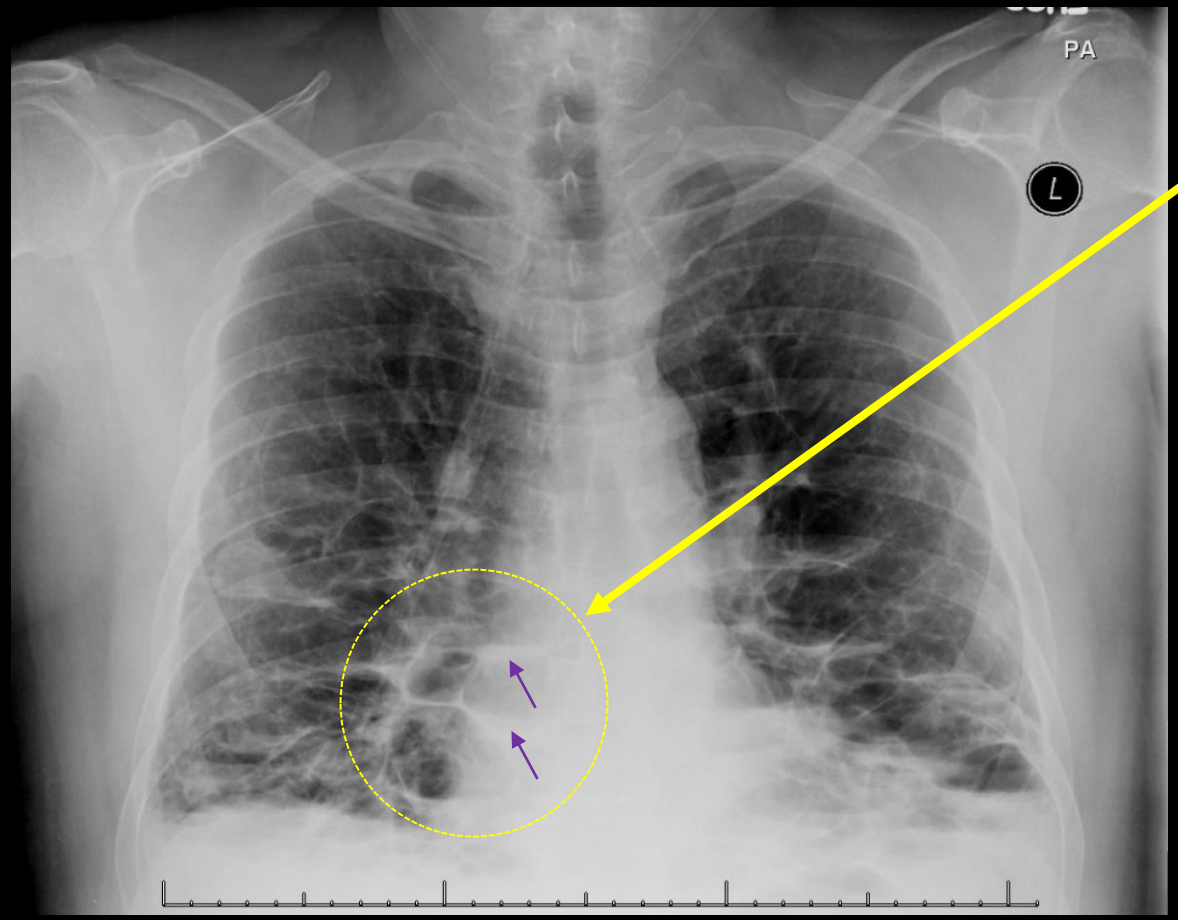
CXR Findings (unlabeled)

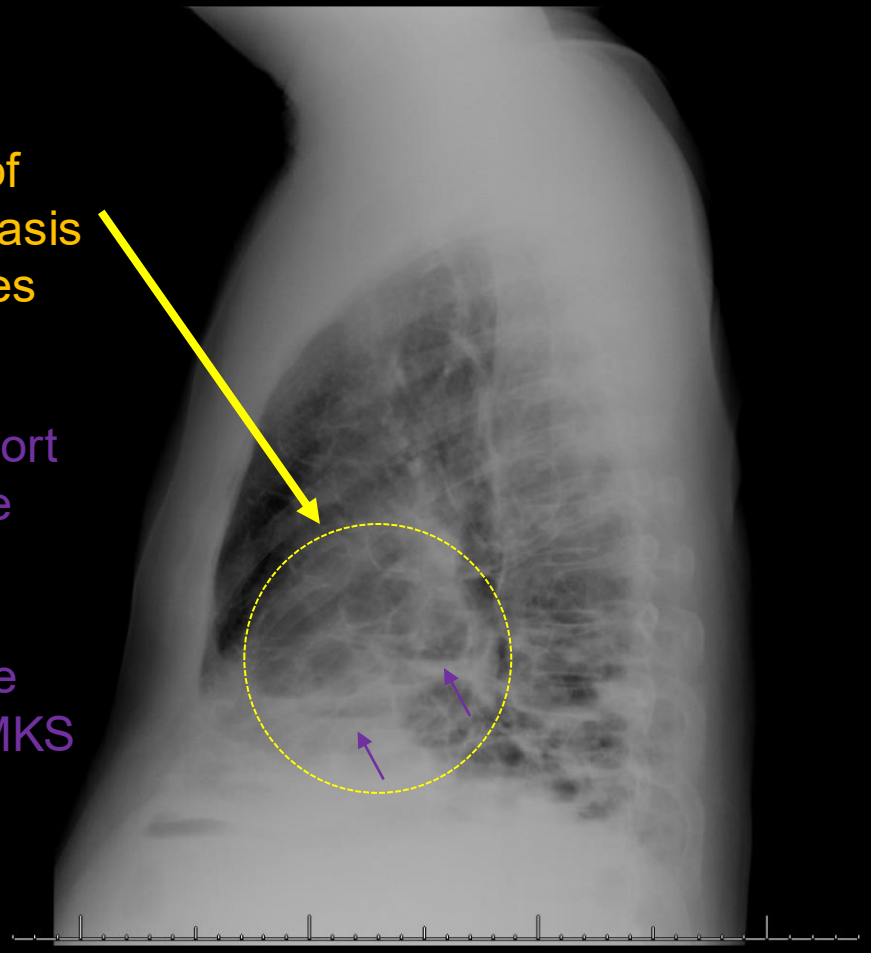


CXR Findings (labeled)

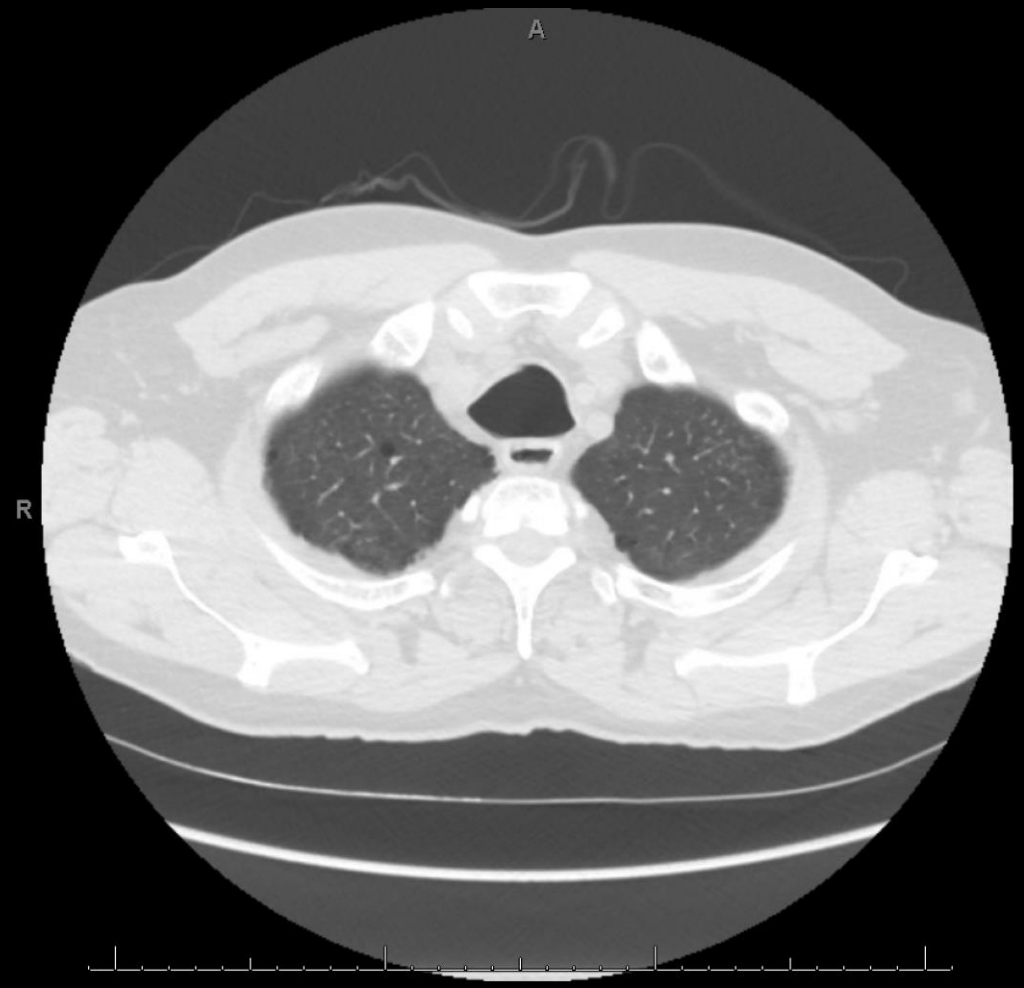


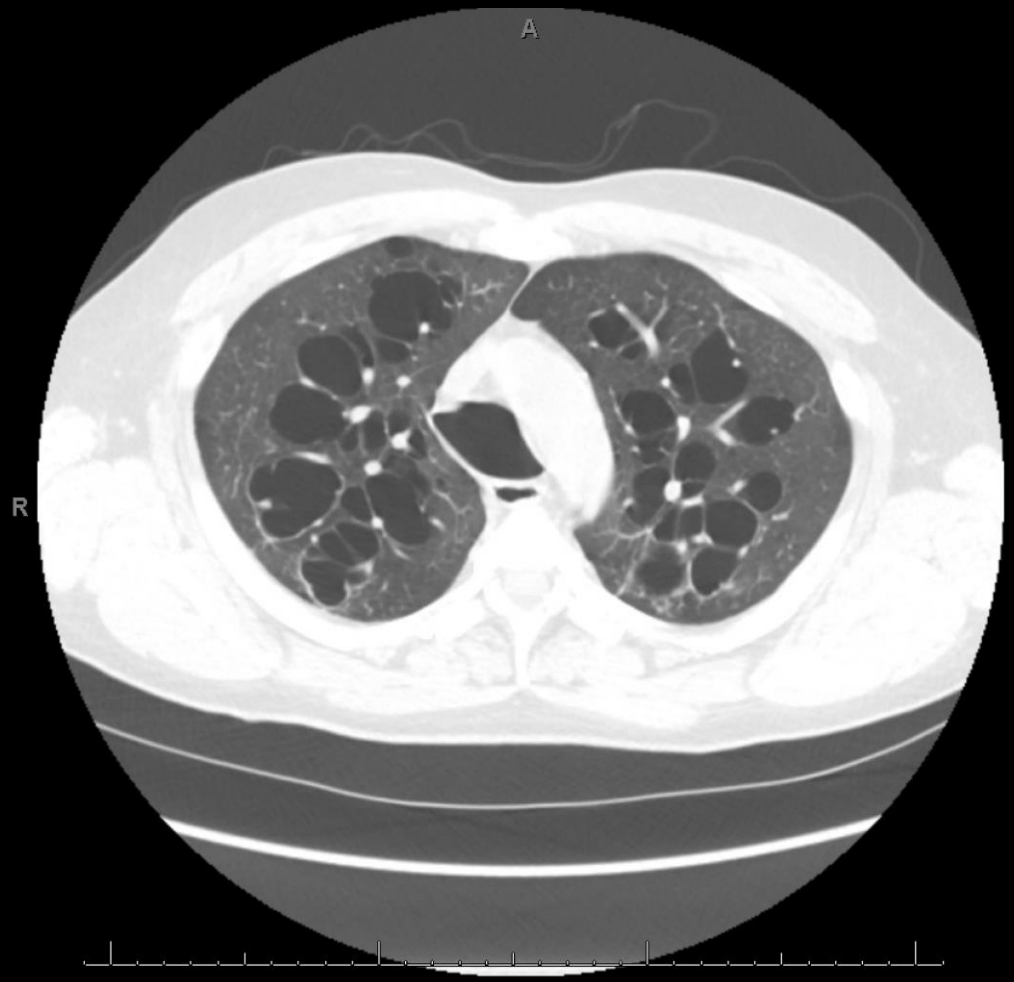
Encircled region of diffuse bronchiectasis with cystic changes

Air-fluid levels (short purple arrows) are present and likely reflect the pooled secretions that are characteristic of MKS

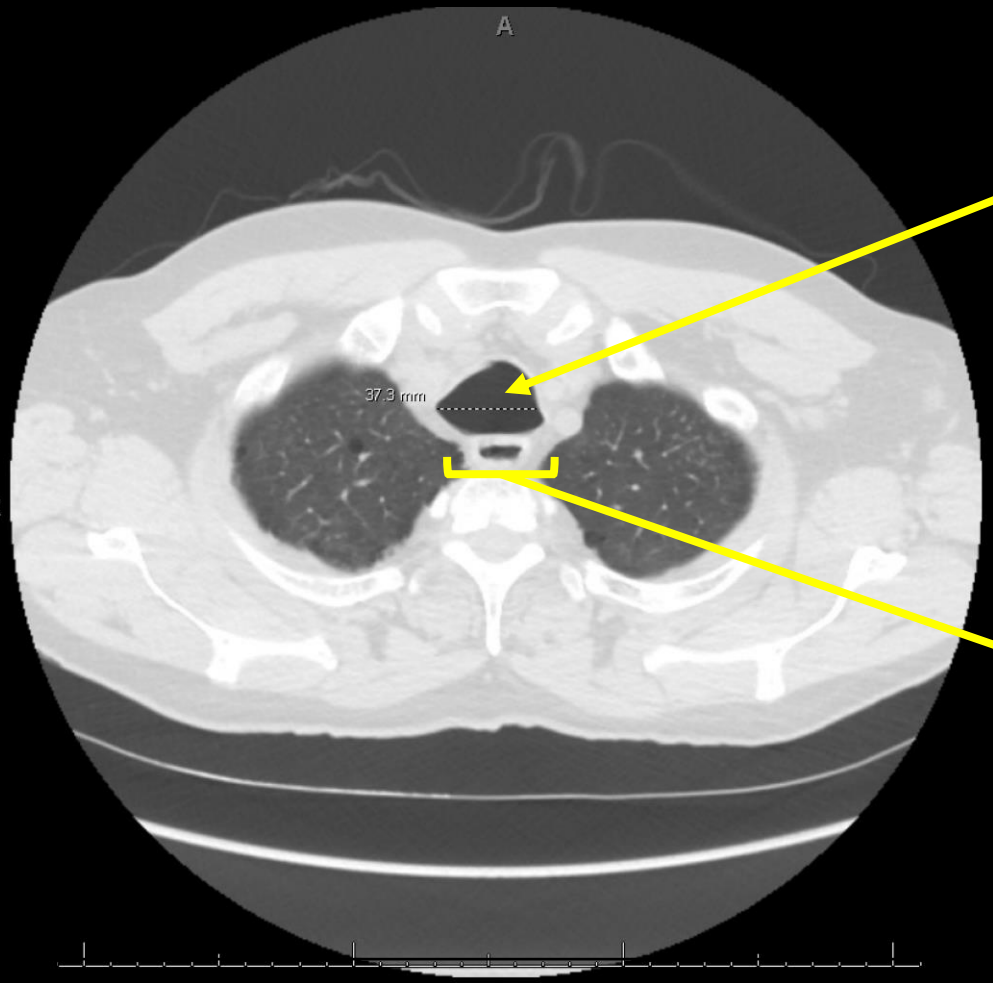


Axial CT Findings (unlabeled)





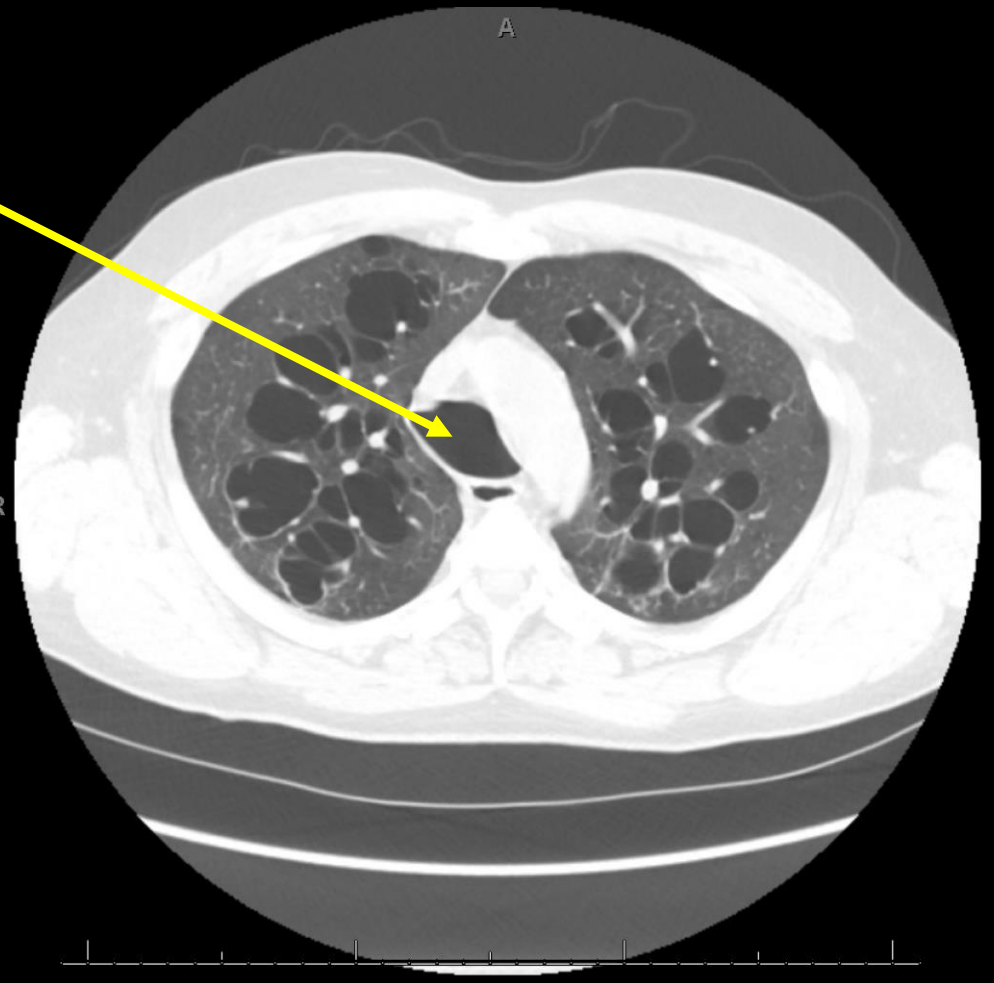
Axial CT Findings (labeled)



Axial CT section above the aortic arch

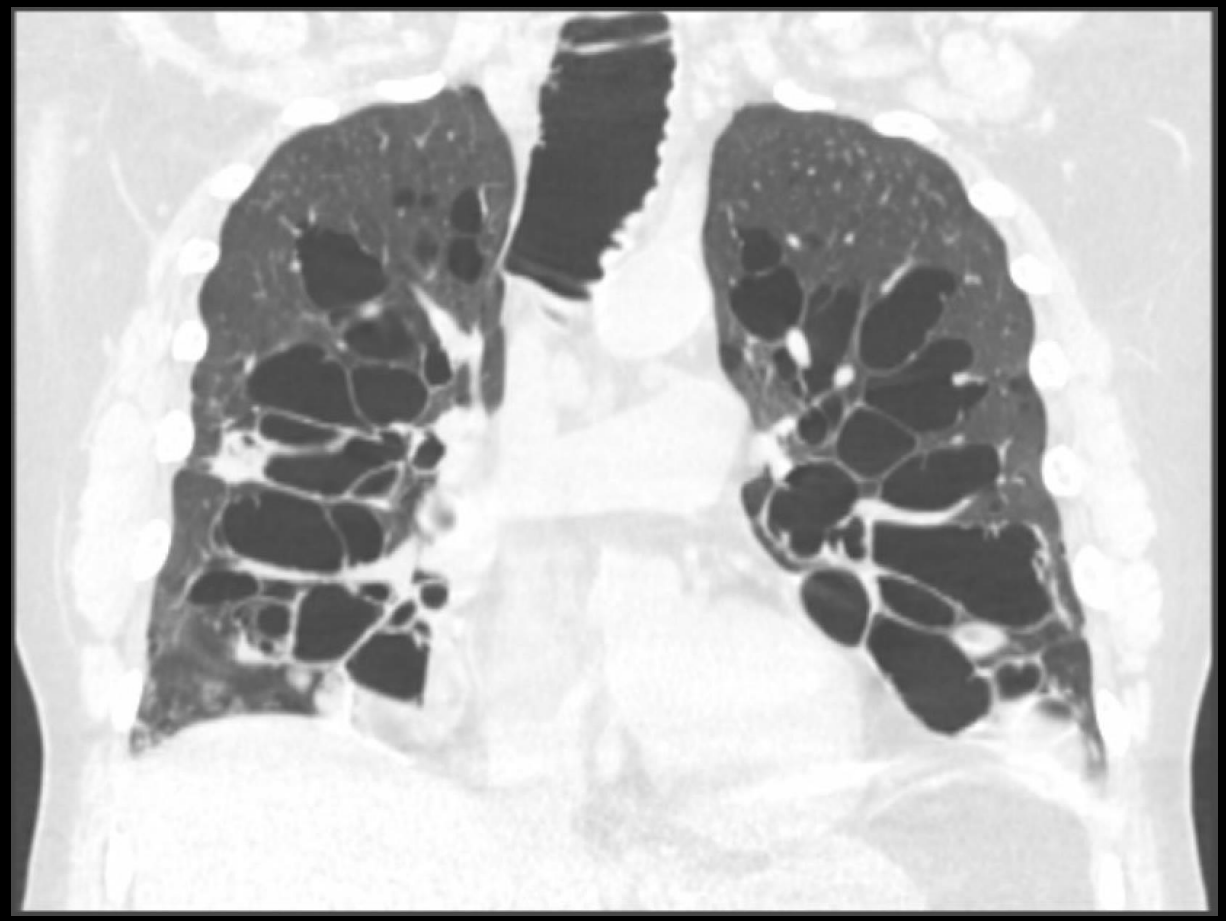
Dilated trachea

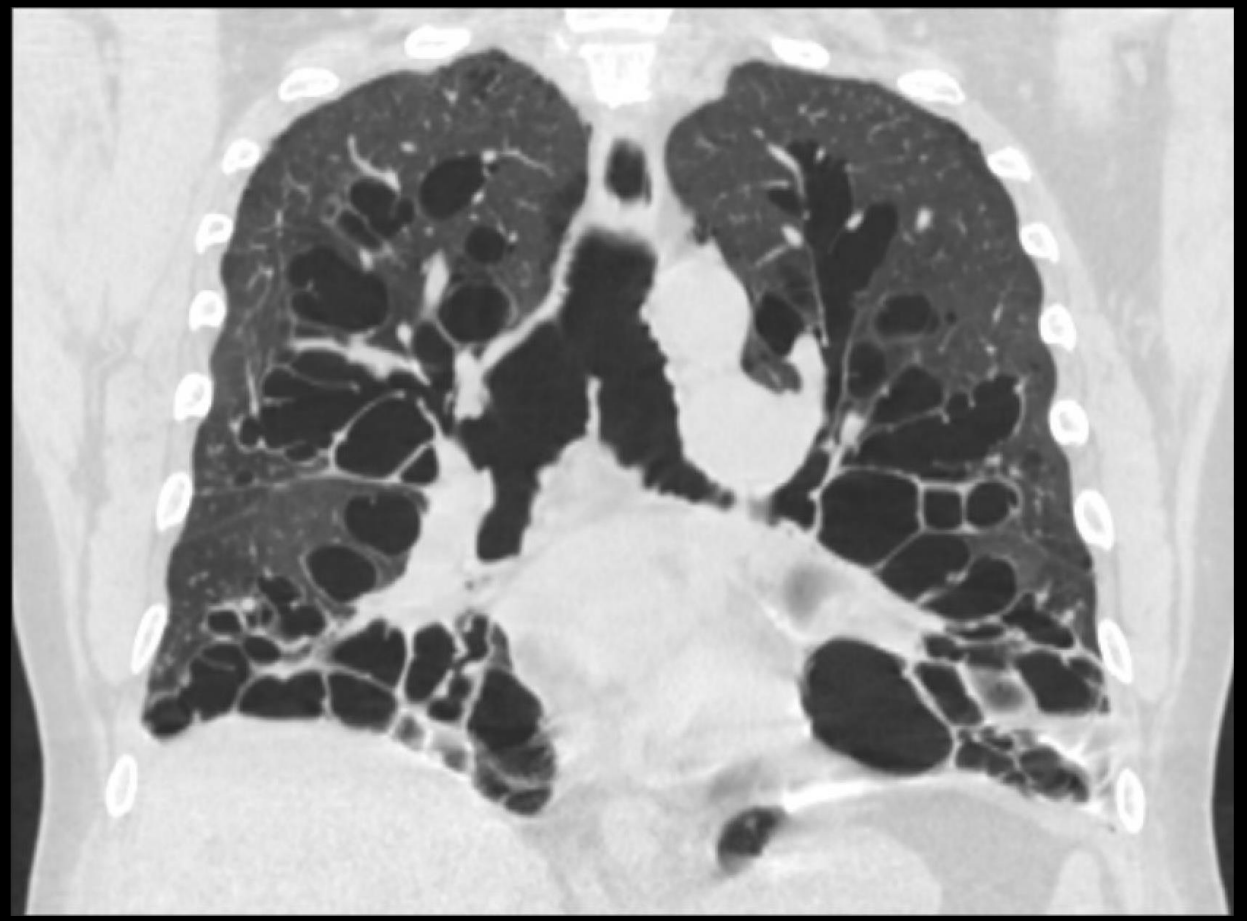
Transverse tracheal diameter of 3.7 cm, above the diagnostic threshold for MKS[1]



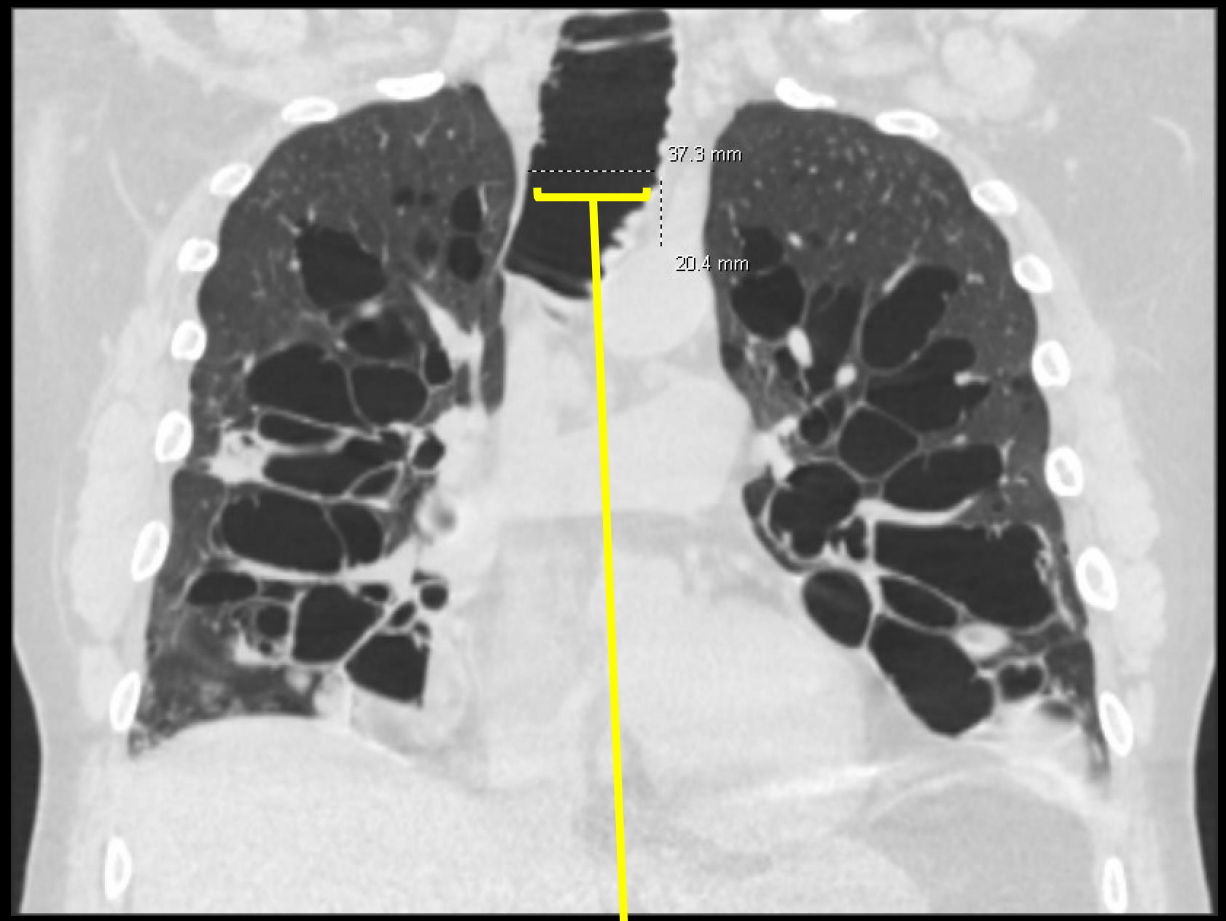
Axial CT section at the level of the aortic arch

Coronal CT Findings (unlabeled)

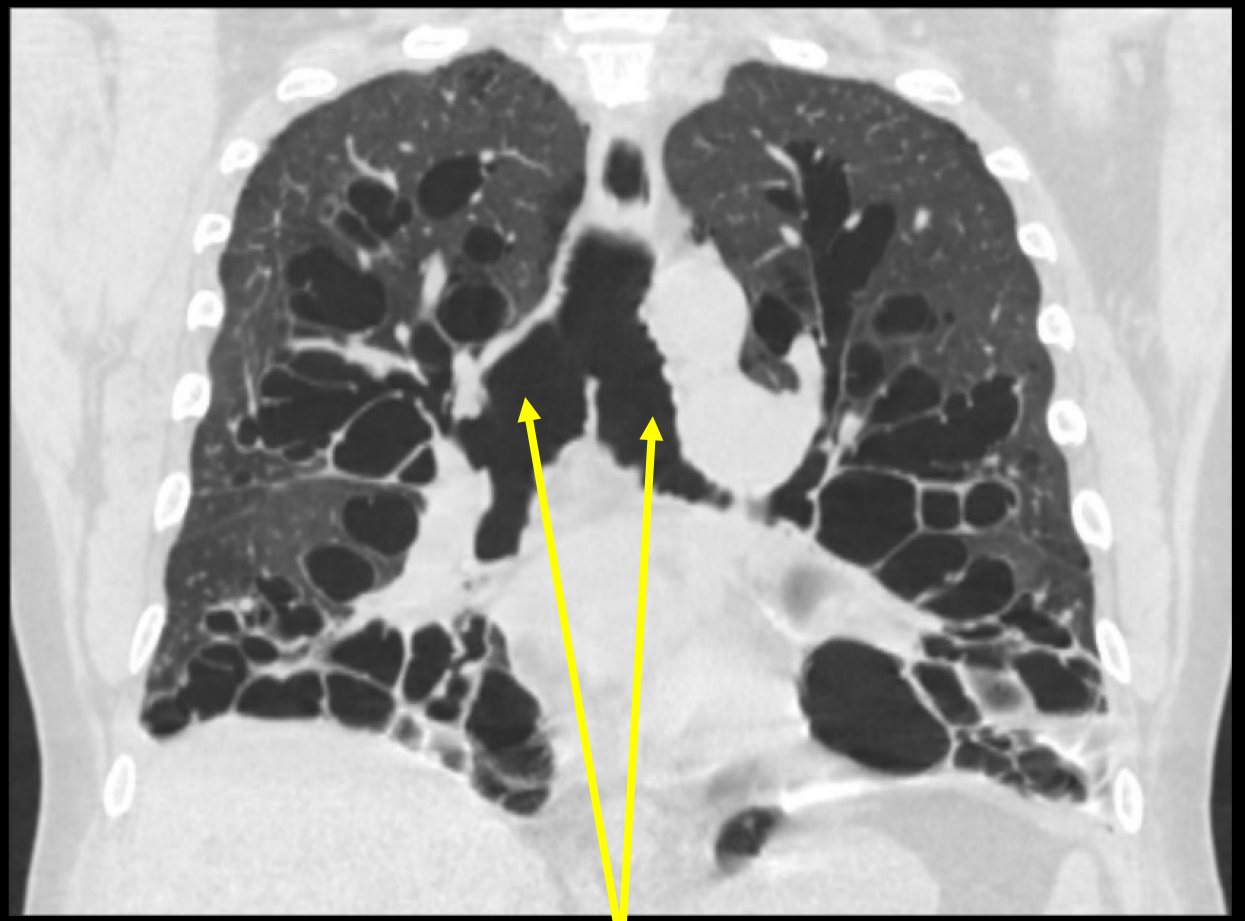




Coronal CT Findings (labeled)



Dilated trachea
TTD > 3 cm, measured ~ 2 cm above the aortic arch

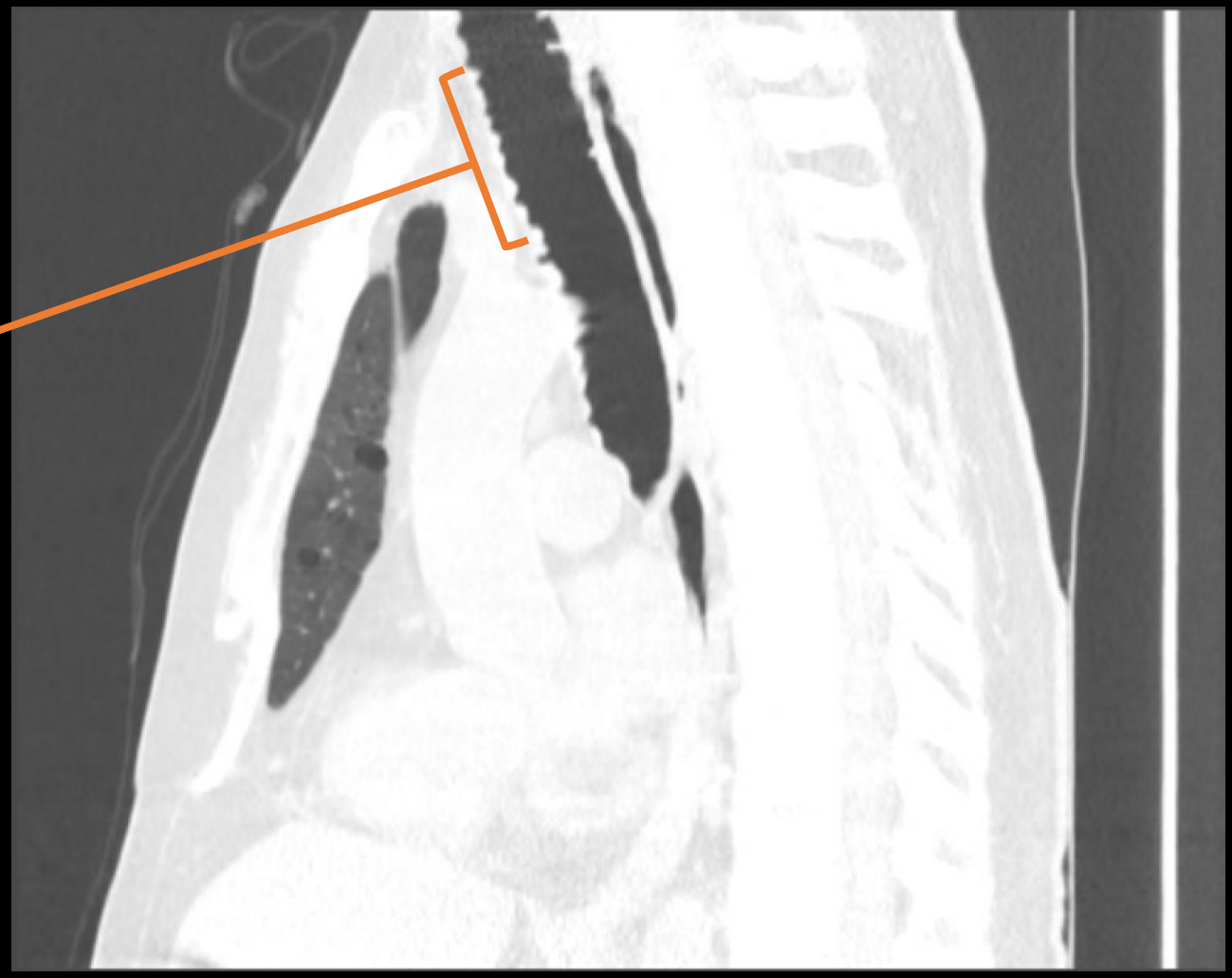


Dilated primary bronchi

Sagittal CT Findings (unlabeled)

Sagittal CT Findings (labeled)

Scalloped appearance of the trachea due to bulging of redundant musculo-membranous tissue between the cartilaginous rings



Final Dx:

Mounier-Kuhn Syndrome

Case Discussion

- Pathogenesis[1,2]
  - Abnormal dilation of the trachea and primary bronchi due to severe atrophy of intraluminal elastic and smooth muscle tissue
  - Flaccid airways hyper-expand with inspiration and collapse during expiration → bulging and diverticulosis of tracheal wall from ↑ outflow driving pressure → stagnation and impaired clearance of secretions predispose to recurrent infection
  - Etiology of structural changes remains unclear (inherited vs acquired), but some evidence suggests a congenital basis for MKS due to occurrence in multiple age groups and association with other connective tissue disorders

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Case Discussion

- Epidemiology[2]
  - Rare condition, with the number of reported cases estimated around 500
  - More commonly diagnosed in middle-aged men who smoke

- Clinical Presentation[2]
  - Symptoms resembling chronic bronchitis and bronchiectasis – productive cough, dyspnea, etc.
  - Recurrent respiratory tract infections

Case Discussion

- Diagnosis[1,3,4]
  - On imaging, a transverse tracheal diameter > 3 SDs above the mean is diagnostic
  - CXR: > 3 cm
  - CT: > 2.5 cm in men, > 2.1 com in women
  - Bronchoscopy may be notable for a dilated lumen, saccular pouches, diverticula, and pooled secretions

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Case Discussion

- Management[2]
  - Much of the same treatment approach for bronchiectasis is also applied to MKS, with the specific intervention tailored to symptom/disease severity
  - Focus on preventing/reducing exacerbations through:
    a) airway clearance – bronchodilators, mucolytics, chest PT
    b) protecting against infection – vaccination, prophylactic antibiotics
    c) surgical options for refractory symptoms – stents, lung transplant

References

1. Collins J, Stern EJ. Airways. Chest Radiology: The Essentials. 3rd ed. Wolters Kluwer; 2015.
2. Sharma S, Kuperberg SJ. State-of-the-art narrative review: Mounier-Kuhn syndrome and tracheobronchomegaly. Respir Med. 2025;237:107914. doi: 10.1016/j.rmed.2024.107914
3. Dunne MG, Reiner B. CT features of tracheobronchomegaly. J Comput Assist Tomogr. 1988;12(3)388–391. doi: 10.1097/00004728-198805010-00004
4. Zaghba N, Laklaai Z, Chaanoun K, Benjelloun H, Yassine N. Mounier-Kuhn syndrome: a typical case including CT and bronchoscopic imaging. Oxf Med Case Reports. 2023;2023(11):omad123. doi: 10.1093/omcr/omad123