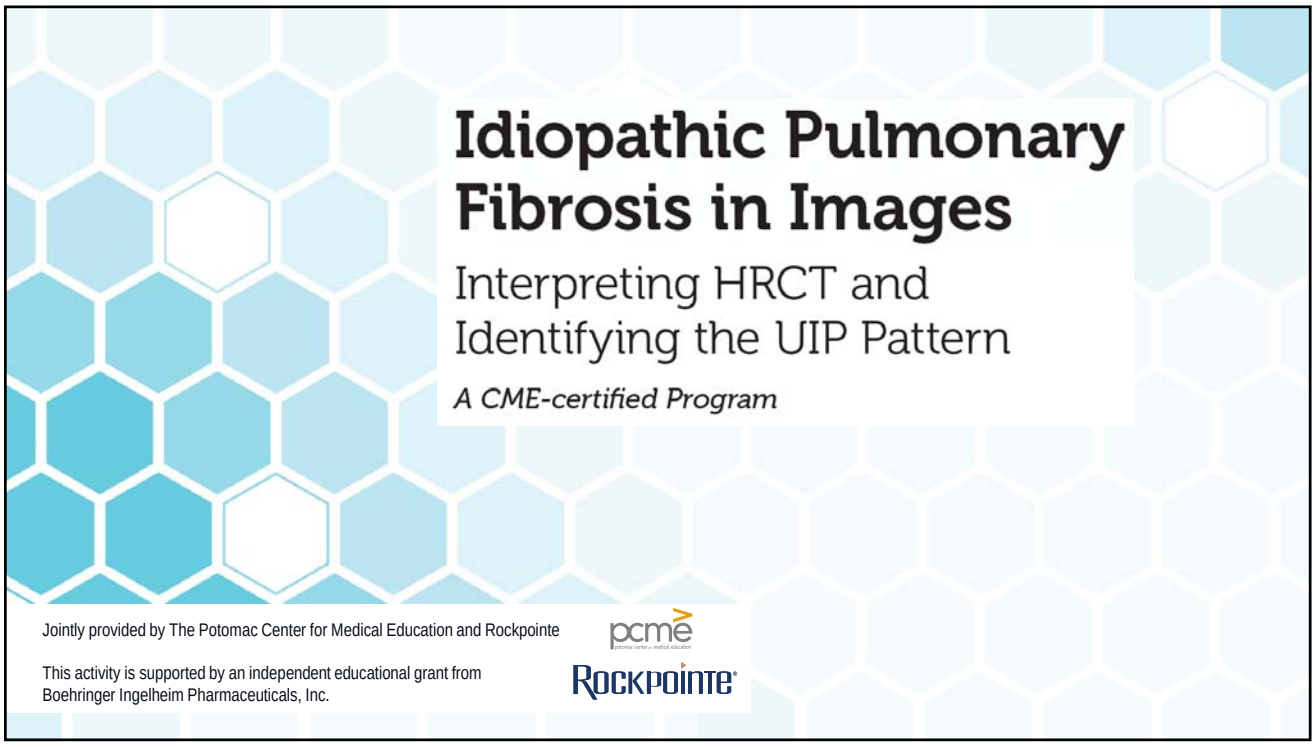
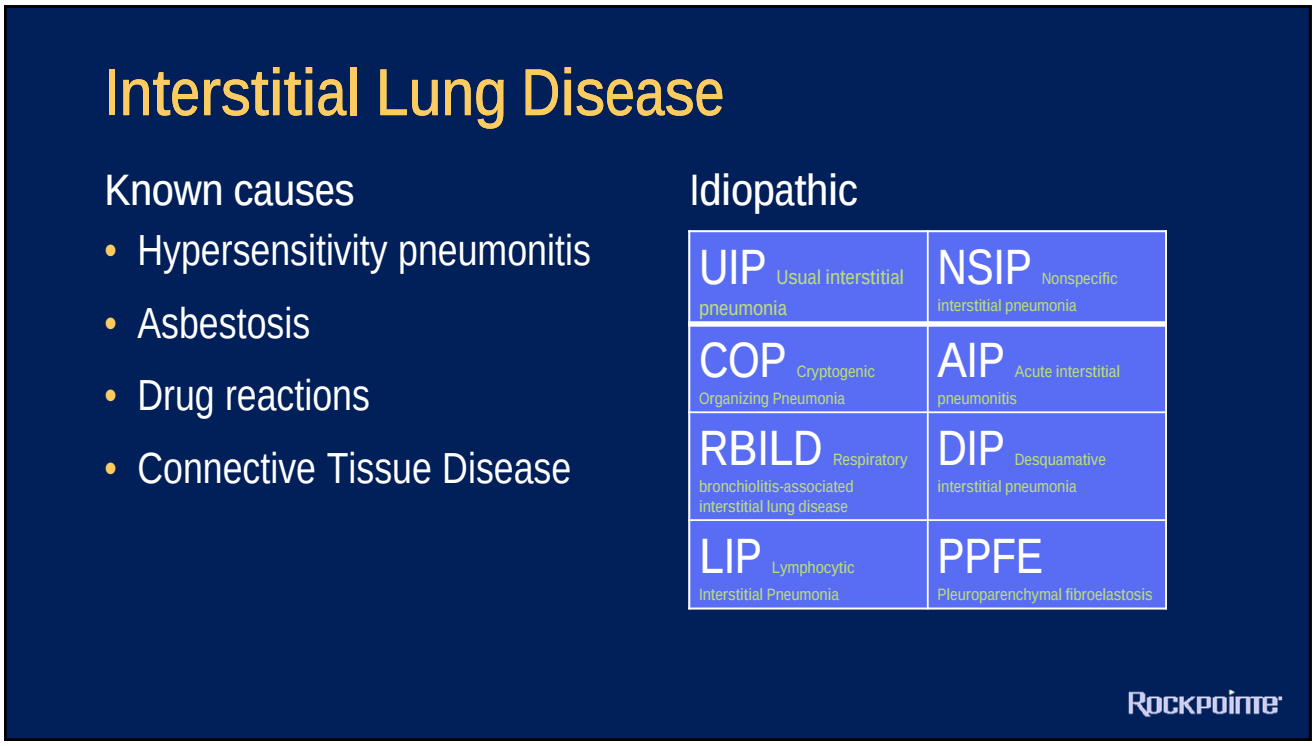
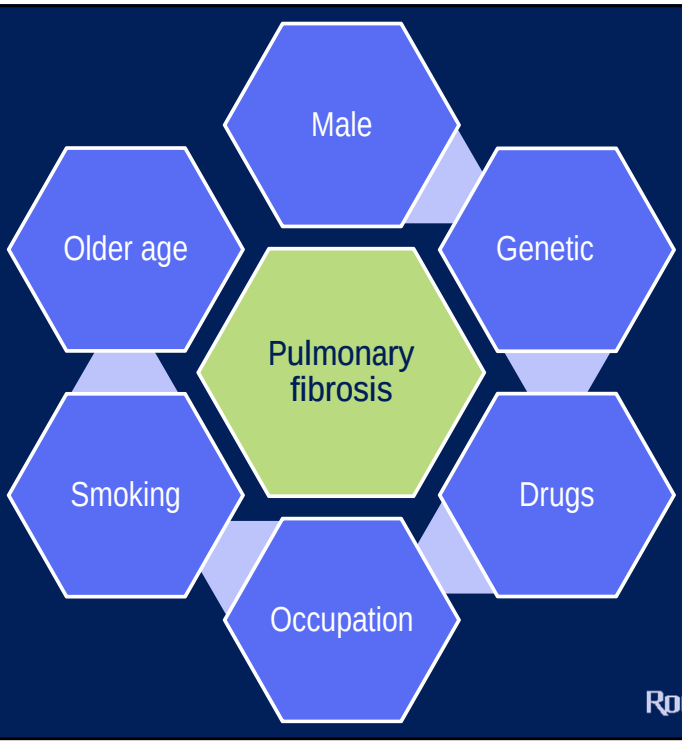




Factors which increase a persons risk for pulmonary fibrosis



Rockpointe

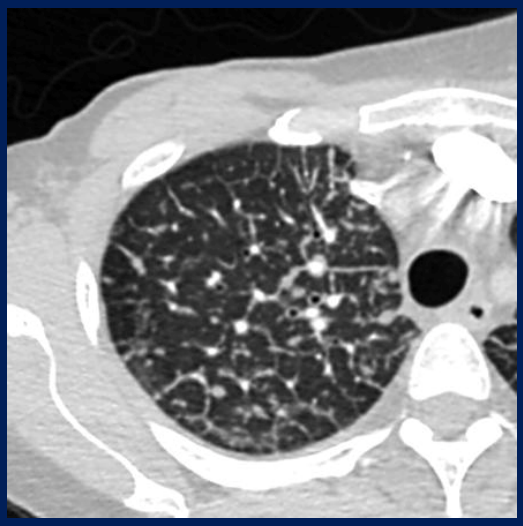
Idiopathic pulmonary fibrosis (IPF) 101

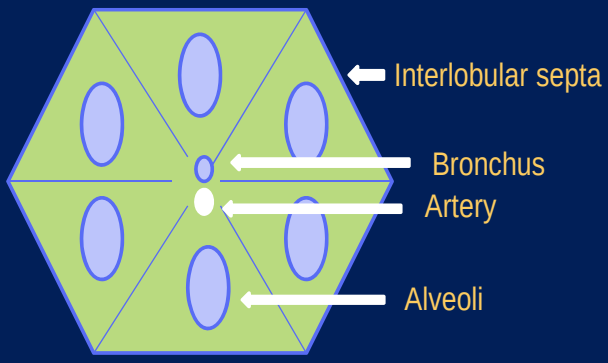
- Idiopathic pulmonary fibrosis (IPF) most common and deadly type of pulmonary fibrosis
- Similar survival as compared to Non-Small Cell Lung Cancer
- Usual interstitial pneumonitis (UIP) is the imaging pattern and histology in IPF
- Conversely, UIP almost always IPF (>95%)
- In 2014, FDA approved new therapies for the treatment of patients with IPF

Xia, Meng, et al. "Treatment Destiny In Idiopathic Pulmonary Fibrosis Patients Following Approval Of Two Drug Therapies." *A103. IPF: MORE ABOUT THERAPY AND OUTCOMES*. American Thoracic Society, 2016. A2697-A2697.

Rockpointe

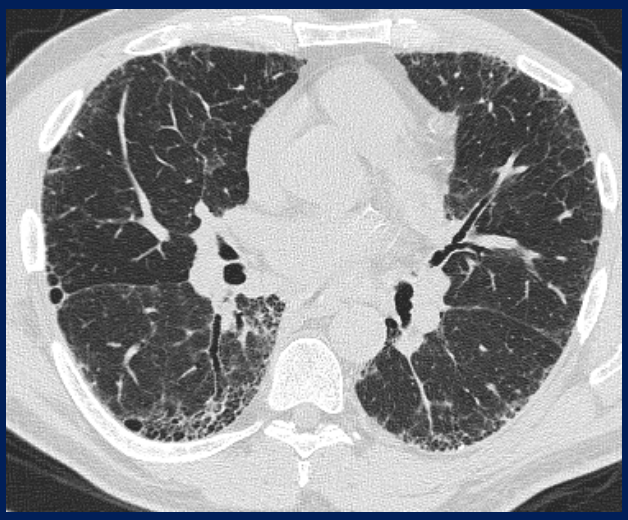
Secondary Pulmonary Lobule





Rockpointe

ATS Guidelines for UIP



- Subpleural basilar predominant fibrosis
- Reticulations
- Honeycombing
- Absence of features that would suggest and alternative diagnosis

Raghu G, et al. ATS/ERS/JRS/ALAT Committee on Idiopathic Pulmonary Fibrosis. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med. 2011 Mar 15;183(6):788-824.

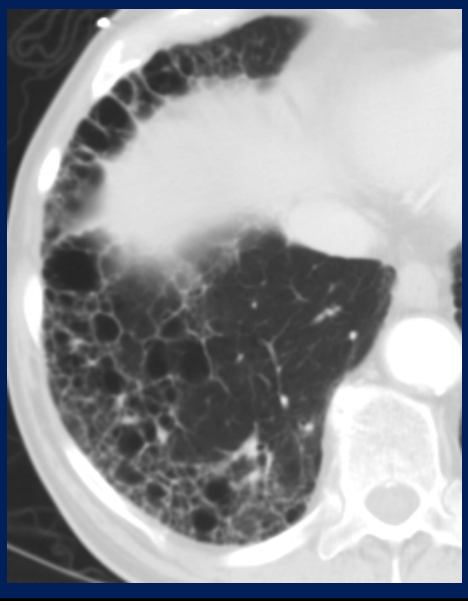
Rockpointe

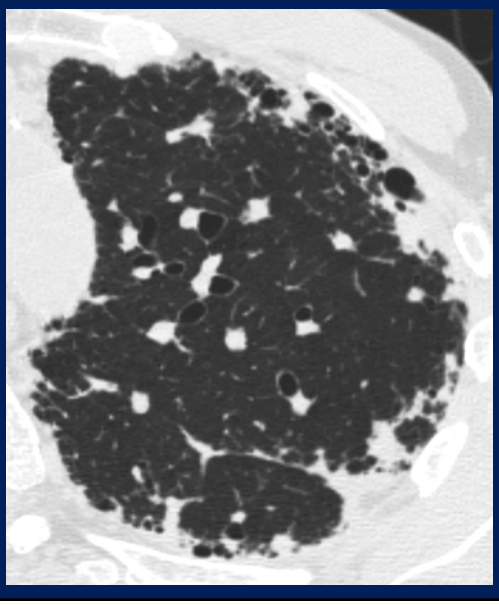
CANNOT B UIP

- Consolidation
- Air trapping
- Nodules
- Non-solid or ground glass
- O is for holes or cysts
- T is for top
- B is for bronchovascular

Rockpointe

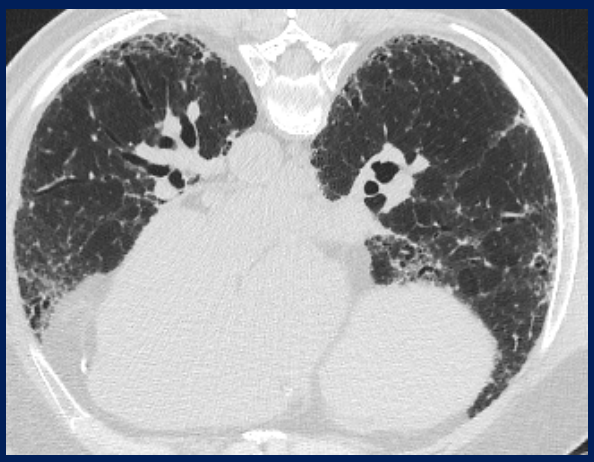
Honeycombing vs bronchiectasis





Rockpointe

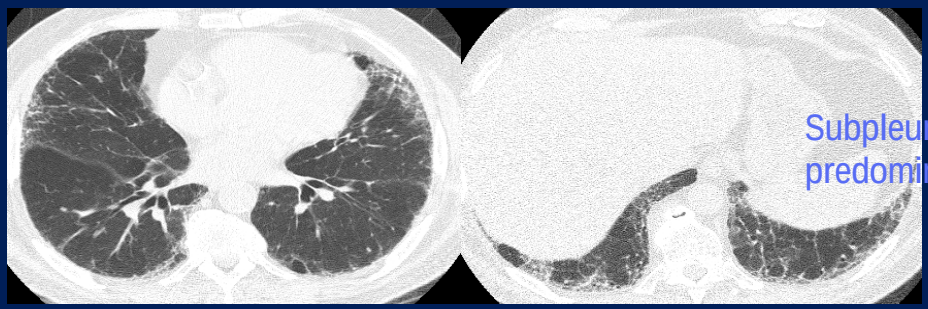
ATS Guidelines for Possible UIP



- Subpleural basilar predominant fibrosis
- Reticulations
- Honeycombing
- Absence of features that would suggest and alternative diagnosis

Rockpointe

Possible UIP



Subpleural and basilar predominant

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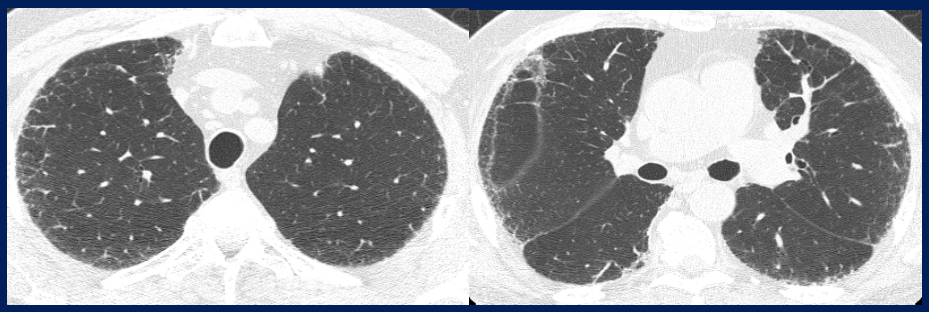
Possible UIP

Reticulations



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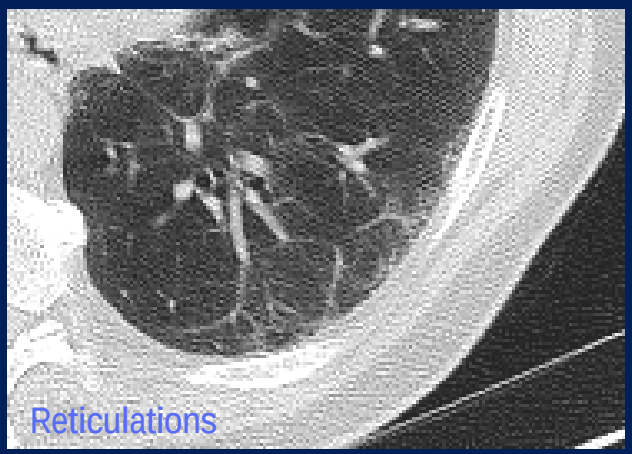
Pre honeycombing to honeycombing



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ATS guidelines for inconsistent with UIP

- Inconsistent with UIP Pattern (Any of the Seven Features)
  - Upper or mid-lung predominance
  - Peribronchovascular predominance

  — Distribution
  - Extensive ground glass abnormality (extent>reticular abnormality)
  - Consolidation in bronchopulmonary segment(s)/lobe(s)
  - Profuse micronodules (bilateral, predominantly upper lobes)

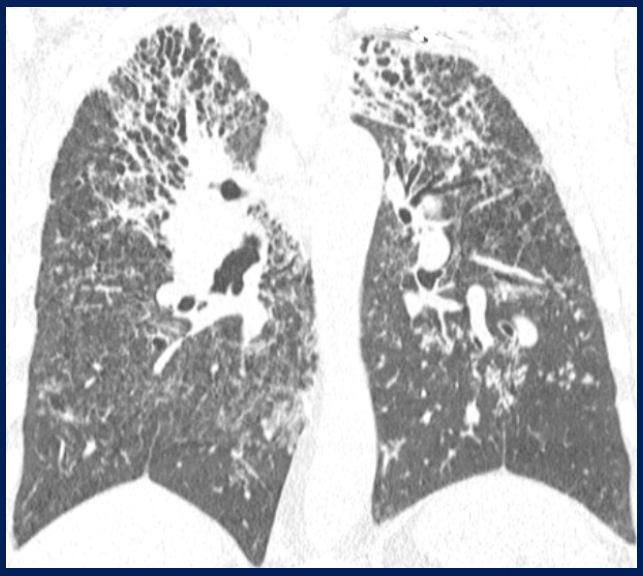
  — Increased density
  - Discrete cysts (multiple, bilateral, away from areas of honeycombing)
  - Diffuse mosaic attenuation/air-trapping (bilateral, in three or more lobes)

  — Decreased density

Raghu G, et al. ATS/ERS/JRS/ALAT Committee on Idiopathic Pulmonary Fibrosis. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med. 2011 Mar 15;183(6):788-824.

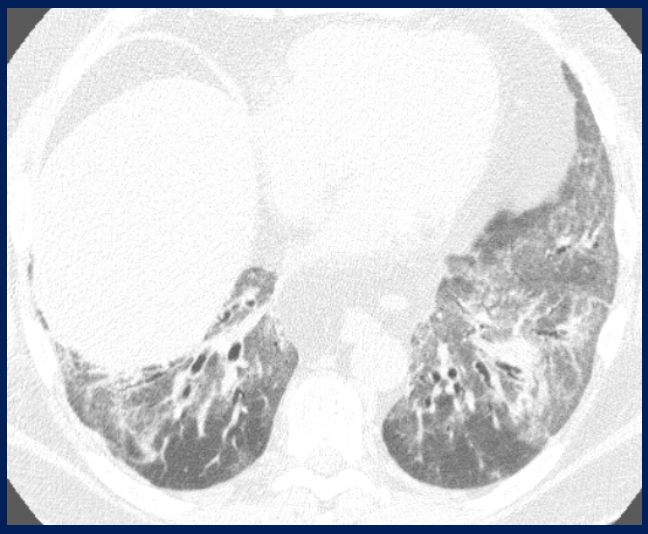
Upper lobe fibrosis

- Upper lobe fibrosis with volume loss
- Relative sparing of the lower lobes
- Centrilobular nodules



Ground-glass opacity

- Ground glass opacity and traction bronchiectasis in NSIP



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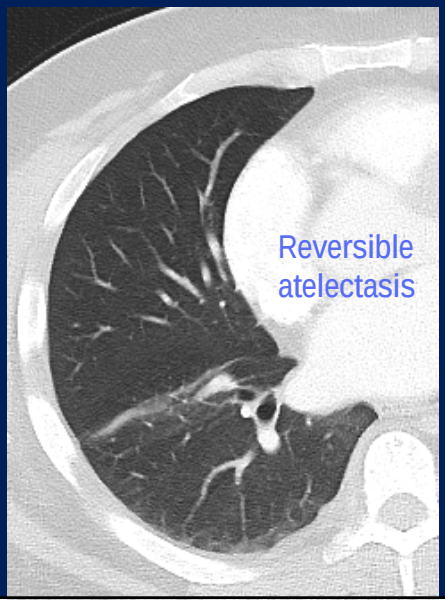
Mimickers of Fibrosis



Rockpointe

CHP

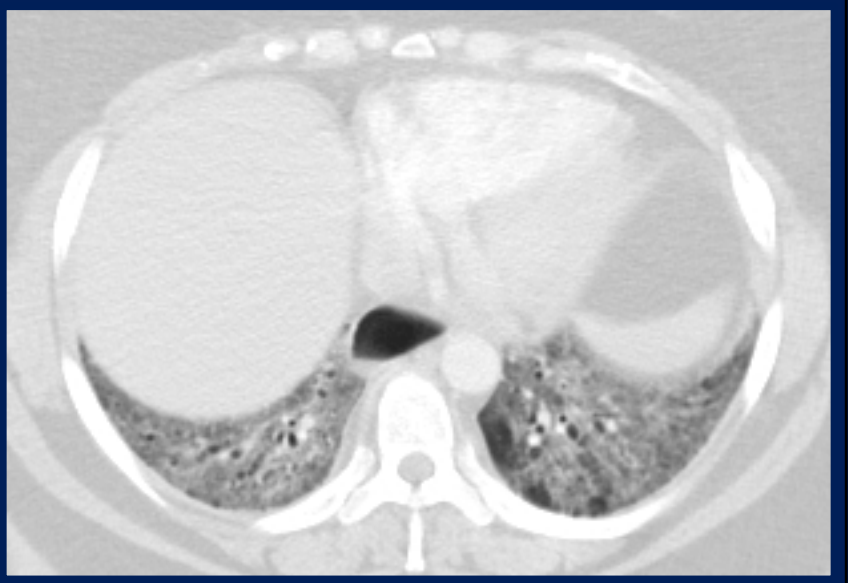
Sarcoid

UIP

NSIP

NSIP

- Lower lobe fibrosis
- Follows bronchovascular distribution
- Homogeneous
- Ground glass opacity
- Dilated esophagus

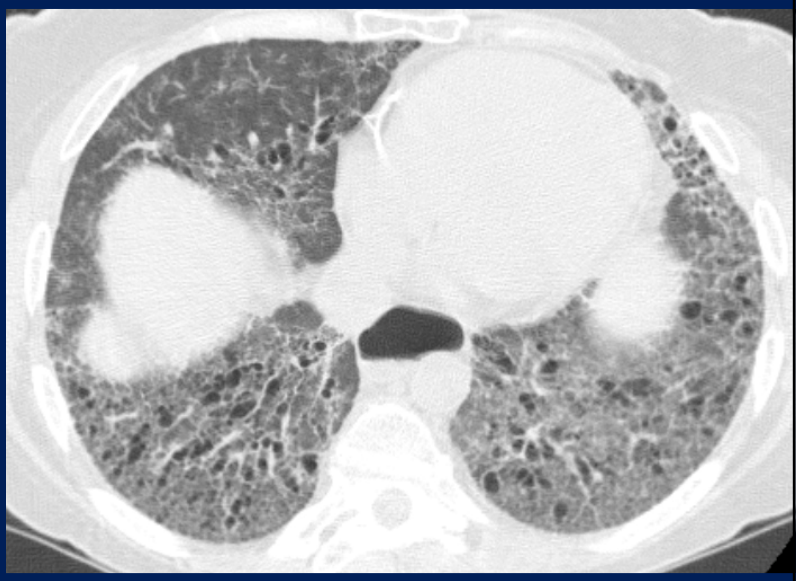


Sasaki, Shinichi, et al. "Diagnostic Significance Of Biomarkers For Chronic Fibrosing Idiopathic Interstitial Pneumonias (Usual Interstitial Pneumonia Vs Non-Specific Interstitial Pneumonia)." *C39. IPF: MORE ON DIAGNOSIS AND THERAPY*. American Thoracic Society, 2016. A4999-A4999.

ROCKPOINTE

NSIP

- Lower lobe fibrosis
- Follows bronchovascular distribution
- Homogeneous
- Ground glass opacity
- Dilated esophagus



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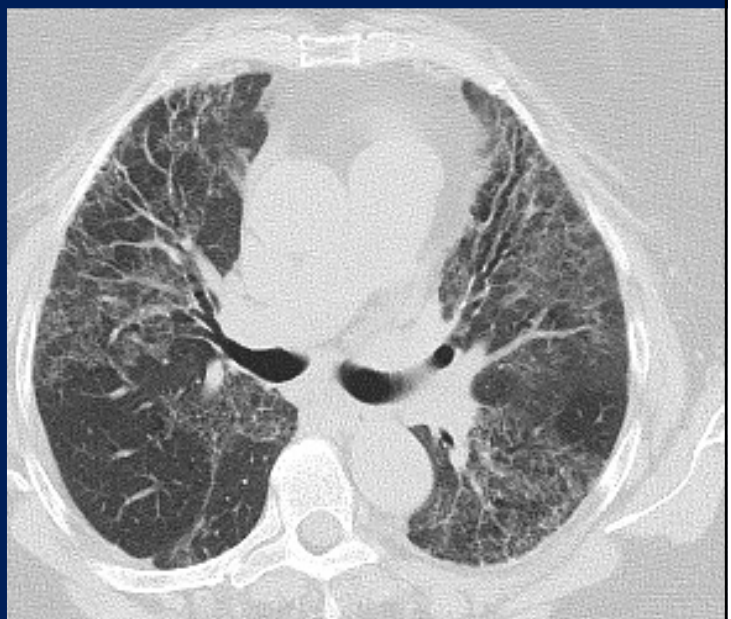
Chronic Hypersensitivity Pneumonitis

- Upper lobe predominant
- Bronchovascular distribution
- Air trapping



Silva, C. Isabela S., et al. "Chronic Hypersensitivity Pneumonitis: Differentiation from Idiopathic Pulmonary Fibrosis and Nonspecific Interstitial Pneumonia by Using Thin-Section CT 1." *Radiology* 246.1 (2008): 288-297.

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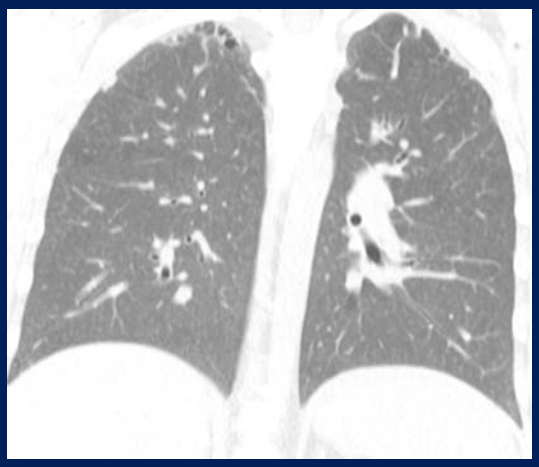
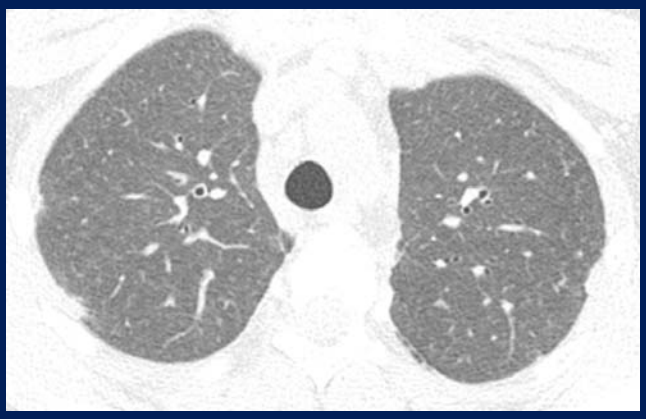
Chronic Hypersensitivity Pneumonitis



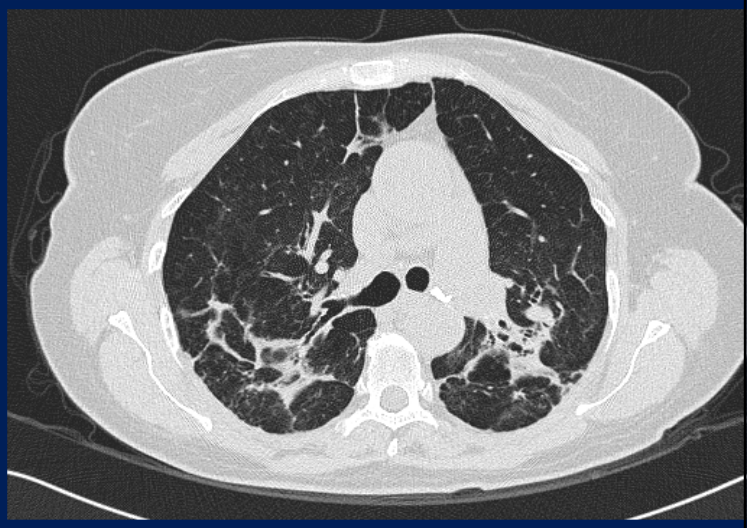


Centrilobular nodules and early fibrosis

Rockpointe

Stage 4 Sarcoidosis

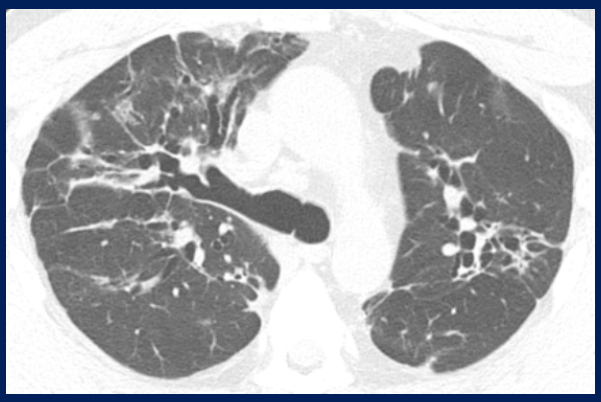
- Upper lobe predominant fibrosis
- Bronchovascular distribution

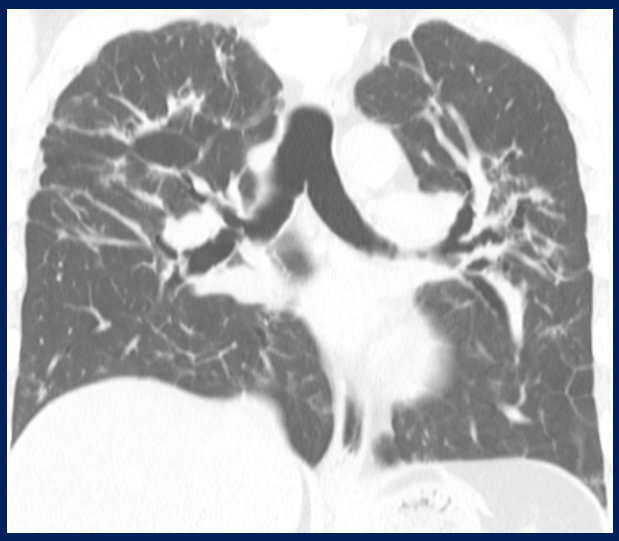


Brauner, M. W., et al. "Pulmonary sarcoidosis: evaluation with high-resolution CT." *Radiology* 172.2 (1989): 467-471.

Rockpointe

Stage 4 Sarcoidosis

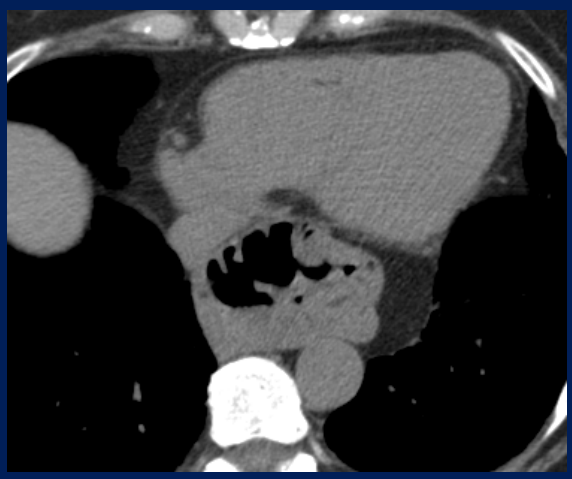


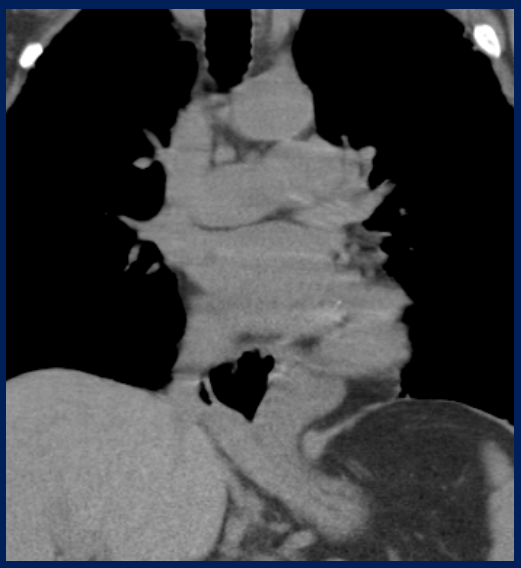


Upper lobe predominant fibrosis that follows brocnhovascular distribution

Rockpointe

Hiatal Hernia





Hiatal hernia and gastro-esophageal reflux is associated with fibrosis of the lung

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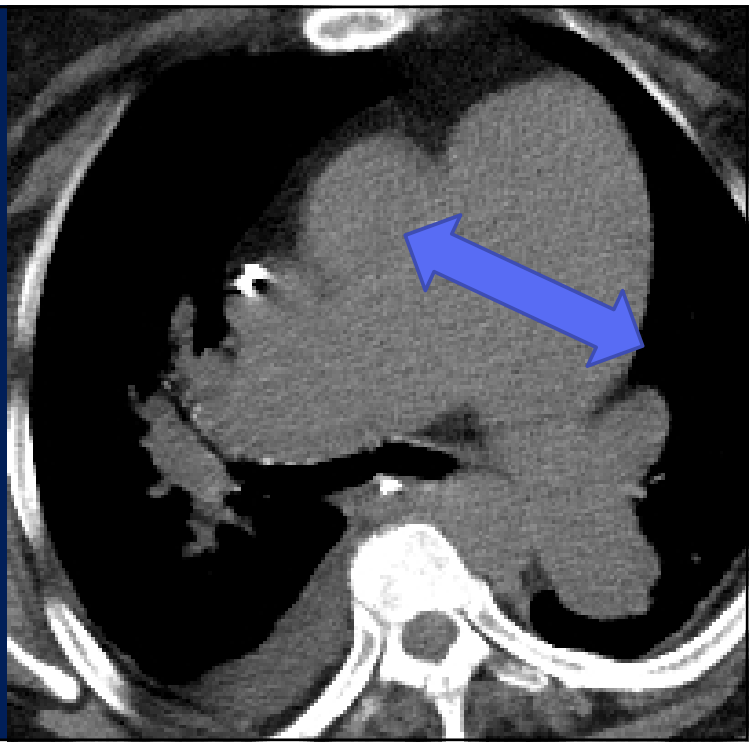
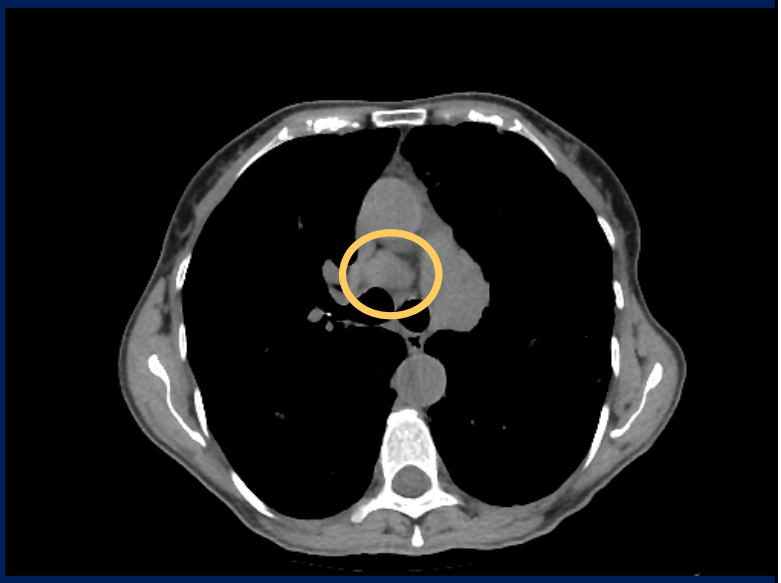
Pulmonary Artery

- Pulmonary artery enlargement is associated with pulmonary hypertension and can be seen in patients with fibrosis



Enlarged Lymph Nodes

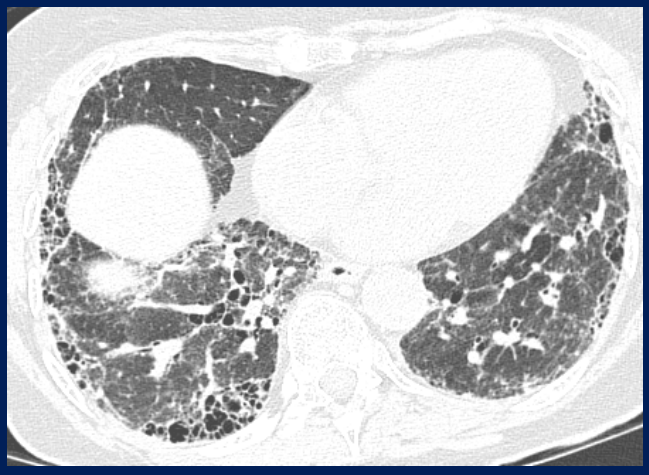
- Mediastinal lymphadenopathy can occur in patients with pulmonary fibrosis



Souza, Carolina Althoff, et al. "Idiopathic interstitial pneumonias: prevalence of mediastinal lymph node enlargement in 206 patients." *American Journal of Roentgenology* 186.4 (2006): 995-999.

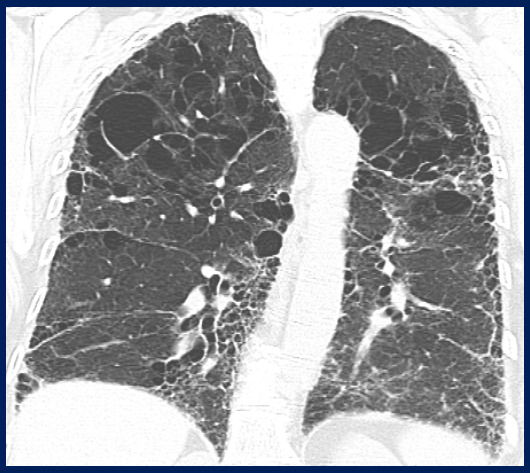
ROCKPOINTE

Combined pulmonary fibrosis and emphysema



Honeycombing

Emphysema



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Non-radiological features that point toward IPF diagnosis

- Older age
- Male sex
- History of smoking
- Basilar crackles
- Decreased DLCO, FVC
- Decreased performance on 6 minute walk test

Raghu G, et al. ATS/ERS/JRS/ALAT Committee on Idiopathic Pulmonary Fibrosis. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med. 2011 Mar 15;183(6):788-824.
Rosewarne, D., et al. "The idiopathic interstitial pneumonias–a survival guide." *Imaging* (2014).

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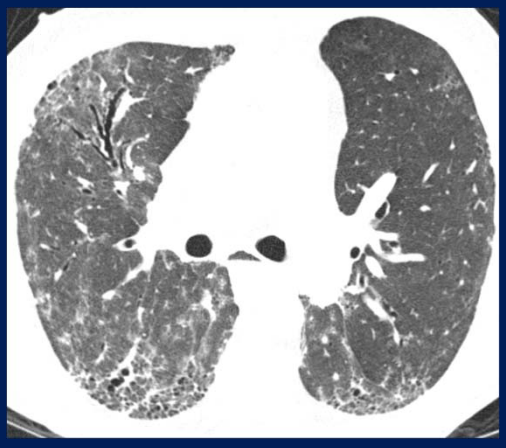
Radiological features that point toward IPF diagnosis

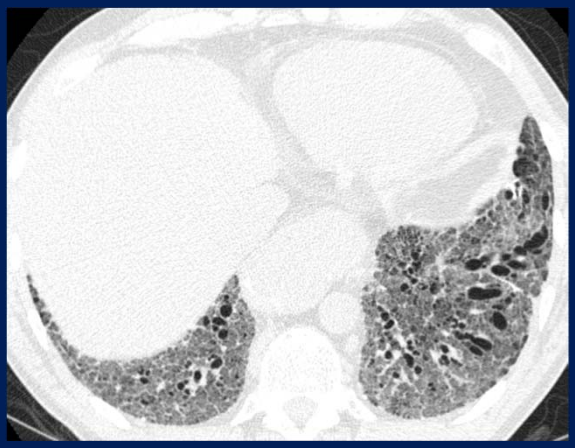
- Lower lobe predominant fibrosis
- Sub-pleural fibrosis
- Reticulations and traction bronchiectasis
- Honeycombing
- Volume loss
- Absence of consolidation, air trapping, nodules

Raghu G, et al. ATS/ERS/JRS/ALAT Committee on Idiopathic Pulmonary Fibrosis. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med. 2011 Mar 15;183(6):788-824.
Rosewarne, D., et al. "The idiopathic interstitial pneumonias–a survival guide." *Imaging* (2014).

ROCKPOINTE

Case 1: 55 year old female with dyspnea.



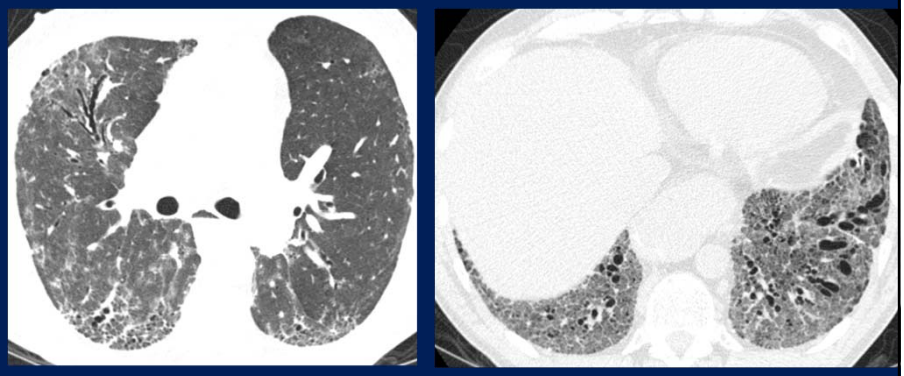


What is the most likely diagnosis?

ROCKPOINTE

Case 1: 55 year old female with dyspnea.

- NSIP
  - Lower lobe predominant fibrosis
  - Bronchovascular distribution
  - Absence of honeycombing
  - Ground glass opacity



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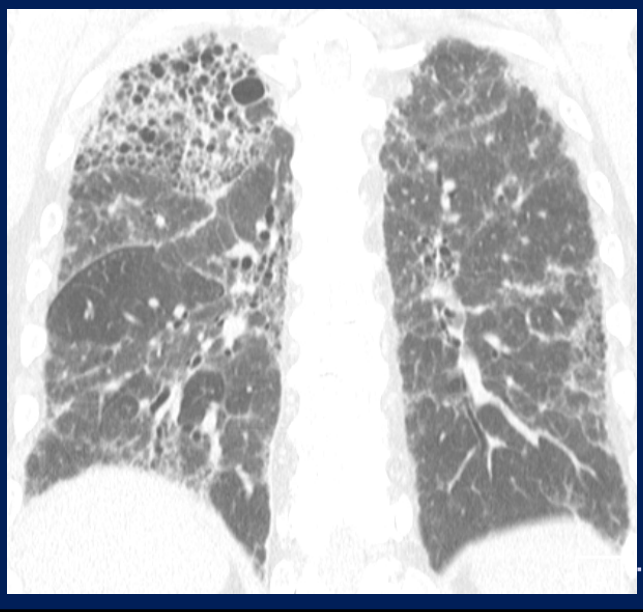
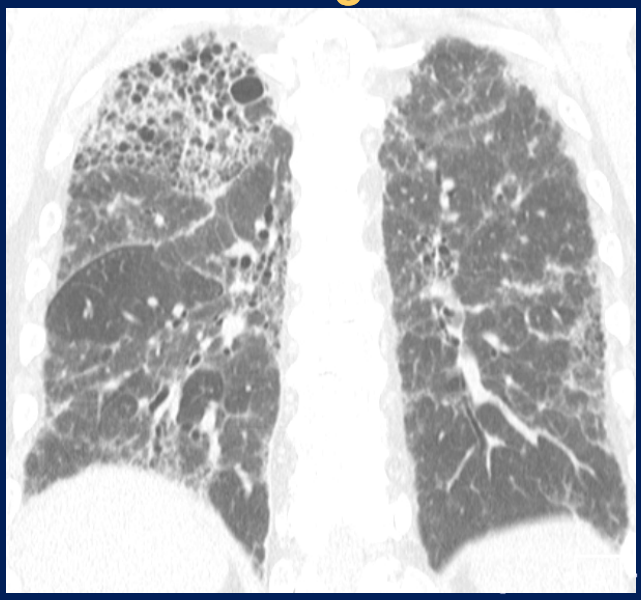
Case 2: 73 year old female with long standing dyspnea

What is the most likely diagnosis?



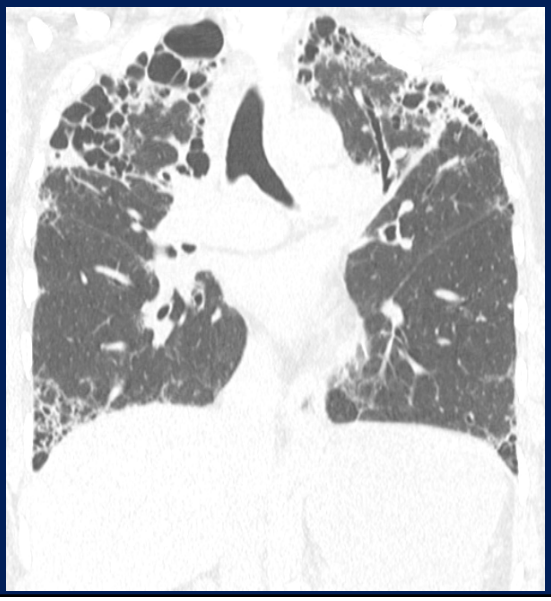
Case 2: 73 year old female with long standing dyspnea

- CHP
  - Upper lobe fibrosis
  - Bronchovascular
  - Air trapping



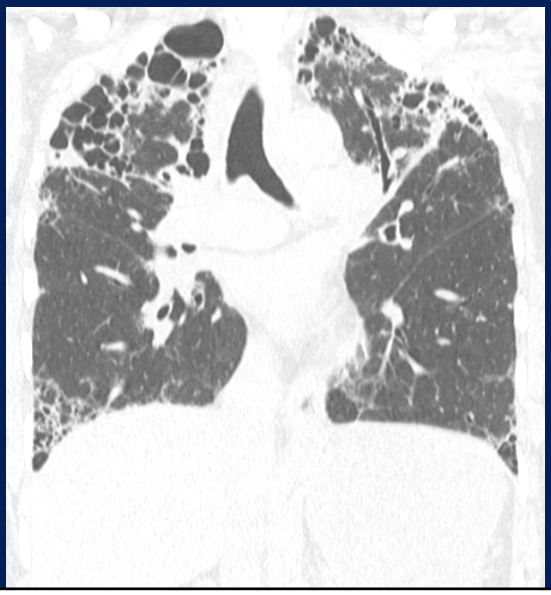
Case 3: 37 year old with chronic cough

What is the most likely diagnosis?



Case 3: 37 year old with chronic cough

- Stage 4 Sarcoid
  - Upper lobe fibrosis
  - Bronchovascular distribution
  - Cystic changes



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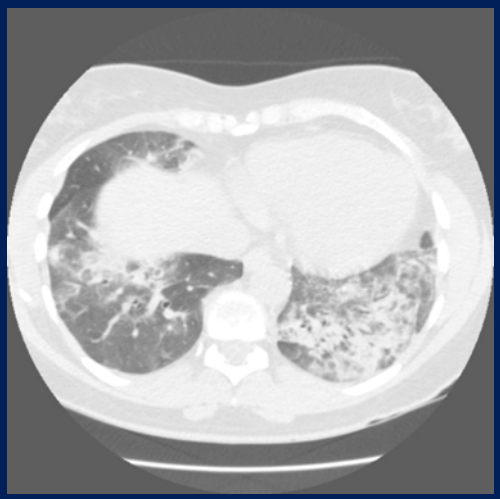
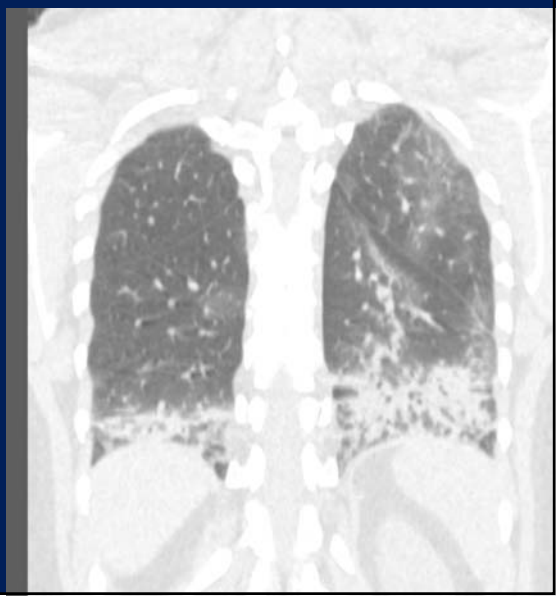
Case 4: 45 year old with chronic cough

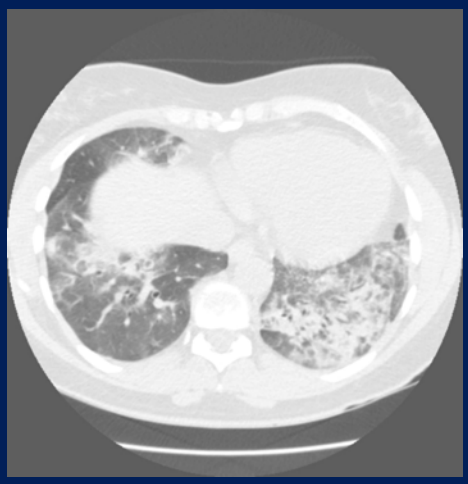


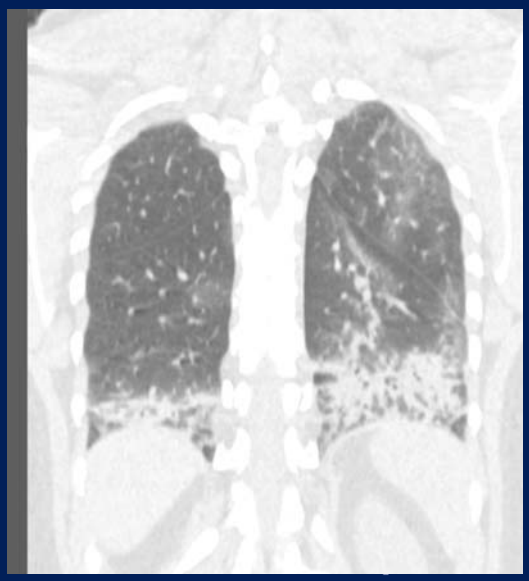


What is the most likely diagnosis?

Case 4: 45 year old with chronic cough

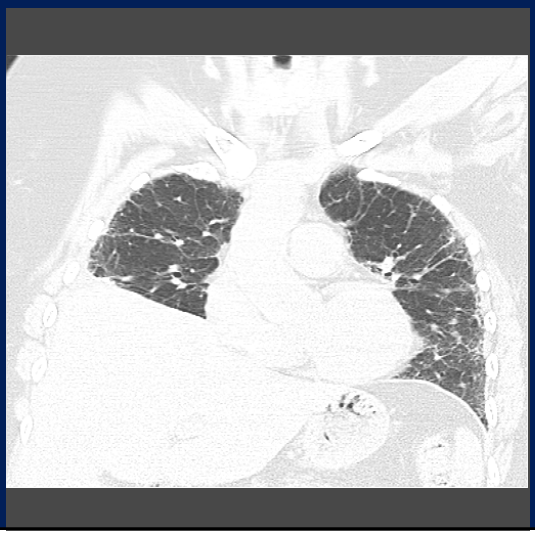
- Organizing pneumonia
  - Consolidation
  - Bronchovascular distribution

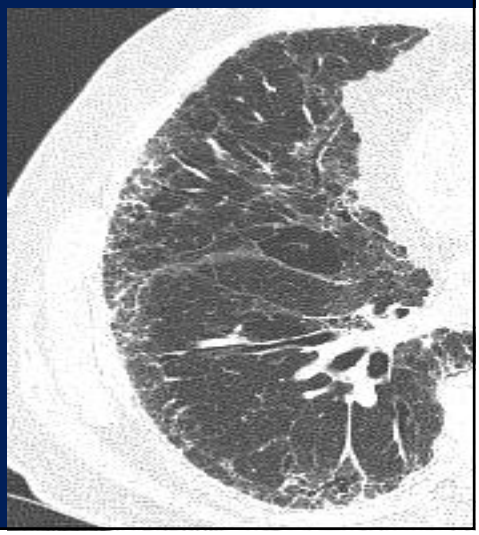




Case 5: 68 year old female with increasing shortness of breath and cough

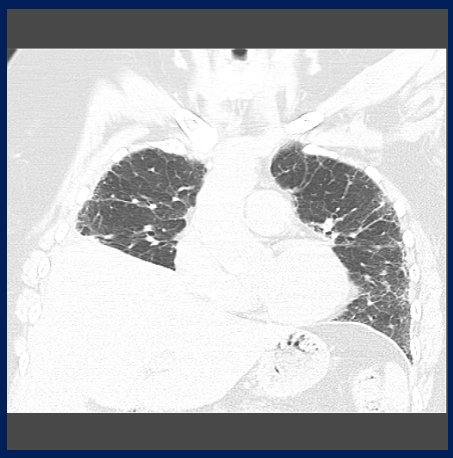
What is the most likely diagnosis?

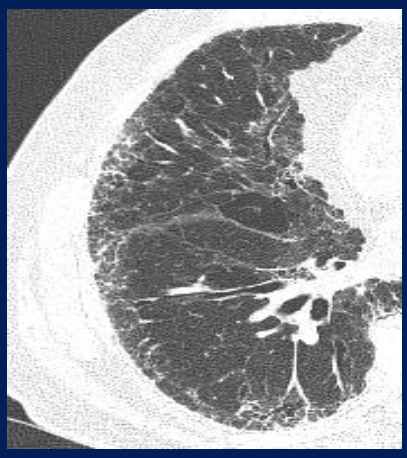




Case 5: 68 year old female with increasing shortness of breath and cough

- Possible UIP
  - Subpleural basilar predominant fibrosis
  - Absence of Honeycombing
  - Reticulations and traction bronchiectasis





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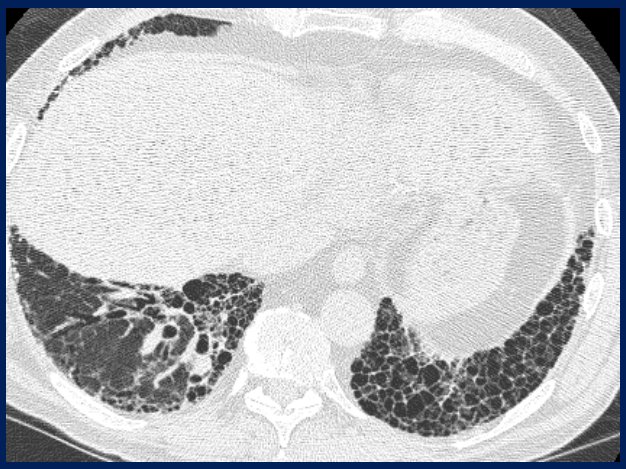
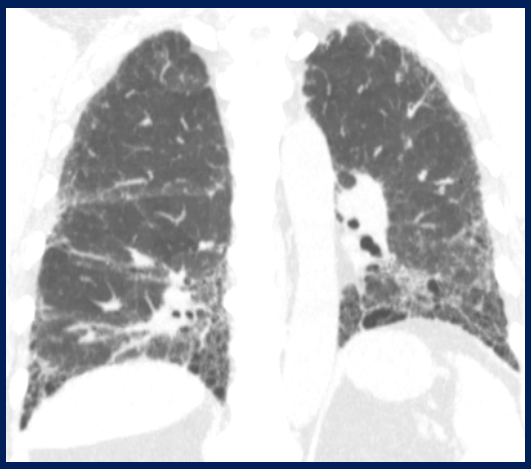
Case 6: 78 year old man with shortness of breath



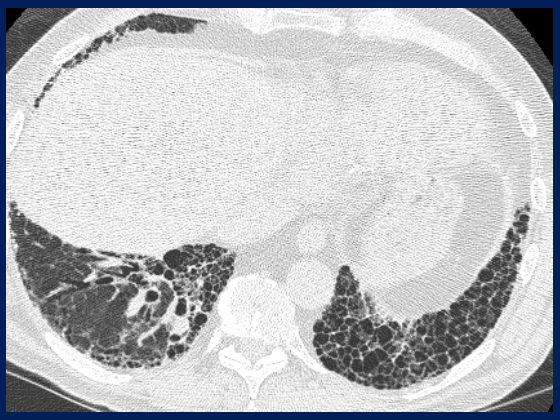


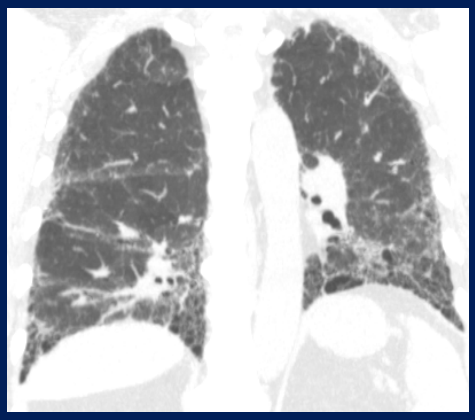
What is the most likely diagnosis?

Rockpointe

Case 6: 78 year old man with shortness of breath

- UIP
  - Subpleural basilar predominant fibrosis
  - Honeycombing
  - Reticulations and traction bronchiectasis





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Radiology and Pulmonary communication

- Radiology report should provide supporting words for correct diagnosis
- Ancillary findings in report include pulmonary artery size, hiatal hernia and liver cirrhosis
- Discussion with pulmonologist for first CT to review clinical information
- Multidisciplinary conference is gold standard

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