
بسم الله الرحمن الرحيم

Updates of Diagnostic & Interventional Radiology

Scientific Day

PROGRAM

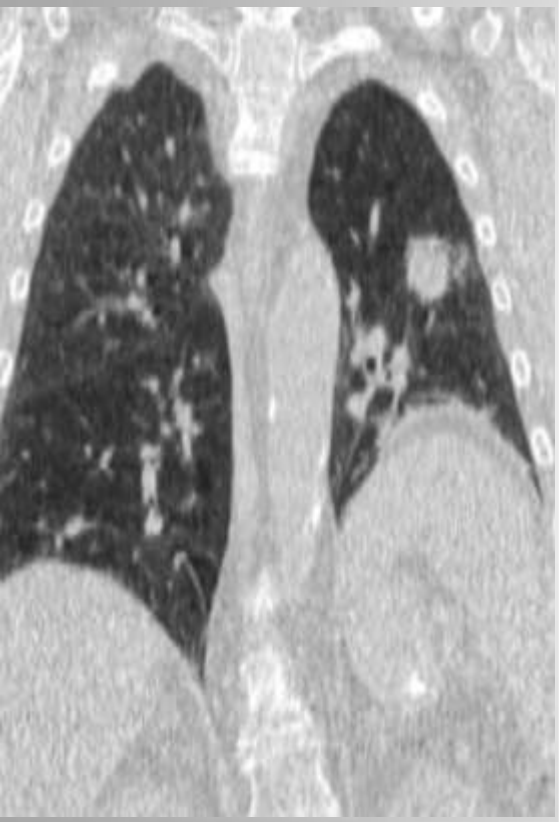
Friday 14 Jan 2022		Topic	Speaker
1	1.30	Introduction , Welcoming & Registration	
		SESSION 1	
1.30	1.45	Ablation of Liomyoma	Dr. Hesham Algahlaan
1.45	2.00	Updates in MSK Imaging	Dr. Mahmoud Yosef
2.00	2.15	Review of Shoulder MRI	Dr. Hemadan AbdelHameed
2.15	2.30	DISCUSSION	
2.30	3.00	Coffee Break	
		SESSION 2	
3.00	3.15	CPA & IAC MASSES	Dr. Mohammad Hassan
3.15	3.30	Percutaneous lumbar disc ozone nucleolysis	Dr. Mohammad Ezz
3.30	3.45	Recommendations of Diffuse Lung Diseases Imaging	Dr. Ahmad Mokhtar
3.45	4.00	Review of Breast MRI	Dr. Ebtesam AbdelBarey
4.00		DISCUSSION	
4.15		Launch	

Coordinator

Dr. Ahmad Mokhtar Abodahab

President of Department

Prof. Dr. Mohammad Zakey



IMAGING KEYS OF DIFFUSE LUNG DISEASES

BY

AHMAD MOKHTAR ABODAHAB – MD

LECTURER OF RADIOLOGY

FACULTY OF MEDICINE

SOHAG UNIVERSITY

OBJECTIVES

- Focus on

<u>key imaging findings and differentiators</u>

to evaluate **Different Lung Diseases .**

Items of talk

Keys of ILD

Chest Imaging Schemes

LUNG IMAGING PATTERNs

Focal Lung Lesion

- 1) Nodule (< 3 cm)
- 2) Mass (> 3 cm)
- 3) Pulmonary Patch
  - Consolidation
  - Infarction
- 4) Pulmonary Cavity

Diffuse Lung Disease

1) Interstitial lung disease
2) Alveolar lung pathology
3) Nodular pattern
4) Cystic pattern

D.L.D.

INTERSTITIAL LUNG DISEASE

Interstitial lung disease (ILD)

several hundred separate diseases

Some Times

Unique

Frequently

Overlapped

Imaging serves as
A key role in the diagnosis

METHODS OF DIAGNOSIS

X ray

CT

BIOPSY

MRI

COMMON CAUSES OF INTERSTITIAL LUNG DISEASES

- Interstitial pneumonias ,
- Interstitial edema ,
- Idiopathic pulmonary fibrosis
- Collagen diseases
- Radiation induced ,
- Drug induced,

DR. C III

CT finding
Interstitial Lung Diseases

Septal

LI 2 NES

SubPleural

Thickening

BRON 2 CHIAL

Traction

Spider

2

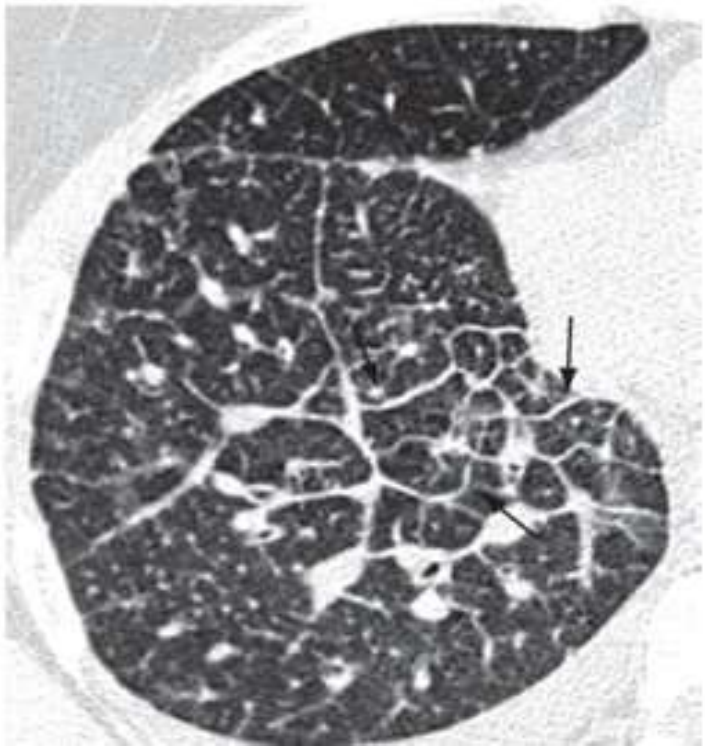
Honey Combing

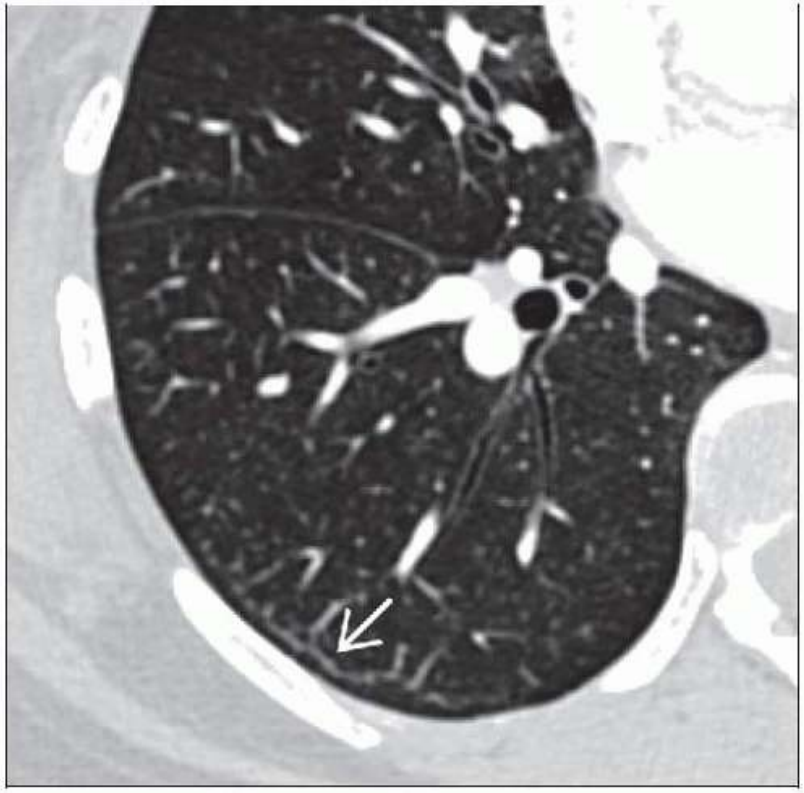
CT finding
Interstitial Lung Diseases

Septal

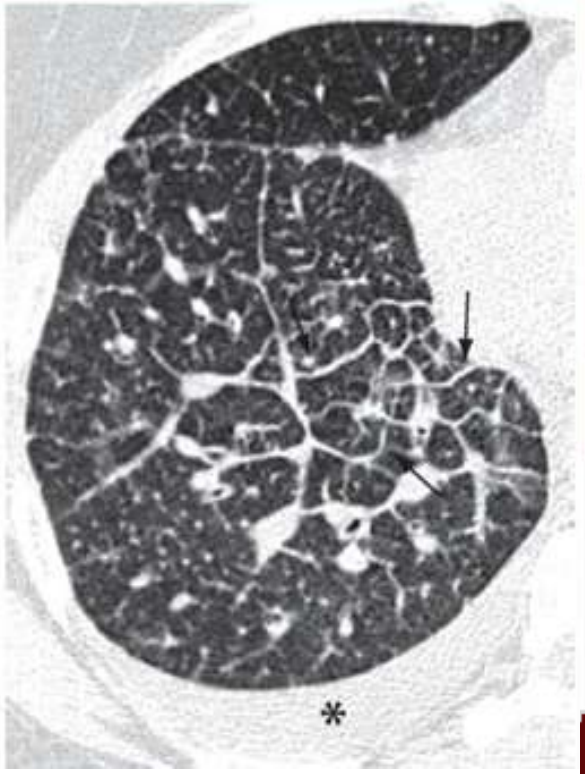
LI 2 NES

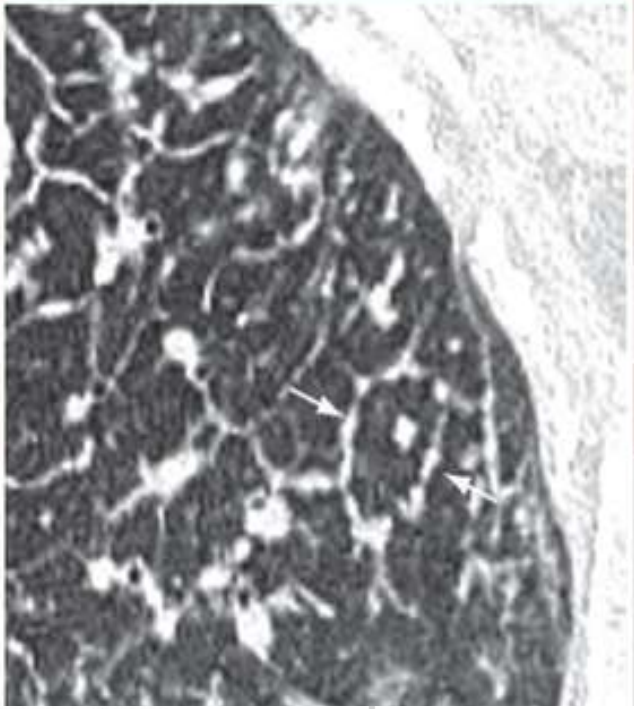
SubPleural





Smooth	Nodular	Irregular
Edema "Venous"	**Lymphatic**	
• Pulmonary Edema	• lymphangitic carcinomatosis • lymphocytic interstitial pneumonia • Lymphoma	• UIP • Sarcoidosis • Asbestosis





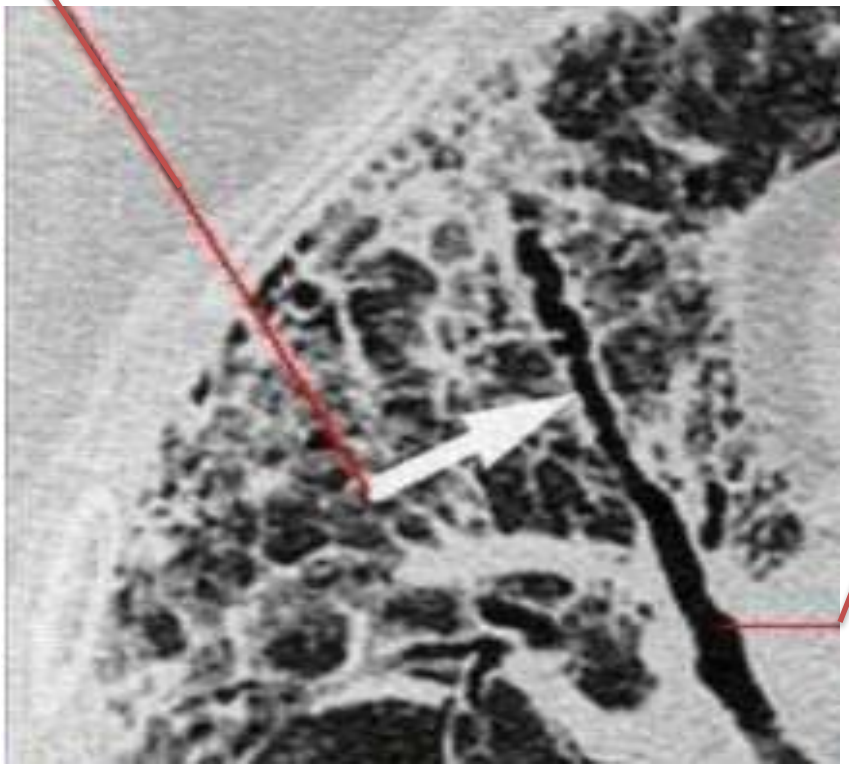
INTERLOBULAR SEPTAL THICKENING

CT finding
Interstitial Lung Diseases

Thickening

BRON2CHIAL

Traction



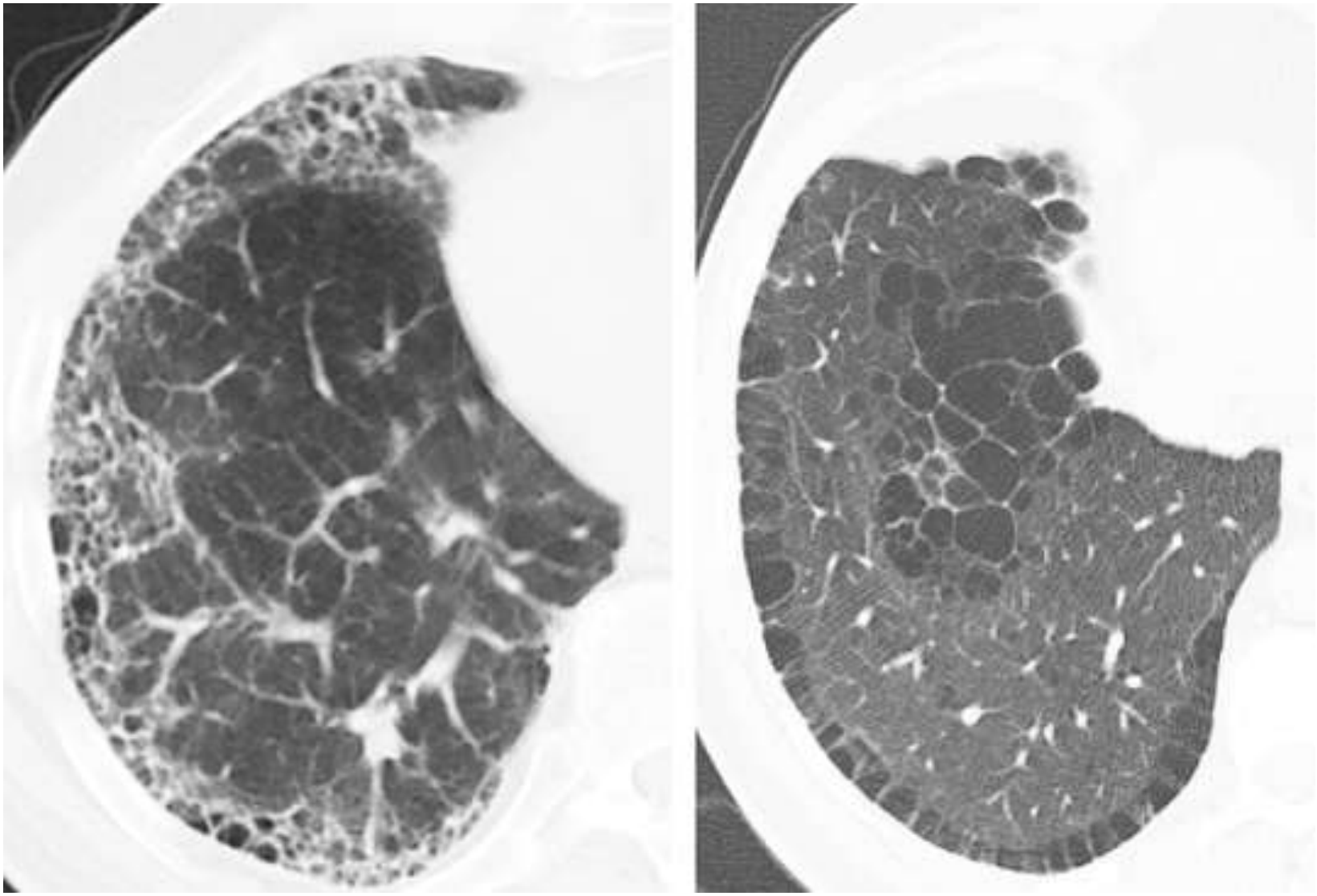
Traction Bronchiectasis

CT finding
Interstitial Lung Diseases

Spider

2

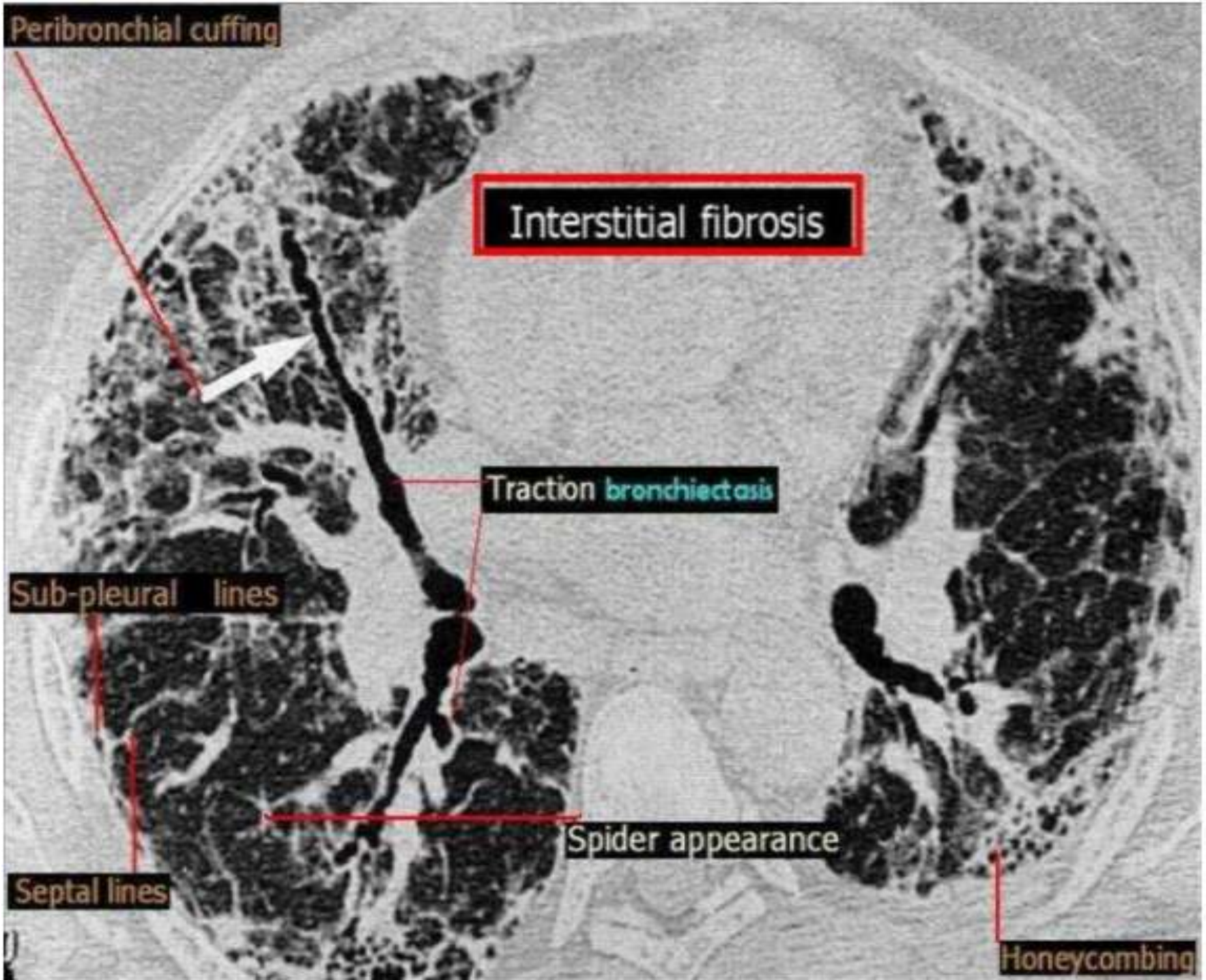
Honey Combing

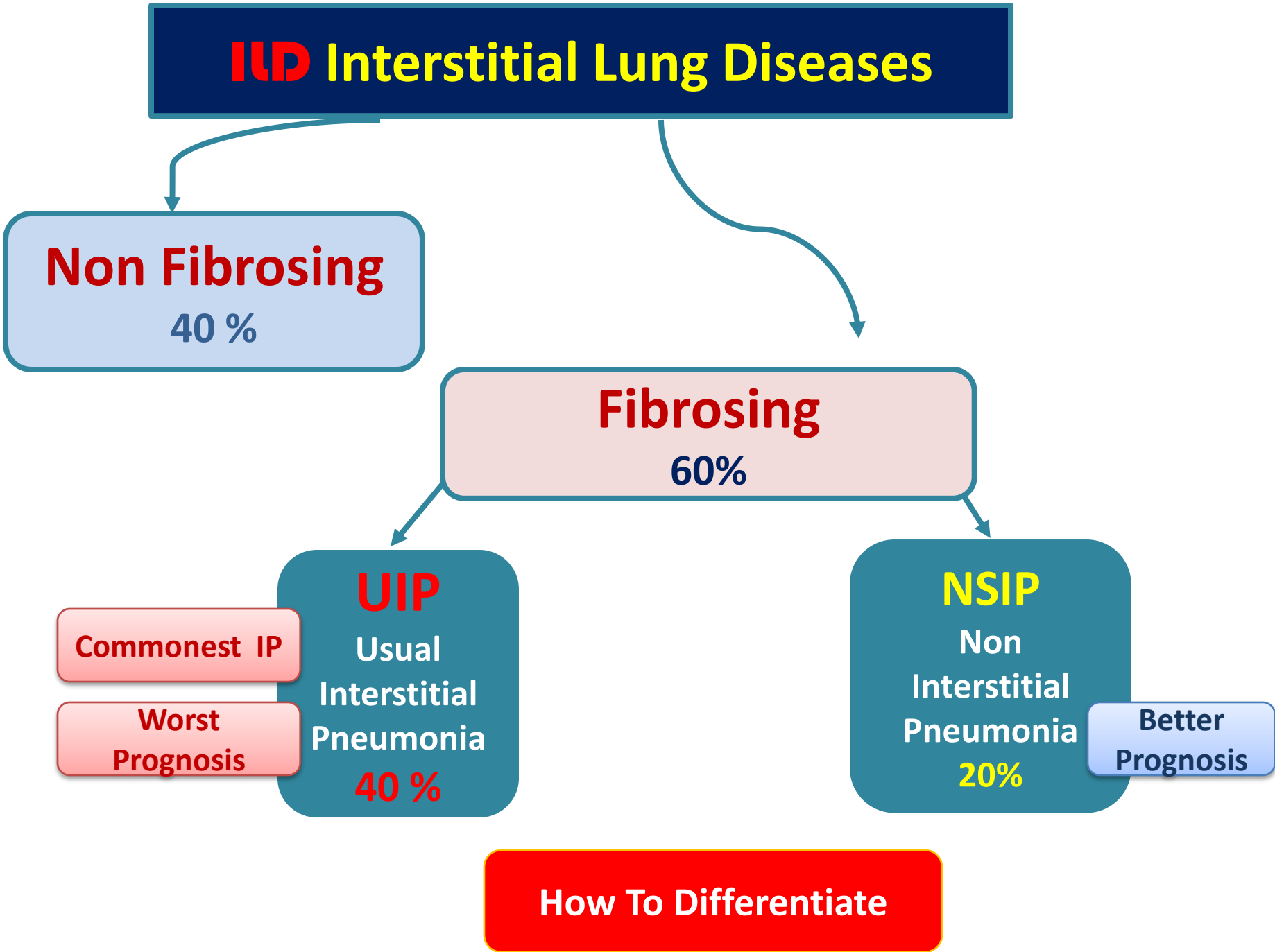


Honey Combing

VS

Para sebtal Emphysema


Peribronchial cuffing
Interstitial fibrosis
Traction bronchiectasis
Sub-pleural lines
Spider appearance
Septal lines
Honeycombing


ILD Interstitial Lung Diseases
Non Fibrosing
40 %
Fibrosing
60%
UIP
Usual
Interstitial
Pneumonia
40 %
Commonest IP
Worst
Prognosis
NSIP
Non
Interstitial
Pneumonia
20%
Better
Prognosis
How To Differentiate

UIP

Usual **I**nterstitial **P**neumonia

Key Finding

- **Peripheral** and **Lower lobe** predominance

Strongest indicator for UIP

- ✓ Honeycombing
- ✓ Reticular opacities
- ✓ Traction bronchiectasis,
- ✓ Volume Loss
- ✓ Architectural distortion
- ✓ Ground-glass opacities

(Not early)

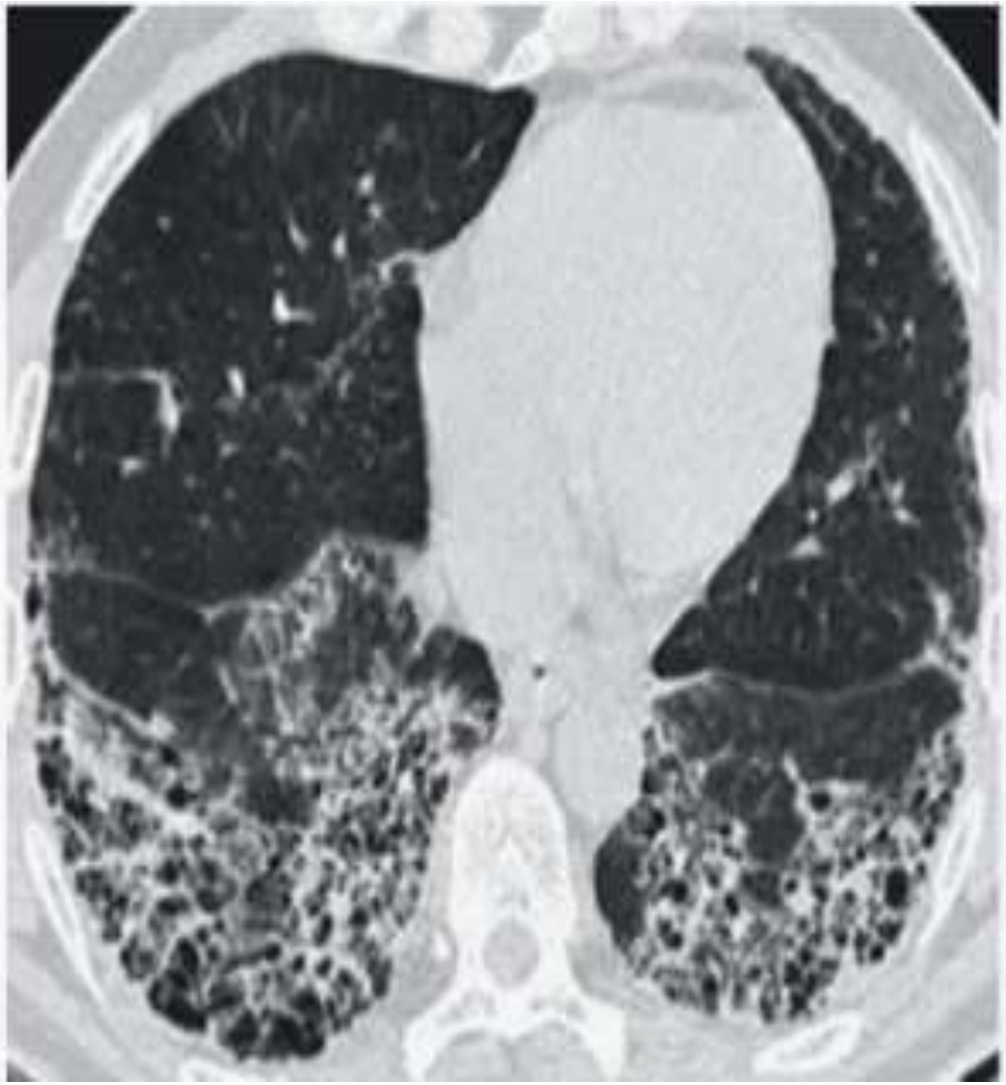
Axial CT – UIP

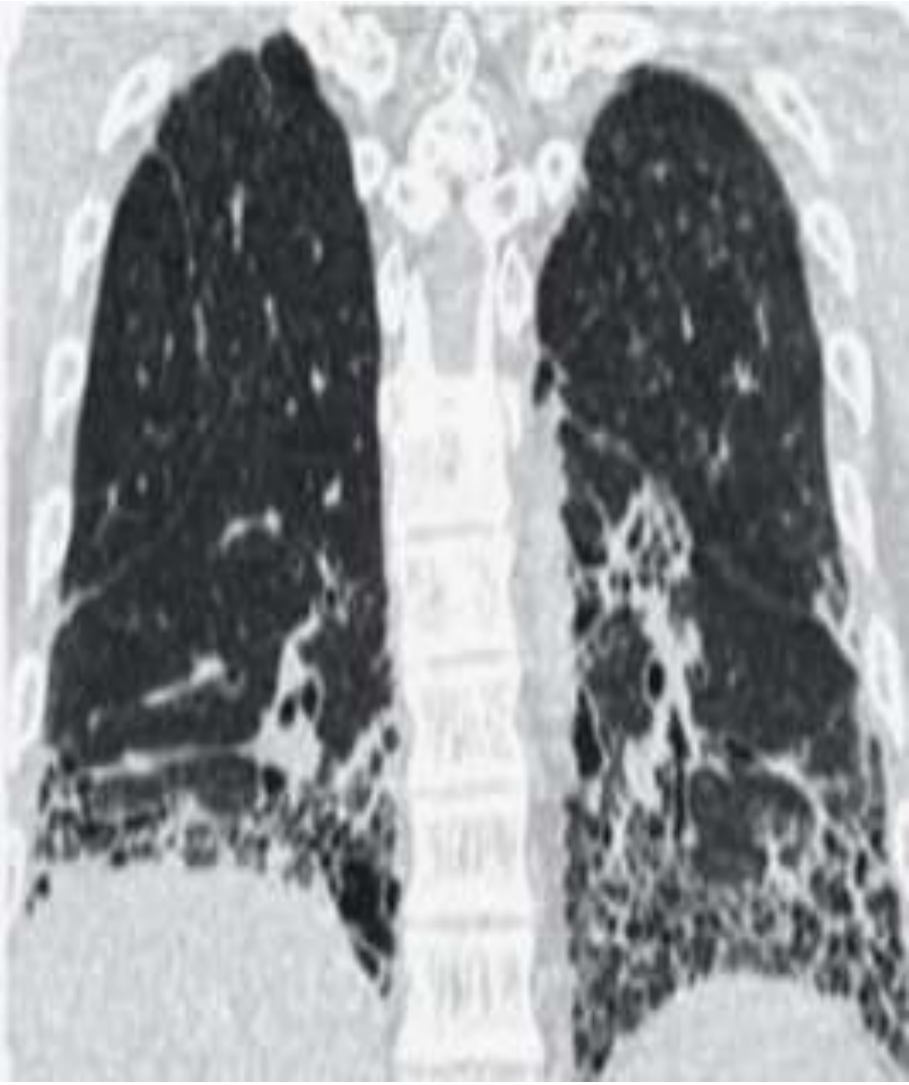
UIP

HONEYCOMBING

- > 8% of lung parenchyma → highly specific
- UIP divided into two groups : ,
  - **<5%** & **>5%** honeycombing.

< 5% honeycombing → diagnostic difficulty , differentiation from NSIP can be impossible





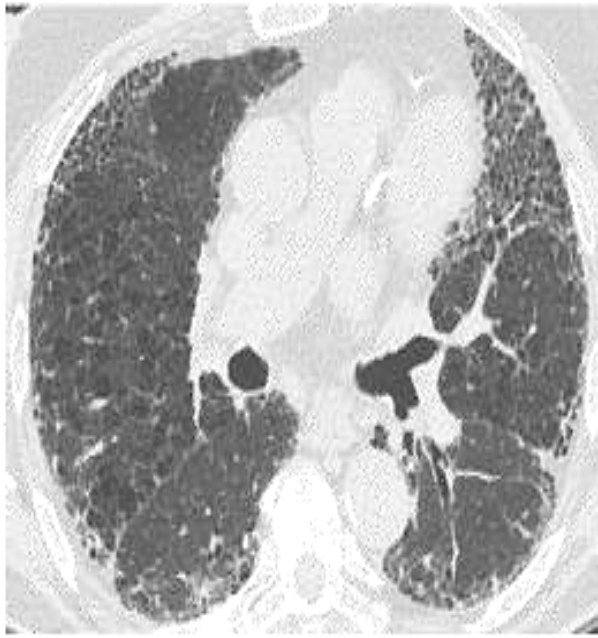
UIP

Honey Combing & Reticulation

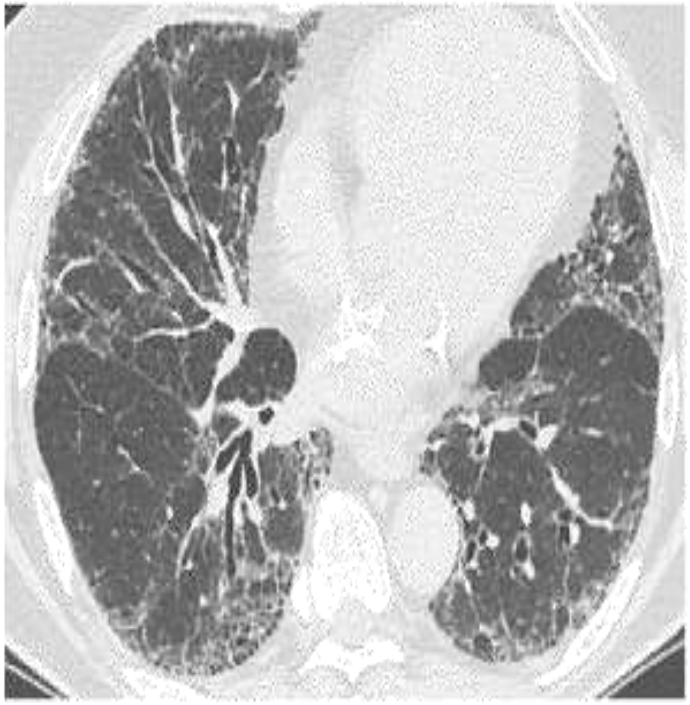
Peripheral and **Lower lobe** predominance

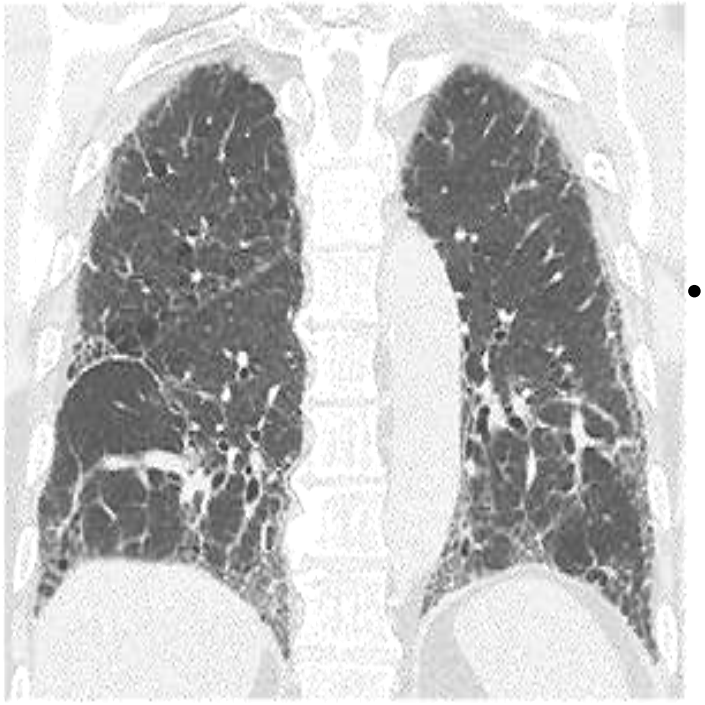
a.

b.



c.





- **UIP**

Different Finding

- Stephen Hobbs, et al rcti.rsna.org Radiology: Cardiothoracic Imaging Volume 3: Number 1—2021

NSIP

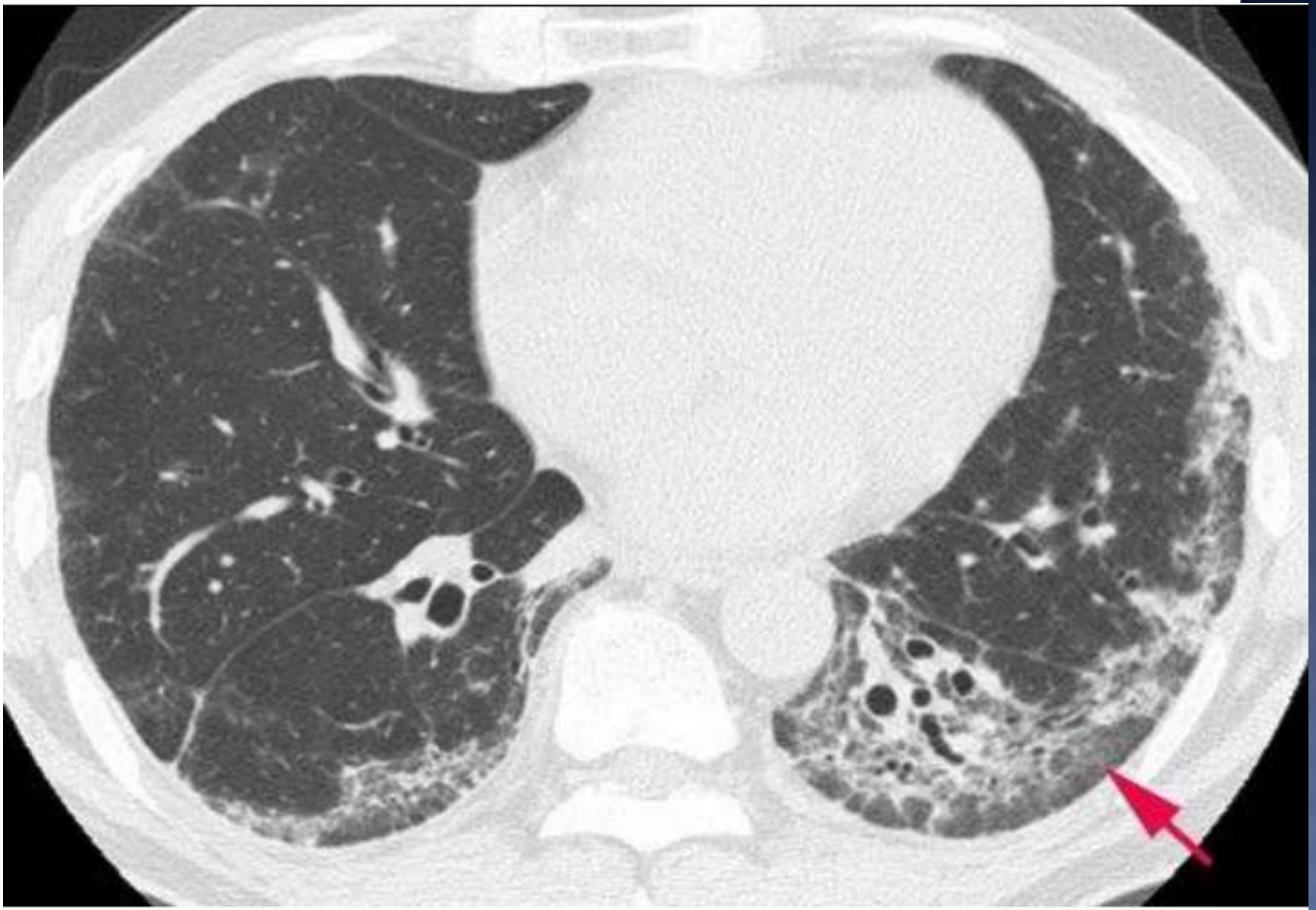
Non **S**pecic
Interstitial
Pneumonia

Key Finding

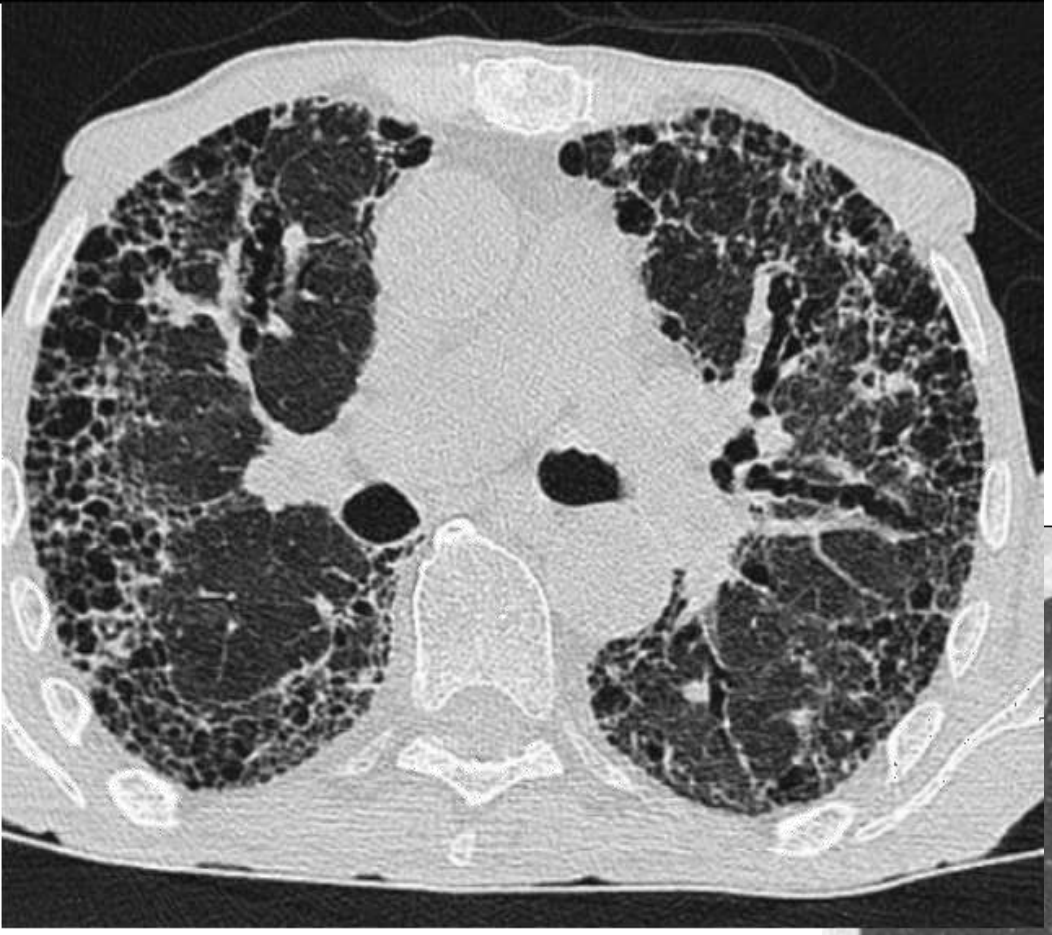
- **Sub pleural Sparing** (relatively specific sign)

- ✓ **Honeycombing** (rare, late)
- ✓ **Reticular opacities**
- ✓ **Ground-glass opacities** (Dominant & Symmetrical)
- ✓ **Traction bronchiectasis,**
- ✓ **Volume Loss**
- ✓ **Architectural distortion** (Uncommon)

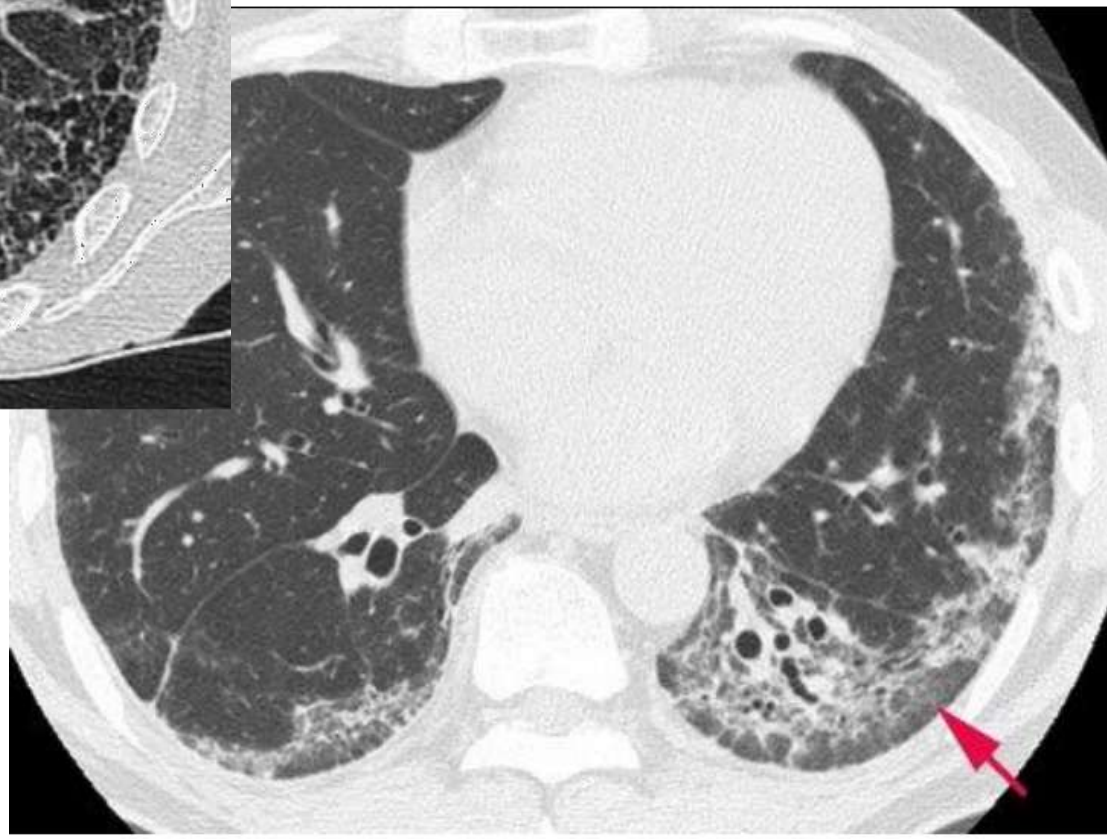
NSIP 2 Types : - **Fibrotic type:** more common, worse outcome
- **Cellular type:** less common, better prognosis



Subplural sparing – NSIP



Axial CT – UIP



Subplural sparing – NSIP

(I P F)
INTERSTITIAL PULMONARY FIBROSIS

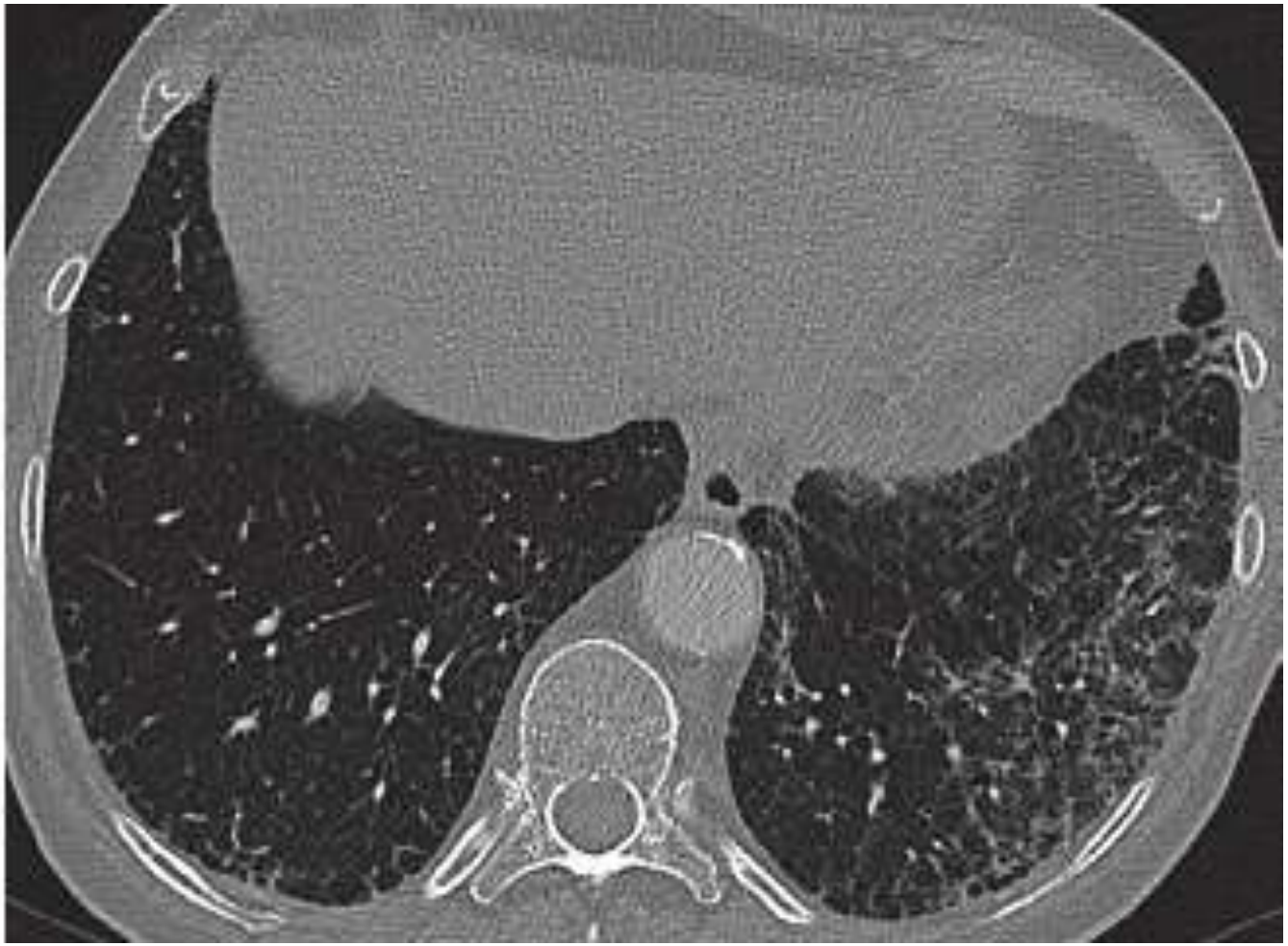
- ✓ IPF is a progressive chronic interstitial fibrotic lung disease of unknown etiology
- ✓ Imaging serves **a key role** in the diagnosis
- ✓

RISK FACTORS

- Multiple
- include :
  - ✓ Smoking,
  - ✓ Older age,
  - ✓ Family history, c
  - ✓ GIT reflux (Chronic) ,
  - ✓ some environmental exposures

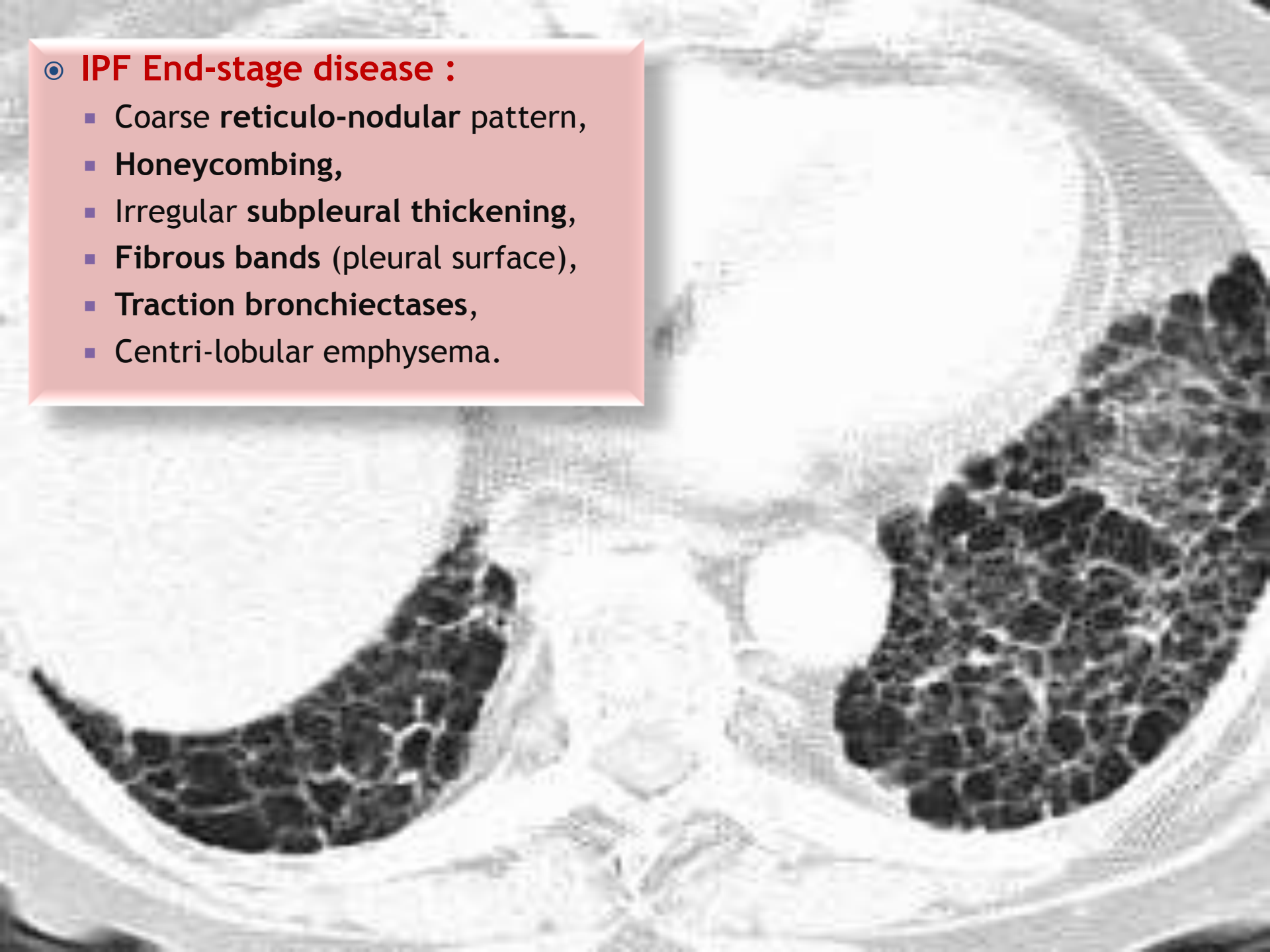
IDIOPATHIC PULMONARY FIBROSIS.

- **Initially :**
  - distinct **reticular** interlobular thickening.



IDIOPATHIC PULMONARY FIBROSIS.

- **End-stage disease :**
  - coarse reticulonodular pattern,
  - Honeycombing,
  - Irregular subpleural thickening,
  - Fibrous bands (frequently originating from the pleural surface),
  - Traction bronchiectases,
  - **centrilobular emphysema.**

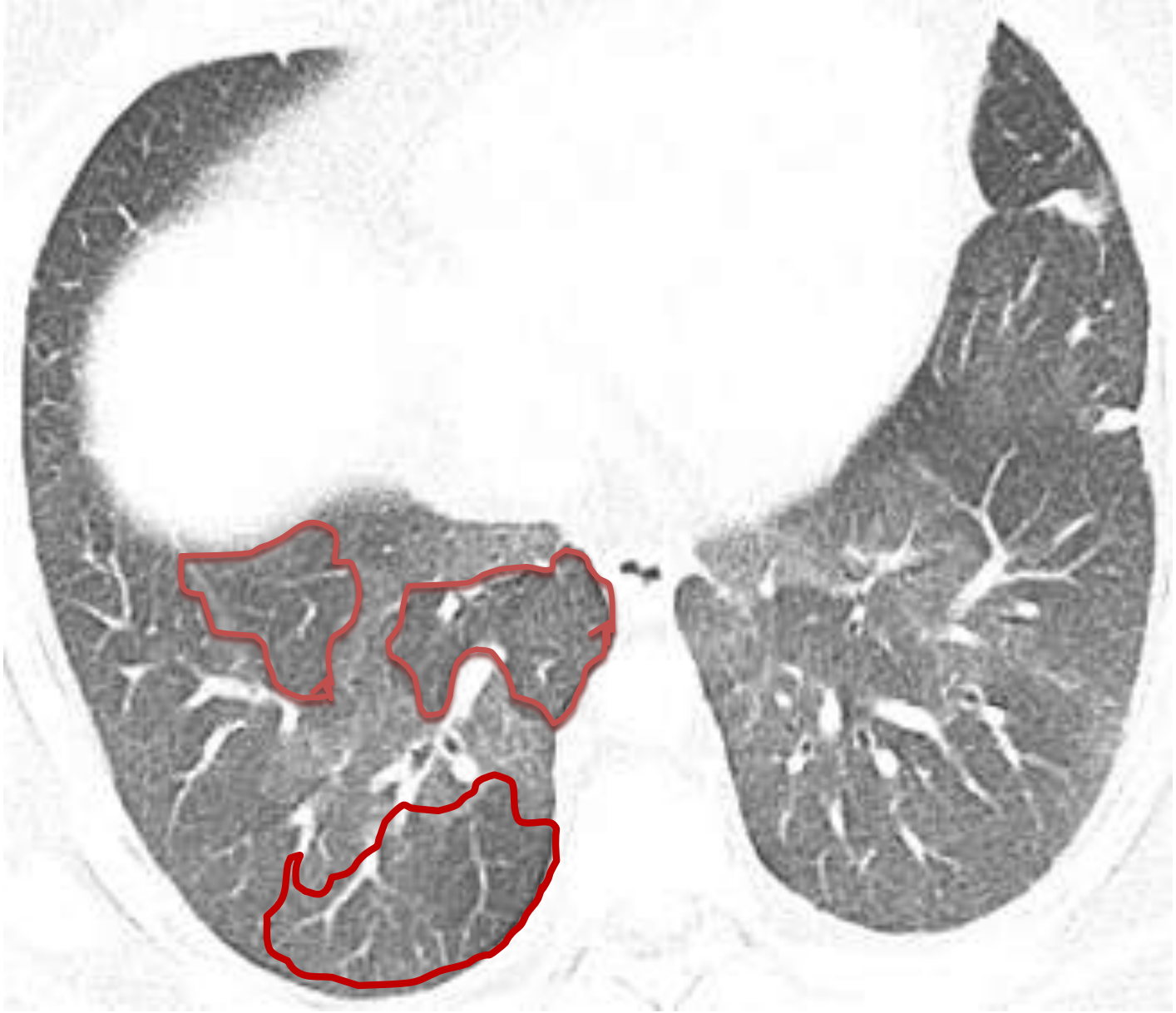


- **IPF End-stage disease :**
  - Coarse **reticulo-nodular** pattern,
  - **Honeycombing,**
  - Irregular **subpleural thickening,**
  - **Fibrous bands** (pleural surface),
  - **Traction bronchiectases,**
  - Centri-lobular emphysema.

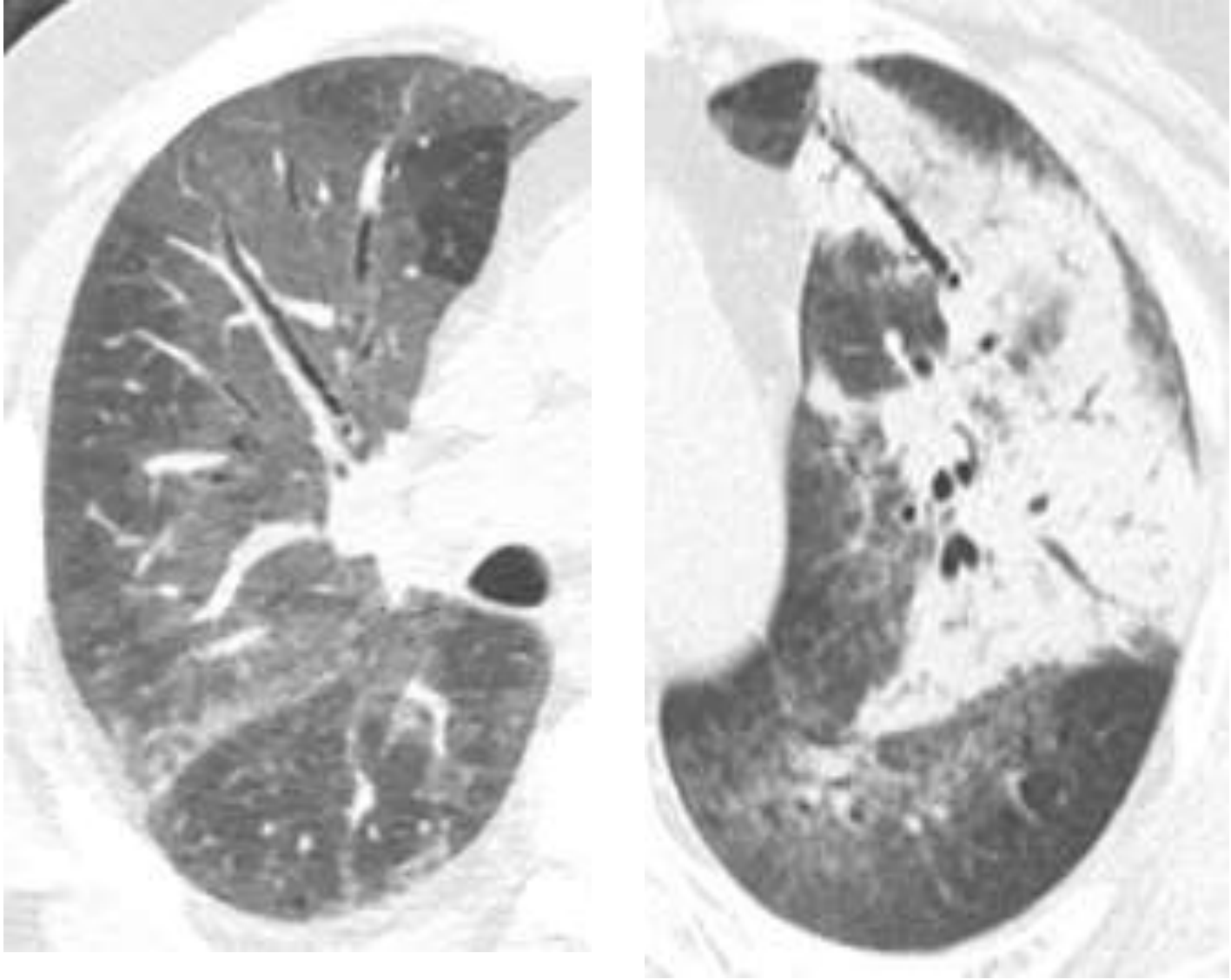
KEY DEFINITIONS IN WITHOUT IPF

- The following features **may suggest an alternative** diagnosis:

  - **Air-Trapping**
  - **Consolidation**
  - **Cysts**
  - **Ground-Glass Opacity**
  - **Micro-nodules**



- Mosaic attenuation and **air trapping.**



Ground Glass VS Consolidation

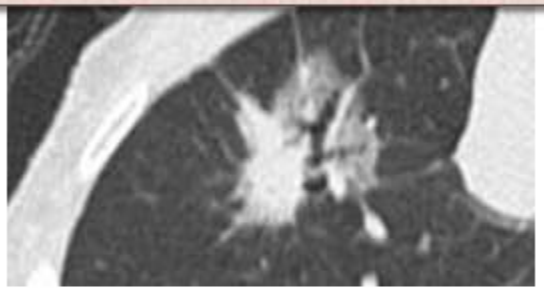
- ✓ **ground-glass** and **mosaic attenuation.**
- This combination points to **chronic hypersensitivity pneumonitis**
- ✓ rather than **idiopathic pulmonary fibrosis.**

Schemes For Chest Imaging

Nodule
< 3 Cm

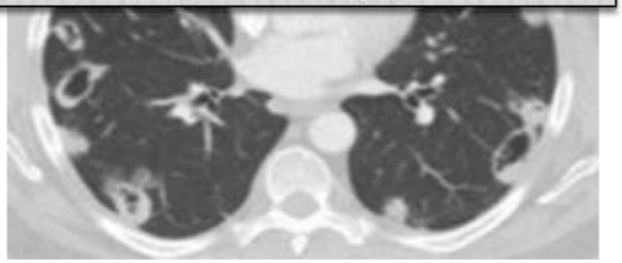
+ Air BRonchogram

- Alveolar cell carcinoma
- Pulmonary Lymphoma
- Round Pneumonia



+ CaVitationS

- Wegener's granulomatosis
  → [thick margin]
- Septic emboli
  → [thin margin]



6 COMMON

→ 2 Benign :

"well defined + Coarse Ca"

✓ Tuberculoma

✓ Hamartoma

→ 2 FLUID:

✓ Hydatid

Sharp margin + Fluid densit

✓ AVM

(Afferent Vessels to Hillum)

→ 2 Malignant:

✓ Bronchogenic Carcinoma:

Speculated edge

✓ Mets: Multiple +/- Known Primary

A.M.Abdelaal

Common Causes of Miliary Nodules “6”:

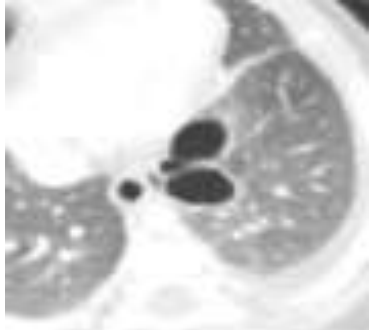
- **T**B,
- **M**ets,
- Pneumoconiosis,
- Alveolar cell carcinoma
- **S**arcoidosis

TM PAcS

Alveolar Microlithiasis

Sarcoidosis

Cavitary Lesions



Pnematocele

Bulla

Ruptured Hydated Cyst

Wavy

Surface

Straight

Air Only

Air Fluid Level

Wall Thickness

Thin
(Site)

Central

Peripheral

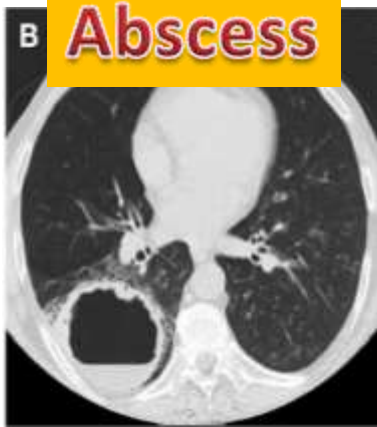
Thick
(Inner margin)

Smooth

Irregular

Chronic Abscess

Tumor BreakDown

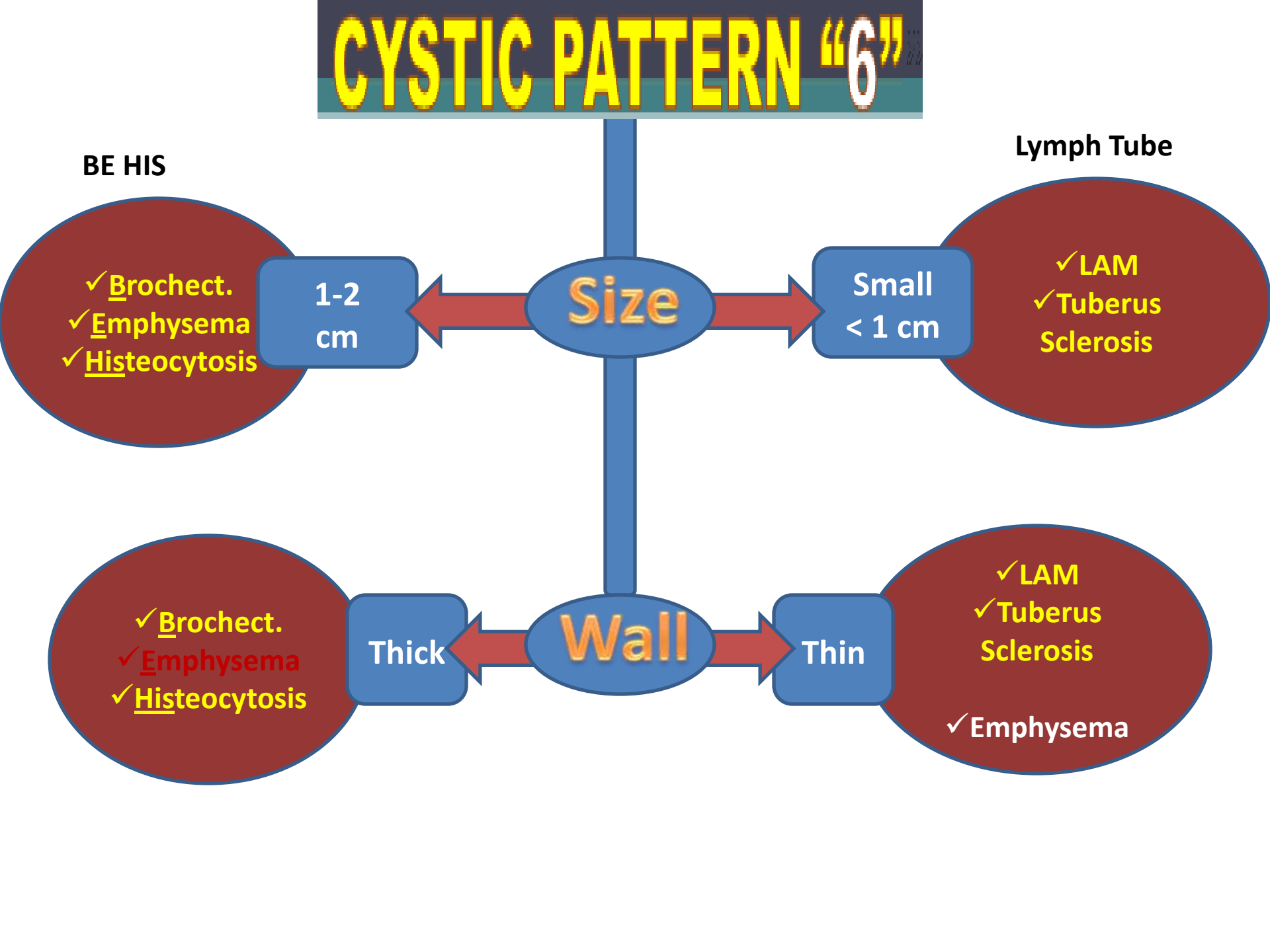


Abscess

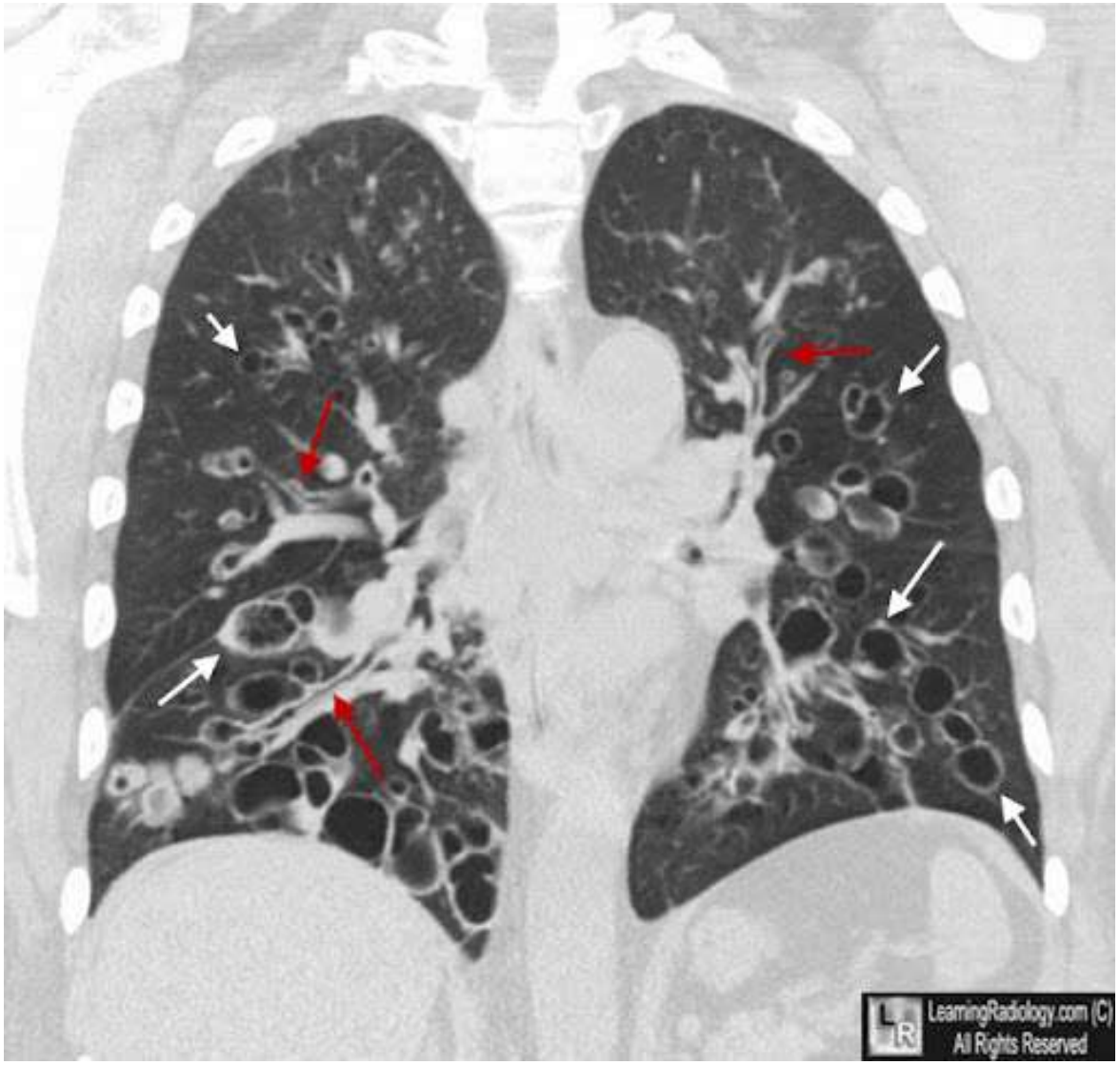
CYSTIC PATTERN "6" ← Diffuse Lung Disease

BE His Lymph Tube

1. **B**roncheactasis cystic
2. **E**mphysema
3. **His**teocystosis
4. **Lymph**angioliomyomatosis
5. **Lympho**cytic Interstetial Pneonmonia
6. **Tub**erus Sclerosis


CYSTIC PATTERN "6"
BE HIS
✓Brochect.
✓Emphysema
✓Histeocytosis
1-2 cm
Size
Small < 1 cm
Lymph Tube
✓LAM
✓Tuberus Sclerosis
✓Brochect.
✓Emphysema
✓Histeocytosis
Thick
Wall
Thin
✓LAM
✓Tuberus Sclerosis
✓Emphysema

cystic bronchiectasis



Usually

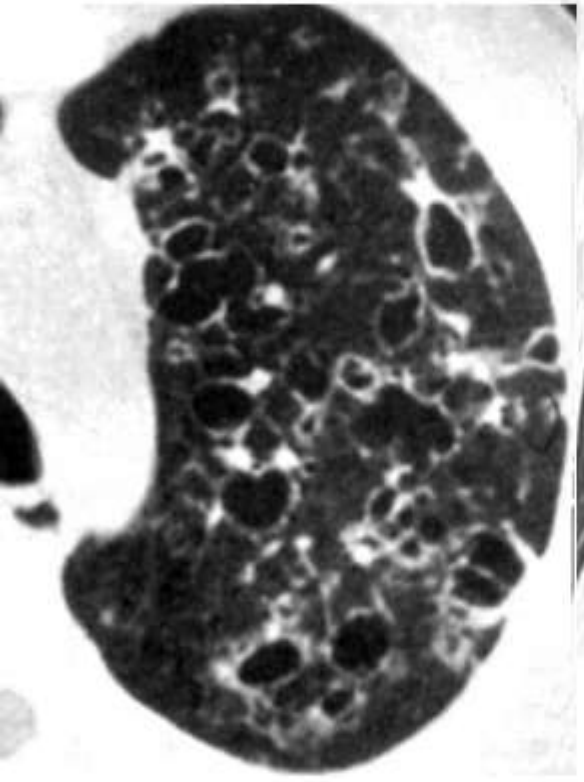
- Central
- Near hilum
- presence of **tubular bronchiectasis**

→ help in DD

HISTEOCYTOSIS

Histeocyts invading Lungs

- 20 : 40 y
- Smoker
  - → tit stop smoking
    + Steroids
    +/- Transplant



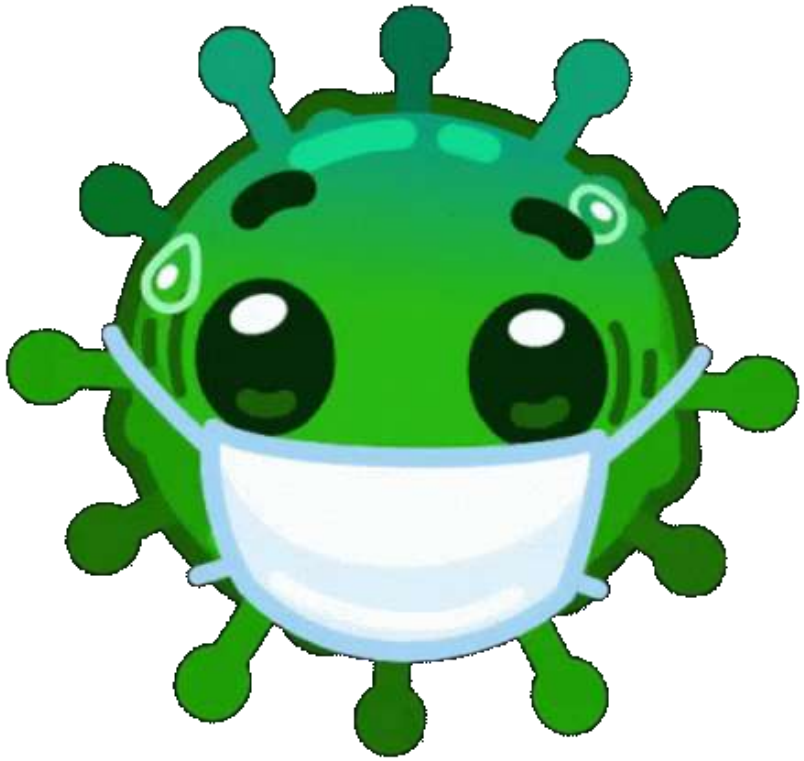
= Preserved
Lung Volume

= Nodules > 5 mm
= Cysts :
* Thin walled
* >10 mm

= Sparing
Lower Part

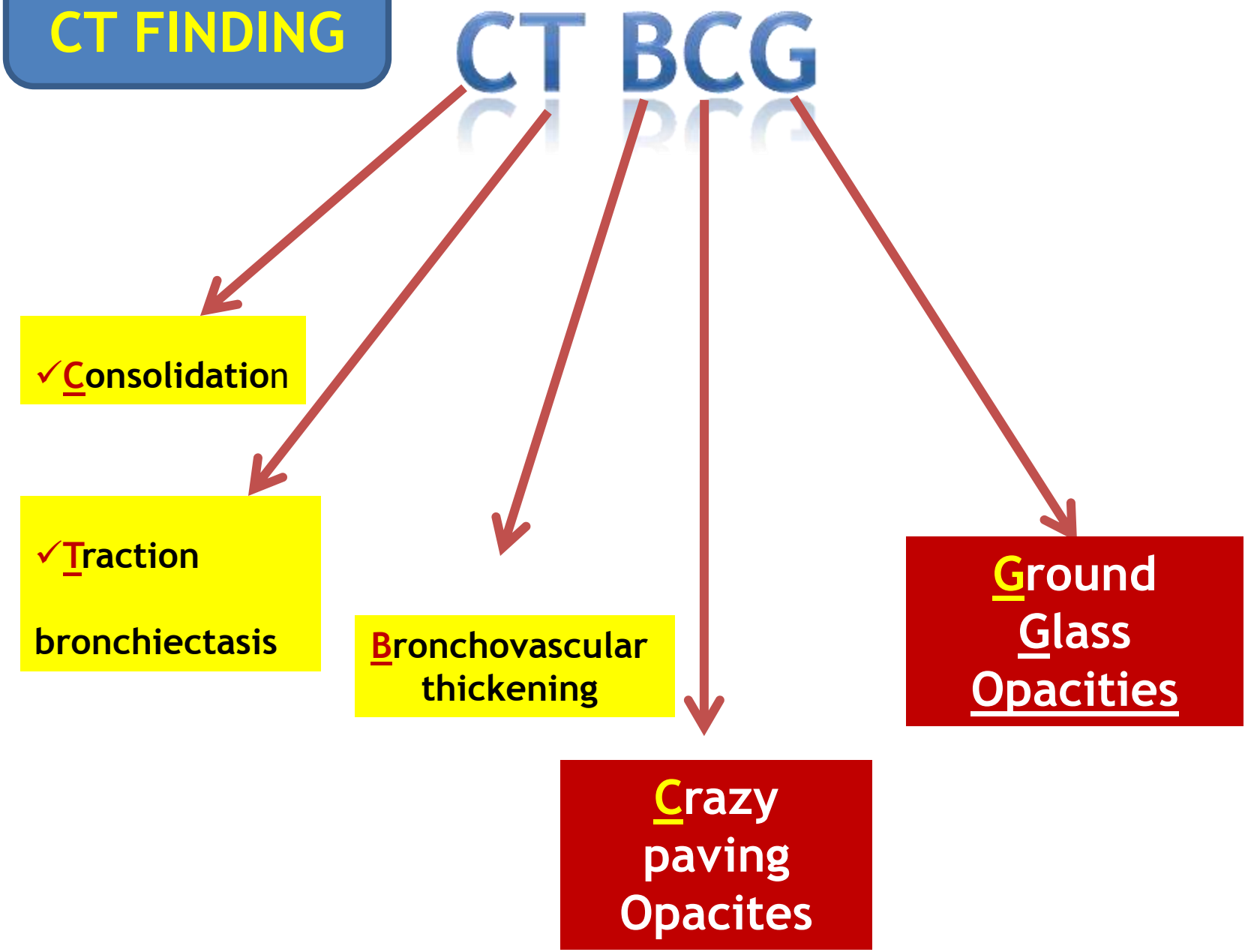
•15% Spontaneous pneumothorax

A.M.Abdalah



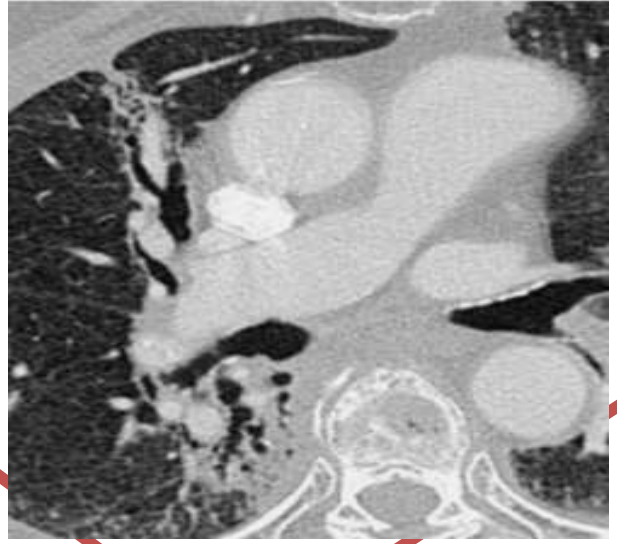
COVID 19
Imaging Keys

COVID 19
CT FINDING



COVID 19 CT

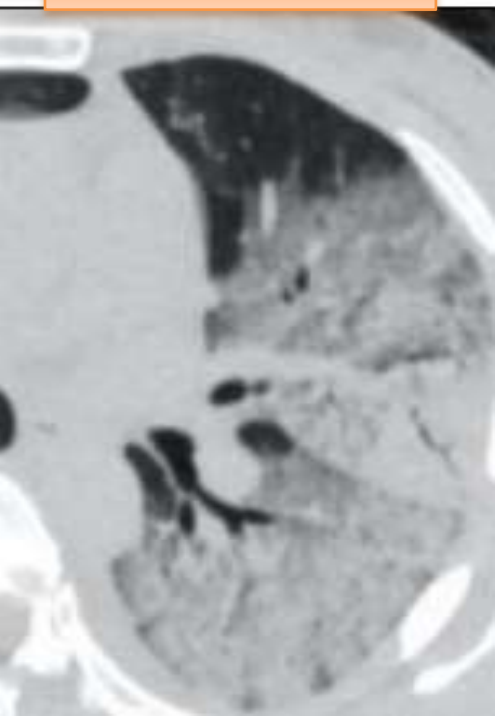
Traction bronchiectasis



Broncho vascular thickening

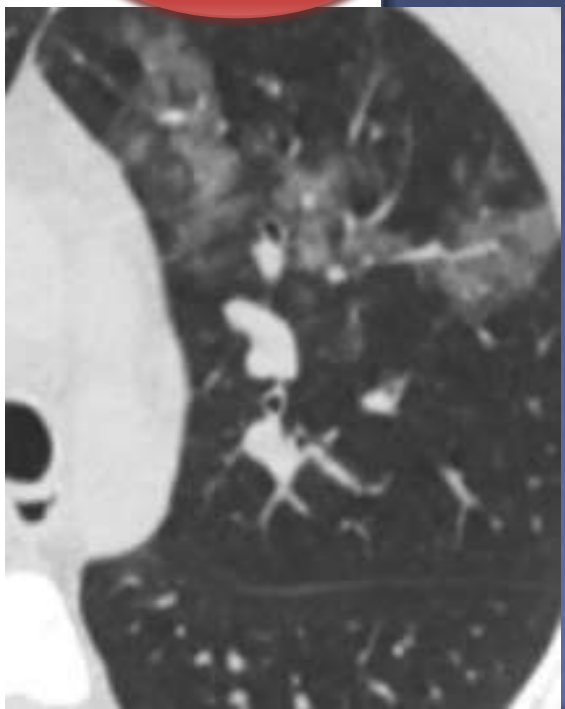
CT BCG

Consolidation



Crazy Paving

Ground Glass Opacities



Diffuse LUNG Diseases Patterns

Interstitial lung disease

DR. C III

- Interstitial pneumonias ,
- Interstitial edema ,
- Idiopathic pulmonary fibrosis
- Collagen diseases
- Radiation induced ,
- Drug induced,

Alveolar lung pathology

- Alveolar edema,
- pneumonia,
- Alveolar hemorrhage,
- Alveolar cell carcinoma
- Alveolar protienosis

Nodular pattern

TM PAcS

- Miliary TB,
- Miliary Mets,
- Pneumoconiosis,
- Alveolar cell carcinoma ,
- Sarcoidosis

Cystic pattern

Be His Lymph Tube

Bronchiectasis.Cystic

- Emphysema and
- Histeocytosis X, ,
- Lymphangioleiomyeomatosis [LAM],
- Lymphocytic pneumonia Tuberous sclerosis.

IIP SUMMERY

- **Idiopathic interstitial pneumonias (IIPs),**

  2 entities, **fibrosing** & **non-fibrosing**

- **UIP** : commonest and worst prognosis
- **Honeycombing :**

  → *most important discriminator between **UIP** and **non-UIP***

Sources & References

- **Recommendations from the Radiology Working Group of the Pulmonary Fibrosis Foundation**. *Stephen Hobbs, MD • Jonathan H. Chung, MD • Jay Leb, MD – 2021*
- *Lectures & How to report - Prof. Dr. Mamdouh Mahfouz*
- Glossary of terms in thoracic imaging and clinicalradiological correlation. What every radiologist should know**. ESR** .
- **Chest Imaging - Dr. M Samy – MD**
- https://radiopaedia.org
- http://www.radiologyassistant.nl
- Idiopathic interstitial pneumonias (IIPs) - Mosleh M. Al Raddadi, MD Consultant Radiologist , KSA

Dr. A.M.Abodahab – MD
Dr.AhmadAbodahab@gmail.com

Jan 2022