

Daria Manos

RSNA 2016
RC 401

<https://medicine.dal.ca/departments/departments-sites/radiology/contact/faculty/daria-manos.html>

STEP 1: Is this fibrotic lung disease?

STEP 2: Is this a UIP pattern?



If yes:

Clinician determines cause
(IPF most common)



If no:

What CT pattern.
Clinical correlation.

UIP 2011, 2013 American Thoracic Society Criteria

UIP Pattern	Possible UIP	Inconsistent with UIP
Subpleural basal predominant	Subpleural basal predominant	Upper or mid lung predominant
Reticular	Reticular	Peribronchovascular predominant
Honeycombing		Ground glass > reticular
No inconsistent features	No inconsistent features	Profuse micronodules
		Multiple bilateral non honeycomb cysts
		Mosaic attenuation – bilateral, 3+ lobes
		Consolidation

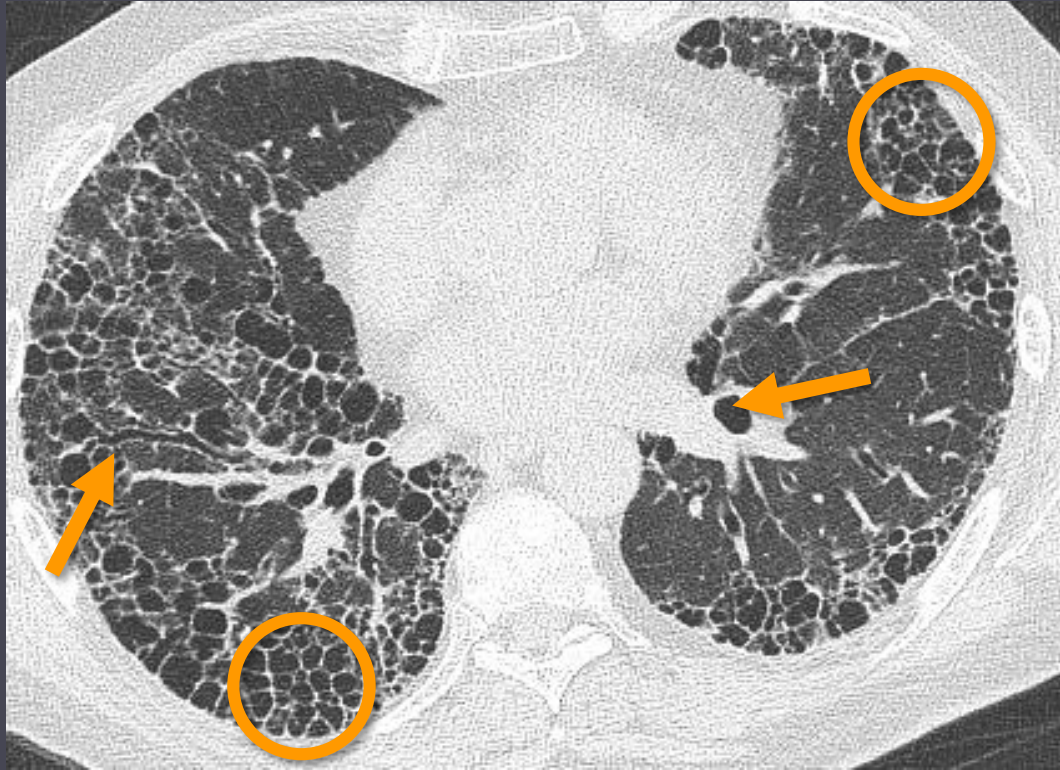
Why bother with ATS criteria?

- Improve interobserver agreement.
- Reduce overdiagnosis of UIP.
- If HRCT and clinical assessment typical for IPF → biopsy not valuable*.

Allow treatment without harm of biopsy

*Flaherty 2003, Hunninghake 2011

Honeycombing is required for ATS UIP pattern

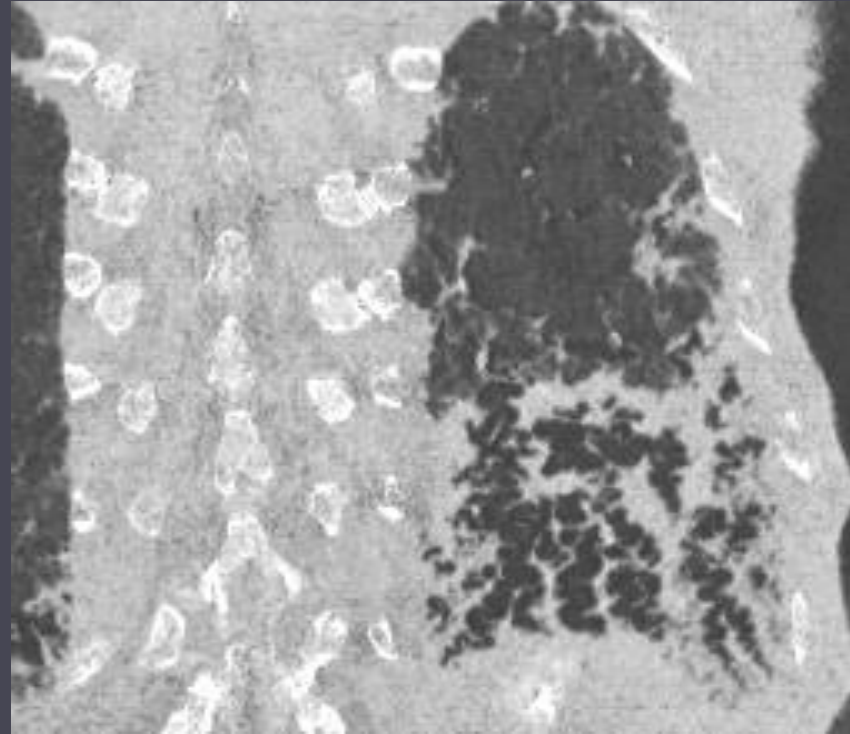
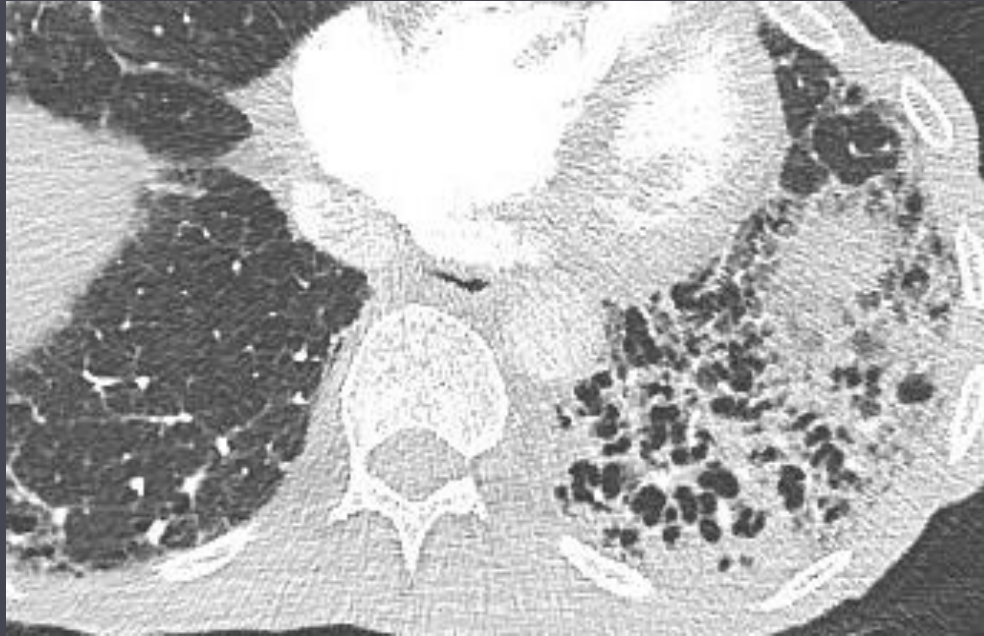


Subpleural
Share walls
Similar size
Stacking

▶ UIP

HP, NSIP and other fibrosis

MIMIC: Traction bronchiolectasis



MIMIC: Emphysema +/- fibrosis



Paraseptal emphysema



Basal emphysema / air space enlargement with fibrosis

Chronic diffuse GGO survival guide

Smoker, tiny cysts, basal



DIP

Bronchiectasis, irregular reticulation
basal, subpleural sparing



NSIP

Air trapping, nodules
spares CPA



Hypersensitivity
Pneumonitis

Septal thickening (crazy paving)
No vertical predominance



Alveolar Proteinosis

Nodules, scattered cysts, history



LIP

Central + peripheral, consolidation

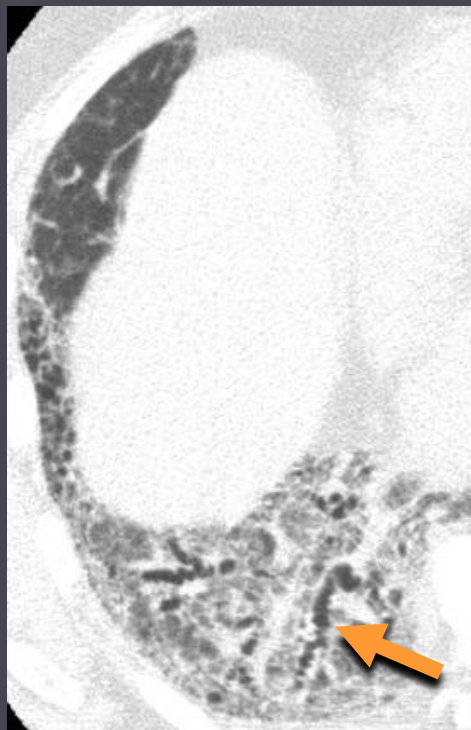


OP

Chronic Ground Glass Opacity



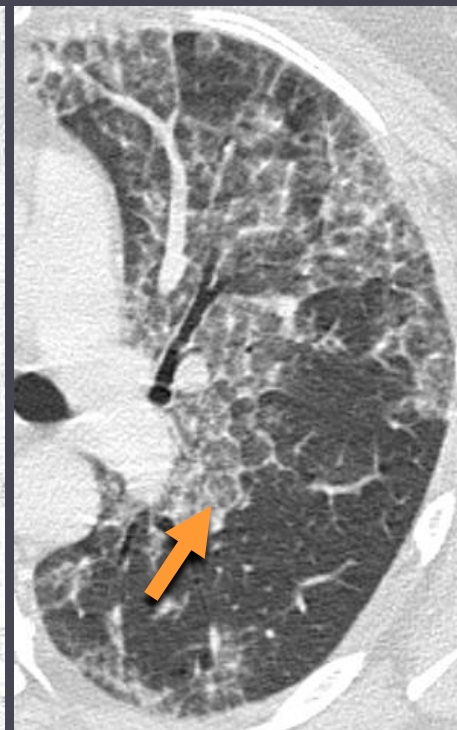
DIP



NSIP



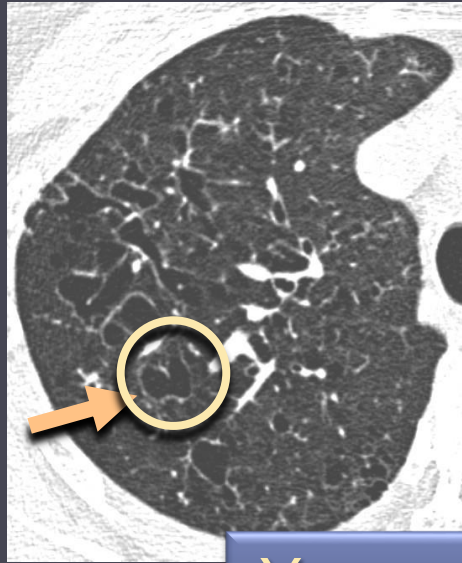
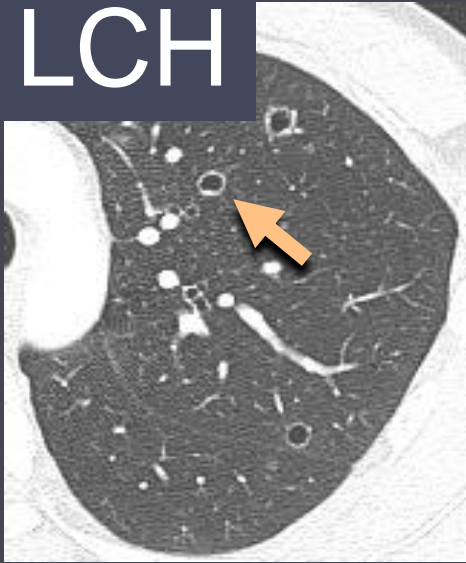
NSIP



Alveolar
Proteinosis

LCH vs. centrilobular emphysema

LCH



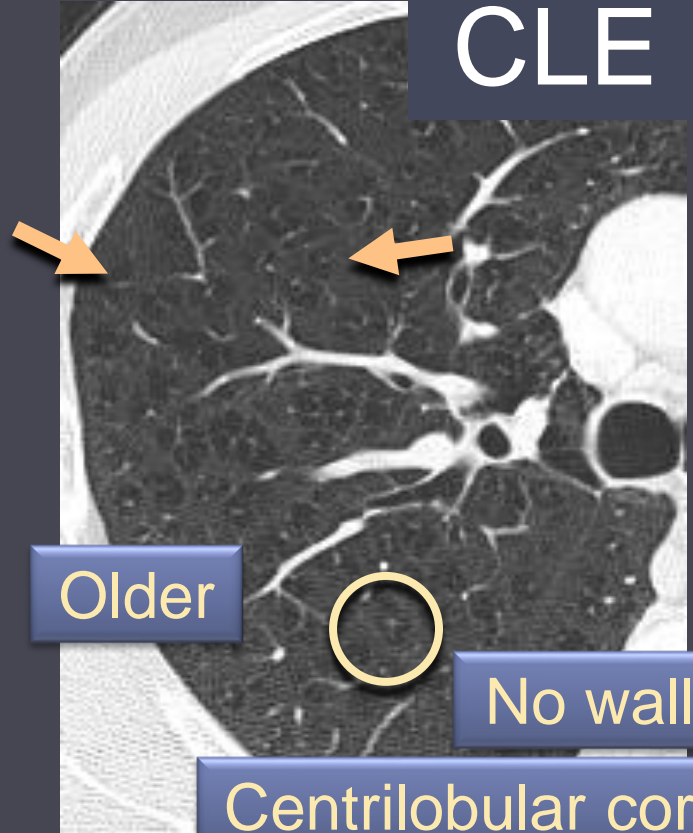
Younger

walls

+/- nodules

Empty

CLE



Older

No walls

Centrilobular core

Cystic lung disease: Demographics

PLCH

(Young)
smokers

LAM

Women
reproductive
age

LIP

Characteristic
Comorbidities
Sjögren
AIDS
Autoimmune
Drug reaction
Dysproteinemia

BHD

Syndrome
Family history

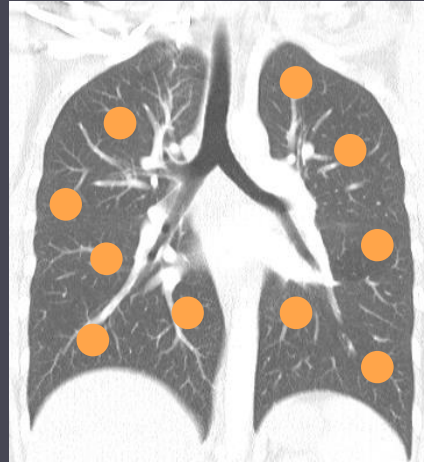
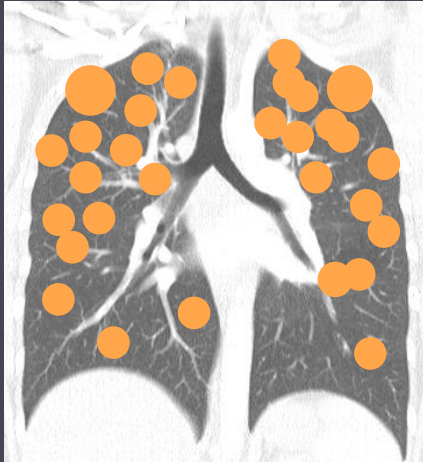
Cystic lung disease: Distribution

PLCH

LAM

LIP

BHD



Distribution of Disease

	Lower lung	Extreme bases	Axial
IPF	Yes	Yes	Peripheral
Chronic HP	yes	May be spared	Peripheral and central

HRCT findings

	Traction bronchiect.	Reticulation	Honeycomb	Mosaic	Centrilob. nodules
IPF	yes	yes	yes	No or minimal	No
Chronic HP	yes	yes	possible, often mild (+/- other cysts)	possible	possible



Pneumoconiosis: silicosis

- Sandblasters, stone workers
 - Similar findings in Coal workers pneumoconiosis, Berylliosis, Talcosis.
- Common if prolonged high level exposure.
 - up to 50-70% incidence if unprotected.
- Often an incidental finding on CXR.
- **Upper lung predominant: differential is sarcoid**

Cavarianai 1995, Kreiss 1996, Chen 2001

Looks like fibrosis ... but does not fit ATS UIP criteria

Fibrotic NSIP

- No/min honeycomb
- Subpleural sparing
- Peribronchial
- Basal

Chronic HP

- Non honeycomb cysts
- CPA spare
- AT + GG (head cheese)
- micronodules

Normal ageing

- Reticulation
- Basal
- > 75 years

Injury

- Radiation
- ARDS
- Chronic aspiration
- Severe infection

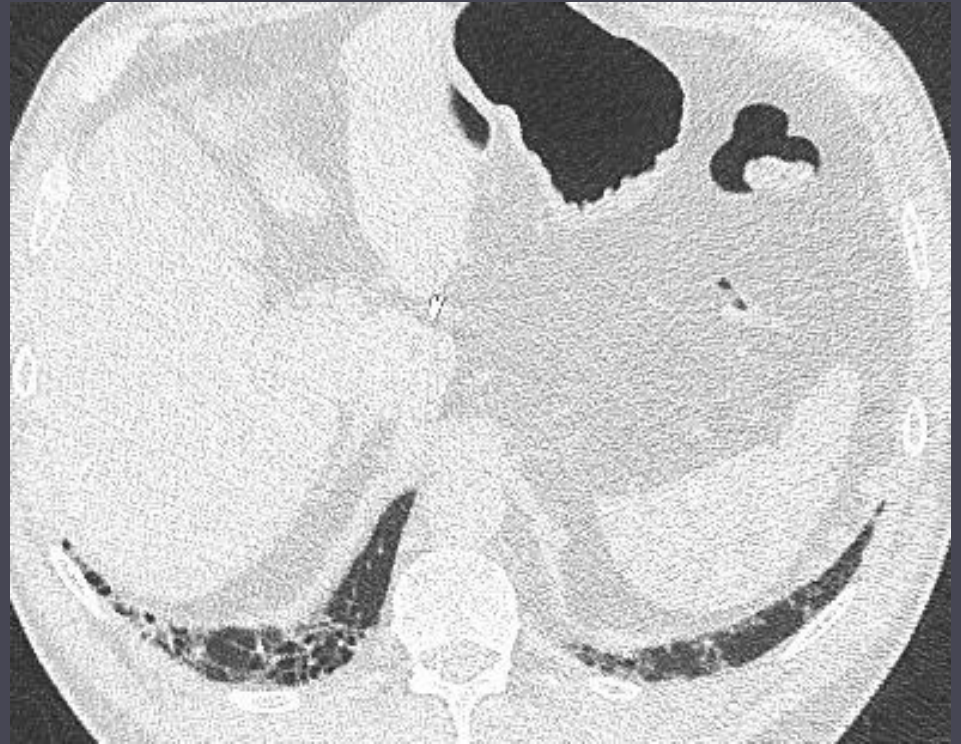
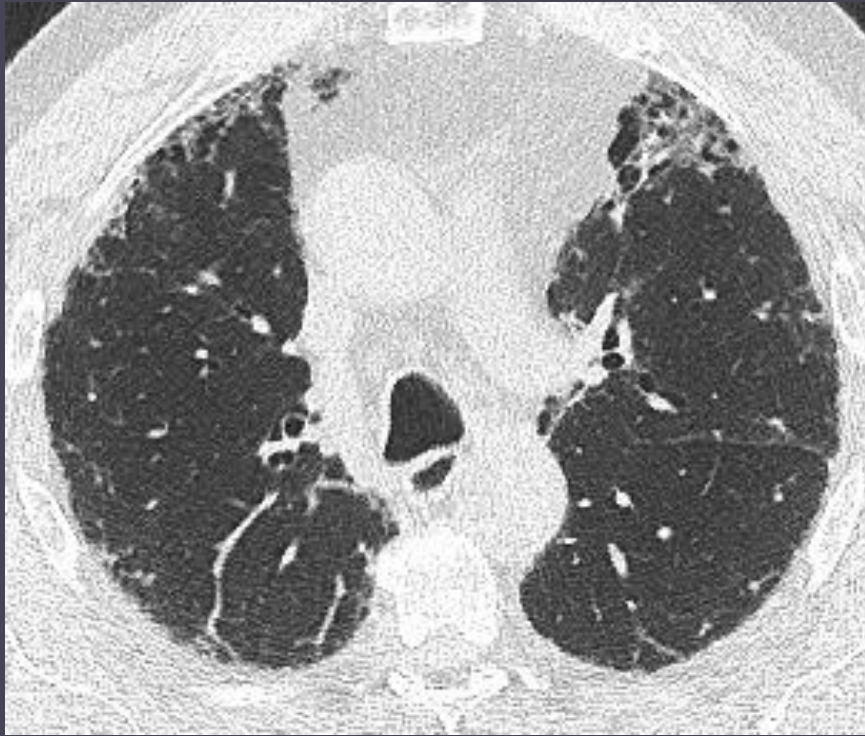
Sarcoid/Silicosis

- Upper
- Central
- Micronodules

Atypical UIP

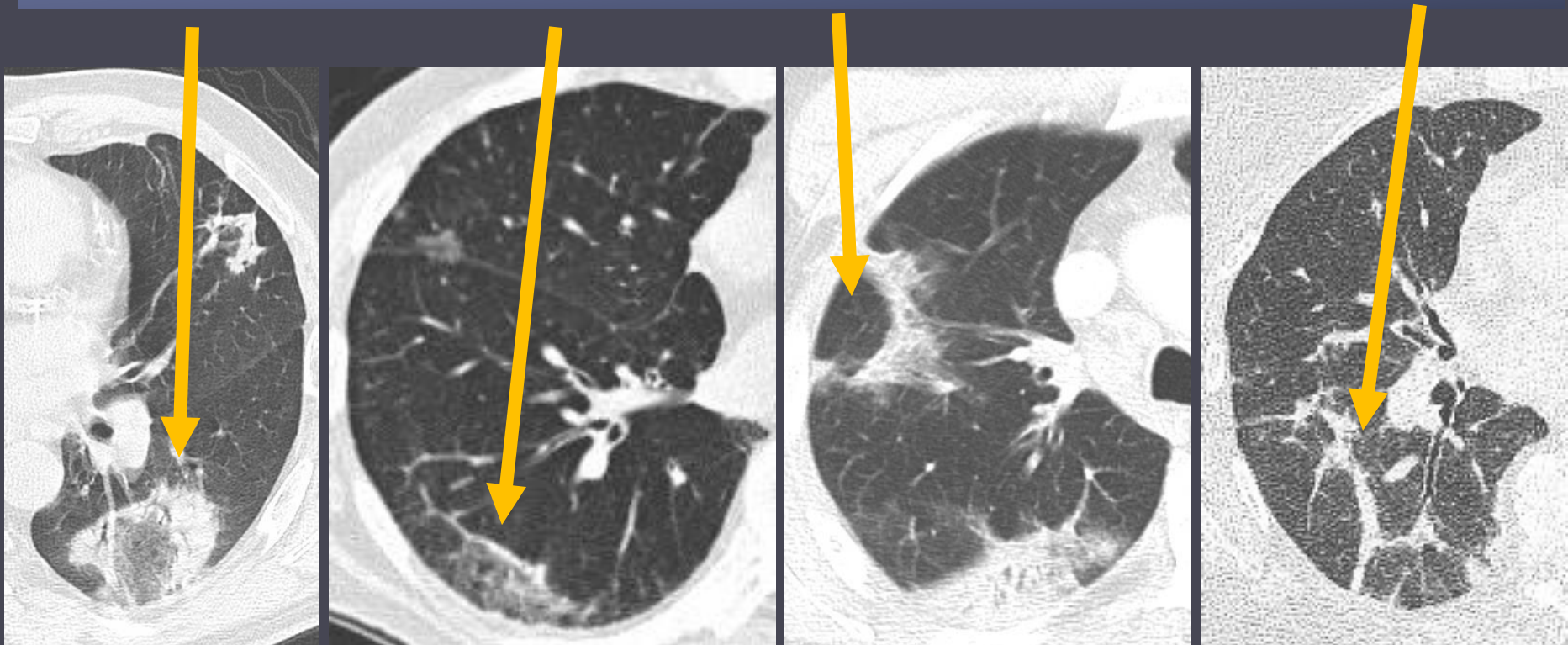
- ATS criteria specific but not sensitive.
- > 30% does not fit ATS criteria.

Propeller pattern in UIP



Described in Hunninghake. Chest 2003

reverse halo, atoll sign, lobular sparing, perilobular lines



1st image courtesy Okka Hamer, Regensburg

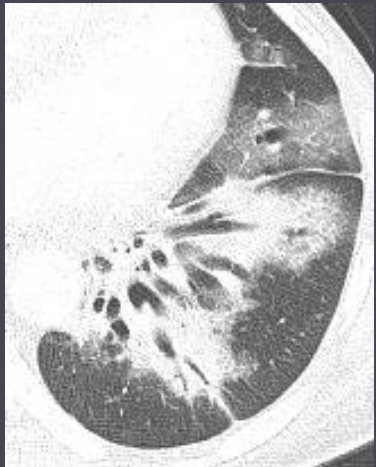
Organizing pneumonia

Non-specific lung reaction to insult

CTD, drug reaction, radiation, IBD pneumonia, aspiration, inhalation, HP cryptogenic

Pathology

Granulation plugs in alveolar ducts with surrounding chronic inflammation.



HRCT:

- Consolidation: non segmental, migratory, patchy, subpleural, peribronchial.
- Perilobular pattern, nodules, masses
- Can exist with other patterns - NSIP