Comperative interpretation of CT and Chest radiograph

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Radiology – Thoracic and interventional imaging
UZ Brussel

Normal pulmonary interstitium

Intralobular

Centrilobular

Peribronchovascular

Interlobular

Subpleural

Secondary pulmonary lobule

- Intralobulair interstitium
- Axial interstitium
- Periferal interstitium

1-2 cm
Pulmonary vene
Interlobular septum
Centrilobular bronchiole and artery

Bronchial
Alveolar
PULMONARY PATTERNS
Vascular
Interstitial
Linear and reticular pattern
Nodular pattern
Increased lung attenuation
Decreased lung attenuation
Mosaic perfusion pattern

CASE 1

- *53 year old male*
- *Smoker*
- *Bronchorrhea*

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Differential diagnosis of bronchial pattern on Chest radiography and CT

- Acute bronchitis
- Chronic bronchitis (asthmatiform – smoking related)
- Broncho-pulmonary dysplasia
- Congestive heartfailure
- Mucoviscidosis
- Hantavirus pulmonary syndrome
- Human metapneumovirus
- Kawasaki disease
- Lungcancer
- Pneumonia
- Lungedema

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- Pneumonia
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ill-defined centrilobular nodules accumulation of pigmented macrophages within respiratory bronchiole

centrilobular emphysema typically begins near the centre of the secondary pulmonary lobule

CASE 2

- *39 year old woman*
- *Shortness of breath*
- *CE: bilateral crepitations*

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DD Vascular - Linear - Reticular - Ggo

- Cardiogenic pulmonary edema

CASE 3

- *39 year old female*
- *Cough*
- *CE: None*

G
pa

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pa

Differential diagnosis nodular pattern on Chest radiograph

- **Acute**
  - Miliary tuberculosis and histioplasmosis (diffuse and bilateral distribution)
  - Endobronchial spread of tuberculosis (patchy or asymmetric distribution)
  - Viral infection (diffuus or patchy distribution)
  - Infectious bronchiolitis (viral, bacterial, fungus)
- **Subacute of chronic**
  - Sarcoidosis (mostly perihilar with upper lobe predominance sometimes associated with thoracic lymphnodes)
  - Hypersensivity pneumonitis (diffuse distribution)
  - Silicosis and “coal workers’ pneumoconiosis” (upper lobe predominance)
  - Hematogenous metastases (diffuse but lower lobe predominance)

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6Y
Phil
4 Fet

CASE 4

- *44 year old male*

- *Fever and night sweats*

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SC 3
SW
A

SC 30
SW 4
A
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CASE 5

- *38 year old woman*
- *Fever*
- *FE: crackles left lung base*

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Multiple nodules
pleural nodules
no pleural nodules
subpleural, septal, peribronchovascular,
diffuse no predominance
perilymphatic distribution
random distribution
centrilobular distribution
Sarcoid
silicosis
lymphangitic ca
Miliary infect:
- TB, fungal
Metastases
Hypersens. pneum
Resp bronchiolitis
Bronchioloalv ca
Infectious diseases

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pleural nodules
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lymphangitic ca
Miliary infect:
- TB, fungal
Hypersens. pneum
Resp bronchiolitis
Bronchioloalv ca
Infectious diseases

CASE 6

- *39 year old male*
- *Dyspnea and fever*
- *Hiv+ (CD4+ van 254/mm³)*

L
pa

L
pa

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Differential diagnosis of Crazy paving

- Infection
  - Pneumocystis jiroveci pneumonie
- Tumor
  - Adenocarcinoma in situ
- Idiopathic
  - Pulmonary alveolar proteinosis
  - Sarcoïdosis
  - NSIP
  - OP
- Inhalation
  - Lipoid pneumonia
- Sanguineous
  - ARDS
  - Hemorrage

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Pulmonary alveolar proteinosis

Lipoid pneumonia

Pulmonary hemorrage in patient with granulomatosis with polyangiitis (Wegener granulomatosis)

CASE 7

- *46 year old female*
- *Pneumothorax treated by manual aspiration and drain (wait and see)*
- *Right sided pleural pain*

Patterns of interstitial lung disease

Patterns of interstitial lung disease

Case 7

Centrilobular emphysema

Differential diagnosis of cystic lung disease on HRCT

- “End-stage”-longfibrosis: (honeycombing)
- Lymphangiomyomatosis (LAM): (cysts are uniform in size and form (round)
- Langerhans cell histiocytosis: (cysts are bizarre in shape and there is a relative sparing of the CDS
- Lymphocytic interstitial pneumonia (LIP): cysts are thin walled and can be multiple. Associated with ground glass opacities

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Lymphocytic interstitial pneumonia (LIP)

Ideopathic pulmonary fibrosis - Usual interstitial pneumonia

UIP Pattern (All Four Features)	Possible UIP Pattern (All Three Features)	Inconsistent with UIP Pattern (Any of the Seven Features)
• Subpleural, basal predominance • Reticular abnormality • Honeycombing with or without traction bronchiectasis • Absence of features listed as inconsistent with UIP pattern (*see* third column)	• Subpleural, basal predominance • Reticular abnormality • Absence of features listed as inconsistent with UIP pattern (*see* third column)	• Upper or mid-lung predominance • Peribronchovascular predominance • Extensive ground glass abnormality (extent > reticular abnormality) • Profuse micronodules (bilateral, predominantly upper lobes) • Discrete cysts (multiple, bilateral, away from areas of honeycombing) • Diffuse mosaic attenuation/air-trapping (bilateral, in three or more lobes) • Consolidation in bronchopulmonary segment(s)/lobe(s)

Definition of abbreviation: UIP = usual interstitial pneumonia.

ATS/ERS/JRS/ALAT Statement: Ideopathic Pulmonary Fibrosis: Evidence-based Guidelines for Diagnosis and Management. AJRCCM, 2011 Mar 15;183(6):788-824

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Pulmonary Langerhans cell histiocytosis

CASE 8

- *52 year old male*

- *Referred to UZ Brussel for pulmonary hypertention*

R

R

Patterns of interstitial lung disease

Patterns of interstitial lung disease

Differential diagnosis of a reticular pattern on Chest radiograph

- **Acute**
  - Cardiogenic pulmonary edema (reticular pattern associated with septal lines, large pulmonary venes, pleural fluid and cardiomegaly)
  - Acute viral or mycoplasma pneumonia (often associated with consolidation and on HRCT centrilobular nodules with three-in-bud)
- **Chronic**
  - Idiopathatic pulmonary fibrosis and longfibrosis associated with collagen-vascular disease
  - Asbestosis (mainly in lower lobes and often associated with asbest related pleural disease)
  - “End-stage” hypersensitivity pneumonitis
  - Sarcoïdosis

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  - Sarcoidosis

42.9 mm

32.9 mm
27.1 mm

8

GGO

Crazy paving

Alveolar proteinosis
Pneumocystic pneumonie
Chronic eosinophilic pneumonia
Adenocarcinoma in situ
Lipoid pneumonia
hemorrage
Hypersensivity pneumonitis

Intralobular septal thickening

NSIP (Ideopathic, medicamenous, associated to CVD)
DIP
LIP
Asbestosis
Ideopathic pulmonary fibrosis (atypical)

Tractionbronchiectasis en bronchiolectasis

NSIP with fibrosis (ideopathic, CVD, medicamentous)
Sarcoidosis with fibrosis
LIP
Chronic hypersensivity pneumonitis

GGO

Crazy paving

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Tractionbronchiectasis en bronchiolectasis

NSIP with fibrosis (ideopathic, CVD, medicamentous)
Sarcoidose met fibrose
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LIP
Chronic hypersensivity pneumonitis

Medical Radiology

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Comparative Interpretation of CT and Standard Radiography of the Chest

Springer