



# 肺部感染症、呼吸道疾病 之影像判讀 (I) :

## Infection

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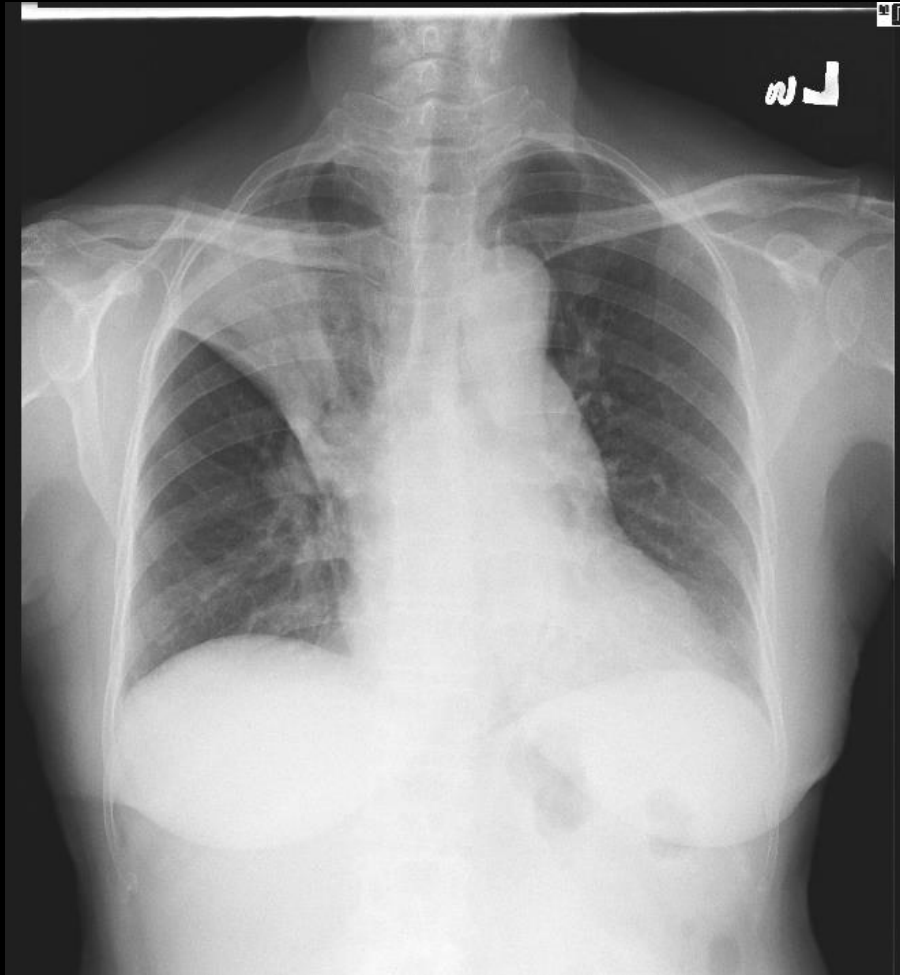


# Contents (1) : Infections

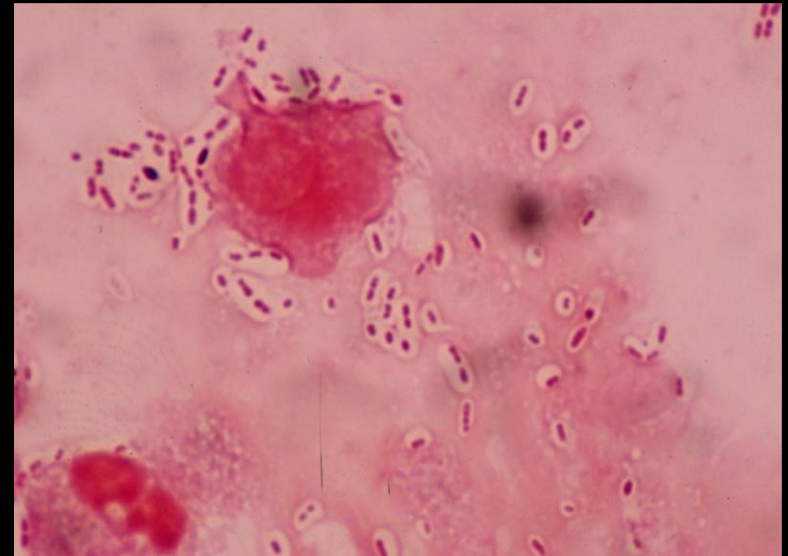
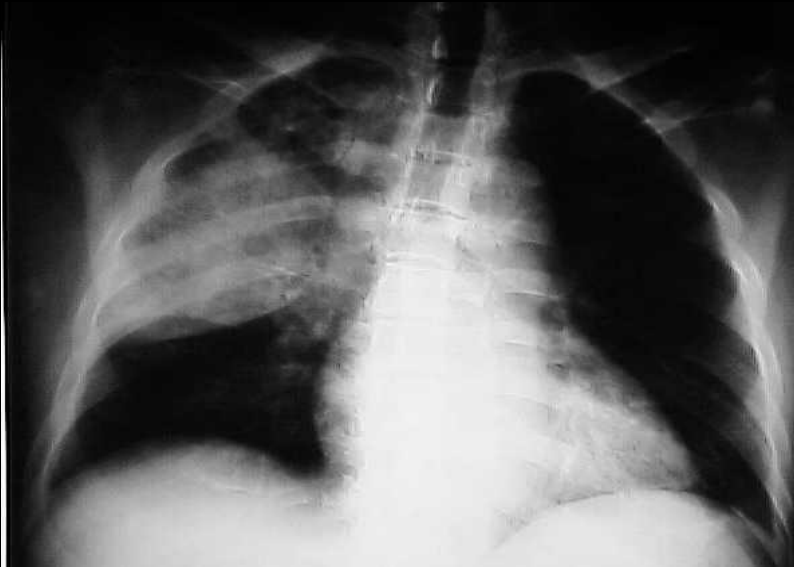
- Air-bronchogram
- Lobar pneumonia (邊緣、內容)
- Bronchopneumonia and Segmental pneumonia
- Interstitial pneumonia
- Bilateral pneumonia
- Serial follow up images
- Rapid progression pneumonia
- Delayed(Un)-resolved pneumonia
- **Complication** of Pneumonia (air, cavity, fluid, ARDS, pneumotocele ...)
- Pneumococcal pneumonia
- Klebsiella pneumonia
- PJP pneumonia
- Viral
- Septic emboli
- Tuberculosis
- **DD: Conditions mimicking pneumonia ( CHF, sputum, Cancer ...)**

**\*\* 單獨影像一般不易區別感染的病原菌種，但有參考價值**

# Pneumonia – air bronchogram



# Pneumococcal Pneumonia

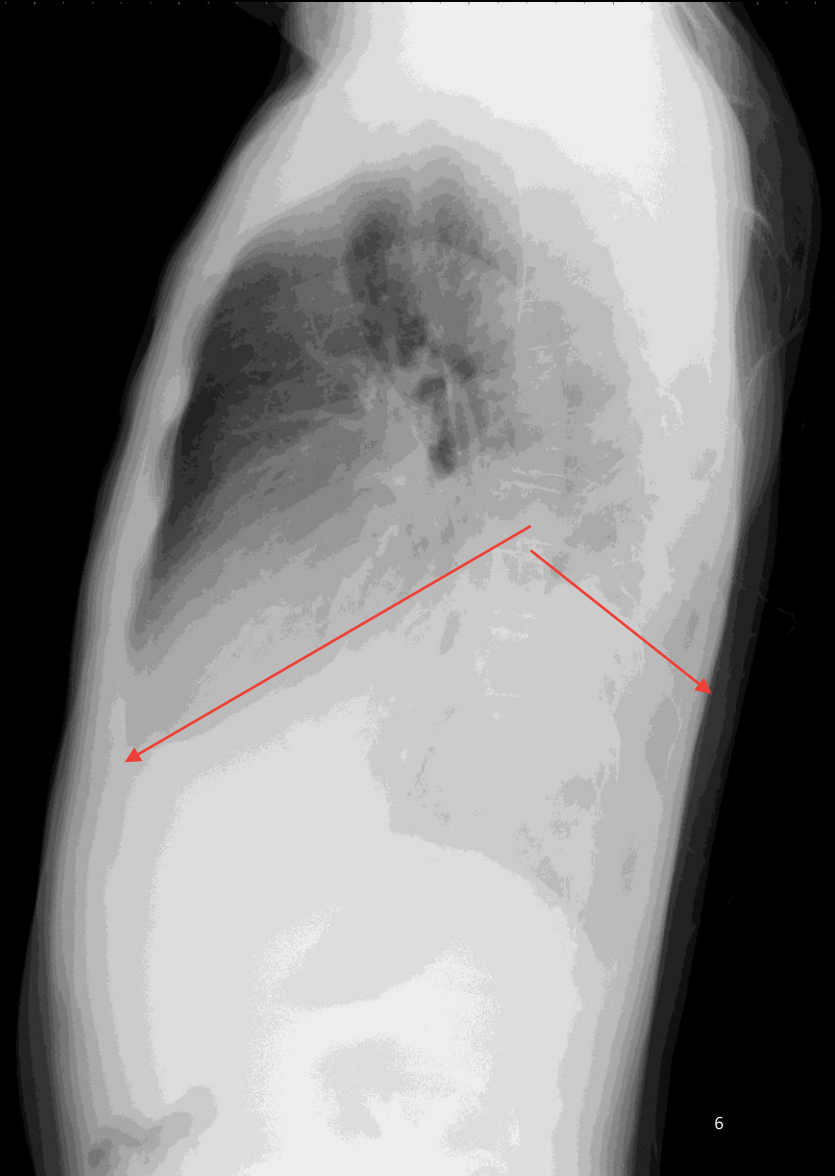
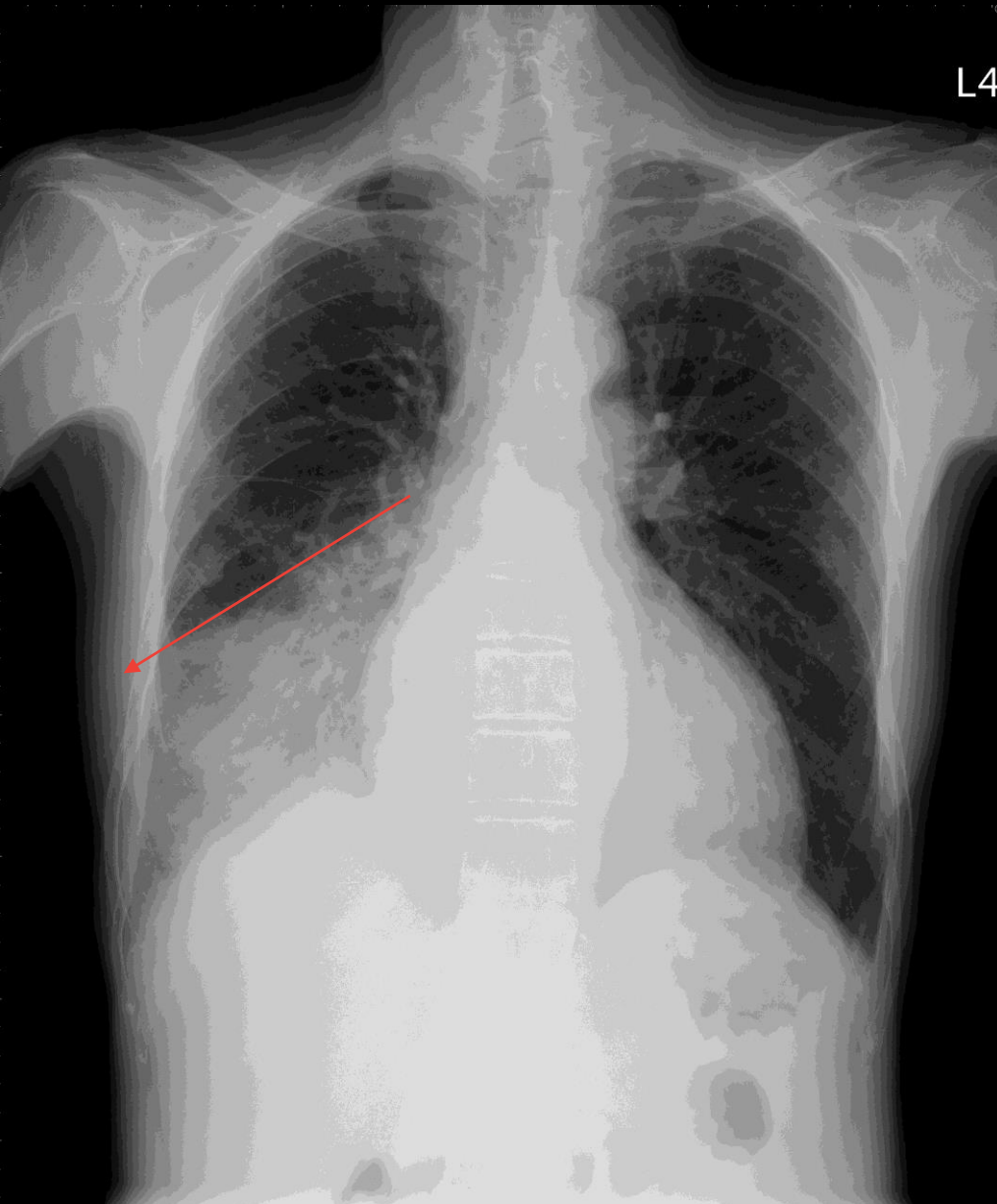


# Pneumonia : *K. Pneumoniae*

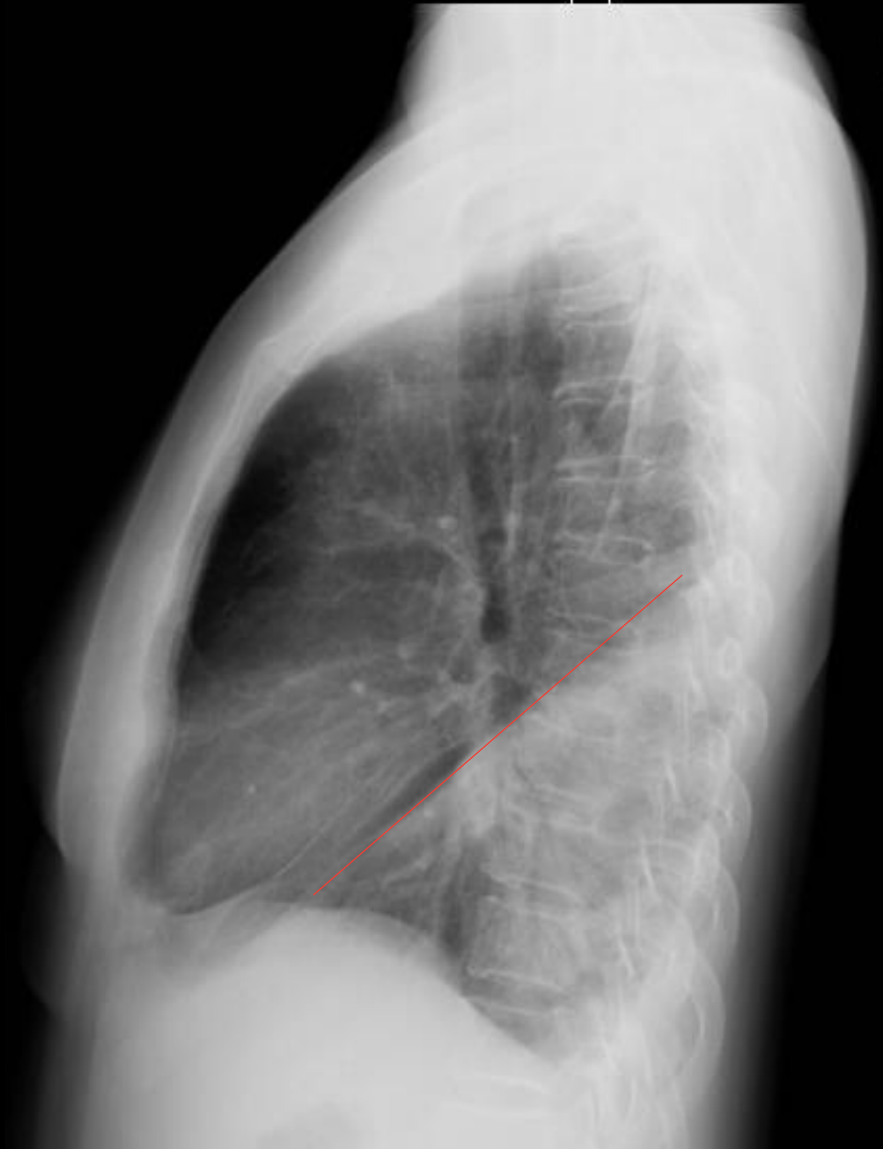
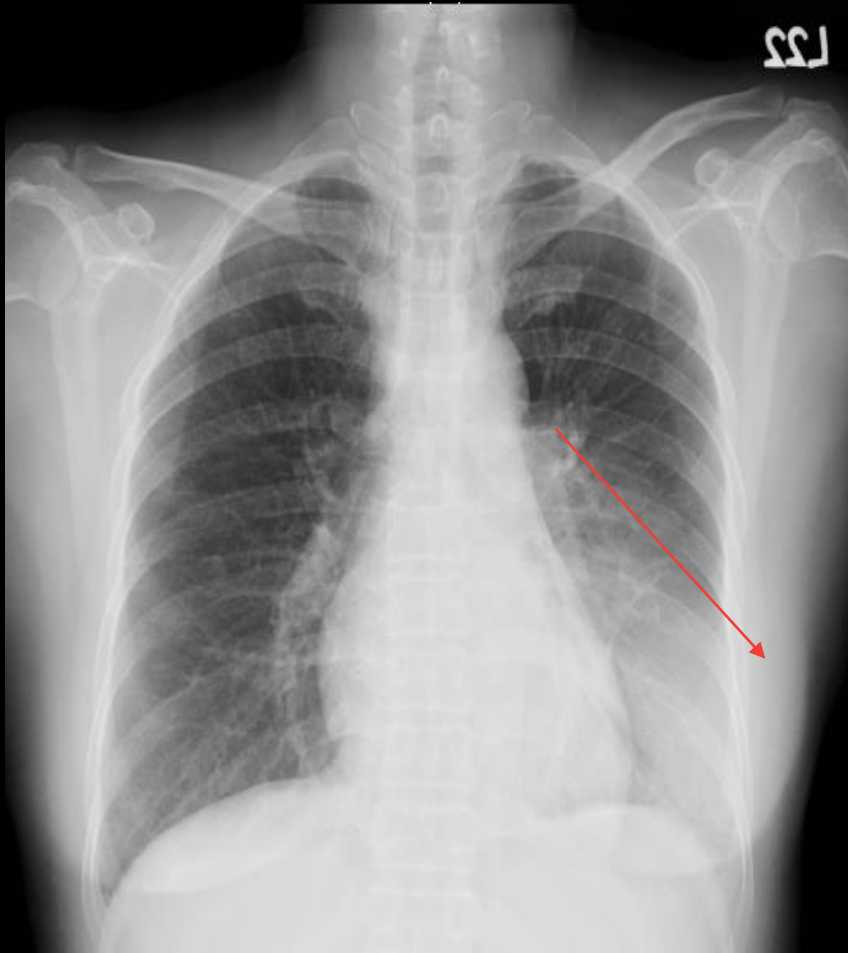


*"Bulging fissure"*

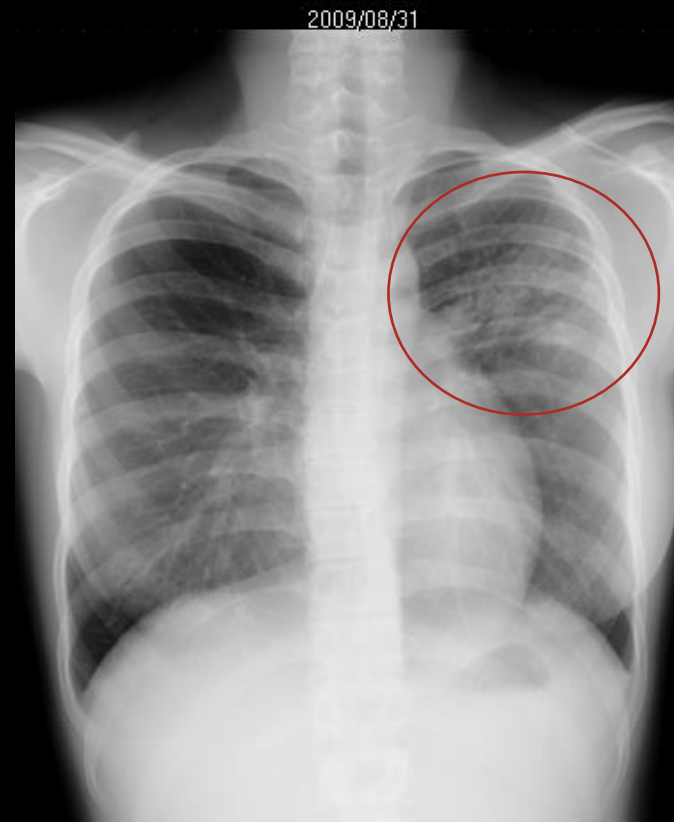
# RLL lobar pneumonia : DD. RML, effusion



# pneumococcal pneumonia , Pneumococcus Ag+

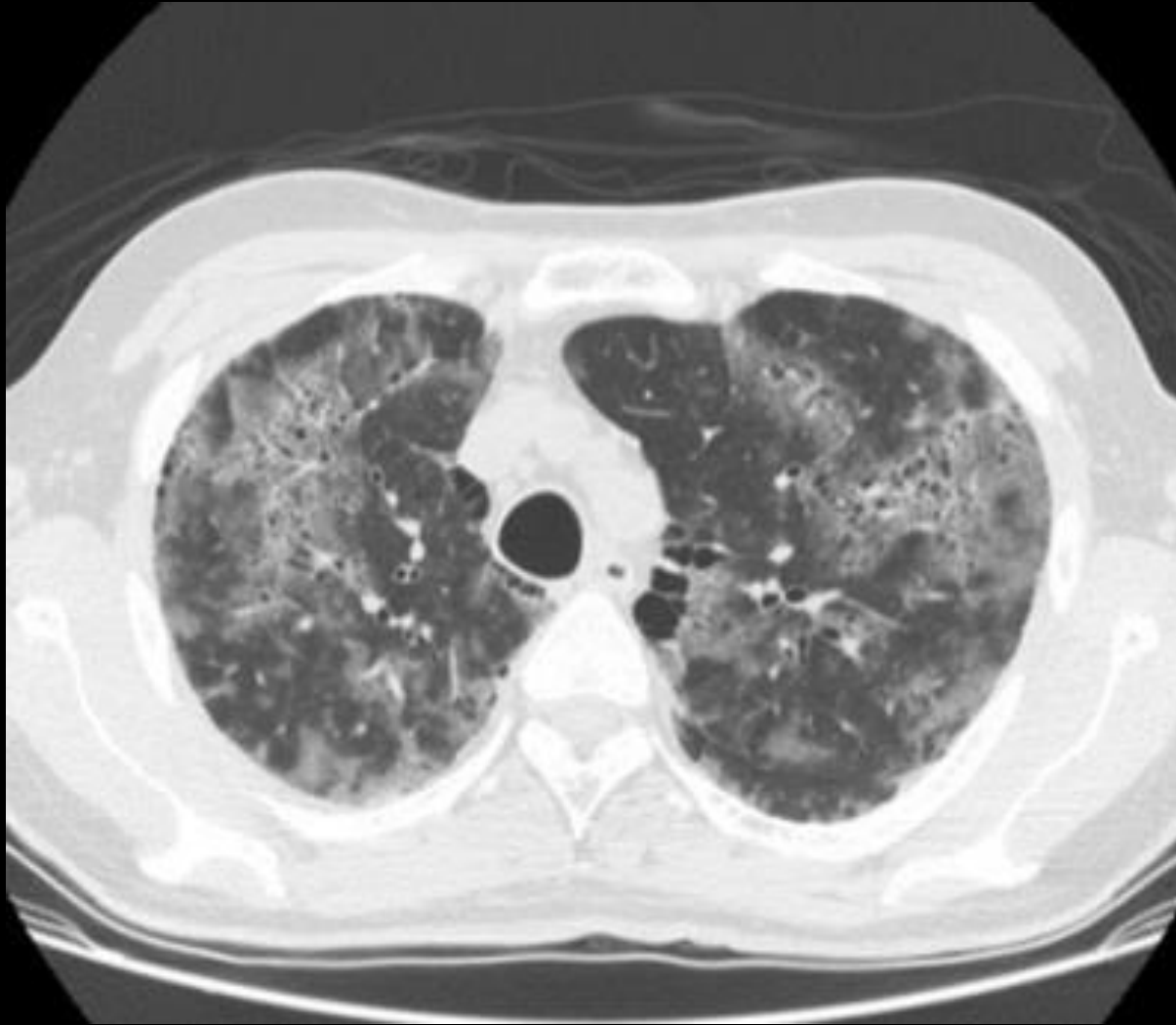


# Bronchopneumonia vs Segmental pneumonia

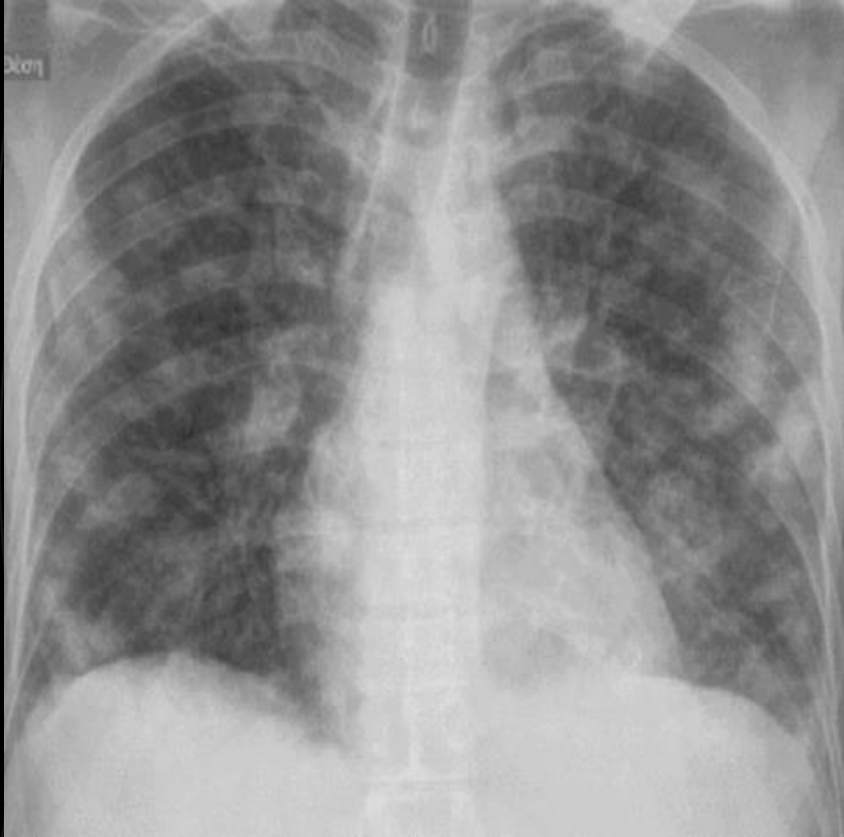




# Diffuse alveolar pneumonia (PJP)



# Diffuse (bilateral) Nodules/Cavities – Septic emboli



DD. Malig meta



# Serial Follow up in infection diseases

Trend of improving, worsening

Delayed, non-resolved patch

# FU CXR within 12 hours



*1 months*



追蹤片子可以及早發現惡化情況

DM patient, FU within 2 days.

cavity, abscess



**FU within 2 days.**

Worse pneumonia or  
effusion ?



**FU within 1 days with pneumonia Tx**      DD. CHF, Edema



# RML pneumonia, FU after 1 month

Delayed resolved, Ca ?





# Complications of pneumonia

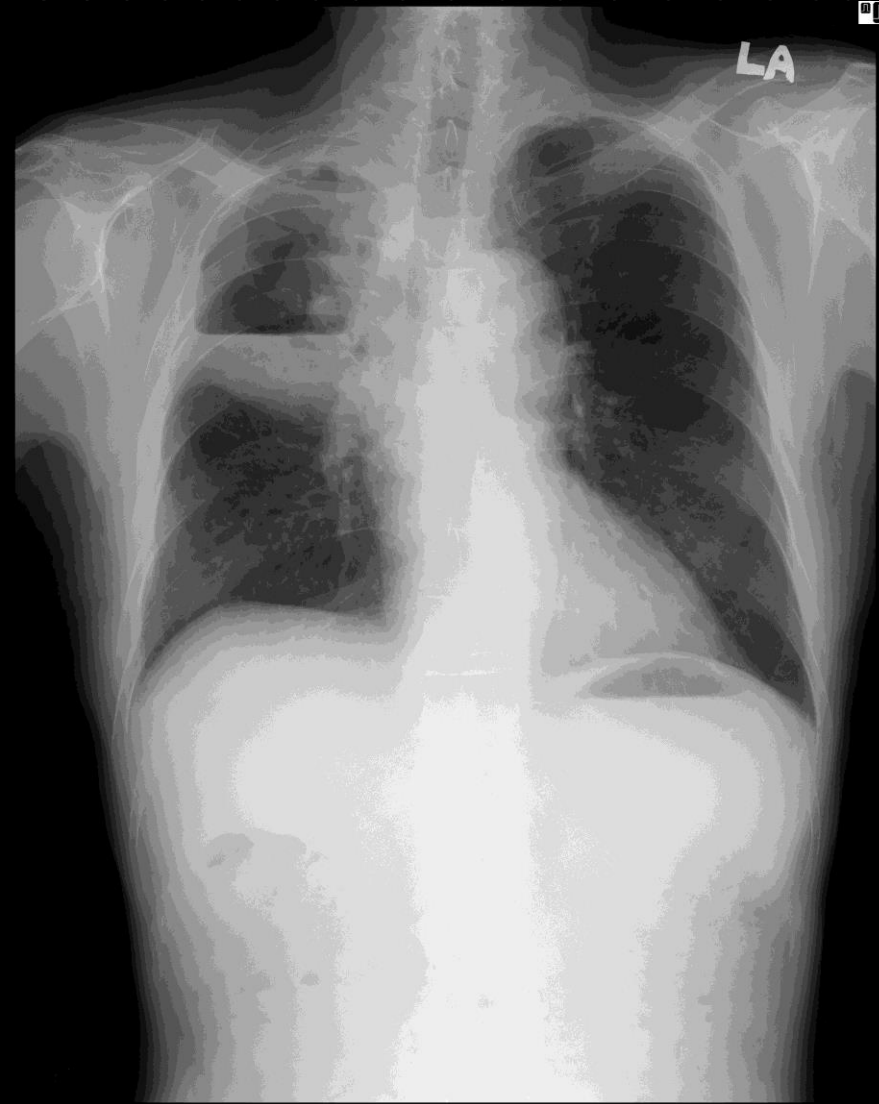
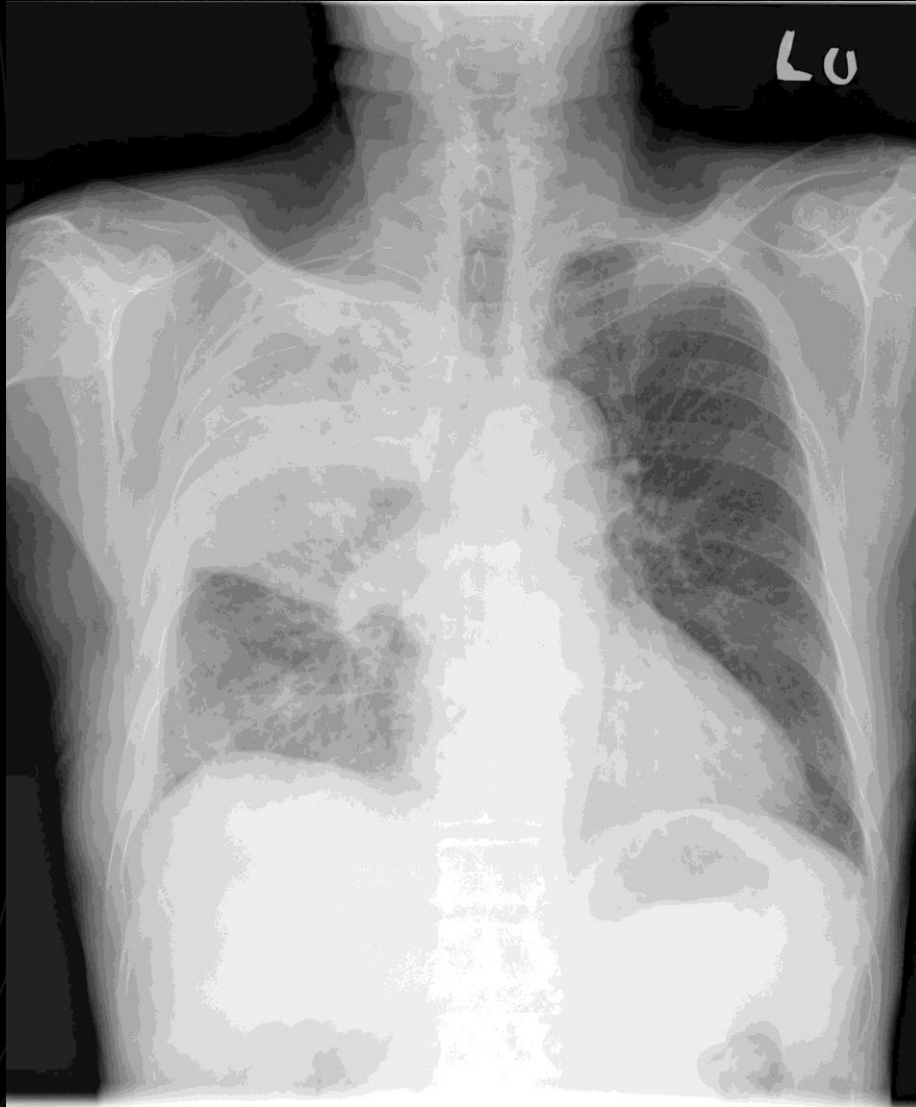
25 y/o woman, DM, pneumonia LLL , (1)



25 y/o woman, DM, worse pneumonia LLL , FU  
1 week later (2)



# RUL CAP, *K.pneumoniae* FU



**Air fluid level , DD. abscess or empyema ?**

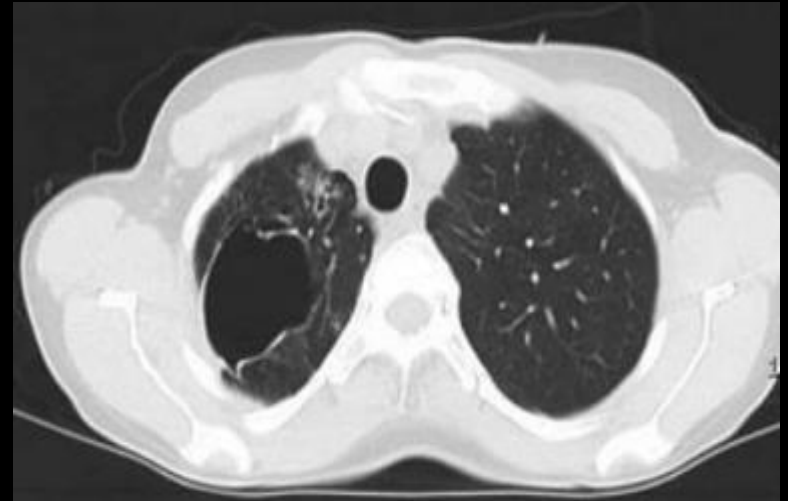
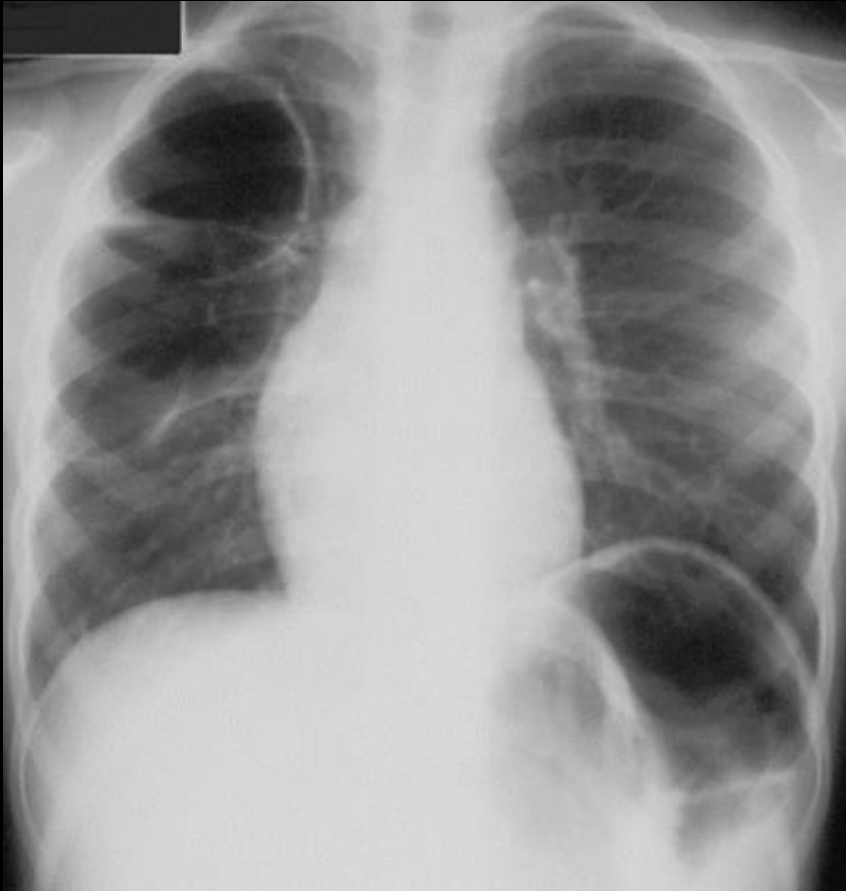


**\* FU within 2 days.**

**Pleural effusion, Not  
Pneumonia worsening.**



# Post pneumonia, Pneumatocele



# Treatment failure

診斷錯誤

用藥錯誤

併發症未治療



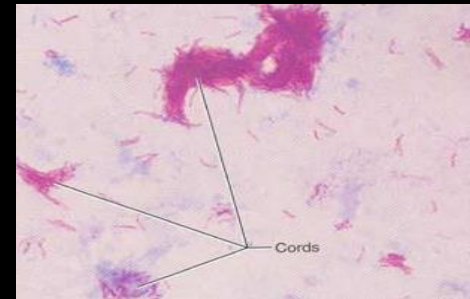
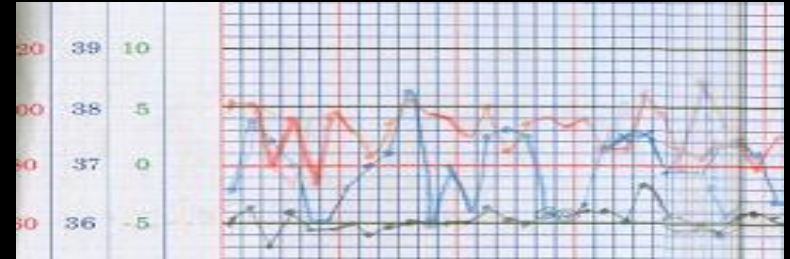
## \* 當病情惡化或者治療沒有改善時，考慮

- 診斷錯誤：CHF, bronchiectasis, TB, CA, etc.
- 細菌診斷錯誤：mixed infection, anaerobes, atypical.
- 藥物種類劑量期間不當：
- 新的細菌或者抗藥性產生：ESBL, Pseudomonas, etc.
- 發生併發症 - Lung abscess, Empyema - drainage...
- 病人病情不穩定，抵抗力差，宿主疾病與抵抗力不佳

# Para-pneumonic effusion



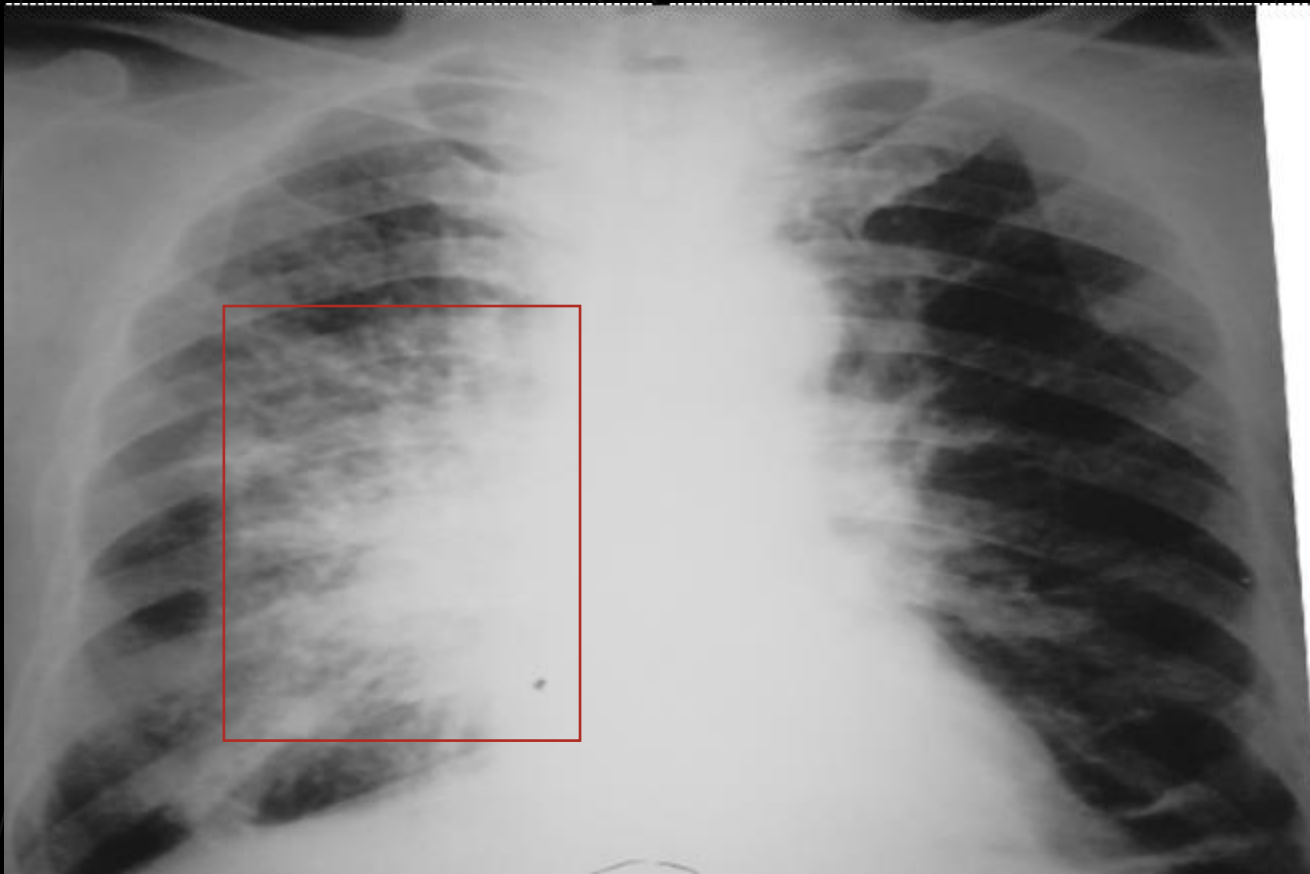
28 y/o female, DM. RLL infiltration,  
cavity like.



# Clinical Image Mimicking Infection, Pneumonia

CHF, Collapse, Cancer, sputum,  
bronchiectasis.

Fever, cough, for 2+ months. Location and shape ?

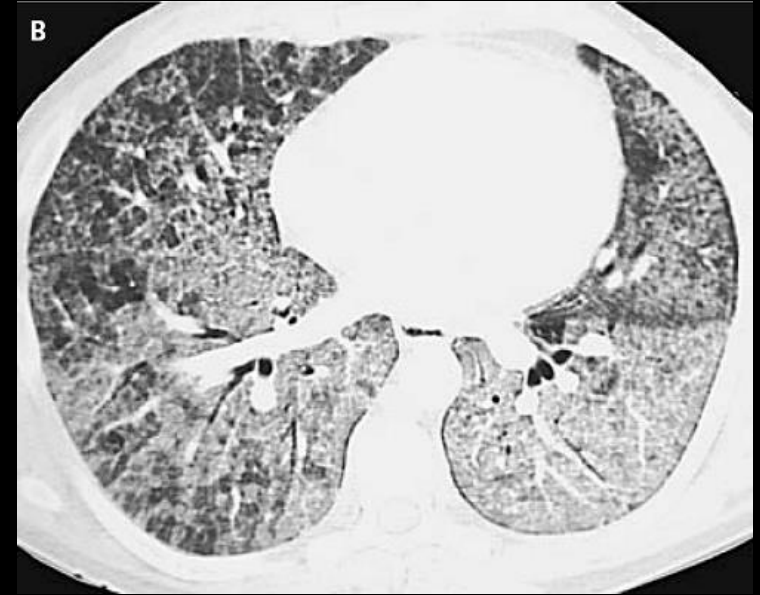


History of Rt lung R/T, R/T pneumonitis.



Pneumoconiosis

# Pulmonary alveolar proteinosis



"crazy paving"

# Cavitary lung abscess ?



Hiatal Hernia .

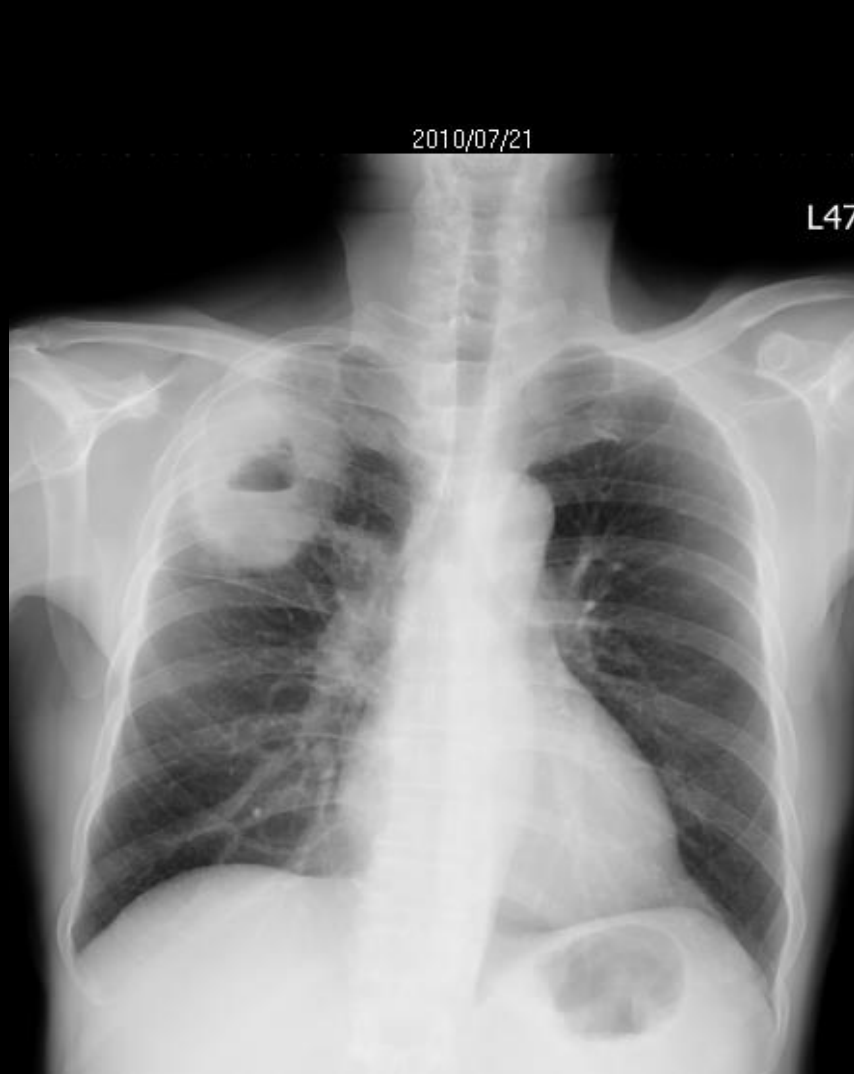


Chronic cough for months. No fever, Location and shape ?



Hiatal Hernia .

chronic cough, sputum, intermittent mild fever. Location and shape ?



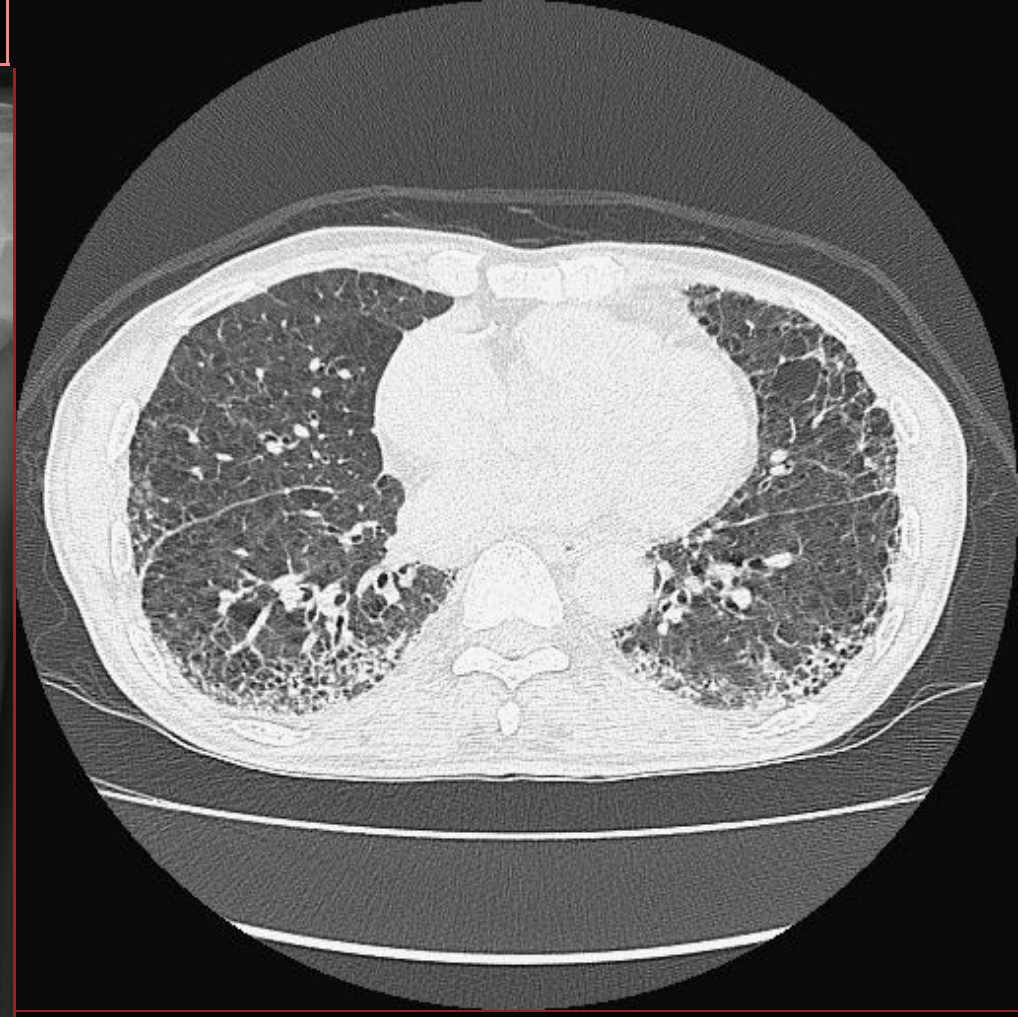
Cavitary lung cancer, squamous cell; DD. Abscess

25 y/o man, chronic cough, sputum  
10 years



Sequestration , LLL

# Chr. interstitial pneumonia, UIP (IPF)

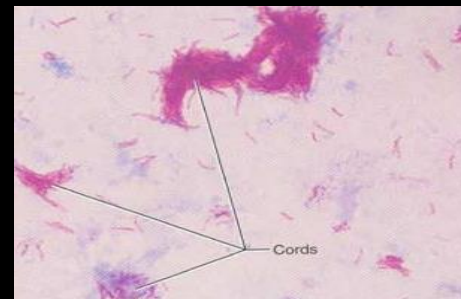


# Tuberculosis

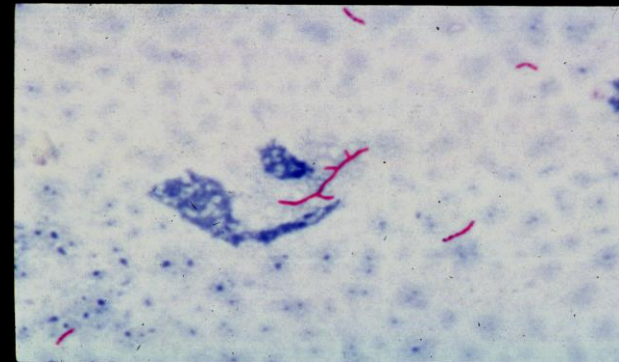
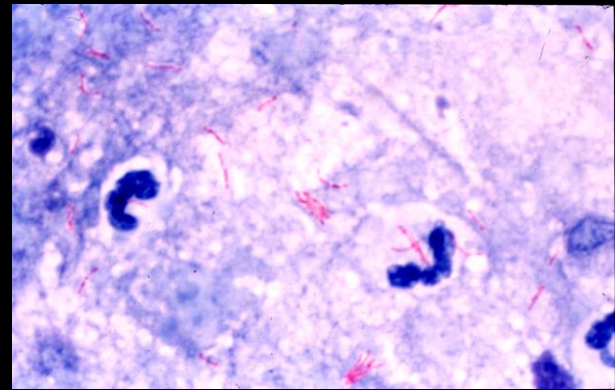
Chronic, Location, Pattern

Old with New lesions

(兩側、上肺、濃淡不一、新舊雜陳)

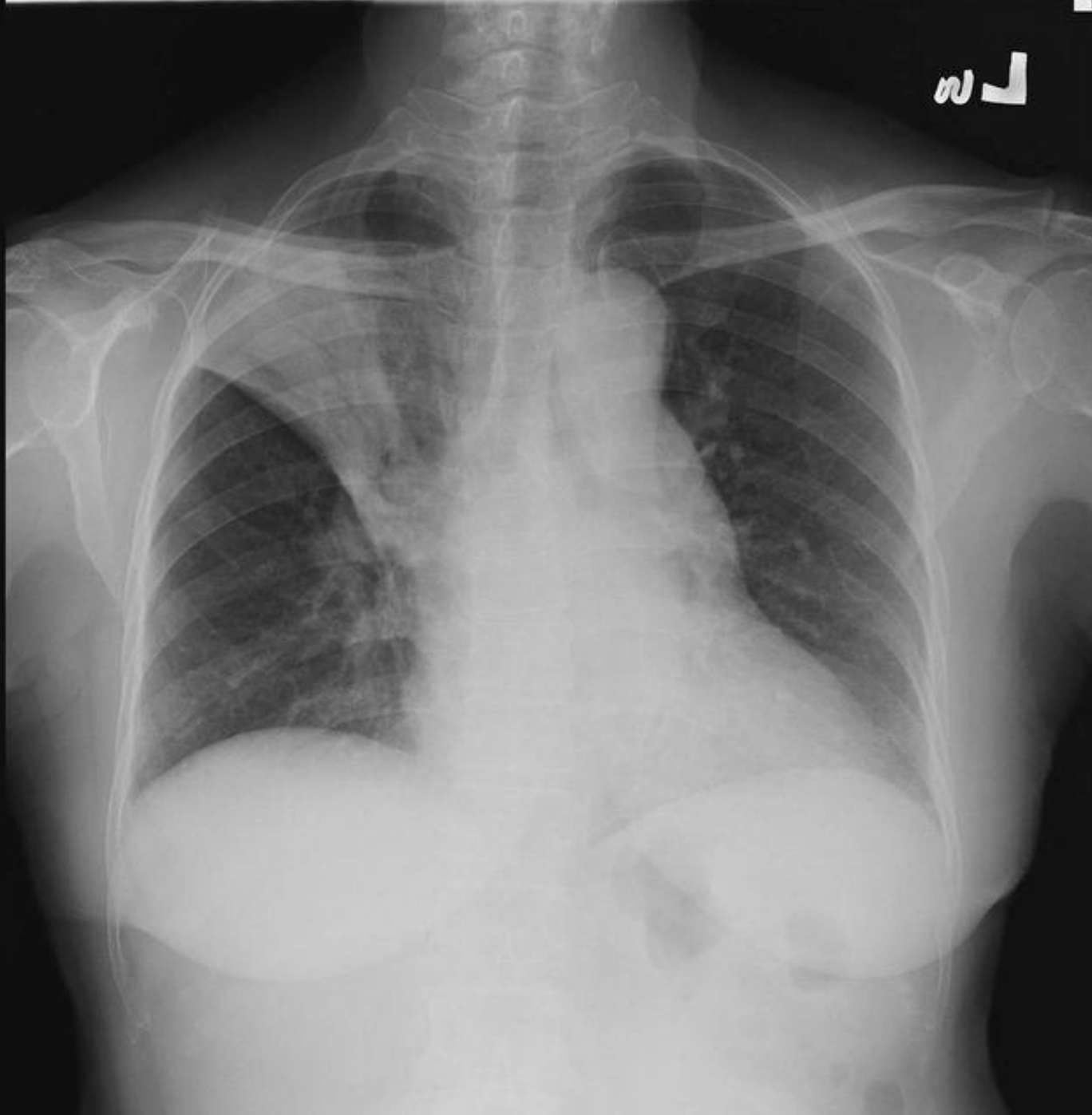


# Tuberculosis, RLL lesions; DM - TB +



# Primary TB, RML







# TB caseous pneumonia



- RUL
- Irregular infil, density.
- Cavity.

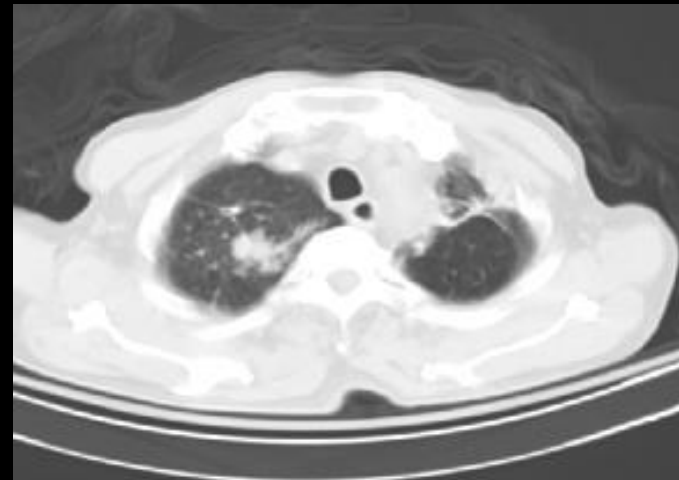
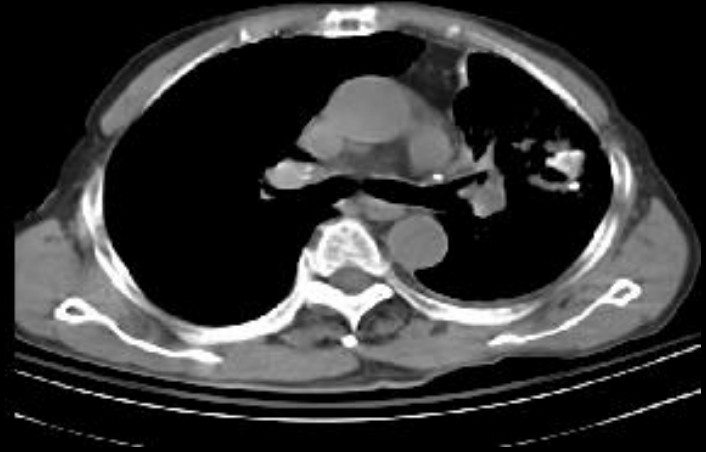
# RUL TB + Lt bronchogenic spread



# AFB 4+, Bil. Upper, Cavities

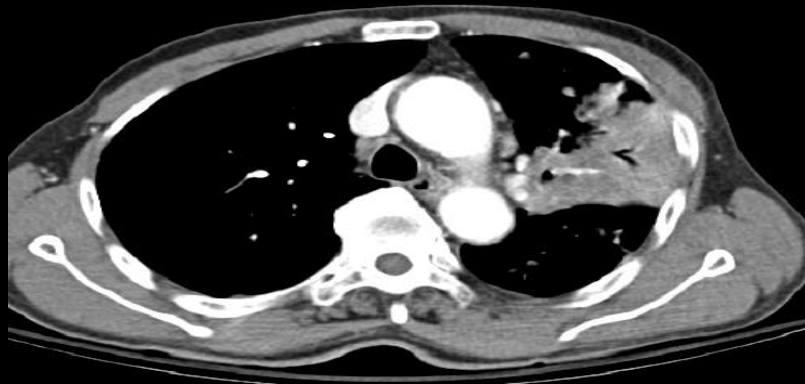


# BUL TB, fibrocalcified lesions, CT



# TB, FibroCalcified lesions, CT

2006/09/06



2006/09/06



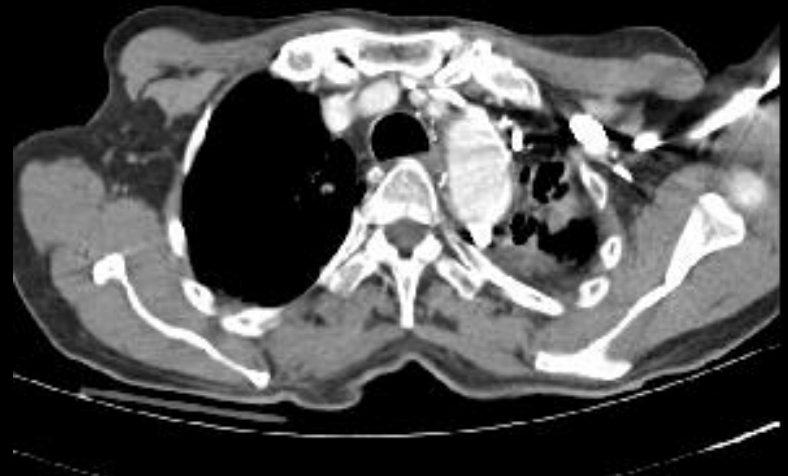
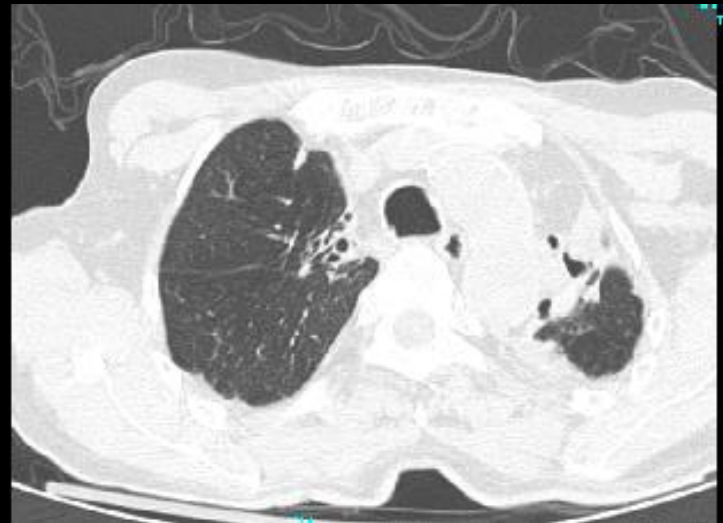
2006/09/06



2006/09/06



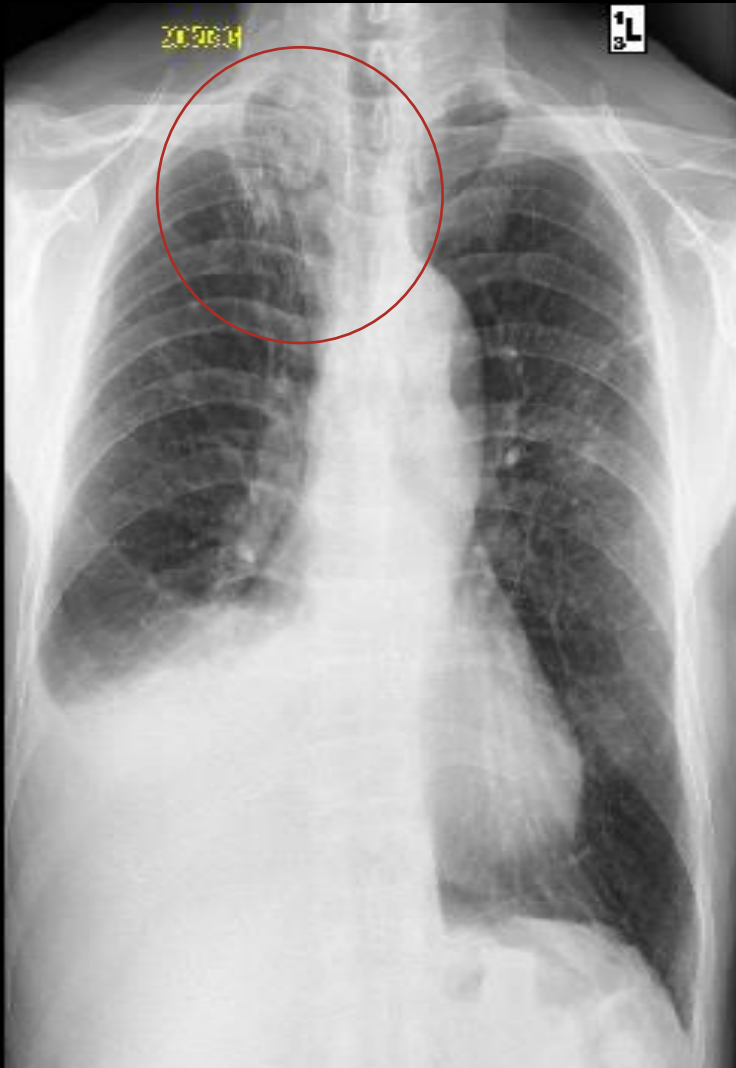
# TB, upper lung Collapse



# TB interstitial lung



# TB pleurisy RUL TB with pleurisy





# Milliary TB

- Diffuse small faint miliary nodules ( behind heart , diaphragm)



# Chronic cough with back pain

2007/09/03



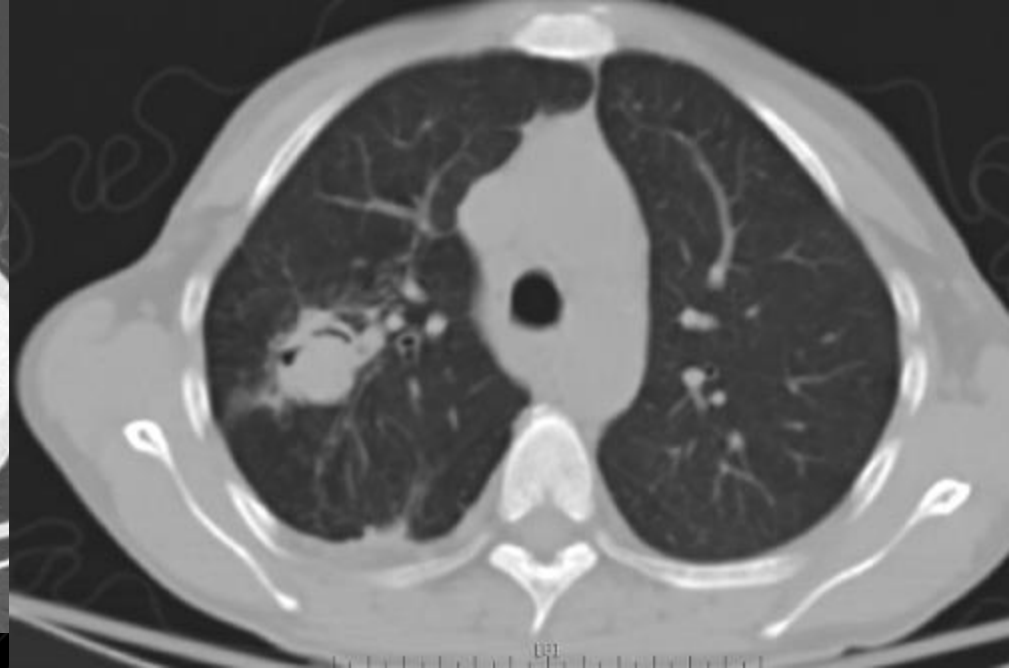
TB spine

2007/09/17

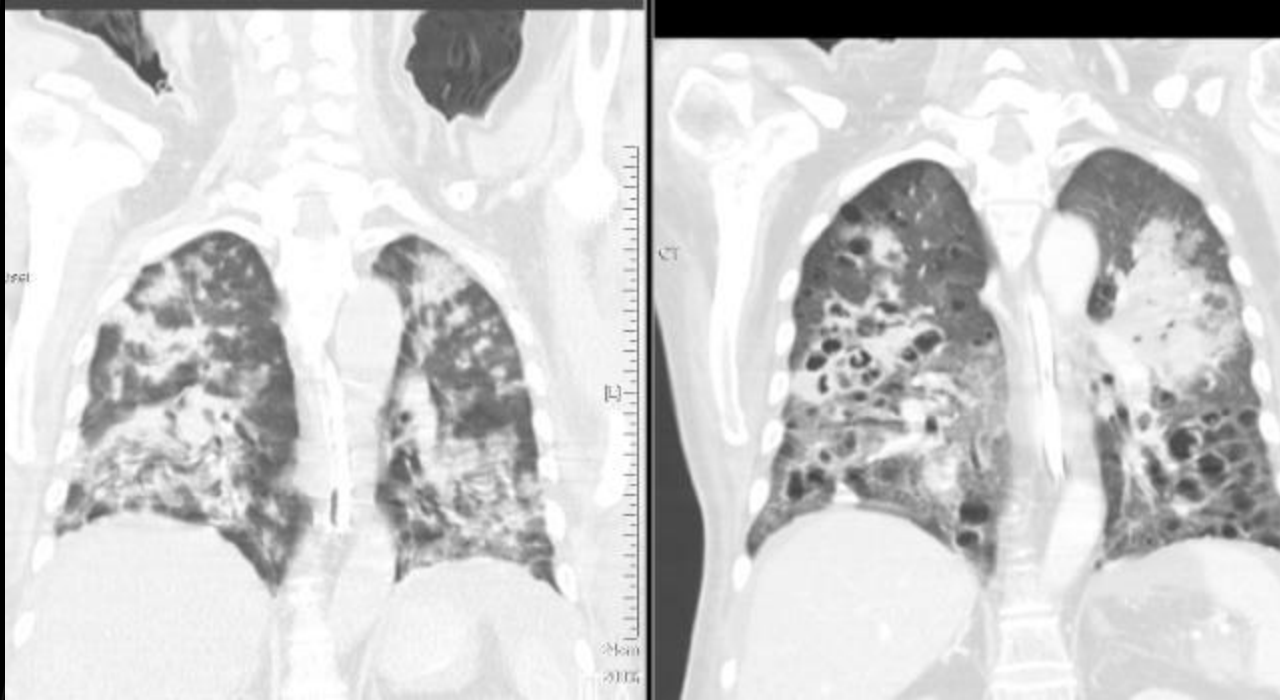


# Other Rare Chronic Infections

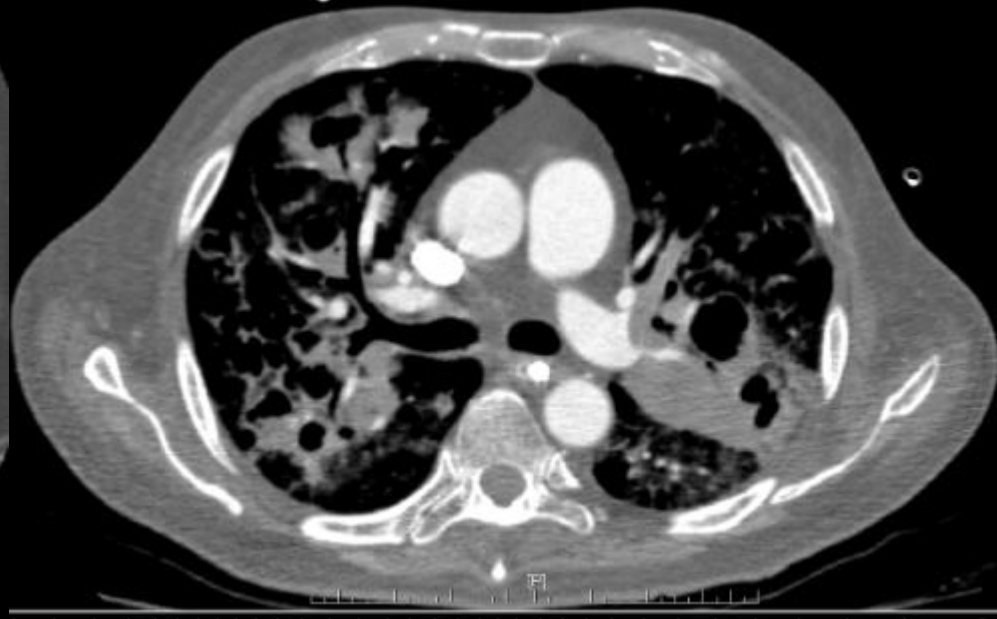
# Mycetoma



# Aspirgilus infection



# Aspirgillus infection





# 肺部感染症、呼吸道疾病 之影像判讀 (II) :

## Airway



# 重要内容



## AIRWAY : CXR , CT

- Bronchiectasis, ABPA
- Trachea, upper airway.
- Small airway, mosaic pattern



Many airway diseases (asthma, COPD)  
patients show Normal CXR



氣管與血管問題

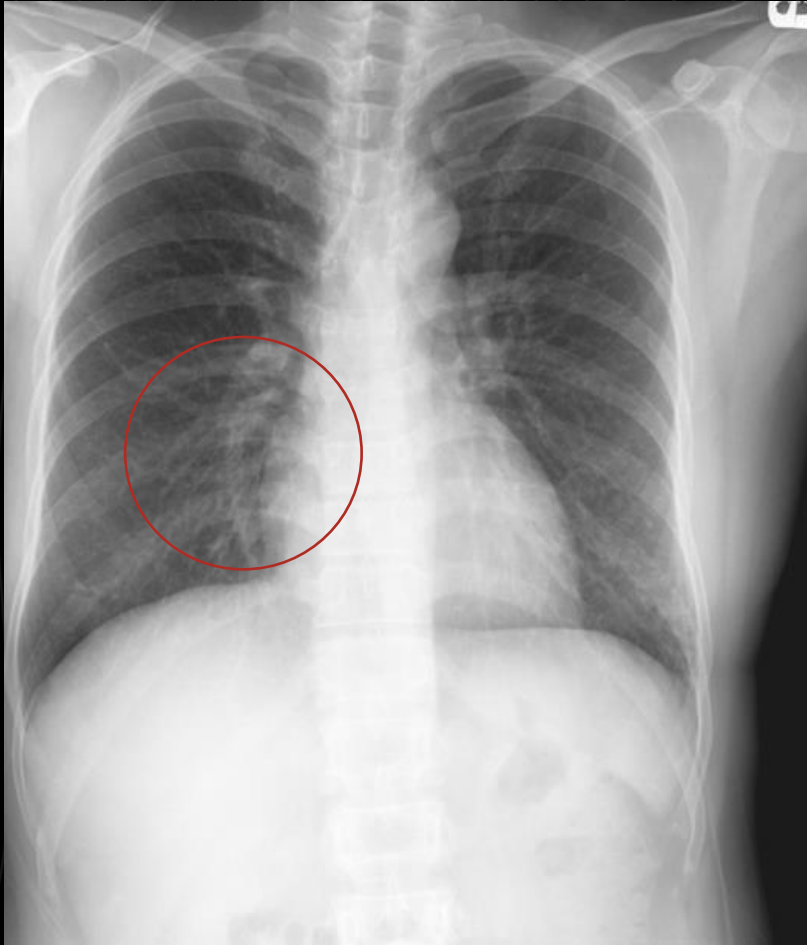
# Bronchiectasis

## HRCT:

CLASSICAL AIRWAY DILATATION AND BRONCHIAL WALL THICKENING (TRAM-TRACK).

SIGNET-RING SIGN IN CROSS-SECTION WITH THEIR ACCOMPANYING PULMONARY ARTERY.

# Bronchiectasis



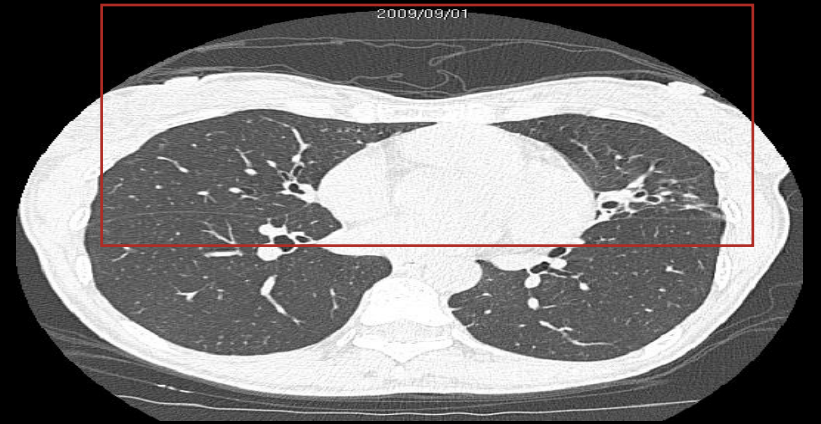
# Lady Windermere syndrome: RML+Lt Ling Lobe bronchiectasis : MAC

2009/06/29

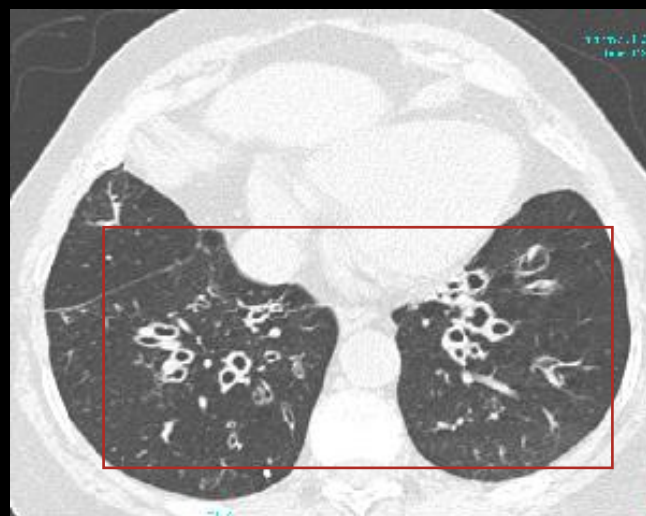
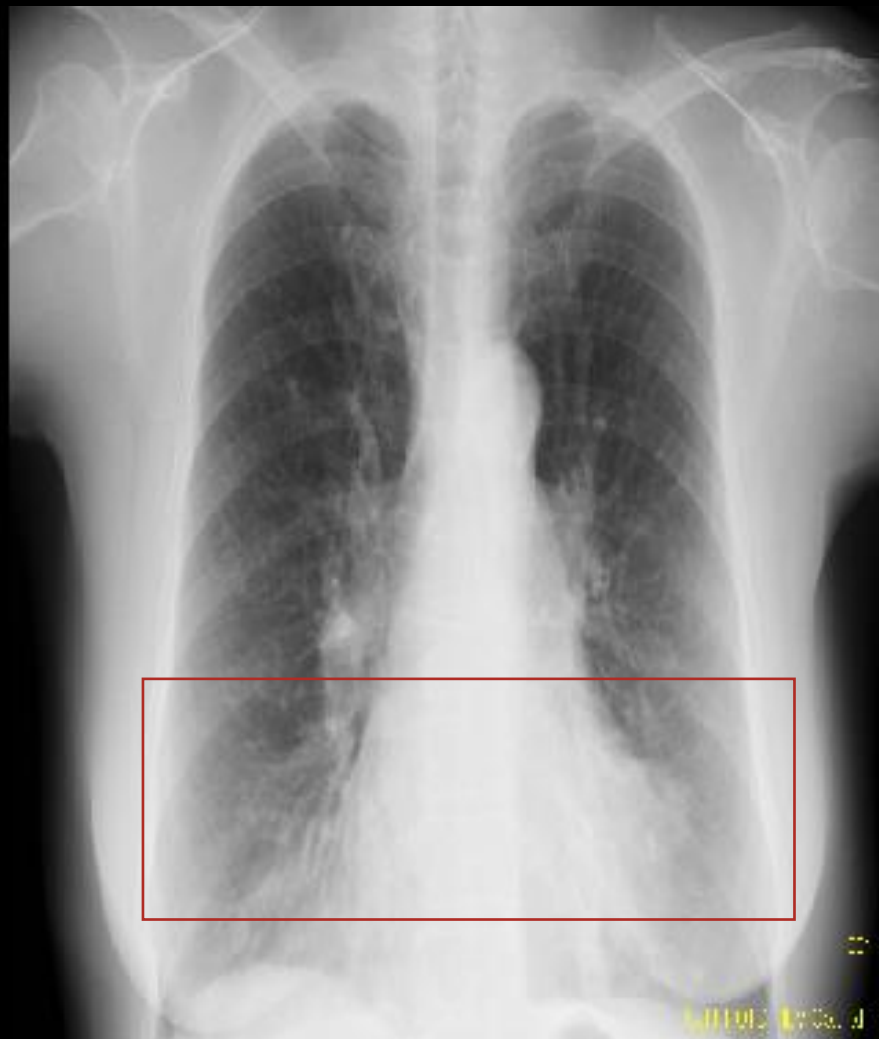
2009/06/29



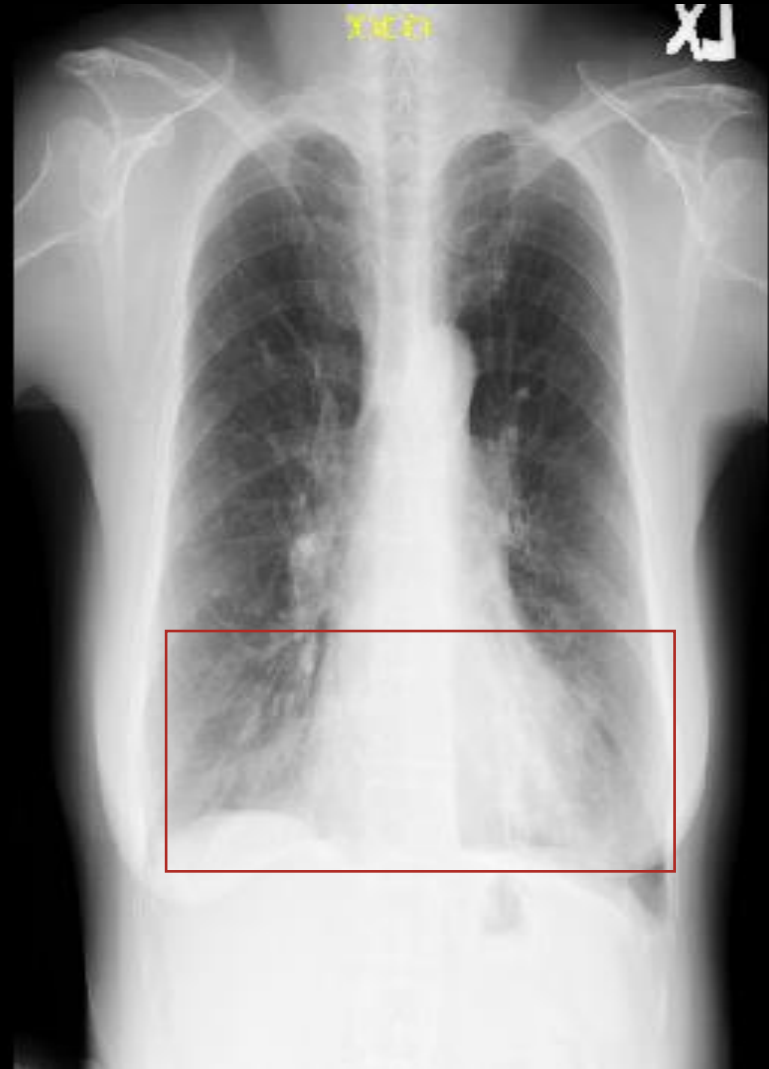
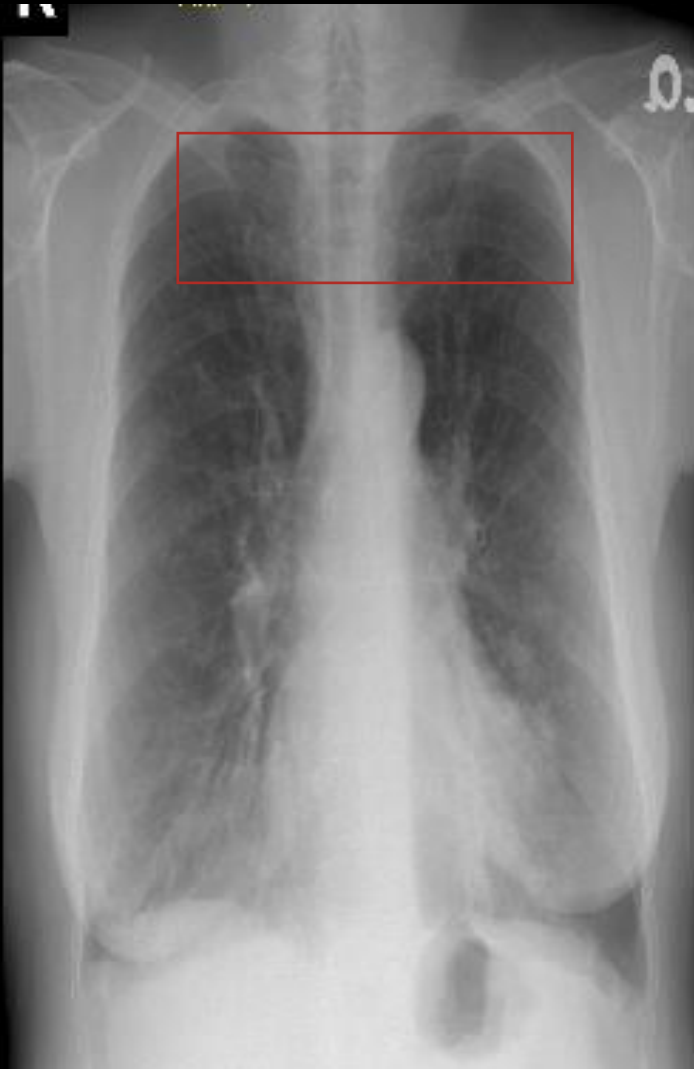
Lady Windermere syndrome: RML+Lt  
Ling Lobe bronhchiectasis : MAC



# Bronchiectasis : lower



# Bronchiectasis : Upper, Lower

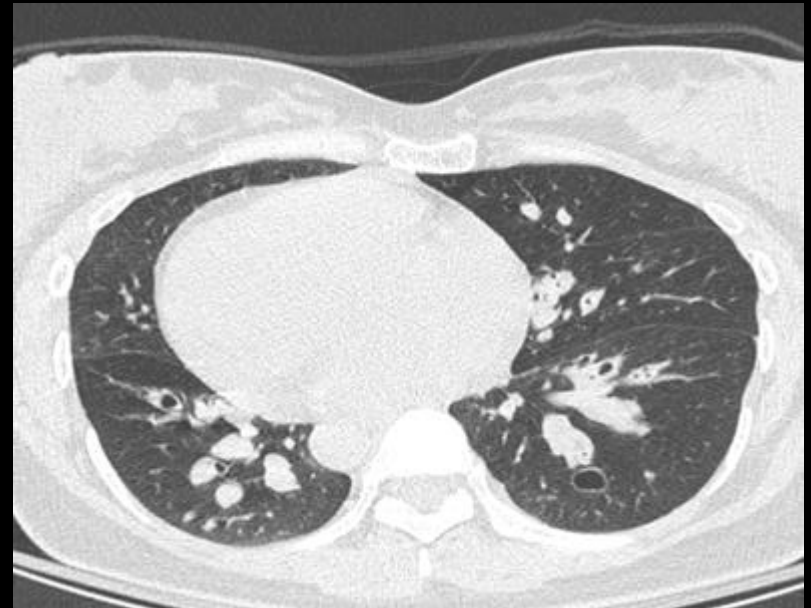


# Severe bil bronchiectasis : migratory by time sequence

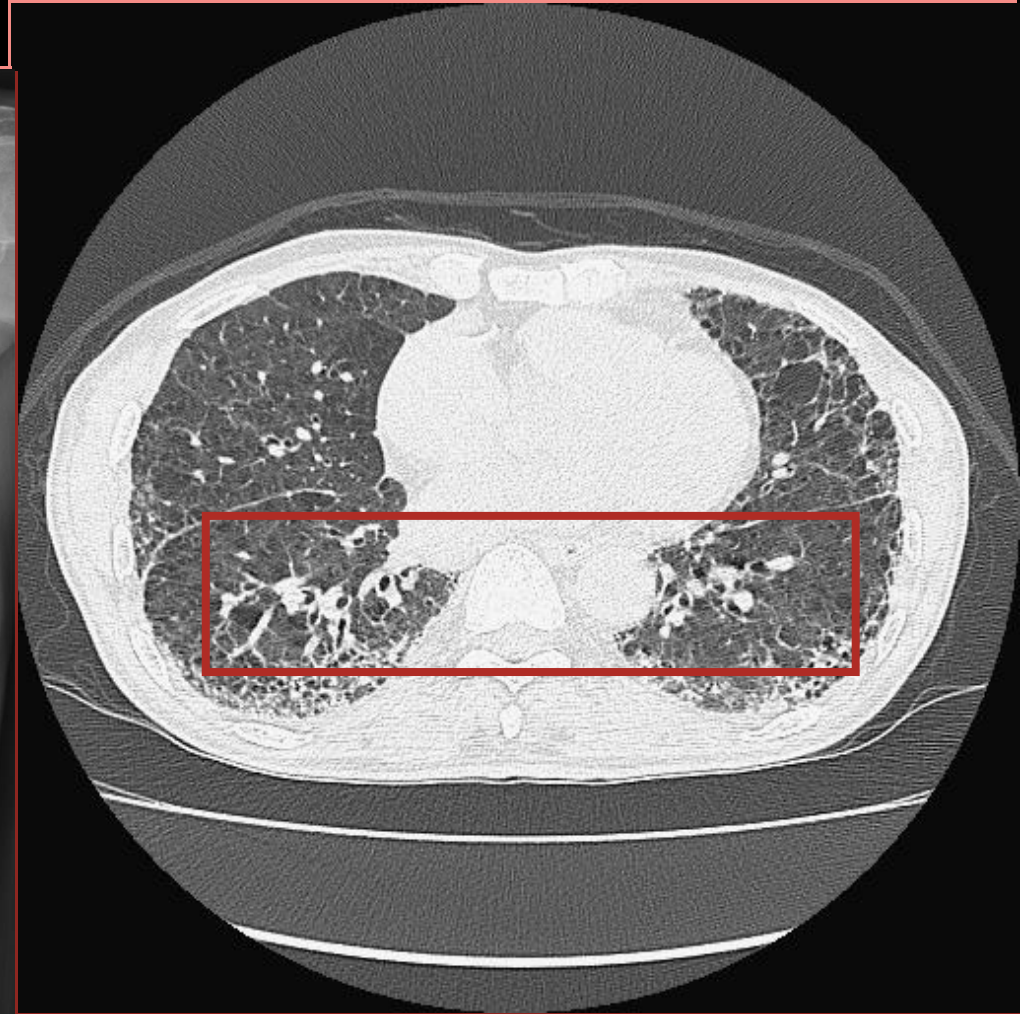




# Kartagener's Syndrome



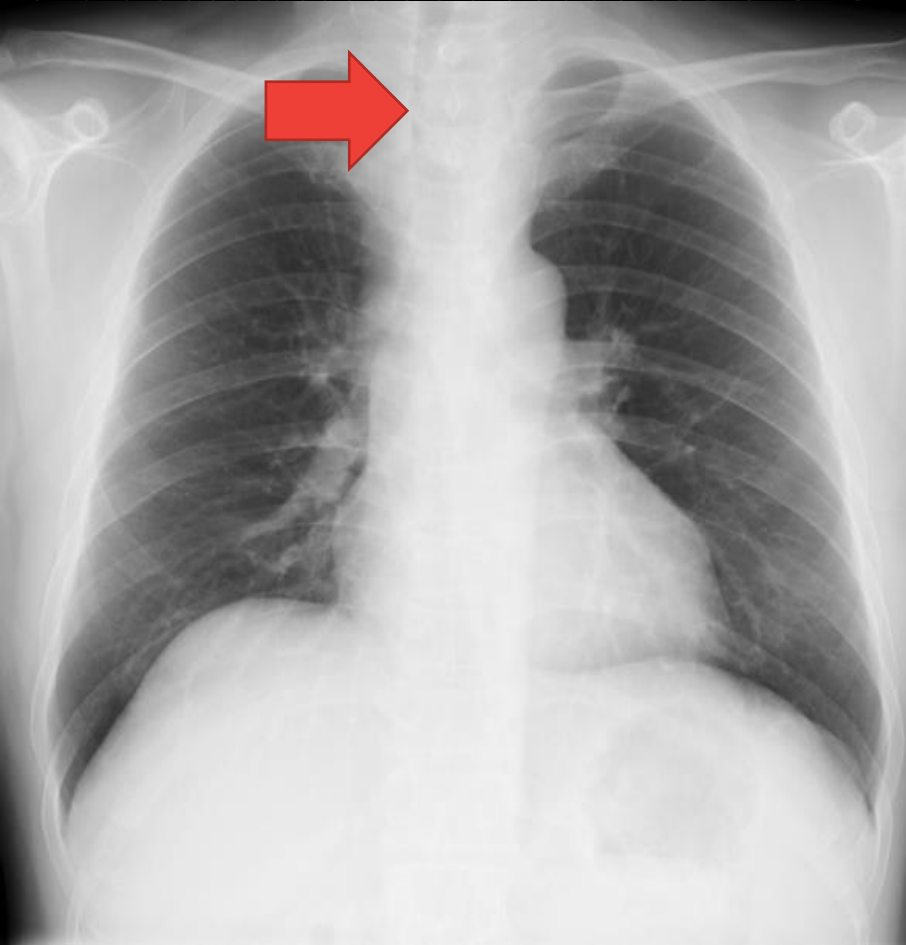
# Interstitial pneumonia, UIP (IPF) :Tractional Bronchiectasis (Peripheral)



# Large Airway

TRACHEA AND LOBAR BRONCHUS

# Trachea tumor + Stent



# Trachea calcification



# Trachea stenosis



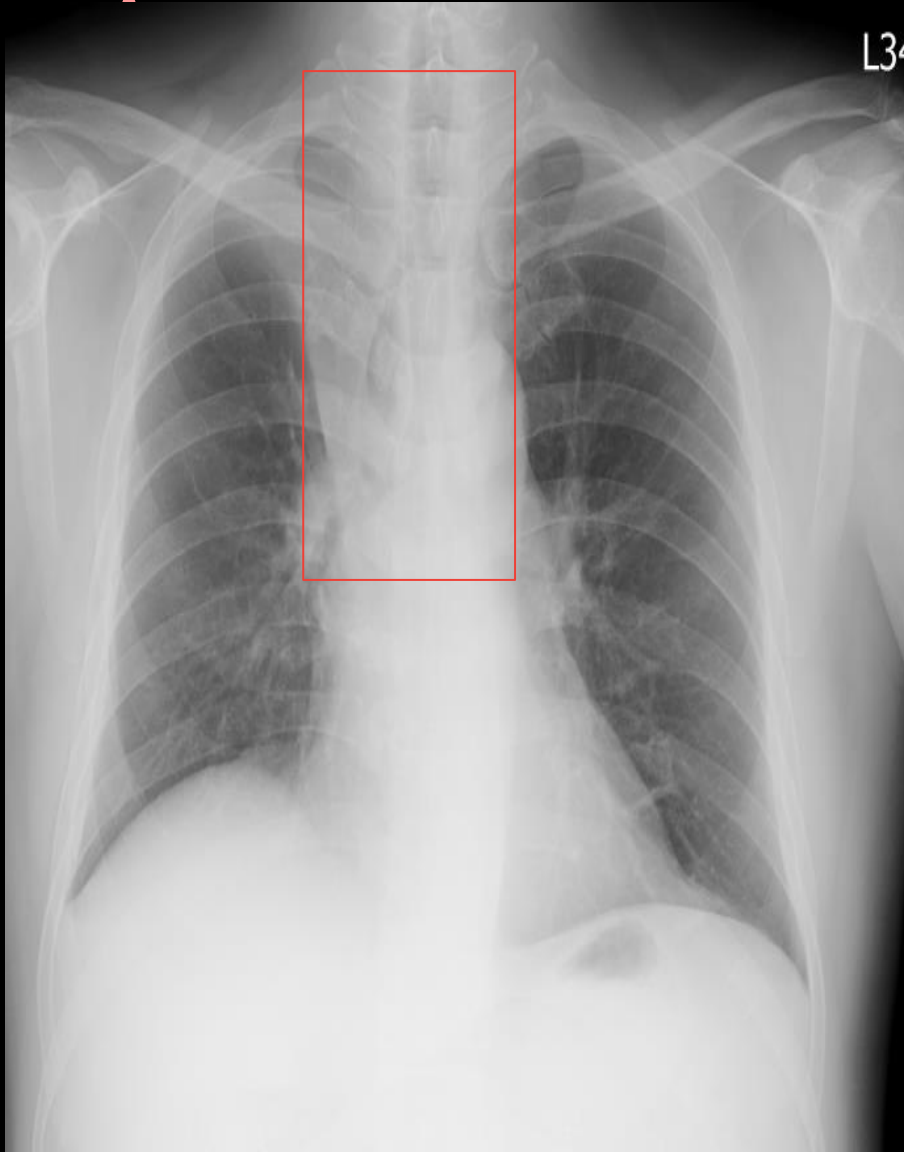
# Trachea stenosis

2010/06/17

L 48

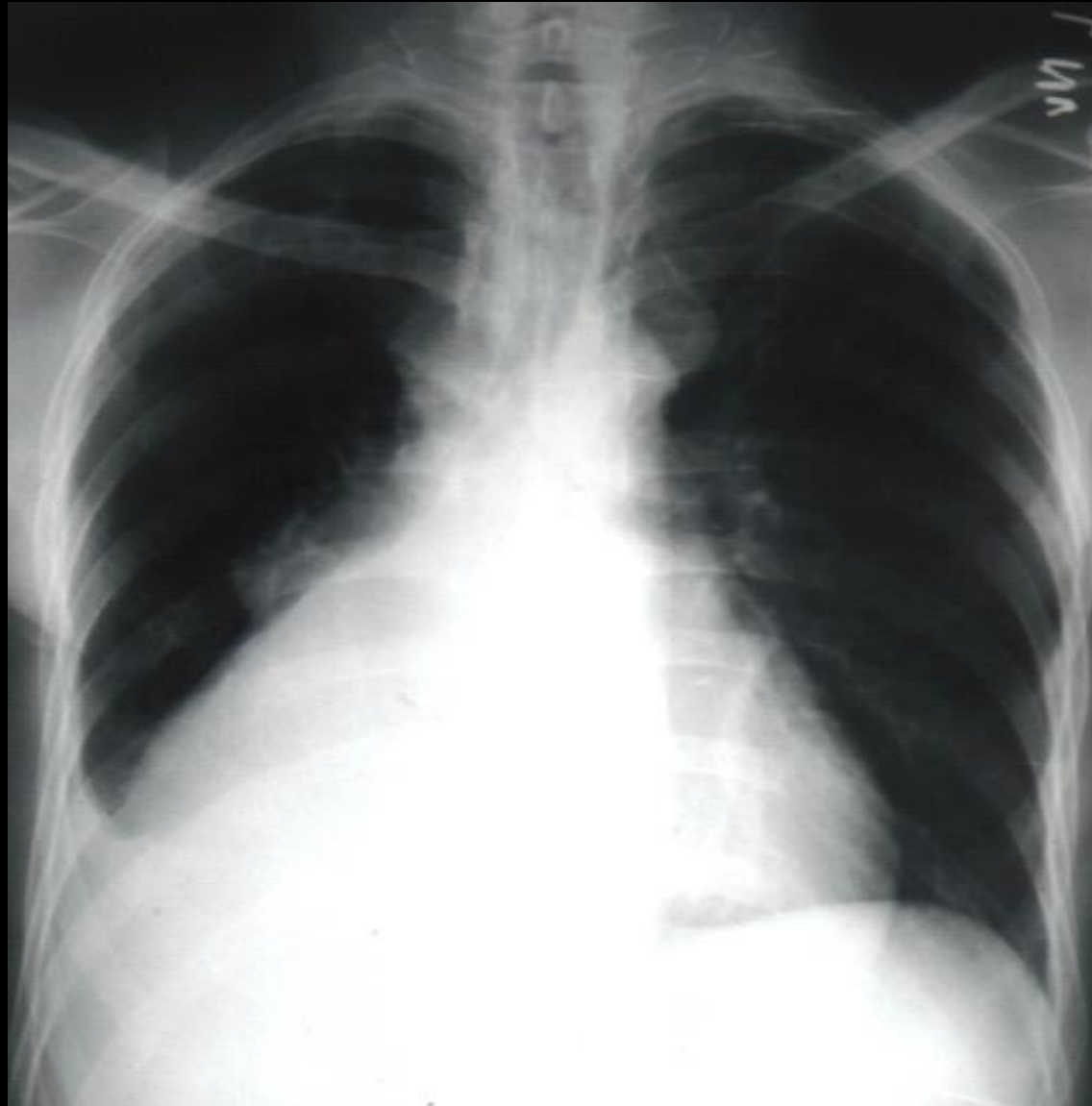


# Collapse, RUL (possible TB)





**Collapse, Bi-lobe; RML+RLL : DD. pneumonia**

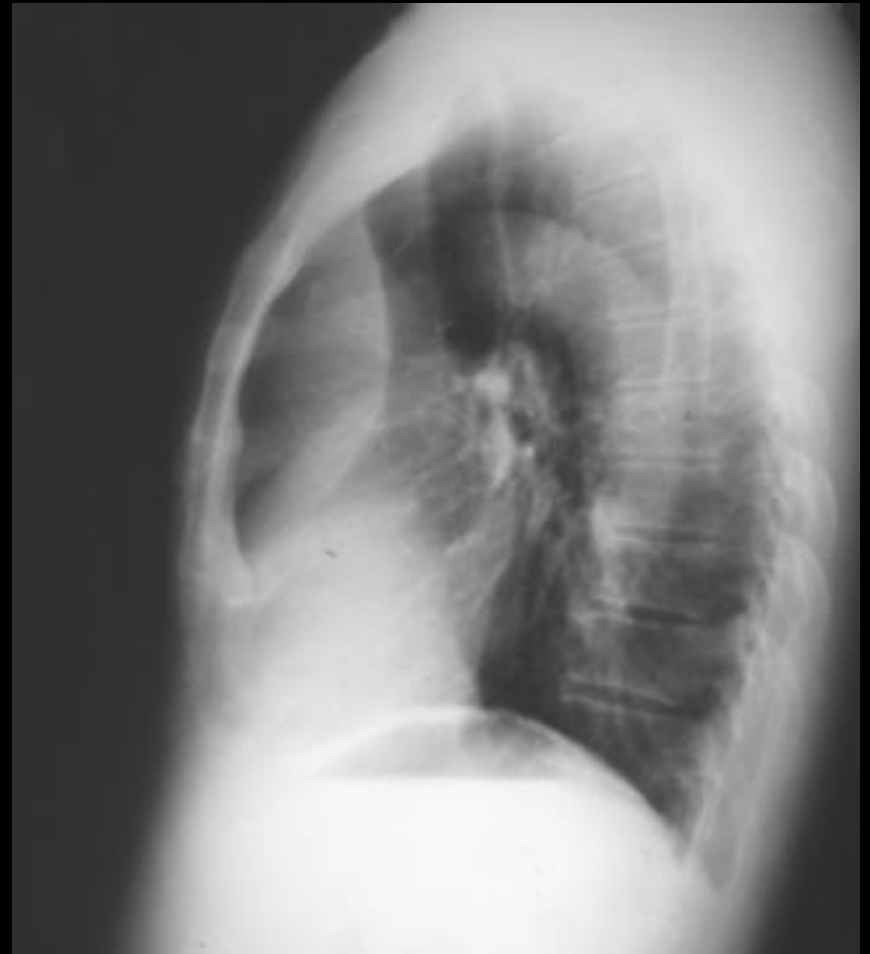


# Collapse Bi-lobe, Rt or Lt ?

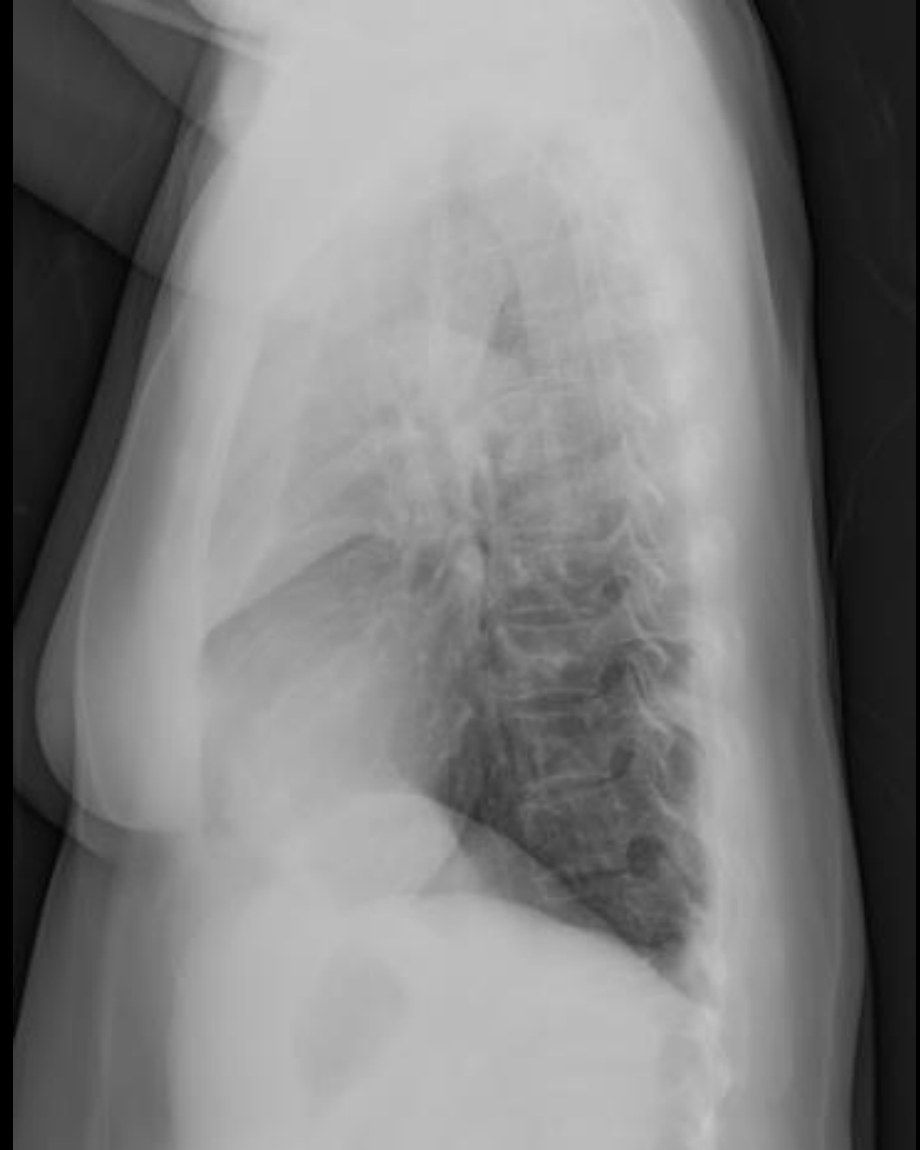


RUL + RML

# Collapse, Bilobe: RUL + RML



# Collapse, Bilobe: RUL + RML



# Collapse, Lt Upp Div (Lt ling L ?)

2007/11/12



2007/11/12



# Collapse, LUL

2008/04/22

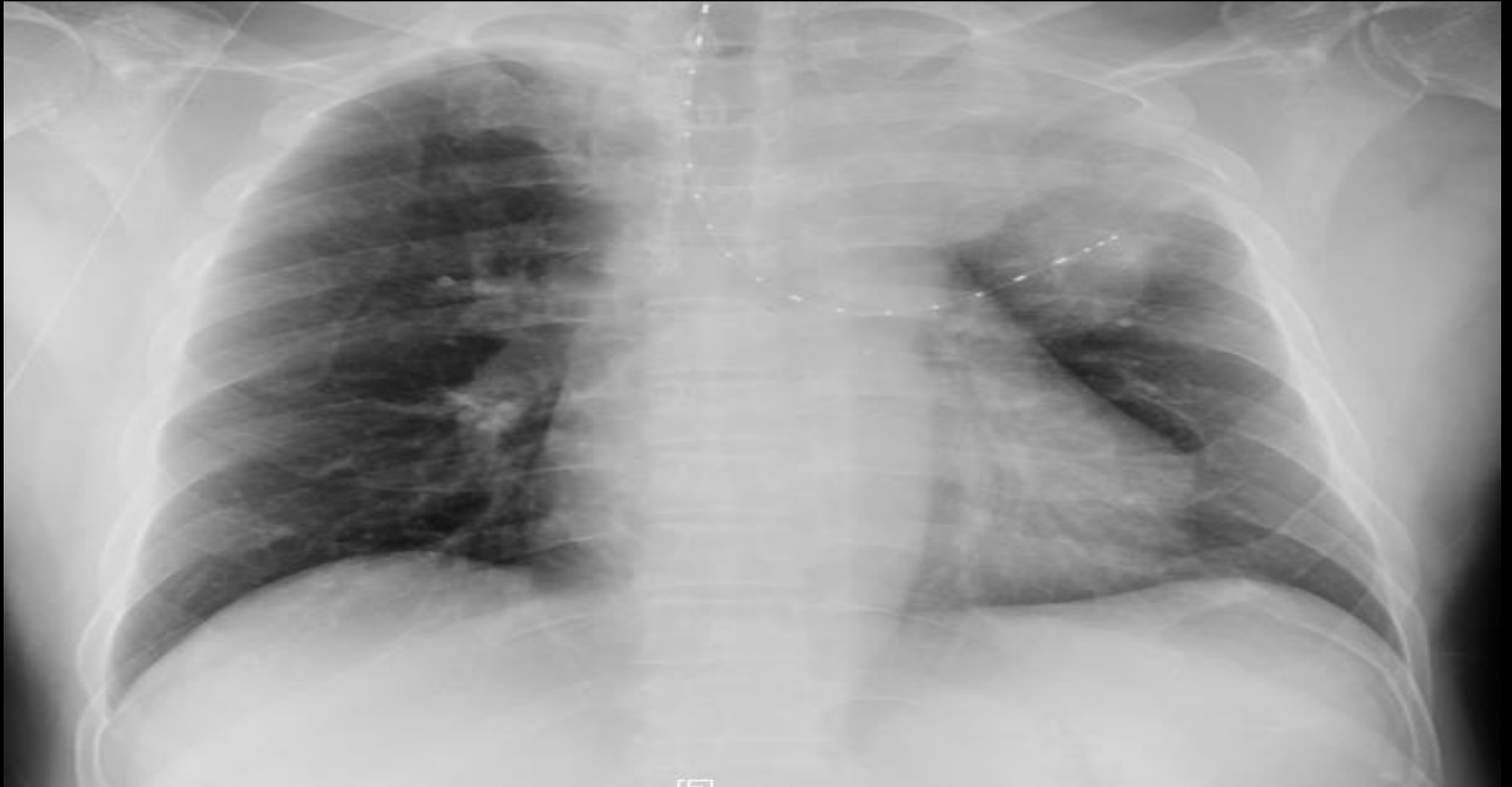


2009/05/04



What is this ?

2007/11/15



# Brachytherapy tube (for endobronchial tumor)





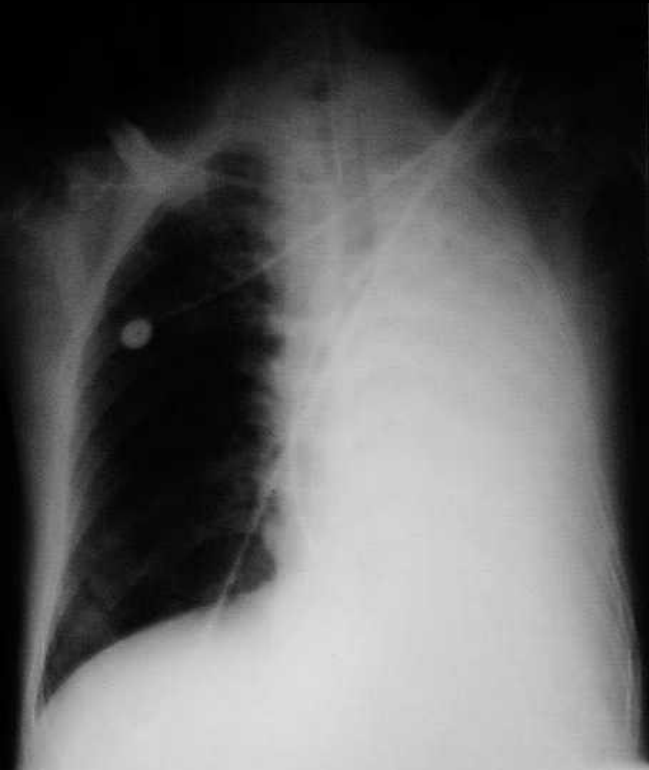
# Chest pain, dyspnea



obstructive  
Emphysema ;  
Foreign body,  
Which side ?

**DD.** Lt Tension  
pneumothorax

Sputum  
impaction

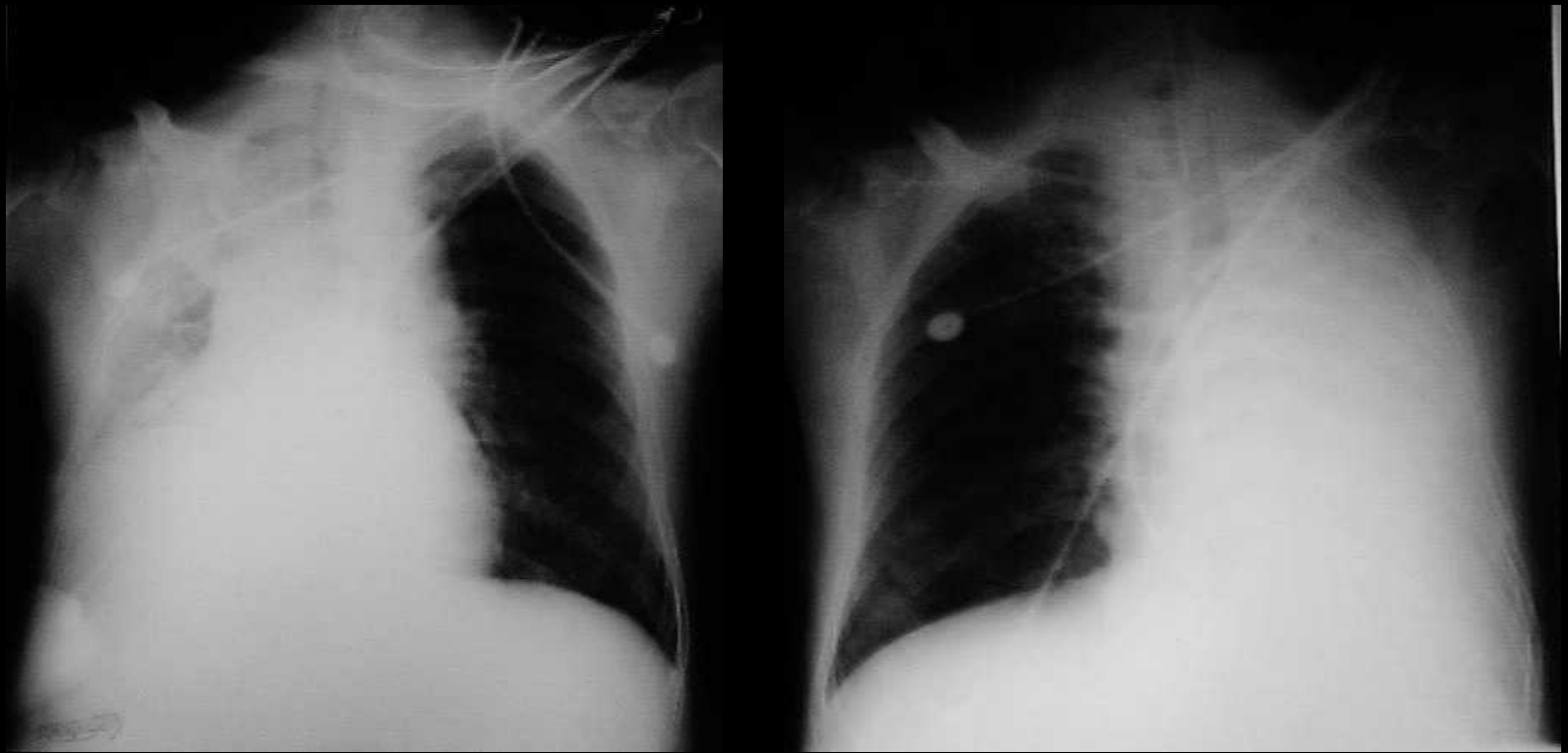


**Differential  
Dx:**



Sputum impaction with  
migratory atelectasis

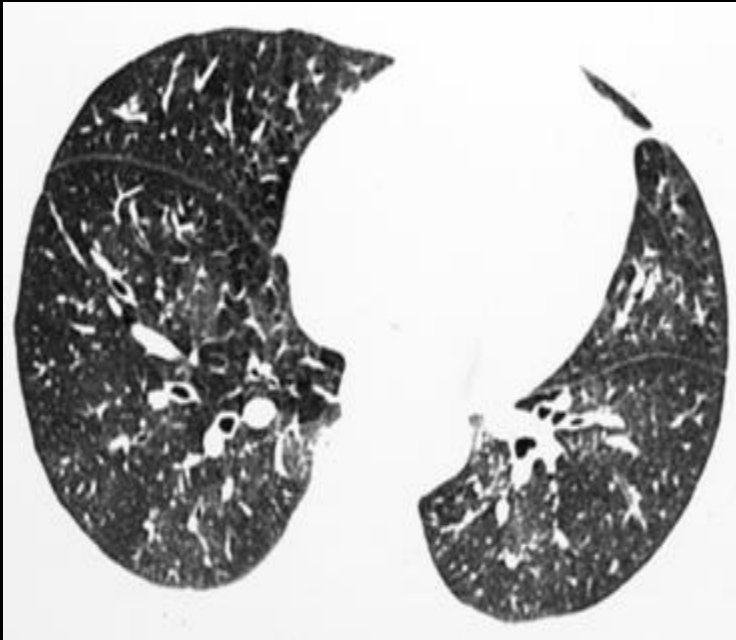
# Sputum impaction - migratory unilateral lung opacification and collapse



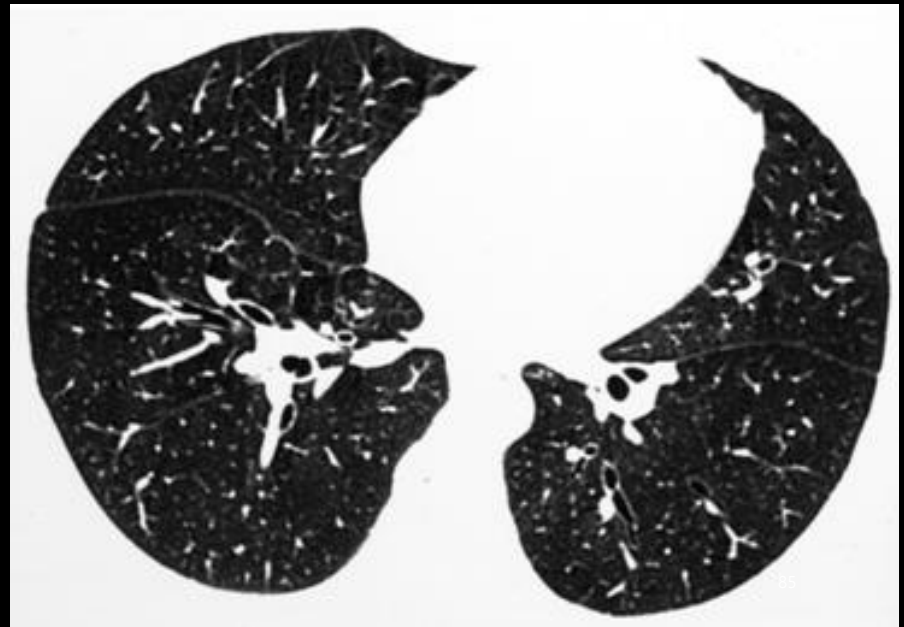
# Small airway disease (Mosaic attenuation)

1. Mosaic perfusion (normal  
-> white)

A. airway abnormality:  
Expiratory/Inspiratory  
**Inpiratory phase**



Expiratory phase



# 結語

- 感染症，影像判讀，往往需要配合臨床、細菌學、系列影像變化，尤其注視是否有併發症。
- 單獨影像，配合斷層，可有較多資訊供判讀；其中：  
pneumococcus, Klebsiella, septic emboli, Tb 時有較特殊影像。
- 許多疾病影像類似感染症，需要（配合臨床）鑑別診斷。
- 氣道疾病，斷層檢查對部分診斷有幫助。

