

空洞性病變與 囊泡病變

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胸腔暨重症科

Pattern identification



Differential diagnosis

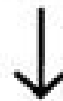


History and physical

Laboratory data



Additional procedures



Diagnosis

Biopsy required for diagnosis



A faint, grayscale chest X-ray image serves as the background for the entire slide. It shows the ribcage, spine, and lung fields. Two yellow rectangular boxes are overlaid on the image, one on the left and one on the right, each containing a white text label.

Cavity

Cyst

Cavity

A gas and/or fluid-filled space, seen as a lucency or low-attenuation area, within pulmonary consolidation, a mass, or a nodule.

Cyst

A clearly defined air and/or fluid-containing space surrounded by a relatively thin (≤ 4 mm) wall.

Table 1. Causes of Focal or Multifocal Cystic and Cavitory Lung Disease

Cystic (wall thickness ≤ 4 mm)
Bullae
Blebs
Pneumatoceles
Congenital cystic lesions
Bronchogenic cyst
Congenital adenomatoid malformation
Infections
Coccidioidomycosis
<i>Pneumocystis carinii</i>
Hydatid disease
Traumatic cysts
Cavitory (wall thickness >4 mm or surrounding infiltrate or mass)
Neoplastic
Bronchogenic carcinomas
Metastases
Lymphomas
Infections
Bacteria
<i>Staphylococcus aureus</i> , gram-negative bacteria, pneumococcus, mycobacteria, melioidosis, anaerobes, actinomycosis, nocardiosis
Fungi
Histoplasmosis, coccidioidomycosis, blastomycosis, aspergillosis, mucormycosis, cryptococcosis, <i>P carinii</i> , sporotrichosis
Parasites
Hydatid disease, paragonimiasis, amebiasis
Immunologic
Wegener granulomatosis
Rheumatoid nodule
Thromboembolism or septic embolism
Progressive massive fibrosis (pneumoconiosis)
Bronchiectasis, localized
Congenital lesions
Sequestration
Congenital adenomatoid malformation

Vascular disease

Inflammation / Infection

Cancer and other tumors

Trauma

Inhalational disease

Malformation

VICTIM

觀察重點

病灶數目

Solitary:

Primary lung cancer
Acute lung abscess
Post traumatic lung cyst

Multiple:

Wegener granulomatosis
Septic emboli
Lung metastases

觀察重點

病灶數目

病灶位置

Central

Peripheral

Apical lung

Lower lung

Bronchovascular tree

觀察重點

Irregular / Lobulated :
malignancy

病灶數目

Shaggy :
acute lung abscess

病灶位置

Smooth :
benign lesions

壁內緣的型態

觀察重點

病灶數目

病灶位置

壁內緣的型態

病灶內容物

痰 (infection)

血

水 (cyst)

瘤 (cancer cell)

觀察重點

Air space consolidation:
Infection, Hemorrhage

病灶數目

Reticular strands:
Fibrosis

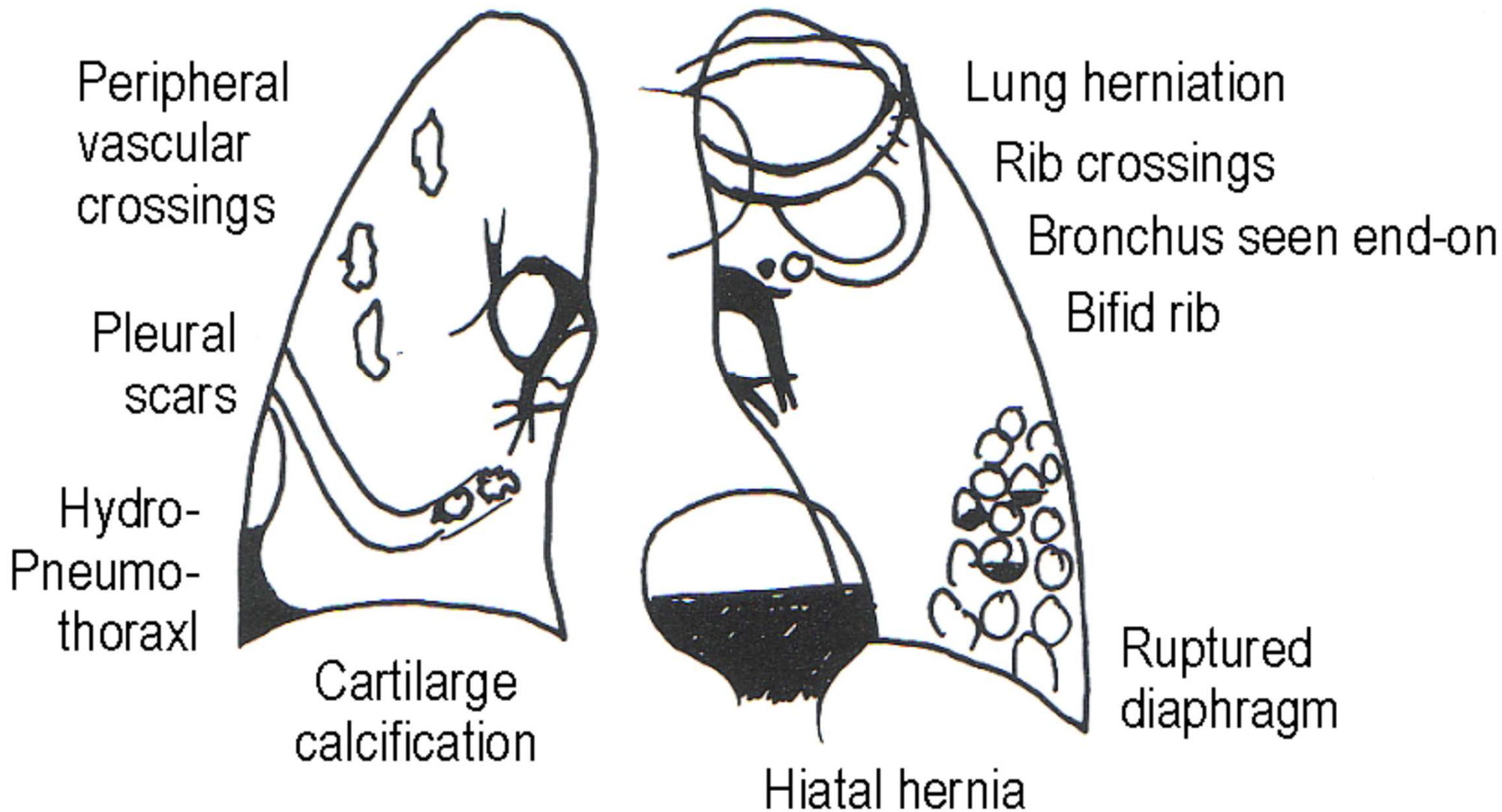
病灶位置

壁內緣的型態

病灶內容物

周圍肺部伴隨變化

可能混淆的其他影像



Cavitary Disease

- **Neoplastic**

- Bronchogenic carcinomas
- Metastases
- Lymphomas
- Kaposi's sarcoma

- **Infections**

- Bacteria
 - *S. aureus*, GNB, pneumococcus, mycobacteria, melioidosis, anaerobes, actinomycosis, nocardiosis
- Fungi
- Parasites

- **Inflammation**

- Wegener's granulomatosis
- Rheumatoid nodule
- Sarcoidosis
- Cryptogenic organizing pneumonia, BOOP

- **Thromboembolism or septic embolism**

- **Pneumoconiosis**

- **Bronchiectasis, localized**

- **Congenital lesions**

- Sequestration

Vascular disease

Wegener's granulomatosis

Rheumatoid disease

Infarct (thromboemboli or septic emboli)

Inflammation / Infection

Bacteria infection

Mycobacterial infection

Fungal infection

Cancer and other tumors

Primary lung tumor

Metastasis

Trauma

Pneumatoceles

Inhalational disease

**Silicosis and coal-worker's
pneumoconiosis**

Malformation

Pulmonary sequestration



**Solitary or
multifocal**

**A large
dominant
cavity**

Wegener's granulomatosis

Wegener Granulomatosis

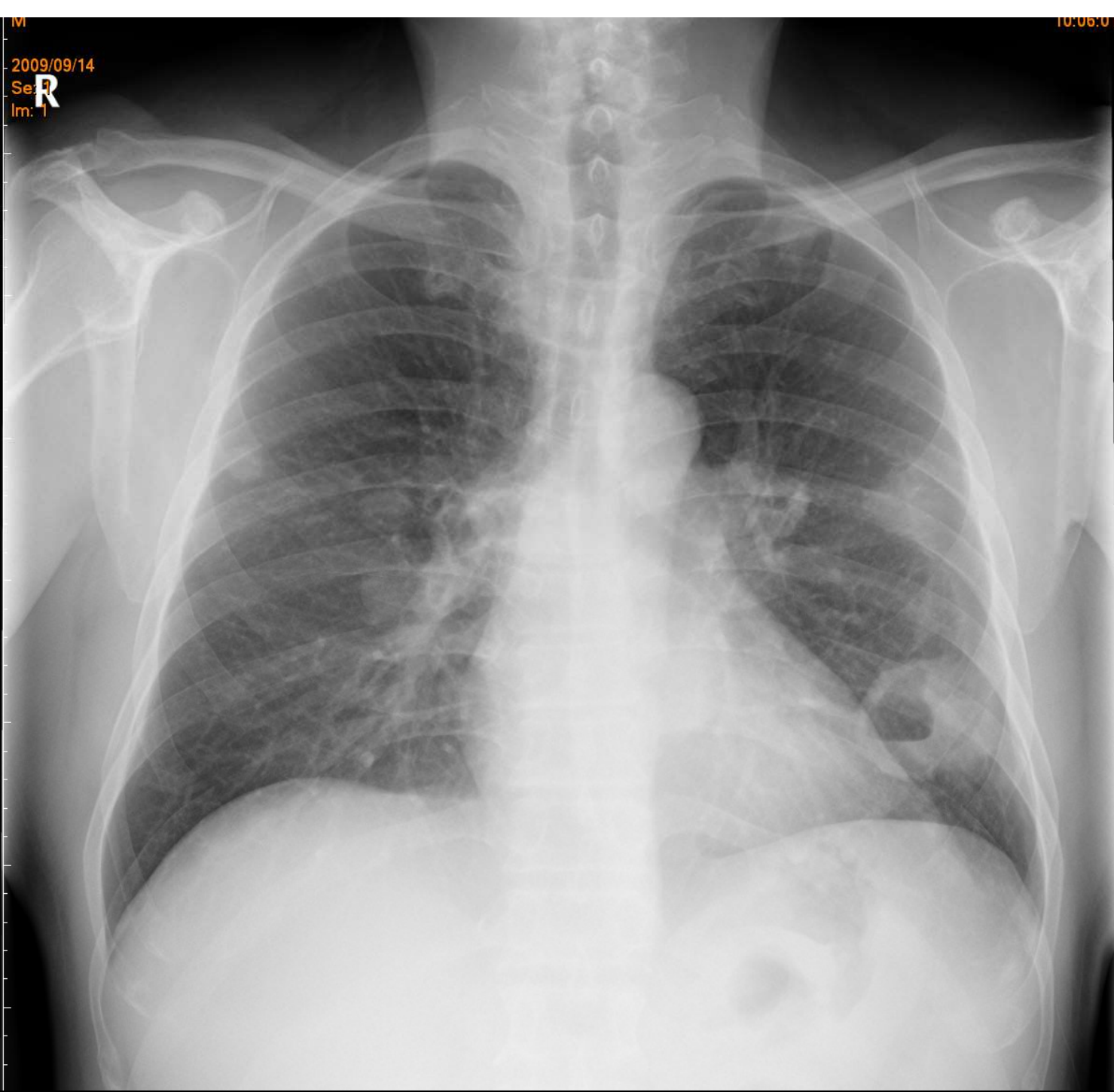
■ Lung parenchymal change

□ Single or **multiple pulmonary nodules**/masses: multiple多(75%)

- 最常見的表現
- Size: 1~10cm; number: 大多<10
- Ill-defined or irregular marginated, no zonal predominance
- 50%會開洞，通常是**irregular, thick walled**
- 少: pleural effusion(<10%), mediastinal/hilar LAP
- 經過治療之後，這些nodules or cavities會消失或是留下scar
- CT scan : nodules with irregular margin，沿著peribronchovascular分布

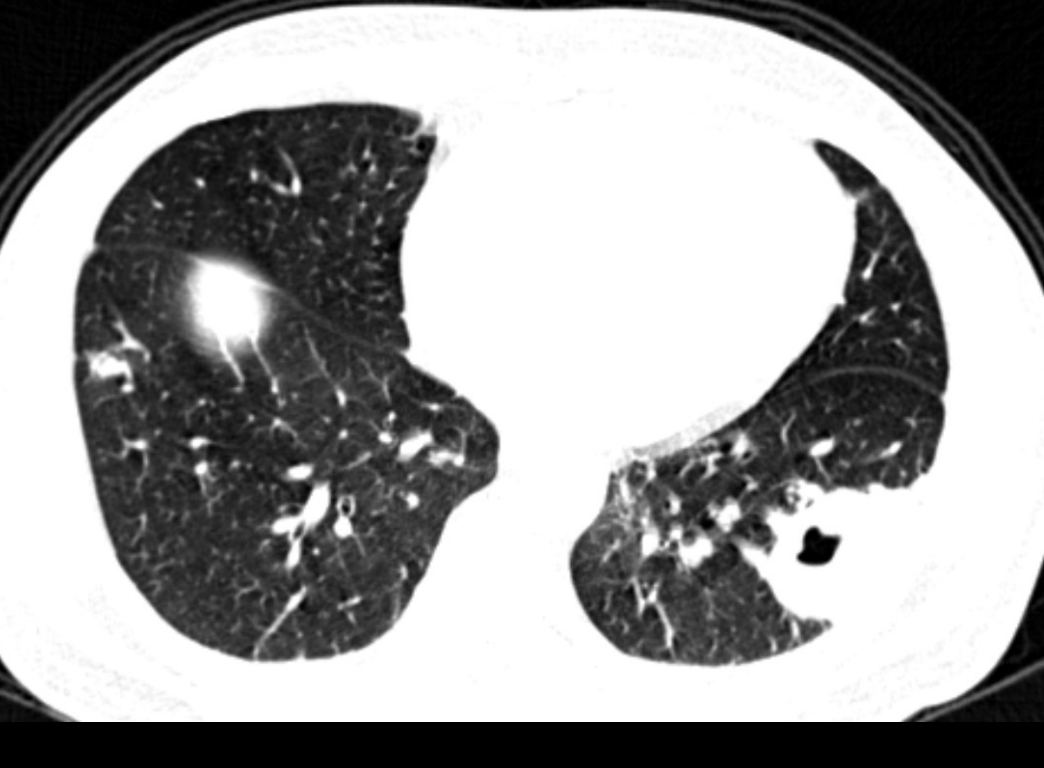
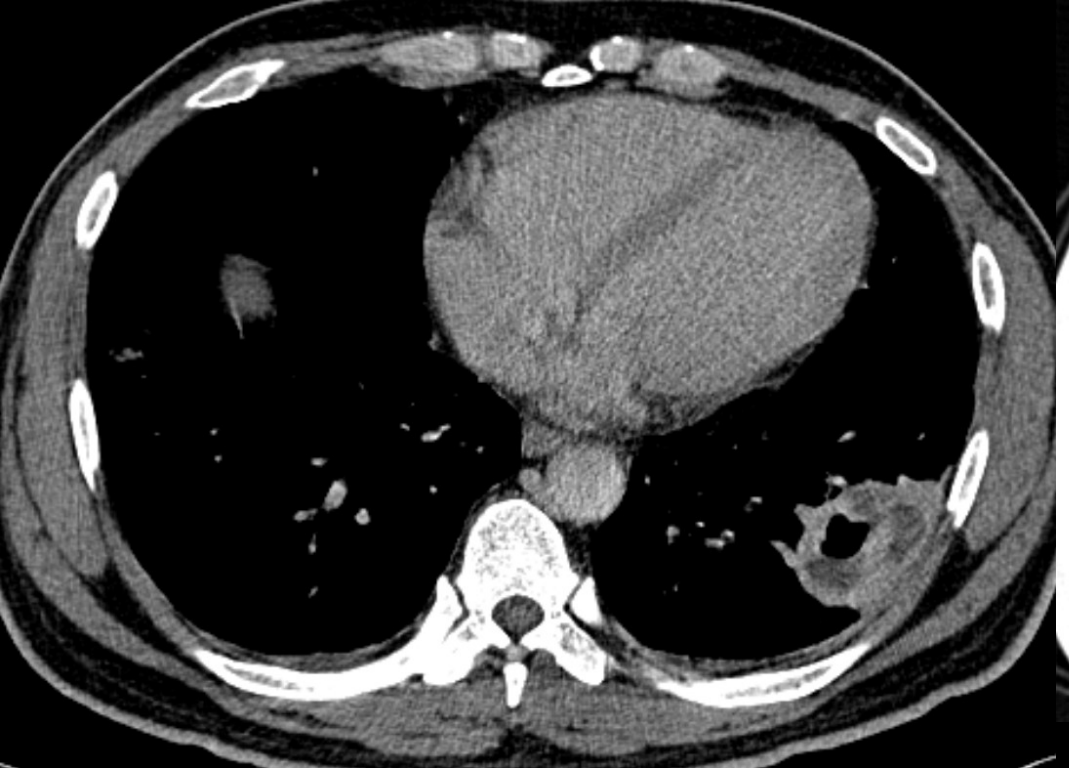
□ Localized or diffuse consolidation / GGO

- 通常代表pulmonary hemorrhage, secondary infection, alveolitis
- A focal area of dense consolidation, patchy bilateral areas of consolidation, or diffuse air-space consolidation



**Multifocal
Peripheral**

Septic emboli





G(+), G(-)

S. aureus

S. pneumoniae

K. pneumoniae

H. influenzae

Necrotizing pneumonia / Lung abscess



新舊雜陳

Upper lungs

Multifocal

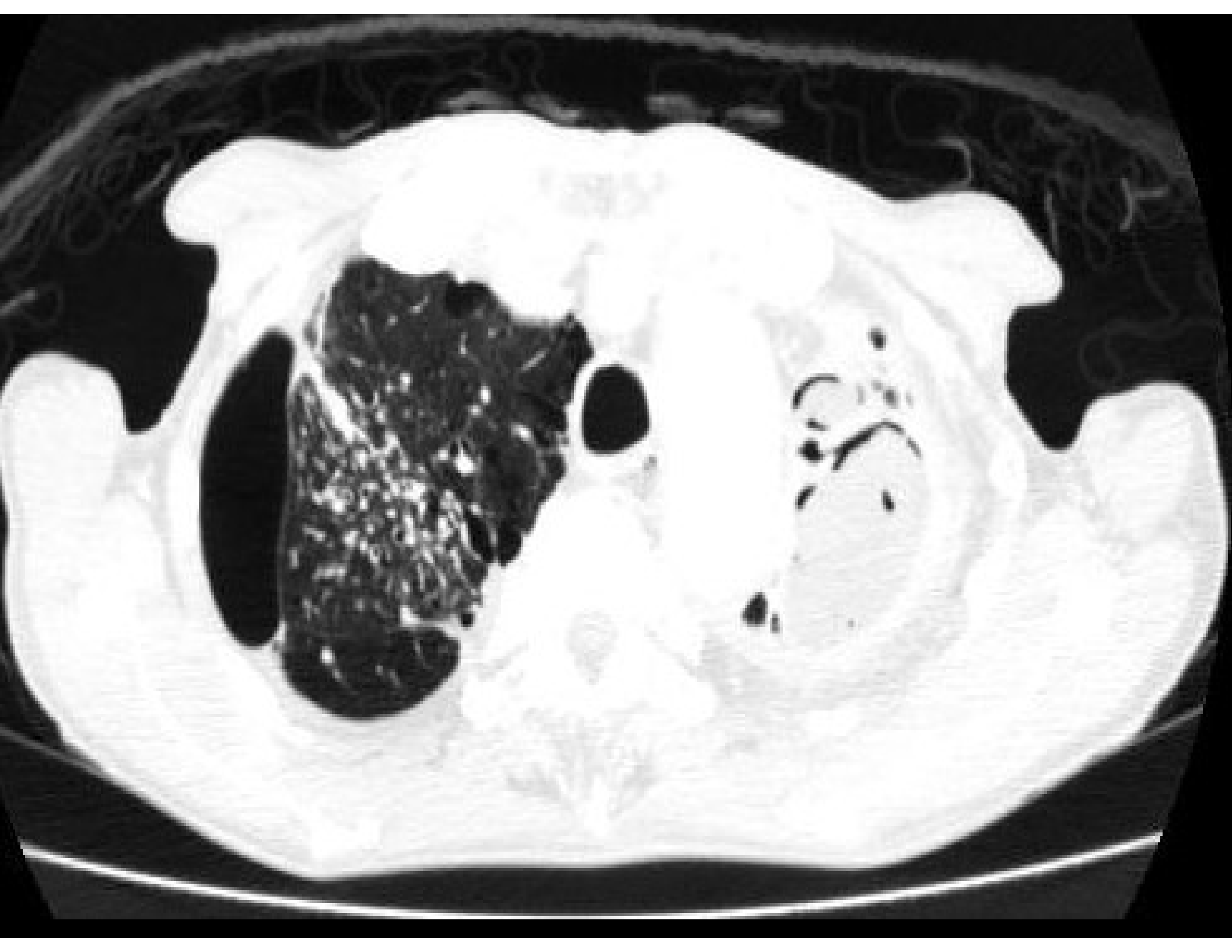
Mycobacterium infection

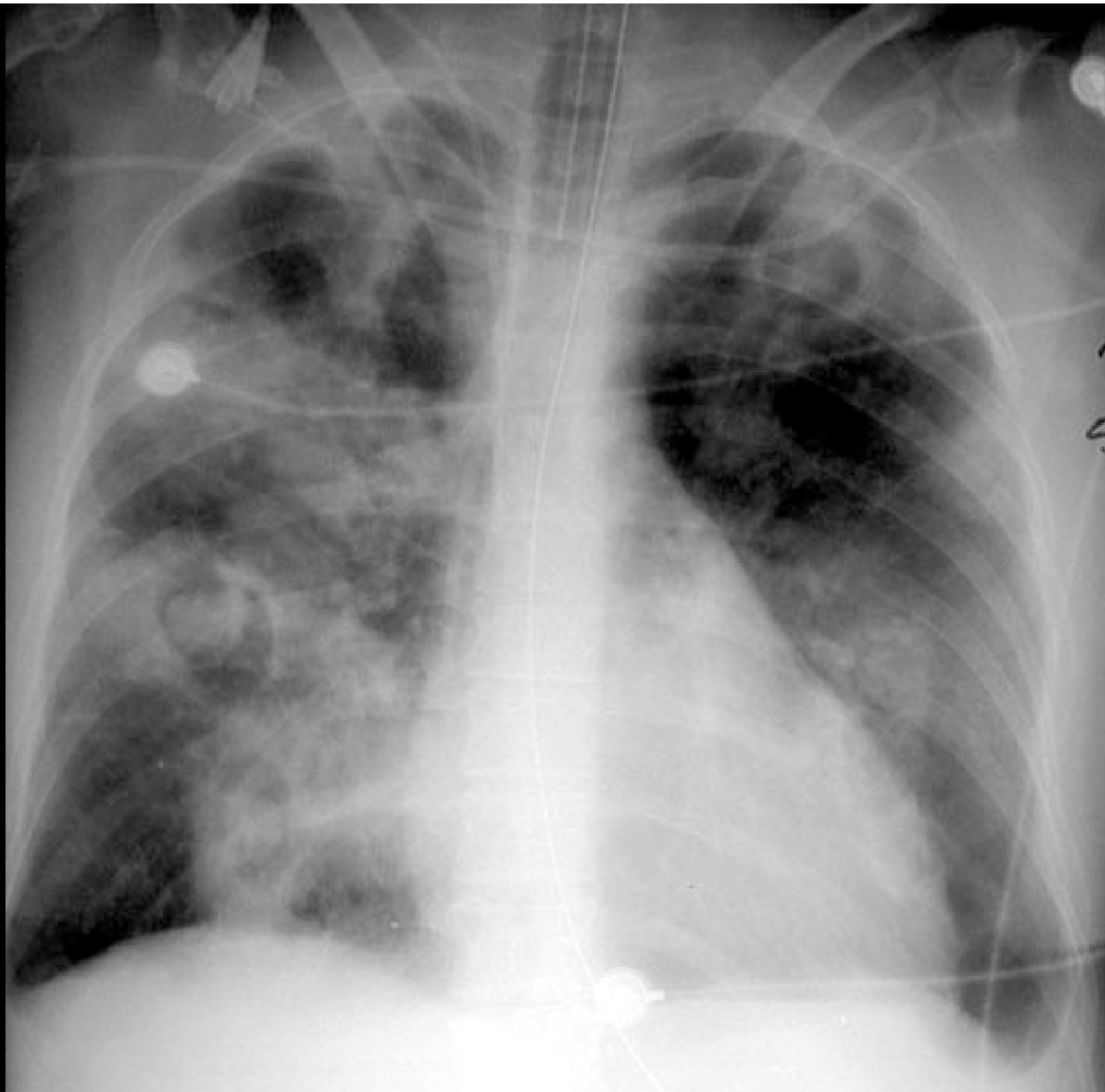


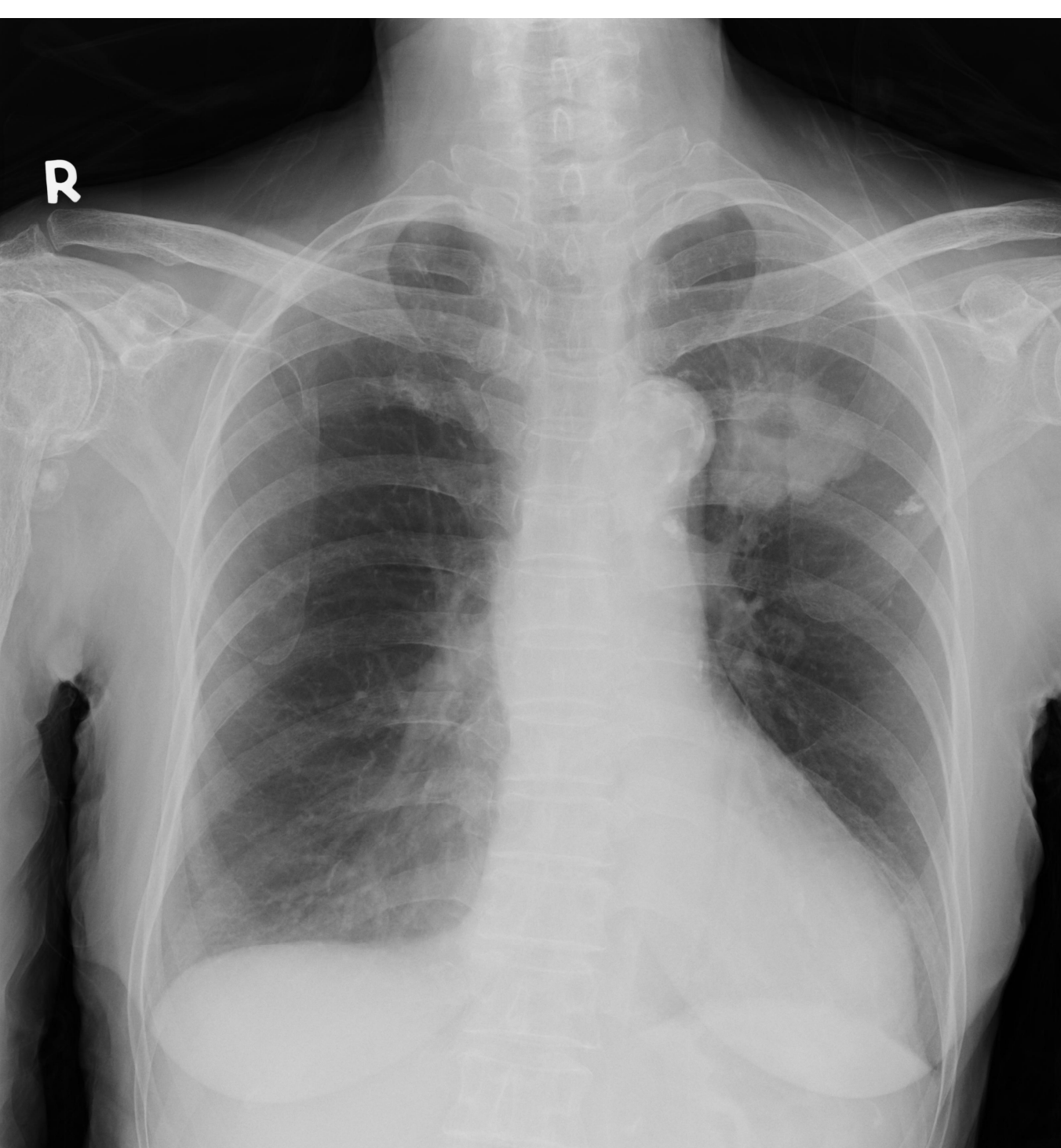
**Aspergilloma
(ball-in-hole)**

**Air crescent
sign**

Aspergillosis infection

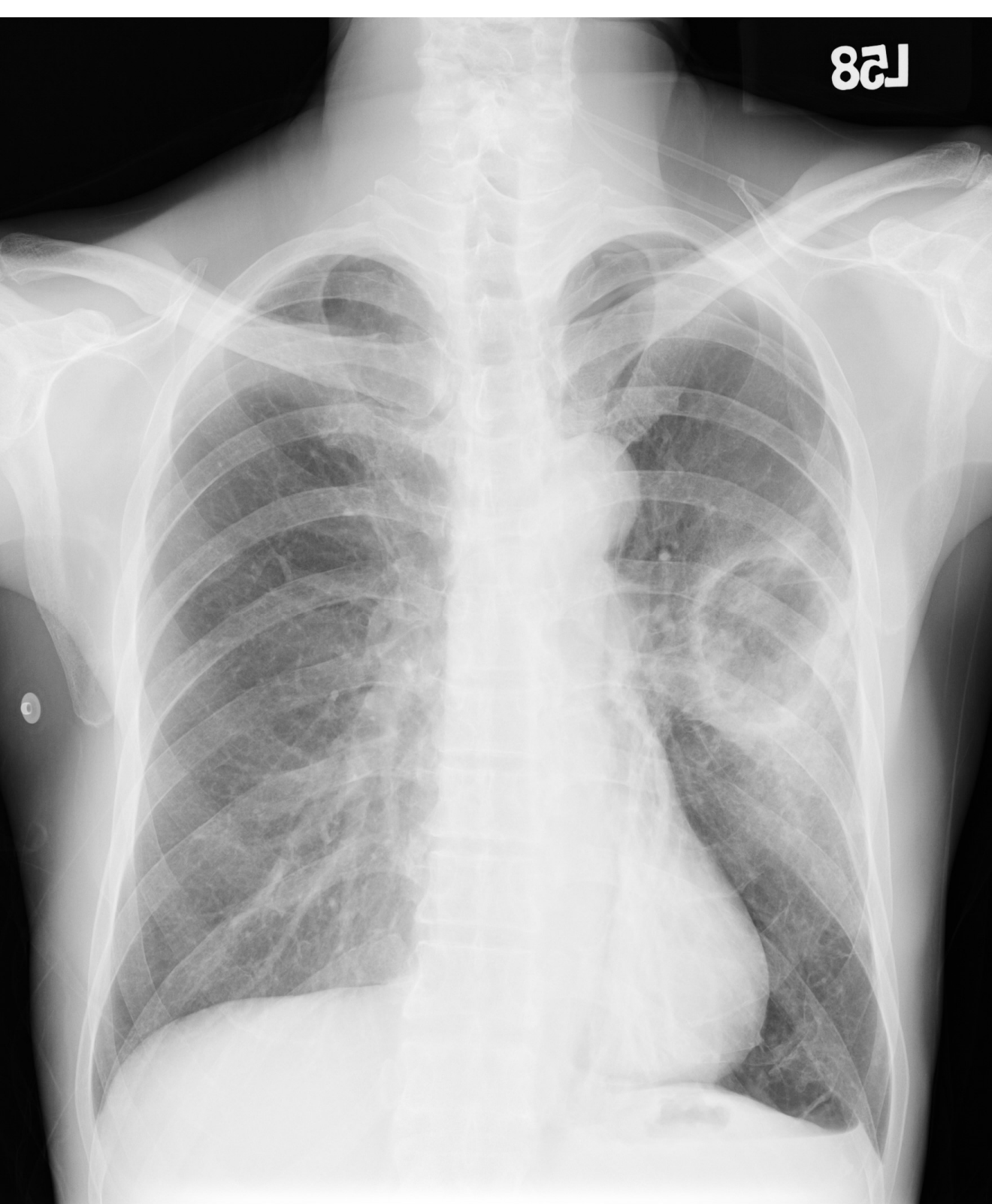






Eccentric
Lobulation
Speculation

Malignancy



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Pneumatoceles



Cystic Disease

- **Congenital cystic lesions**

- Bronchogenic cyst
- Congenital pulmonary airway malformation (CPAM),
Congenital cystic adenomatoid malformation (CCAM)

- **Bullae**

- **Blebs**

- **Pneumatoceles**

- **Infections**

- Coccidioidomycosis
- *Pneumocystis jirovecii*
- Hydatid disease

- **Traumatic cysts**

- **Cystic bronchiectasis**

Vascular disease

Inflammation / Infection

Cystic bronchiectasis

Cancer and other tumors

Trauma

Pneumatoceles

Inhalational disease

Malformation

Bronchogenic cyst

Pulmonary sequestration

CPAM (Congenital Pulmonary Airway Malformation)

Others

Lymphangioliomyomatosis

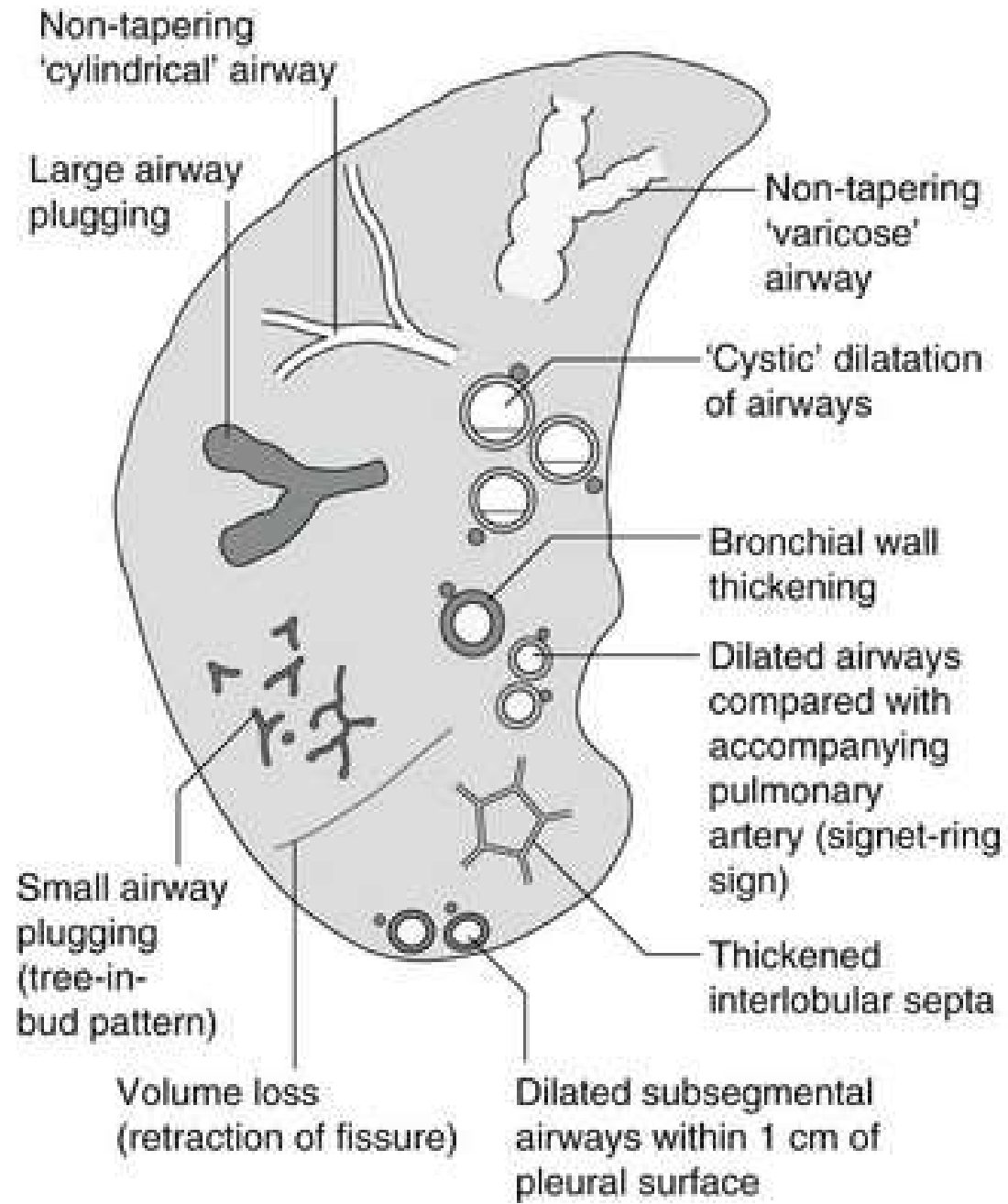
Langerhans' cell histiocytosis

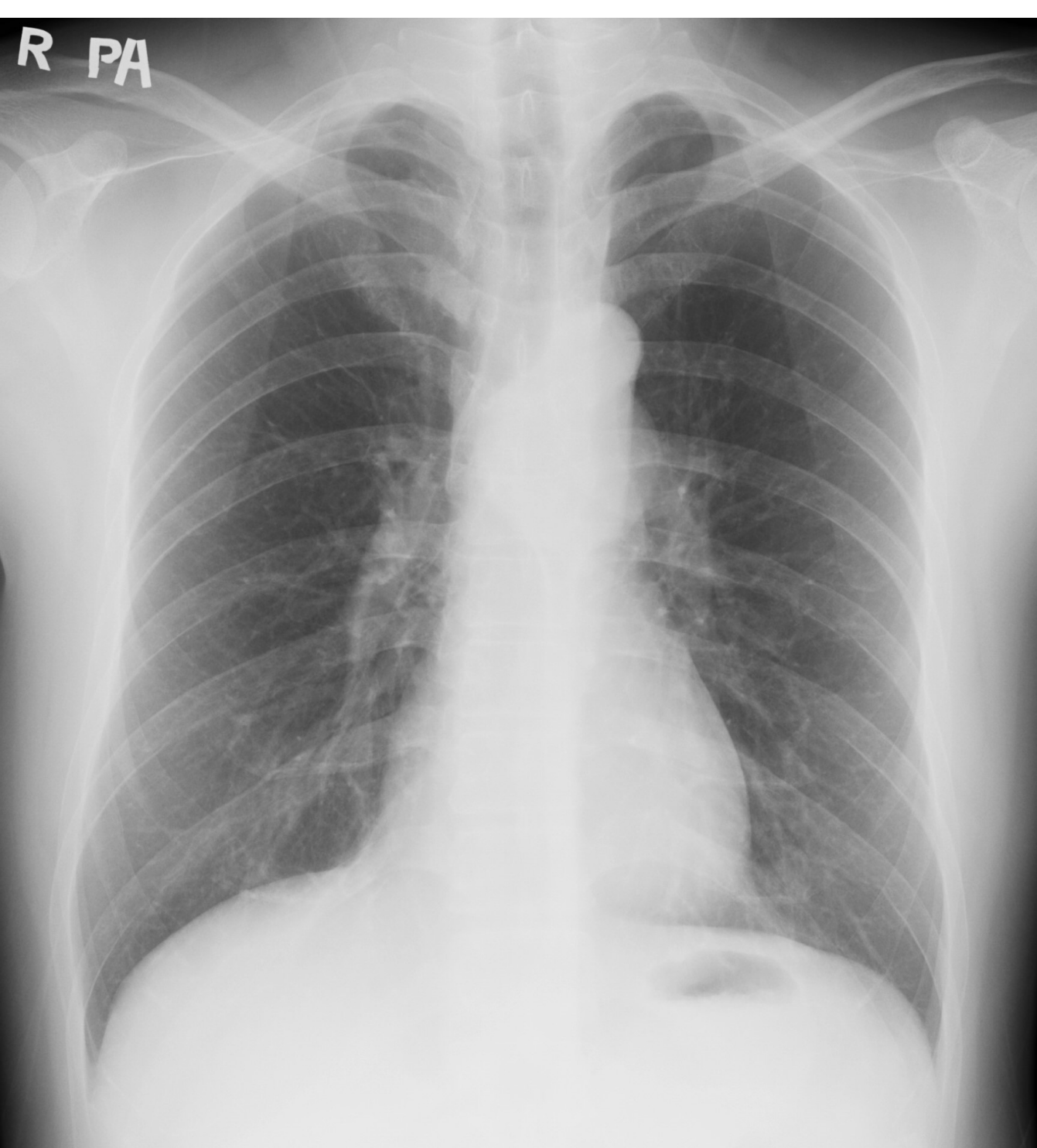
Honeycomb lung

Bullae / Blebs



Cystic bronchiectasis



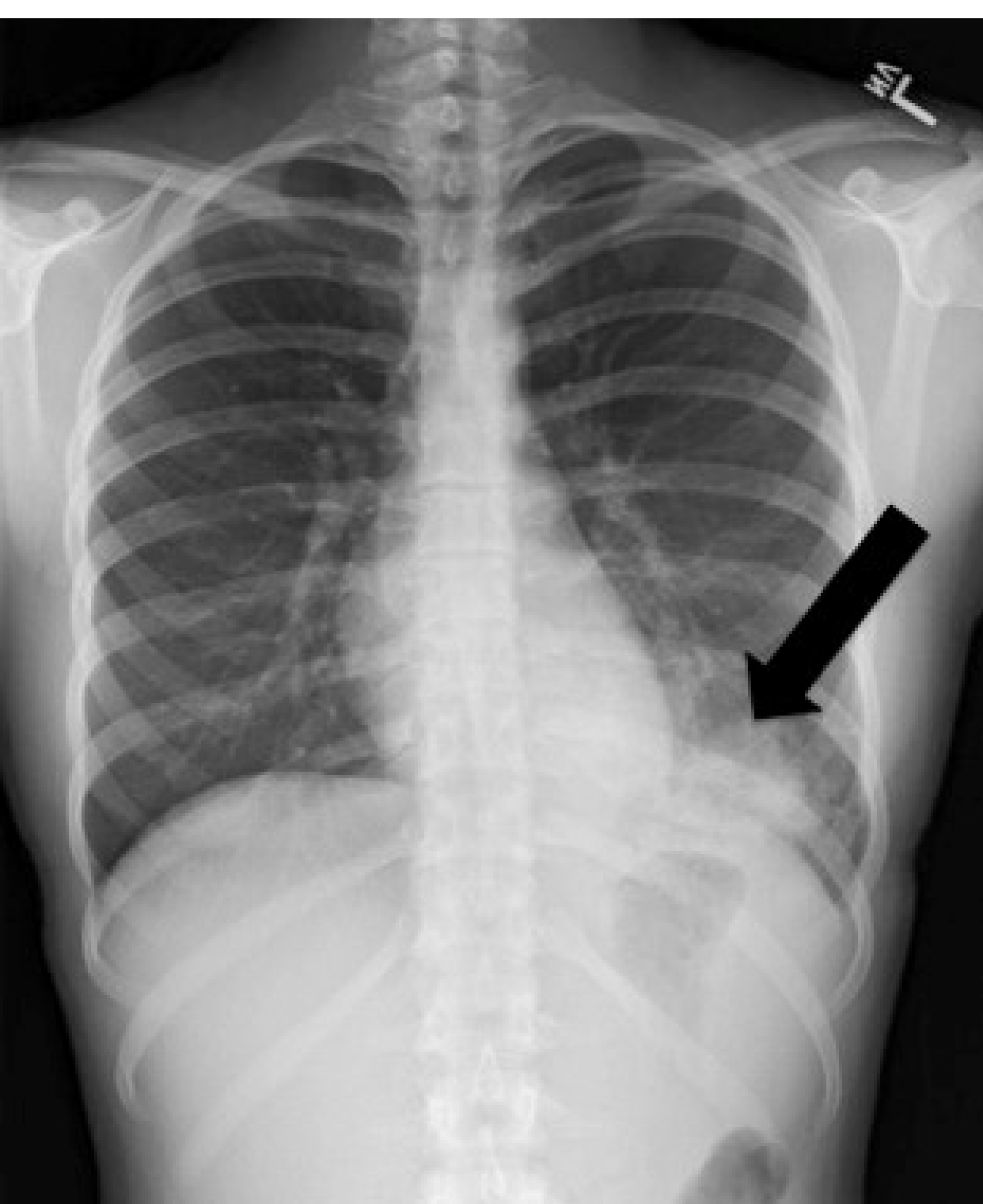


Mediastinum
65-90 %

Bronchogenic cyst

RC
10/10/10
10/10/10

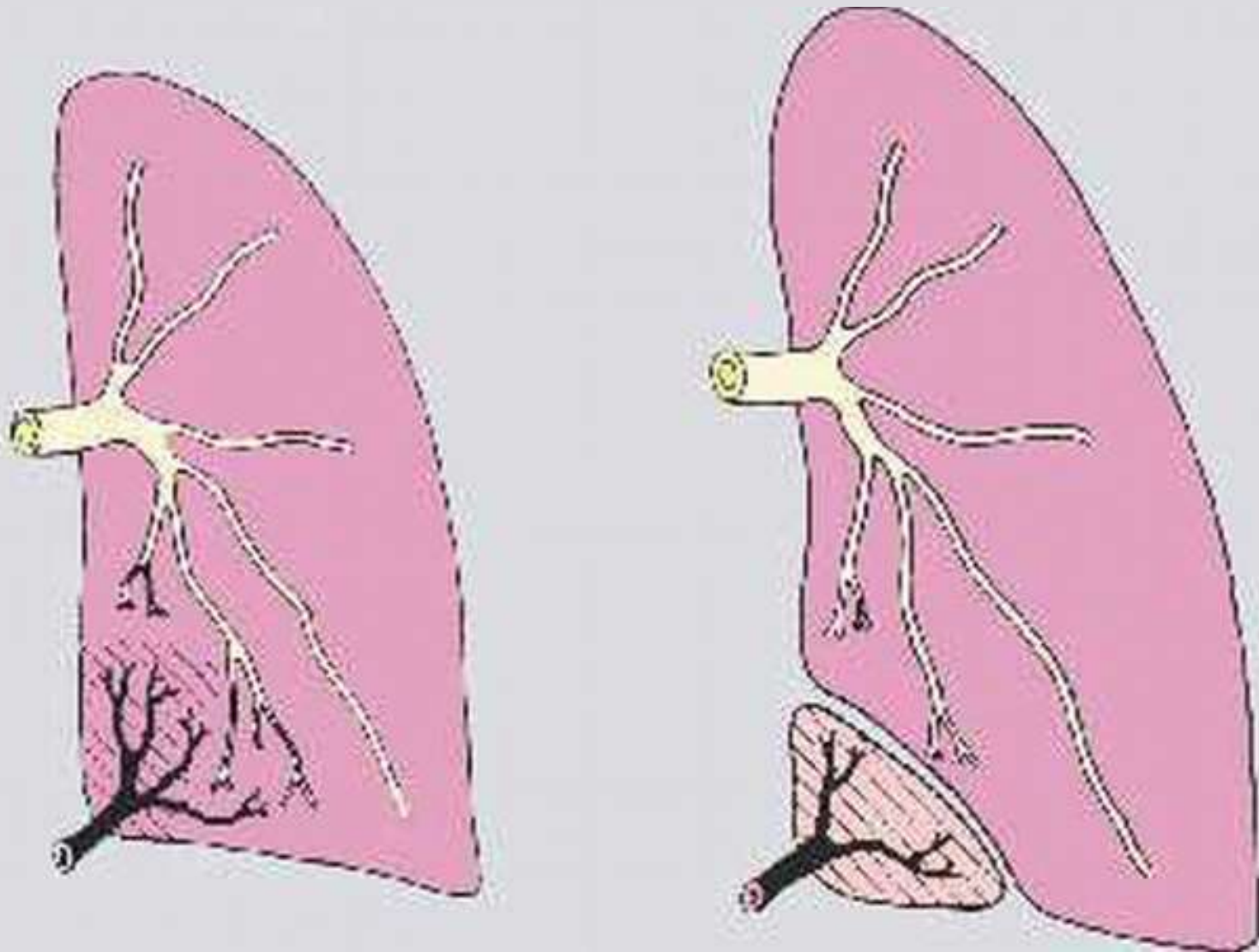




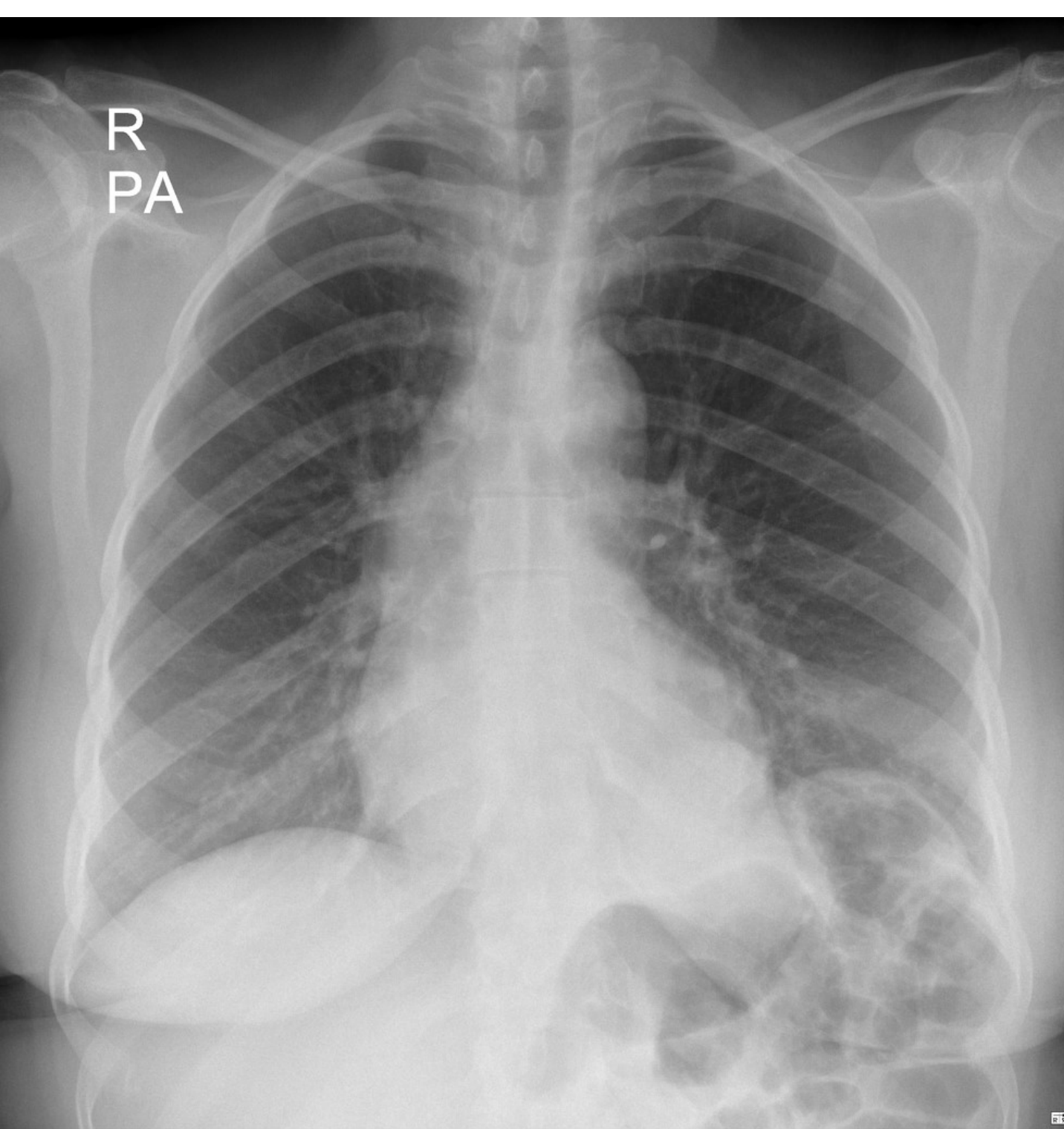
Pulmonary sequestration

<https://www.sciencedirect.com/topics/medicine-and-dentistry/pulmonary-sequestration>

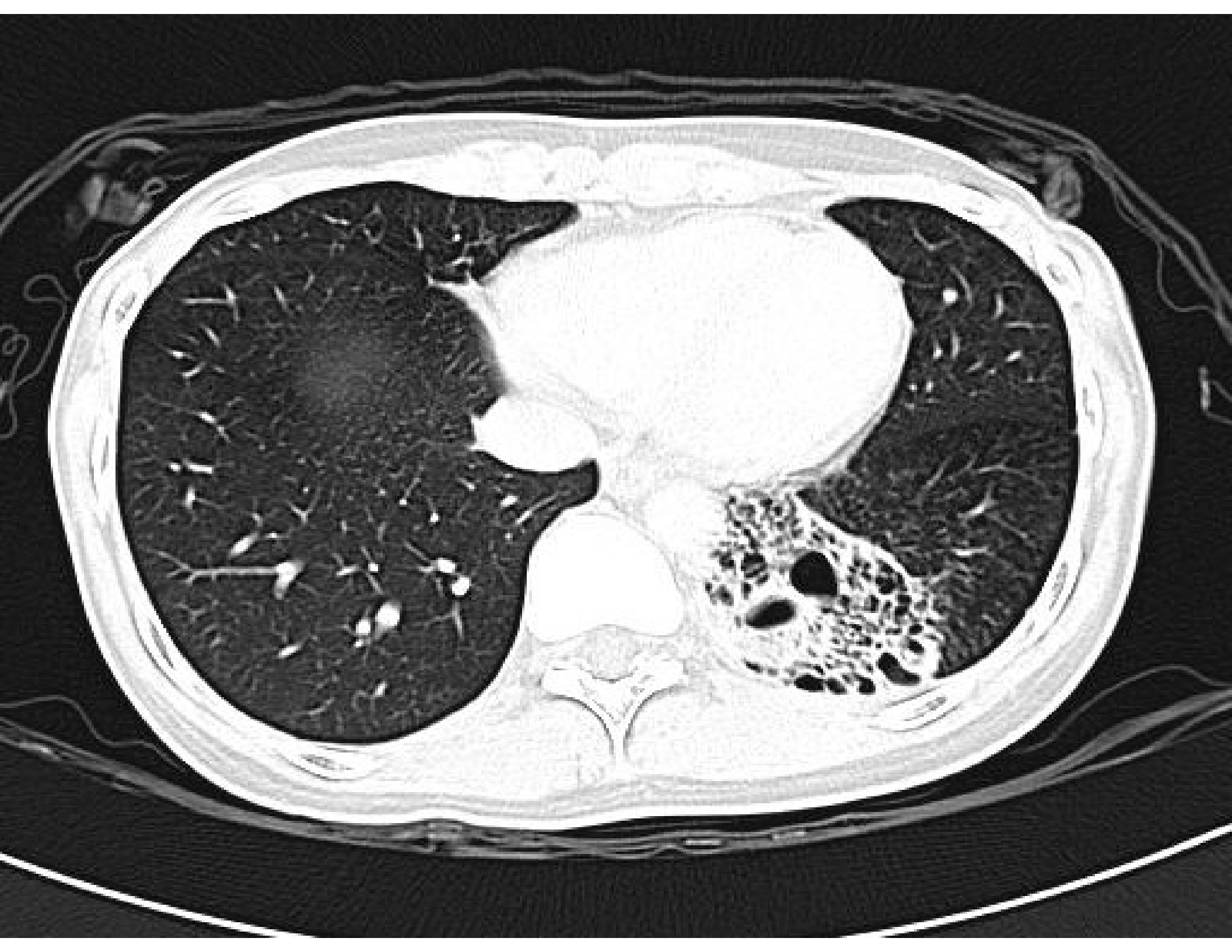
Intralobar Extralobar



Pulmonary sequestration



Case courtesy of Dr Mohamed Hossam el Deen, Radiopaedia.org, rID: 46770



Intralobar (75%)

Left lower lobe: 60%

Right lower lobe: 40%

Extralobar (25%)

**Almost always affect the left lower lobe,
~10% can be subdiaphragmatic**

Pulmonary sequestration



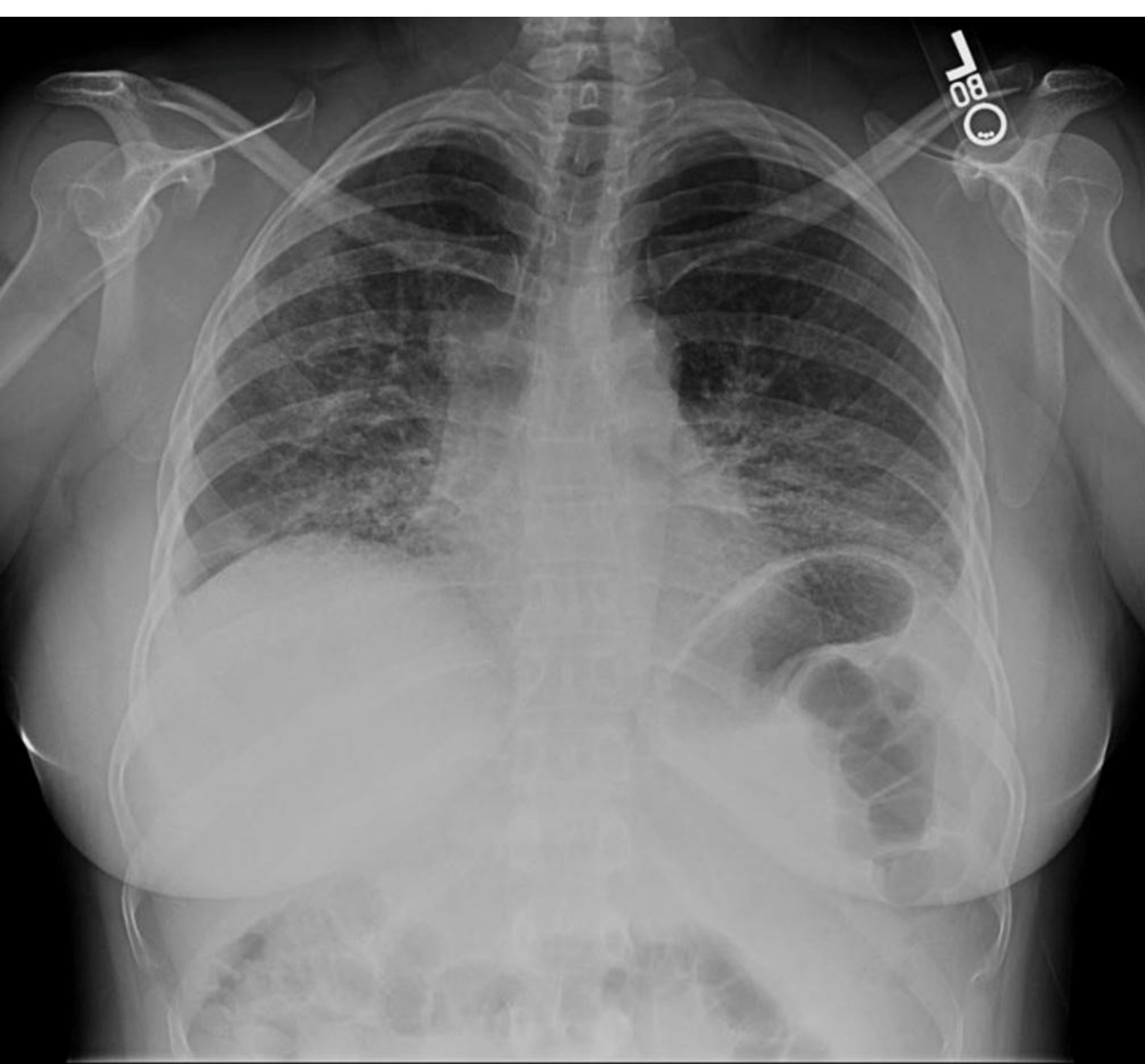
**Women of
childbearing age**

**Recurrent
pneumothorax**

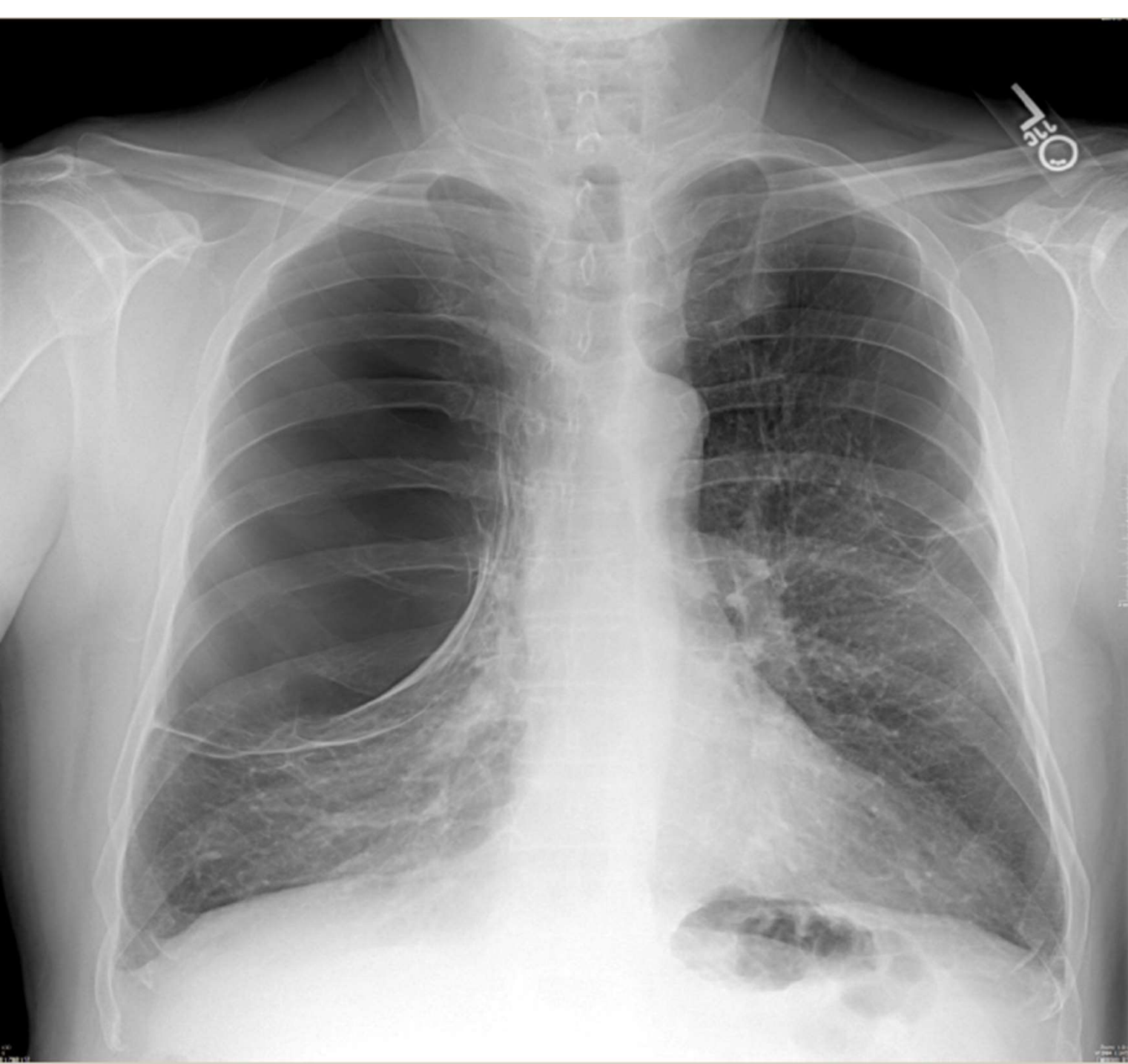
**Tuberous
sclerosis
complex**

Lymphangioleiomyomatosis





Honeycomb / IPF



Bullae

Summary

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Vascular disease

Inflammation / Infection

Cancer and other tumors

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