

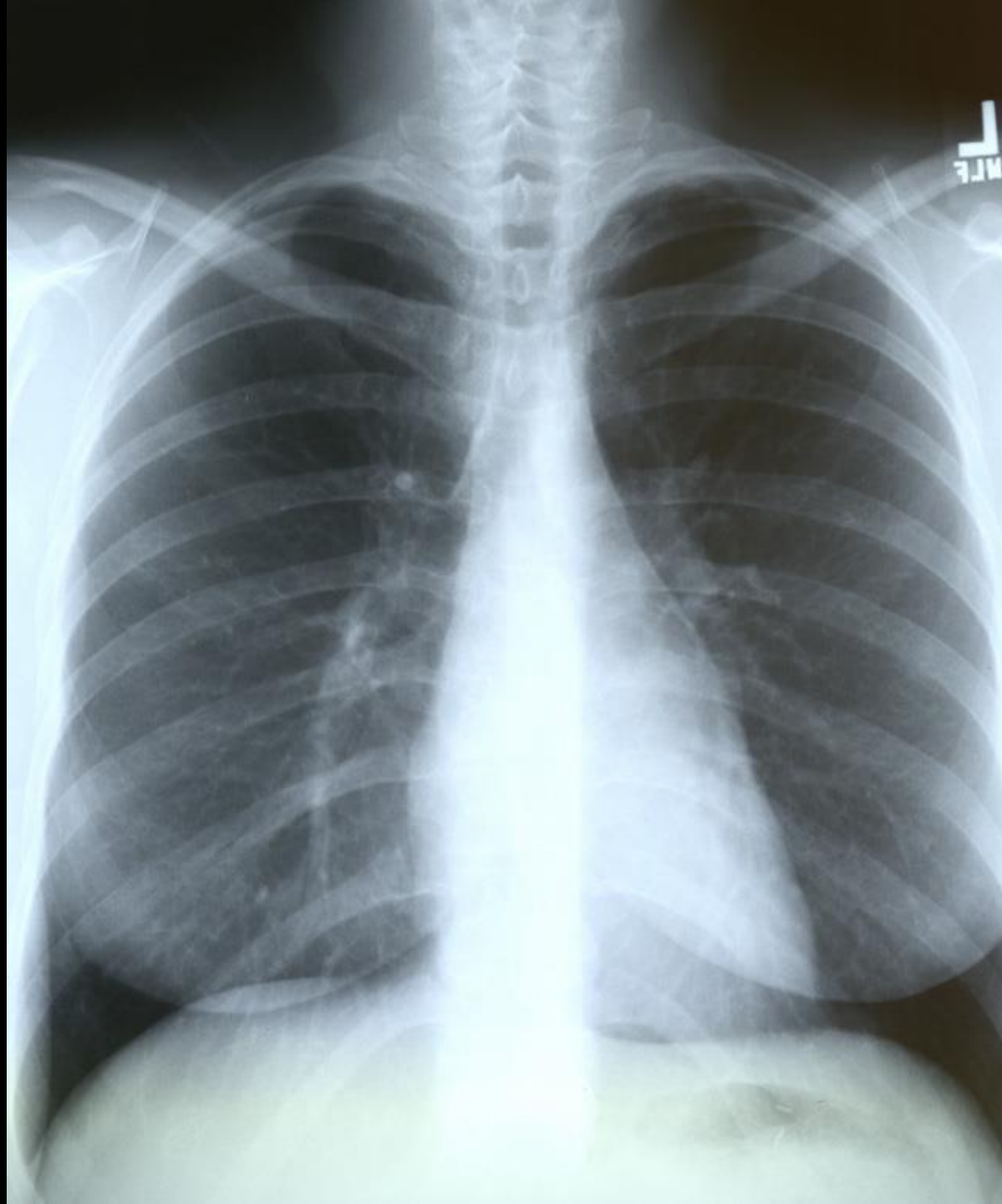
Chest X-rays

Chest X ray

- is the most commonly performed diagnostic **x-ray** examination.

Images

- heart, lungs, airways, blood vessels and the bones of the spine and **chest**.
- Easily and readily available
- It's non-invasive
- Cheap



The 12-Step Program

- **1:** Name
- **2:** Date
- **3:** Old films

} **Pre-read**

- **4:** What type of **view(s)**

- **5:** Penetration

- **6:** Inspiration

- **7:** Rotation

- **8:** Angulation

- **9:** Soft tissues / bony structures

- **10:** Mediastinum

- **11:** Diaphragms

- **12:** Lung Fields

} **Quality Control**

} **Findings**

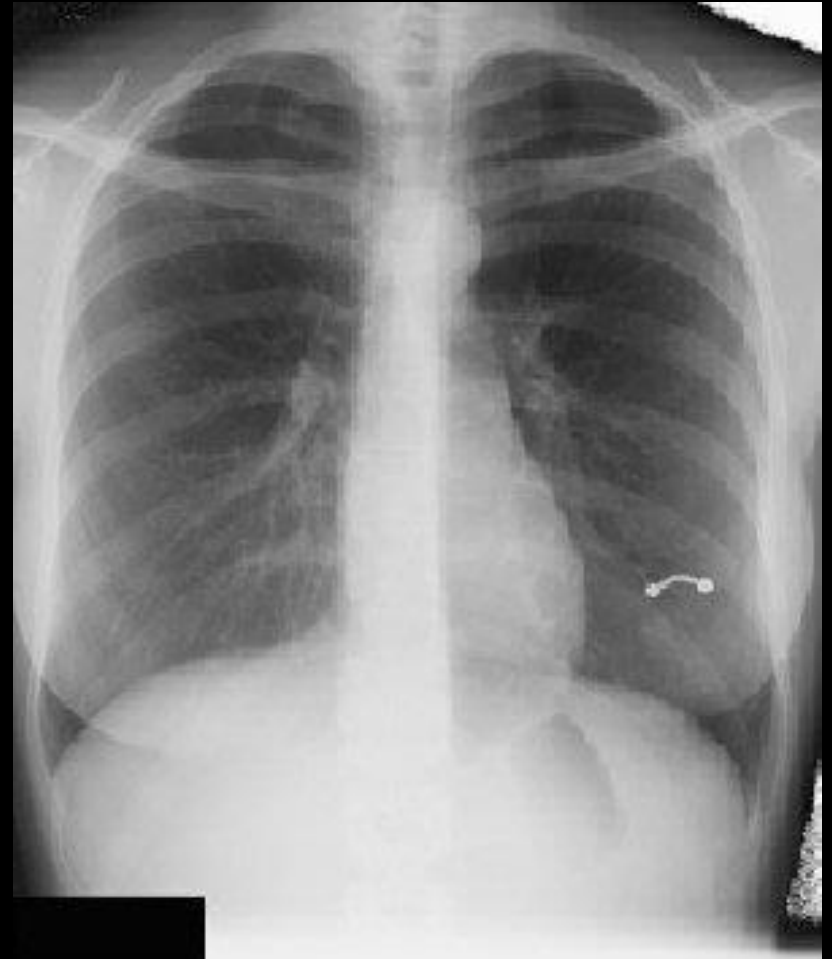
Pre-Reading

- **1.** Check the name
- **2.** Check the date
- **3.** Obtain old films if available

- **4.** Which **view(s)** do you have?
 - PA / AP, lateral, decubitus, AP lordotic

Techniques - Projection

- P-A (relation of x-ray beam to patient)



Techniques - Projection

(continued)

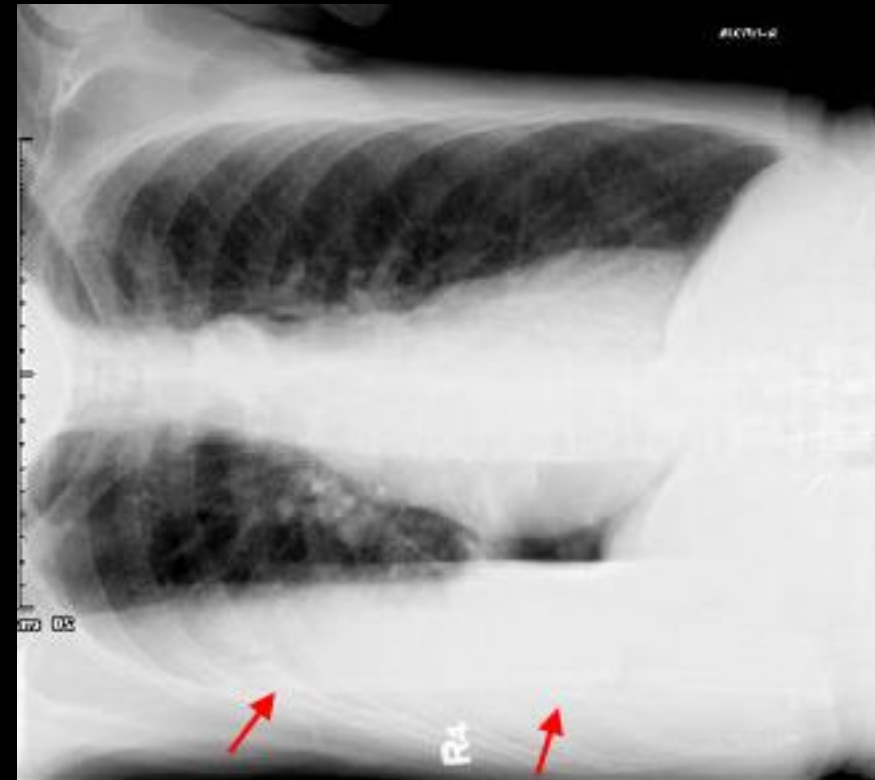
- Lateral



Techniques - Projection

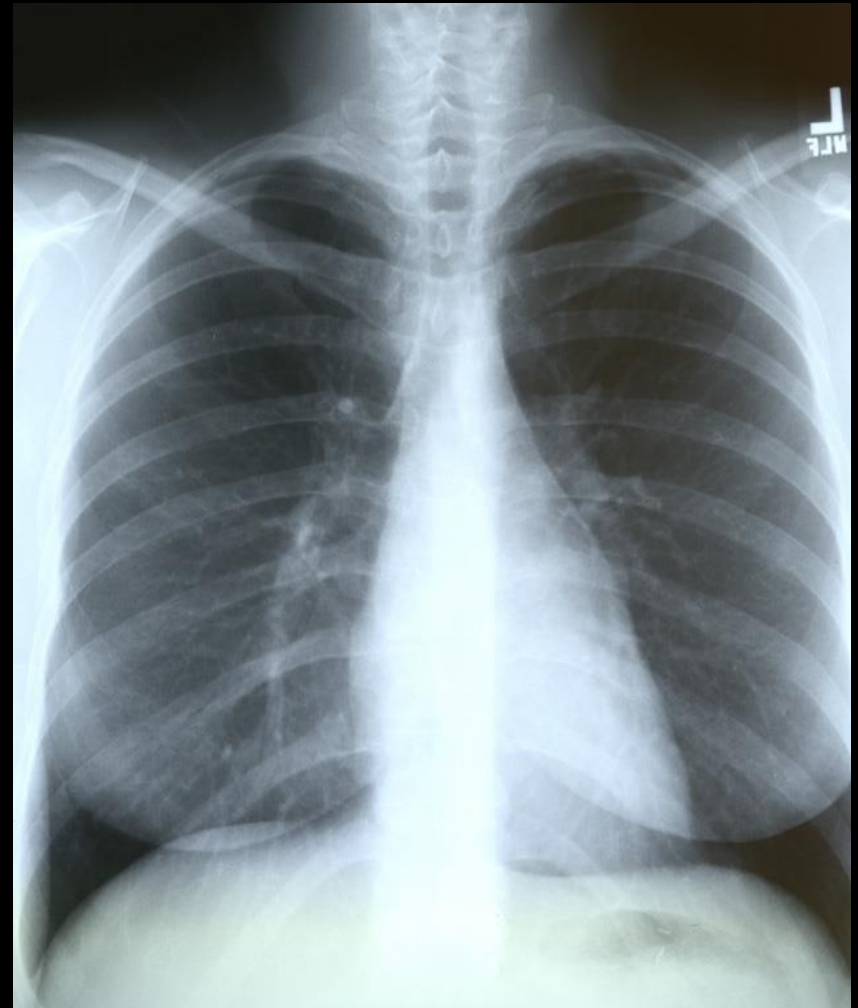
(continued)

- Lateral Decubitus



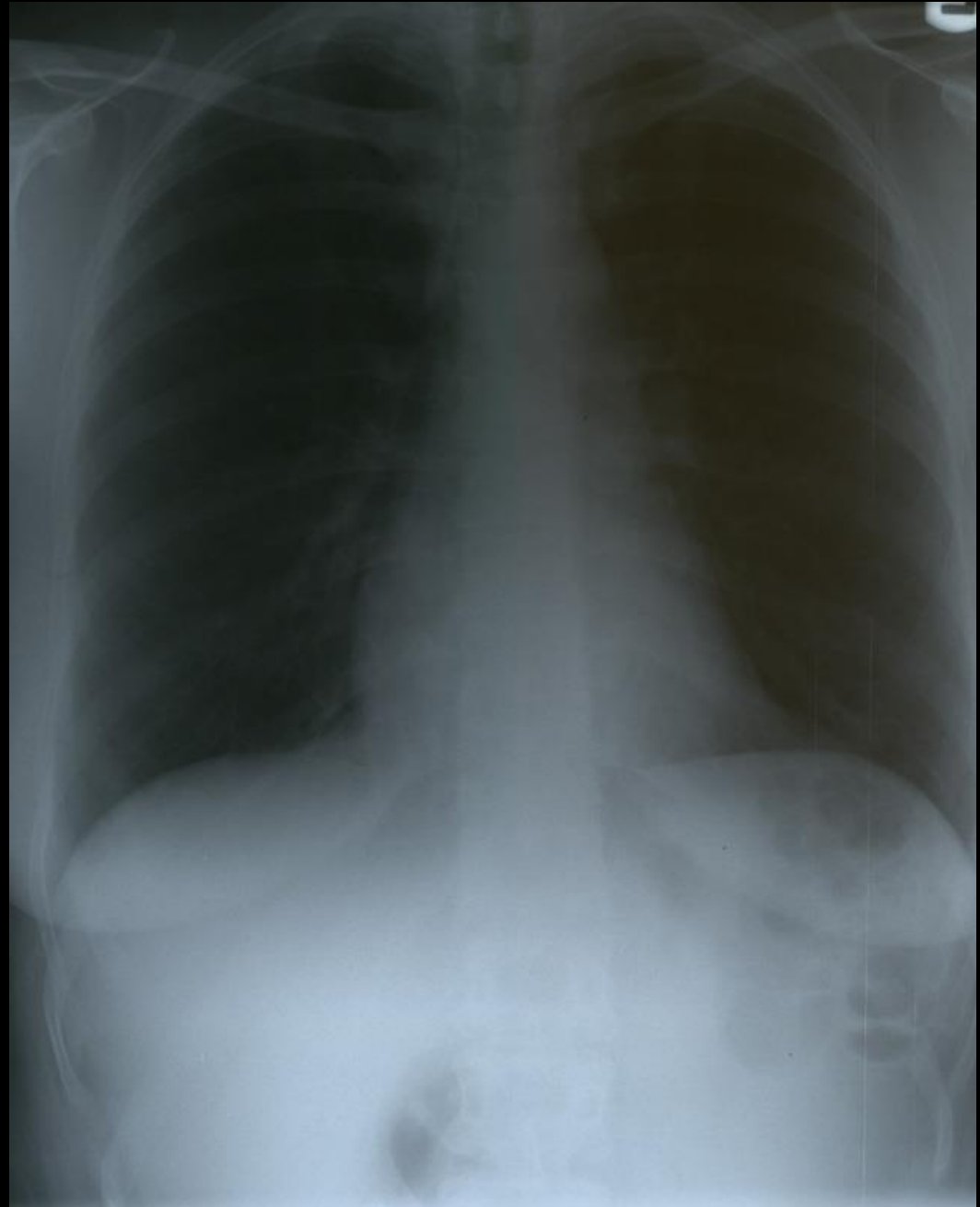
Quality Control

- **5. Penetration**
 - Should see ribs through the heart
 - Barely see the spine through the heart
 - Should see pulmonary vessels nearly to the edges of the lungs



Overpenetrated Film

- Lung fields darker than normal—may obscure subtle pathologies
- See spine well beyond the diaphragms
- Inadequate lung detail



Underpenetrated Film

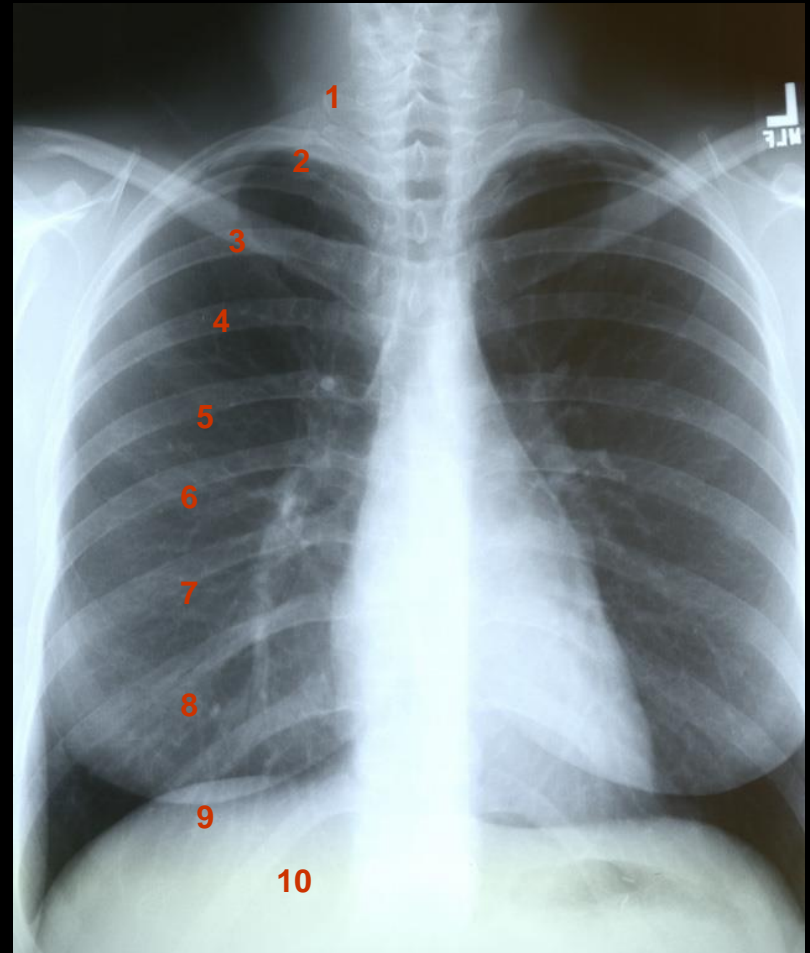
- Hemidiaphragms are obscured
- Pulmonary markings more prominent than they actually are



Quality Control

- **6. Inspiration**

- Should be able to count 9-10 posterior ribs
- Heart shadow should not be hidden by the diaphragm

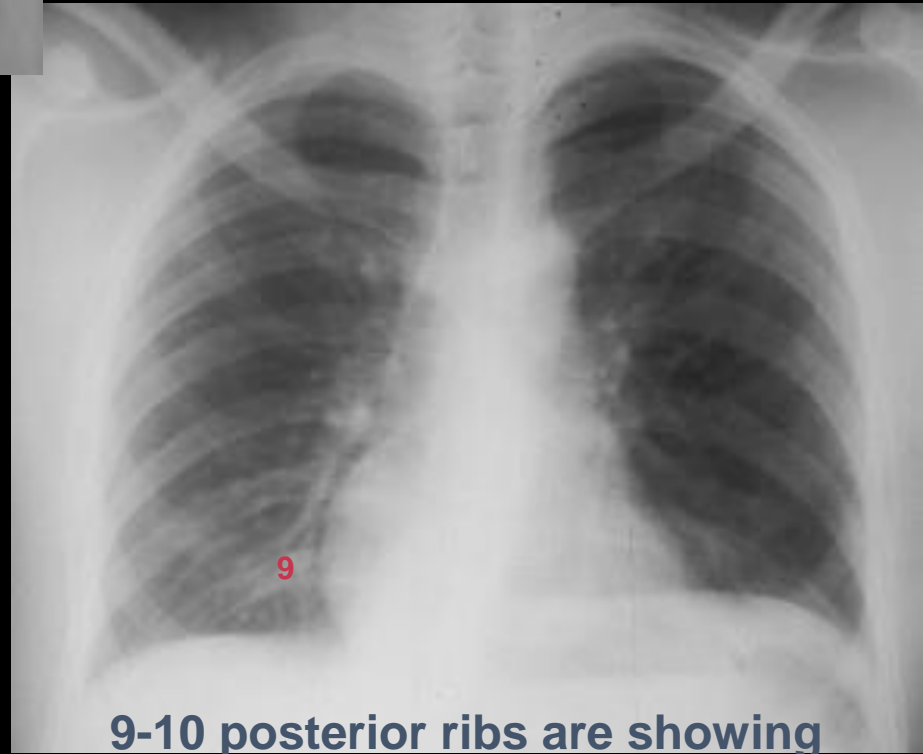




Poor inspiration can crowd lung markings producing pseudo-airspace disease

About 8 posterior ribs are showing

With better inspiration, the “disease process” at the lung bases has cleared

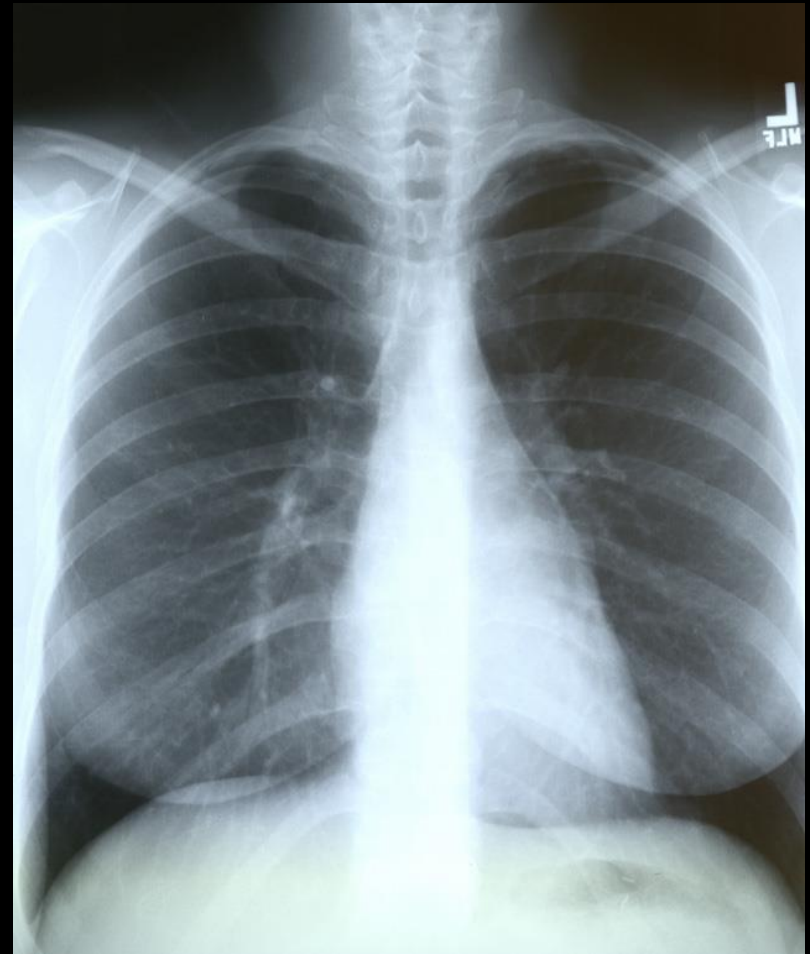


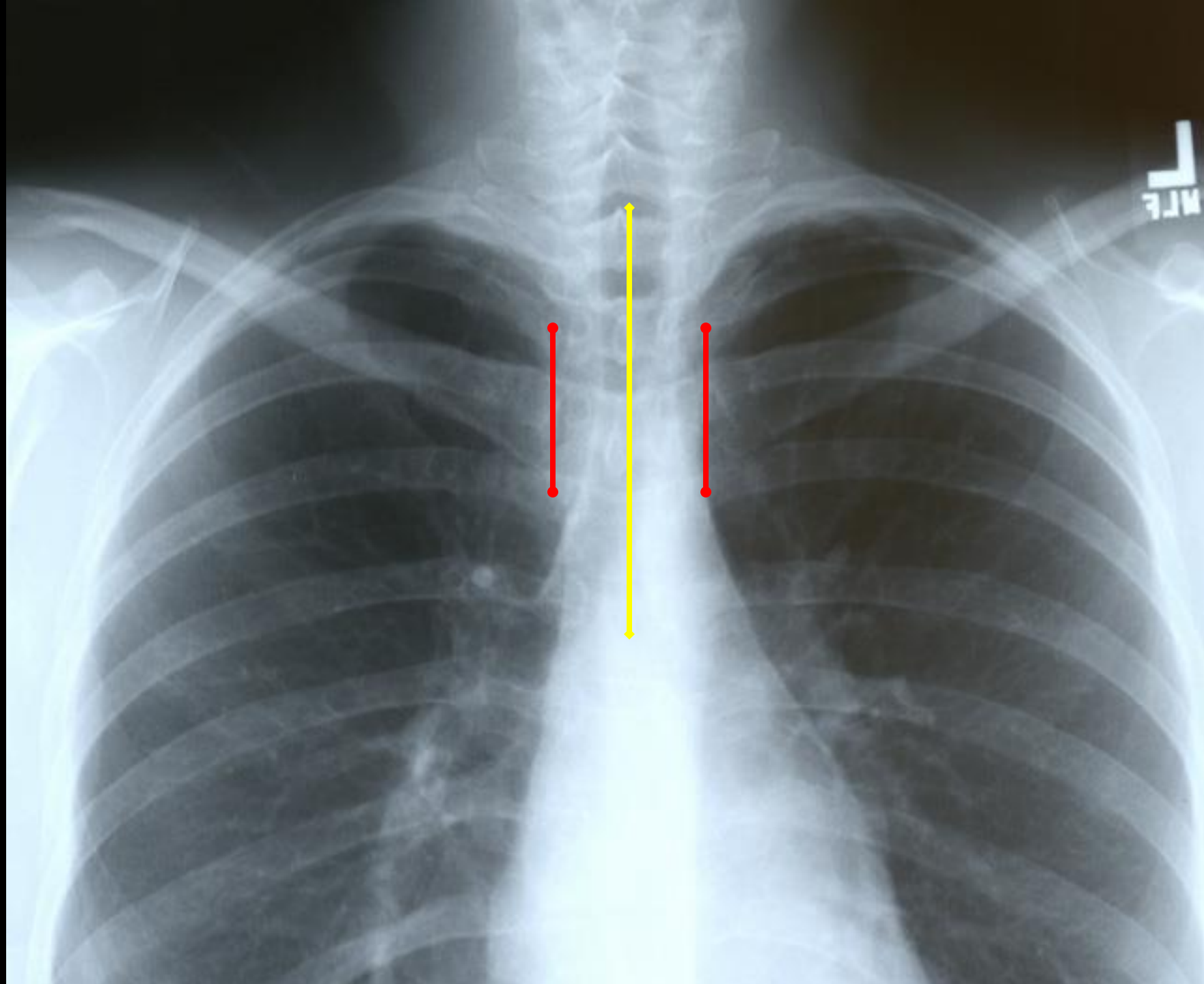
9-10 posterior ribs are showing

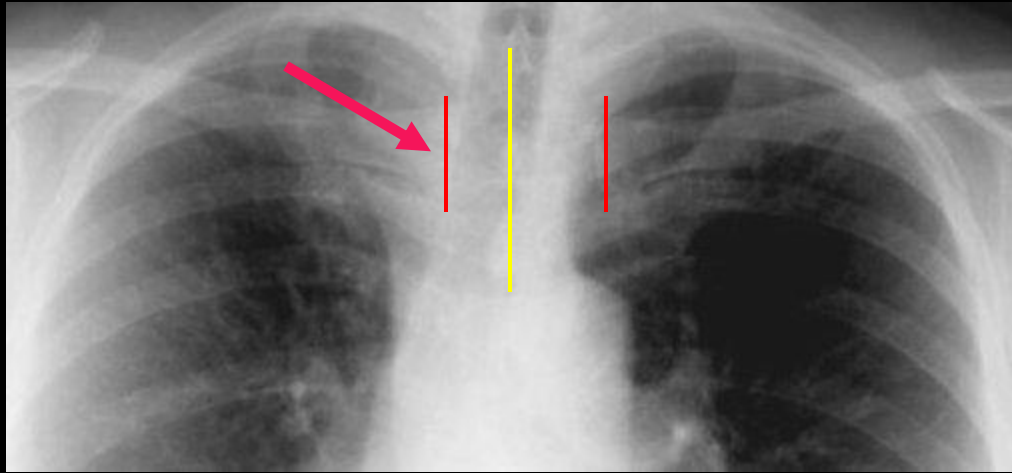
Quality Control

- **7. Rotation**

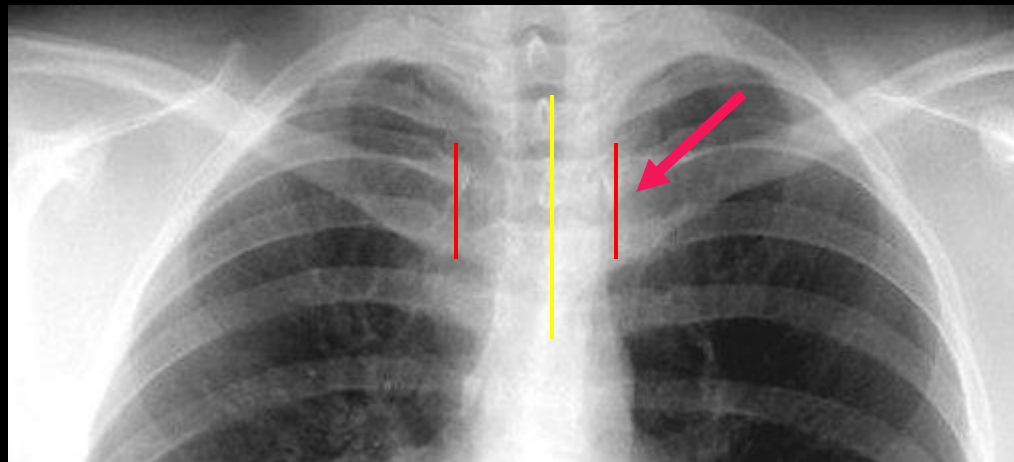
- Medial ends of bilateral clavicles are equidistant from the midline or vertebral bodies







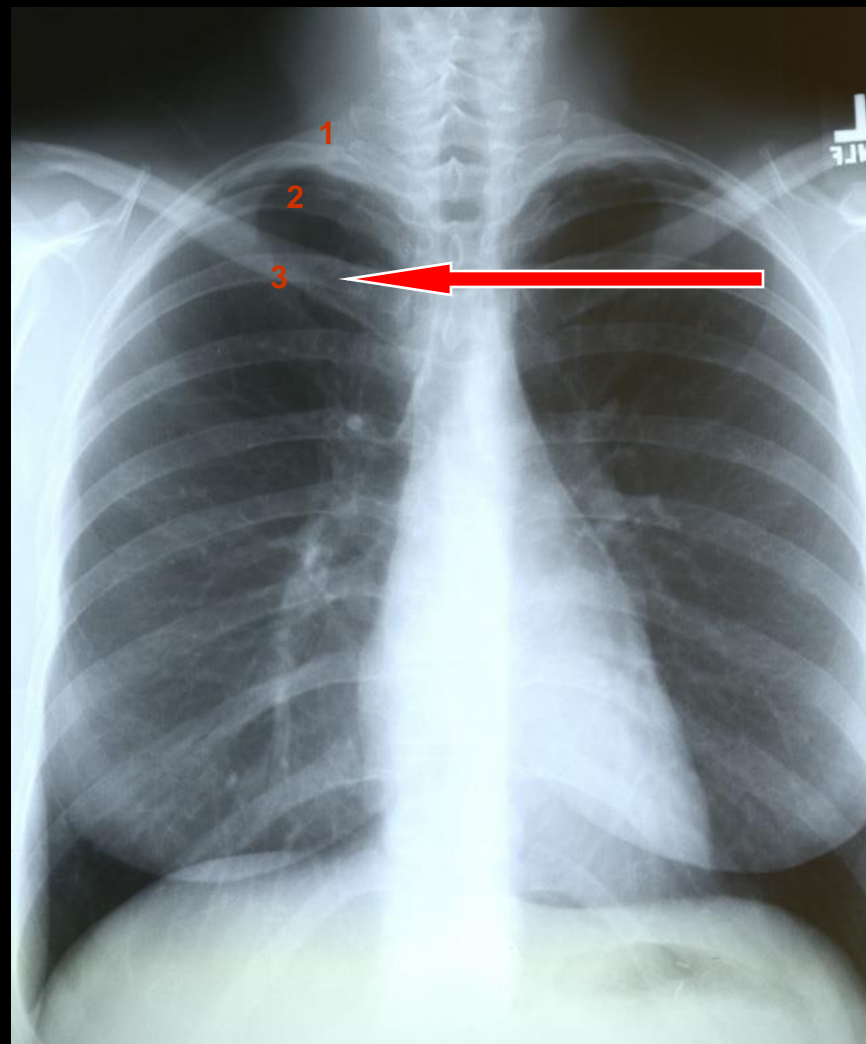
If spinous process appears closer to the right clavicle (**red arrow**), the patient is rotated toward their own **left side**



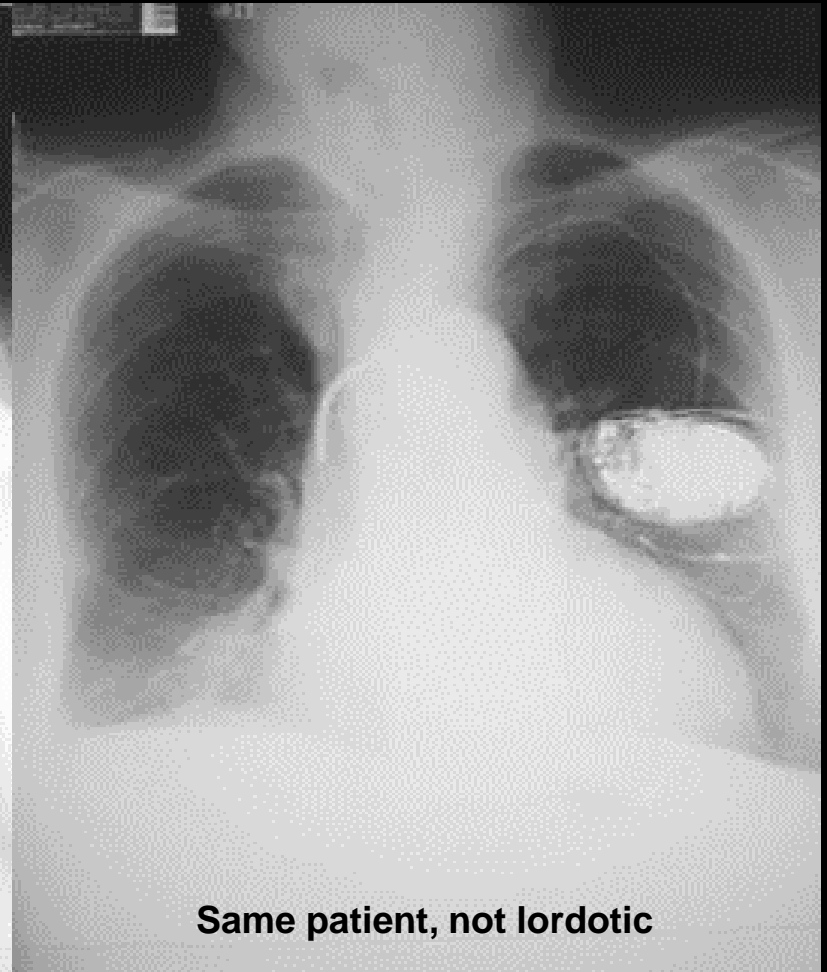
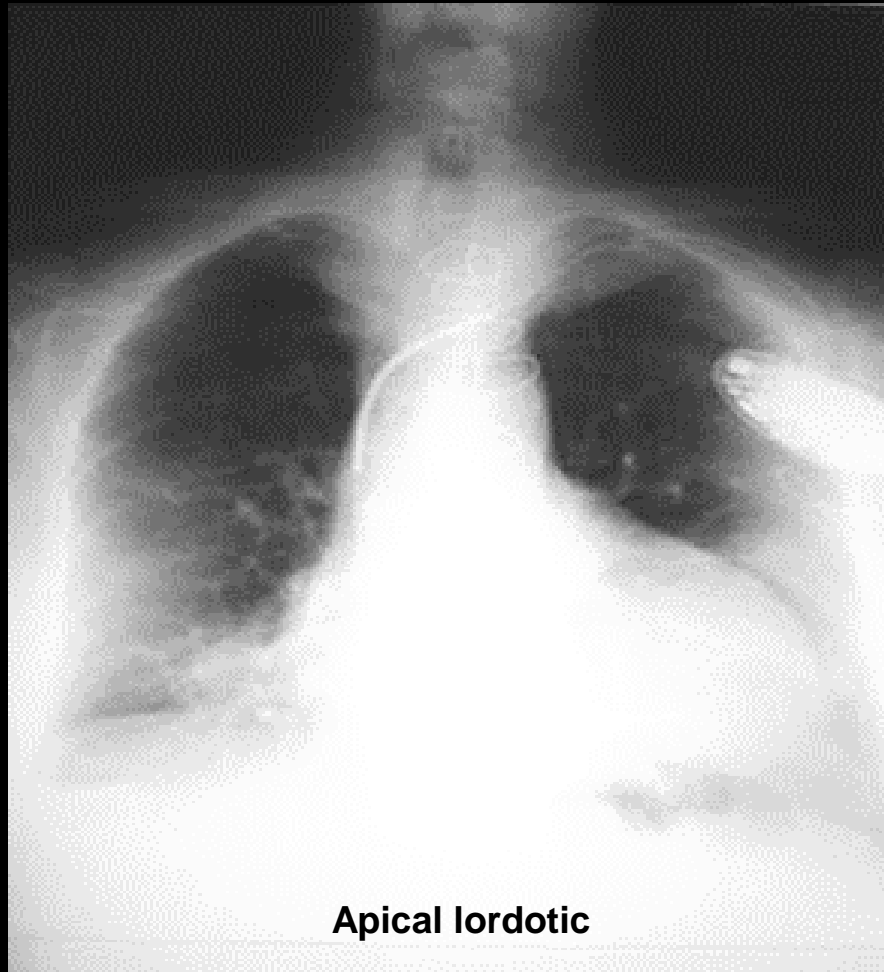
If spinous process appears closer to the left clavicle (**red arrow**), the patient is rotated toward their own **right side**

Quality Control

- **8. Angulation**
 - Clavicle should lay over 3rd rib



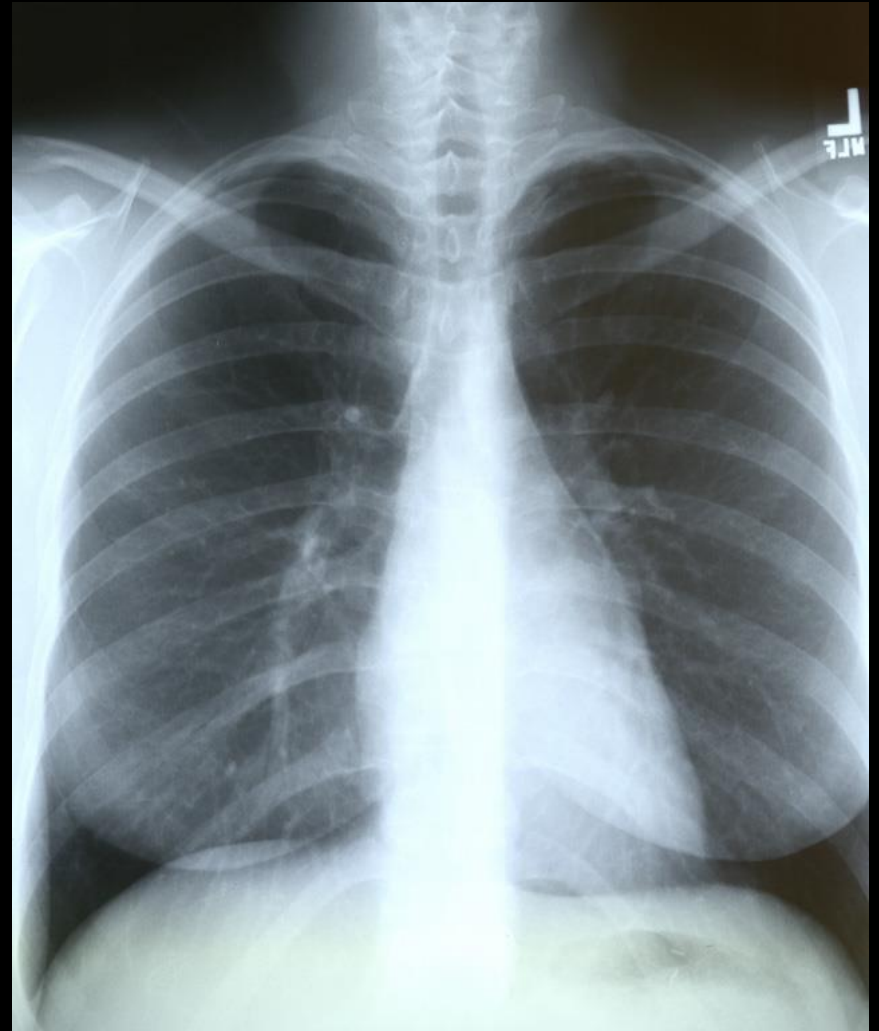
Pitfall Due to Angulation



- A film which is apical lordotic (beam is angled up toward head) will have an unusually shaped heart and the usually sharp border of the left hemidiaphragm will be absent

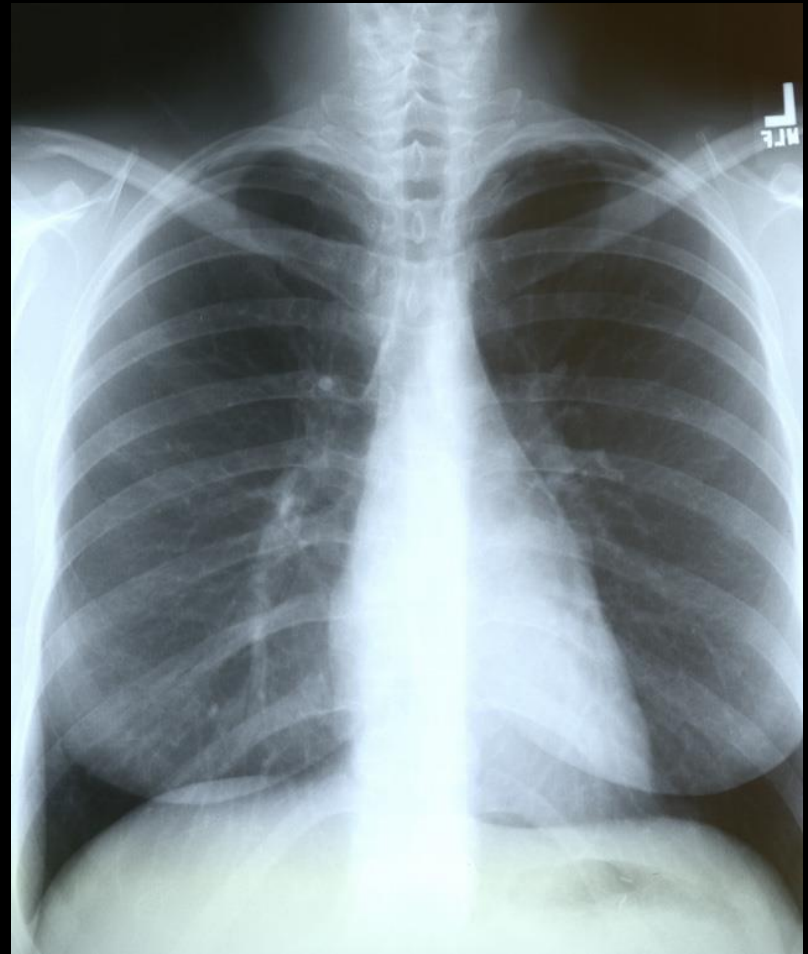
Findings

- **9. Soft tissue and bony structures**
 - Check for
 - Symmetry
 - Deformities
 - Fractures
 - Masses
 - Calcifications
 - Lytic lesions



Findings

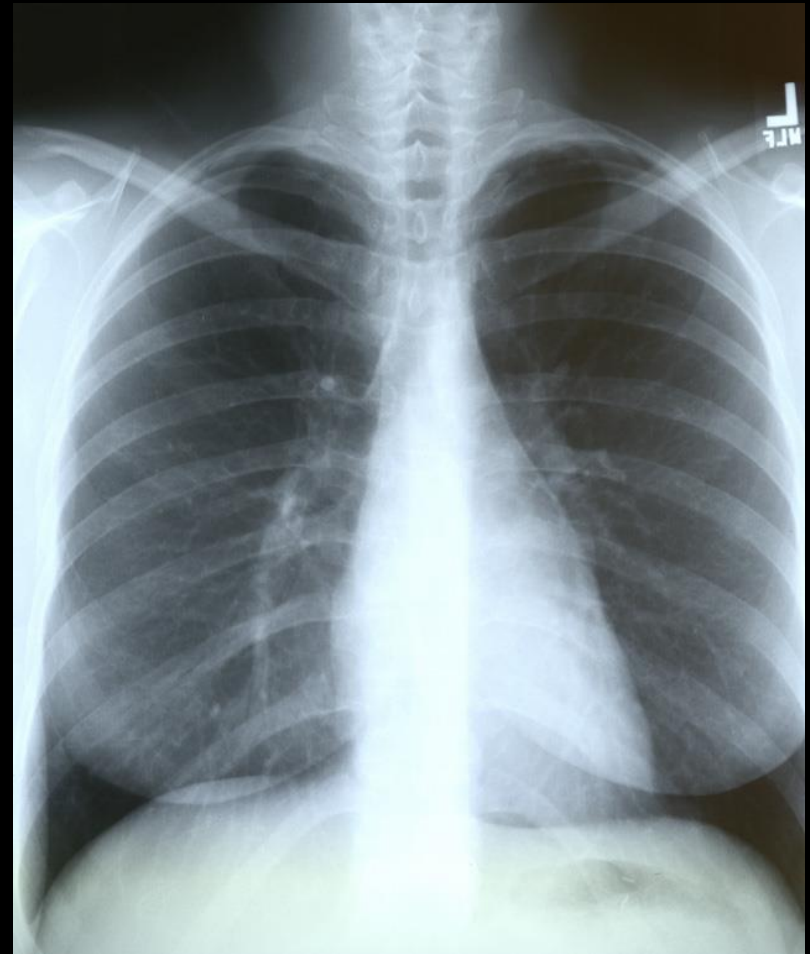
- **10. Mediastinum**
 - Check for
 - Cardiomegaly
 - Mediastinal and Hilar contours for increase densities or deformities



Findings

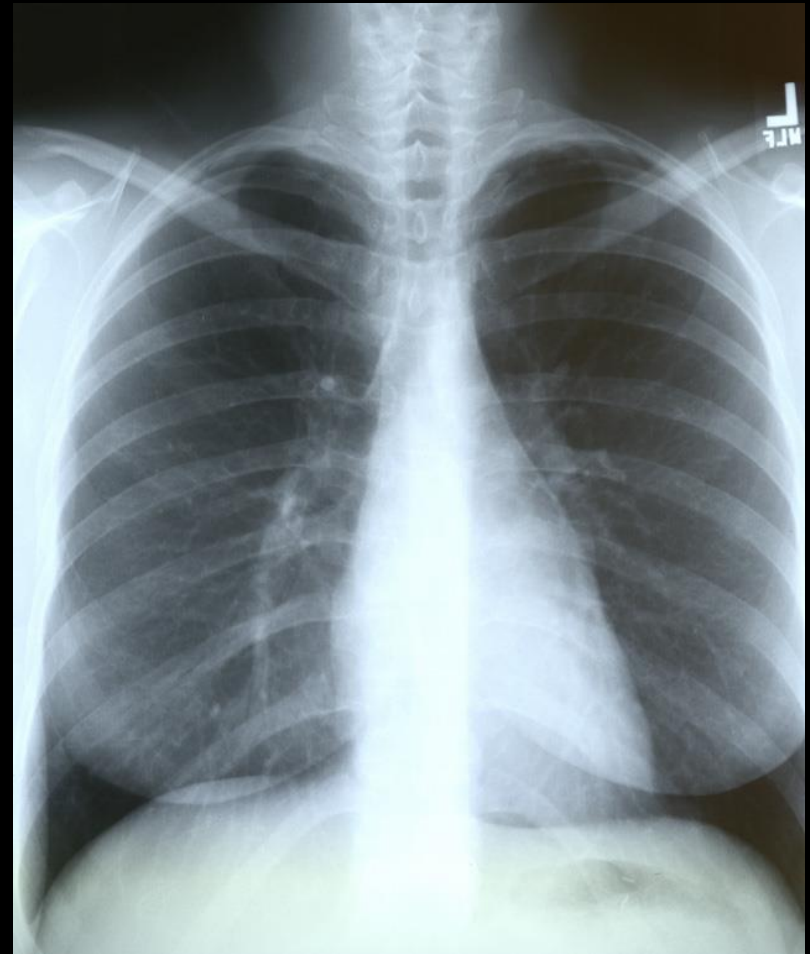
- **11. Diaphragms**

- Check sharpness of borders
- Right is normally higher than left
- Check for free air, gastric bubble, pleural effusions



Findings

- **12. The Lung Fields!**
 - To help you determine abnormalities and their location...
 - Use silhouettes of other thoracic structures
 - Use fissures



Lung Fields: Using Structures / Silhouettes

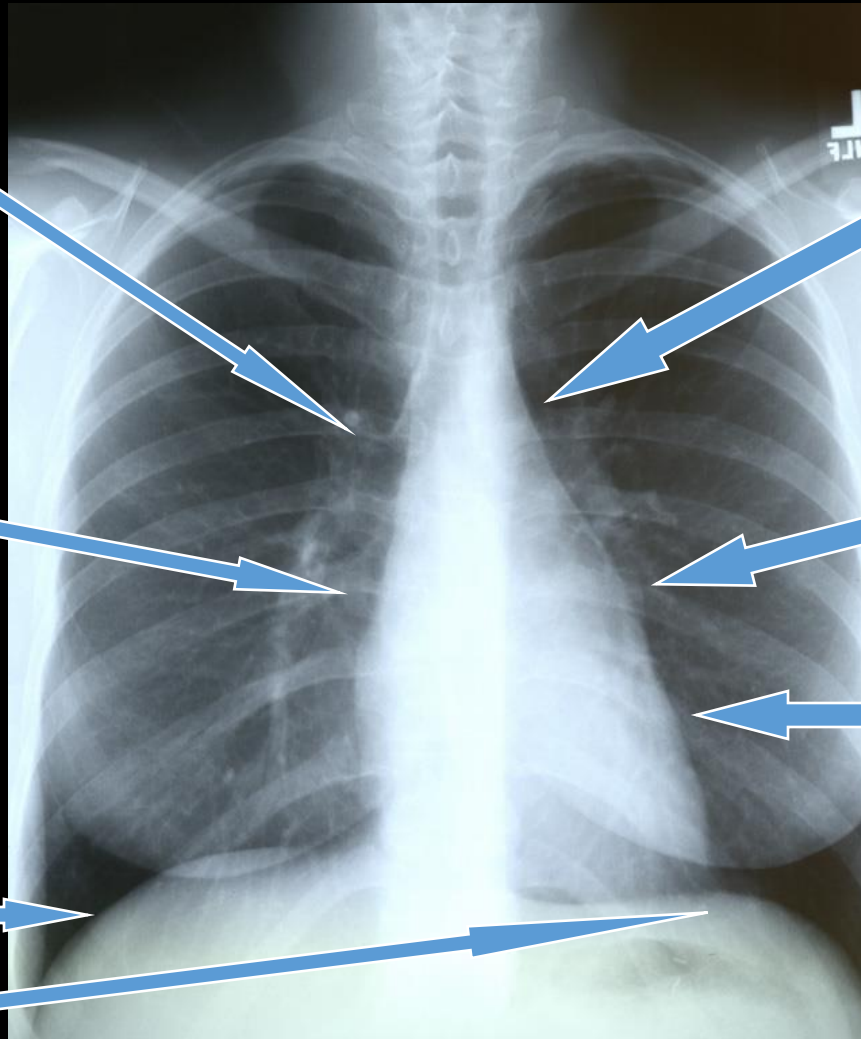
Silhouette / Structure	Contact with Lung
Upper right heart border/ascending aorta	Anterior segment of RUL
Right heart border	RML (medial)
Upper left heart border	Anterior segment of LUL
Left heart border	Lingula (anterior)
Aortic knob	Apical portion of LUL (posterior)
Anterior hemidiaphragms	Lower lobes (anterior)

Lung Fields: Using Structures / Silhouettes

Upper right heart border / ascending aorta (anterior RUL)

Right heart border (medial RML)

Anterior hemidiaphragms (anterior lower lobes)



Aortic knob (Apical portion of LUL)

Upper left heart border (anterior LUL)

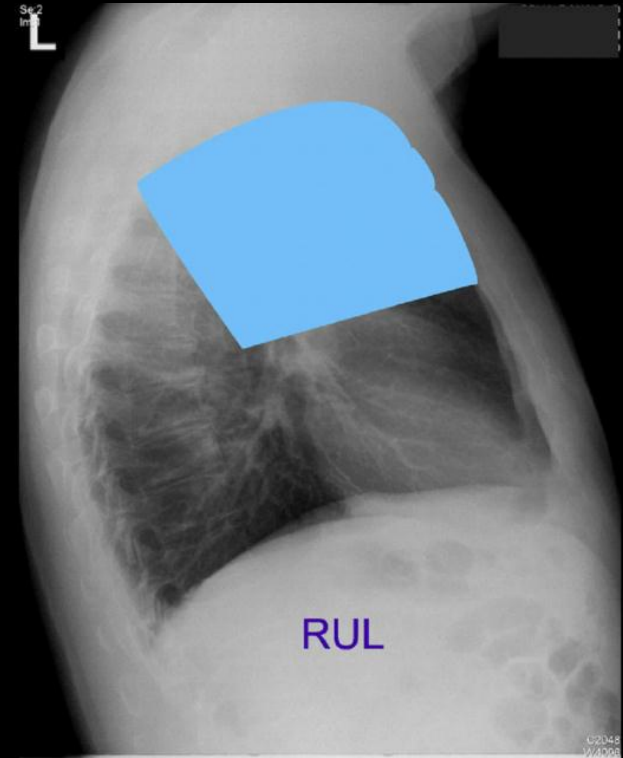
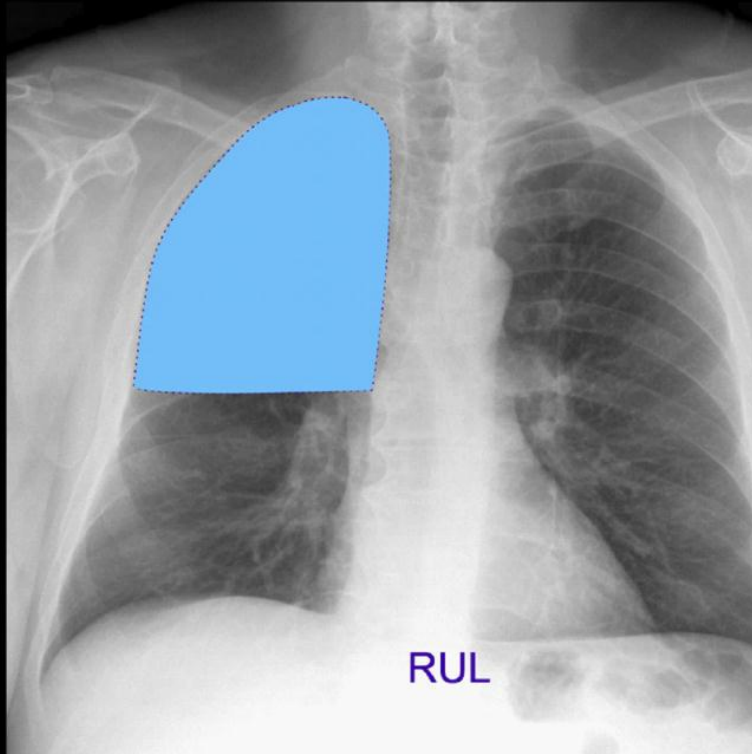
Left heart border (lingula; anterior)

Lung Fields: Fissures

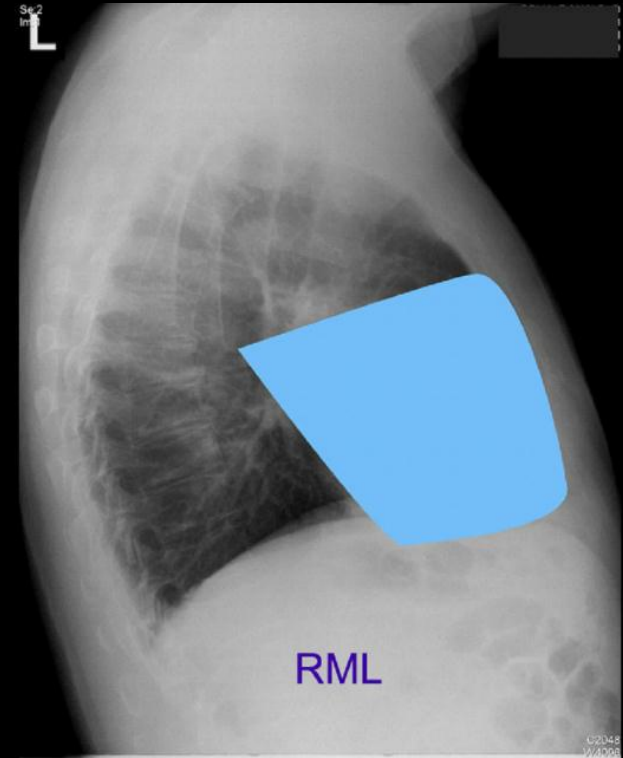
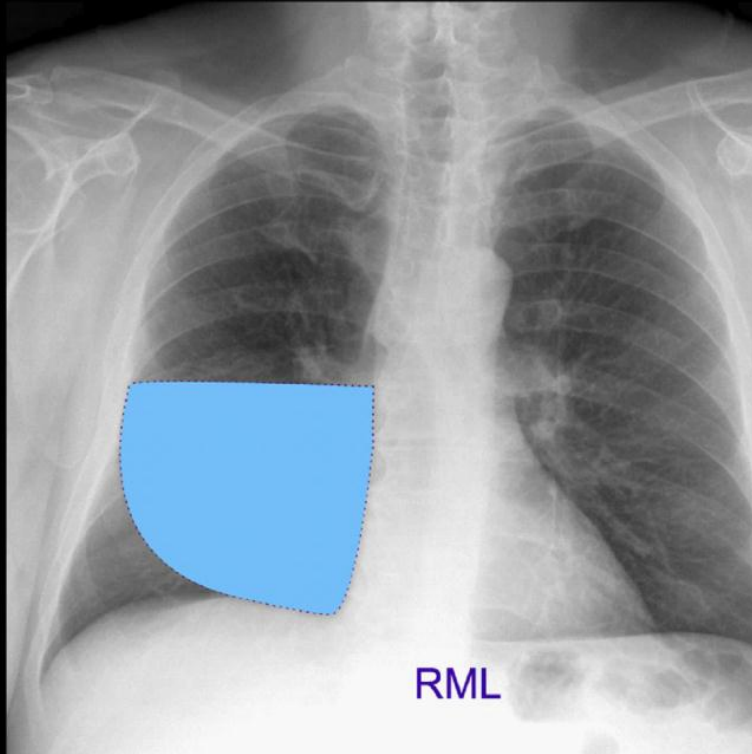
- The fissures can also help you to determine the boundaries of pathology

Major Oblique Fissure	Separates the LUL from the LLL
Right Major Fissure	Separates the RUL/RML from the RLL
Right Minor Fissure	Separates the RUL from the RML

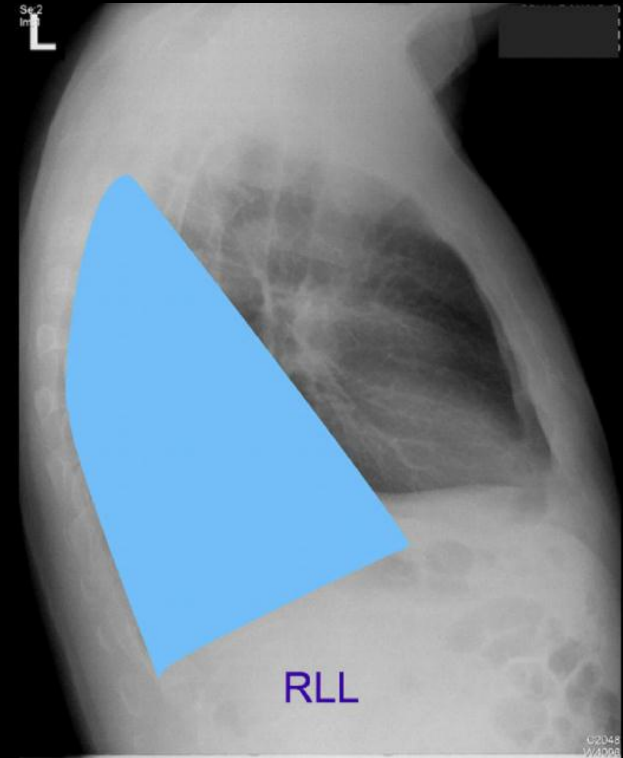
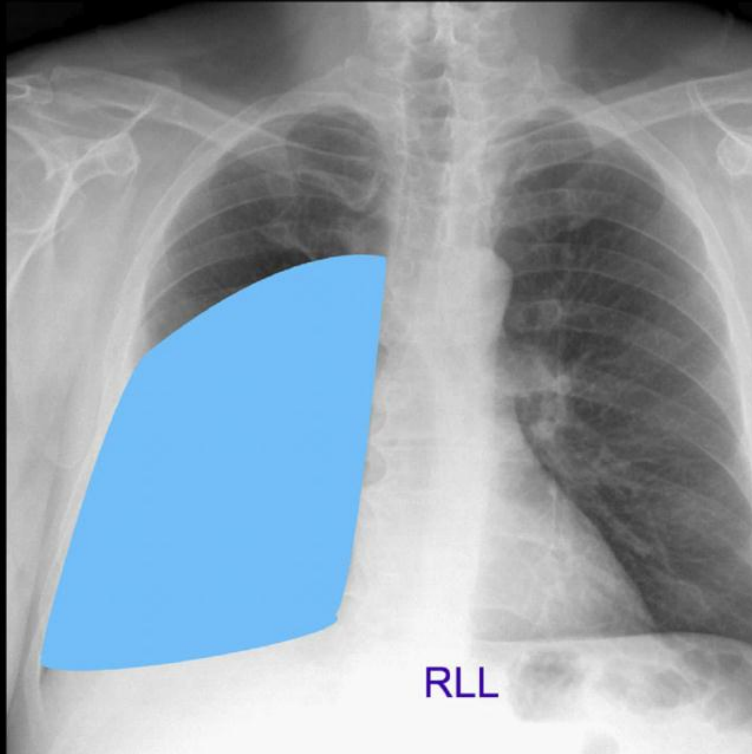
Lobes



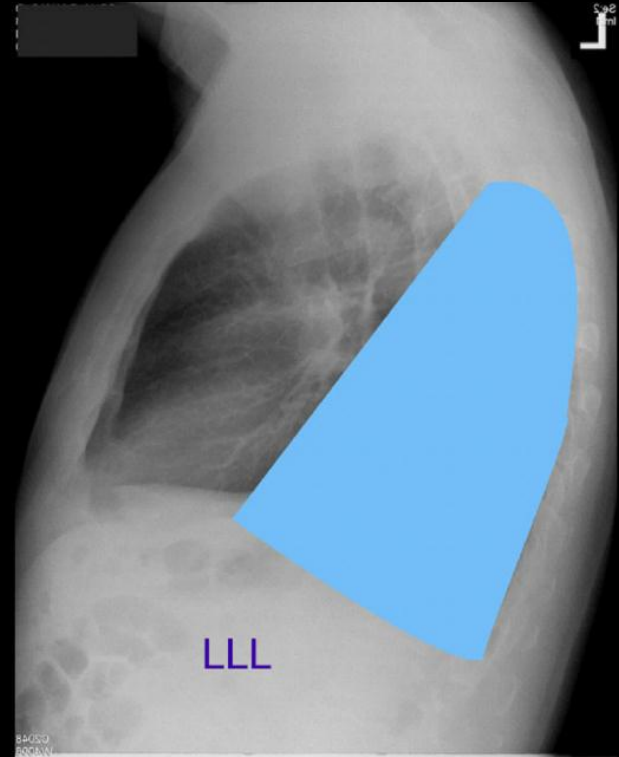
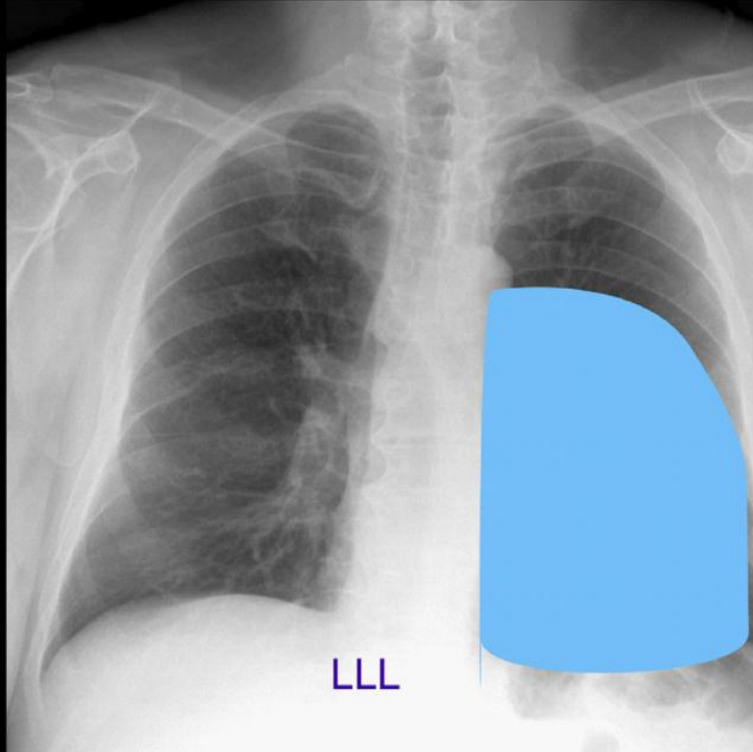
Lobes (continued)



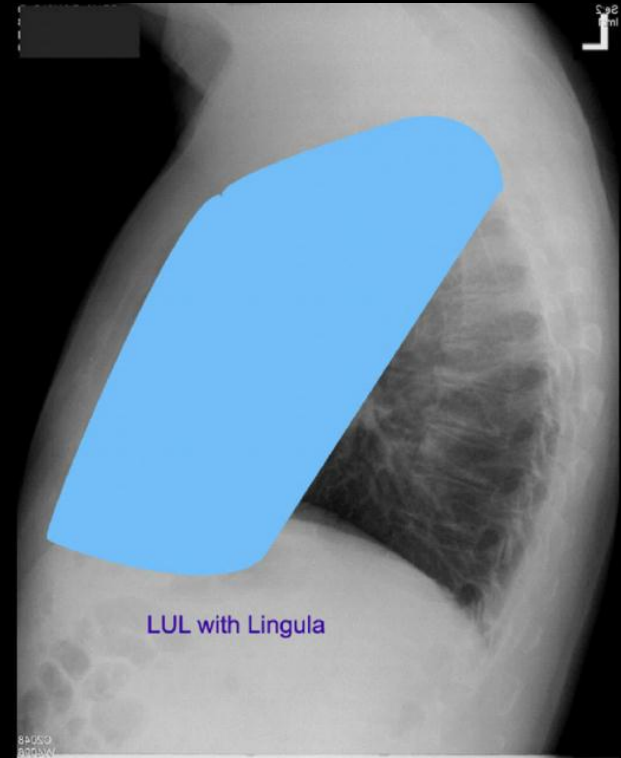
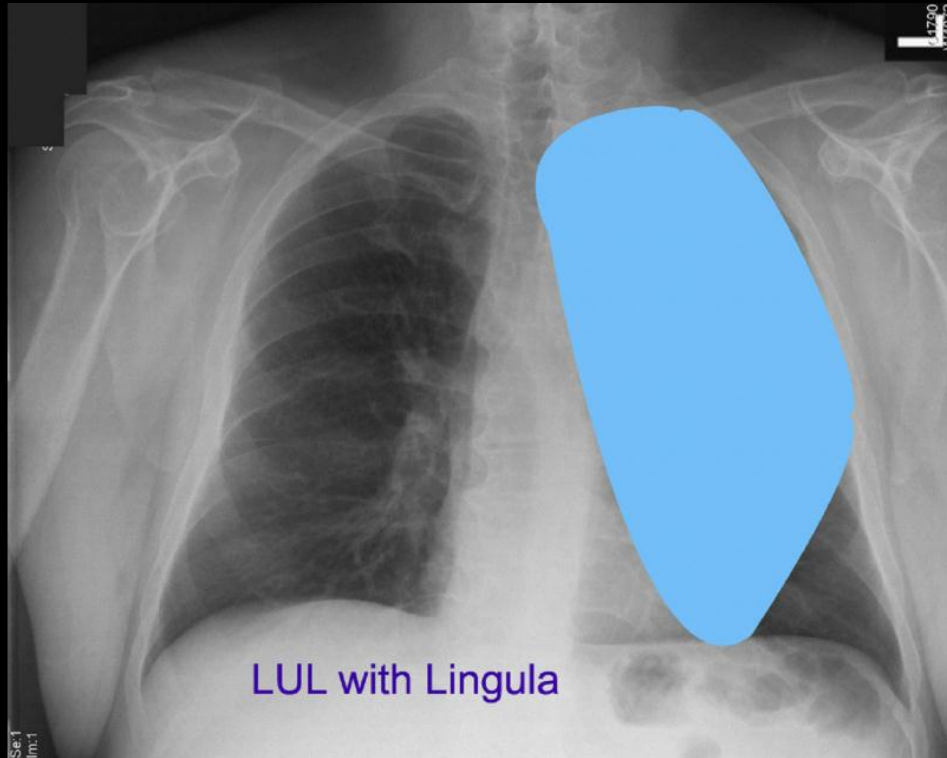
Lobes (continued)



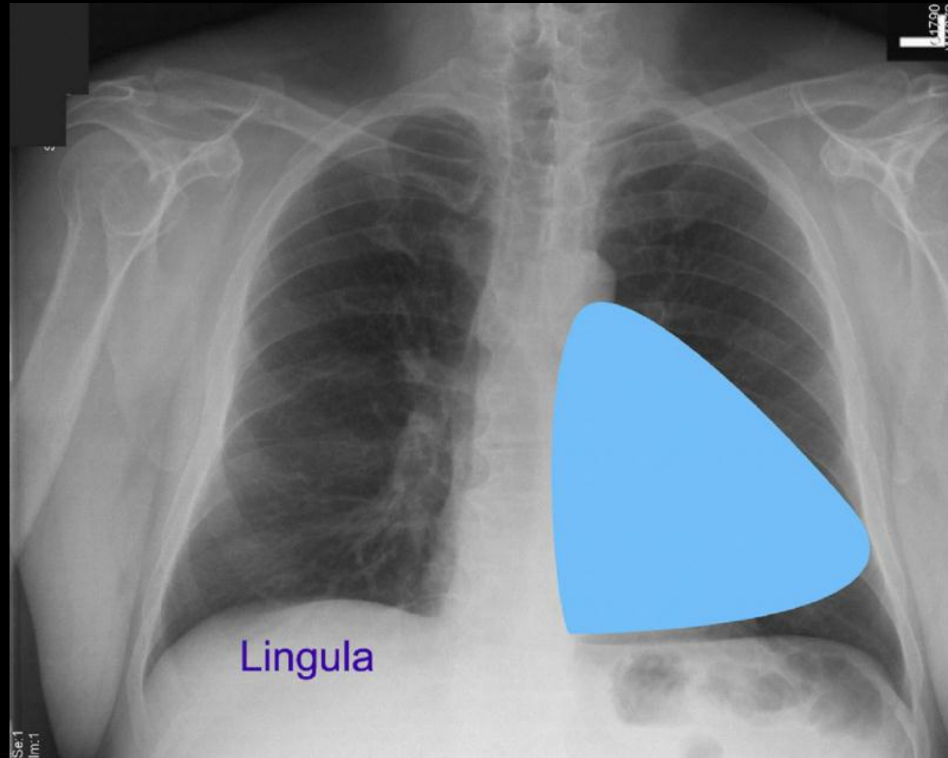
Lobes (continued)



Lobes (continued)



Lobes (continued)



Heart

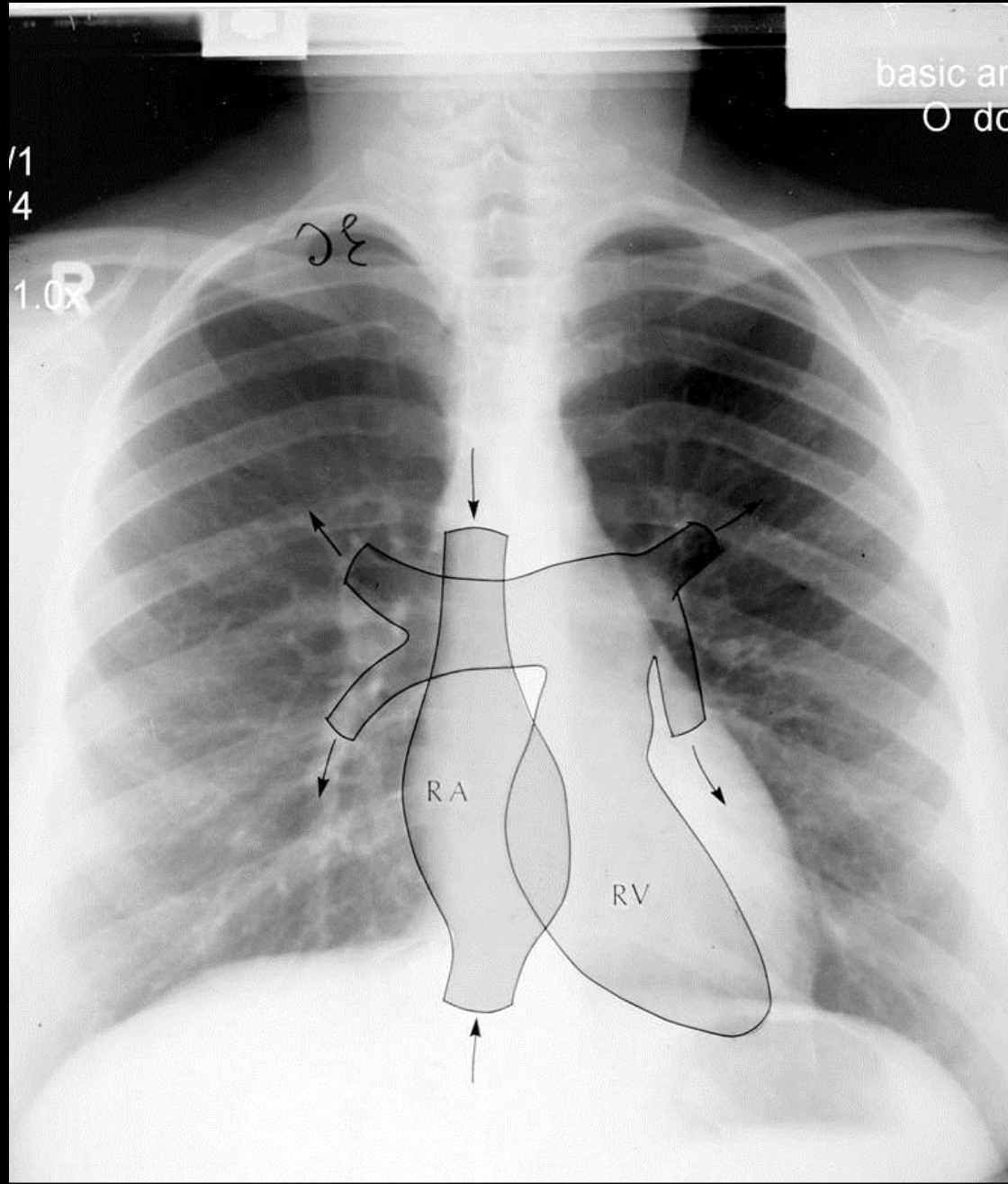
Right border: Edge of (r) Atrium

3. Left border: (l) Ventricle + Atrium

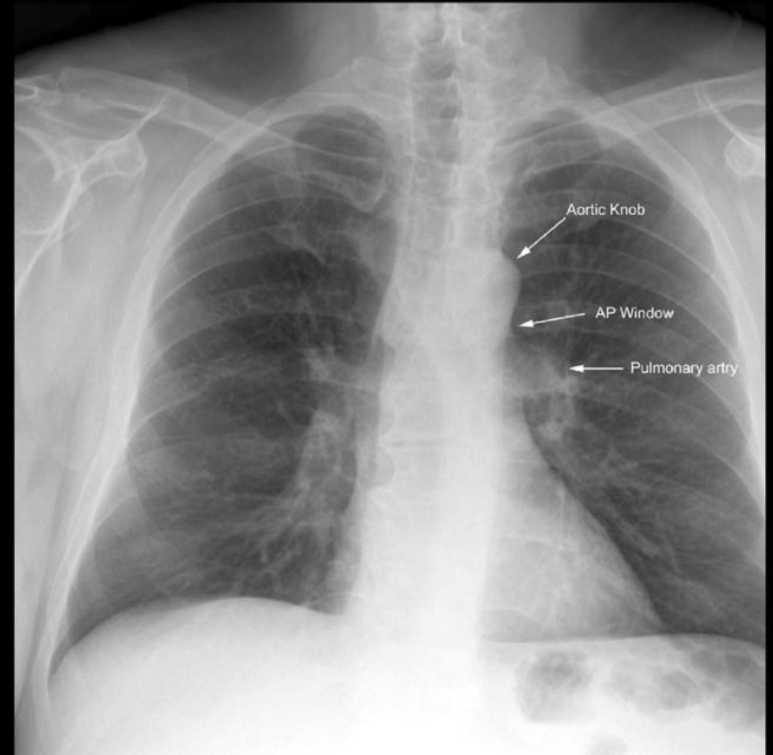
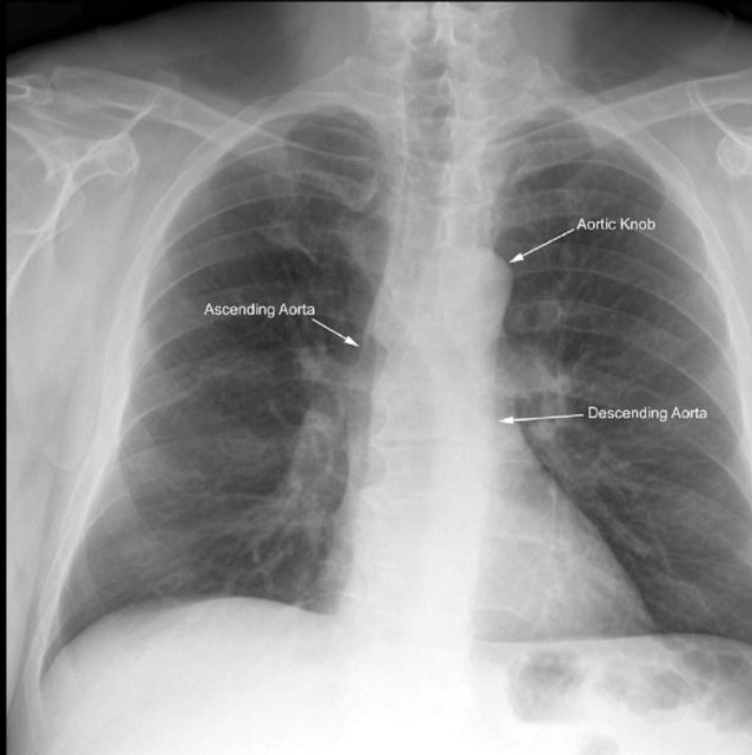
4. Posterior border: Reft Ventricle

5. Anterior border: Right Ventricle

Heart (continued)



Heart (continued)



Hilum

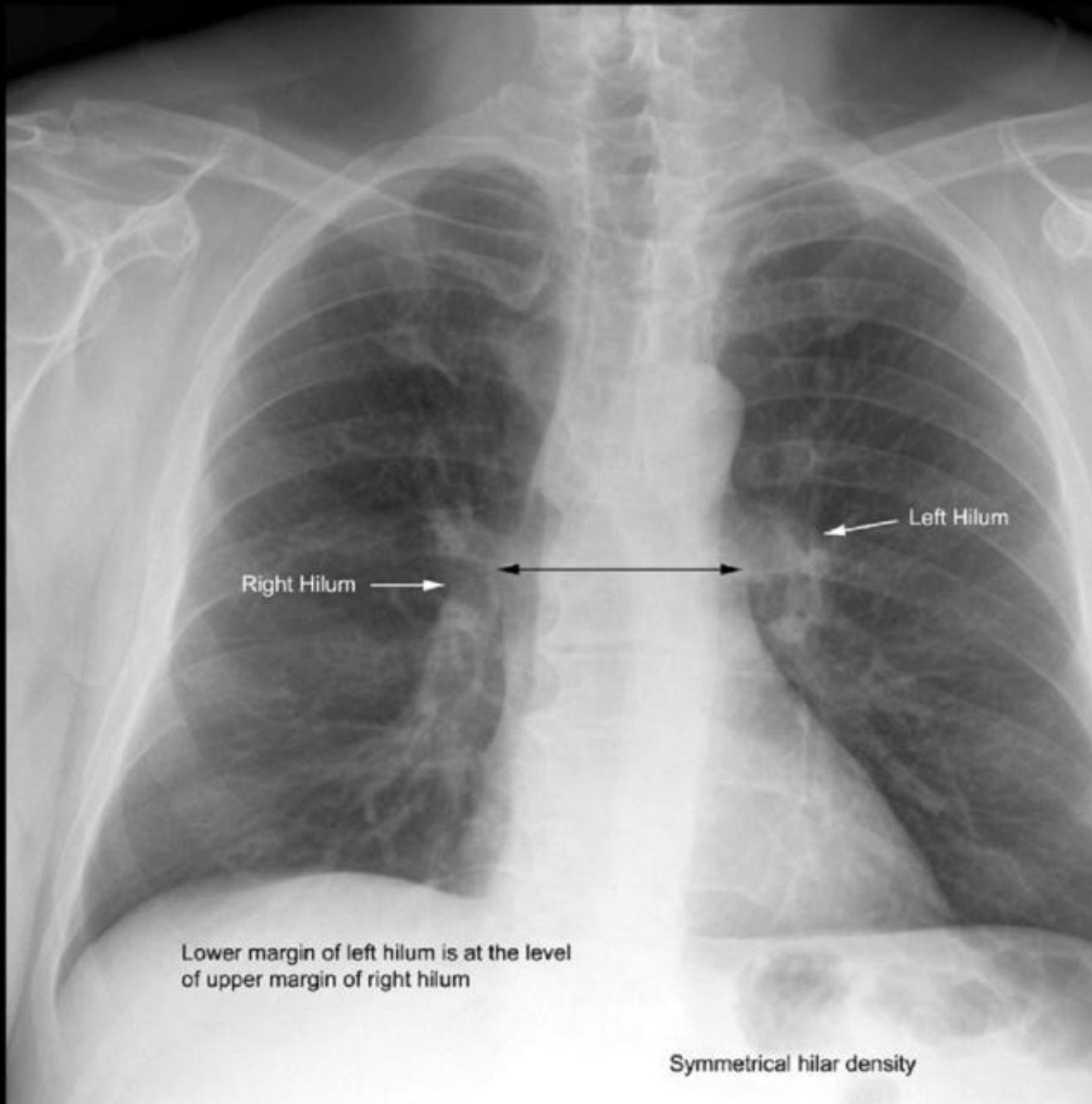
Made of:

1. Pulmonary Art.+Veins
2. The Bronchi

Left Hilum higher (max 1-2,5 cm)

Identical: size, shape, density

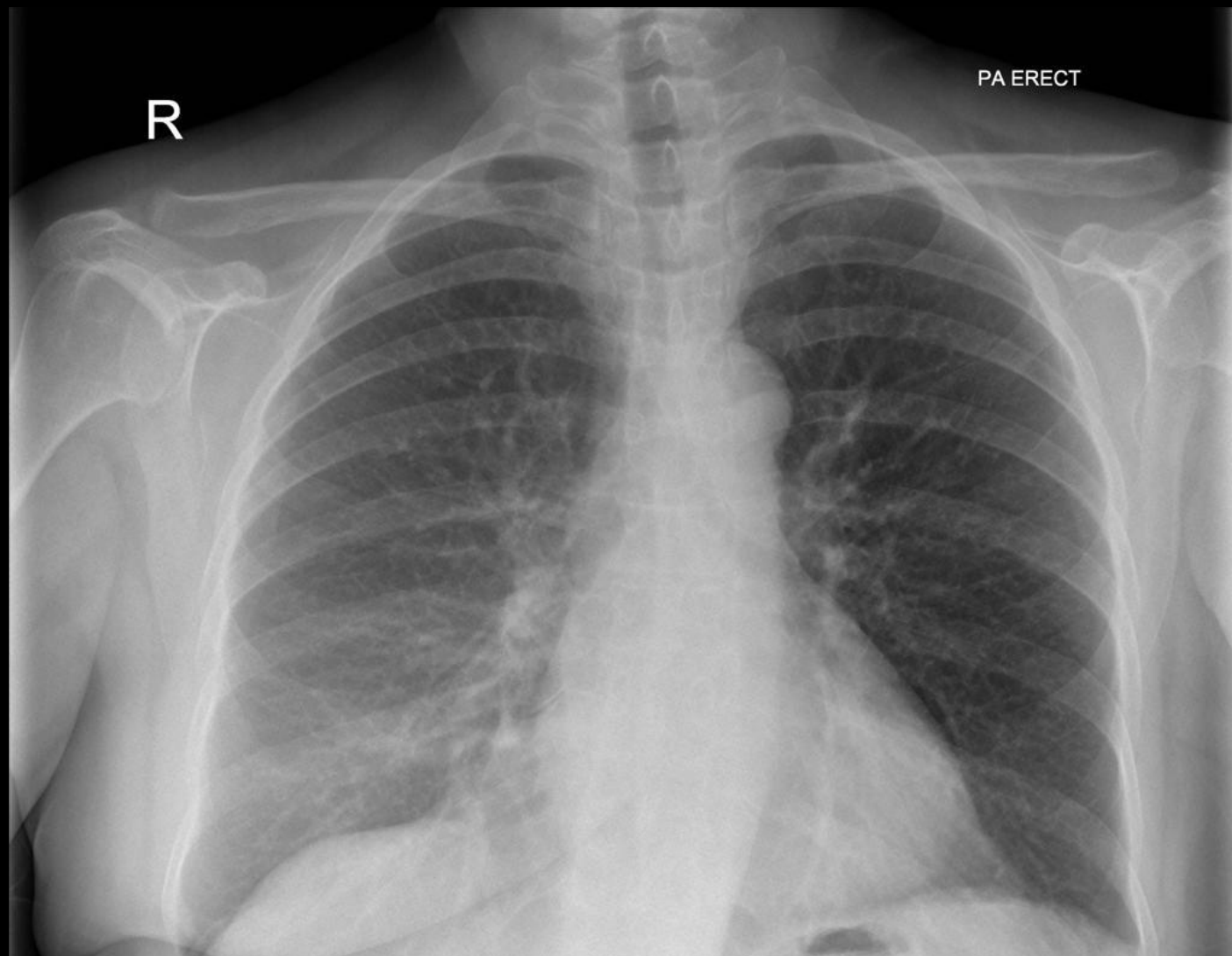
Hilum



Cases

be systematic

Rt Mastectomy

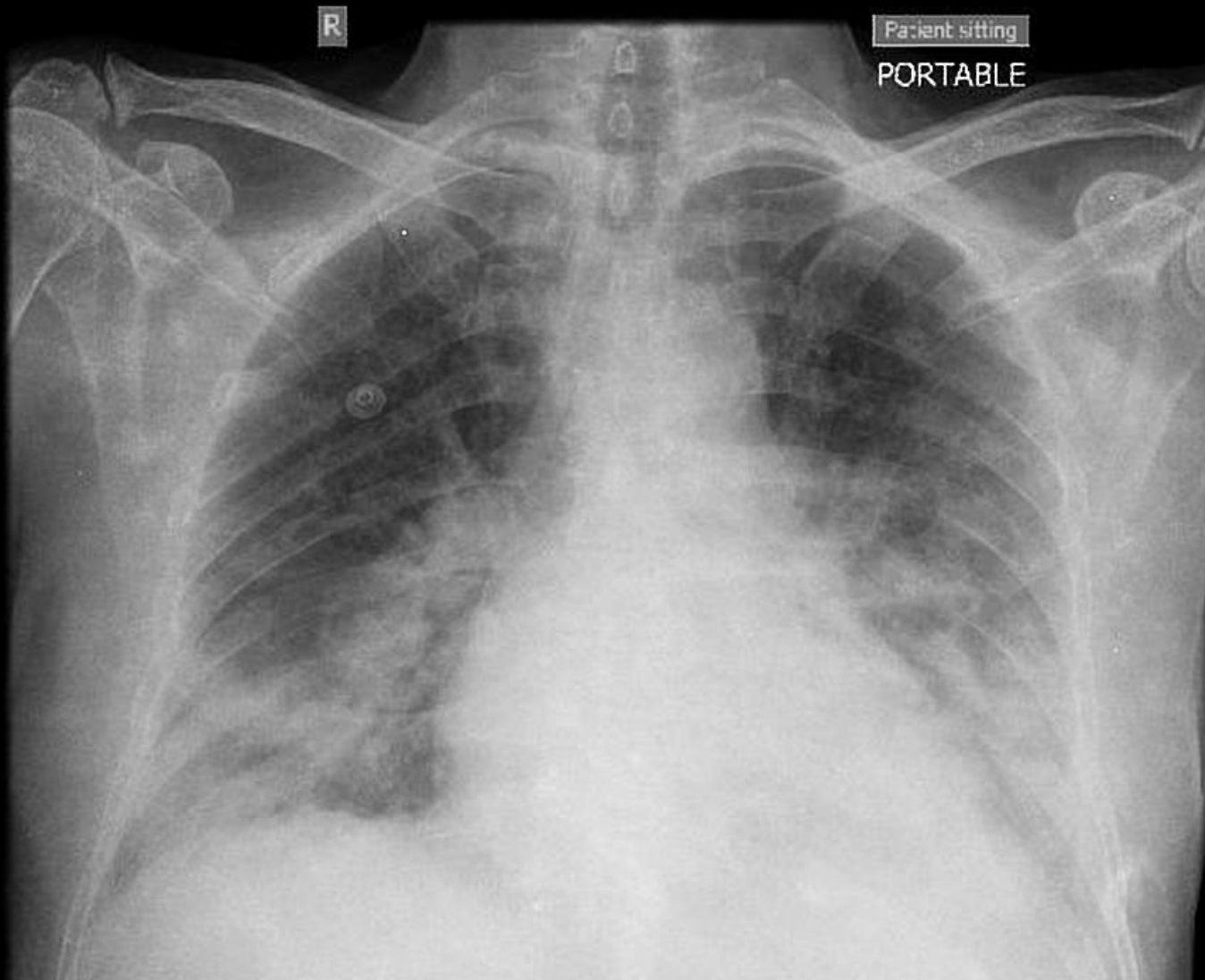


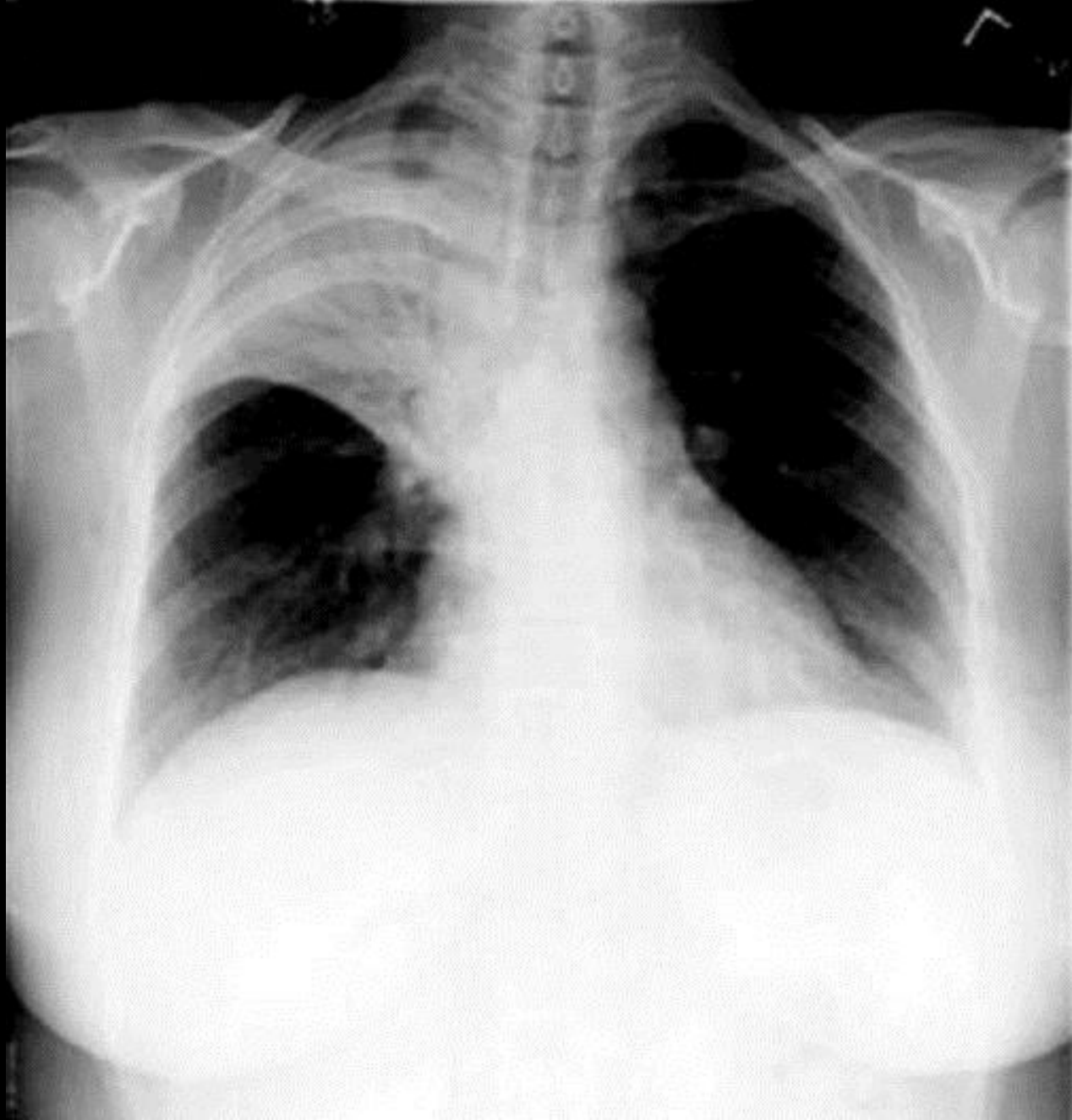
- Rt

- Fever
- Cough

- Breathlessness
- Hypoxia
- Spo2 92% ON HFNC 50L/min 70% O2

COVID 19 Pneumonia





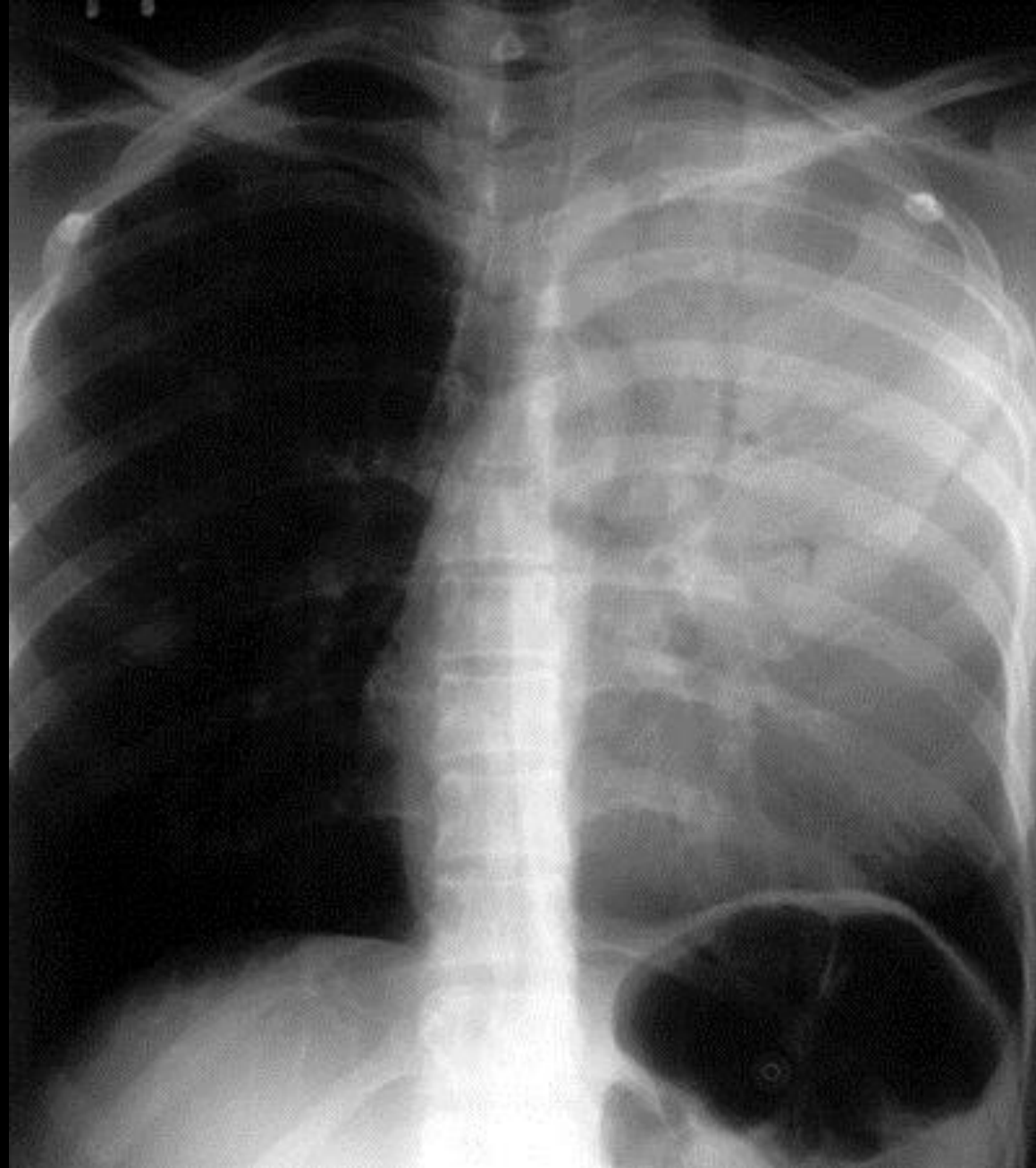
RUL pneumonia



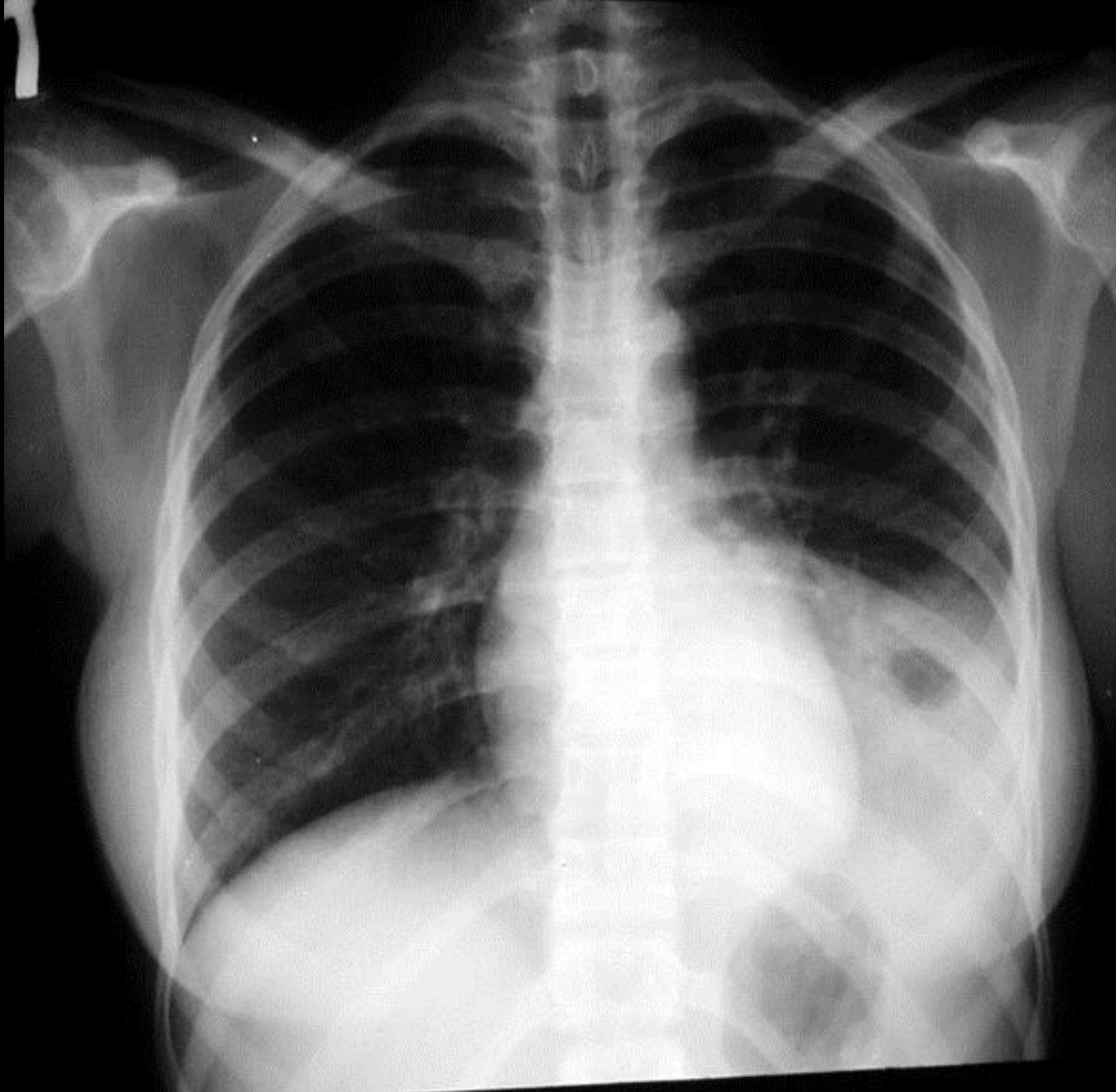
RML pneumonia



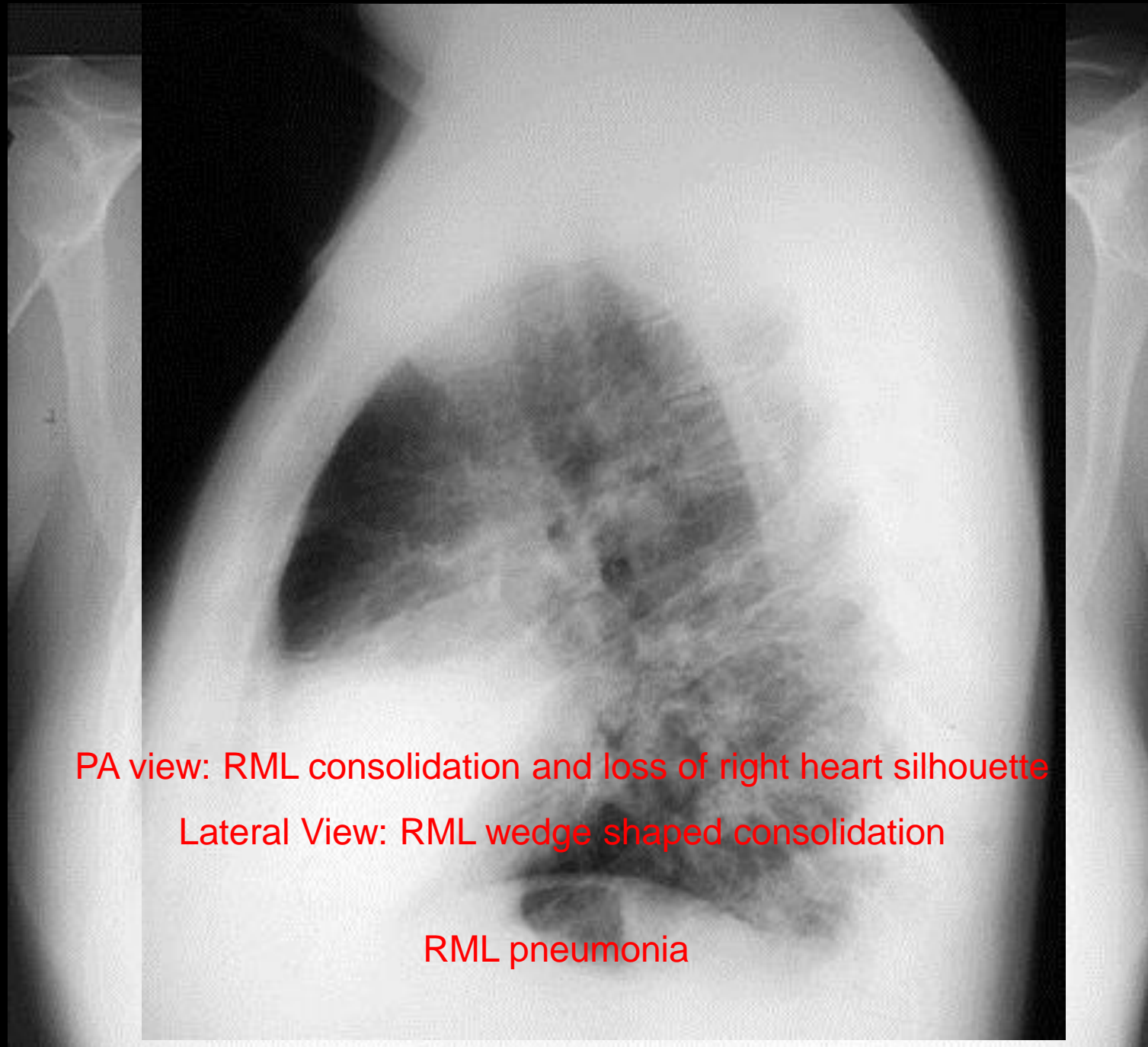
RLL pneumonia



LUL pneumonia



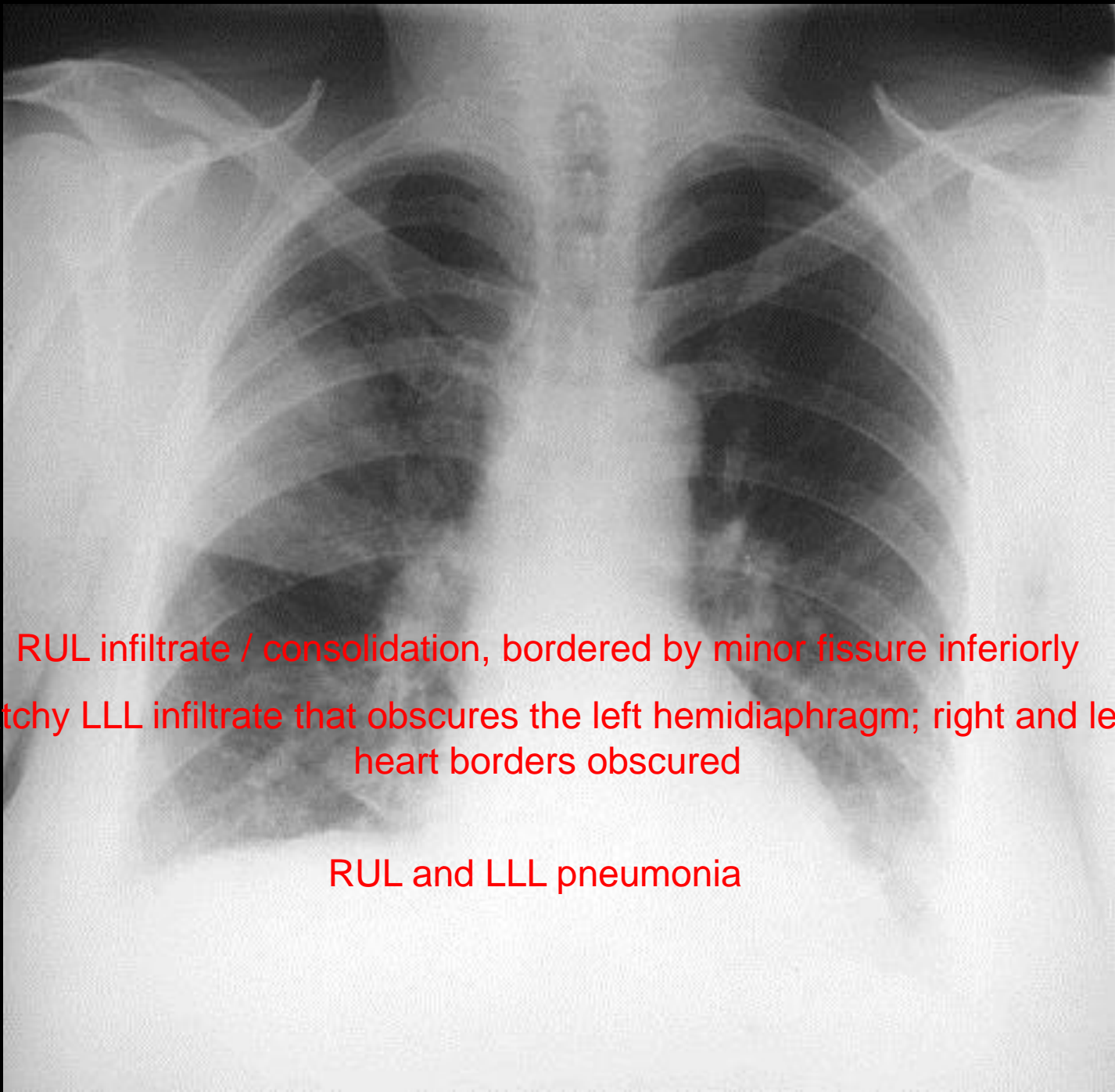
LLL pneumonia



PA view: RML consolidation and loss of right heart silhouette

Lateral View: RML wedge shaped consolidation

RML pneumonia

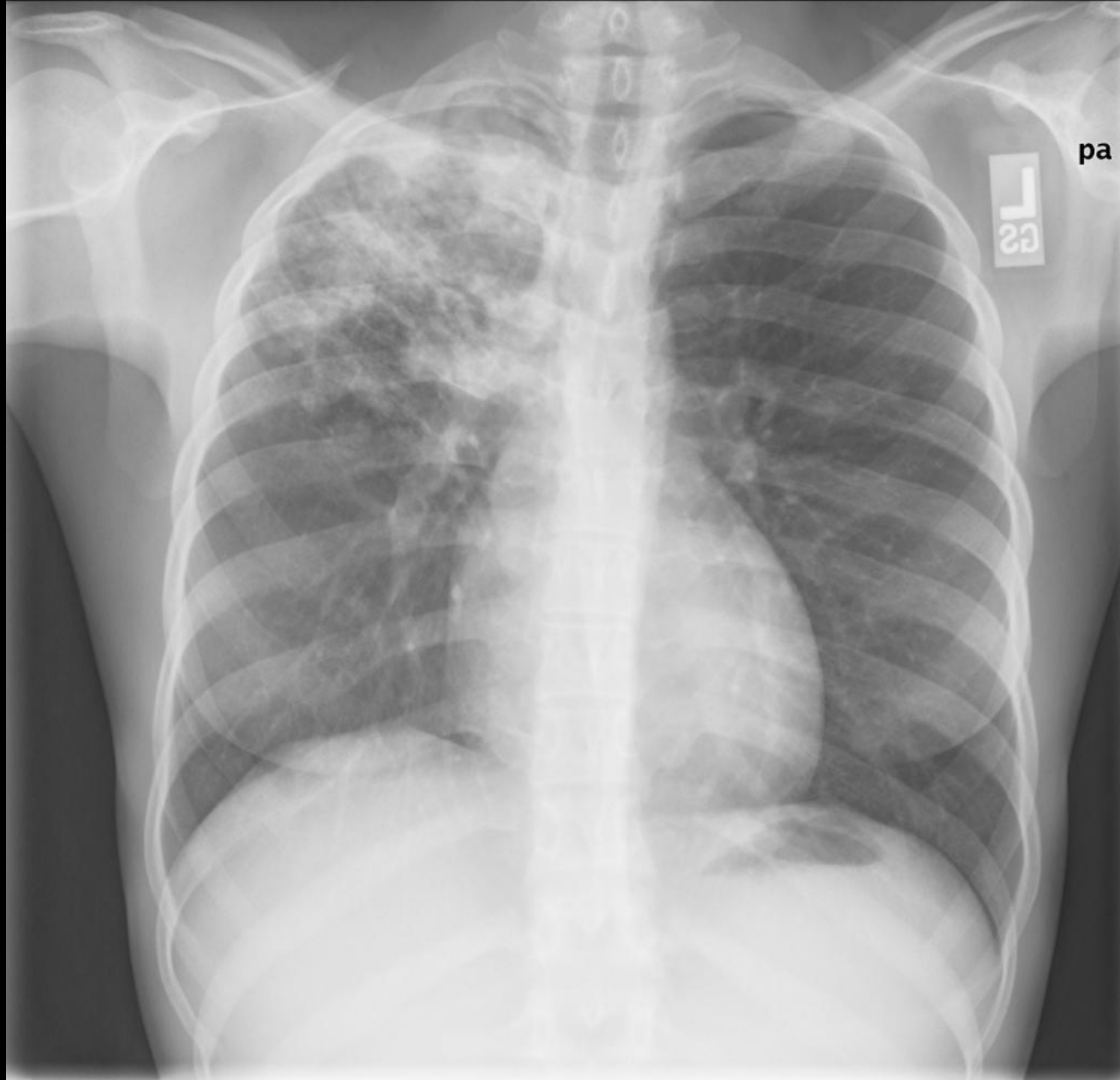


RUL infiltrate / consolidation, bordered by minor fissure inferiorly

Patchy LLL infiltrate that obscures the left hemidiaphragm; right and left heart borders obscured

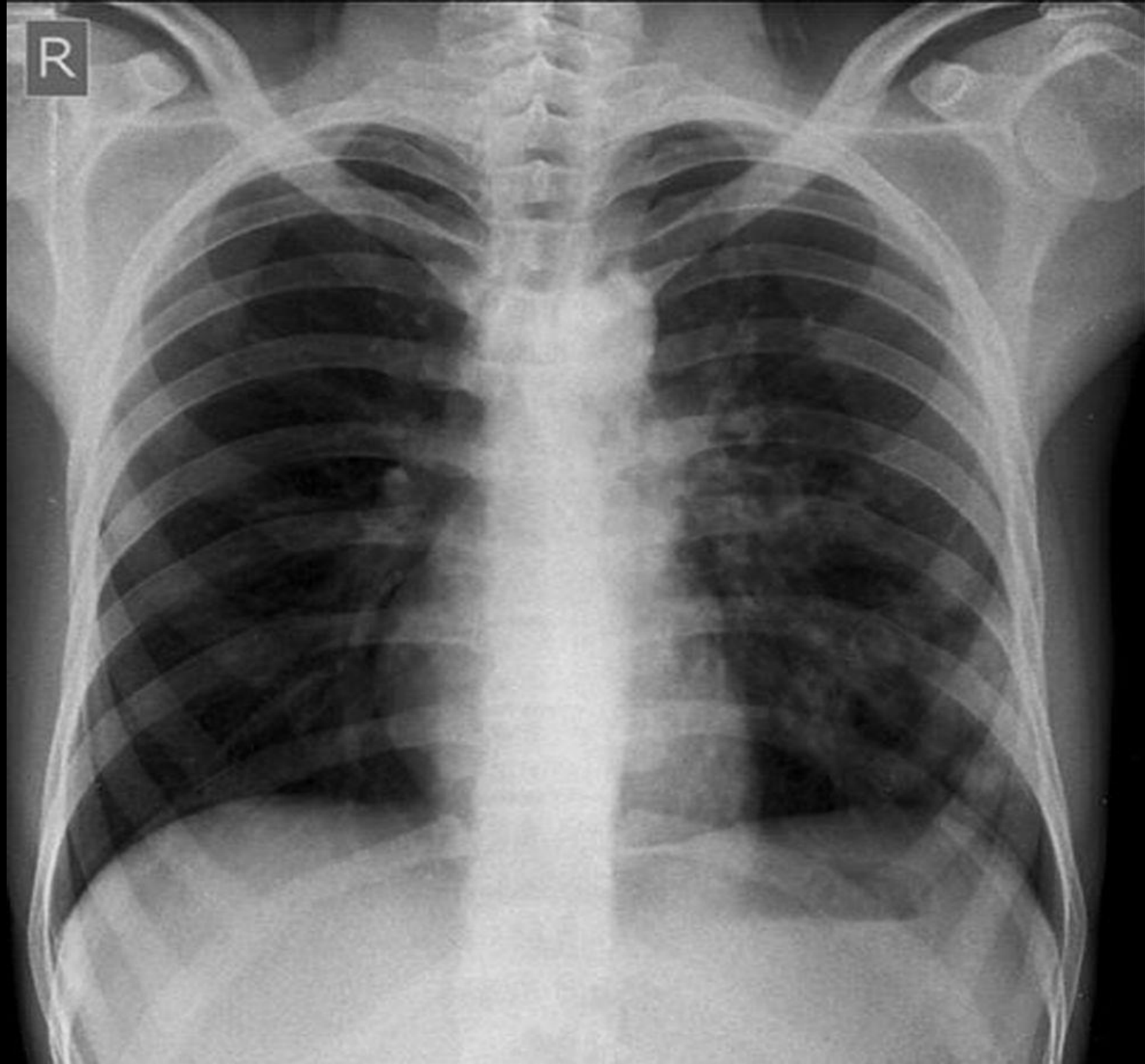
RUL and LLL pneumonia

Tuberculosis Next 4 slides

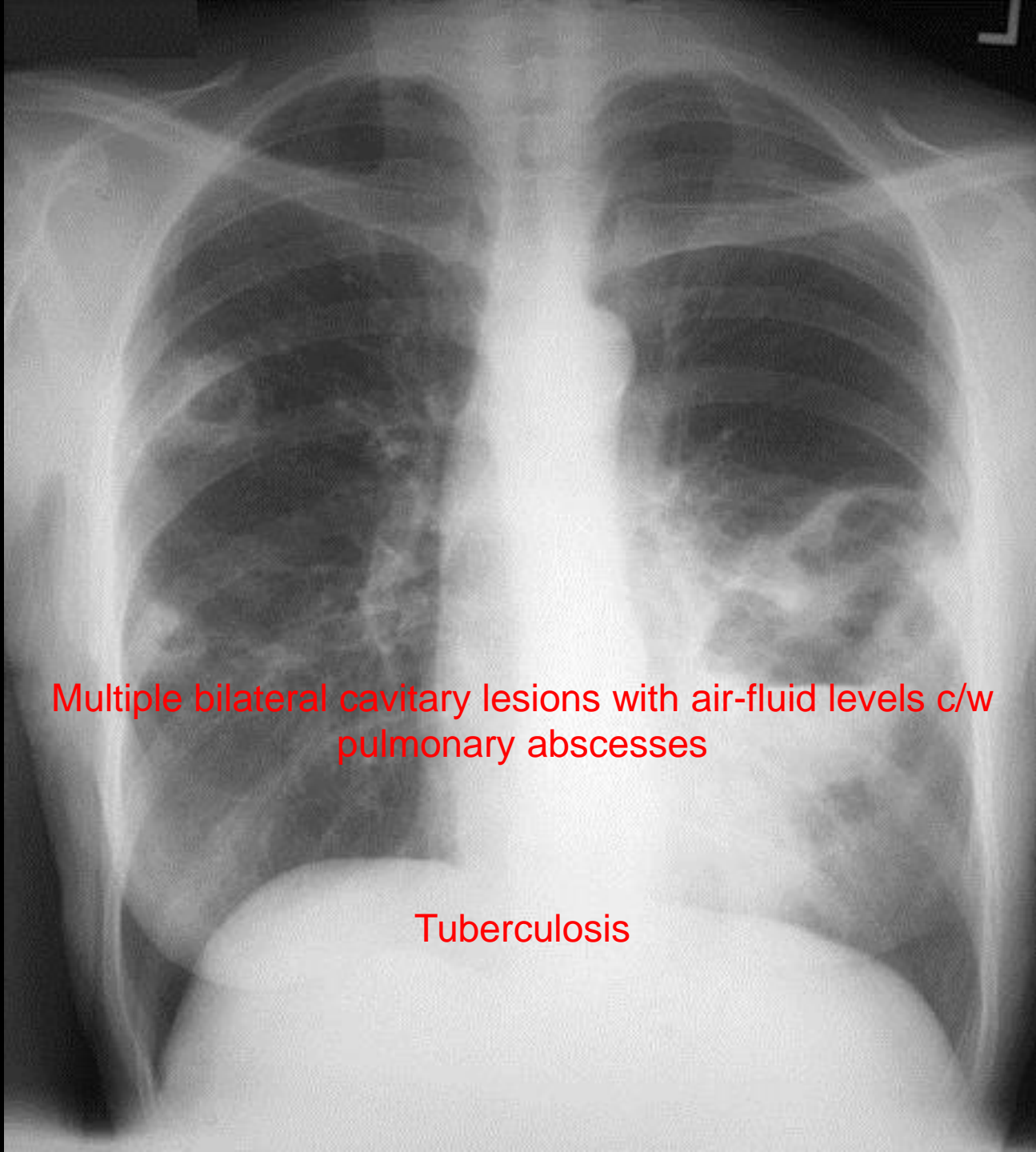


pa

L
23







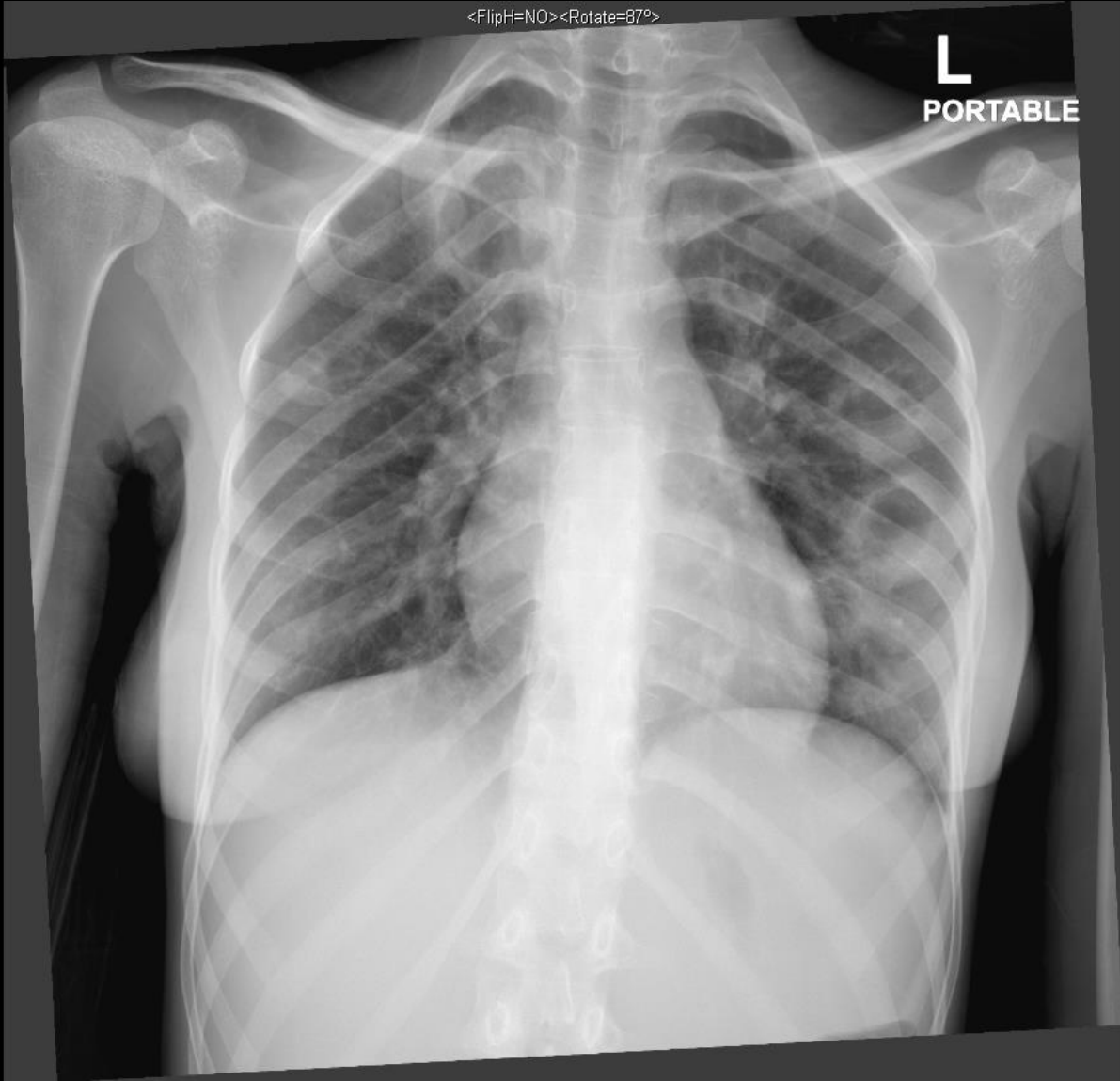
Multiple bilateral cavitary lesions with air-fluid levels c/w pulmonary abscesses

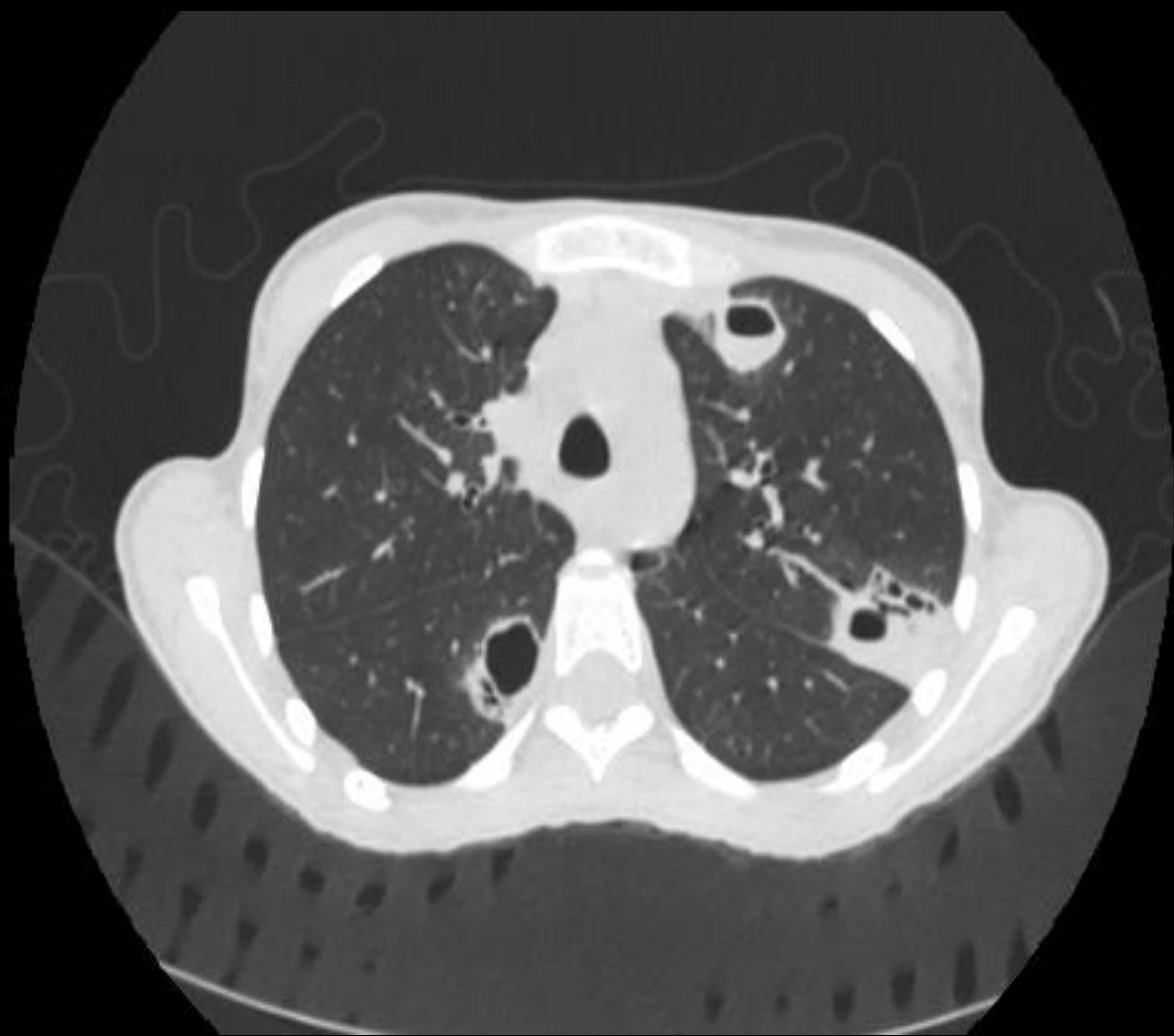
Tuberculosis

Multiple cavitating
lesions

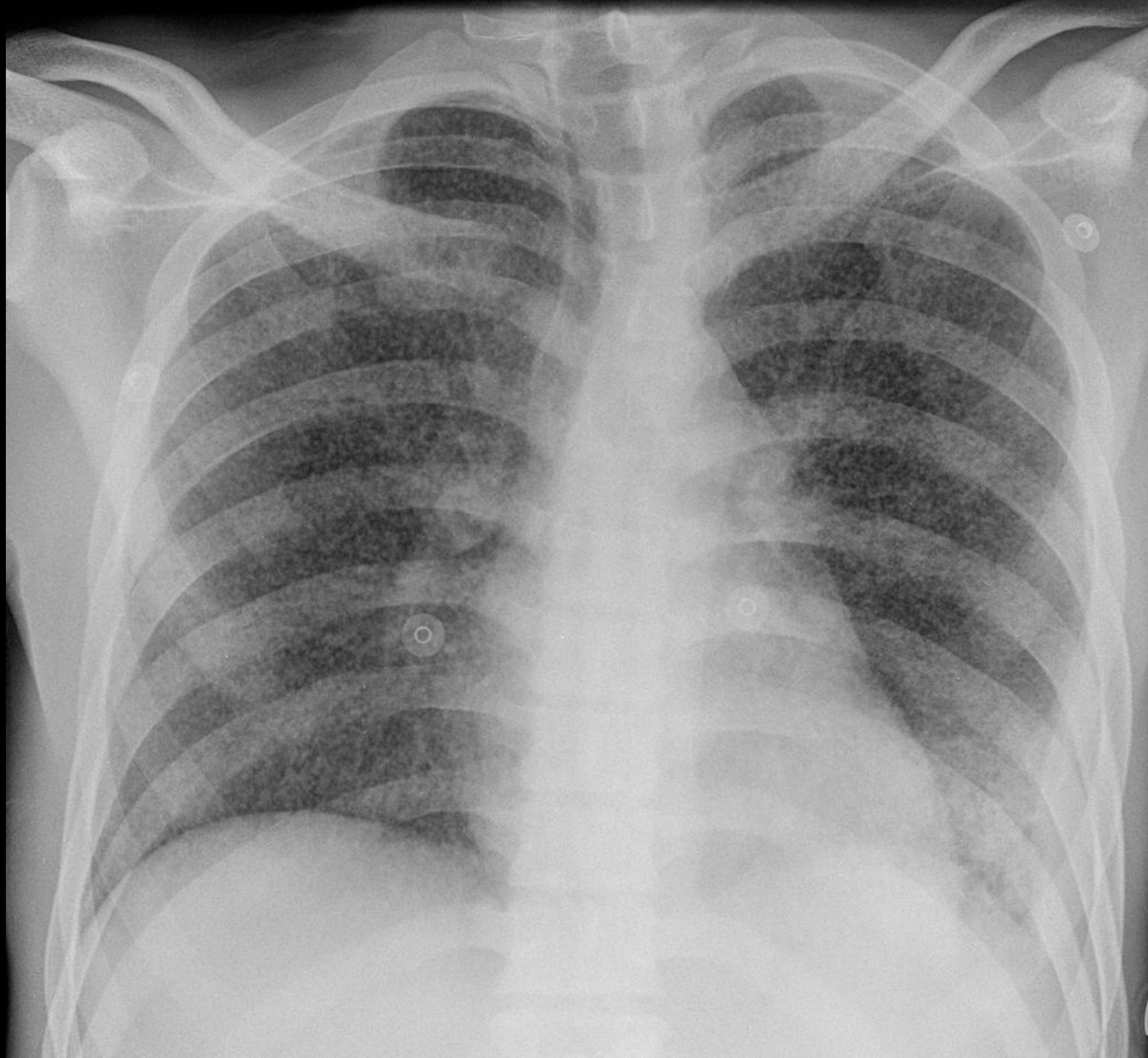
<FlipH=NO><Rotate=87°>

L
PORTABLE





Miliary mottling / Miliary TB



الدخن



R

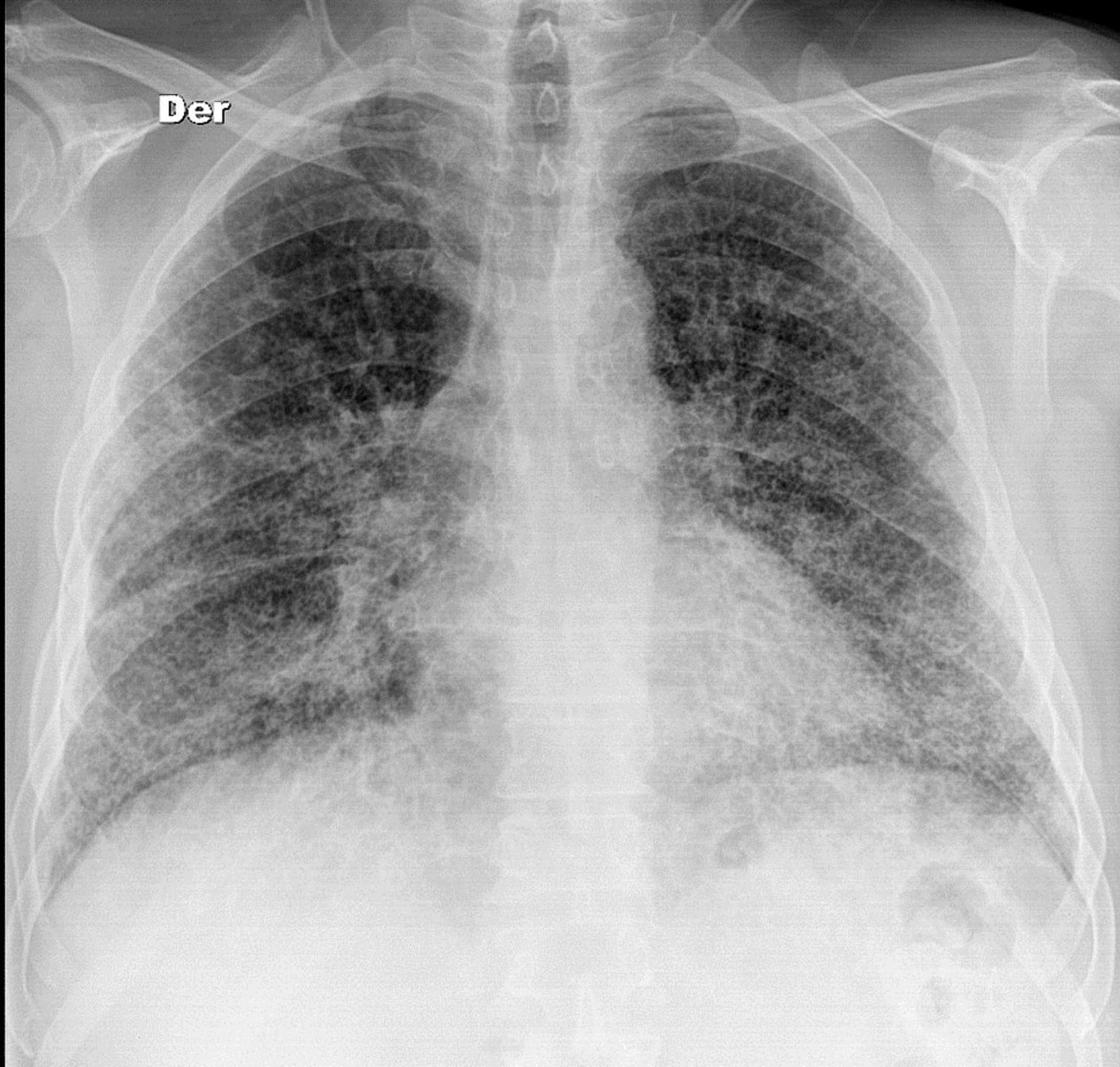


P

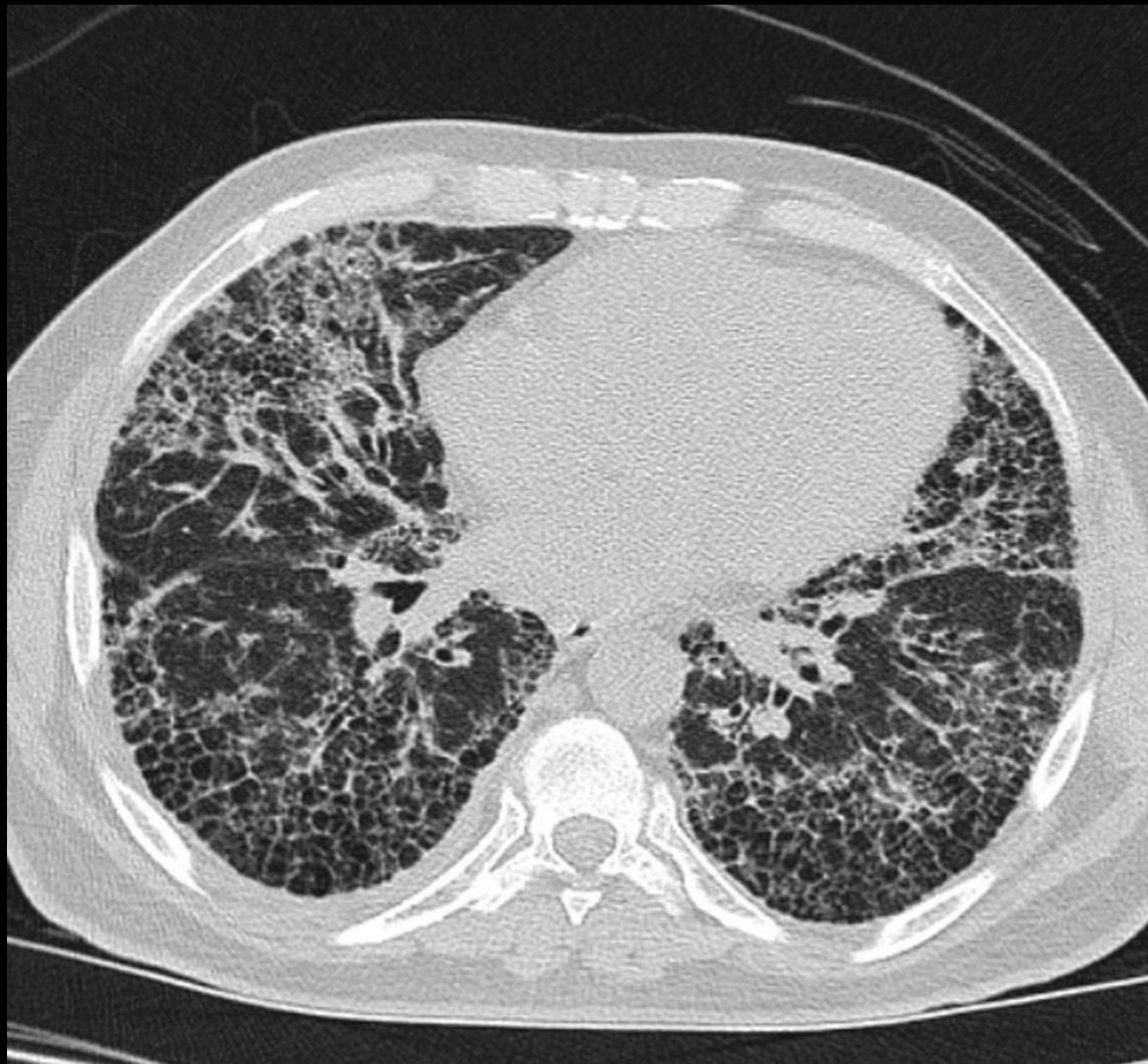
ILD

- The following 2 slides Reticulondular changes



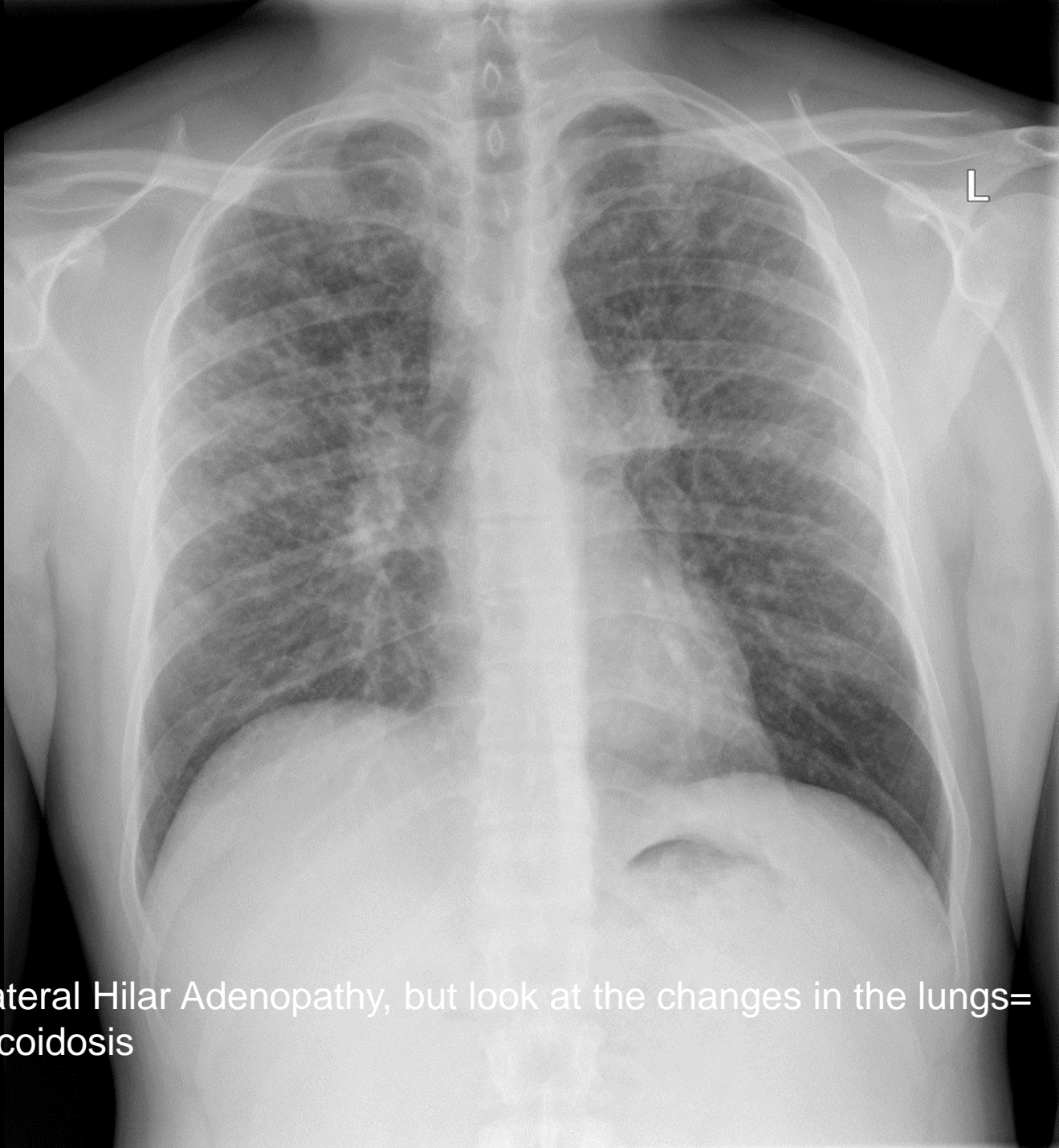


Der





Hilar Lymphadenopathy - BL

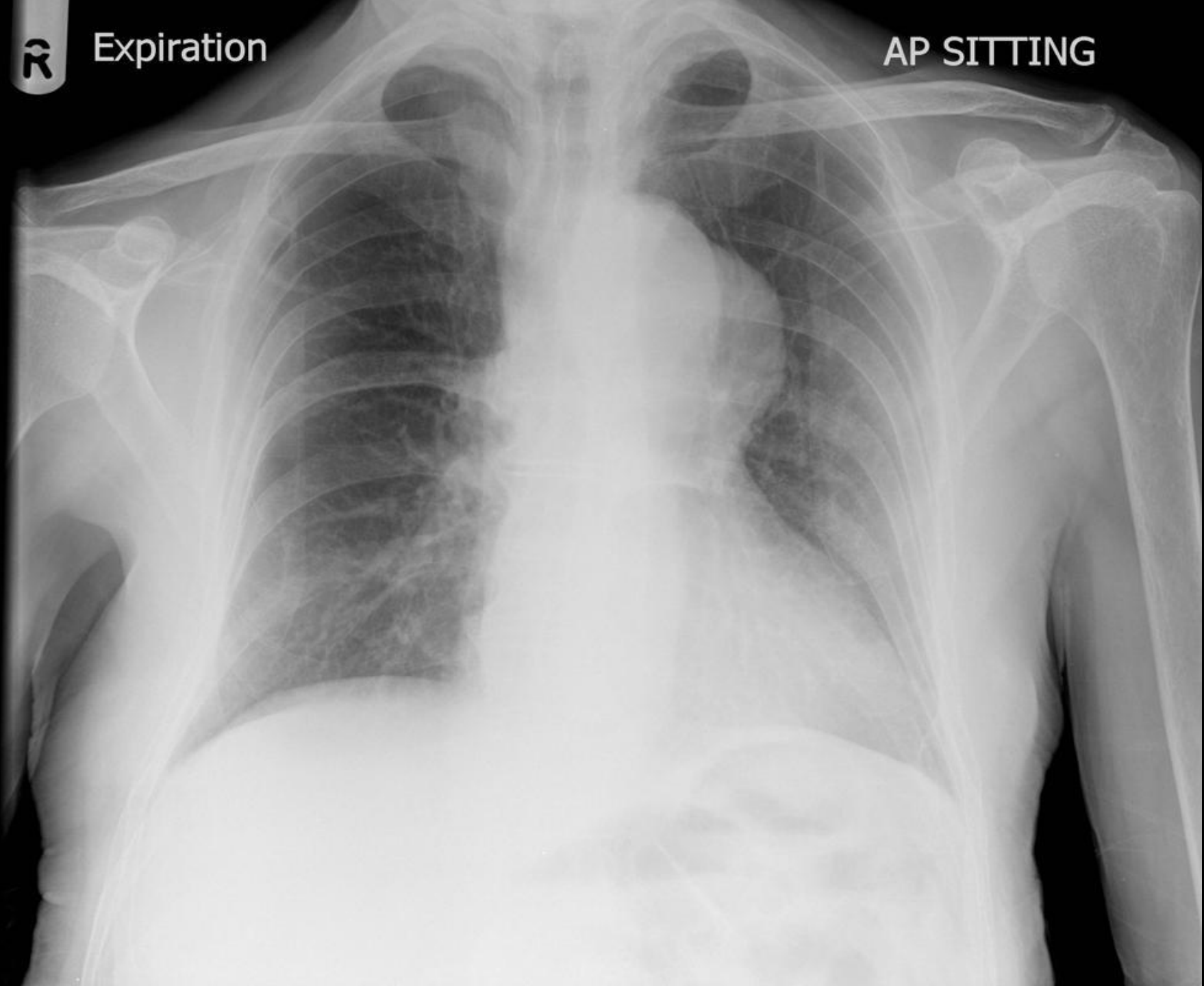


Bilateral Hilar Adenopathy, but look at the changes in the lungs=
sarcoidosis

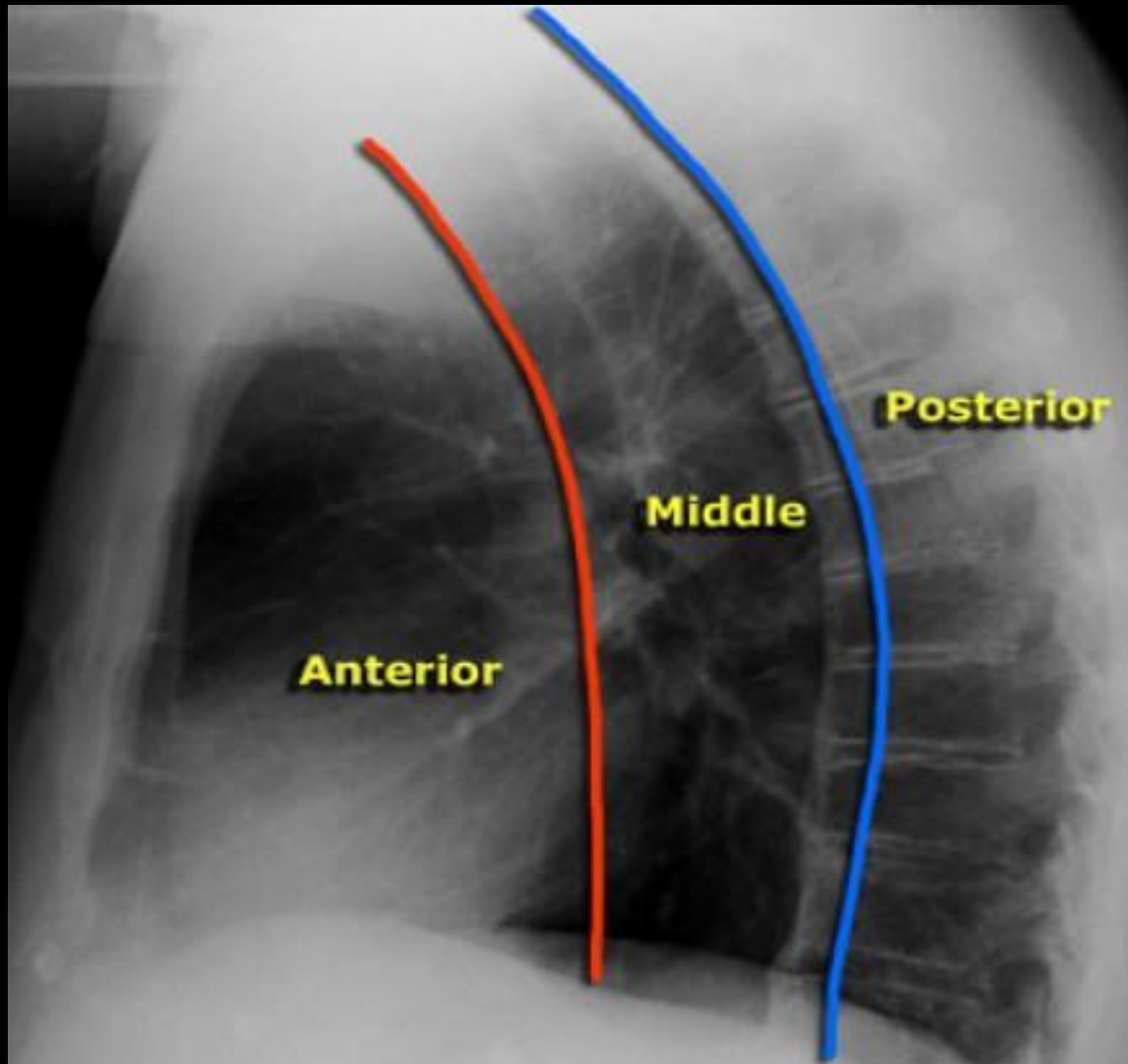
R

Expiration

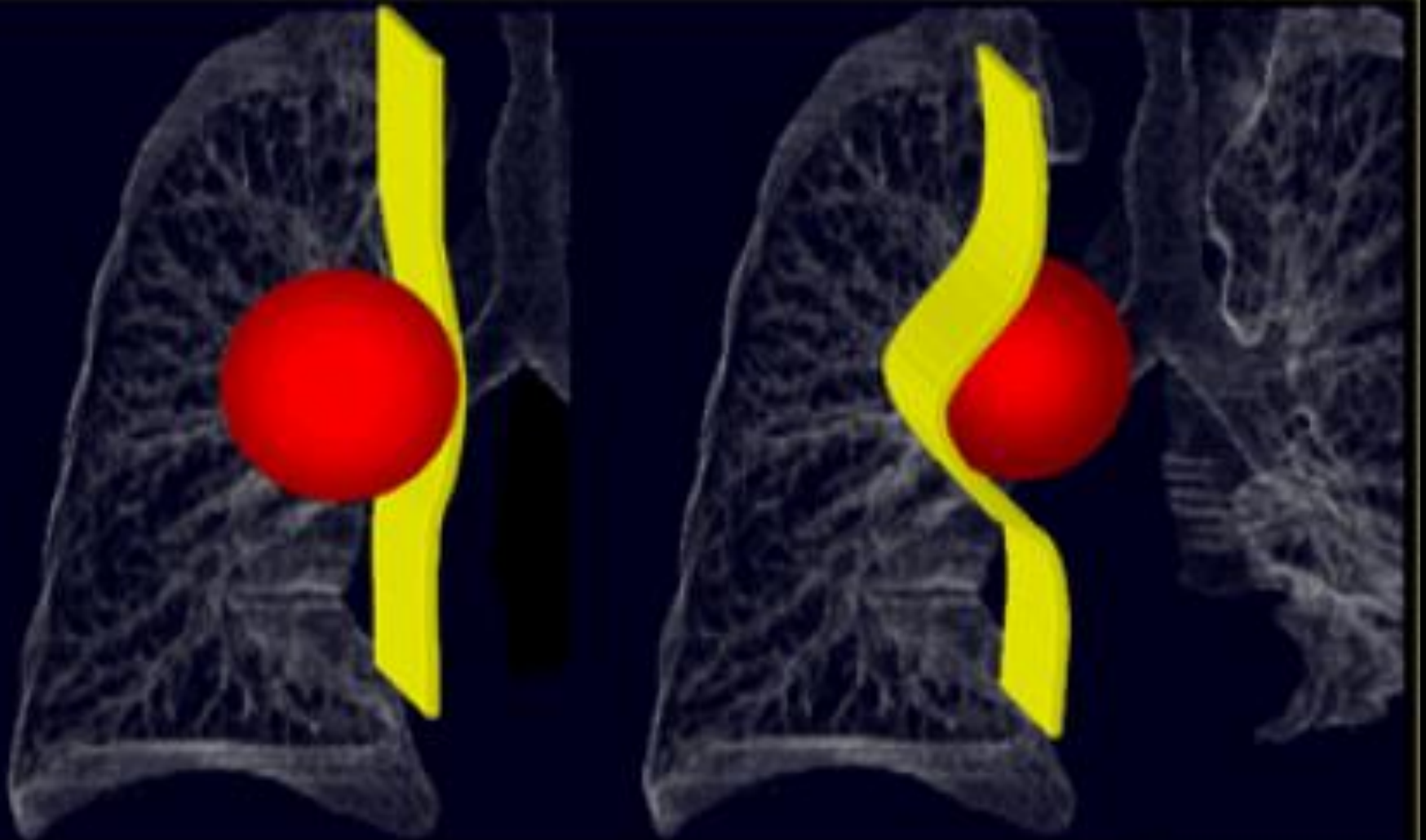
AP SITTING

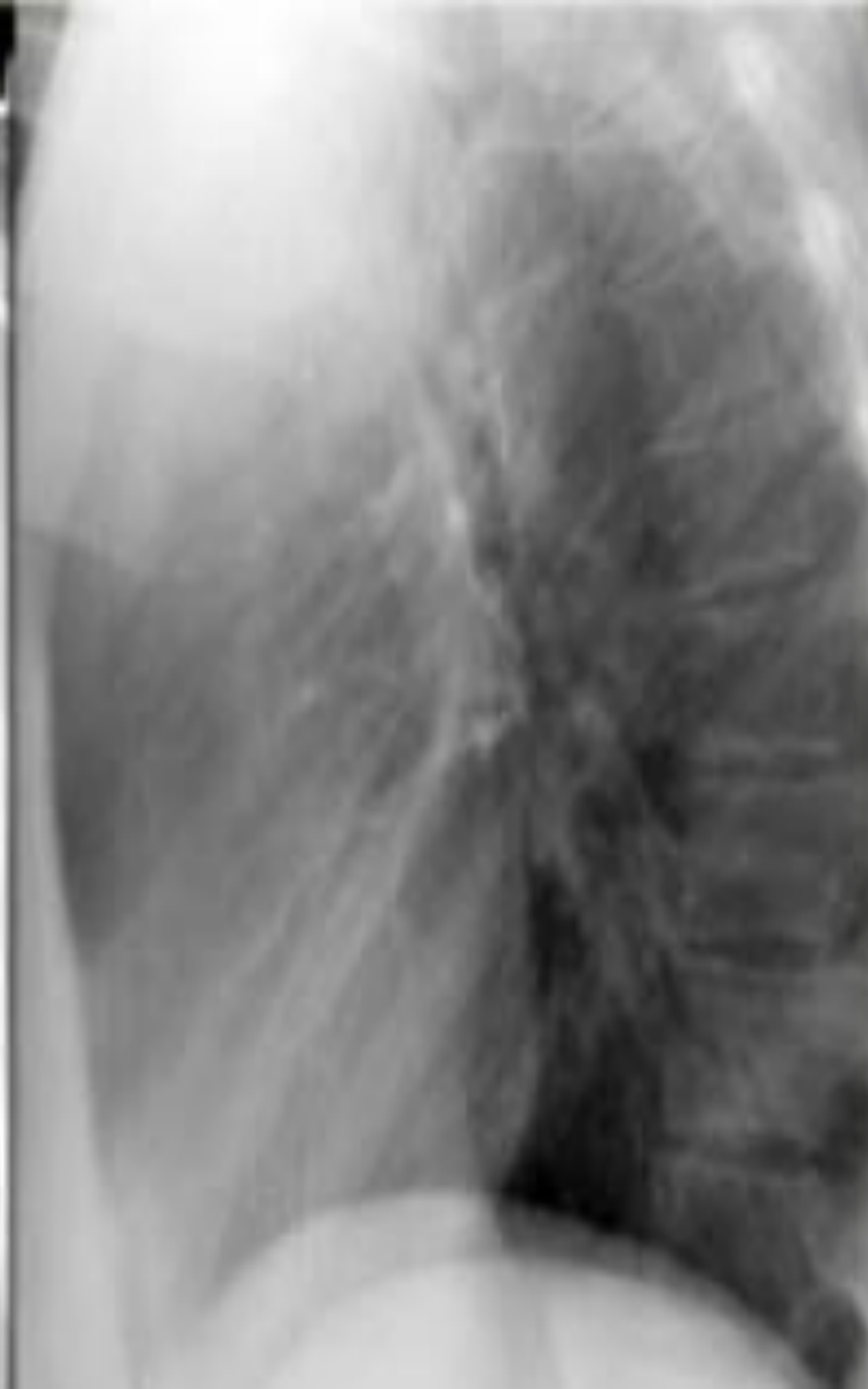


Mediastinum

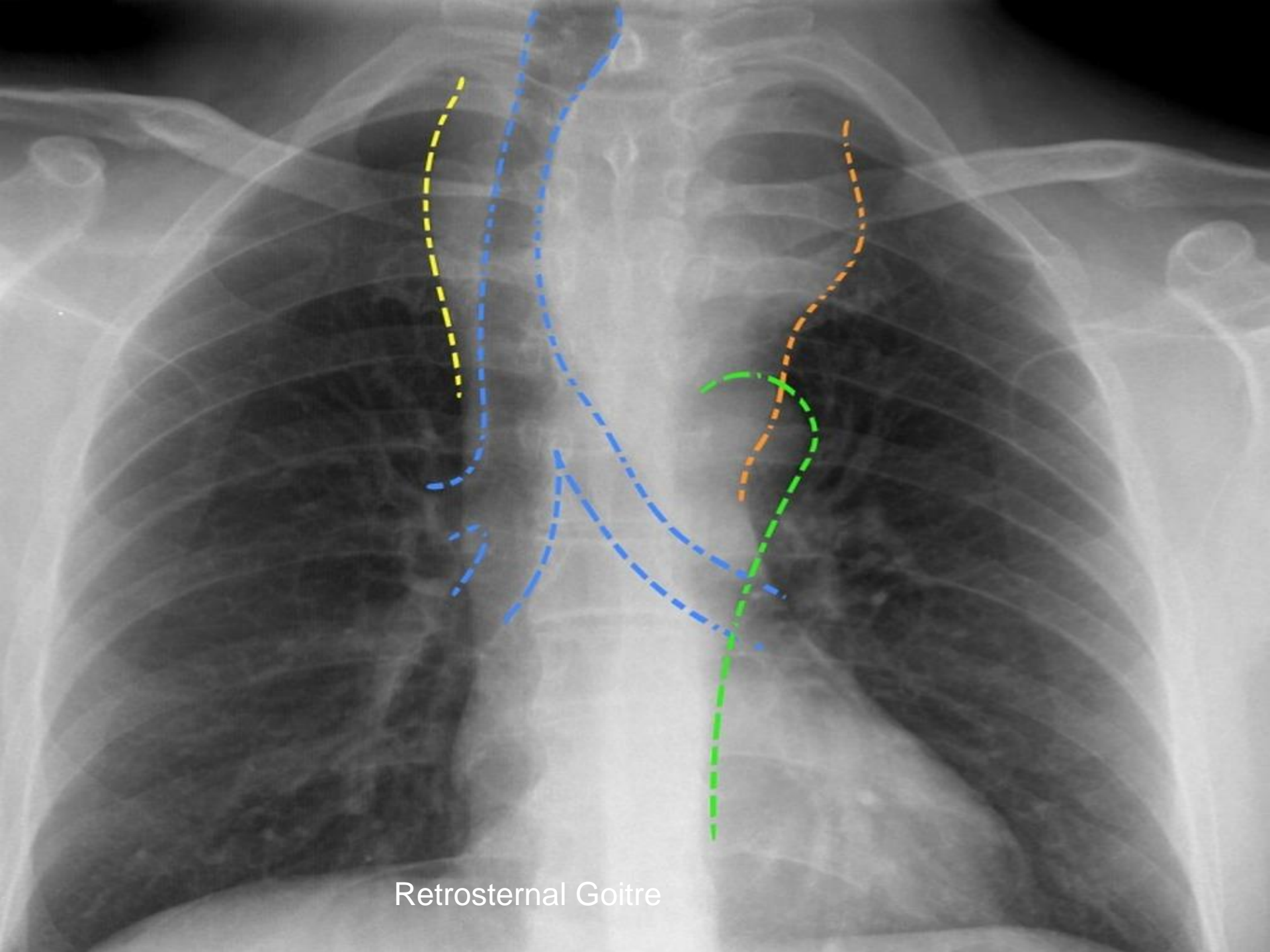


Mediastinal v lung mass

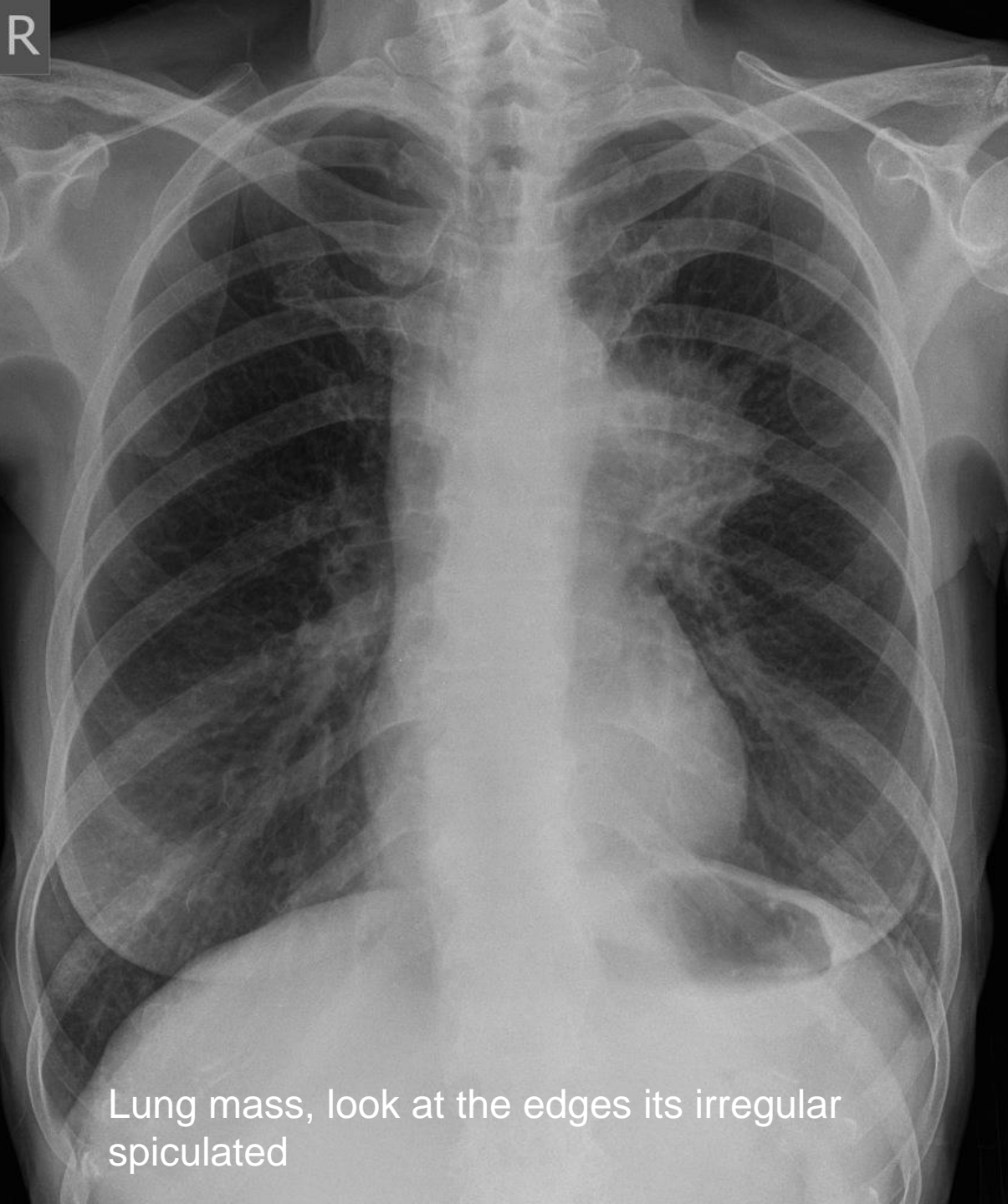






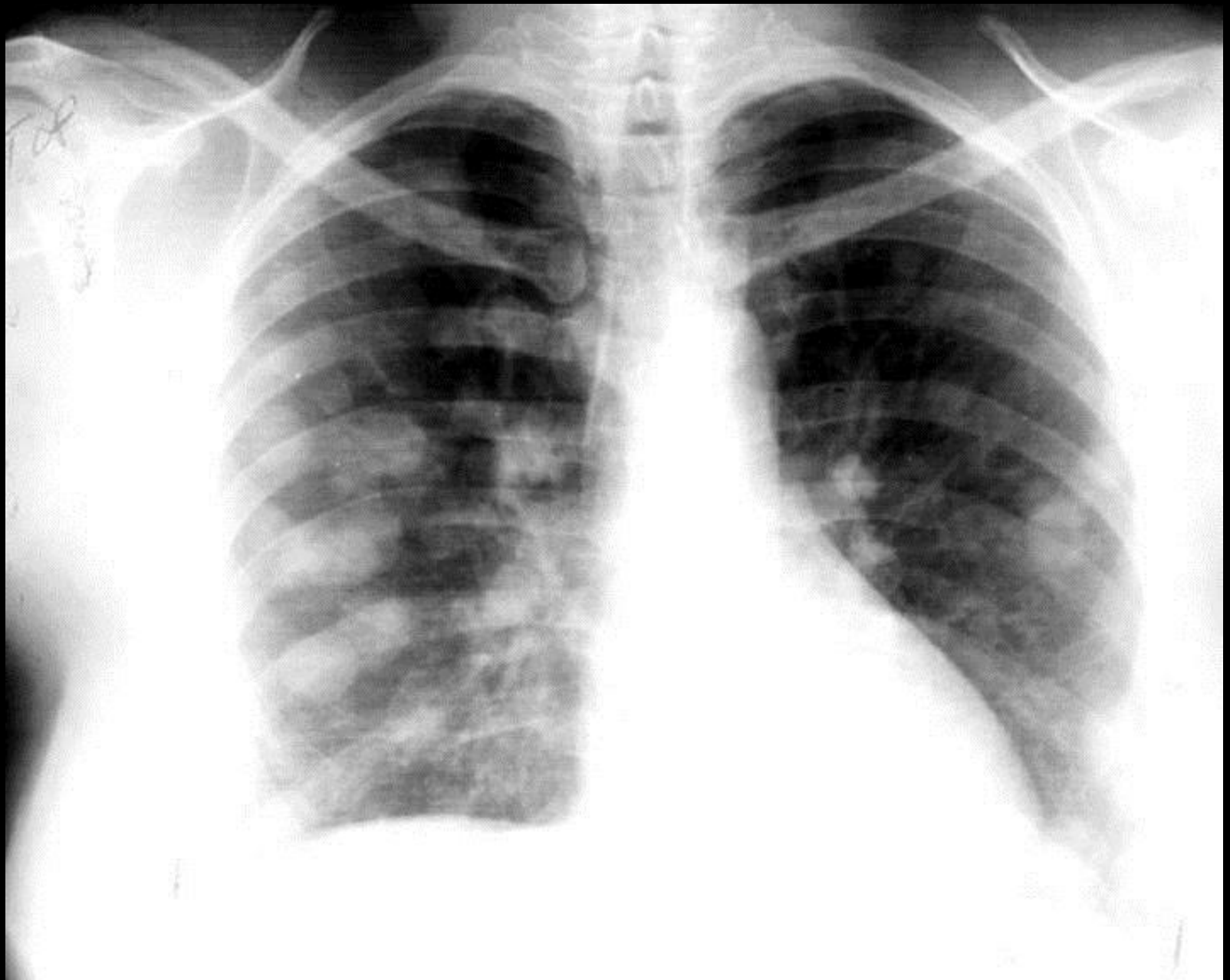


Retrosternal Goitre



R

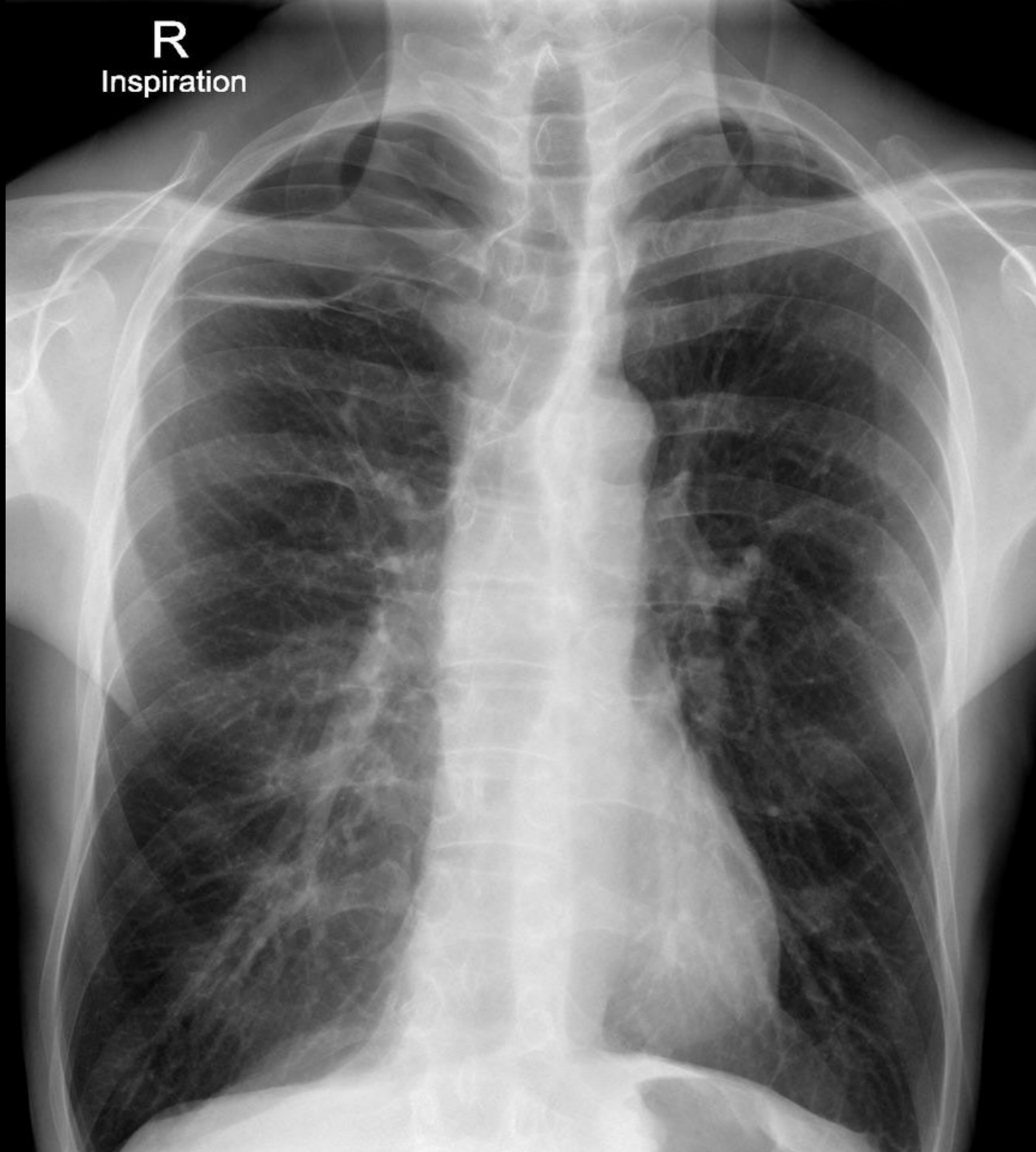
Lung mass, look at the edges its irregular spiculated



Multiple Masses

- The next 2 slides Hyperinflated lungs look at the top right = bulla

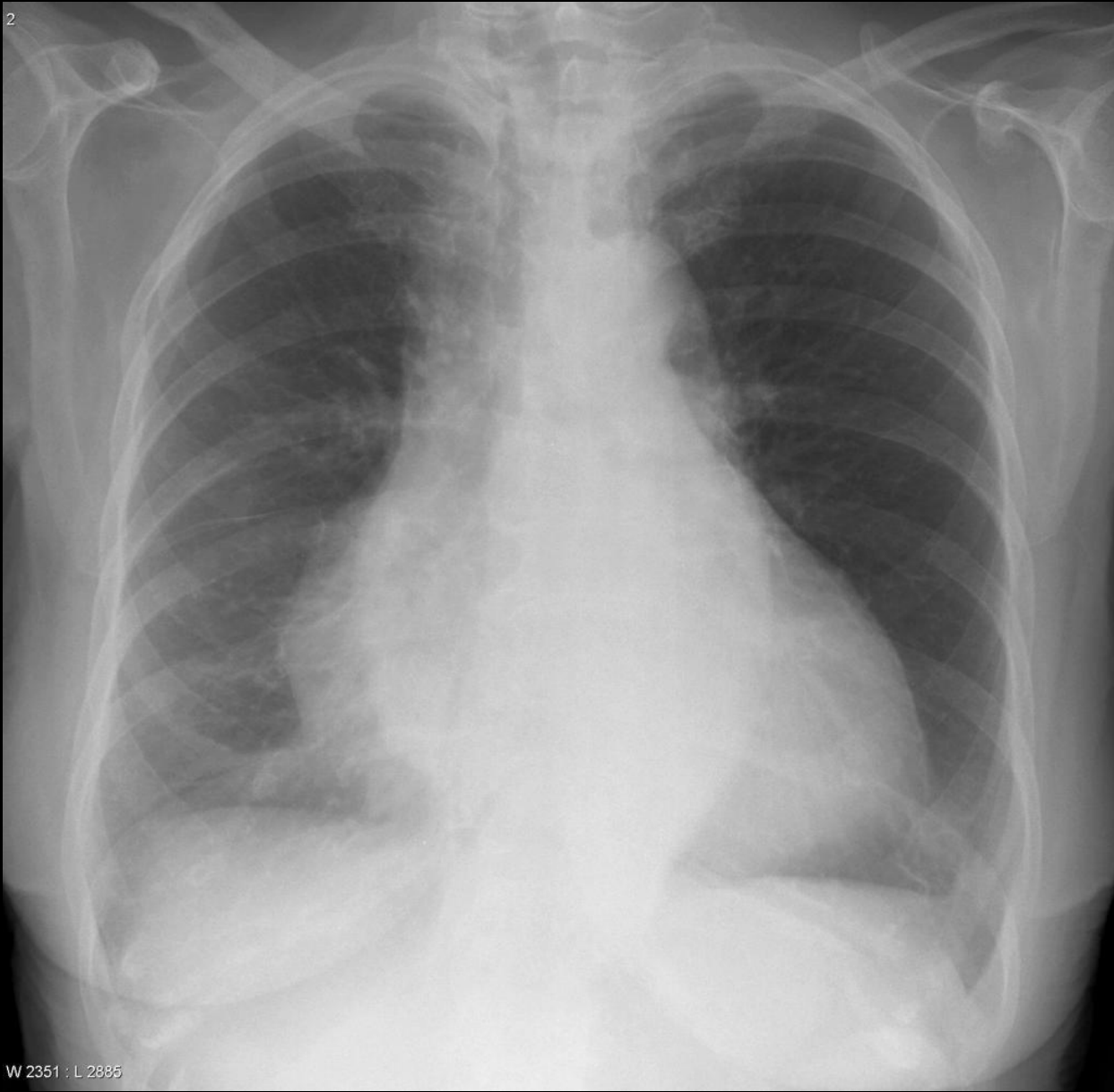
R
Inspiration



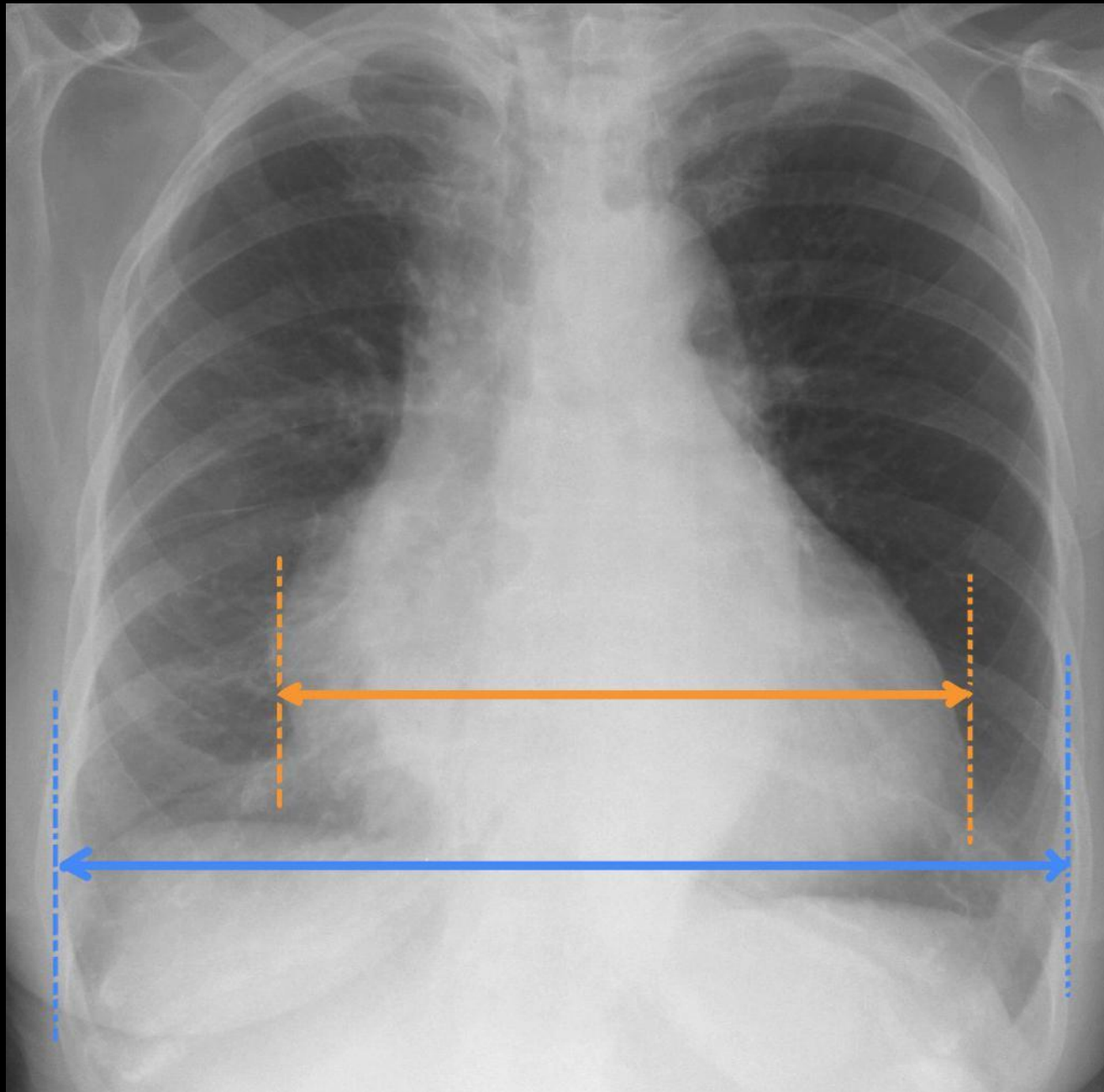


- The next 2 slide cardiomegaly

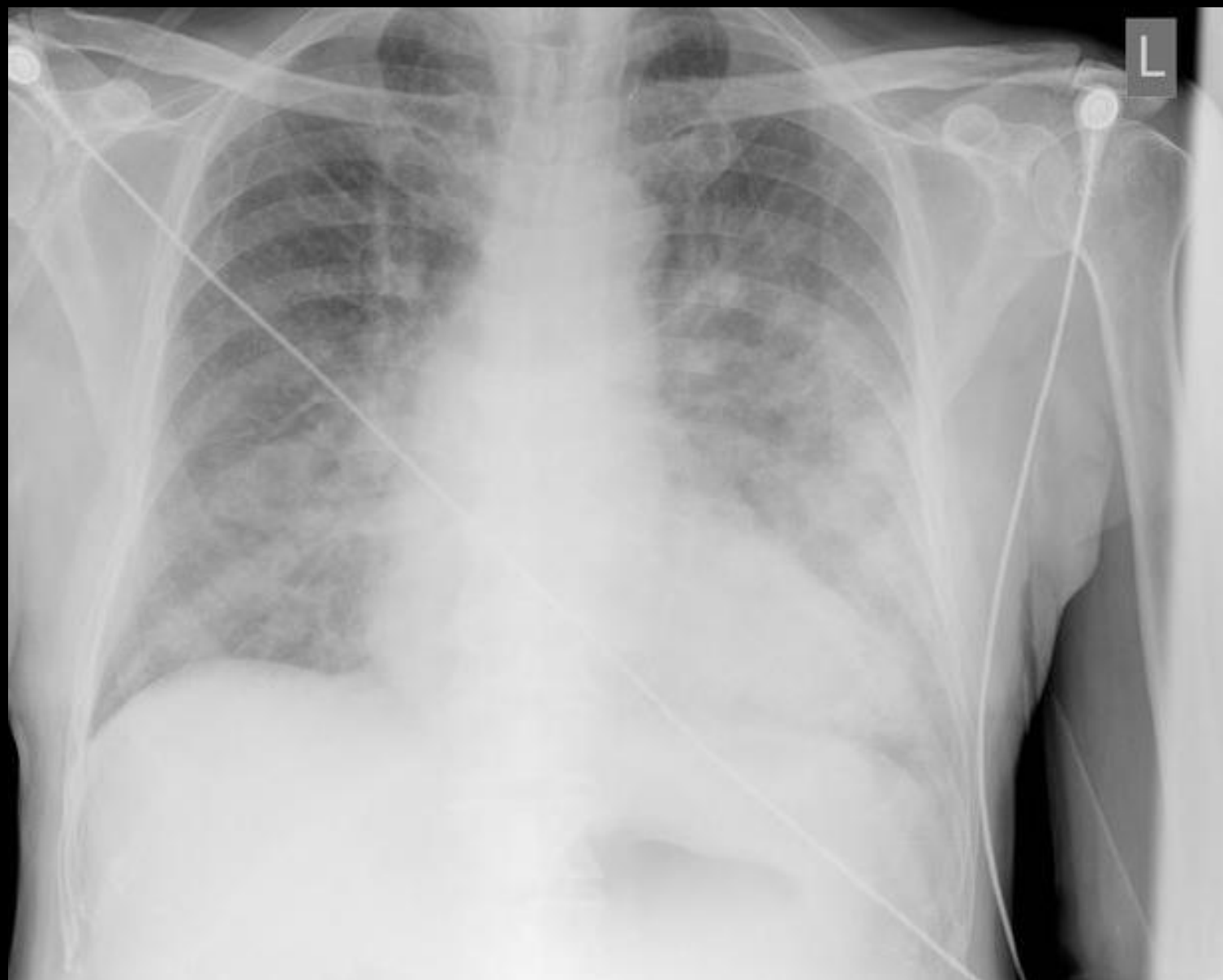
2



W 2351 : L 2885



- The next slide is Heart failure/Pulmonary oedema

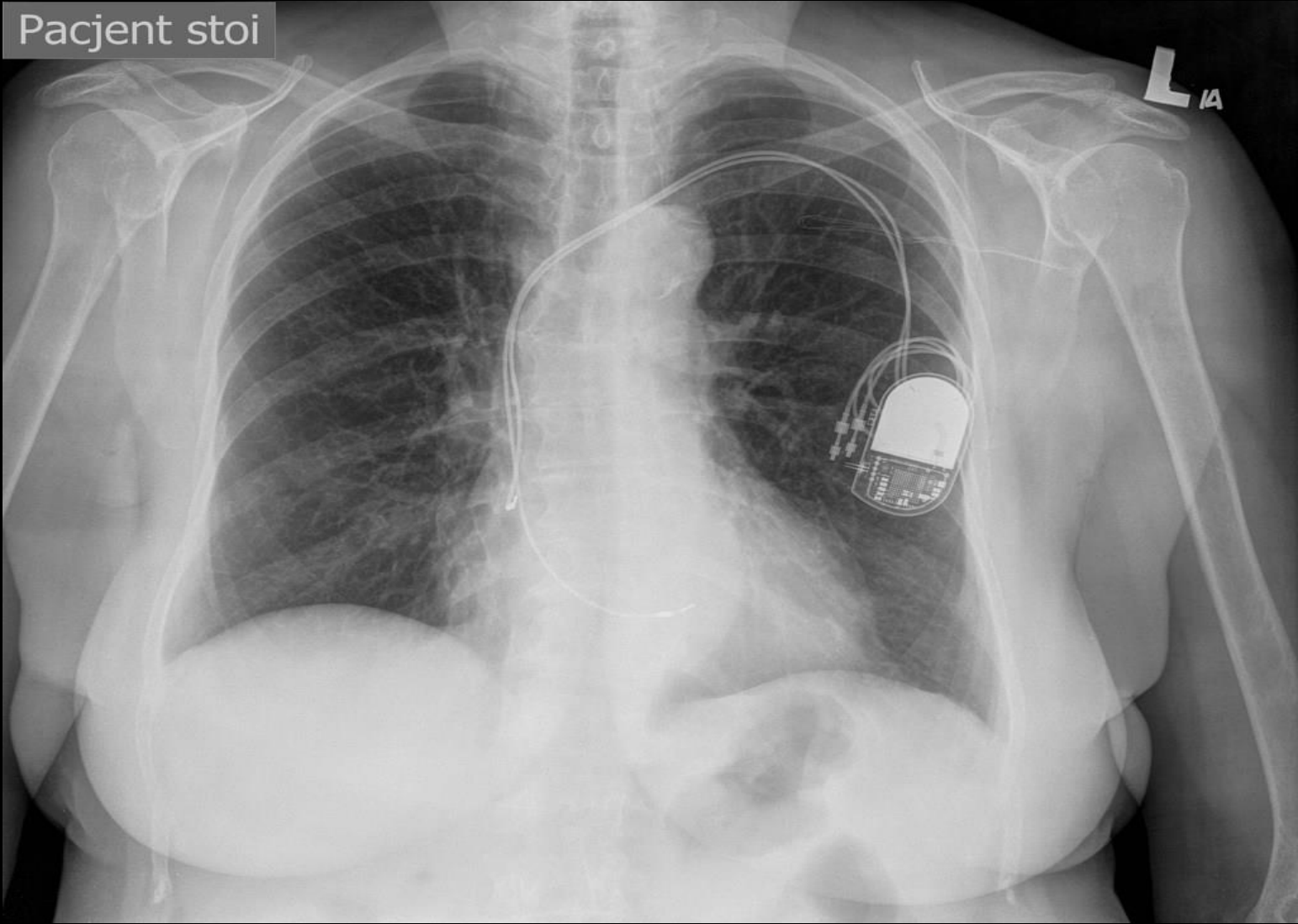


Causes of Pulmonary Oedema

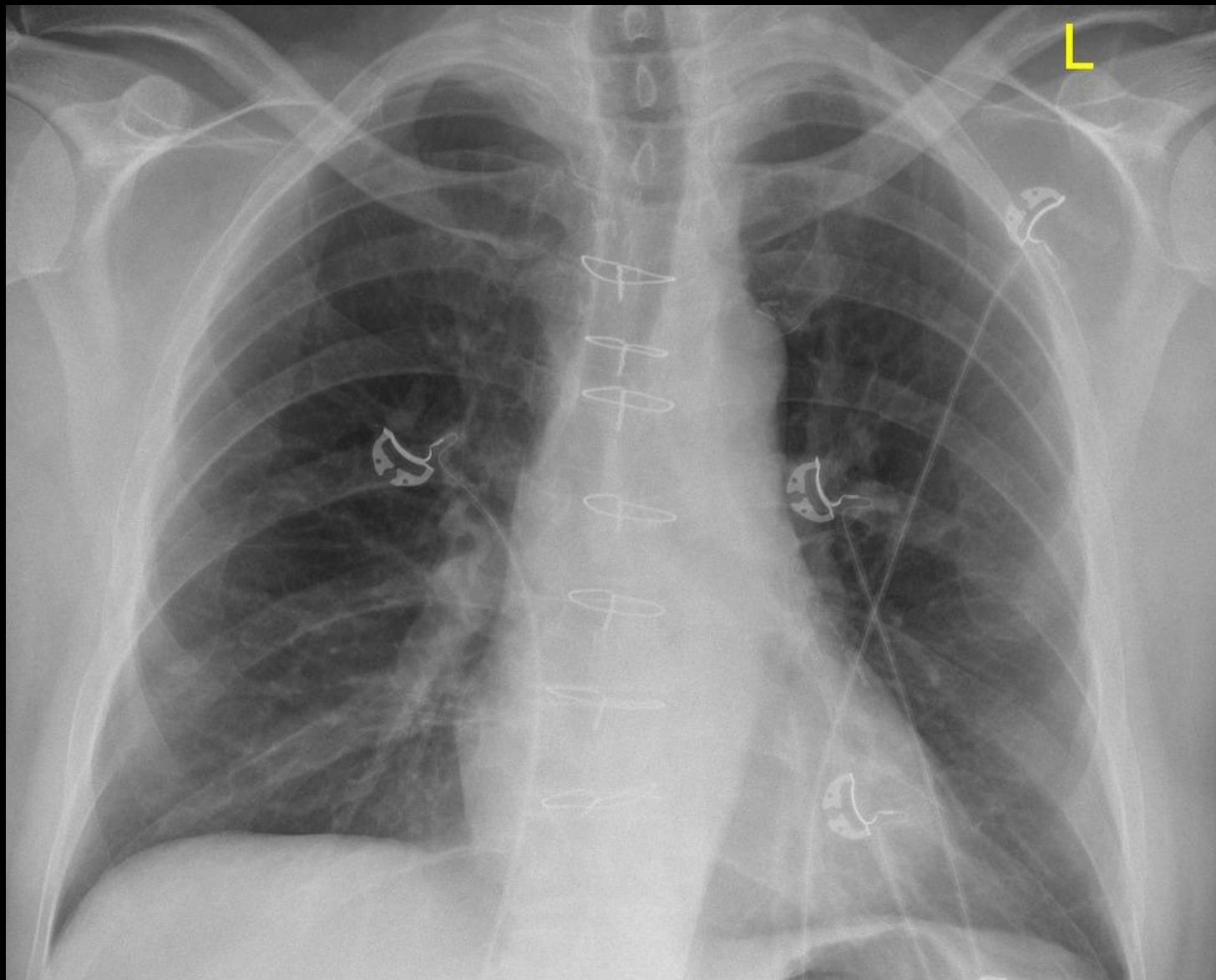
- ?
- ?
- ?
- ?

Dual chamber pacemaker Rt Atrial and Rt Ventricular

Pacjent stoi



Median Sternotomy if you look carefully you can also see a coronary stent





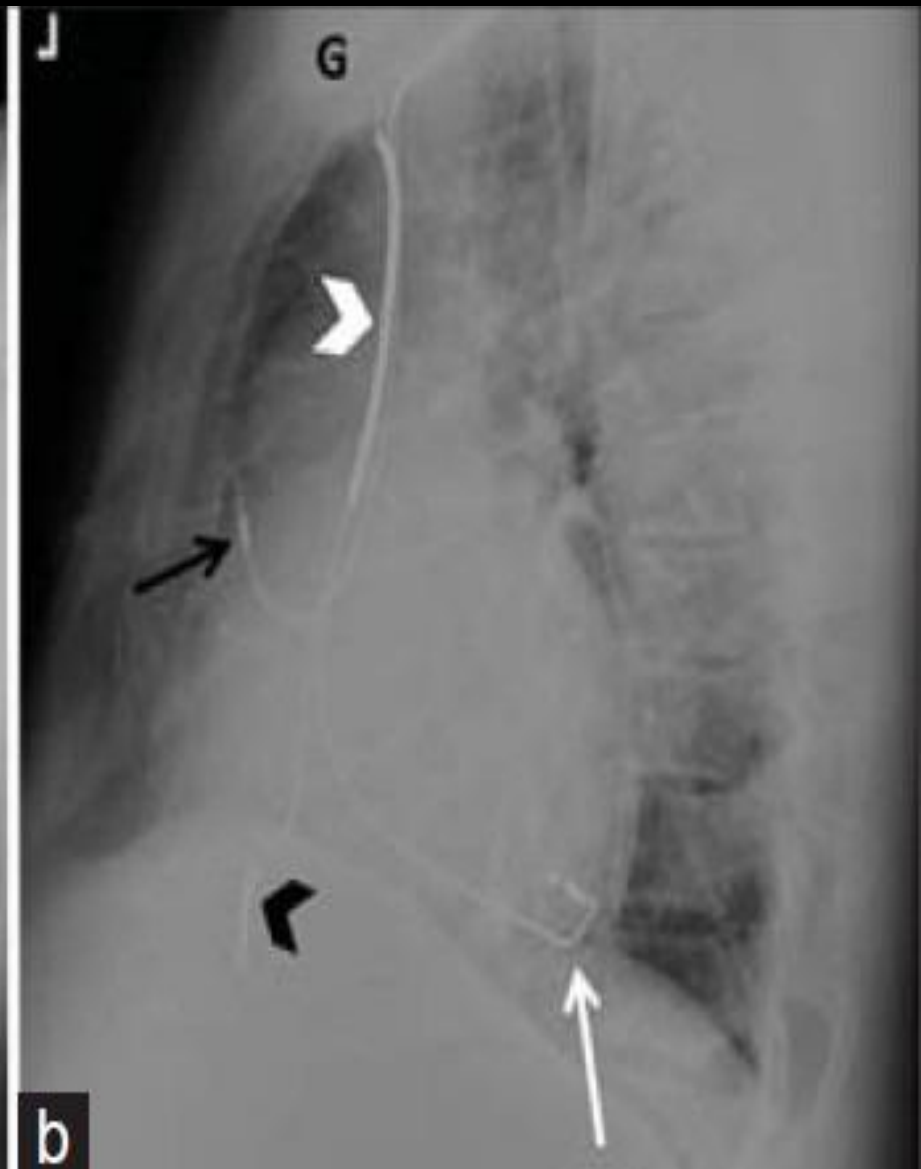
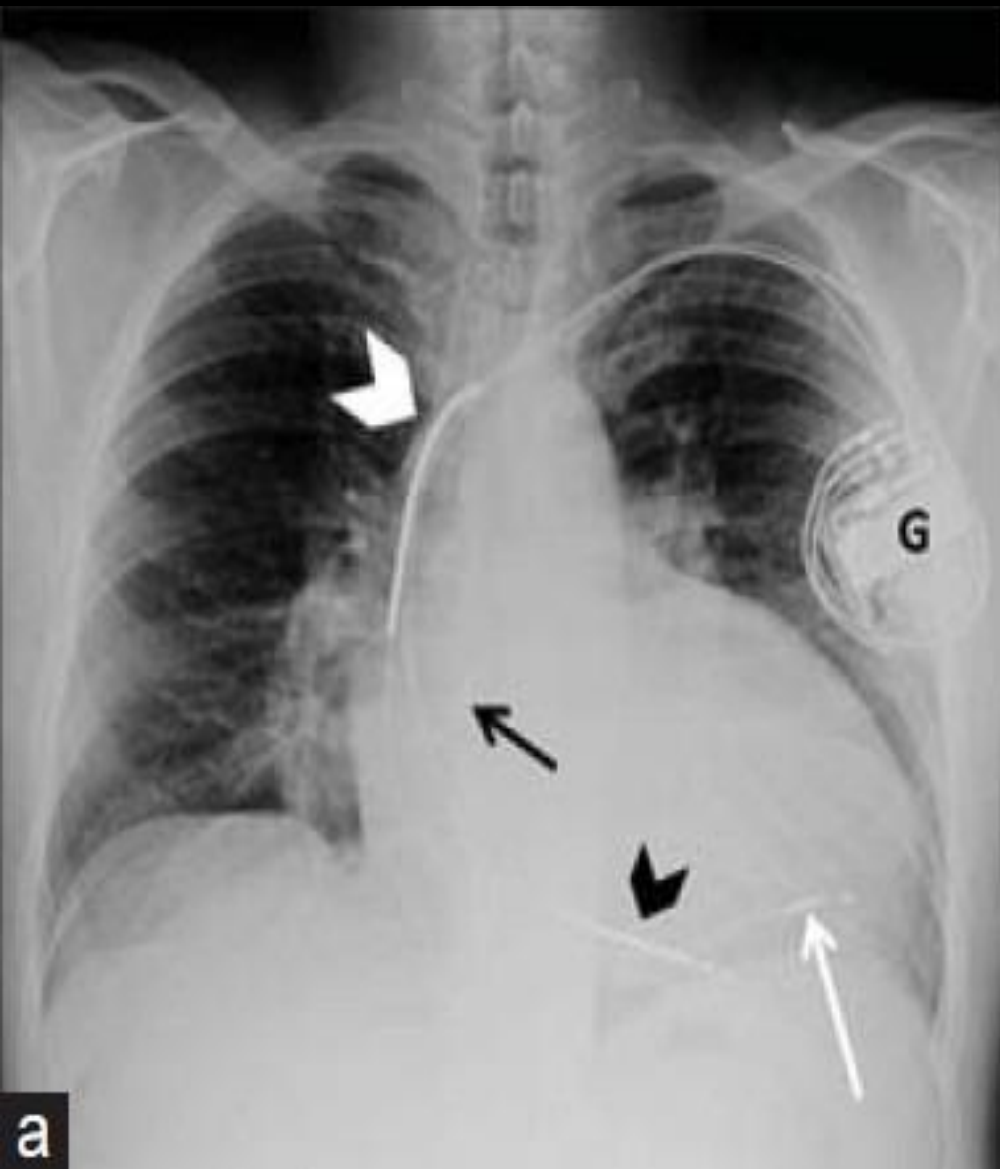
L

pa

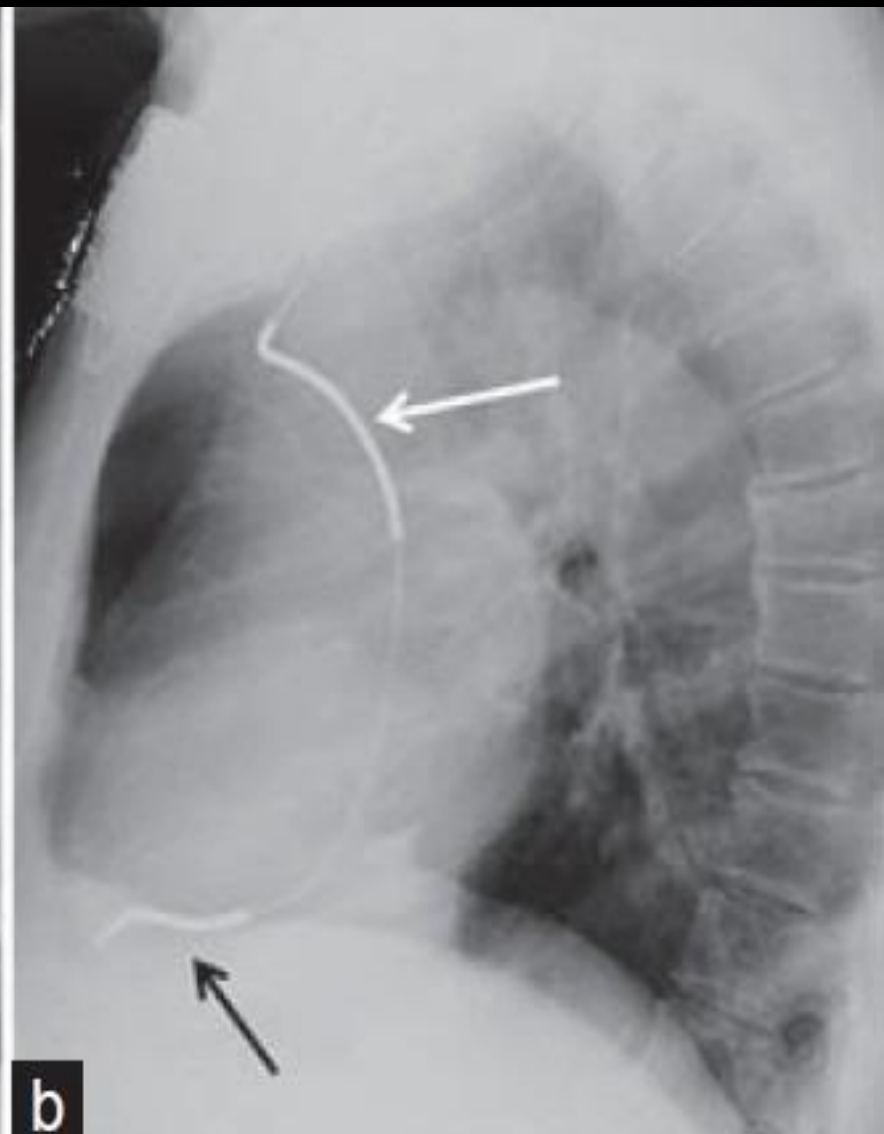
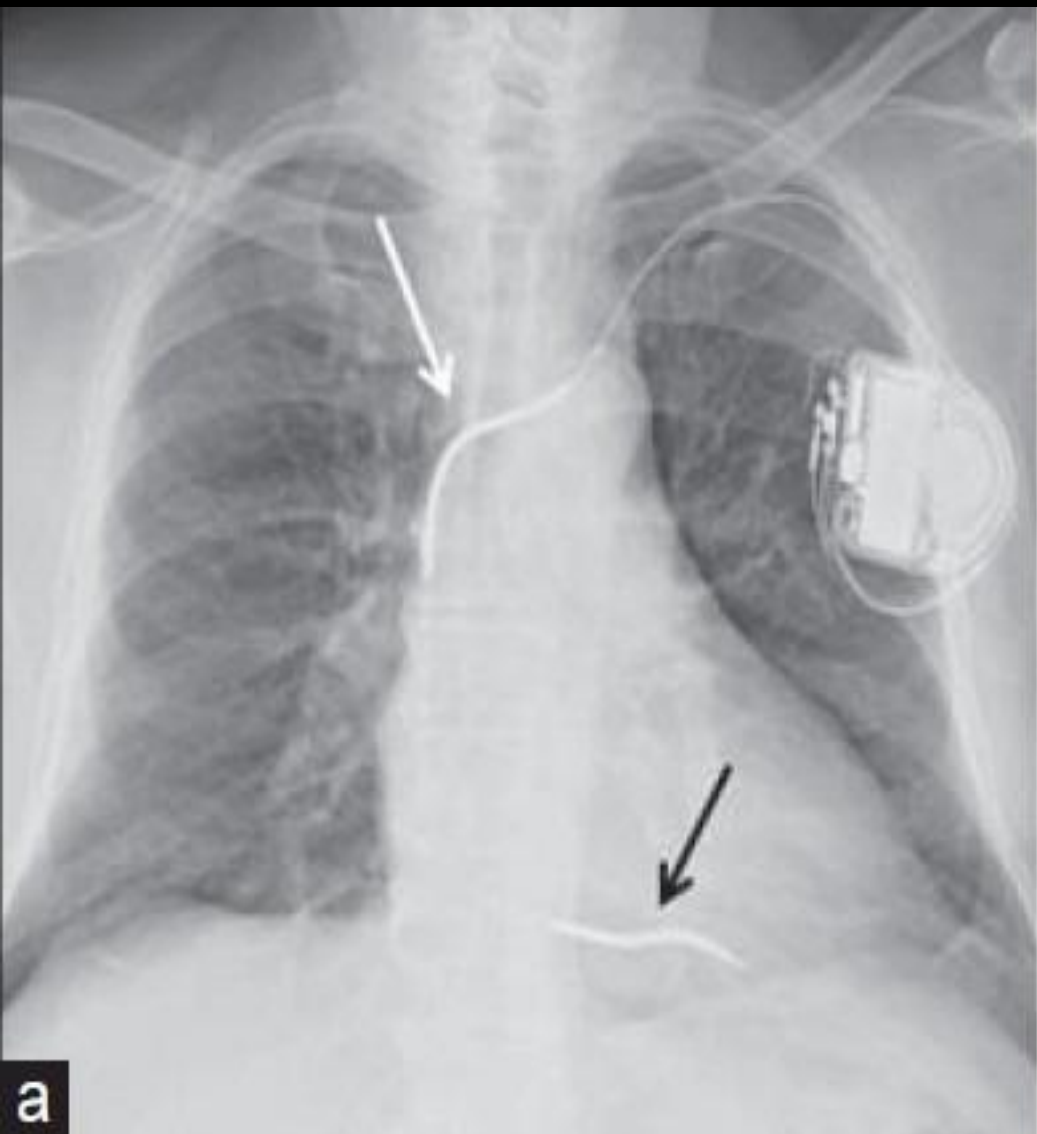
200 mm

Cardiac resynchronization look carefully you see 3 cardiac wires pacing the rt and lt ventricle

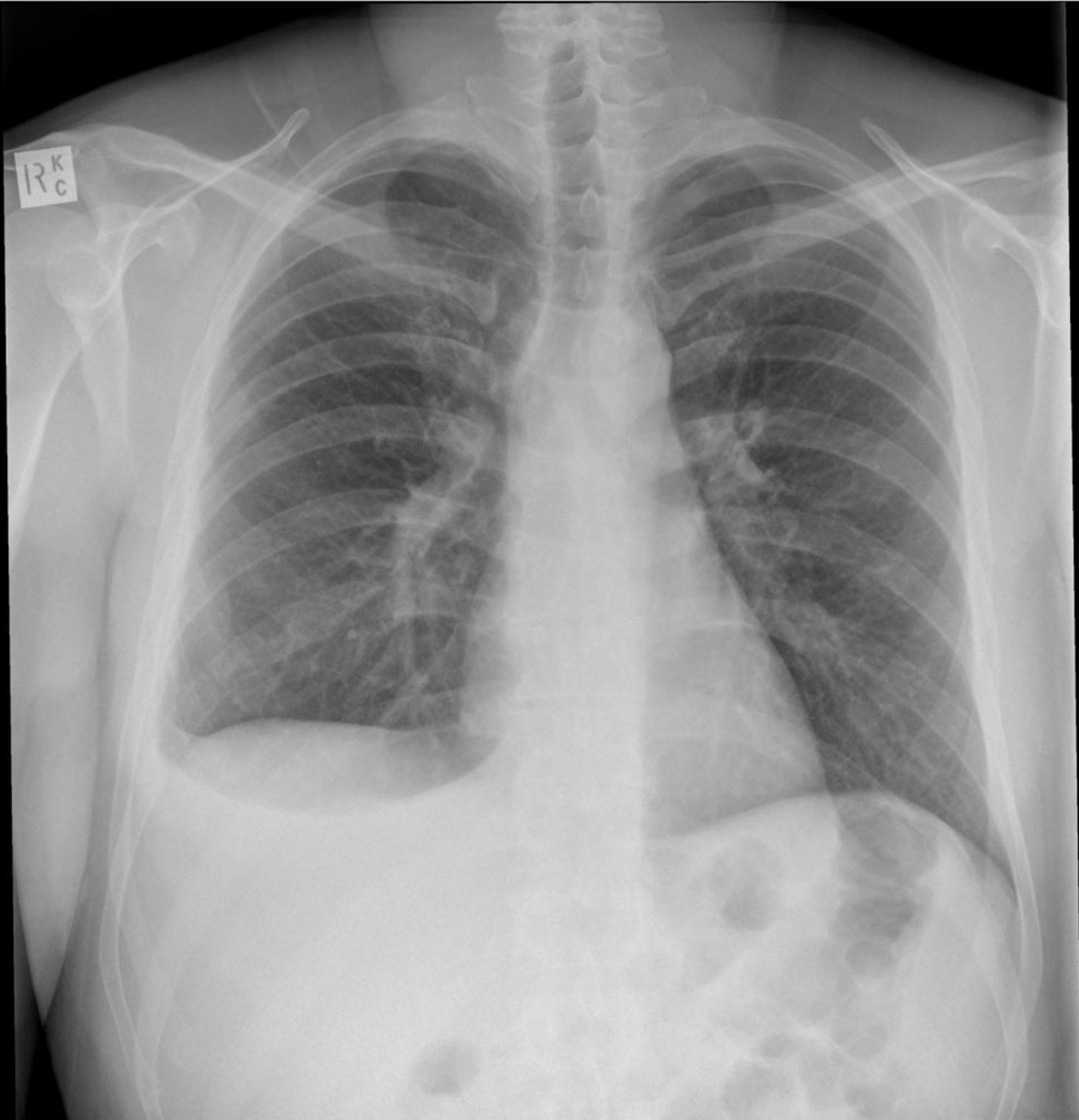
ICD CRT



ICD

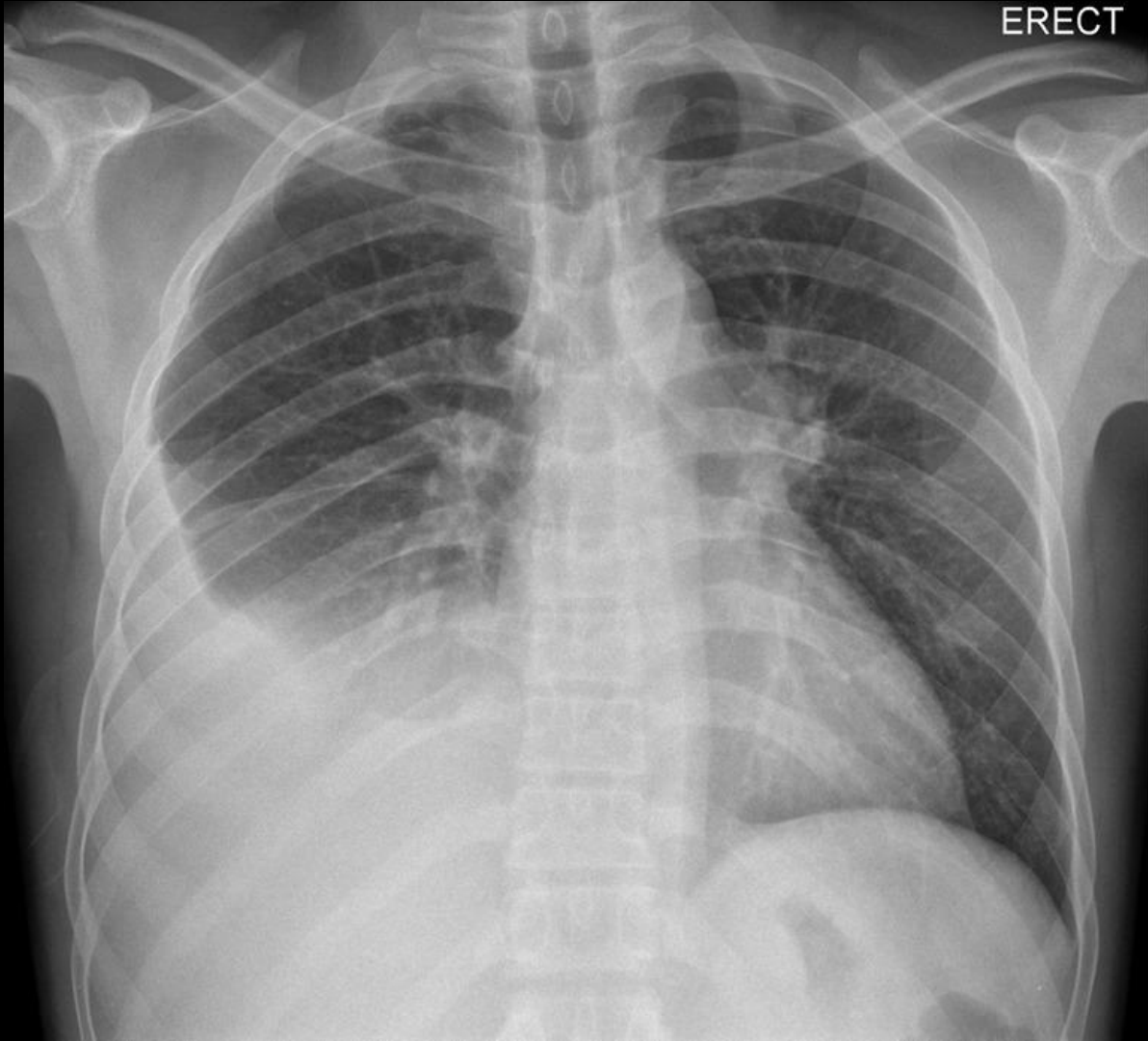


R^K
C



Pleural effusions

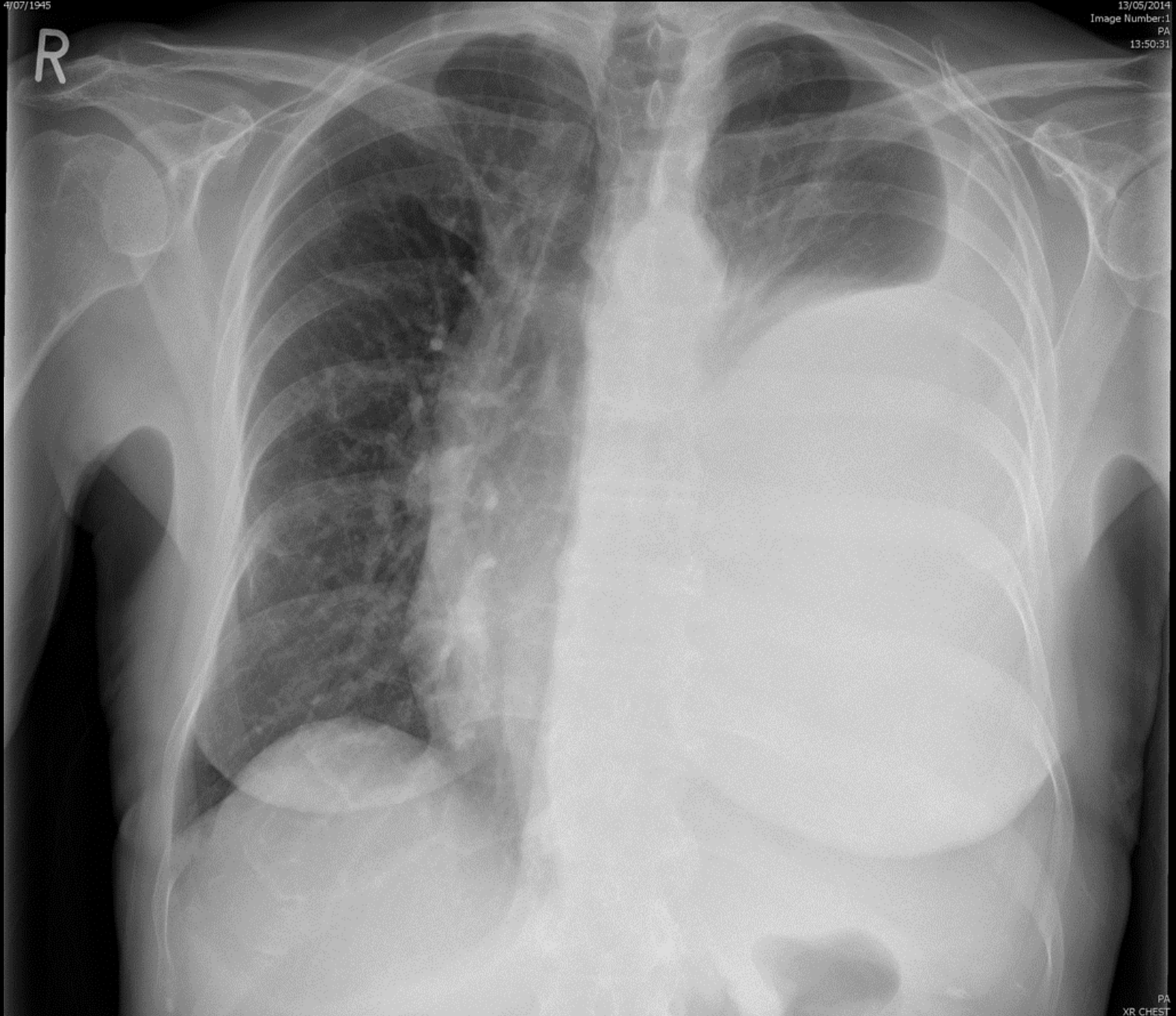
ERECT



4/07/1945

13/05/2014
Image Number:1
PA
13:50:31

R



PA
XR CHEST

Abd Gen

C5-1
31Hz
RS

2D
75%
Dyn R 55
P Low
HGen

TIS0.2 MI 1.3

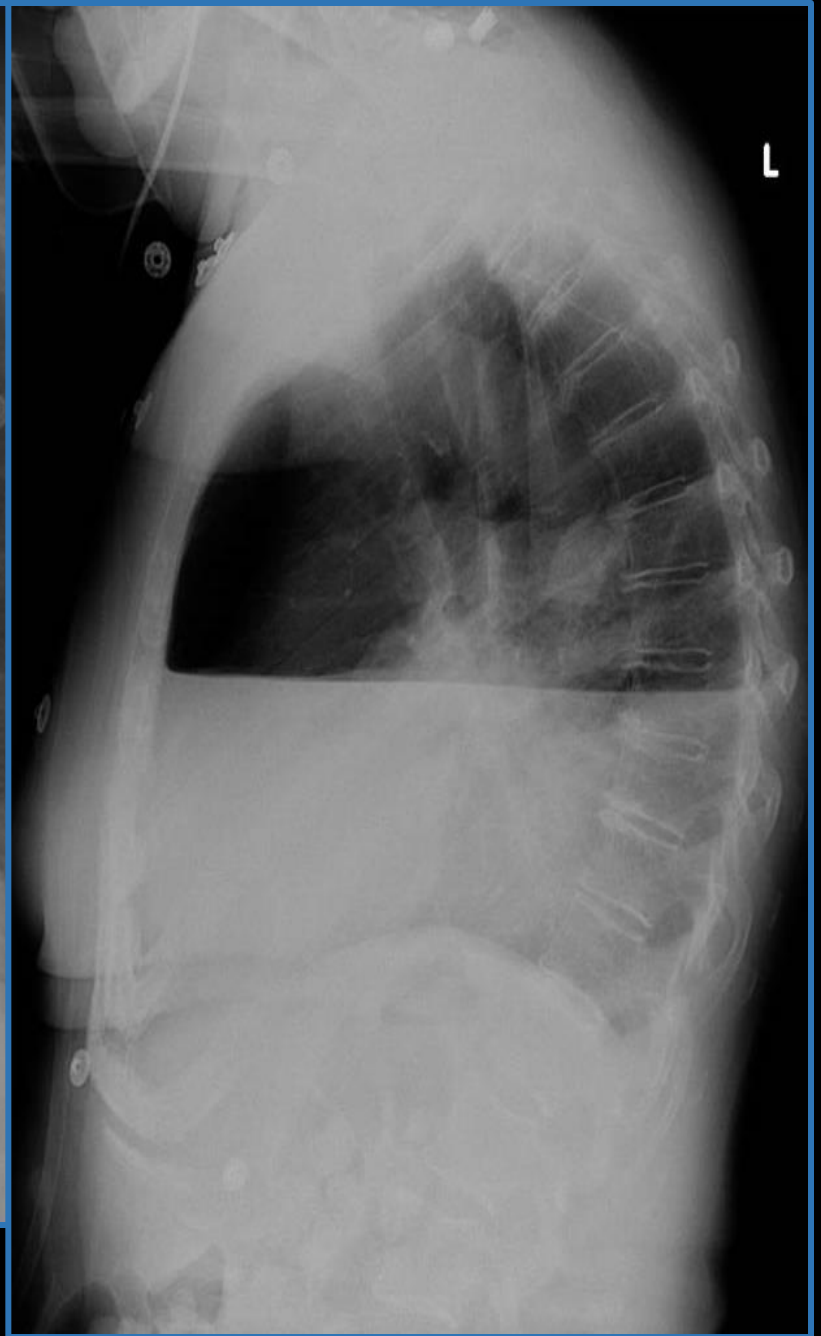


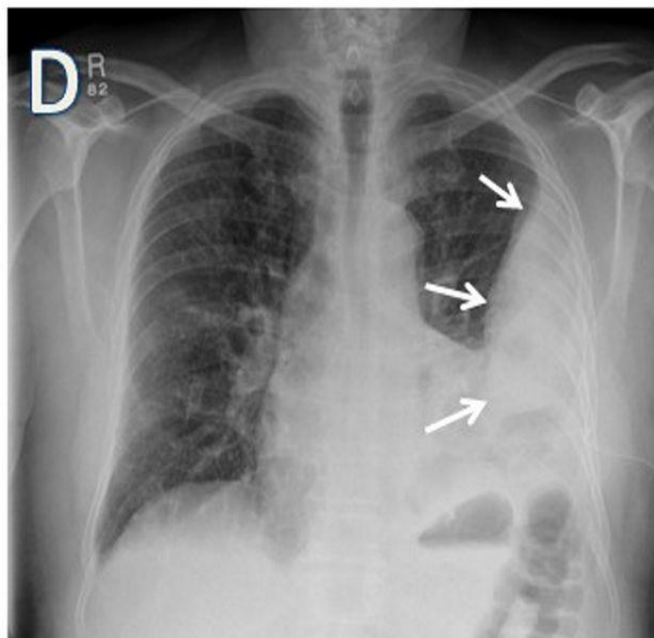
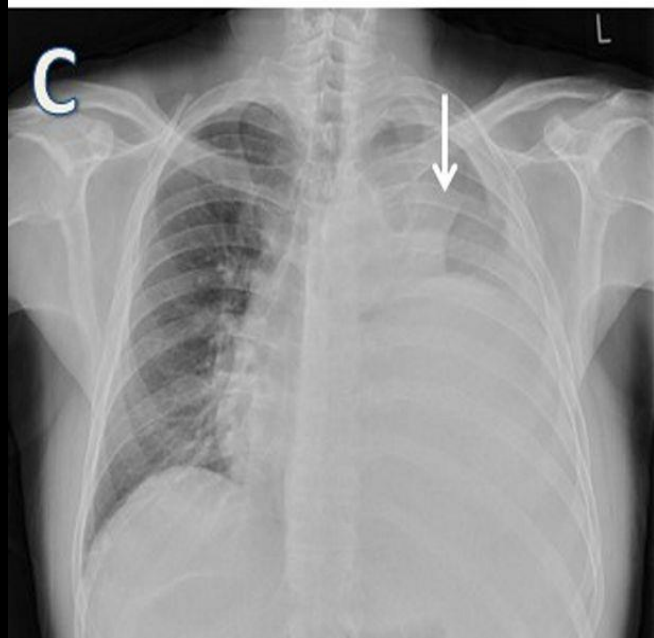
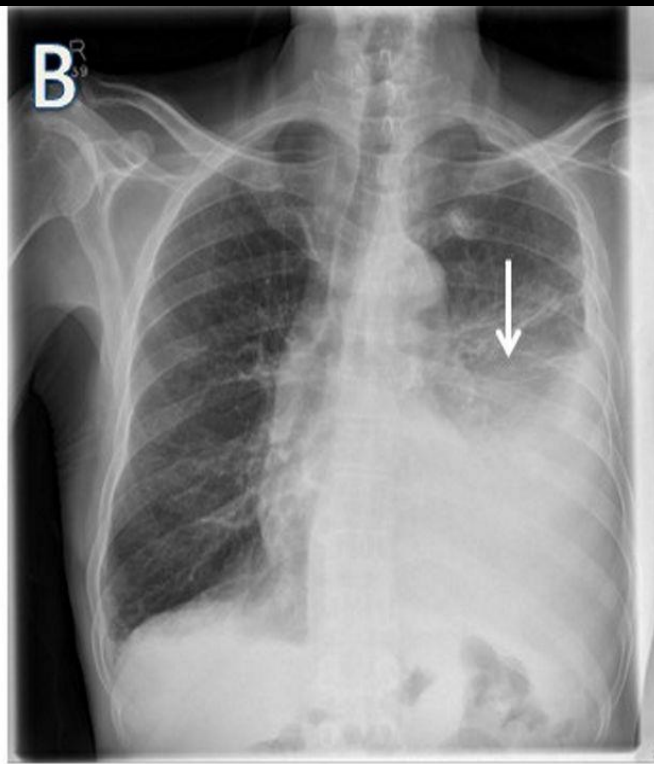
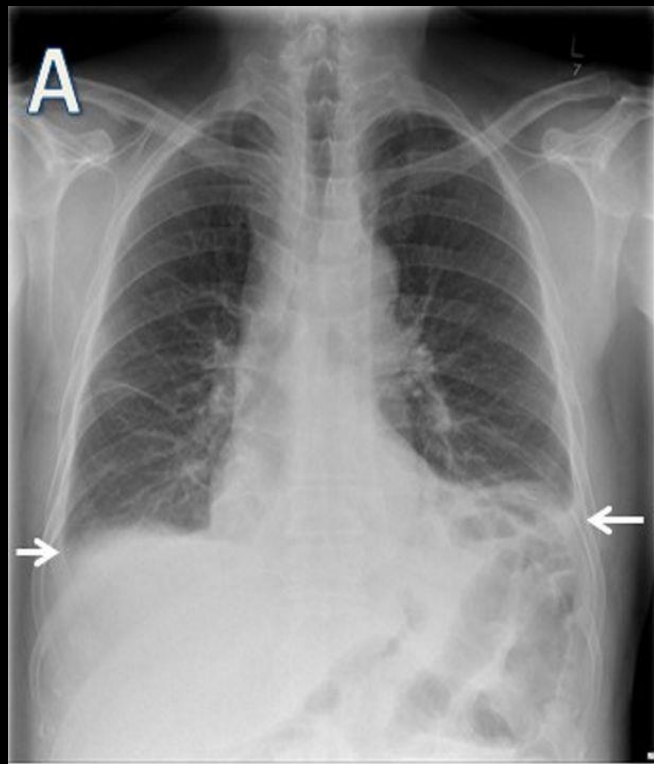
M3

X3

16cm

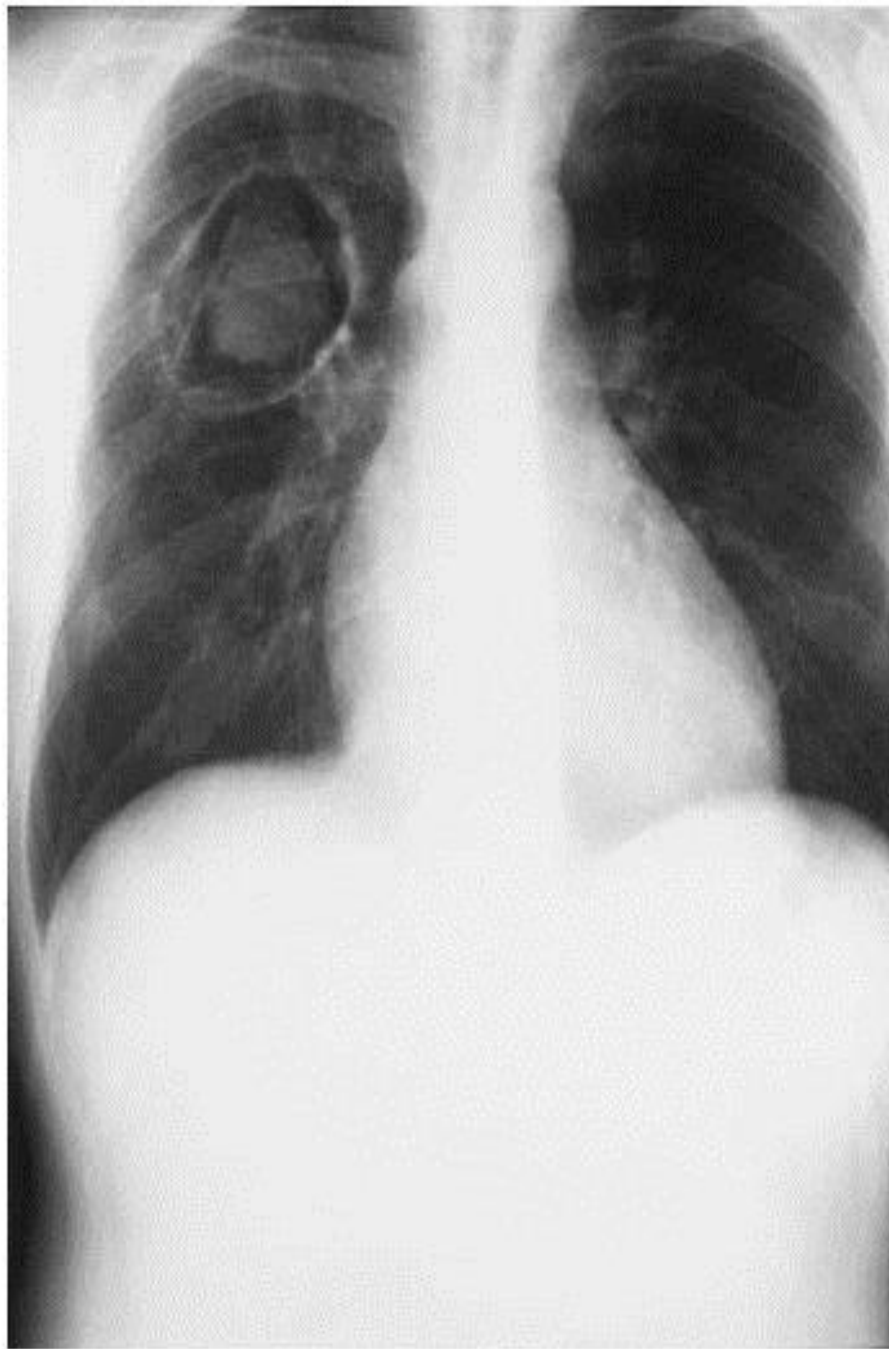




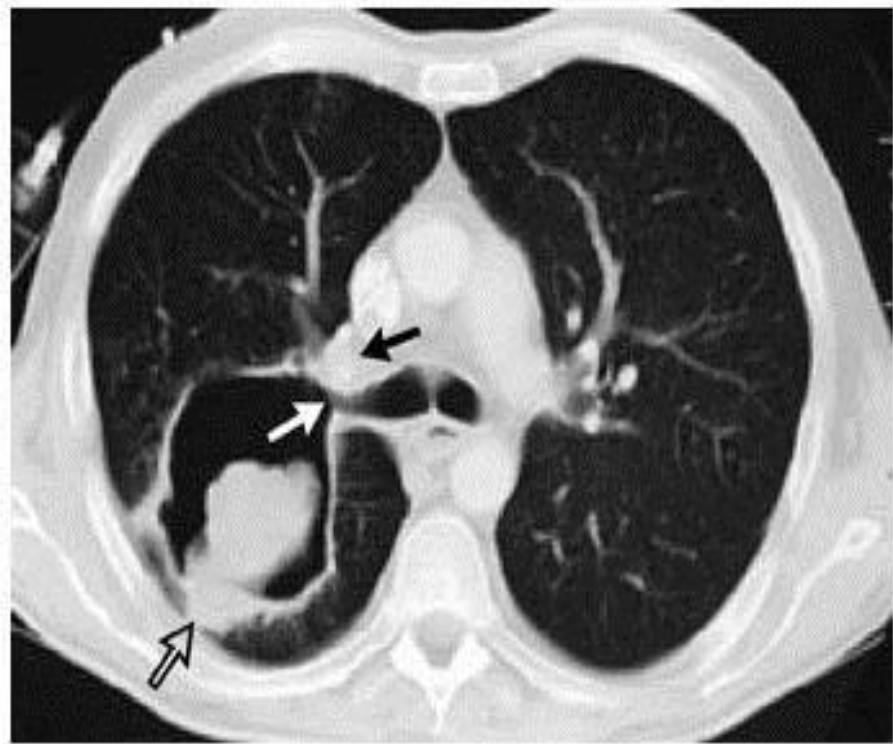




Cavitating lesion

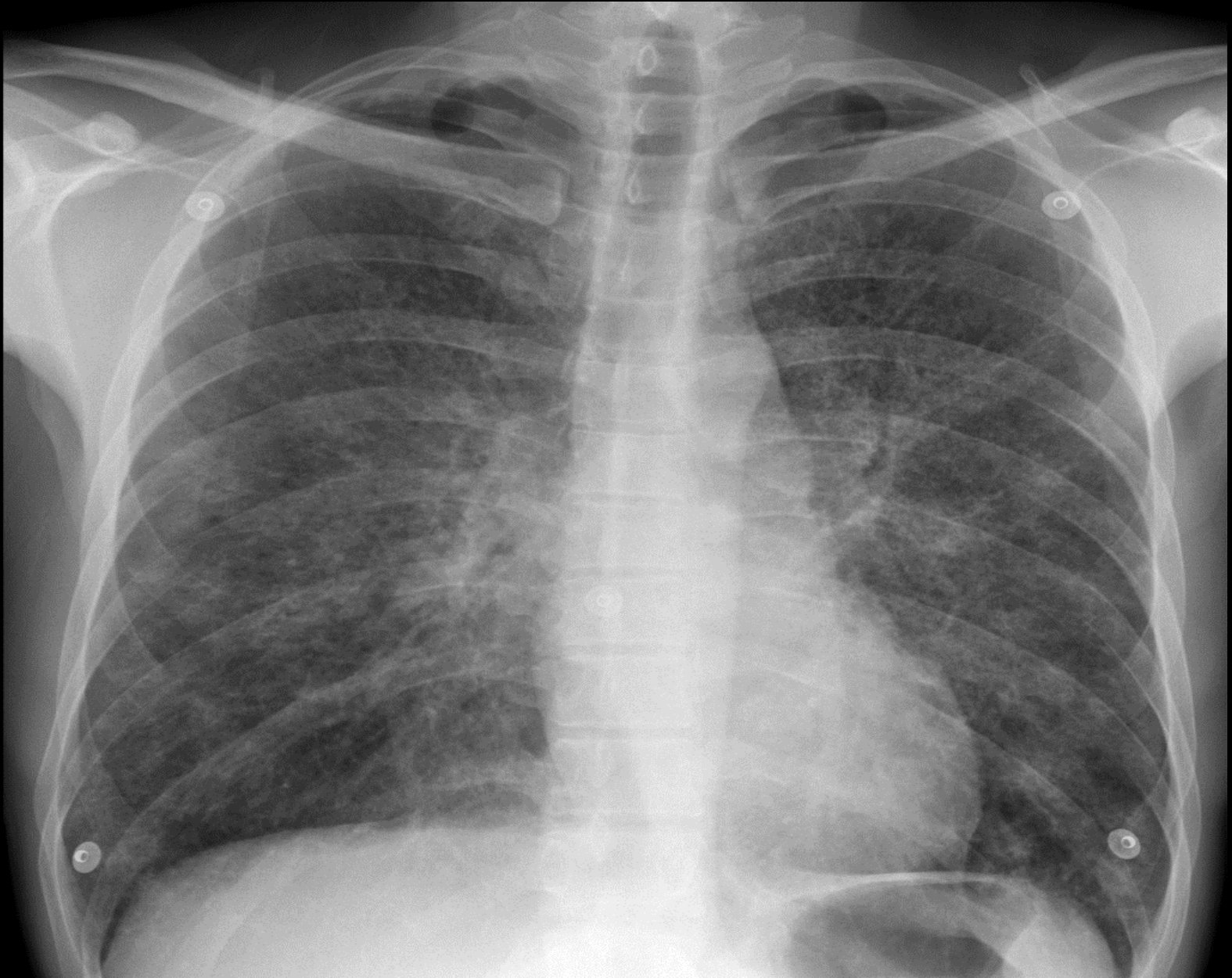


A



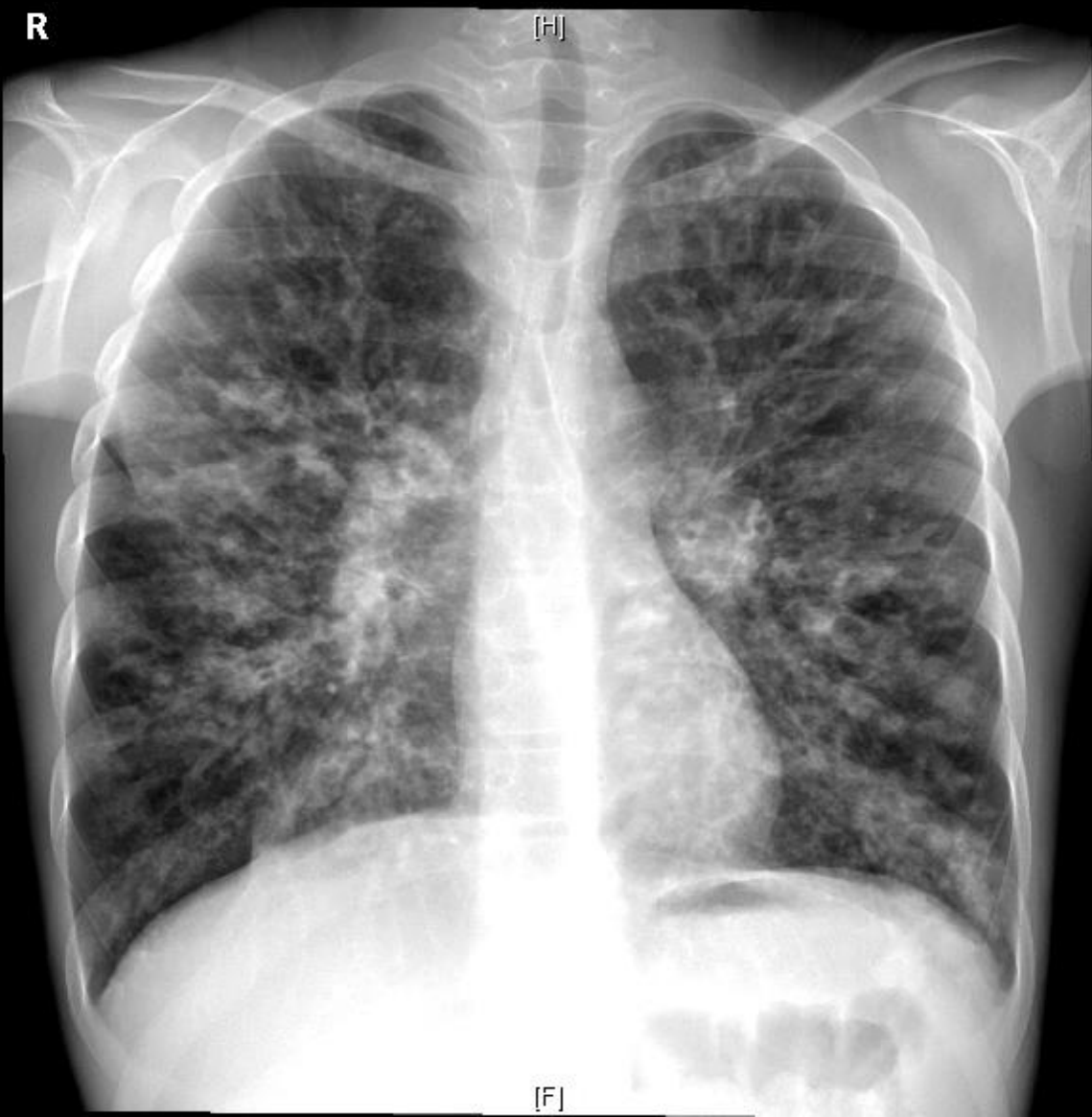
B

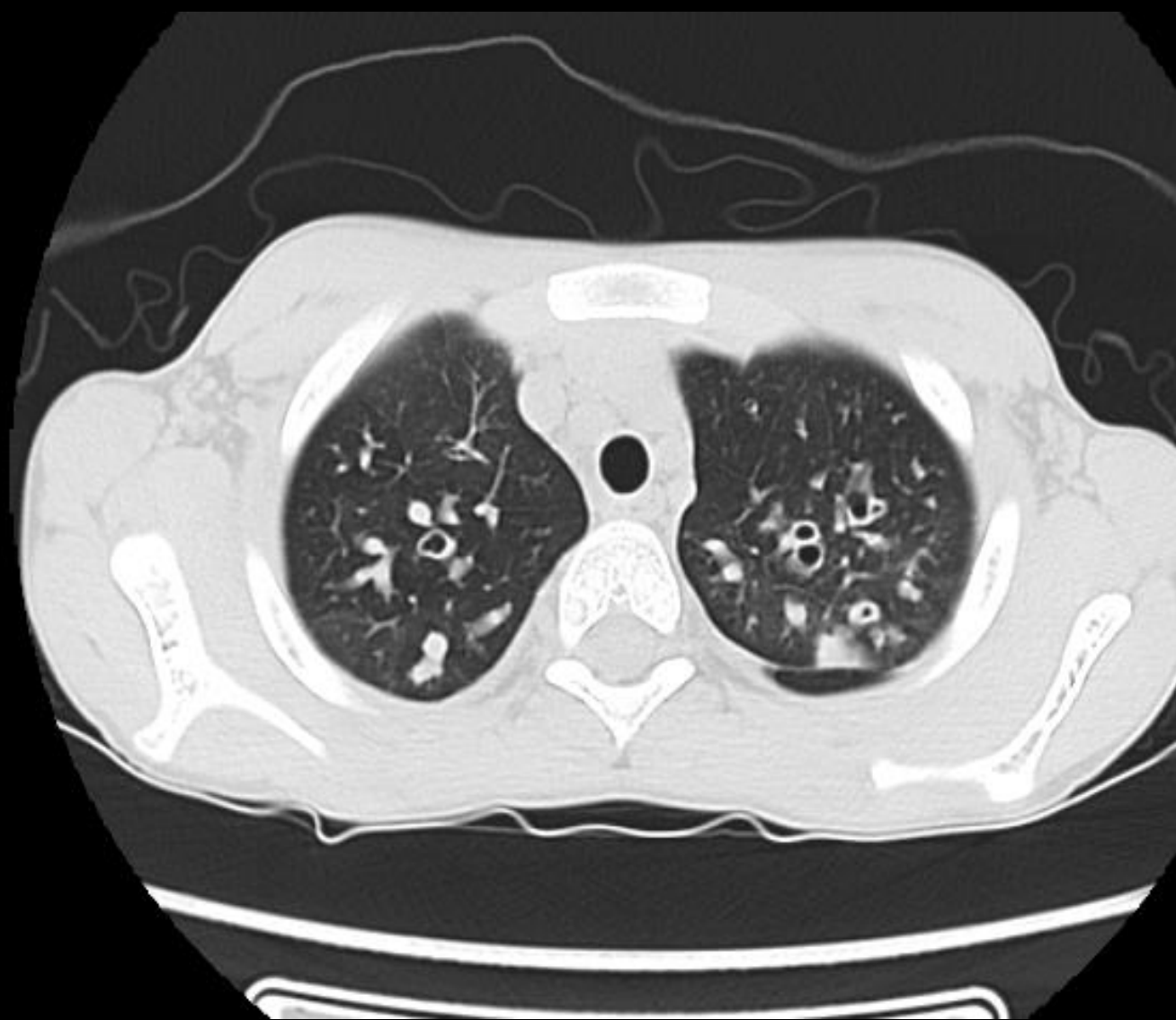
Immunocompromised patient



- Chronic Cough
- Sputum production

Diagnosis: Bronchiectasis

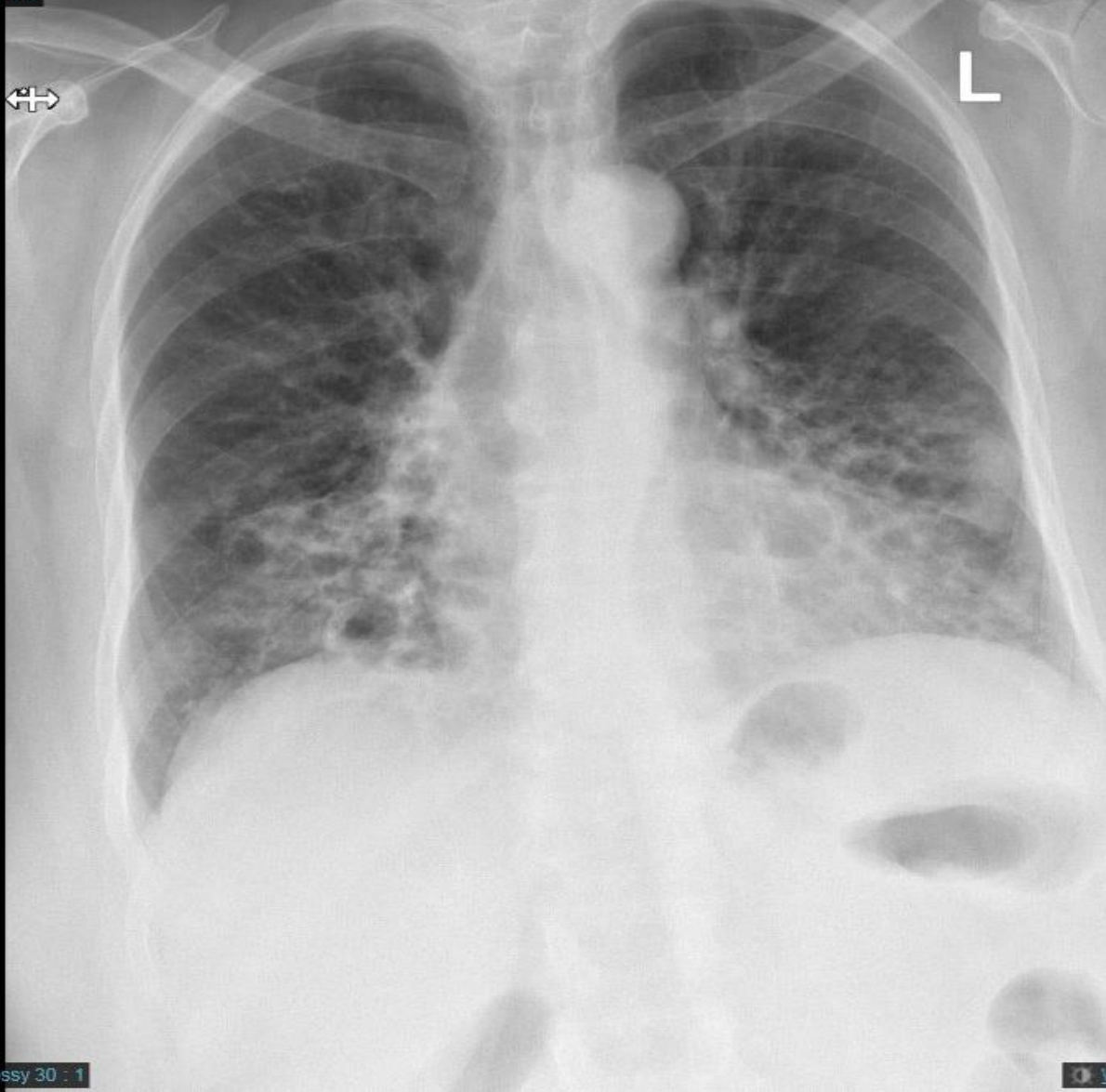




W CHEST PA

Se: 1

Im: 1/1

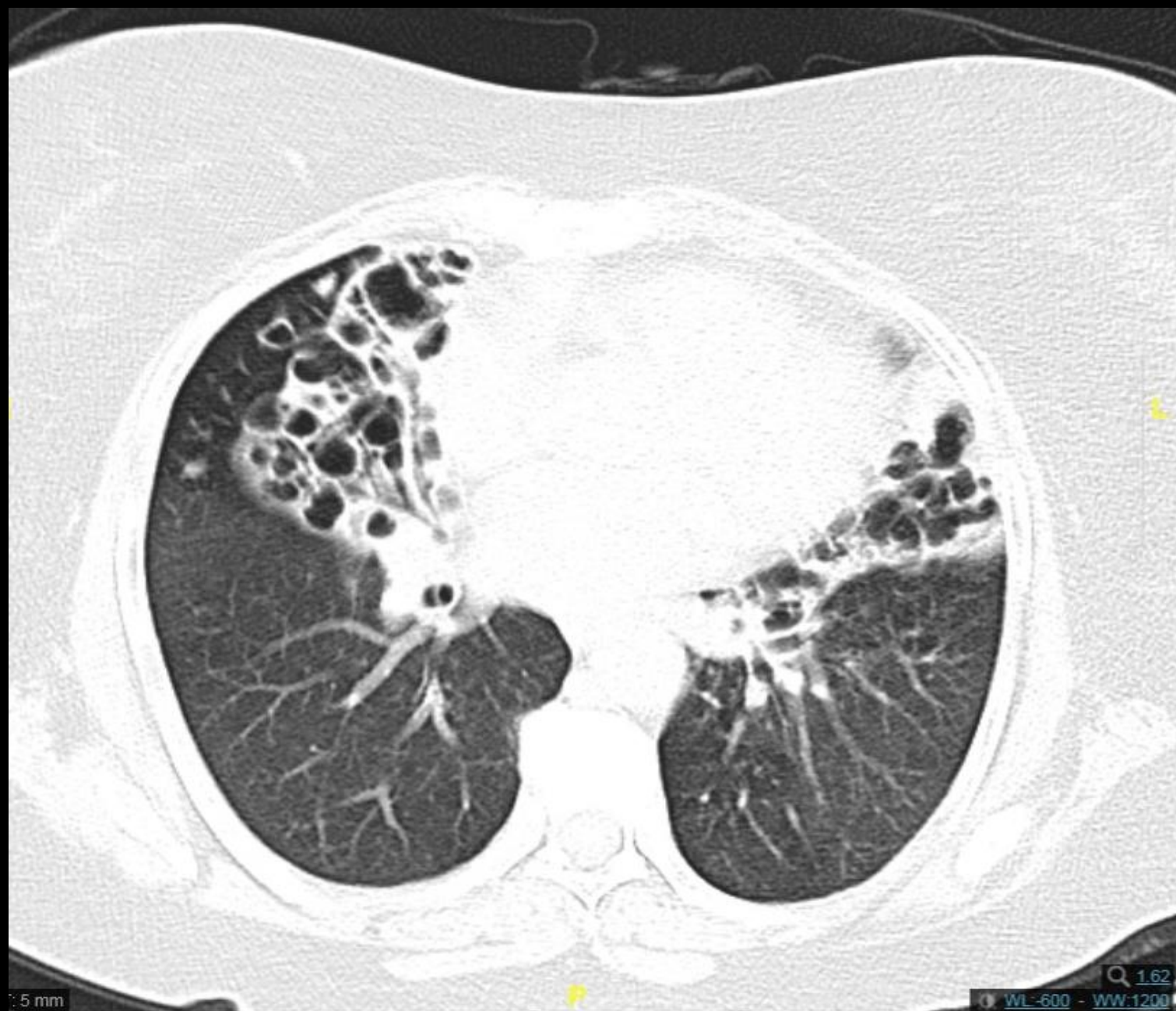


Lossy 30 : 1

Q V

Study Date: 18-Jun-20
Study Time: 14:35:





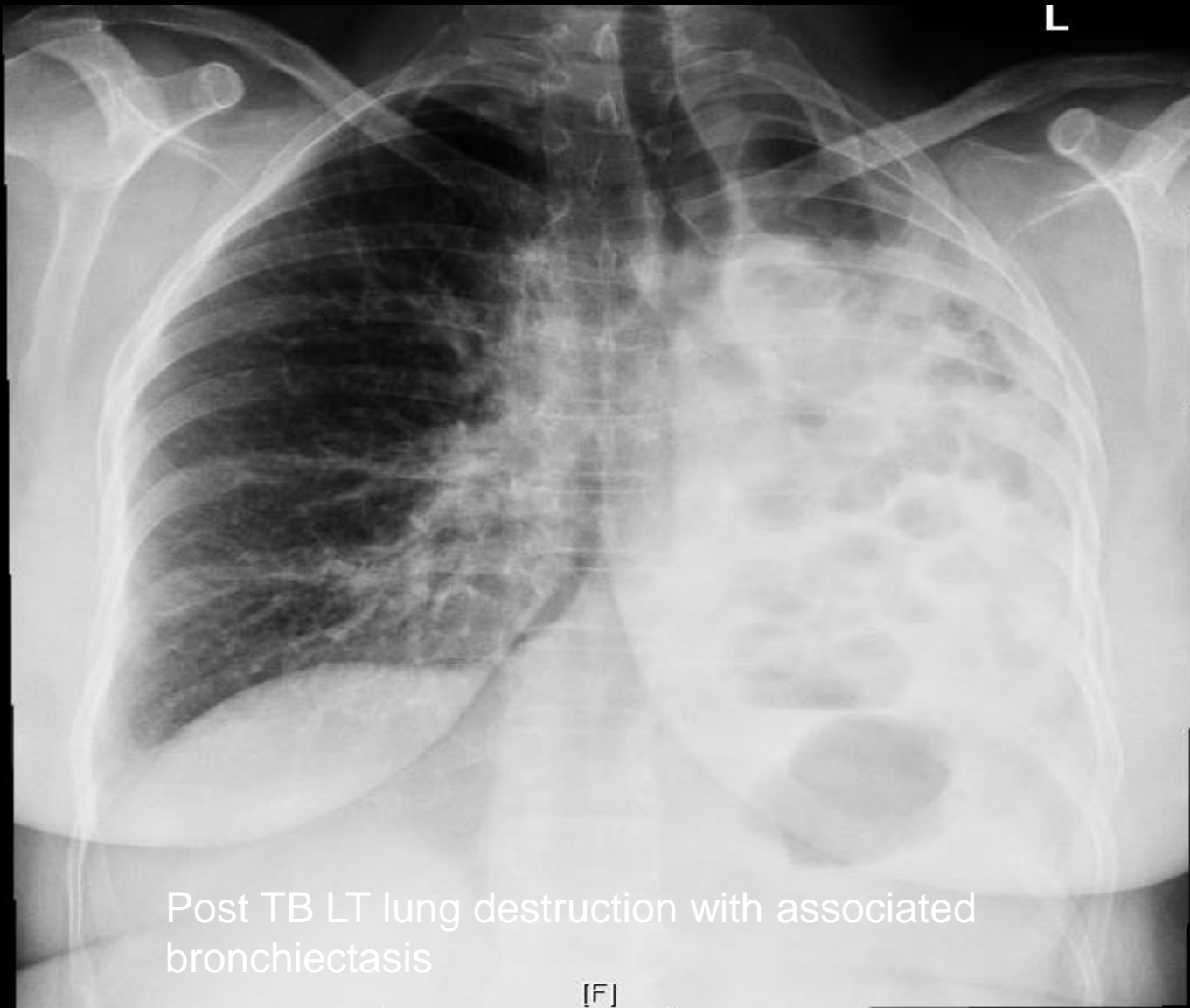
5 mm

1.62

WL-600 - WW-1200

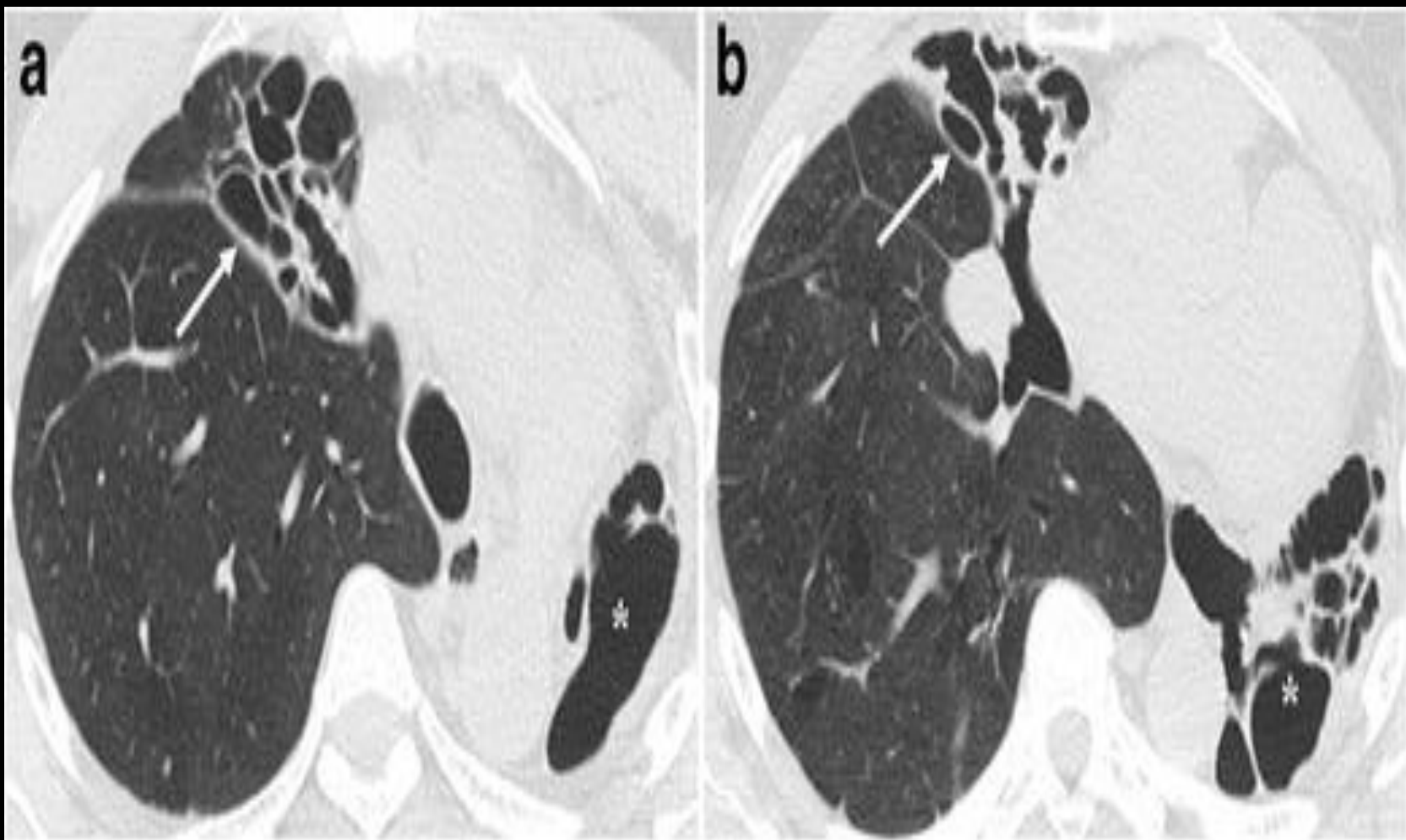


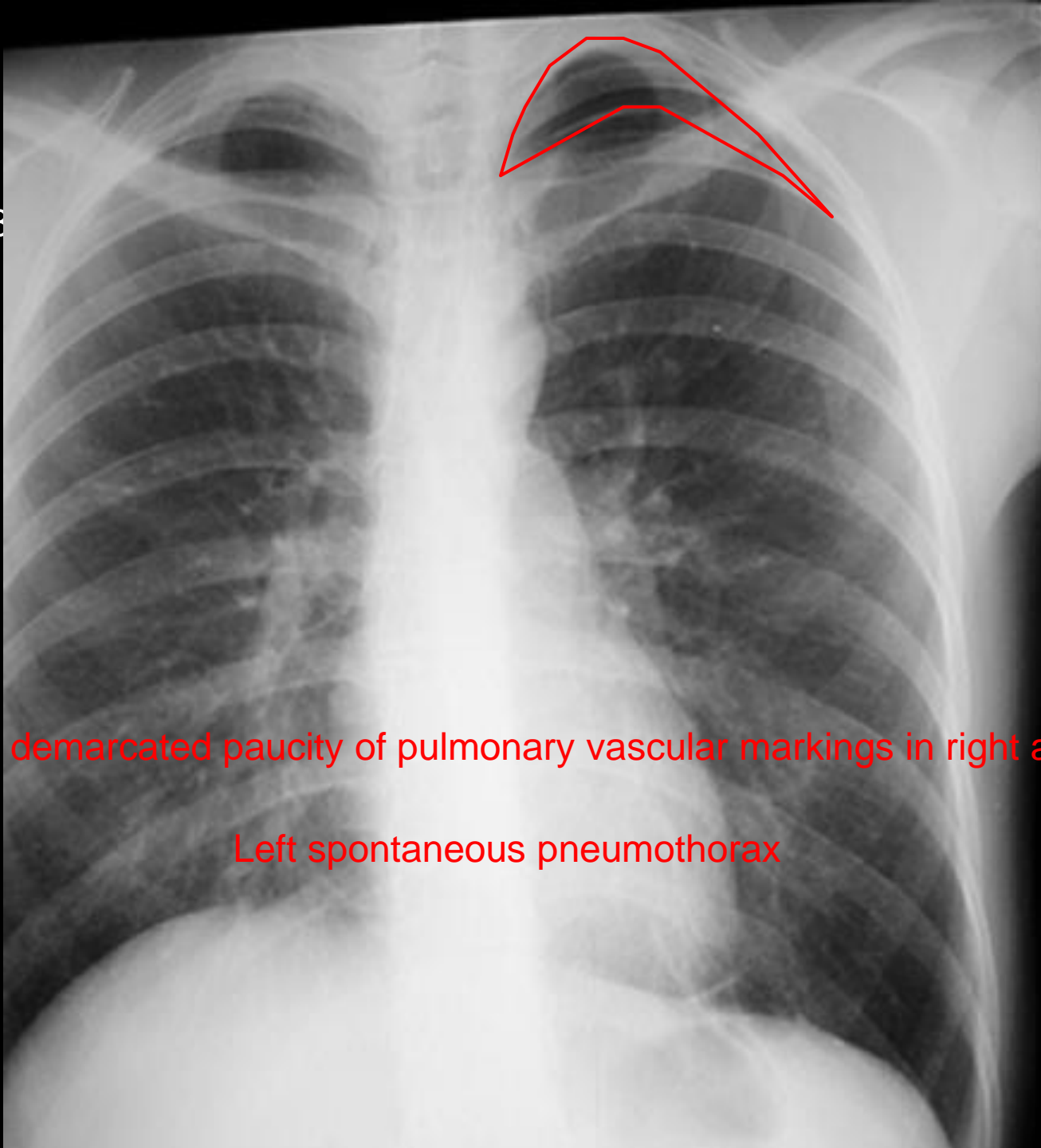




Post TB LT lung destruction with associated bronchiectasis

[F]





28

Well demarcated paucity of pulmonary vascular markings in right apex

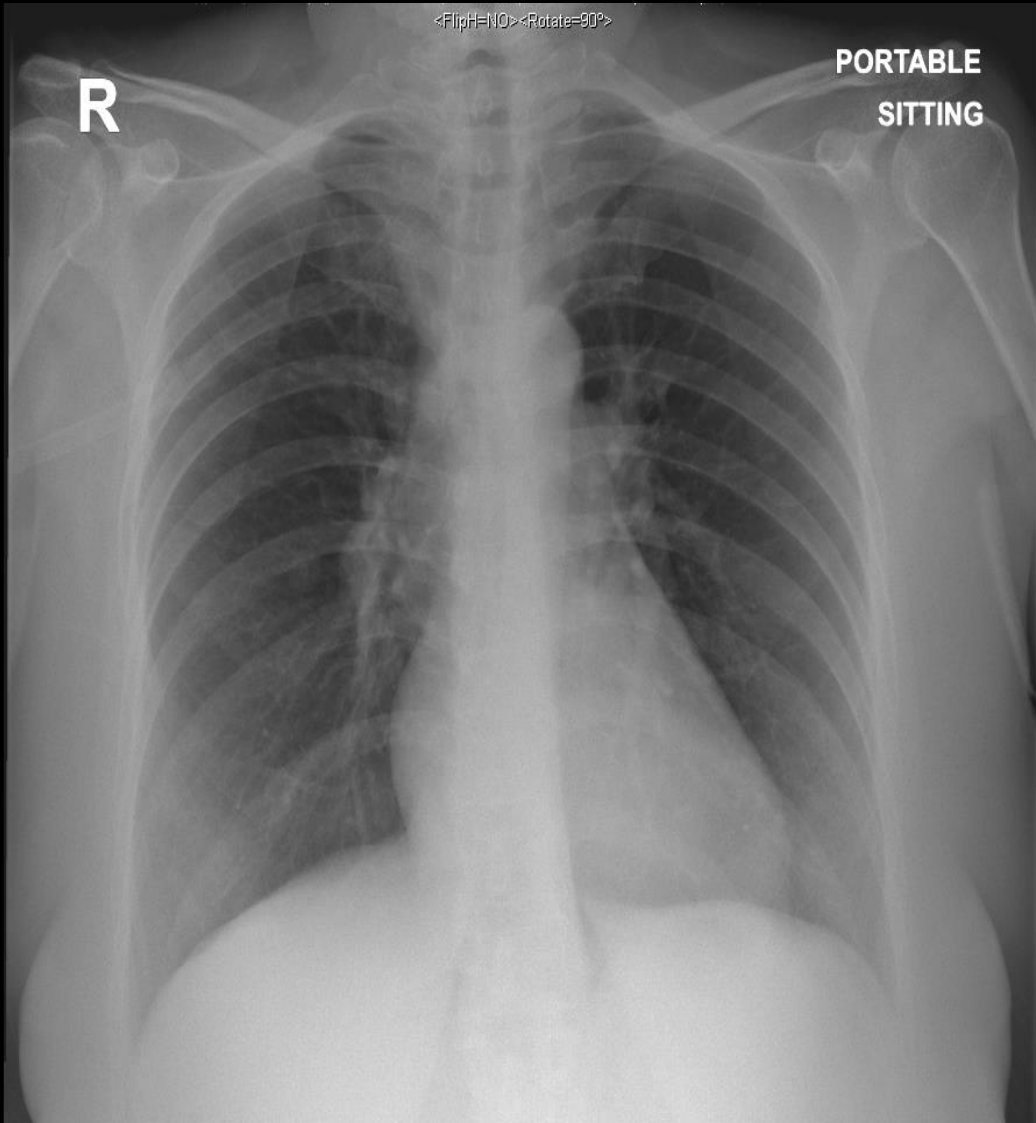
Left spontaneous pneumothorax

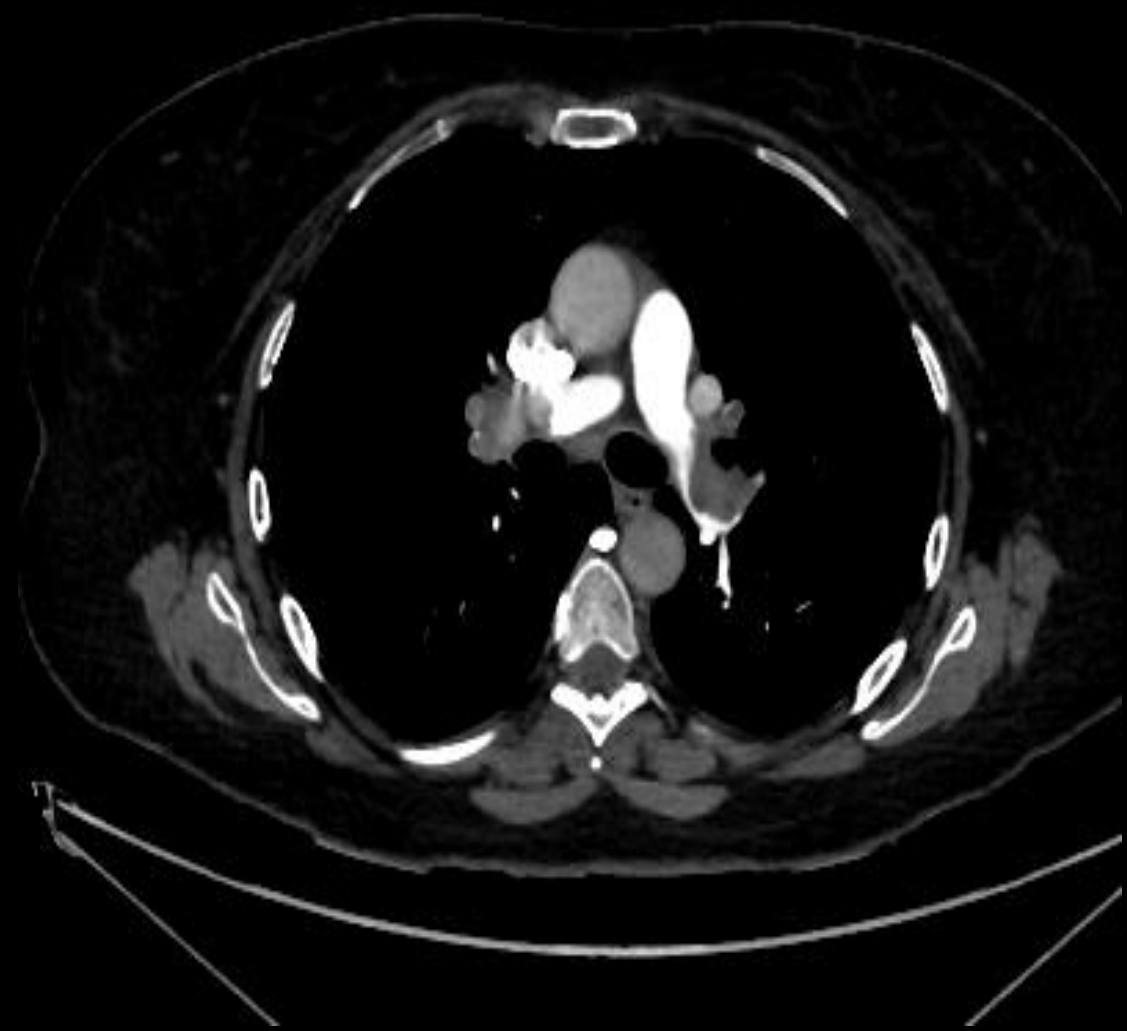


Tension Pneumothorax how will you treat

45 year old with UC

Sudden onset SOB





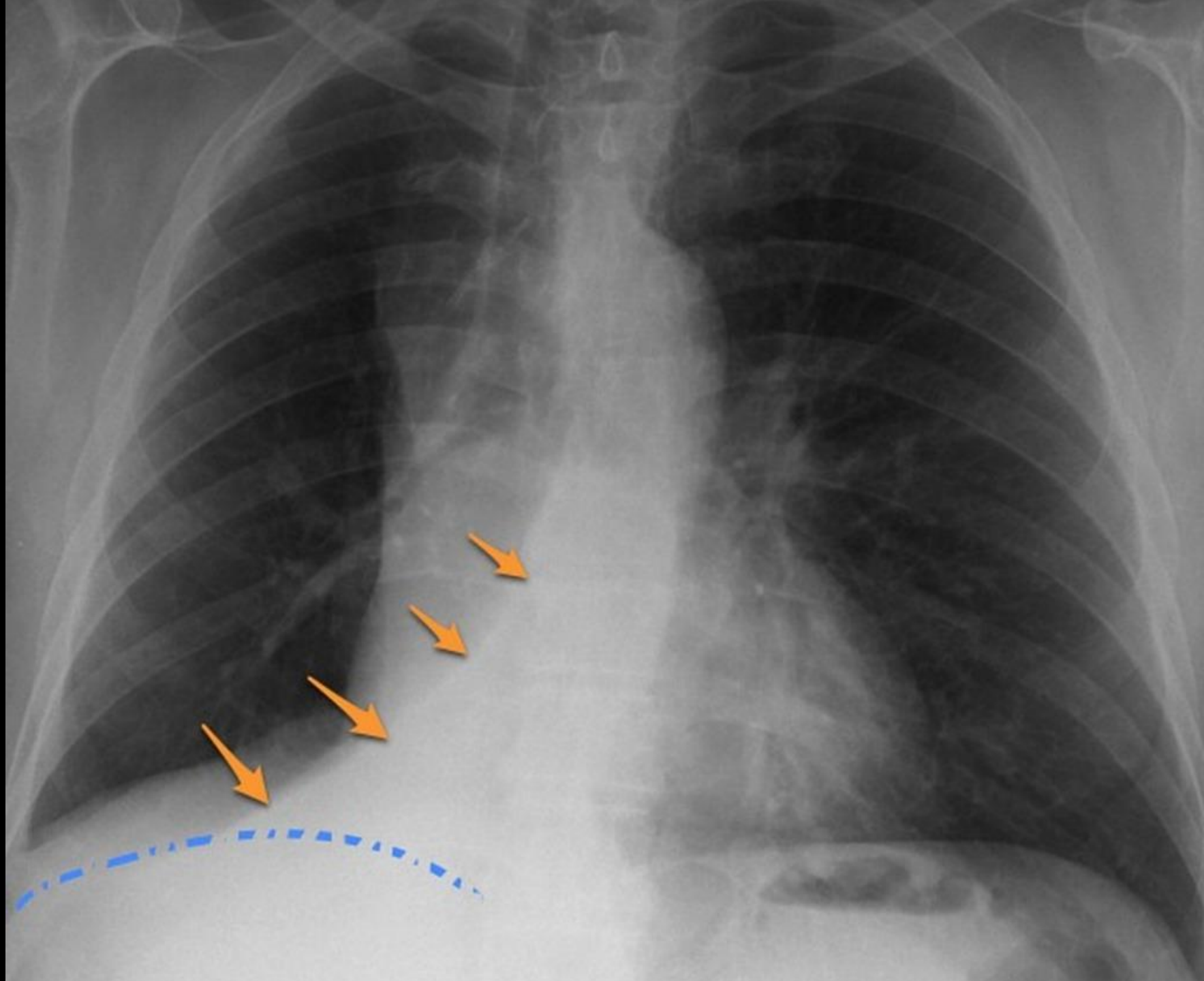
Lung Collapse

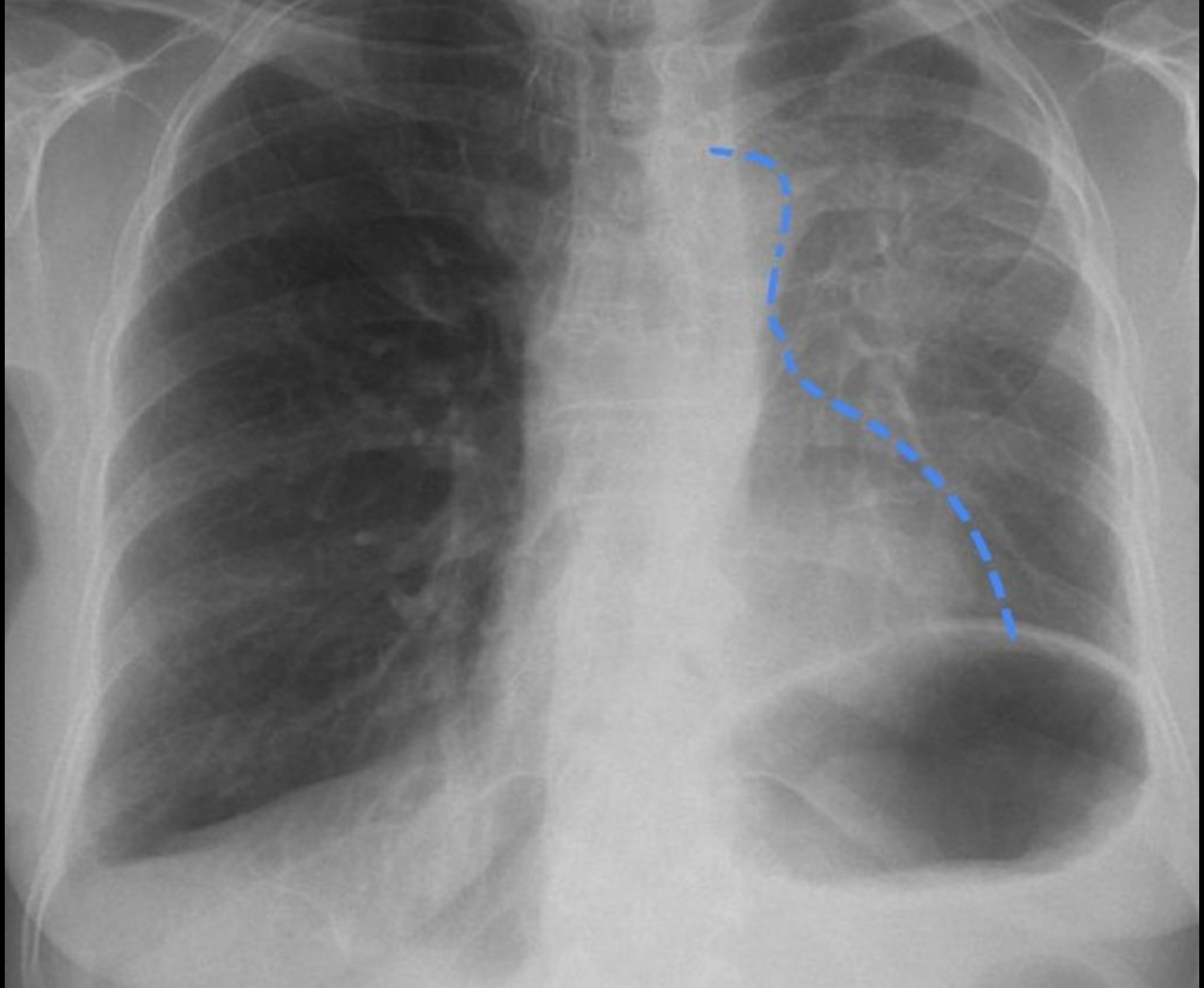
Different lobes

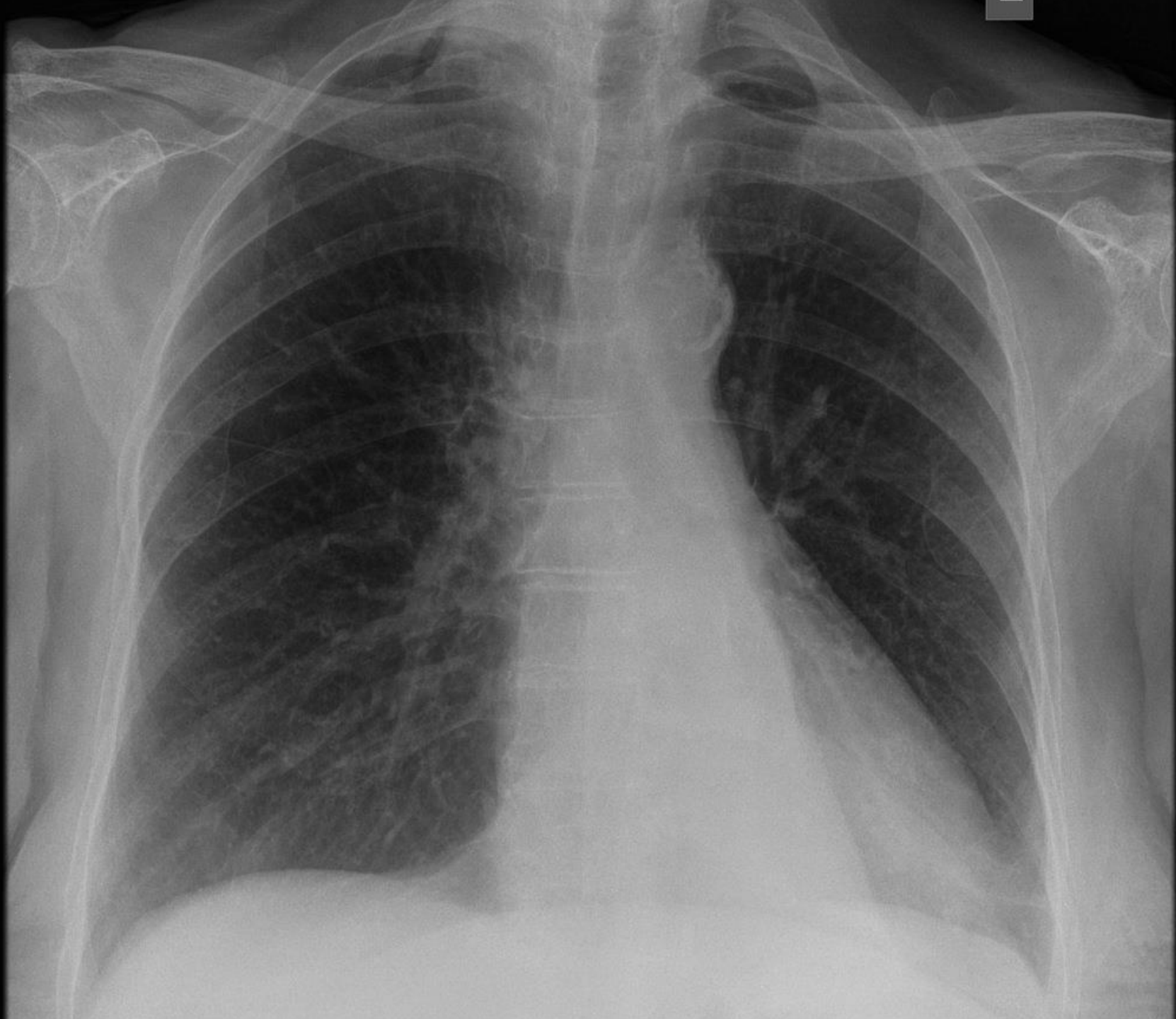
What are the causes?

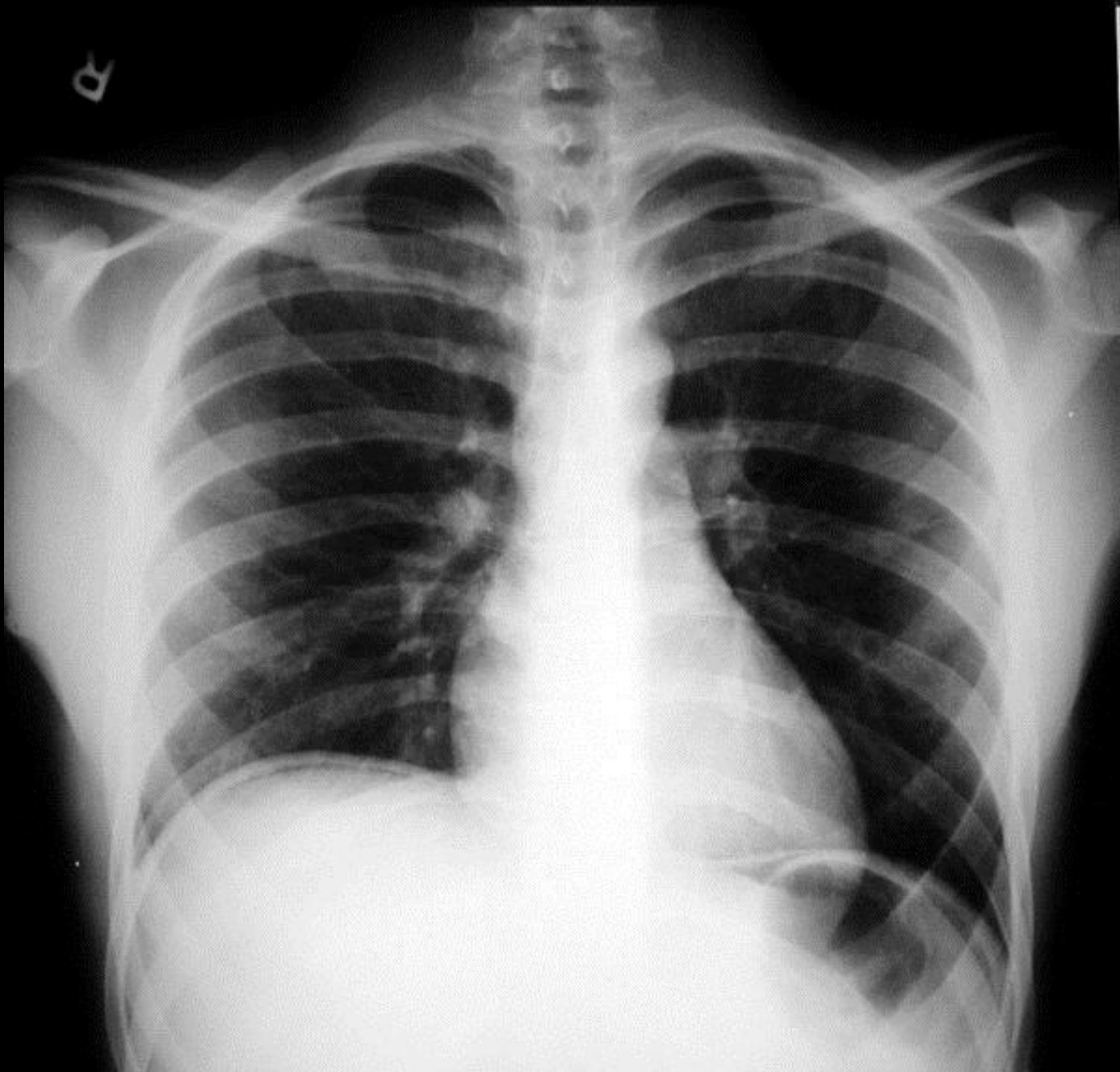


R^D
J



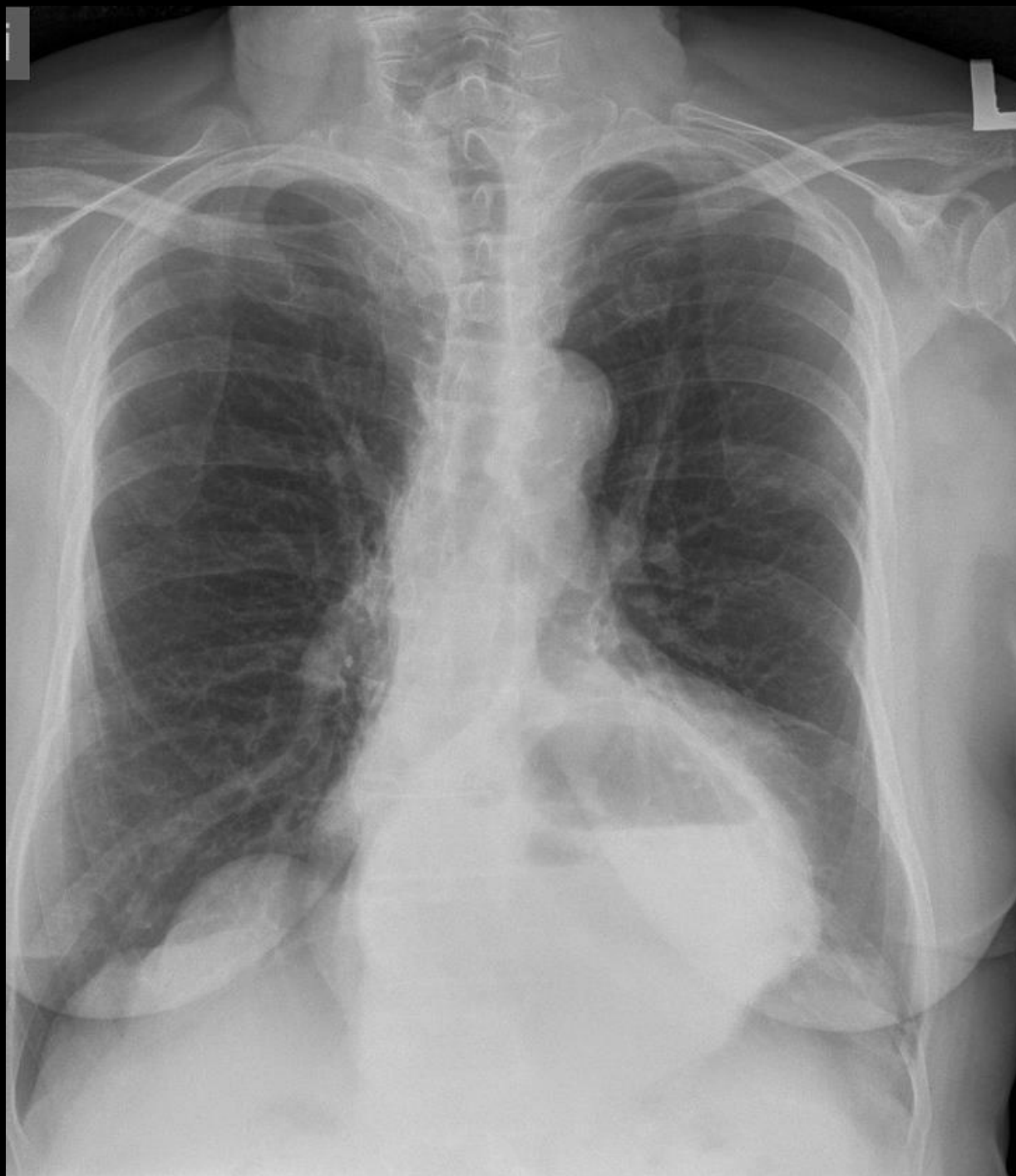


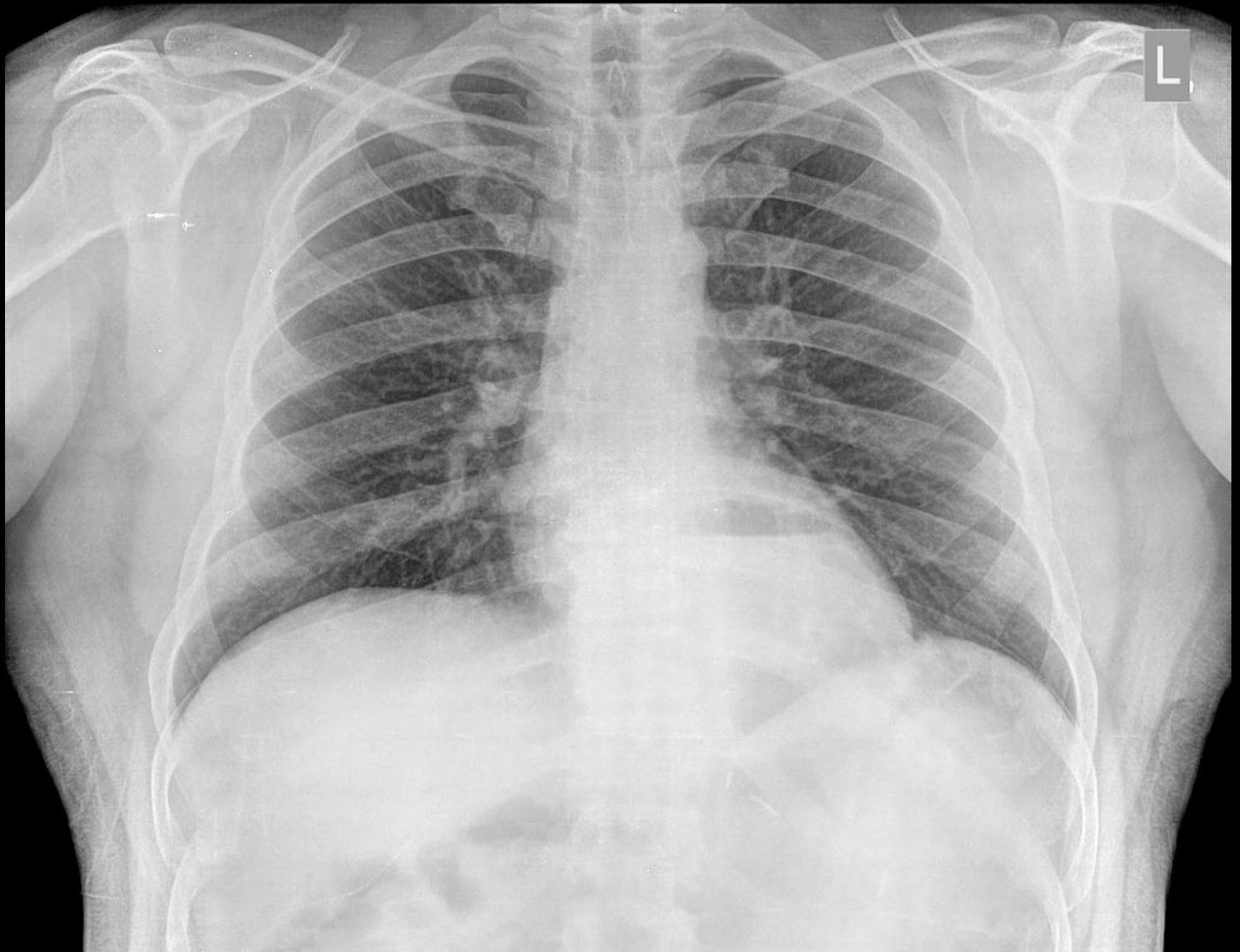




Air under the diaphragm

Chronic cough, upper
GI symptoms





The 12-Step Program

- 1: Name
- 2: Date
- 3: Old films

} **Pre-read**

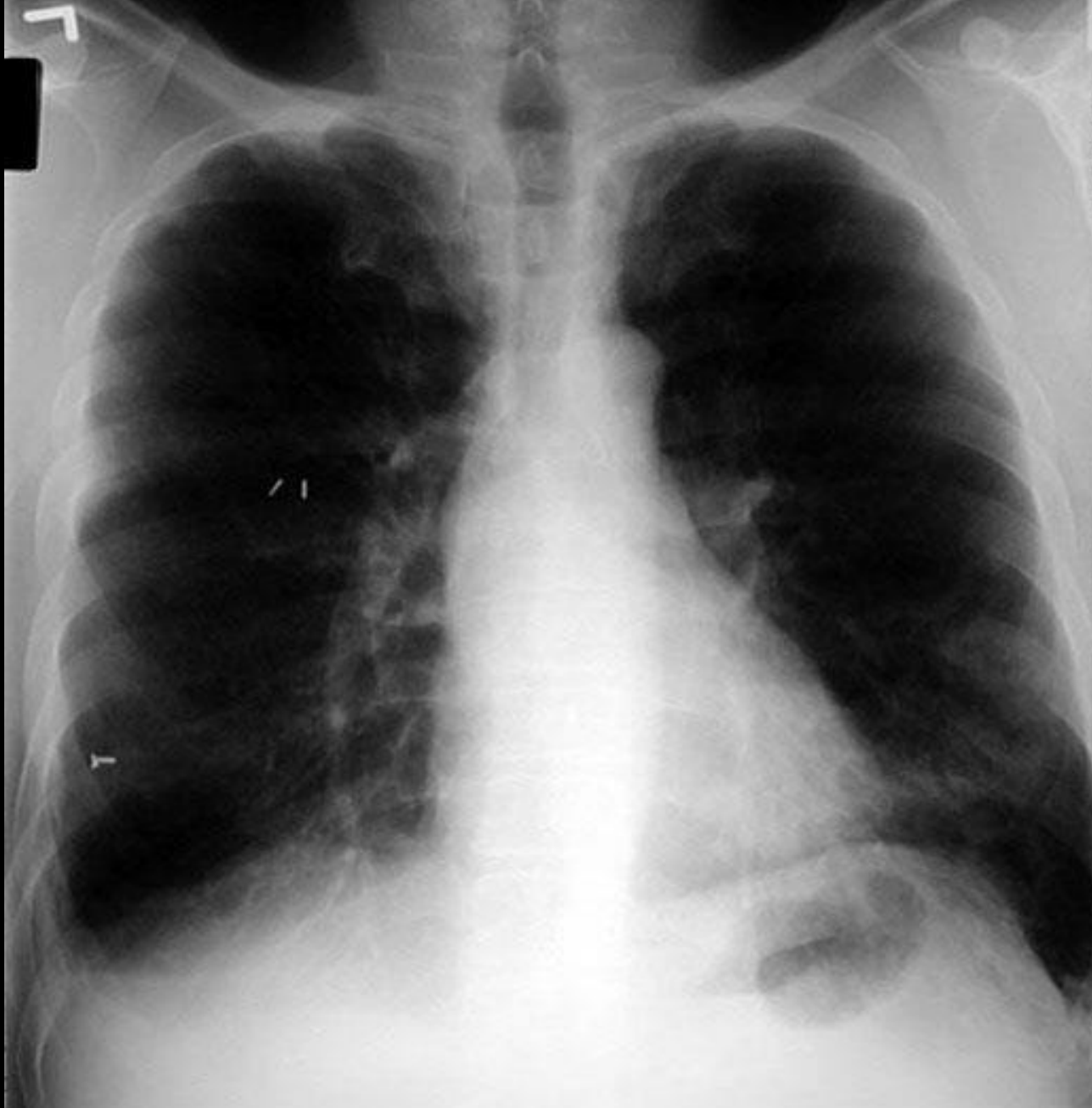
- 4: What type of **view(s)**

- 5: Penetration
- 6: Inspiration
- 7: Rotation
- 8: Angulation

} **Quality Control**

- 9: Soft tissues / bony structures
- 10: Mediastinum
- 11: Diaphragms
- 12: Lung Fields

} **Findings**



Dextrocardia

The End

Questions?