Radiology
Team 438

Radiology of Cardio-respiratory diseases
interactive lecture

Lecture 6

Reviewed By
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Objectives

- No matter what kind of wisdom dictates you the option you should pick, no one one will be able to tell you if it's right or wrong till you arrive to some sort of outcome. The only thing we are allowed to do is believe that we won't regret the choice we made.
- No objectives

Color Index: Important | Doctor's Notes | Extra | Female slides | male slides

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For better Understanding

Differential diagnosis for the abnormal white (Hyperdense) abnormalities on the radiograph:

1- Pleural effusion.
- Check the costophrenic angle, is it sharp or blunted?
- Look for meniscus sign. (Crescent).

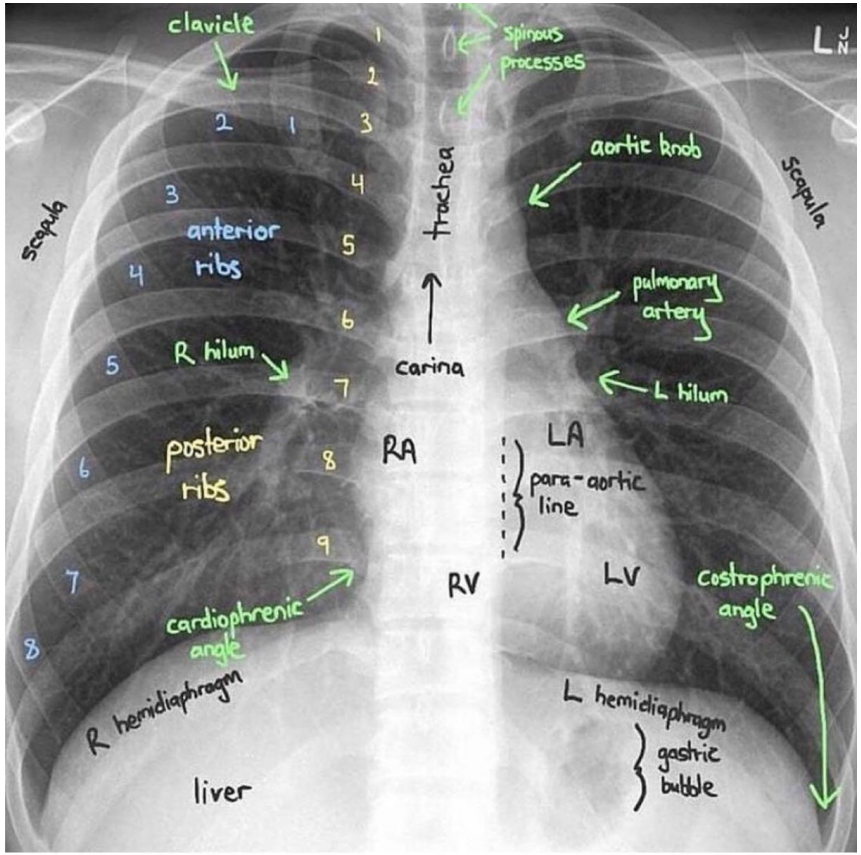
2- Lung collapse (Atelectasis).
- Is there a wedge sign on the lateral view X-ray? tracheal deviation + reduced lung volume

3- Mass.
- Does the opacity have well demarcated margins?

4- Infiltration/consolidation.
- Rare. ill-defined border

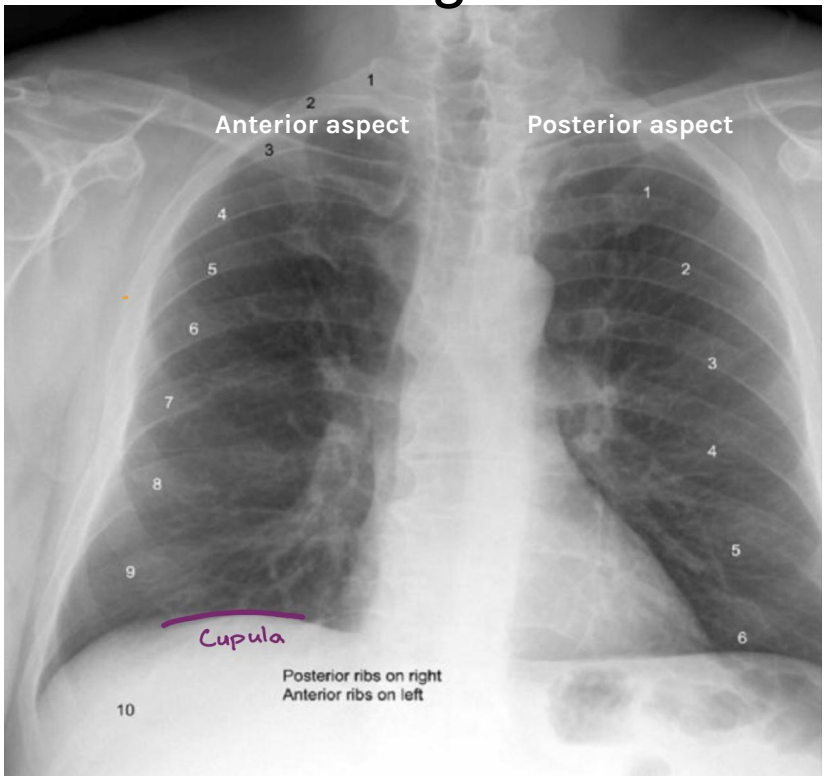
Remember: The history helps a lot, so a history with smoking make us think of a tumor, and history of DVT make us think of PE, and malignancies usually does not present with fever.

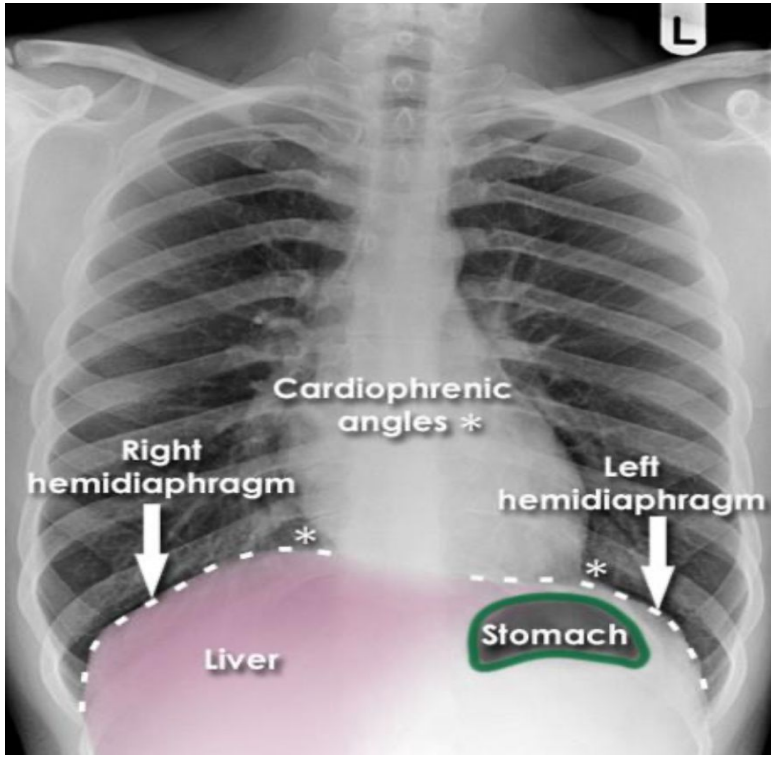
Quick Revision



Extra image

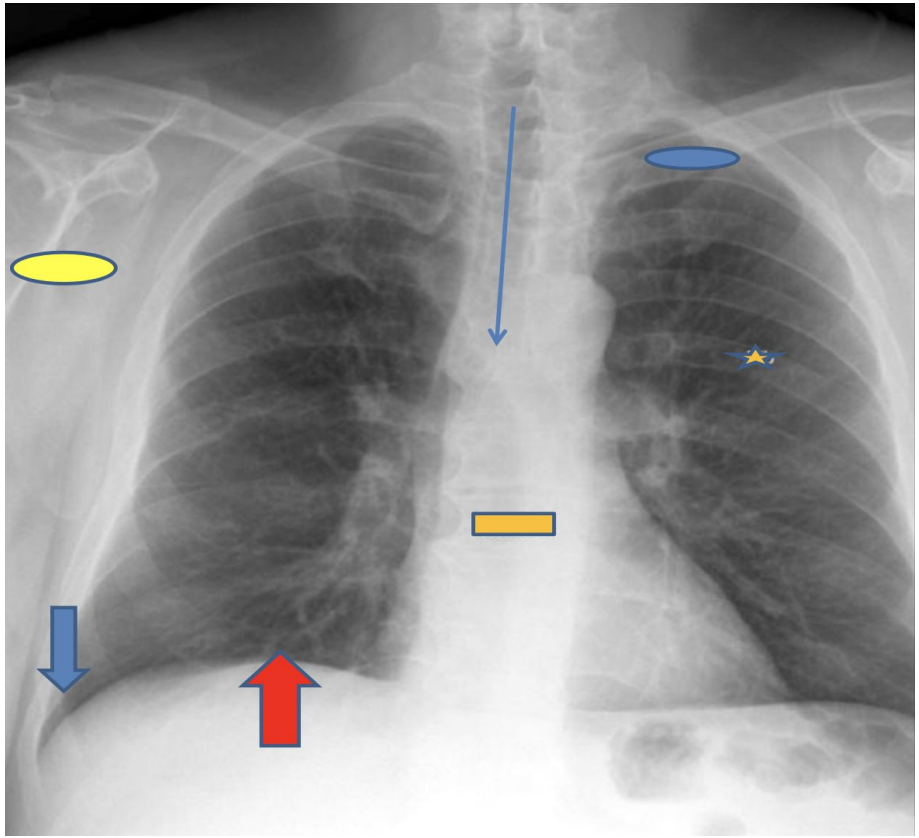
Counting Ribs





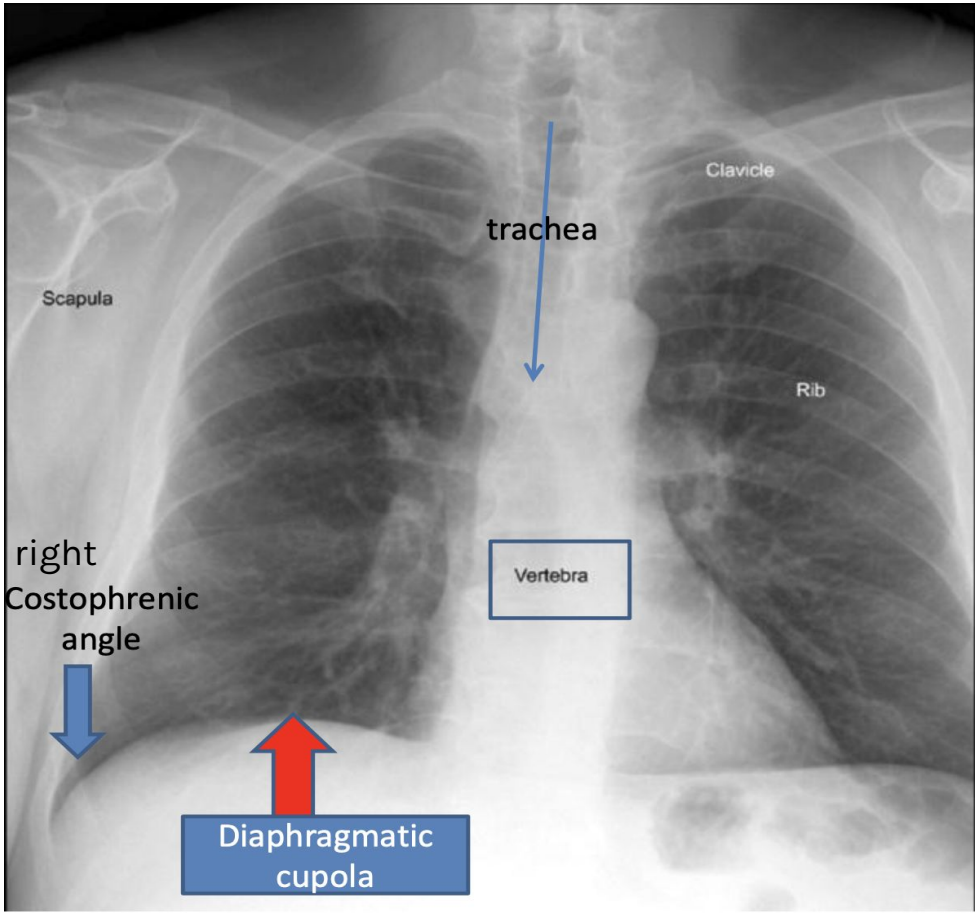
*If the 9th or 10th rib was on the level of diaphragmatic cupola then the patient took full inspiration
If it was on the level of 7th or 8th rib then the patient did not take a full inspiration

Identify the labels:

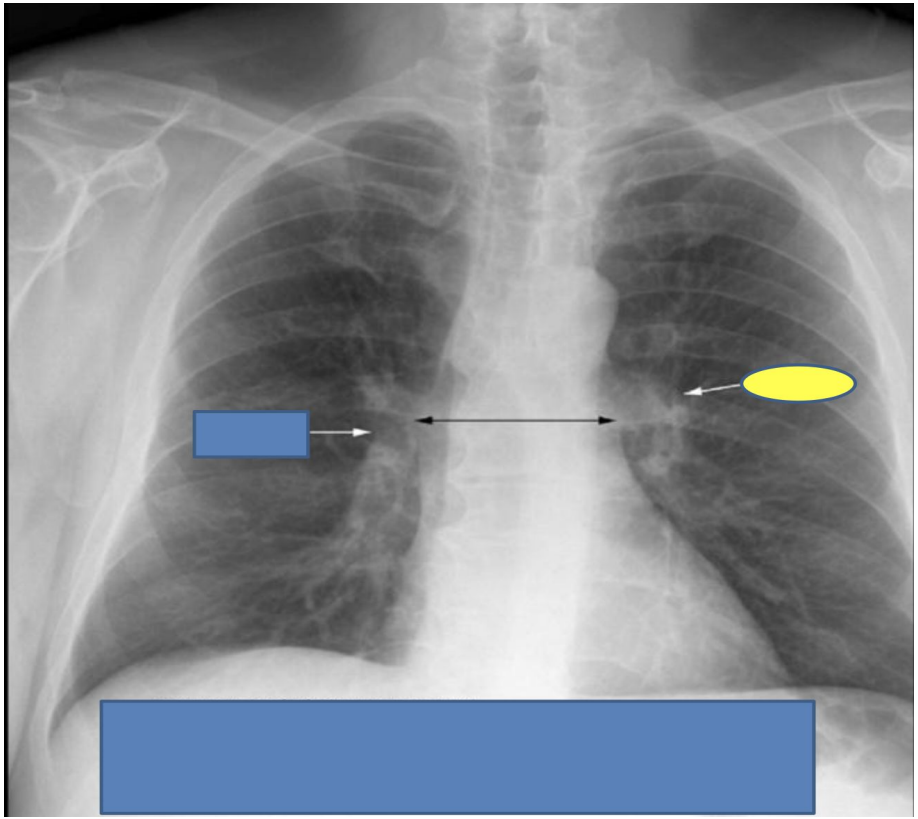


Answer

Anatomy

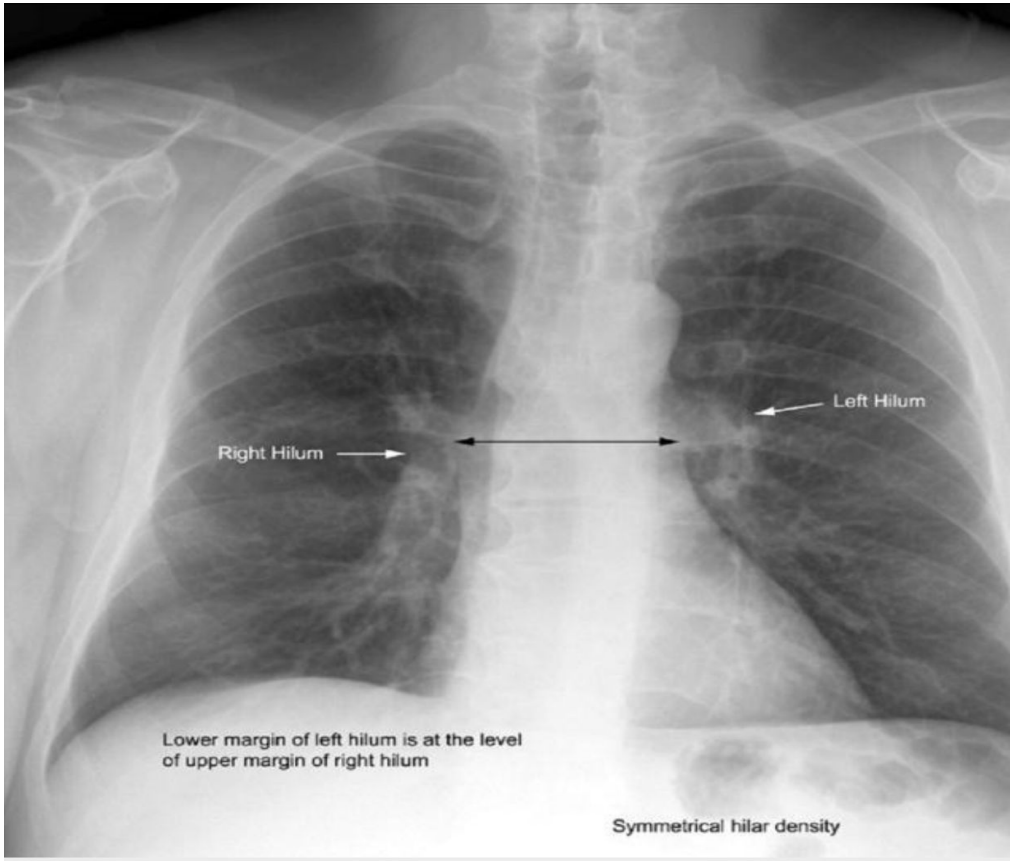

Clavicle
trachea
Scapula
Rib
right
Costophrenic
angle
Vertebra
Diaphragmatic
cupola

Identify the labels:

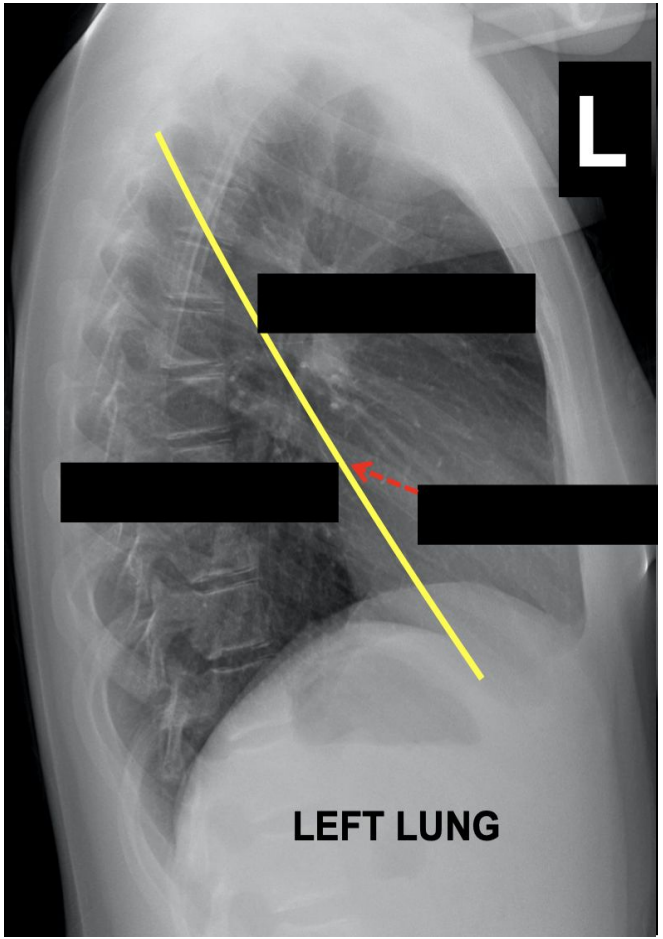


Answer

Hilum

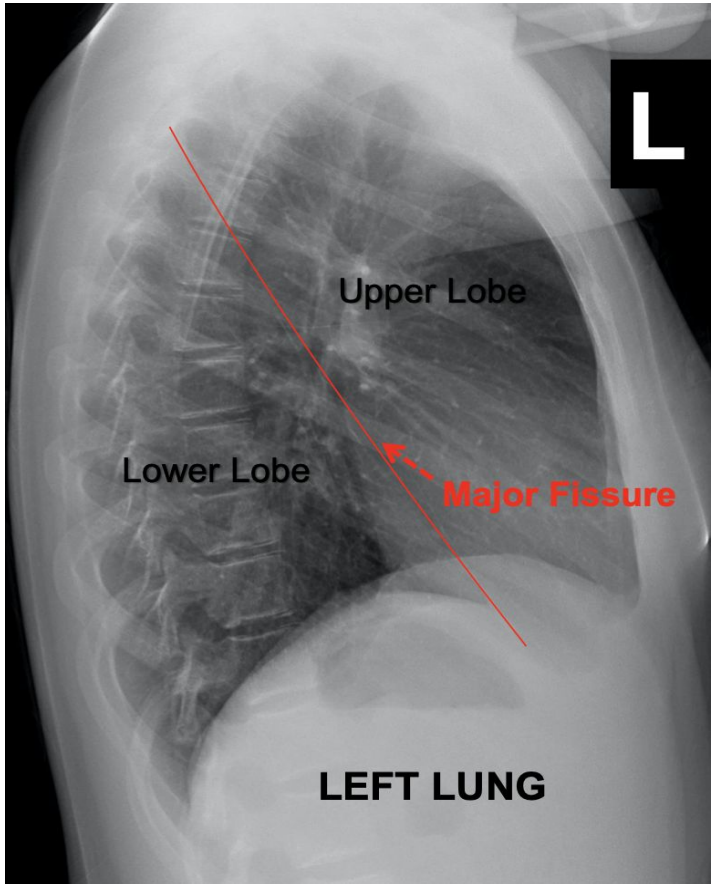

Left Hilum
Right Hilum
Lower margin of left hilum is at the level of upper margin of right hilum
Symmetrical hilar density

Identify the labels:



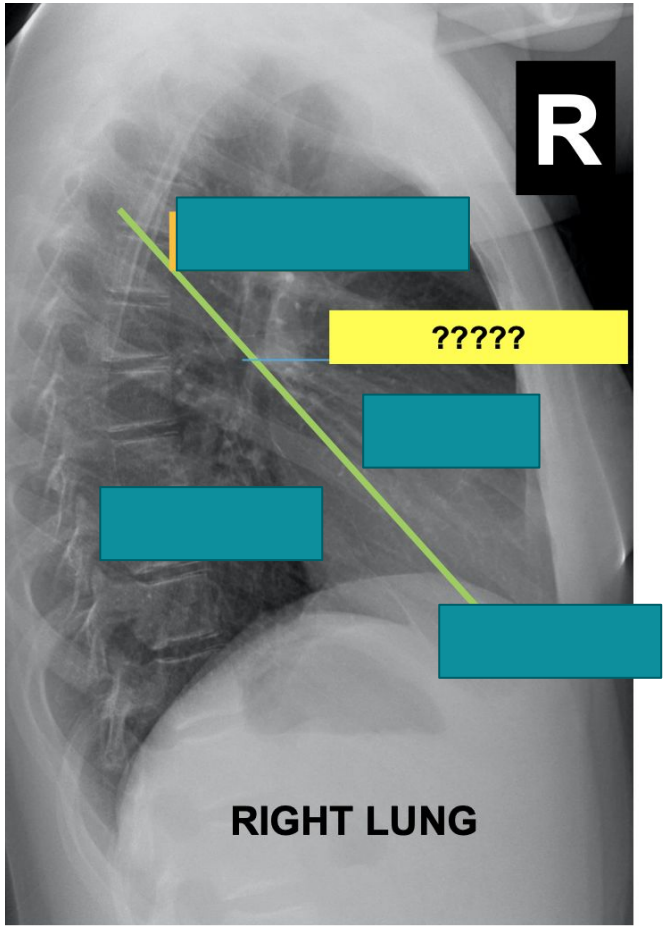
Answer

Anatomy



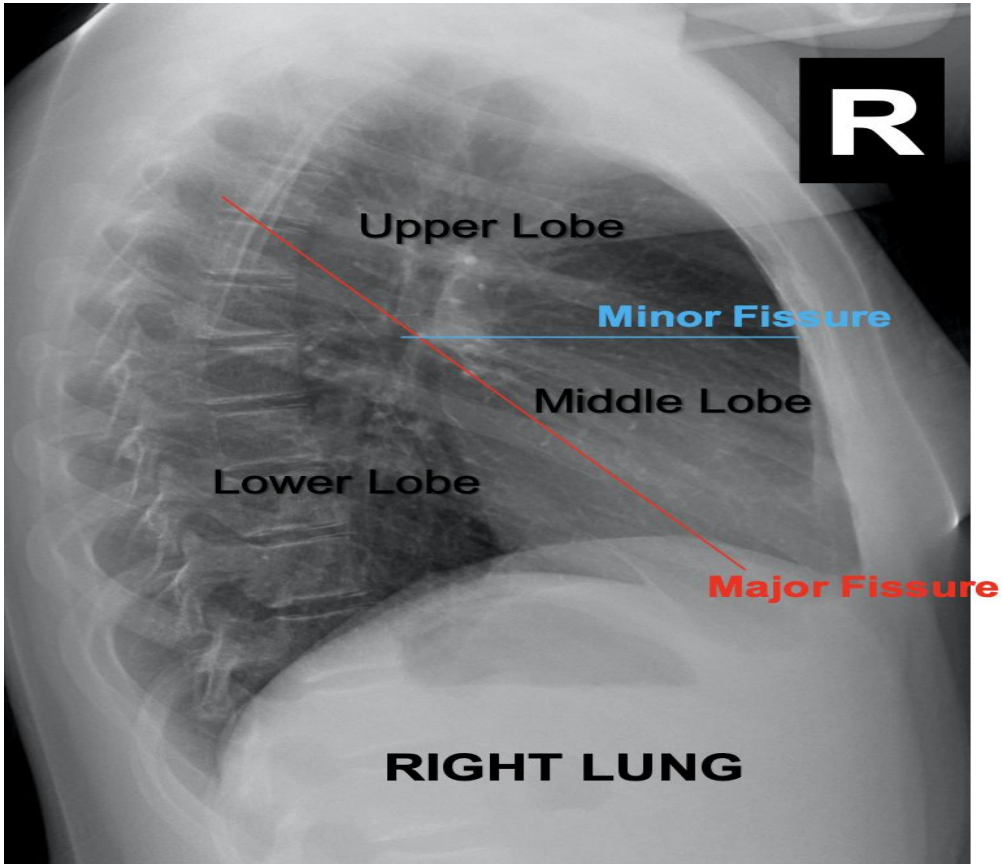
Major fissure=oblique fissure

Identify the labels:



Answer

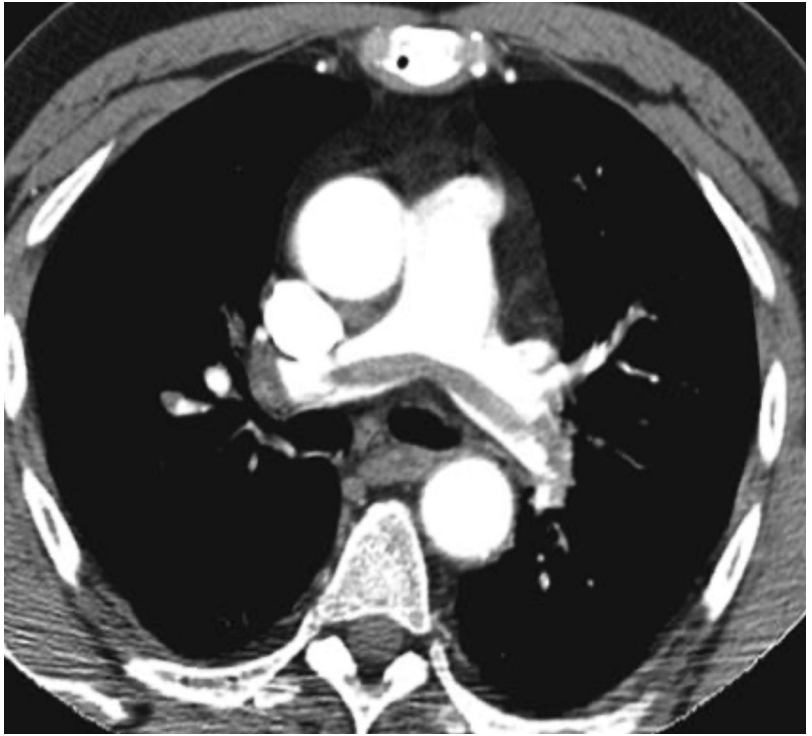
Anatomy



Minor fissure=horizontal fissure

Case 1

- Patient presented to ER with acute chest pain and SOB
- Past history of pelvic fracture with hospital admission for 5 weeks



What is the modality?

What is the diagnosis?

Answer

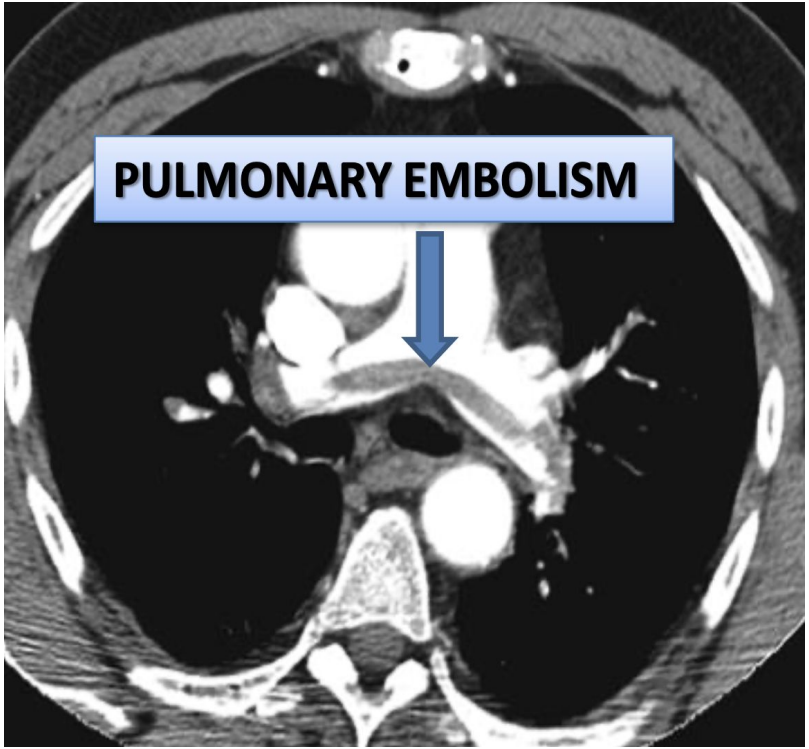
Case 1 (Answer)

What is the modality?

Computed tomography angiography

What is the diagnosis?

Saddle like Pulmonary Embolism

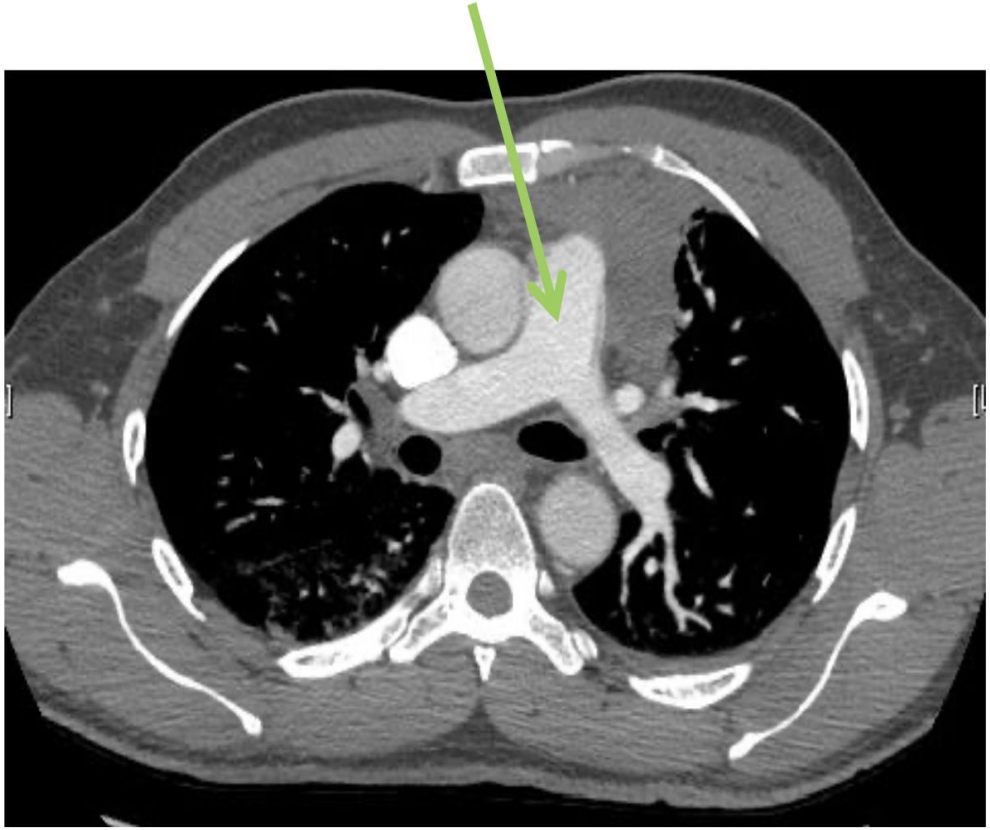


Dr. NOTE: For the exam there are two types of questions:
First type: Without image only clinical scenario
Second type: Image with clinical scenario

If the patient is Bedridden for a long time there is a high possibility for DVT

Case 2

- What is the modality?
- normal or abnormal findings?

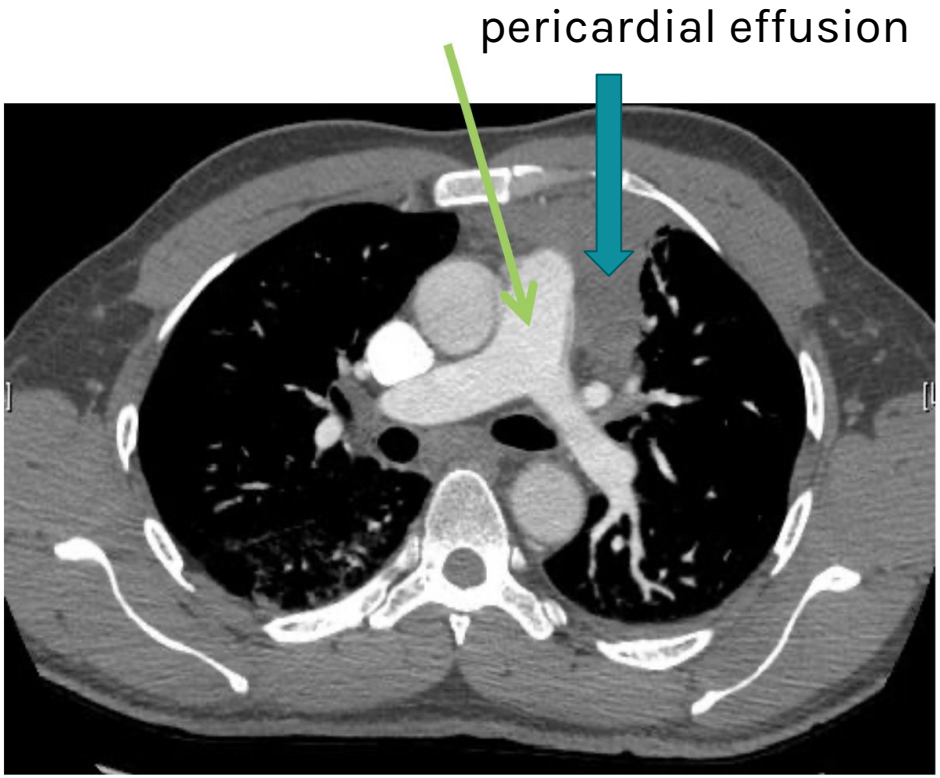


Answer

Case 2 (Answer)

- **What is the modality?**
  Computed tomography angiography with contrast (mediastinal window)

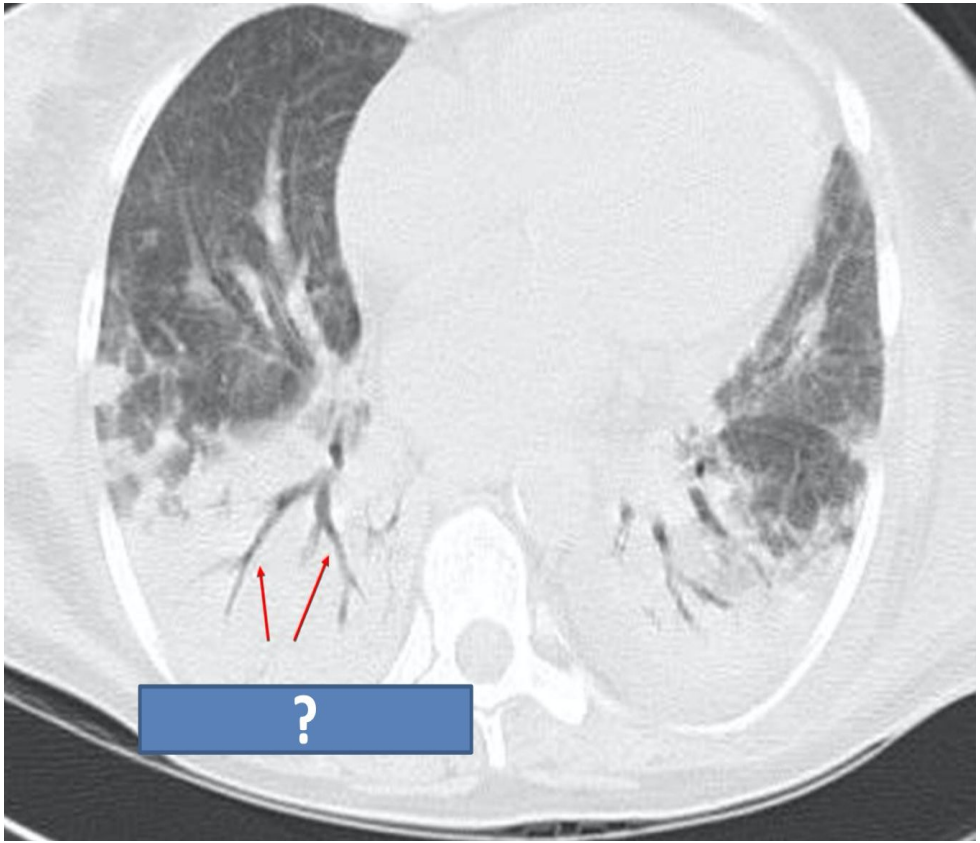
- **normal or abnormal findings?**
  Abnormal due to presence of pericardial effusion



-Regarding the pulmonary trunk=normal no PE
-remember the pericardium surrounds both the heart and the roots of major vessels so the effusion can extend up to the pulmonary areas

Case 3

- What is the modality?
- Signs?
- Diagnosis



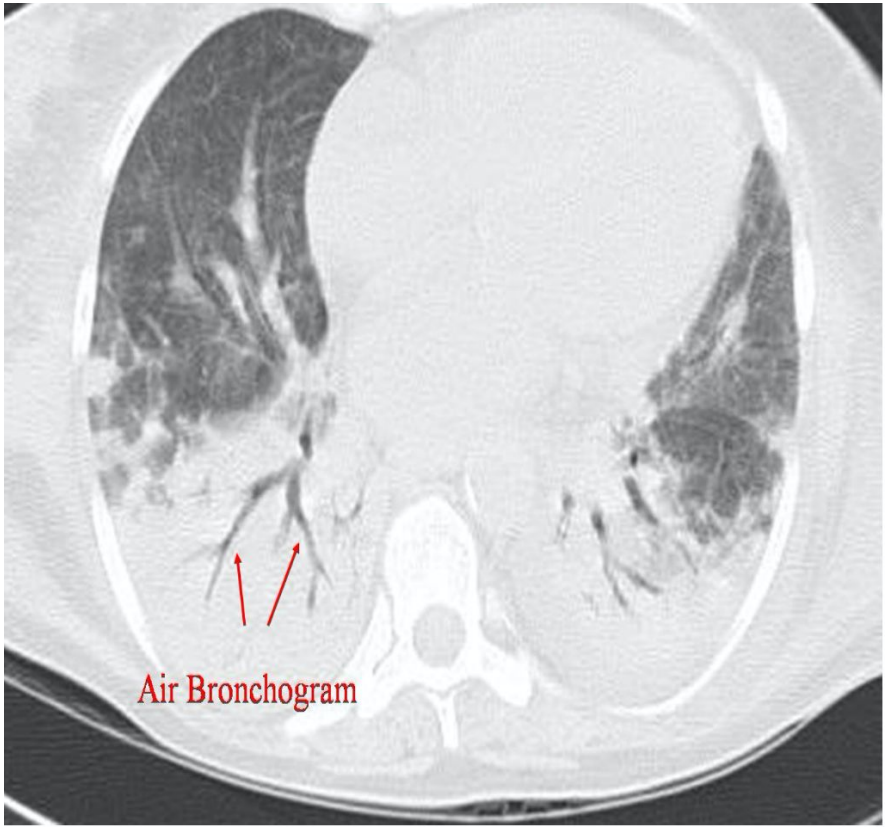
Answer

Case 3 (Answer)

- **What is the modality?**
  Computed tomography
  (lung window)

- **Signs?**
  Air bronchogram

- **Diagnosis**
  Consolidation
  (on both lung bases)



Case 4

- What is the modality?
- Signs?
- Diagnosis ?

Answer

Case 4 (Answer)

What is the modality?

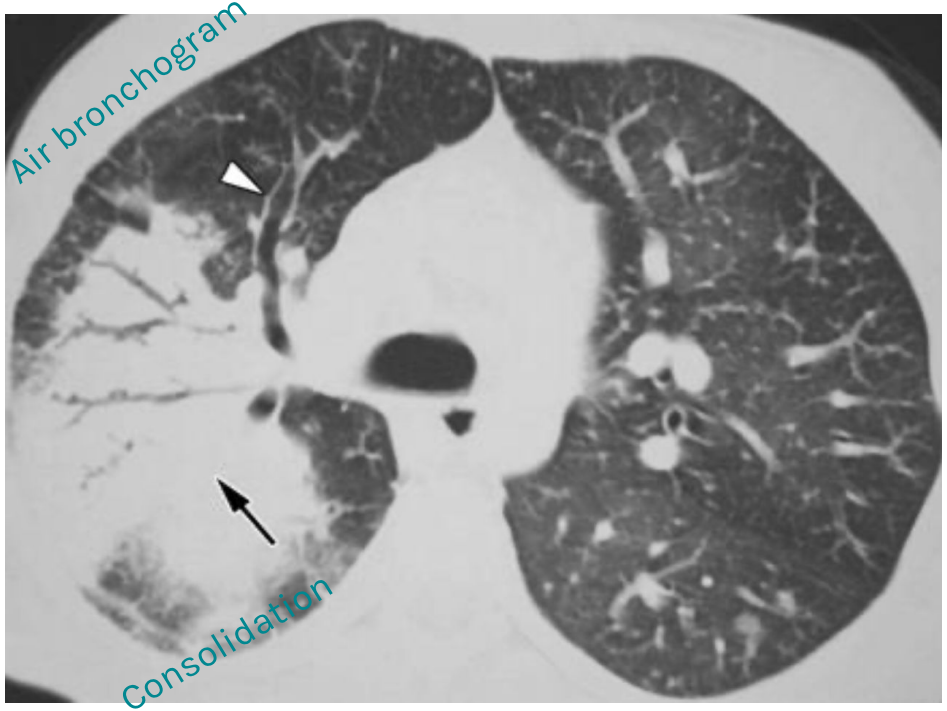
Computed tomography (lung window)

Signs?

Air bronchogram

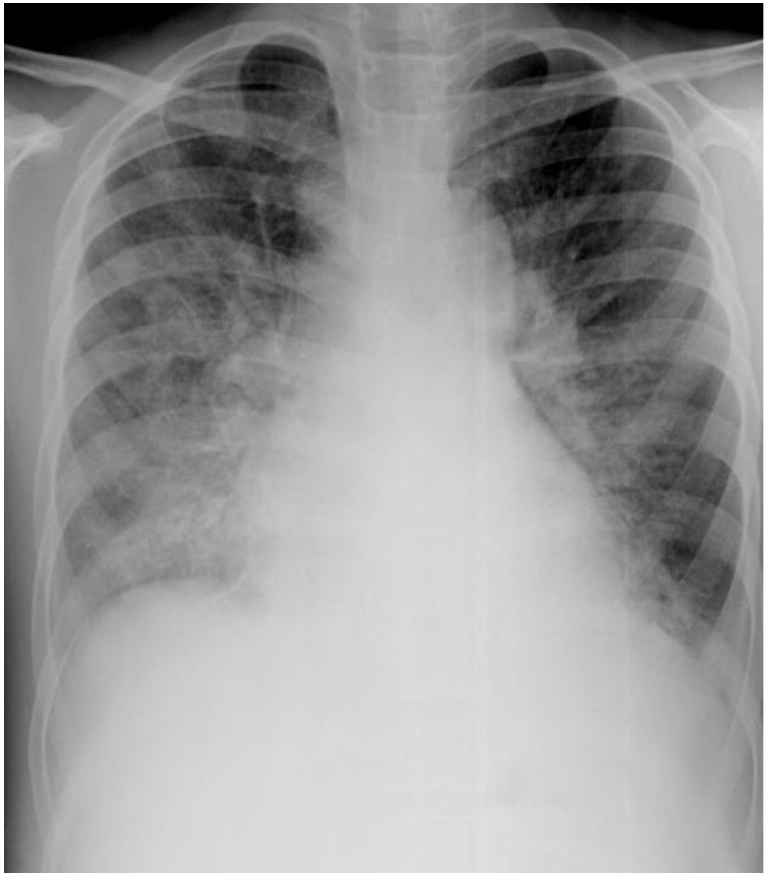
Diagnosis ?

Consolidation



Case 5

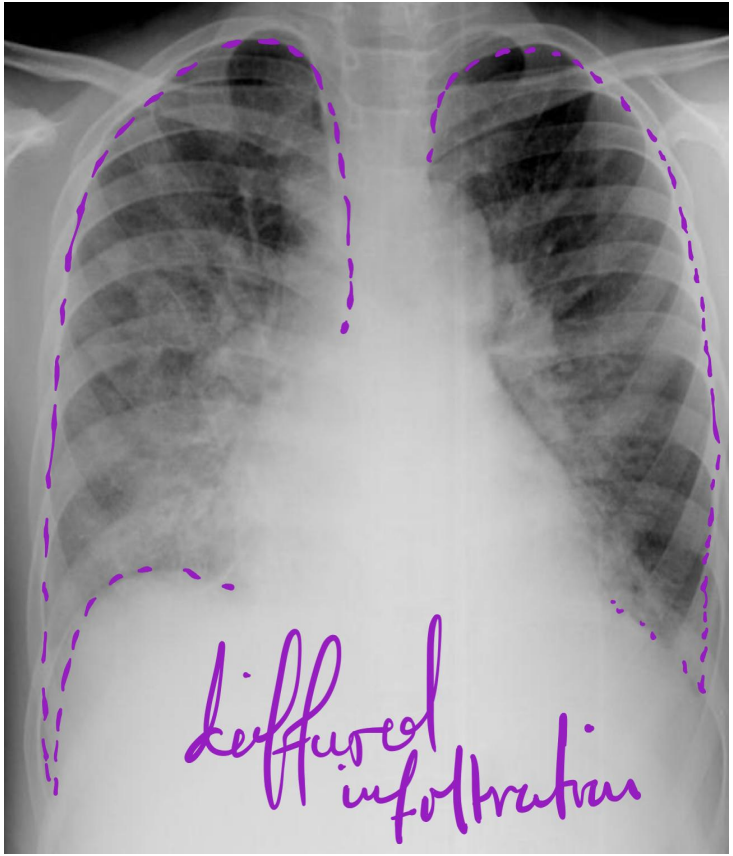
- What is the modality?
- Mass or infiltration?
- Why?



Answer

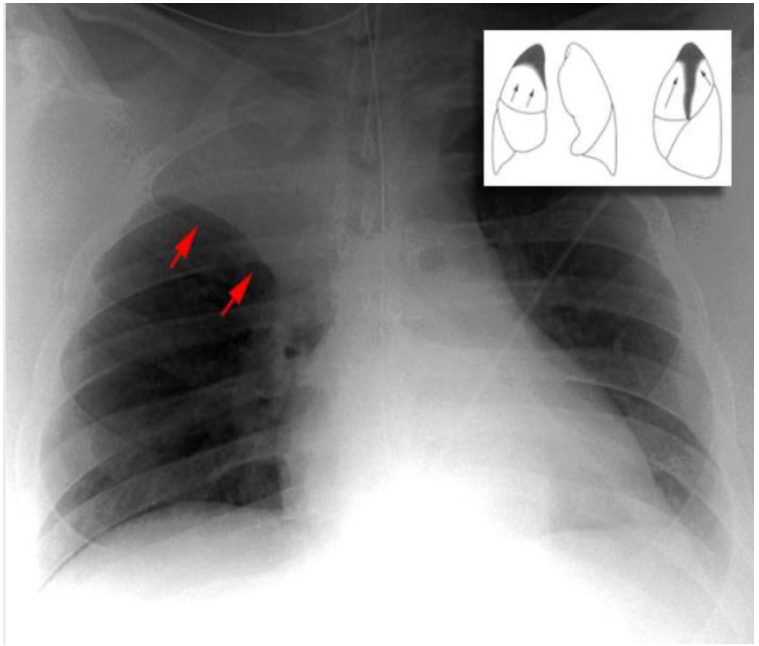
Case 5 (Answer)

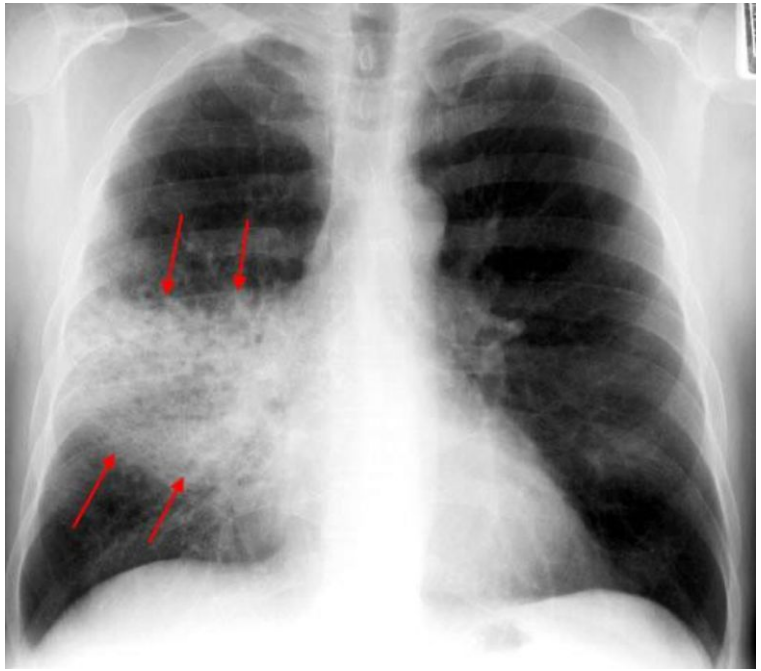
- **What is the modality?**
  CXR
- **Mass or infiltration?**
  Consolidation (diffuse infiltration)
- **Why?**
  Because no defined borders



defined border=mass

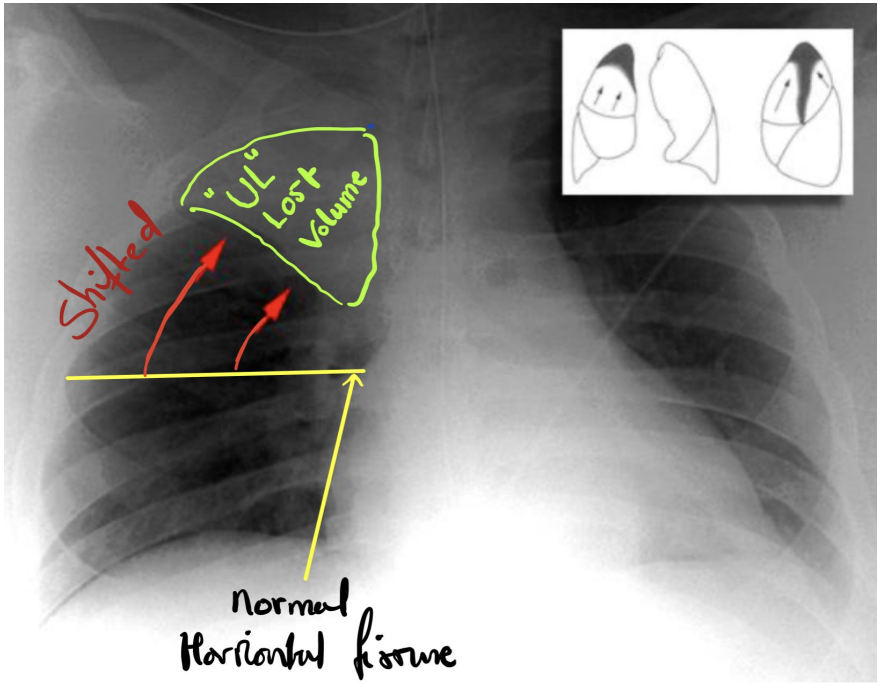
How to differentiate between Atelectasis and Pneumonia?





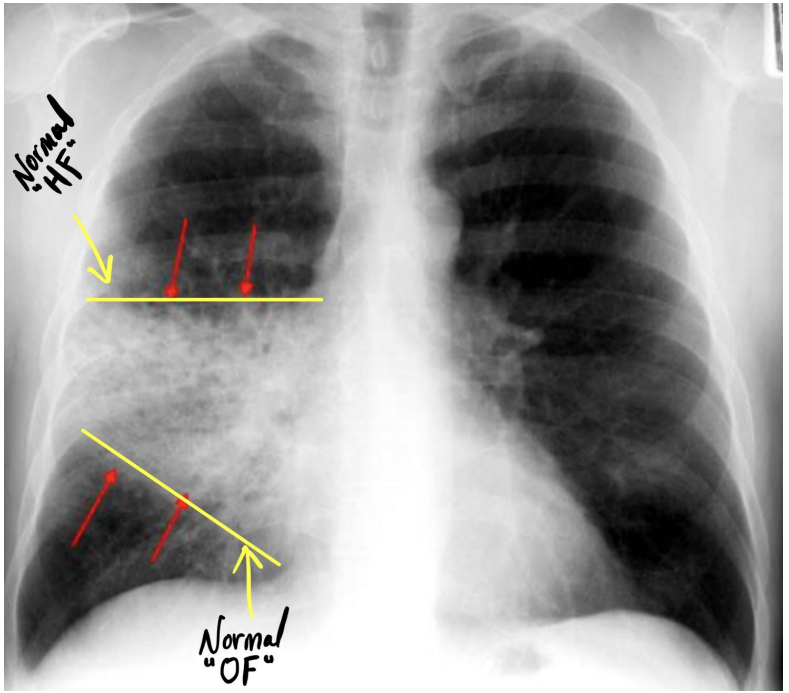
Atelectasis Vs pneumonia

Atelectasis



Collapsed lobe lost **volume**

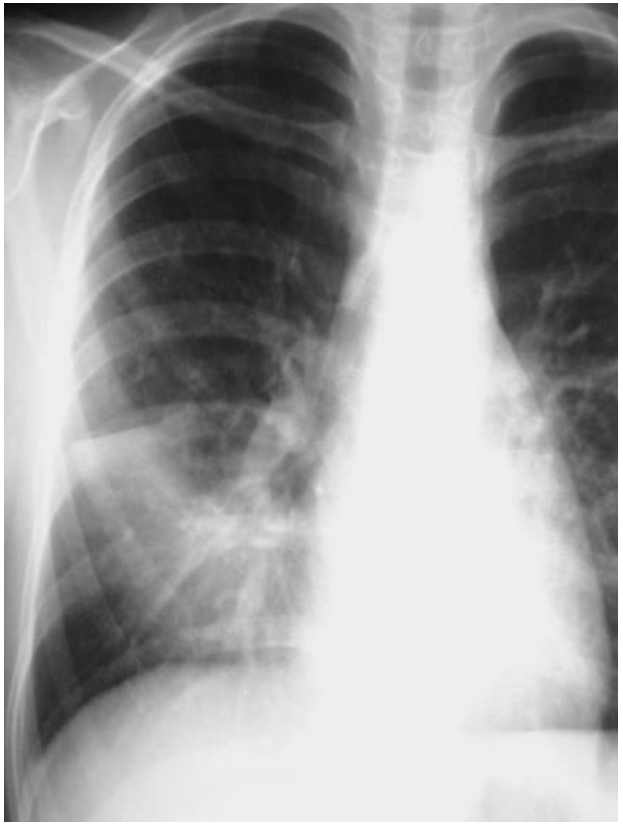
Pneumonia



Lobe with pneumonia has not lost **volume**

Case 6

- What is the diagnosis?

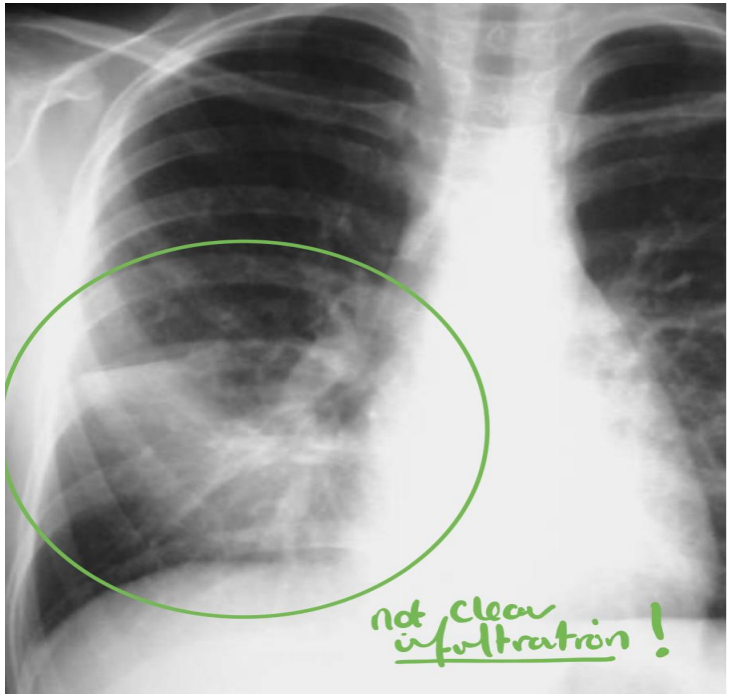


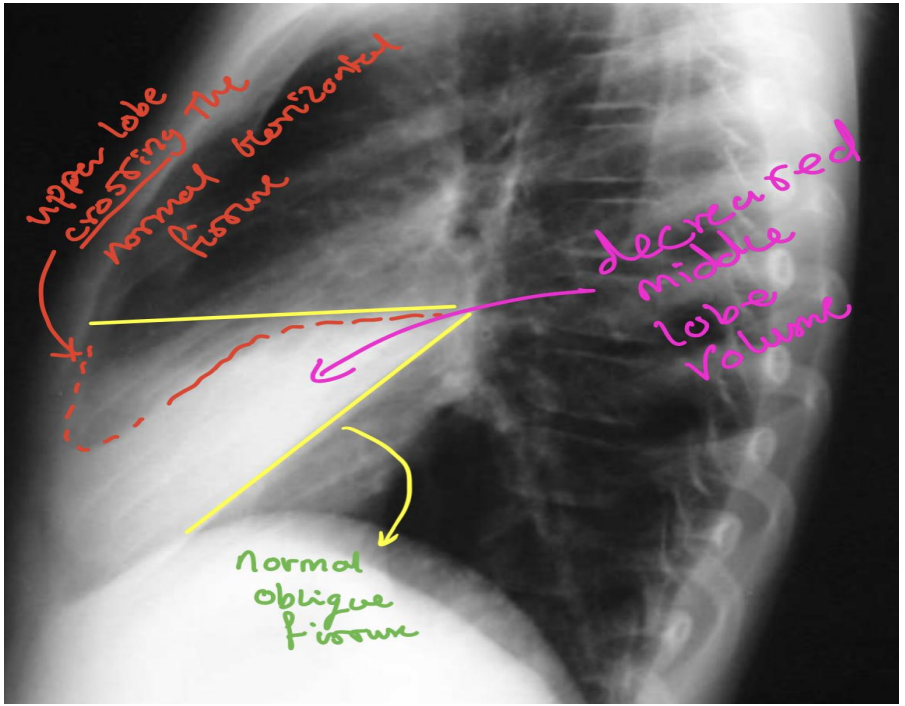
Answer

Case 6 (Answer)

Atelectasis

Always read together





Collapsed right middle lobe. lost **volume**

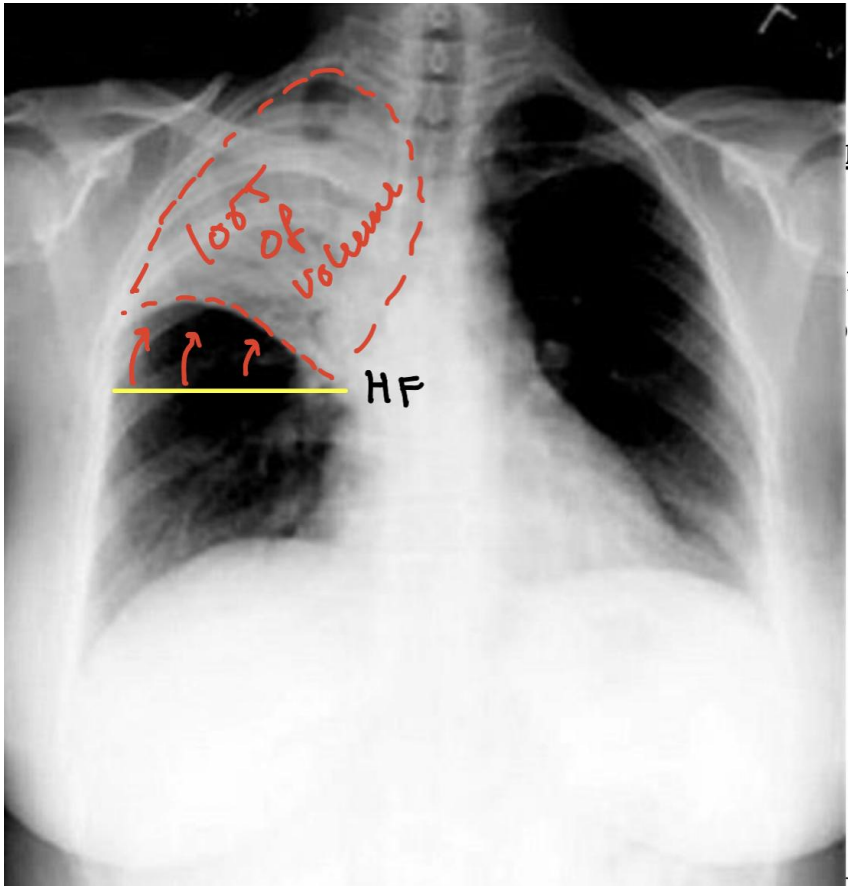
Case 7

- 37 Years old patient with SOB & Fever
- Diagnosis?

Answer

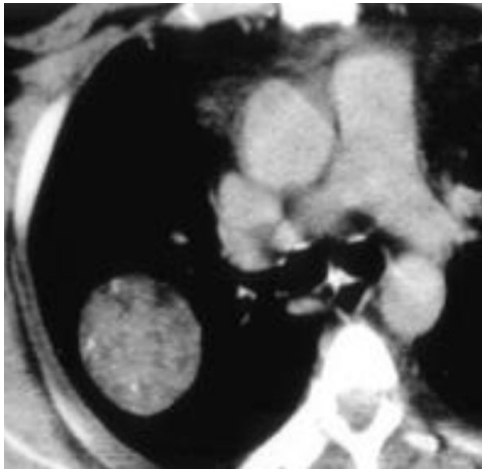
Case 7 (Answer)

- **Diagnosis?** Lung collapse



Case 8

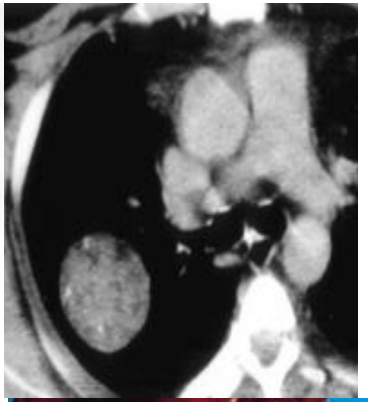
- Mass or infiltration?
- Why?

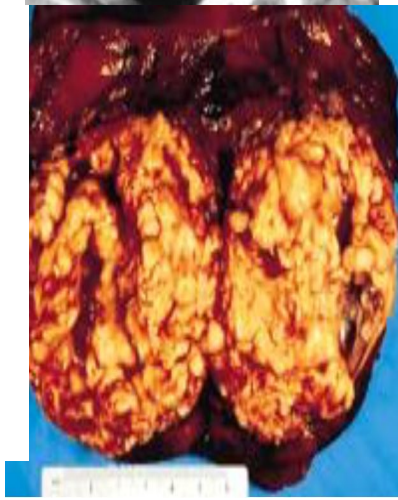


Answer

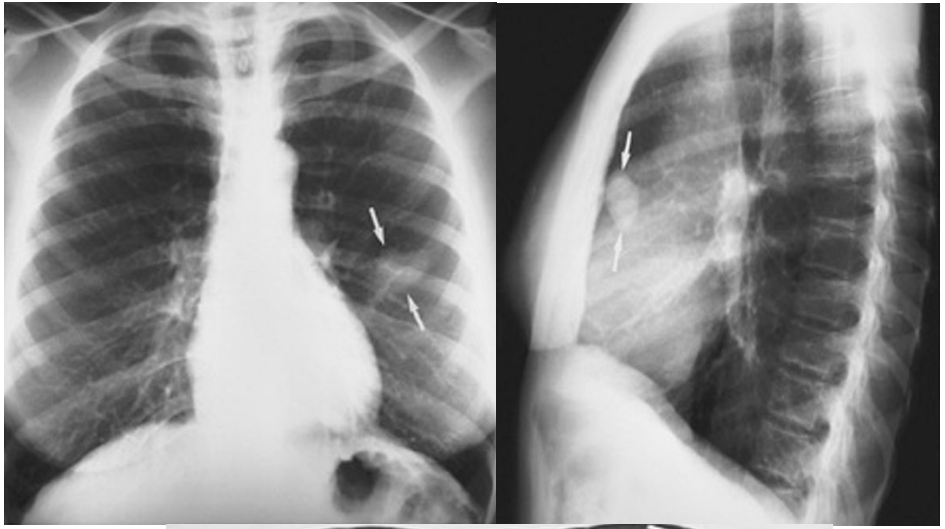
Case 8 (Answer)

- **Mass or infiltration?**
  Neoplastic Mass
- **Why?** Well defined borders

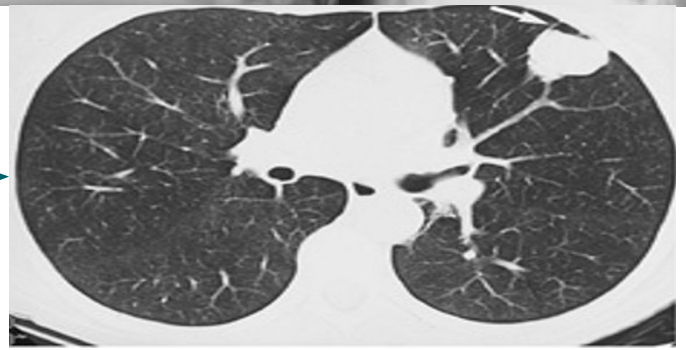




Case 9



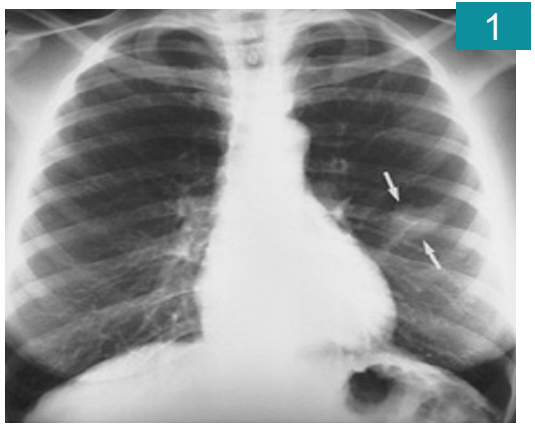
- Mass or infiltration?
- Why?
  - What window?



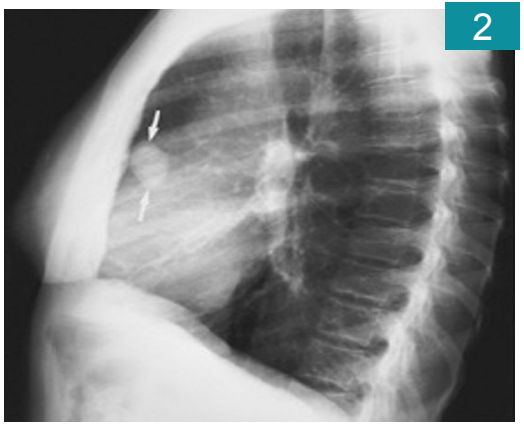
Answer

Case 9 (Answer)

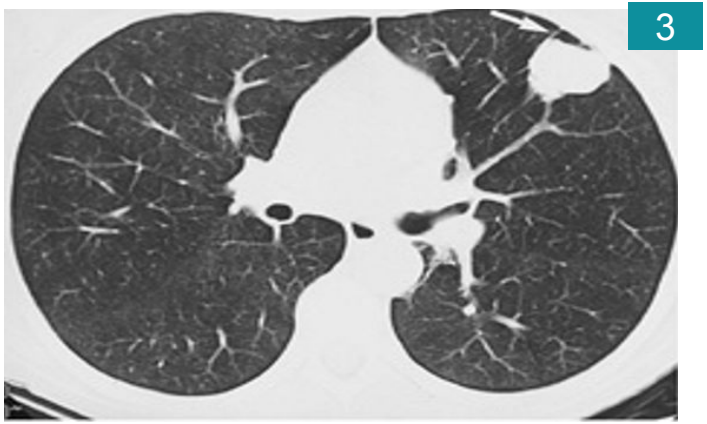
- **Mass or infiltration?** Neoplastic Mass
- **Why?** Well defined borders
- **Steps:**



Not clear borders on PA view



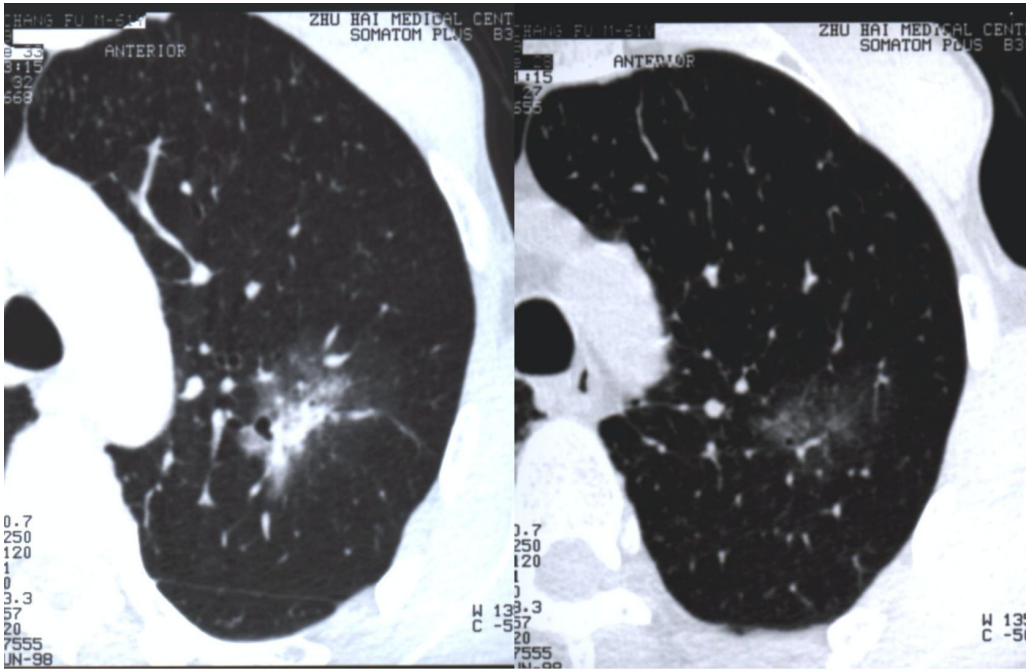
Borders are clear on lateral view



Borders are very clear on CT (lung window)

Case 10

- Mass of infiltration?
- Why?

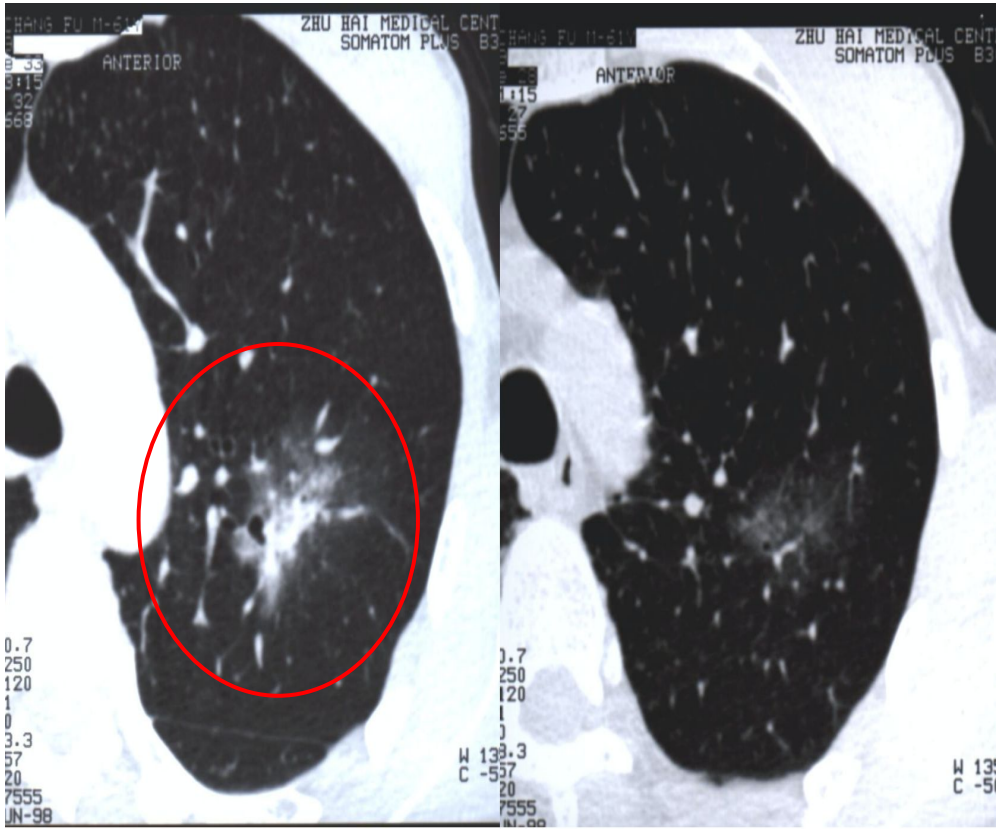


Answer

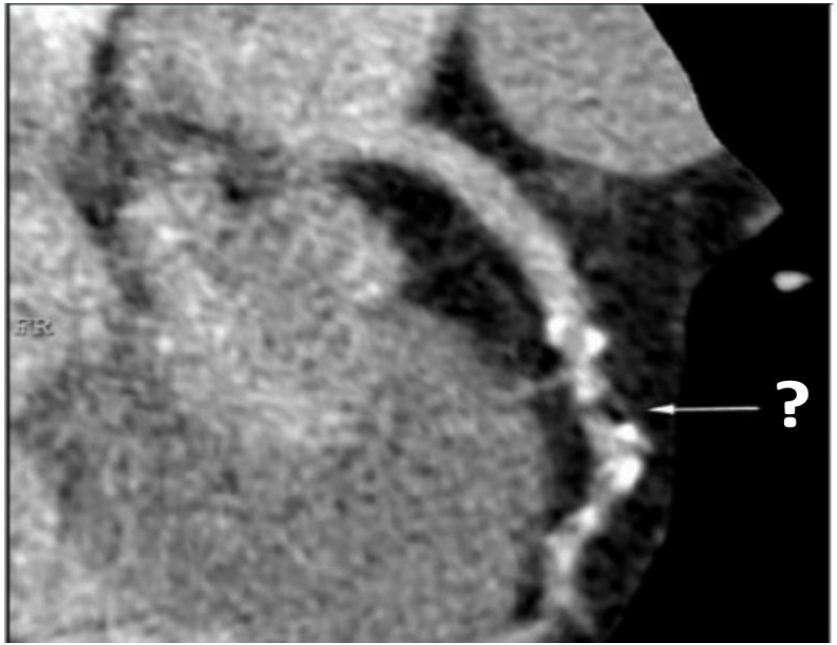
Case 10 (Answer)

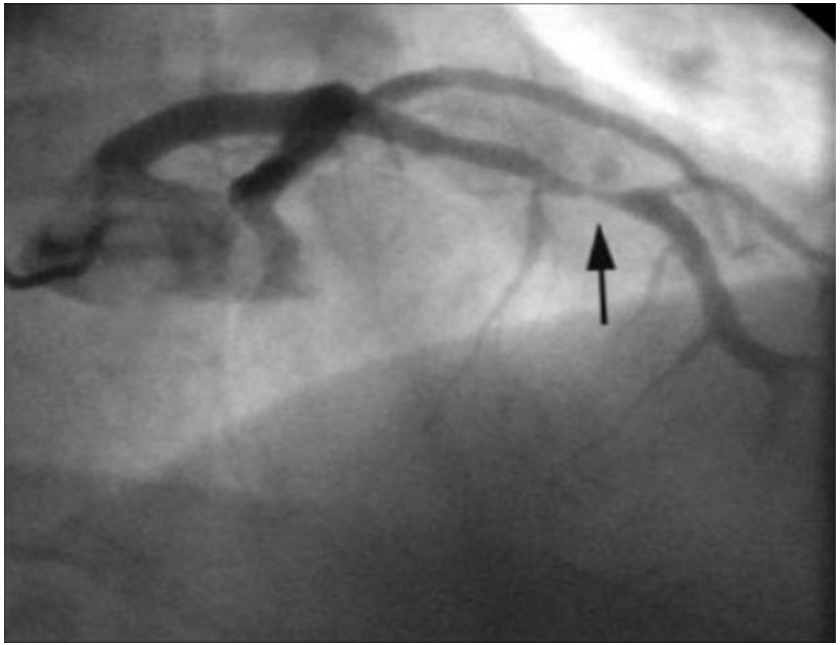
- **Mass of infiltration?**
  (diffused) Infiltration

- **Why?**
  no defined borders



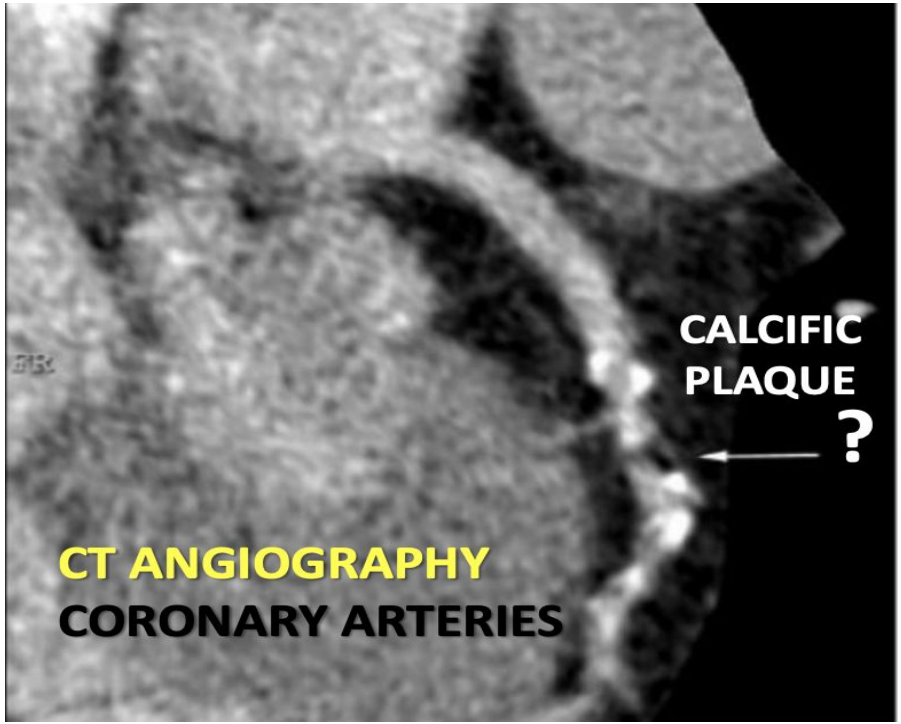
- modality of each?

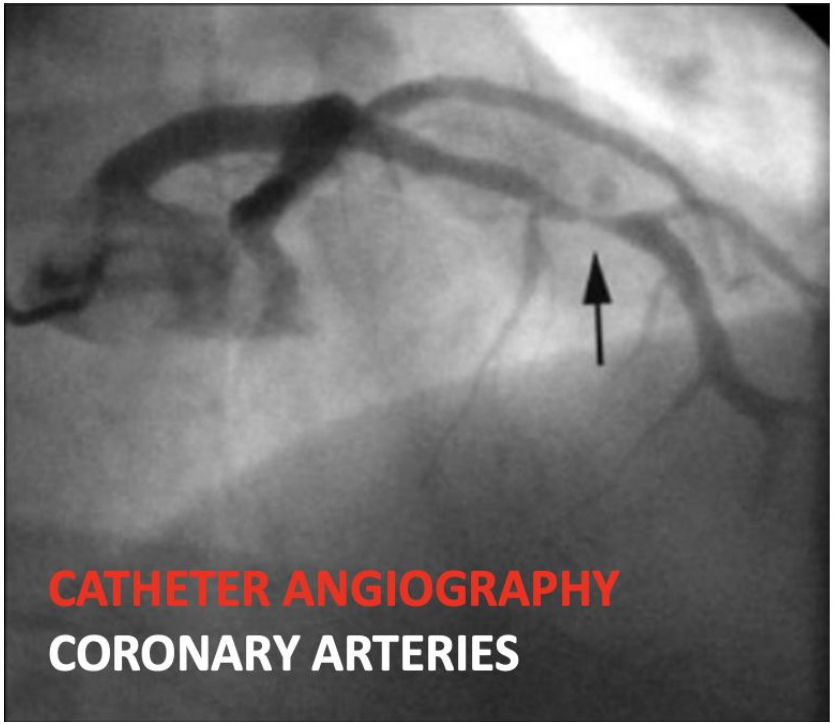




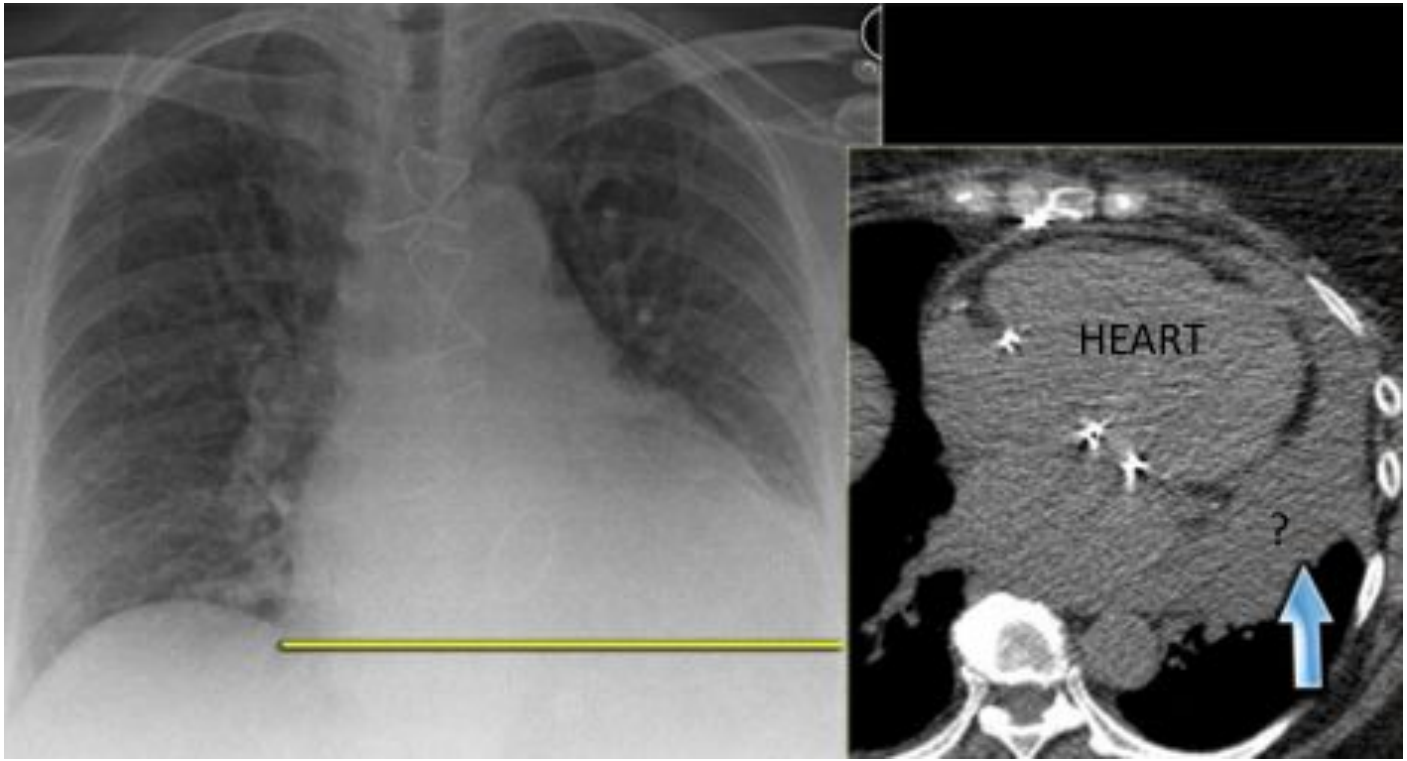
Answer

Case 11 (Answer)





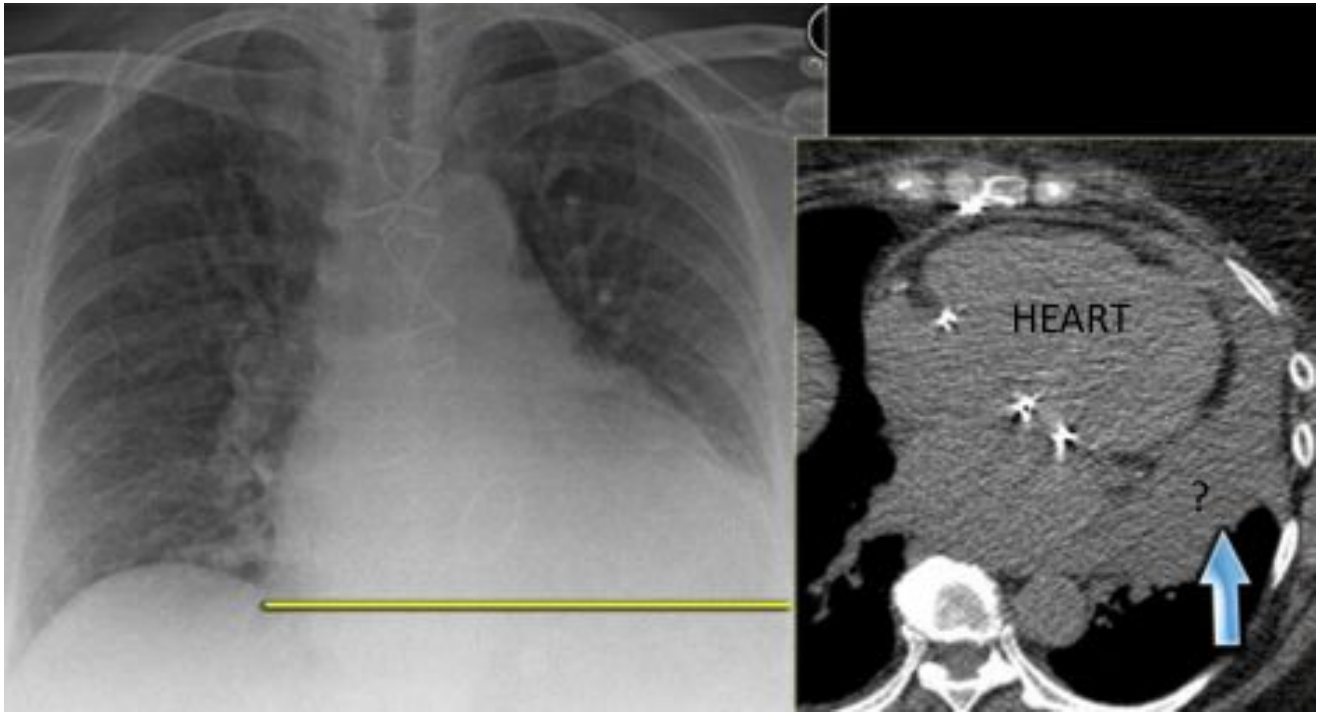
Diagnosis?



Answer

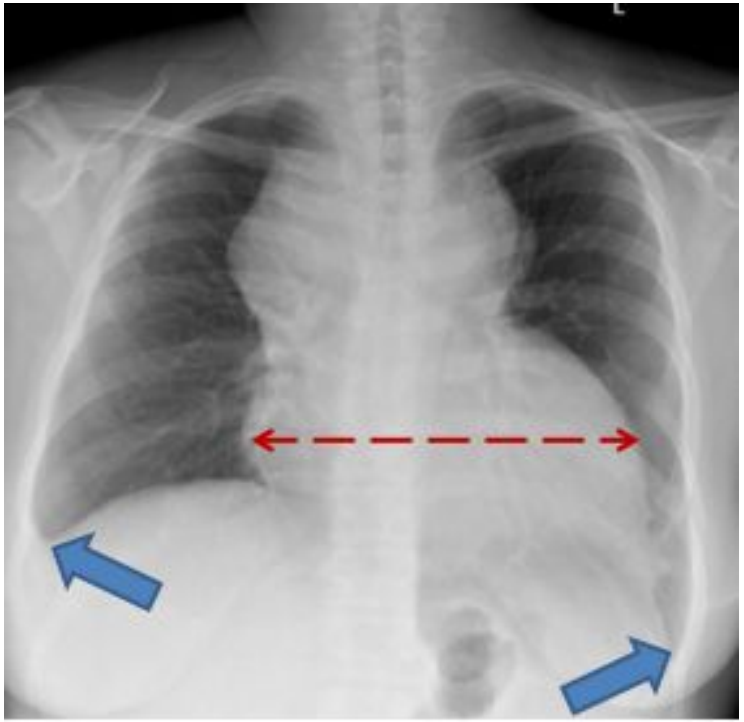
Case 12 (Answer)

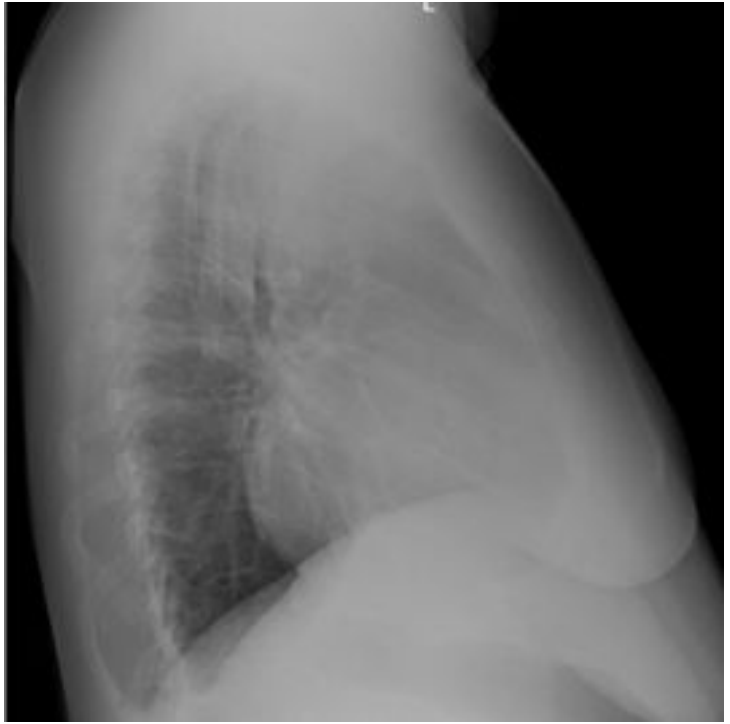
- **Diagnosis?** Pericardial effusion



Although it seems like we have an enlargement of the heart on the left picture, but if you take a look at the lung parenchyma (pulmonary vessels) seem to be okay so we suspect the problem is not from the heart, and to confirm we use others modalities like CT (Here it is CT without contrast)

❑ Diagnosis?

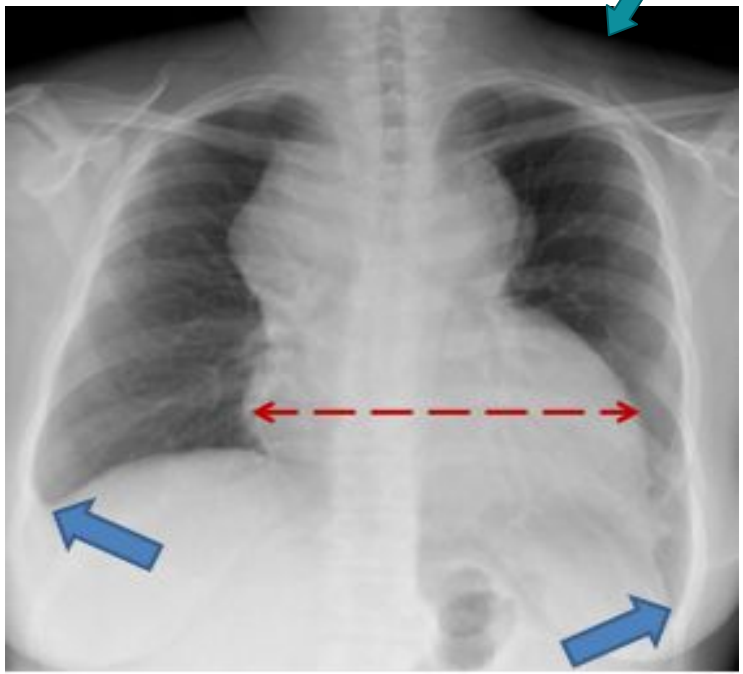


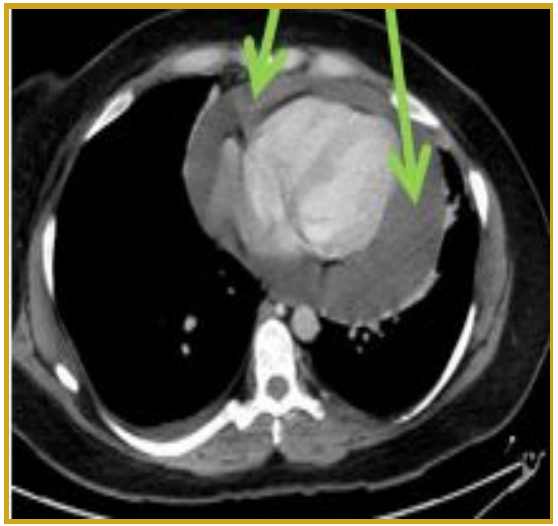


Answer

Case 13 (Answer)

- **Diagnosis?** Pleural effusion and pericardial effusion

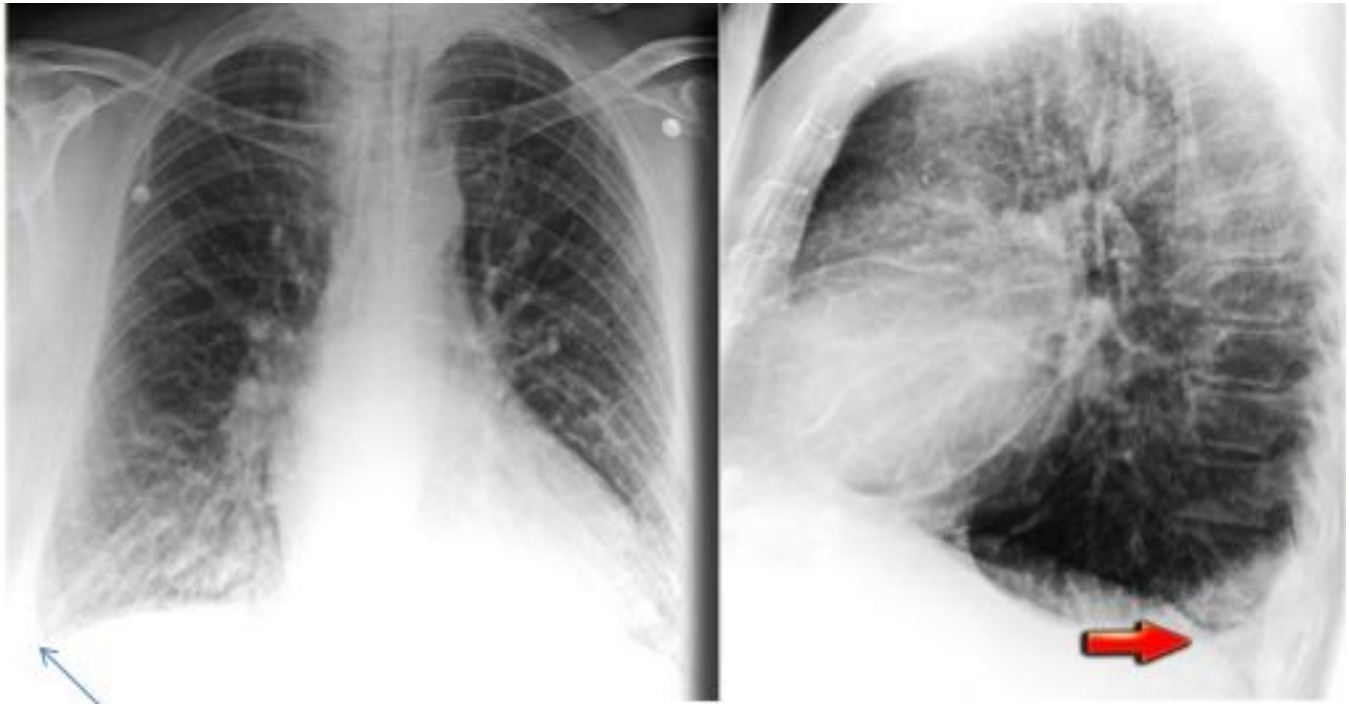




-Blunt of cost diaphragmatic angle, and Increased cardiothoracic ratio
-widening of mediastinum

Case 14

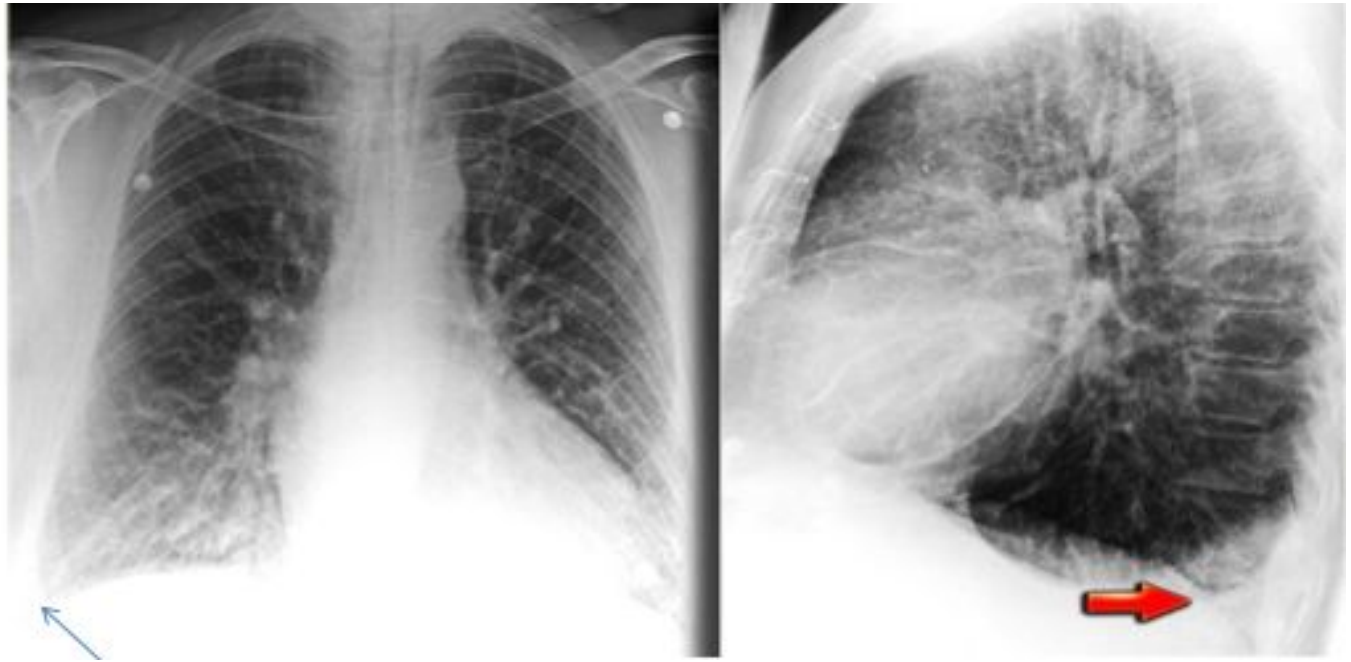
- Diagnosis?
- Abnormal?



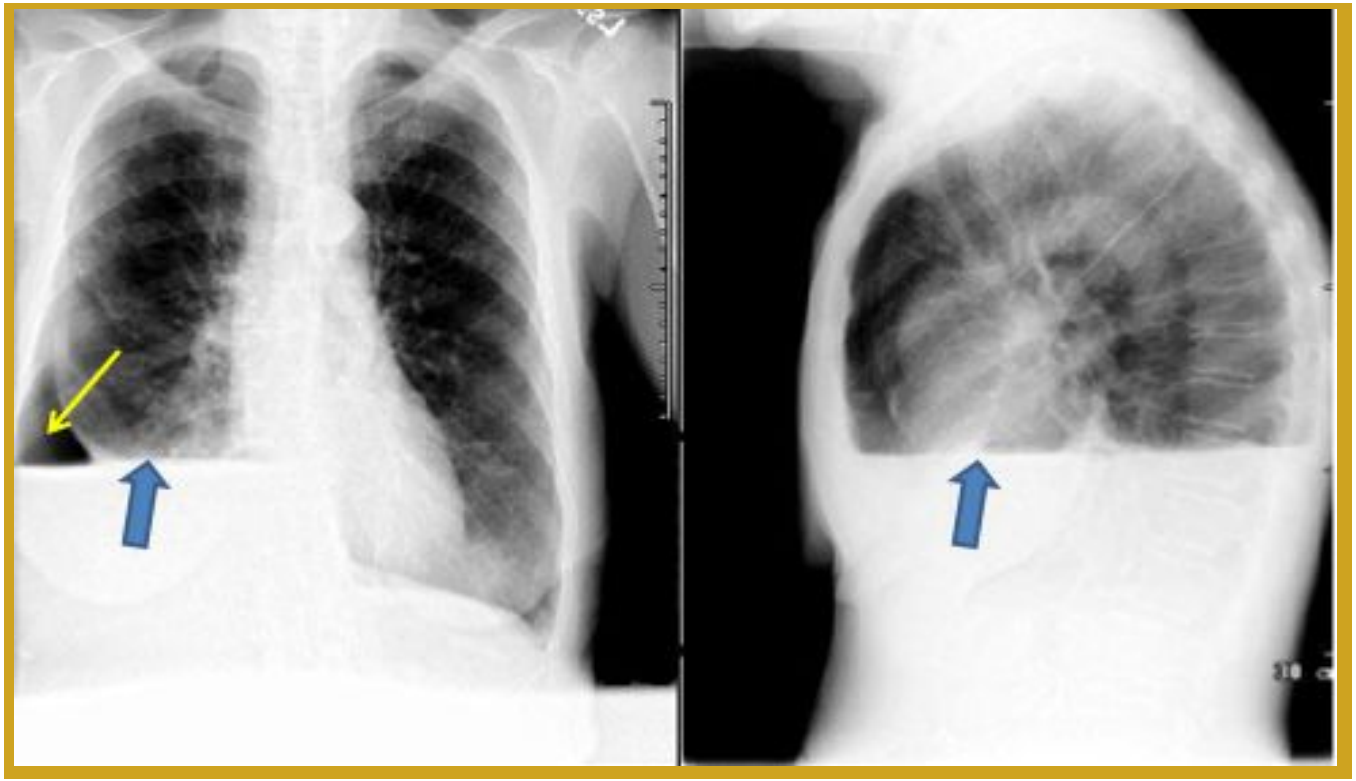
Answer

Case 14 (Answer)

- **Diagnosis?** Pleural effusion
- **Abnormal?** blunted Costophrenic angle



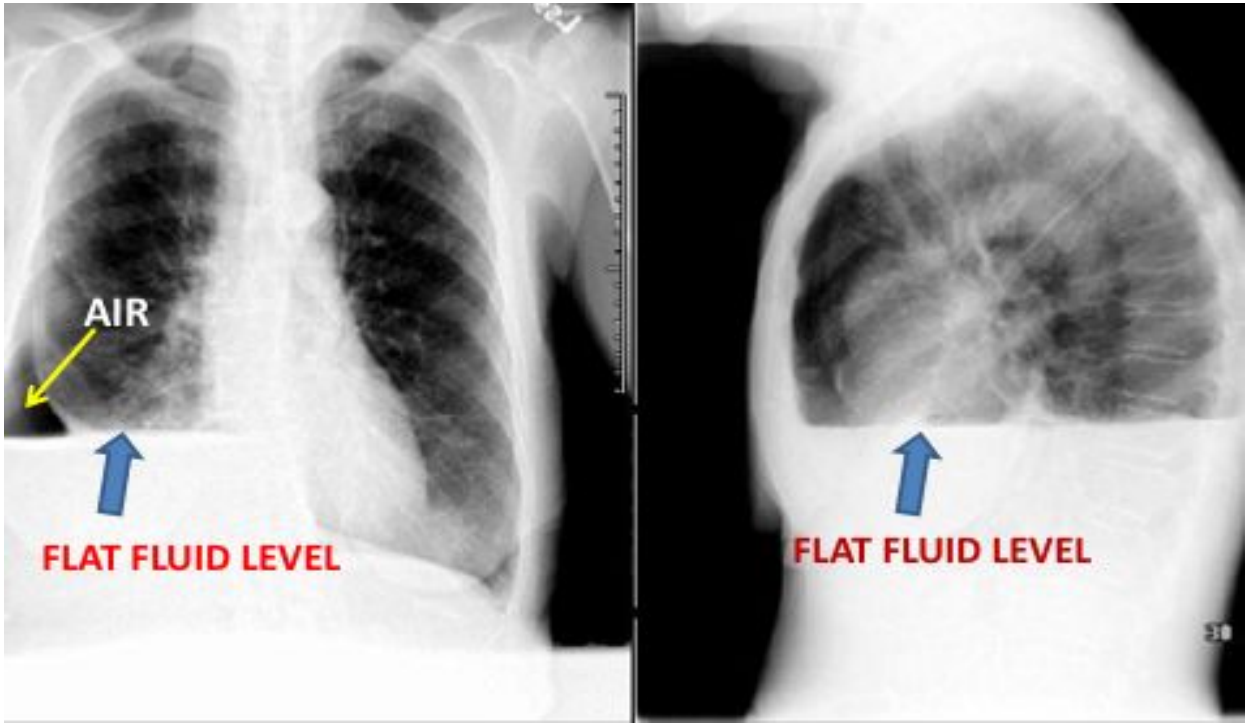
Diagnosis?



Answer

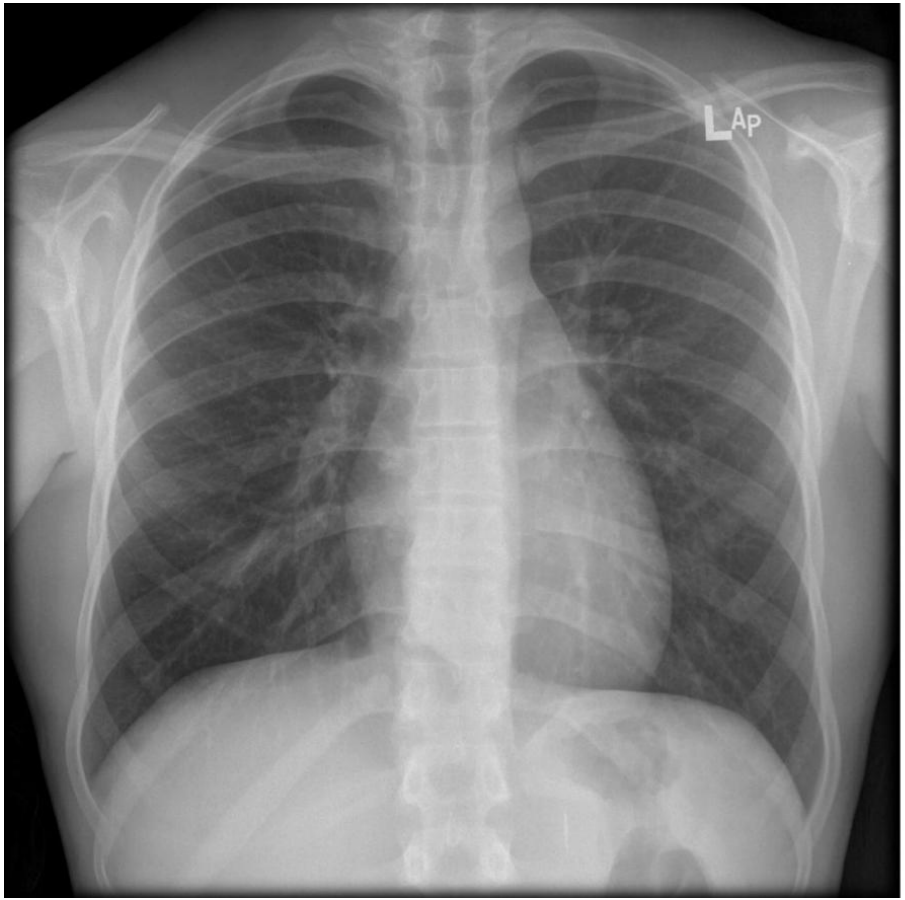
Case 15 (Answer)

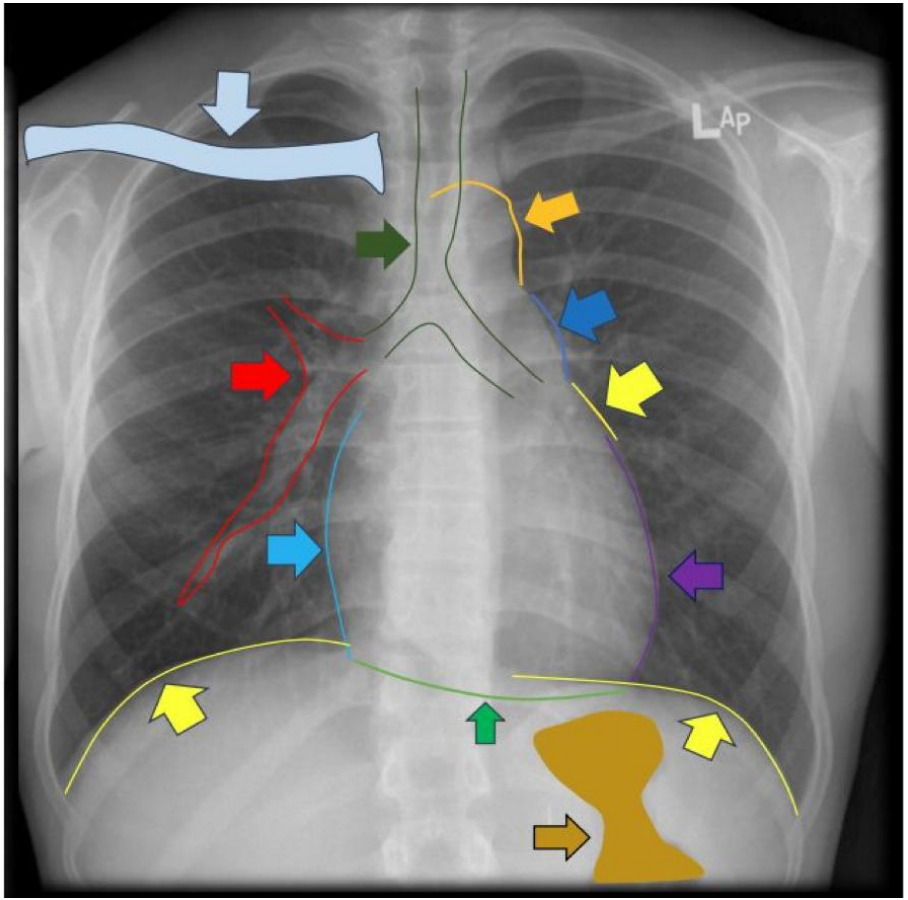
Diagnosis? Hydro-pneumothorax

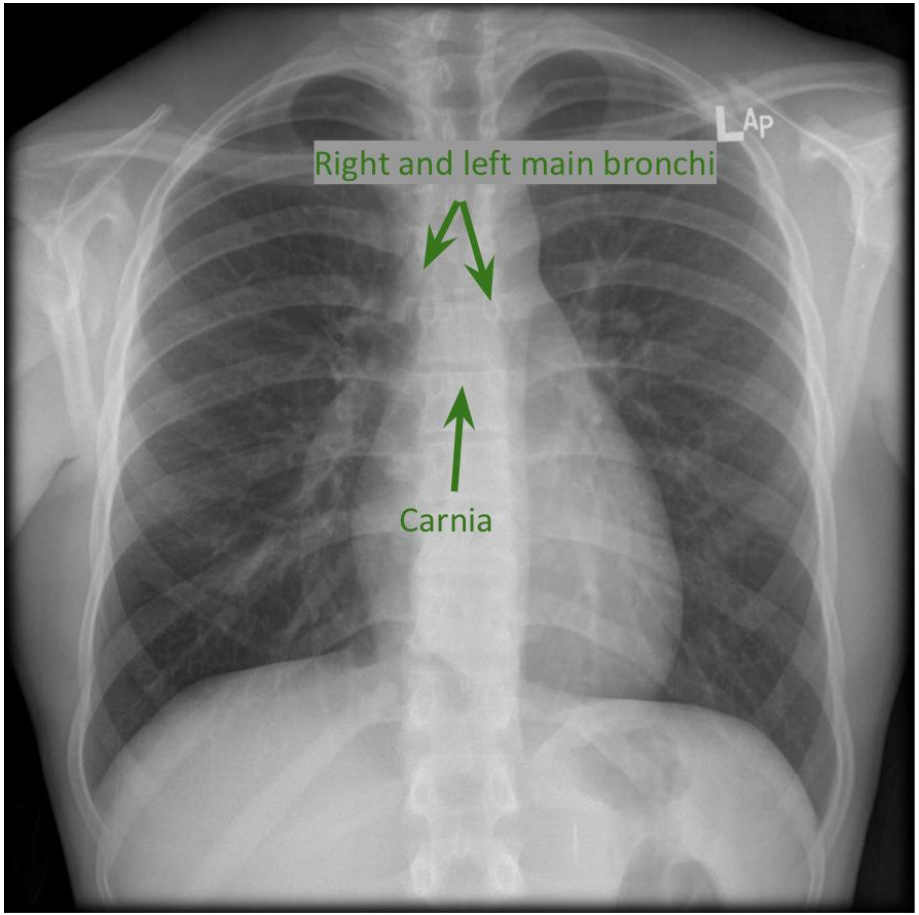


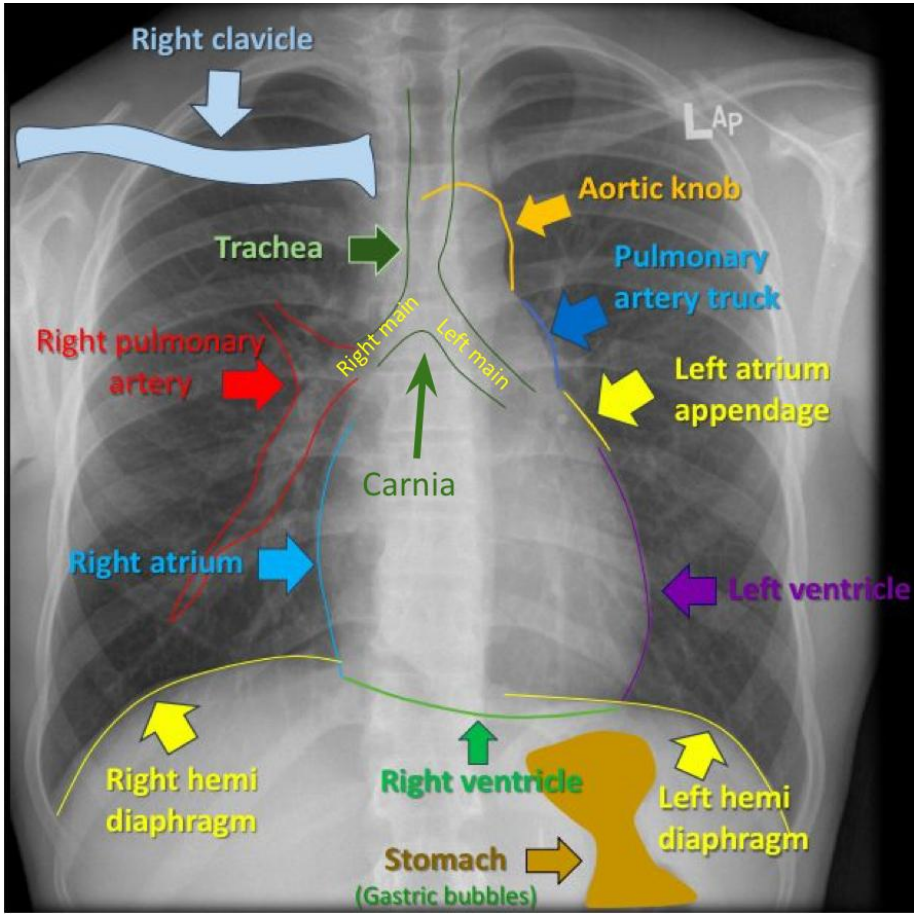
In PA view the fluid can be either inside the lung or out, so to differentiate we use lateral view.If it showed a straight light(like the image above)it is outside the lung, if it was round following the lung border that means the fluid is inside the lung

Name the labels (Extra for practice)





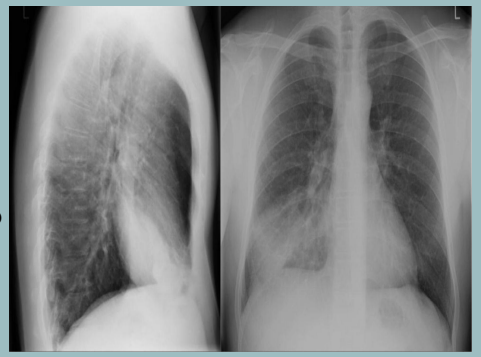

Right and left main bronchi
Carnia


Right clavicle
Aortic knob
Trachea
Pulmonary artery truck
Right pulmonary artery
Right main
Left main
Left atrium appendage
Carnia
Right atrium
Left ventricle
Right hemi diaphragm
Right ventricle
Left hemi diaphragm
Stomach
(Gastric bubbles)

Quiz

1)

- Diagnosis?
- lobe Affected?

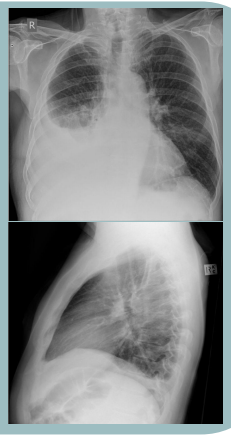


2)

- What is the most likely diagnosis ?
- What other modality can be used to confirm?

3)

- What is the most likely diagnosis ?



4)

- What is the most likely diagnosis ?

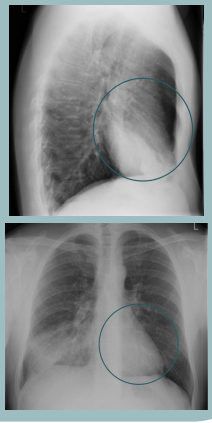
Answers

1)

- **Diagnosis?**

Infiltration/pneumonia (Air space density).

- **lobe Affected?**
- Right middle lobe



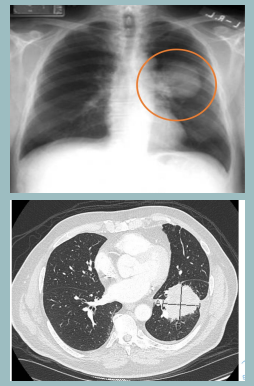
2)

- **What is the most likely diagnosis ?**

Left lung mass

- **What other modality can be used to confirm?**

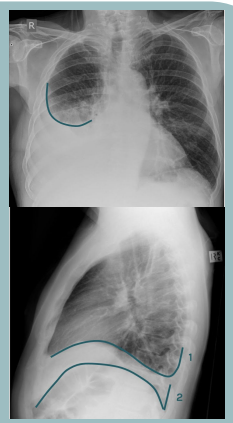
CT scan



3)

- **What is the most likely diagnosis ?**

Right Pleural effusion



4)

- **What is the most likely diagnosis ?**

Pleural effusion (fluid tracking right horizontal fissure)