



Radiology  
Team 438

# Radiology of Cardio-respiratory diseases **interactive lecture**

## Lecture 6

### 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

Reviewed By



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Color Index:

♦ **Important**

♦ **Doctor's Notes**

♦ **Extra**

♦ **Female slides**

♦ **male slides**

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[Editing file](#)

» 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.

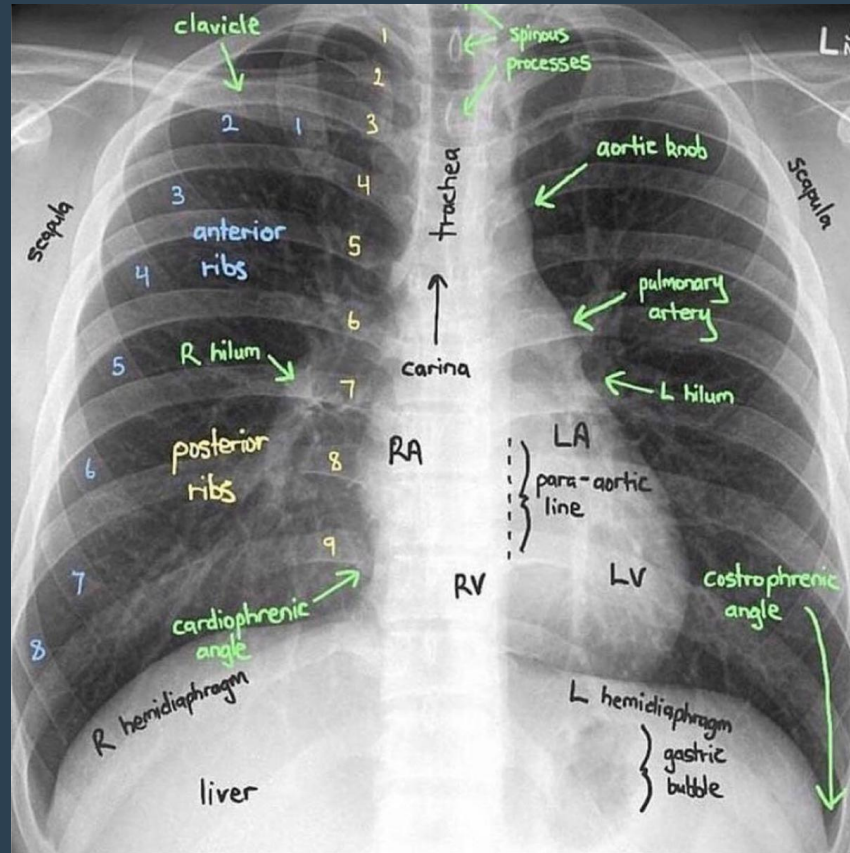
- Does the opacity have **well demarcated margins**?

## 4- Infiltration/consolidation.

- Rare. **ill-defined border**

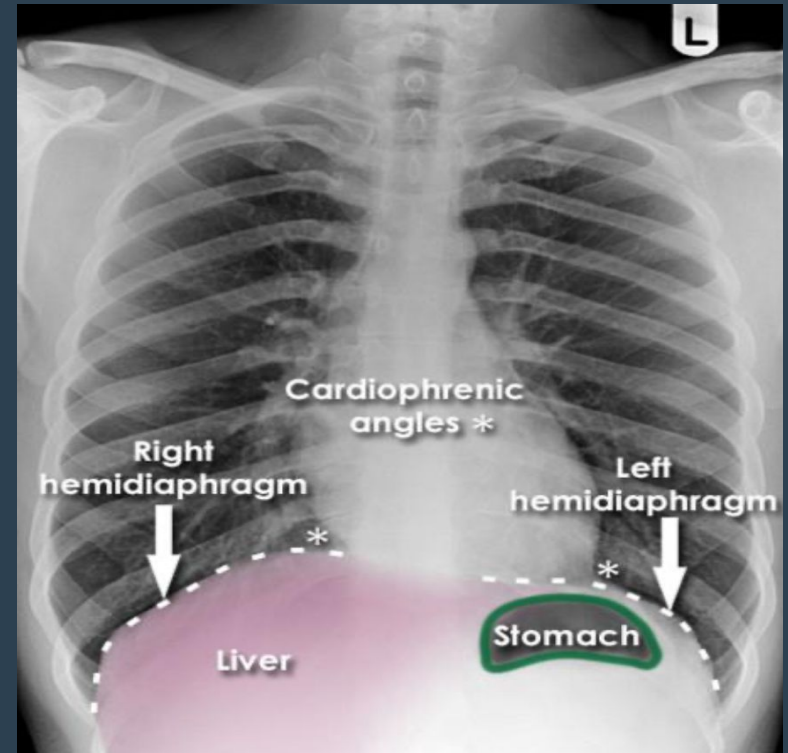
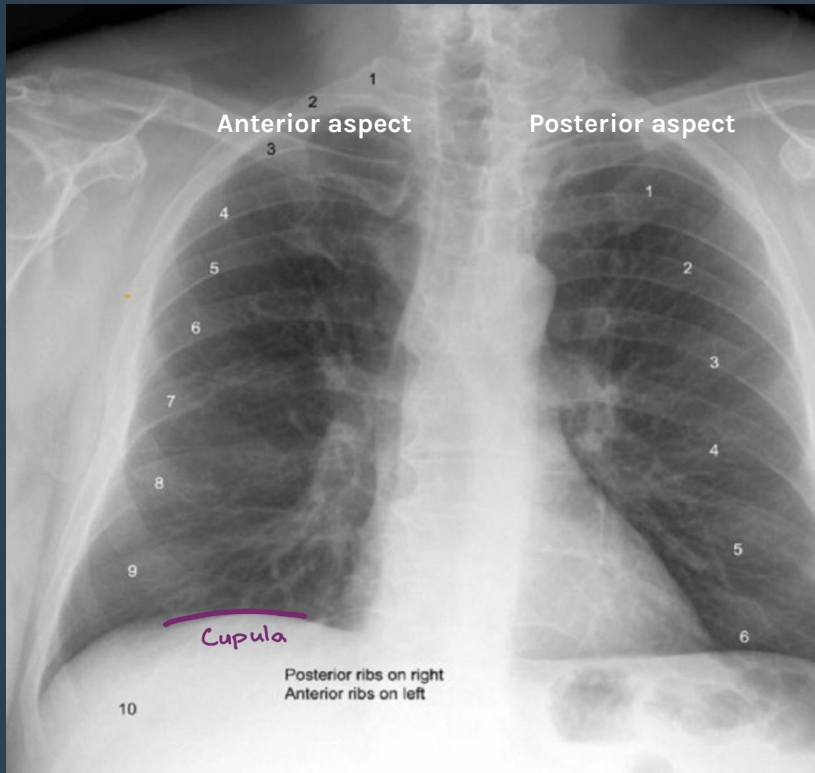
**Remember:** The history helps a lot, so a history with smoking make us think of a tumor, and history of DVT make us think of PE, and malignancies usually does not present with fever.

# Quick Revision



Extra image

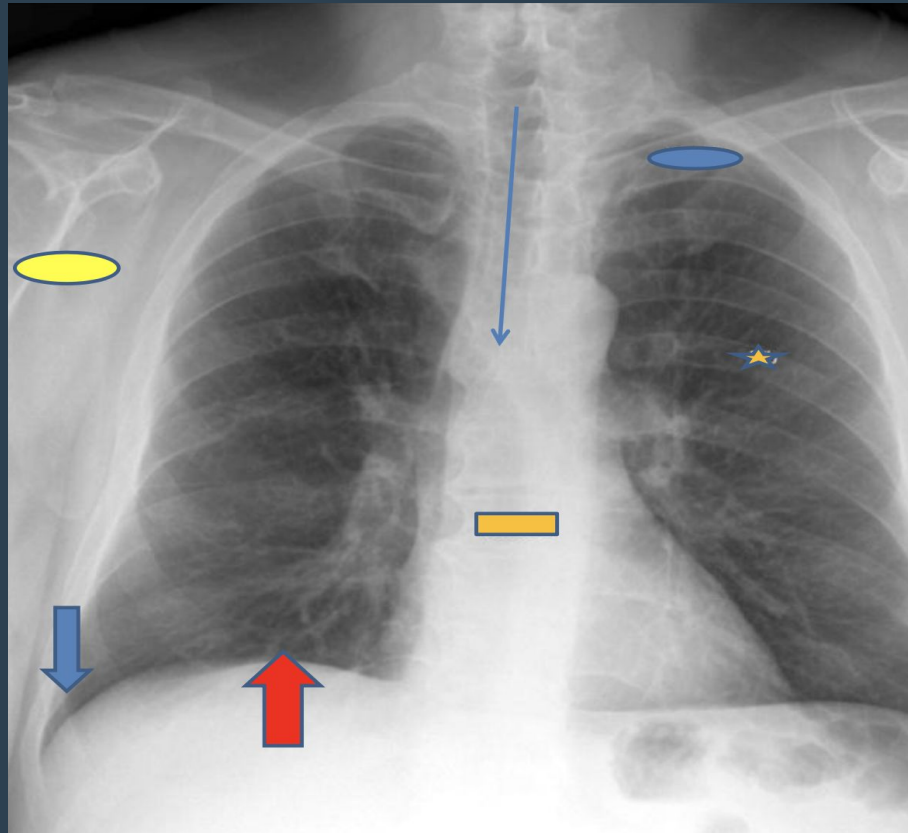
## Counting Ribs



\*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

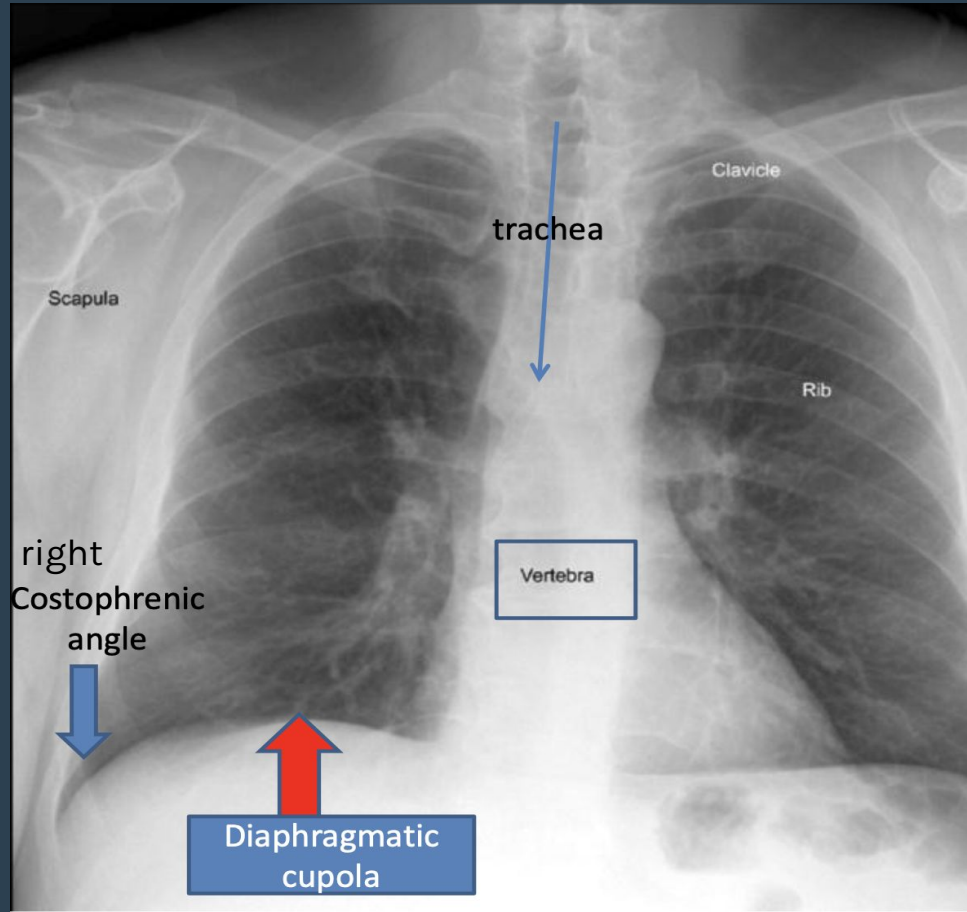
# Anatomy

» Identify the labels:

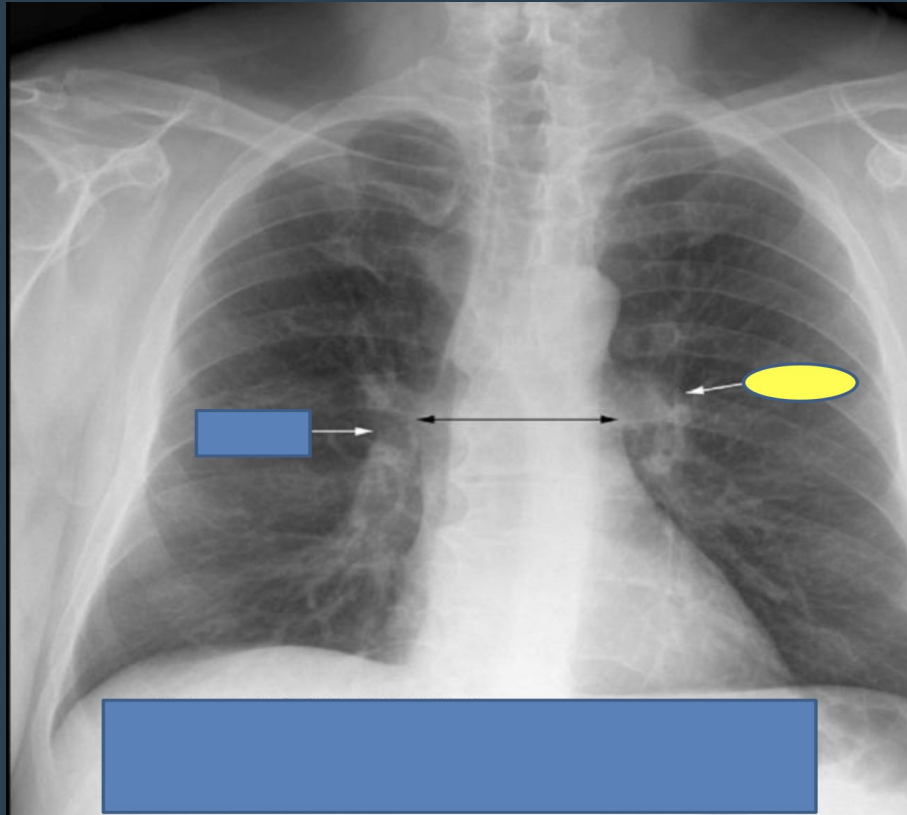


Answer →

# Anatomy



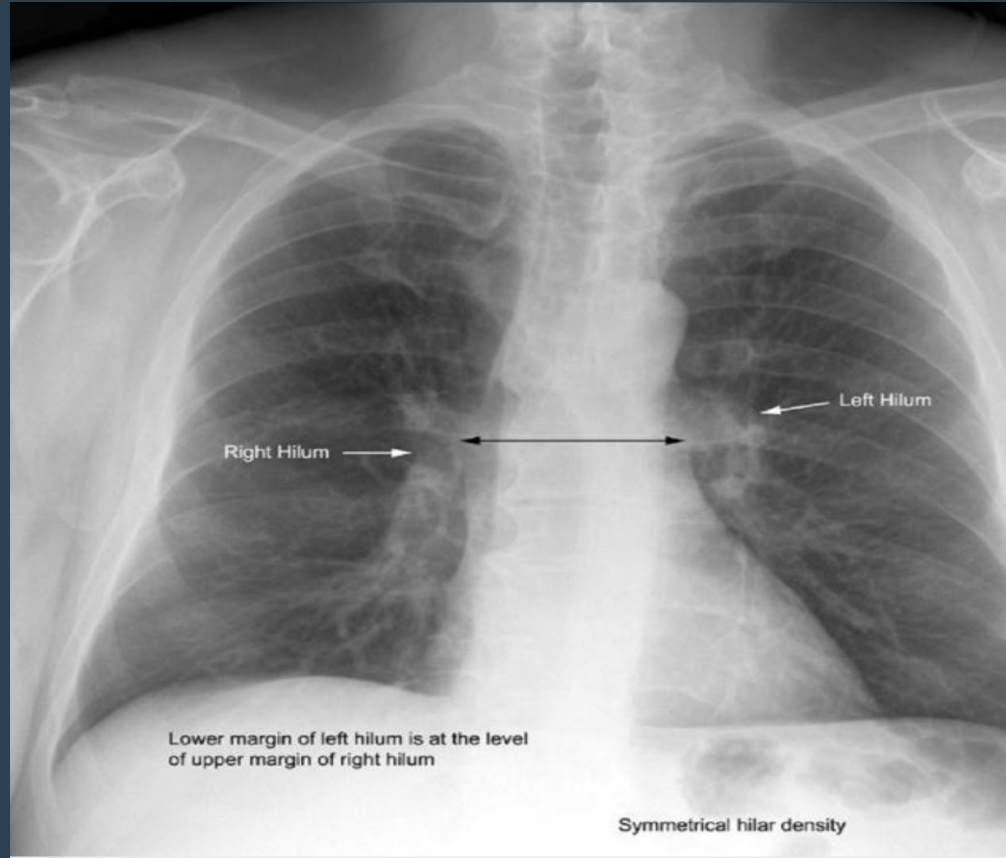
» Identify the labels:



Answer →

# Anatomy

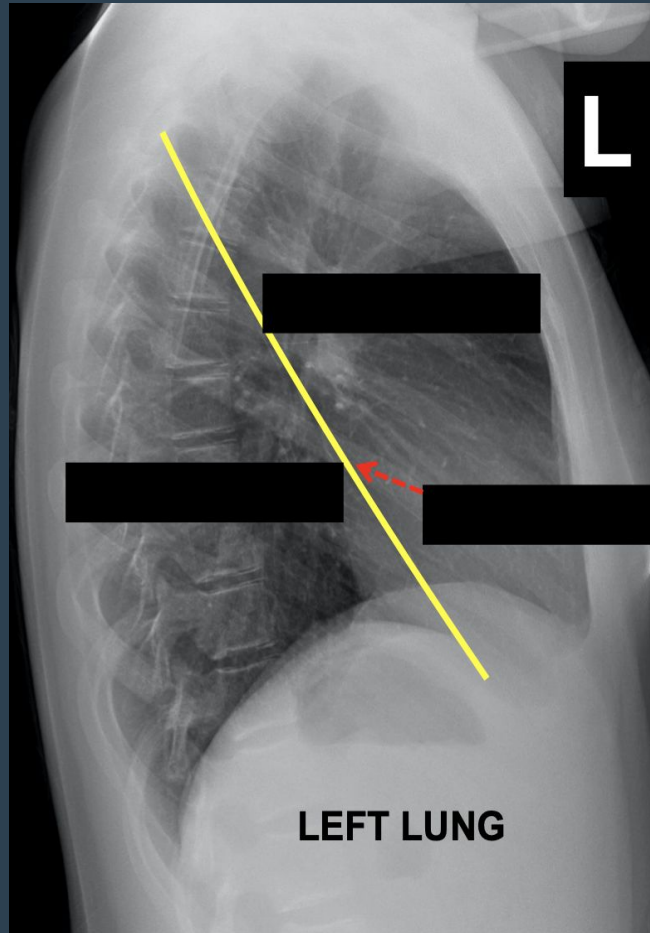
## Hilum





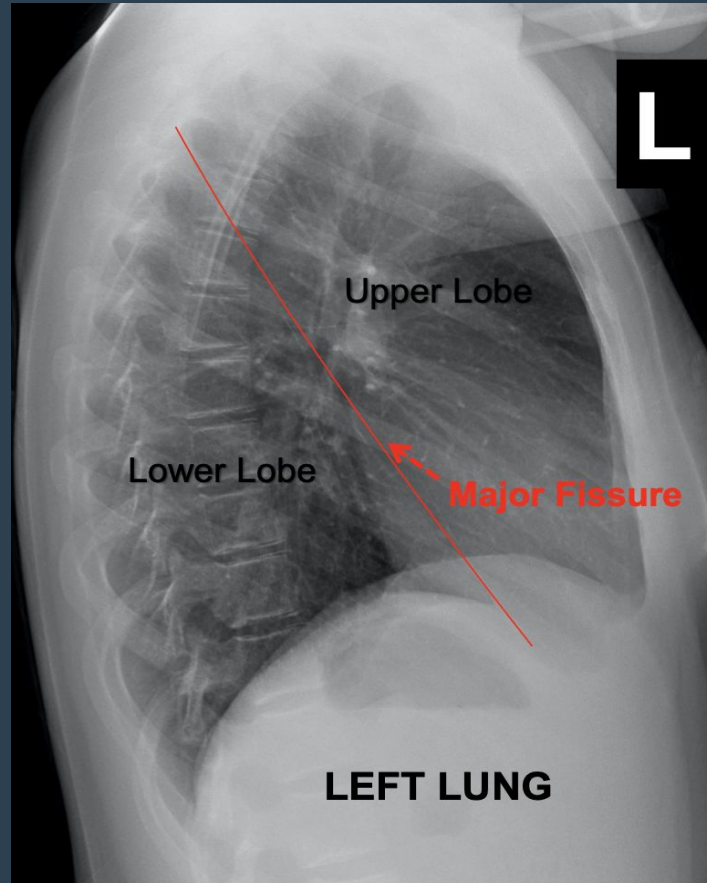
# Anatomy

» Identify the labels:



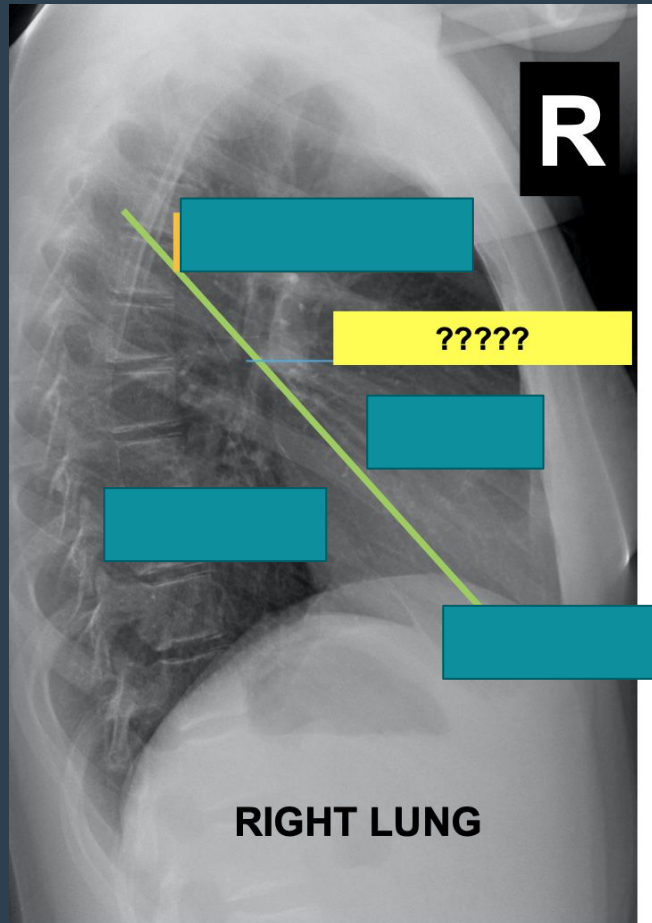
Answer →

# Anatomy



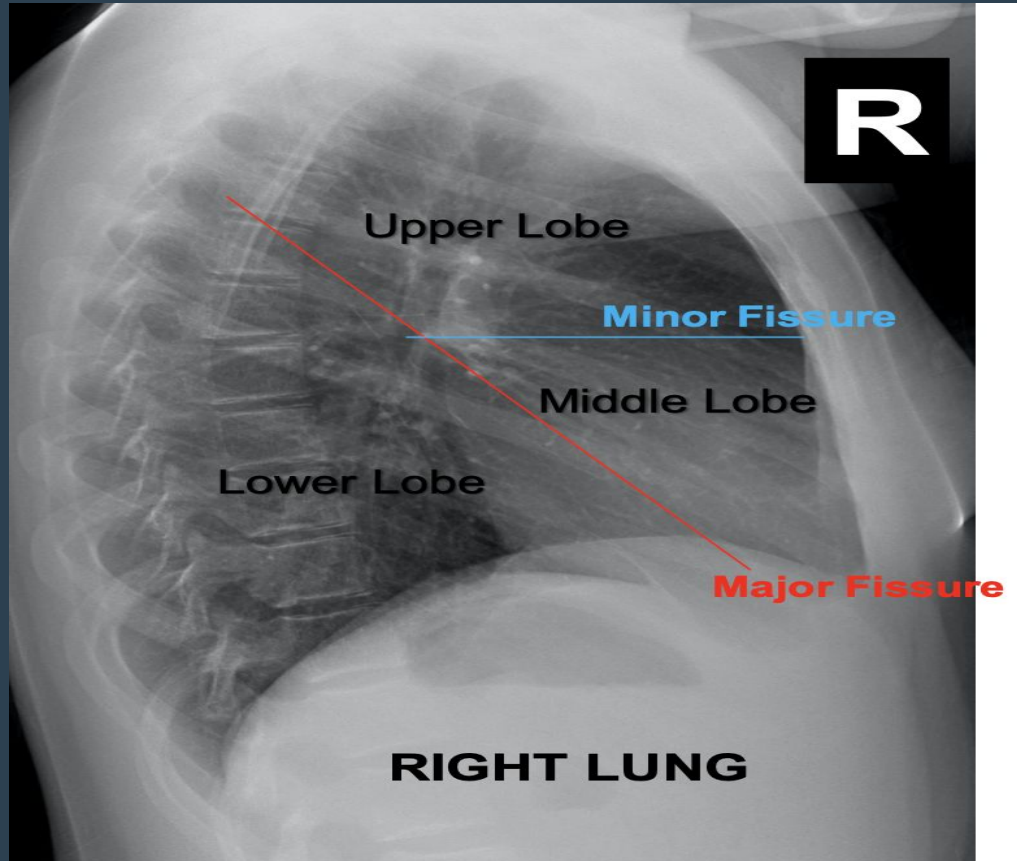
Major fissure=oblique fissure

» Identify the labels:



Answer →

# Anatomy



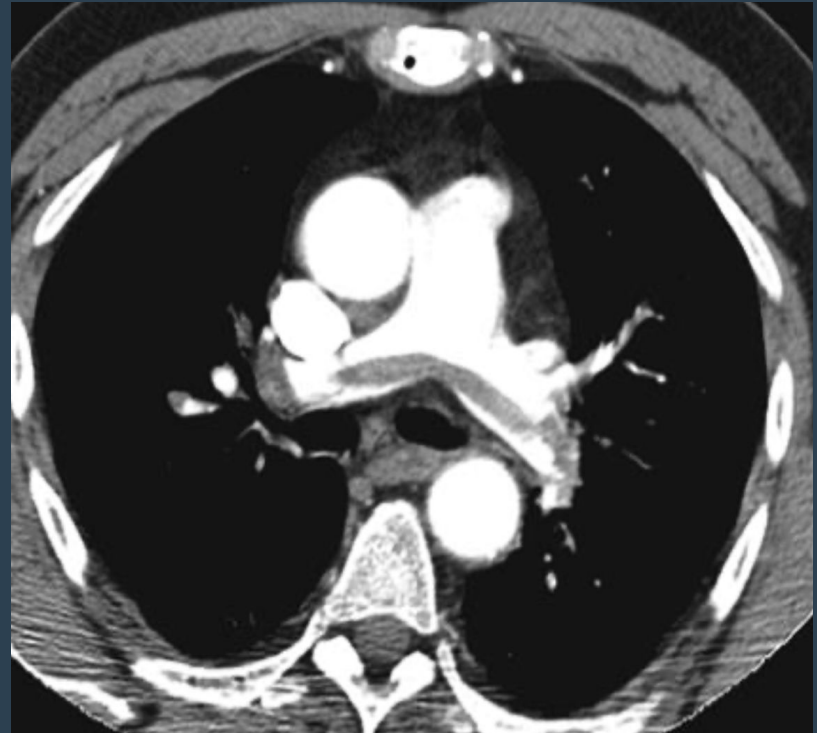
Minor fissure=horizontal fissure

## 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 →

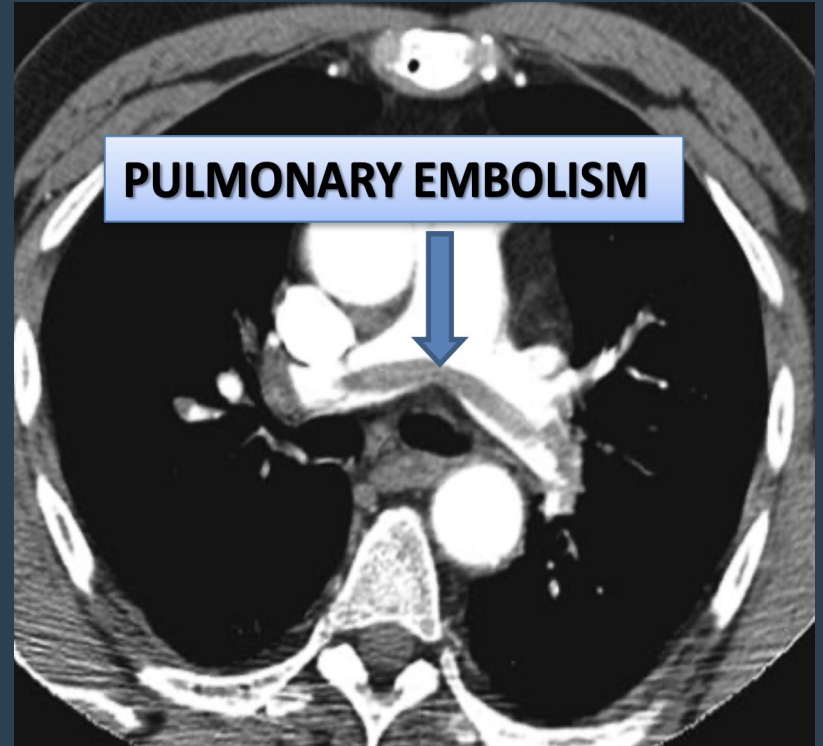
## Case 1 (Answer)

**What is the modality?**

Computed tomography angiography

**What is the diagnosis?**

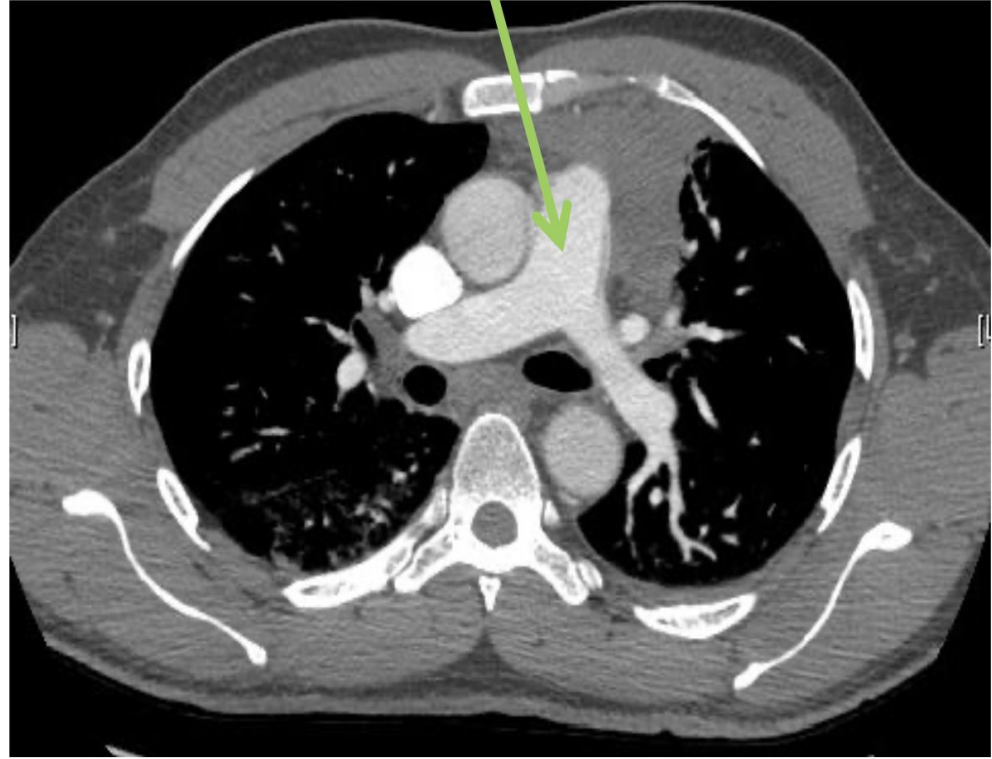
Saddle like Pulmonary Embolism



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

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



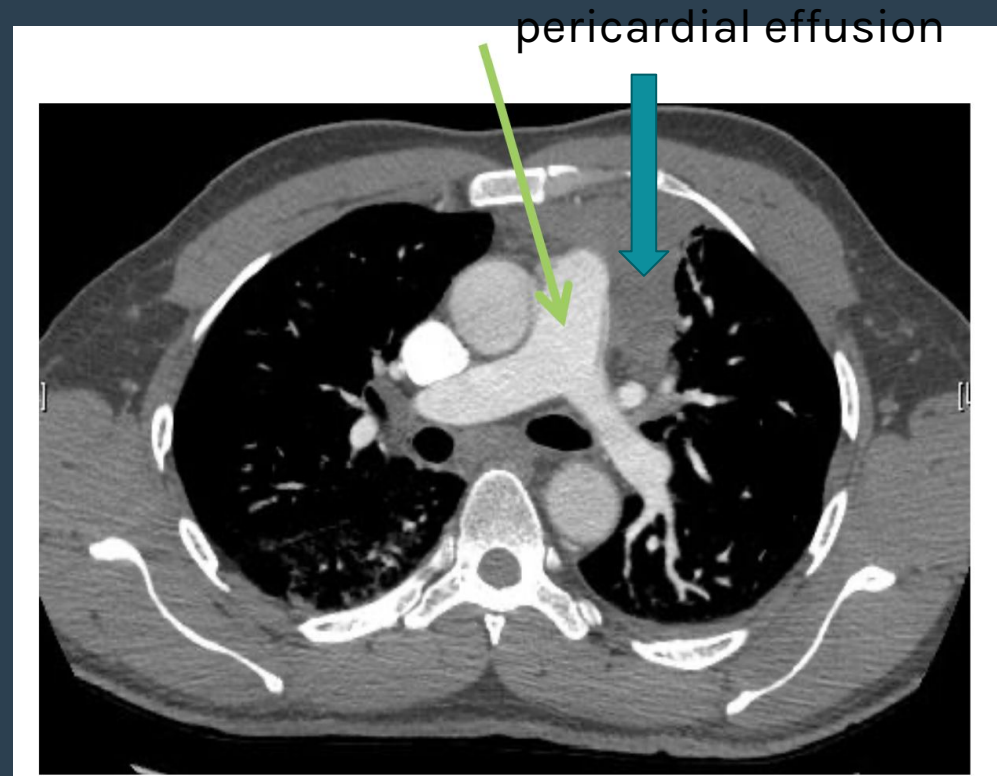
Answer →

### What is the modality?

Computed tomography angiography with contrast (mediastinal window)

### normal or abnormal findings?

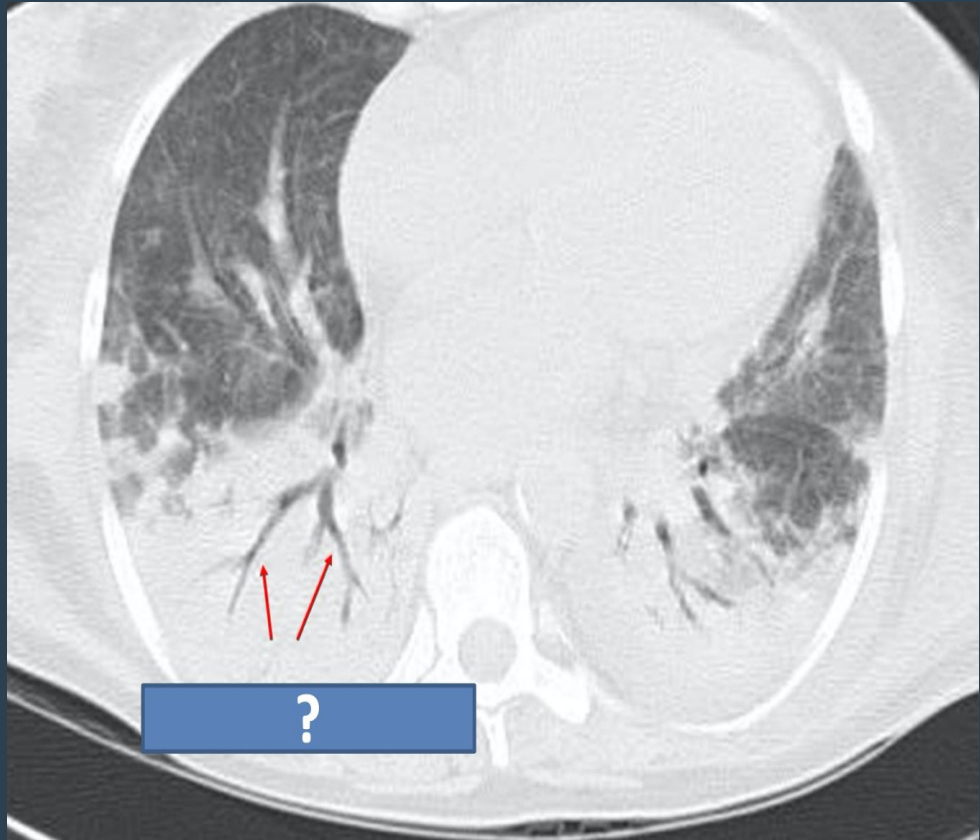
Abnormal due to presence of pericardial effusion



-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



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



Answer →

### ❑ What is the modality?

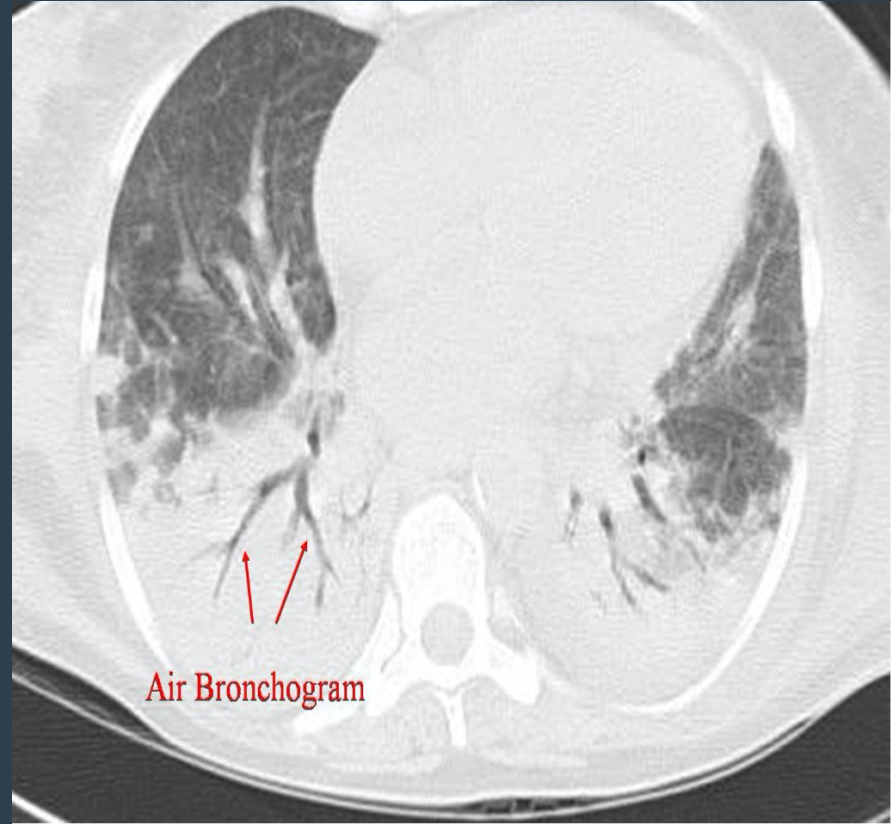
Computed tomography  
(lung window)

### ❑ Signs?

Air bronchogram

### ❑ Diagnosis

Consolidation  
(on both lung bases)



## Case 4

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

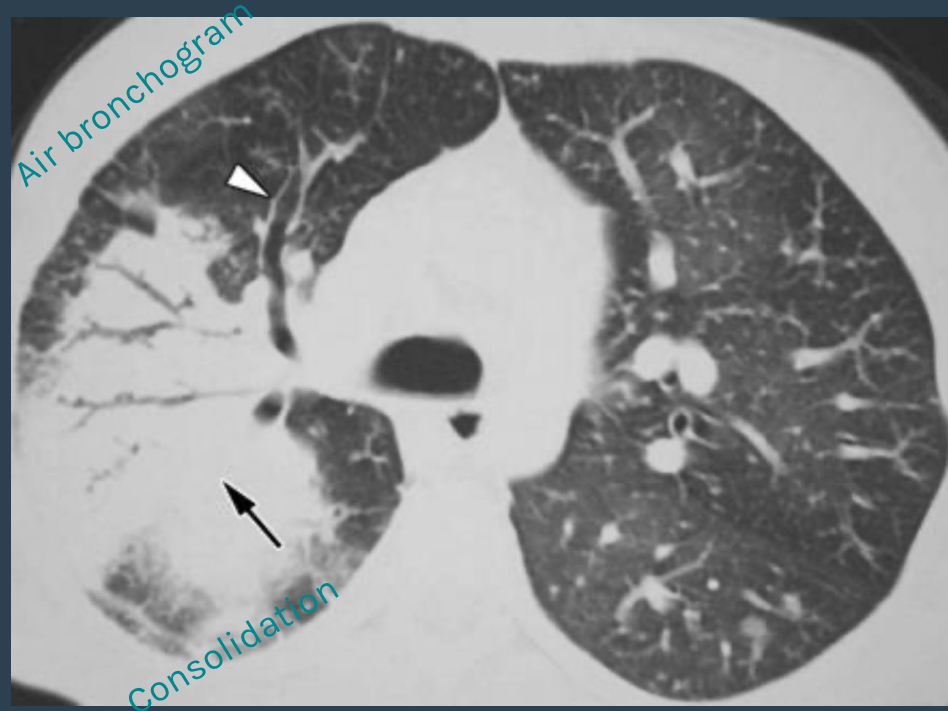


Answer →

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

❑ **Signs?**  
Air bronchogram

❑ **Diagnosis ?**  
Consolidation



## Case 5

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



Answer →

❑ What is the modality?

CXR

❑ Mass or infiltration?

Consolidation (diffuse infiltration)

❑ Why?

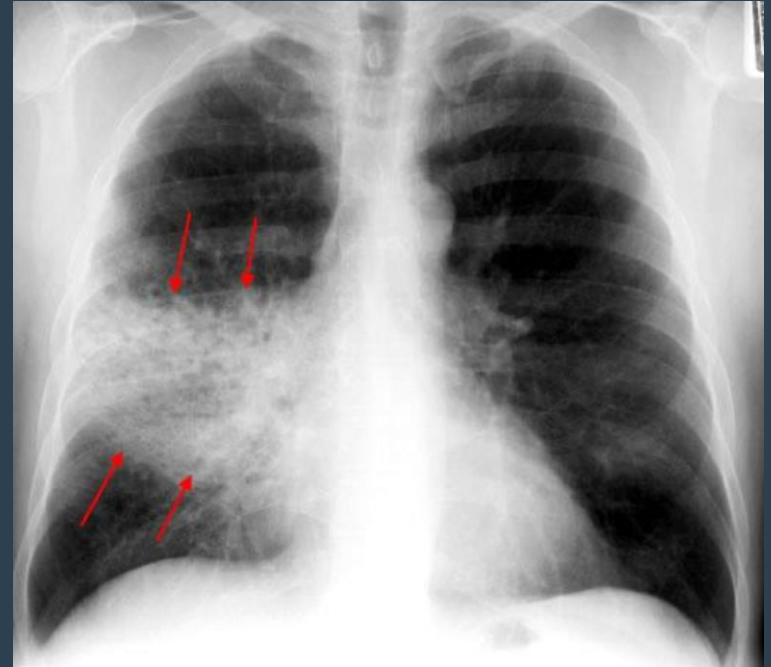
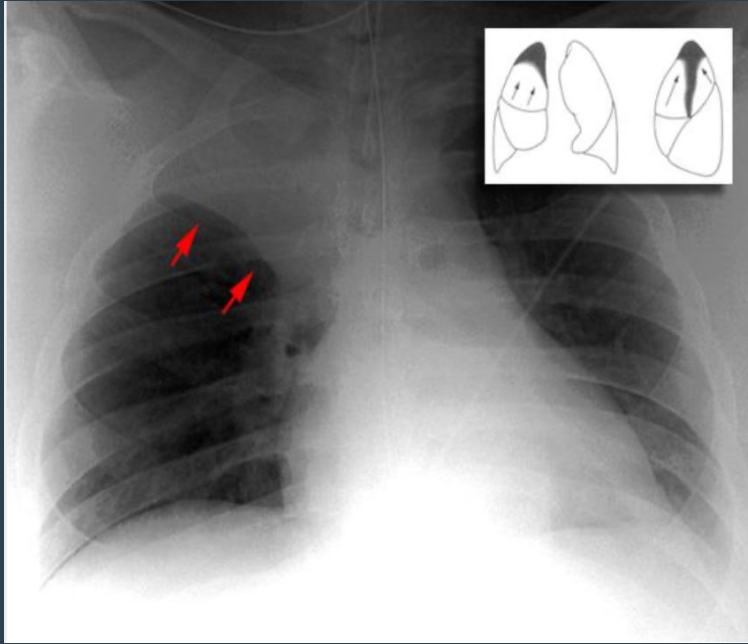
Because no defined borders



defined border=mass

# Atelectasis Vs pneumonia

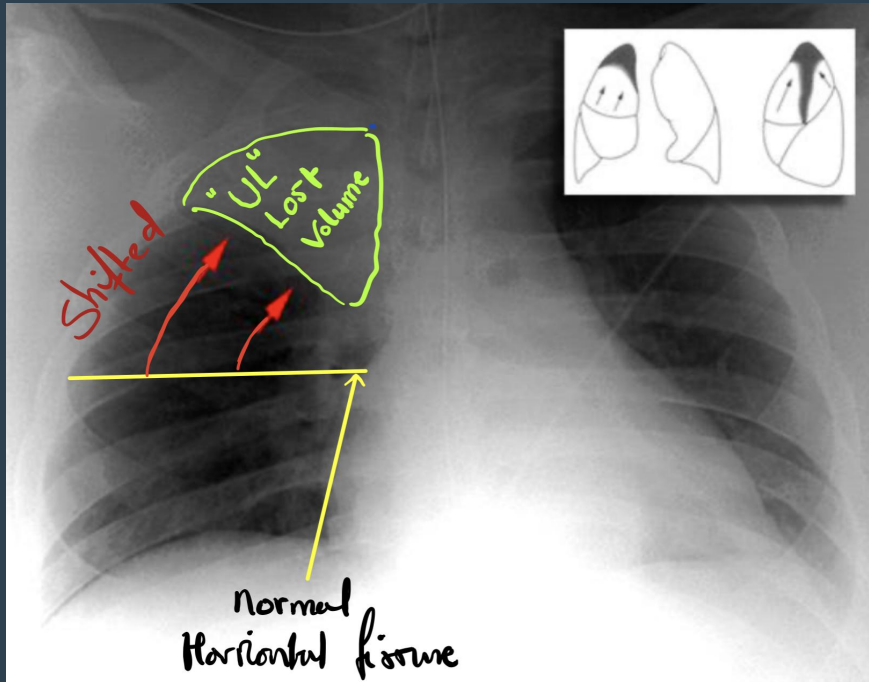
How to differentiate between Atelectasis and Pneumonia?





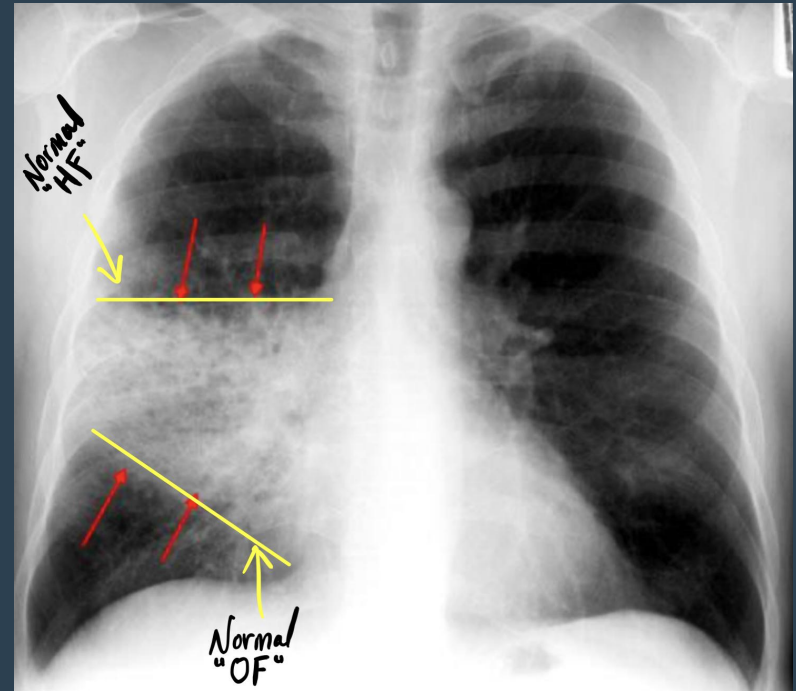
# Atelectasis Vs pneumonia

## Atelectasis



Collapsed lobe lost volume

## Pneumonia

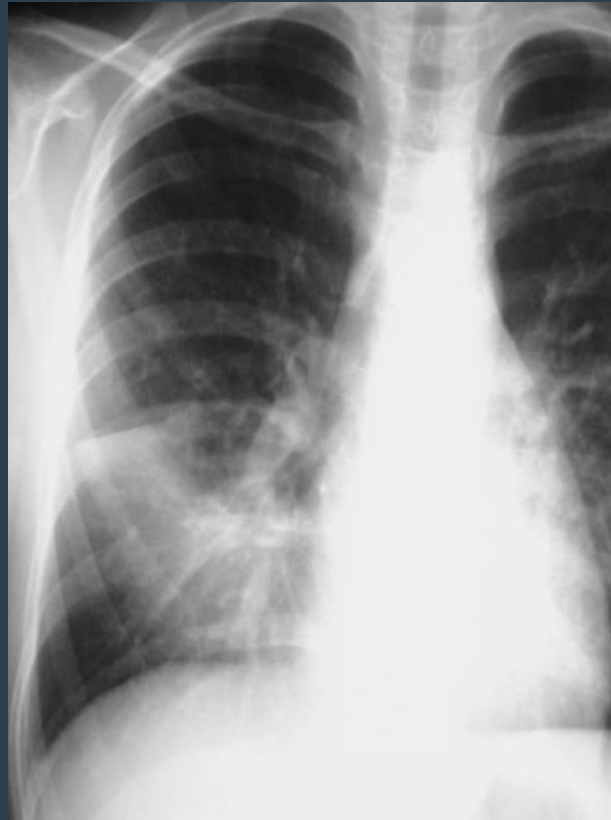


Lobe with pneumonia has not lost volume



## Case 6

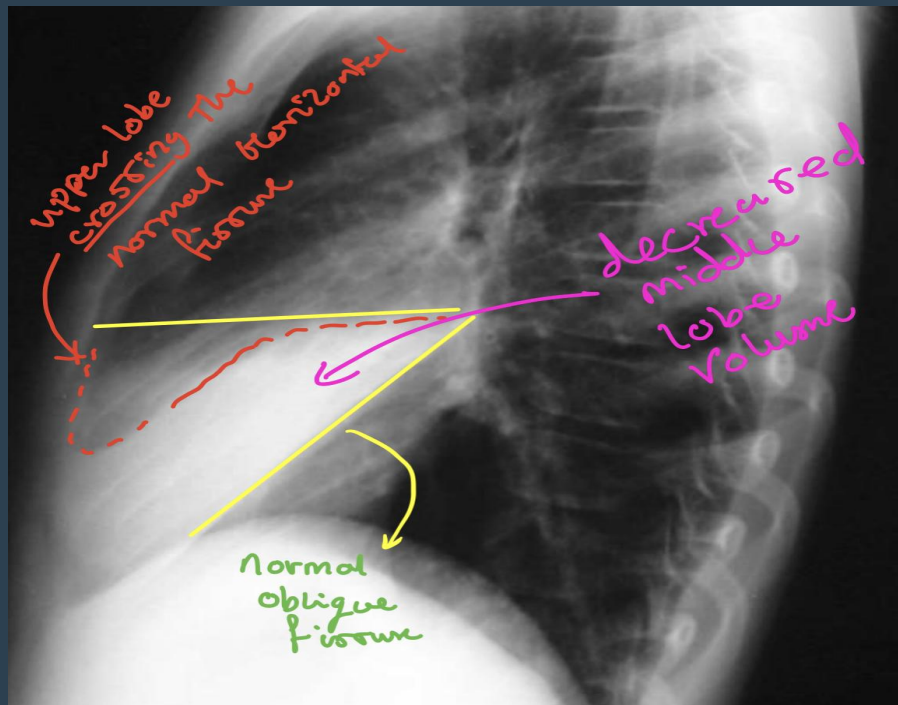
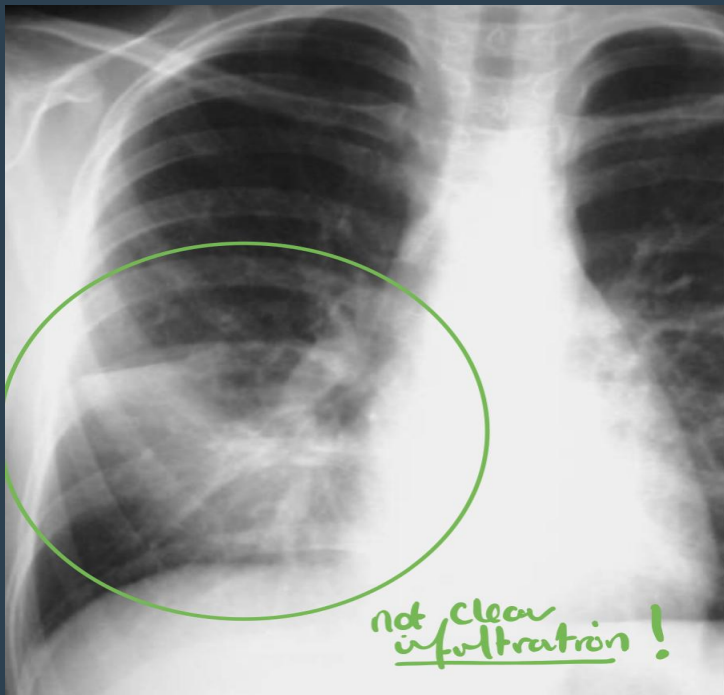
❏ What is the diagnosis?



Answer →

## » Atelectasis

Always read together



Collapsed right middle lobe. lost volume

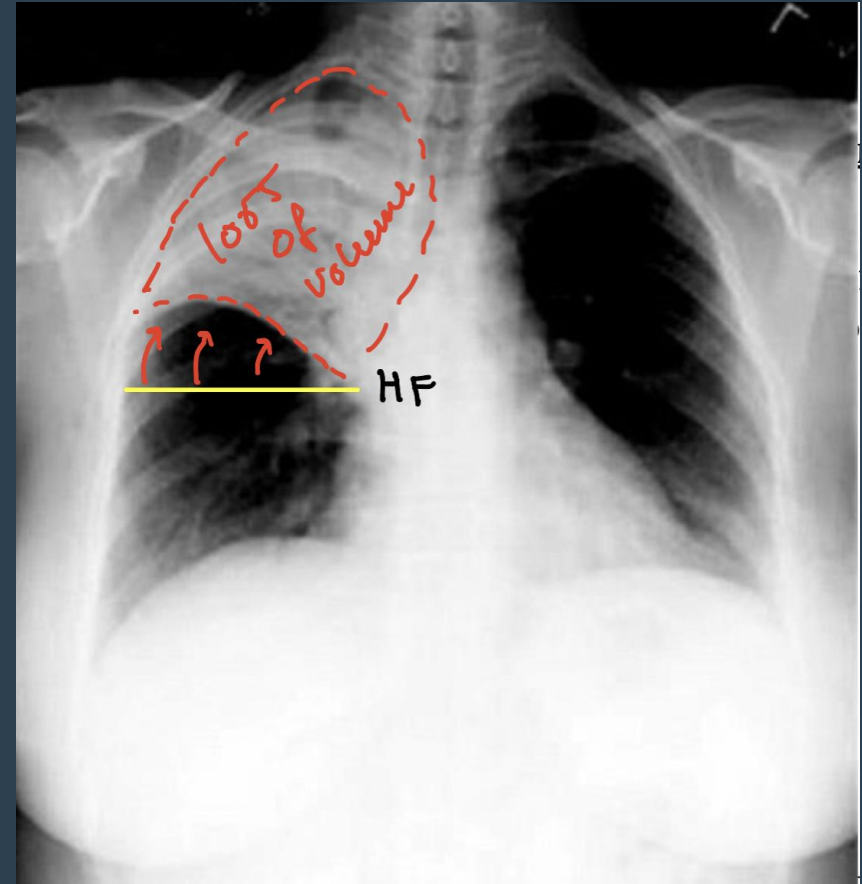
## Case 7

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



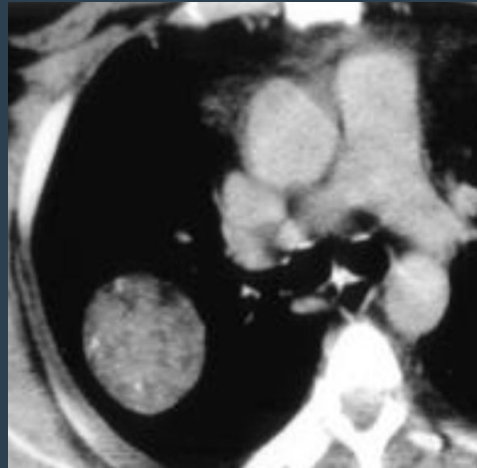
Answer →

❑ Diagnosis? Lung collapse



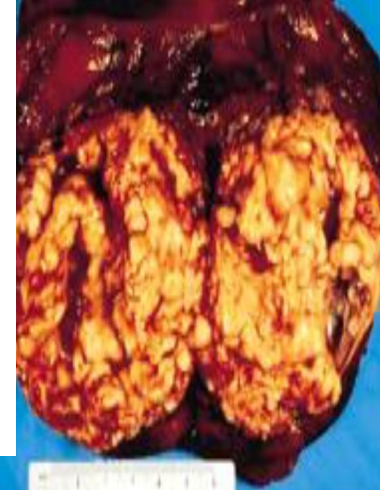
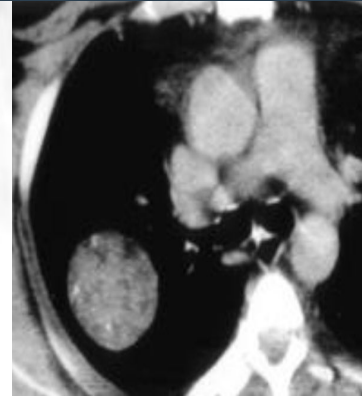
## Case 8

- ❑ Mass or infiltration?
- ❑ Why?



Answer →

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

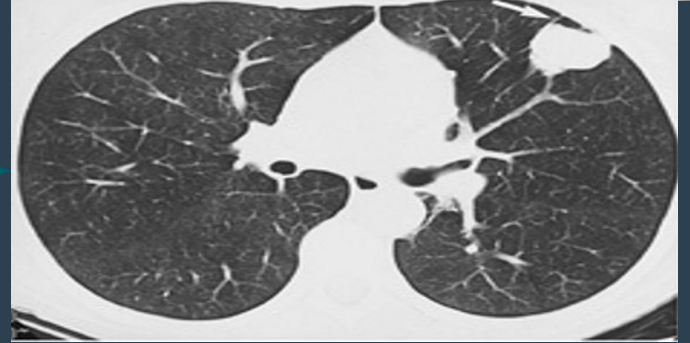
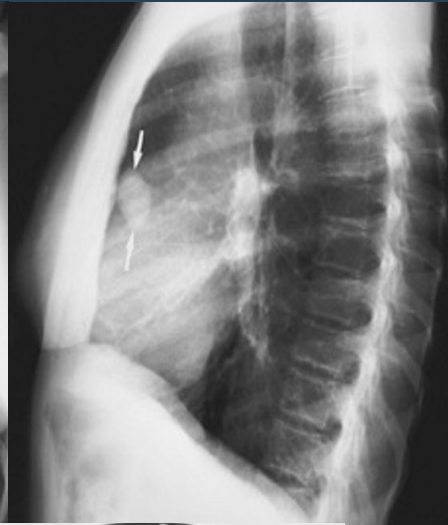


## Case 9

❑ Mass or infiltration?

❑ Why?

❑ What window? →



Answer →

## Case 9 (Answer)

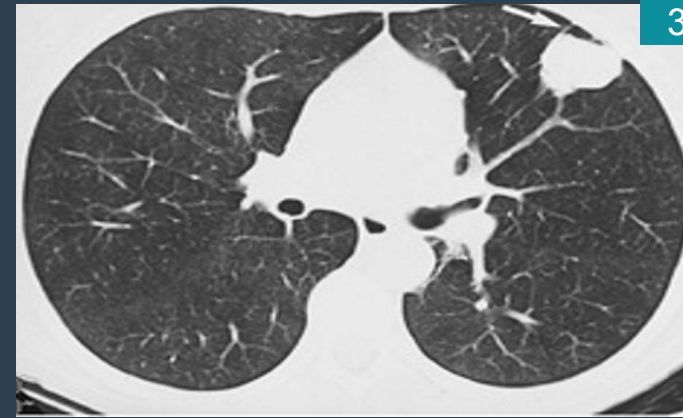
- ❑ **Mass or infiltration?** Neoplastic Mass
- ❑ **Why?** Well defined borders
- ❑ **Steps:**



Not clear borders  
on PA view



Borders are clear  
on lateral view

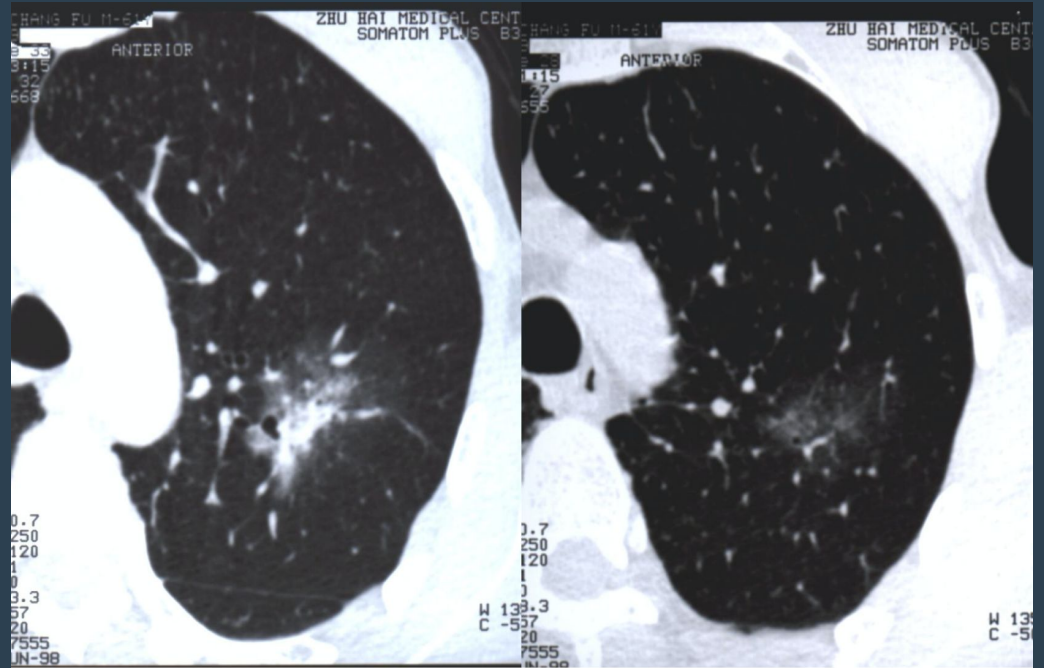


Borders are very clear  
on CT  
(lung window)



# Case 10

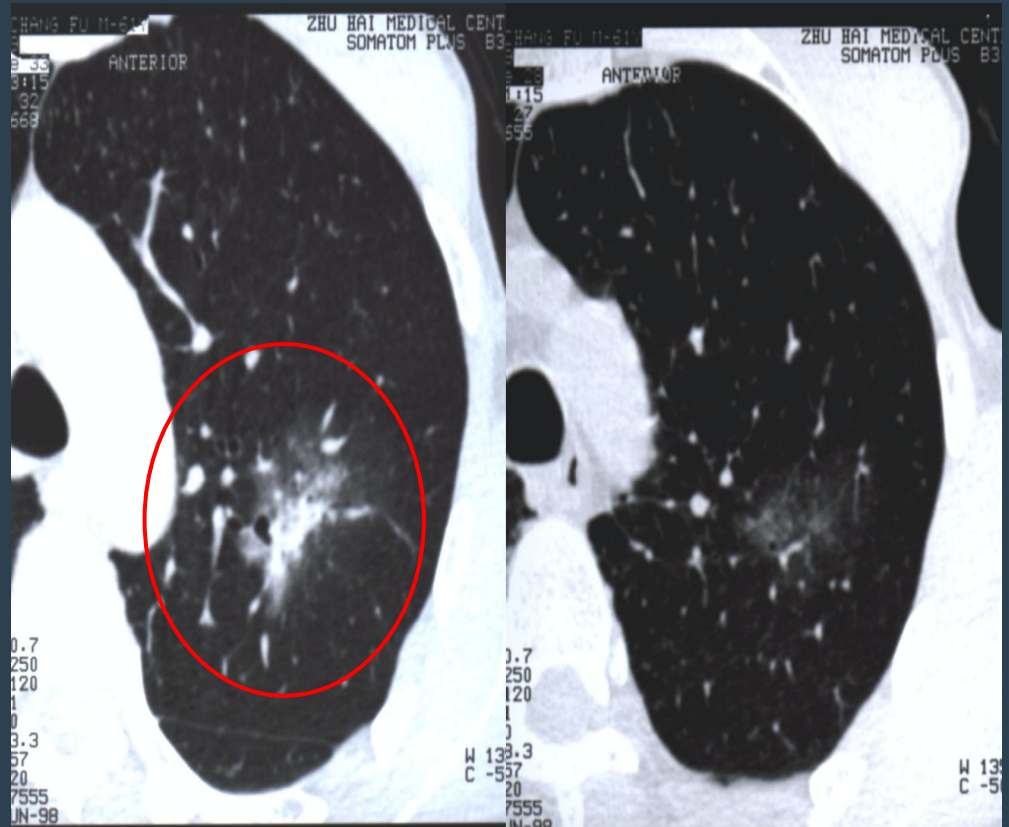
- ❑ Mass of infiltration?
- ❑ Why?



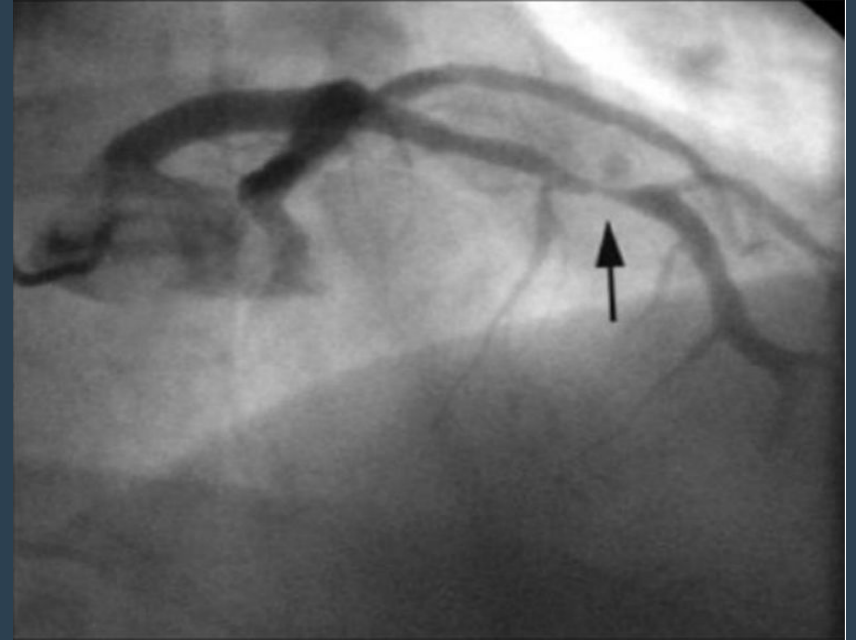
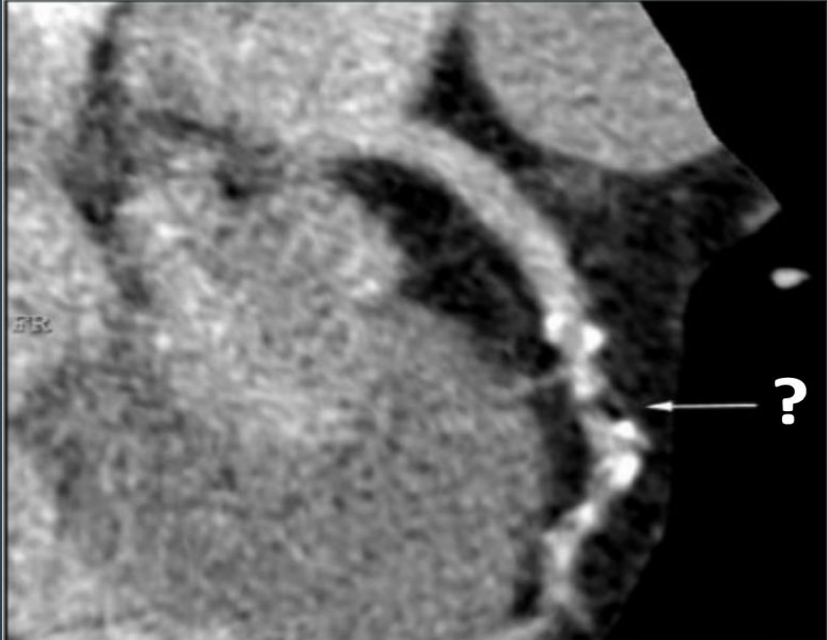
Answer →

## Case 10 (Answer)

- ❑ Mass of infiltration?  
(diffused) Infiltration
- ❑ Why?  
no defined borders

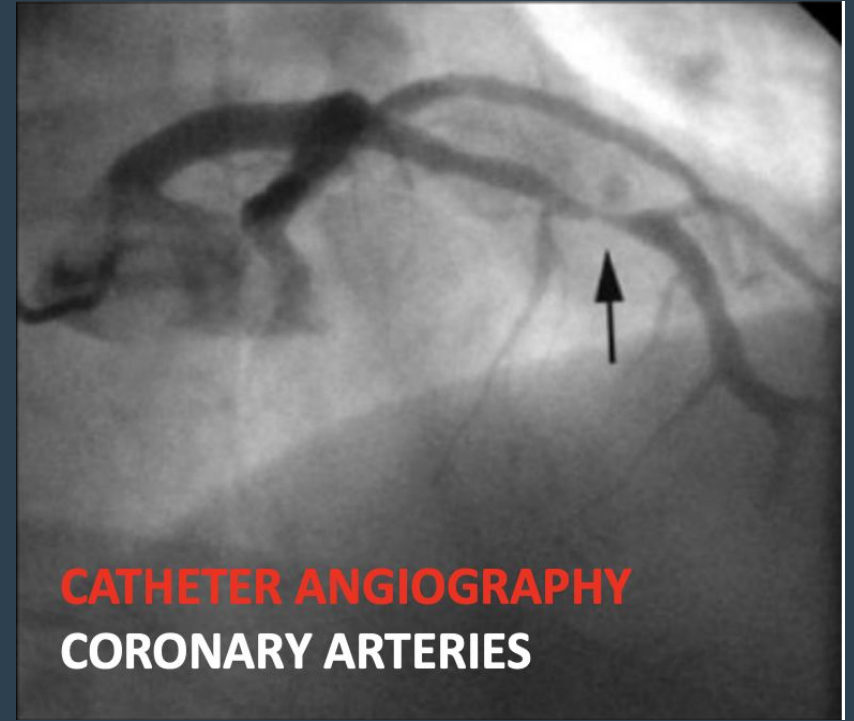
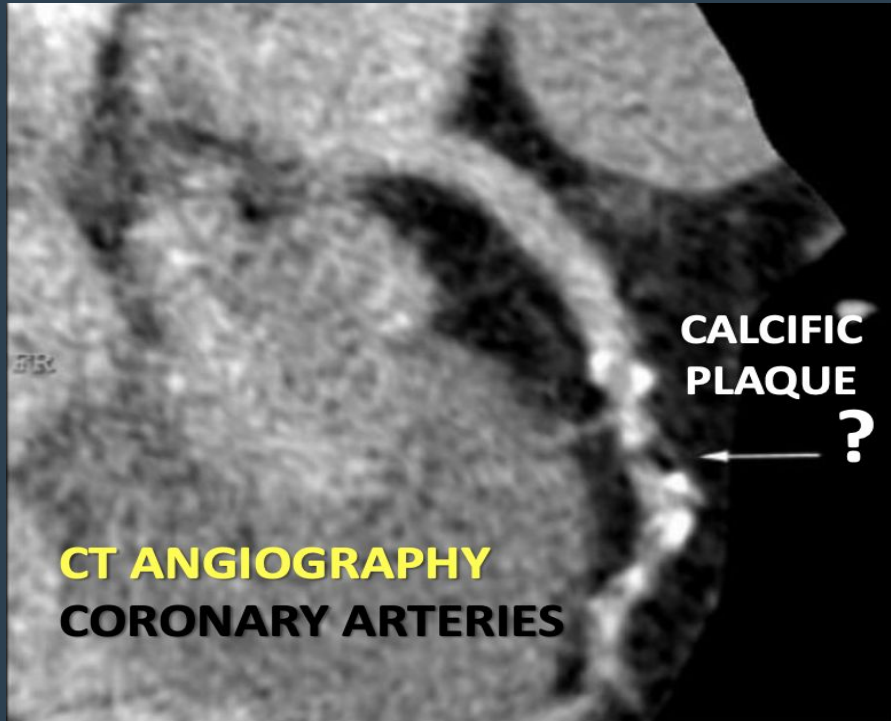


□ modality of each?

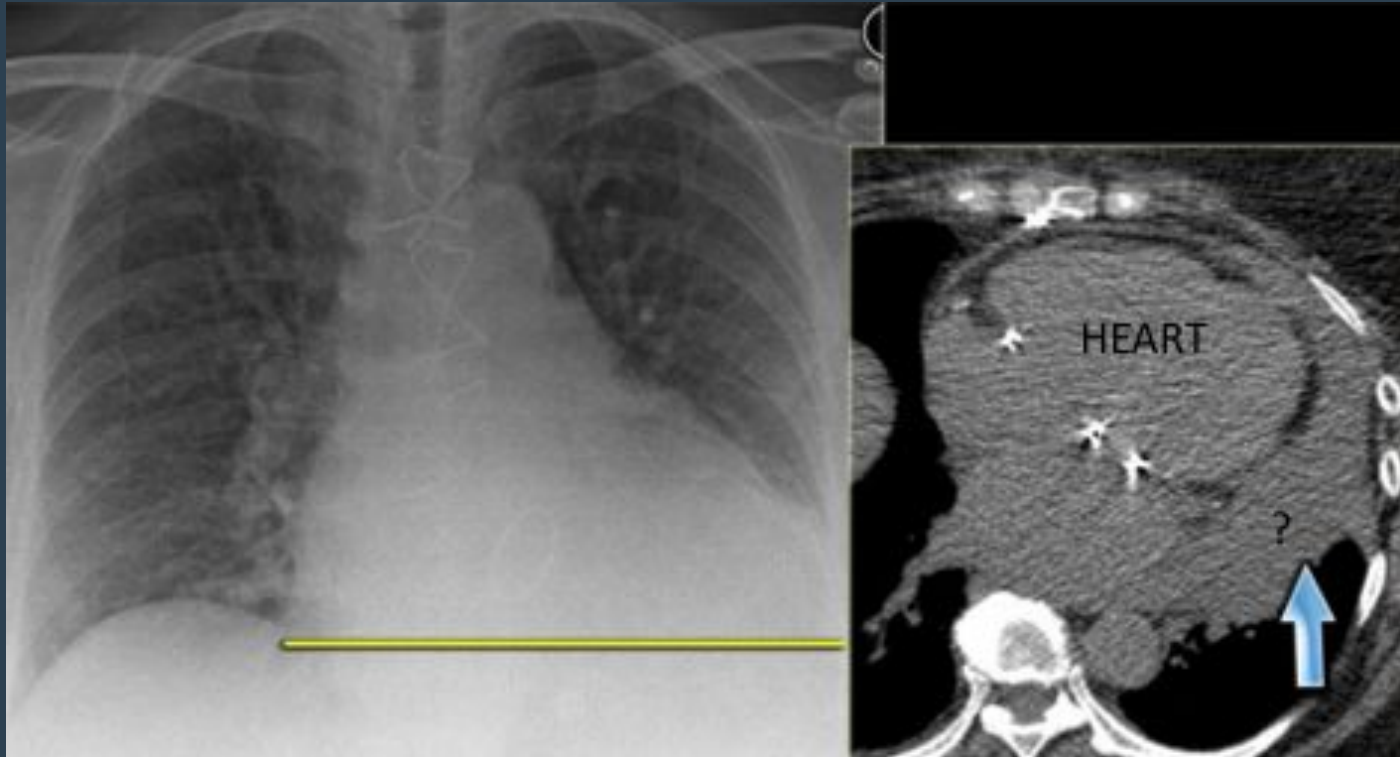


Answer →

## Case 11 (Answer)



❏ Diagnosis?



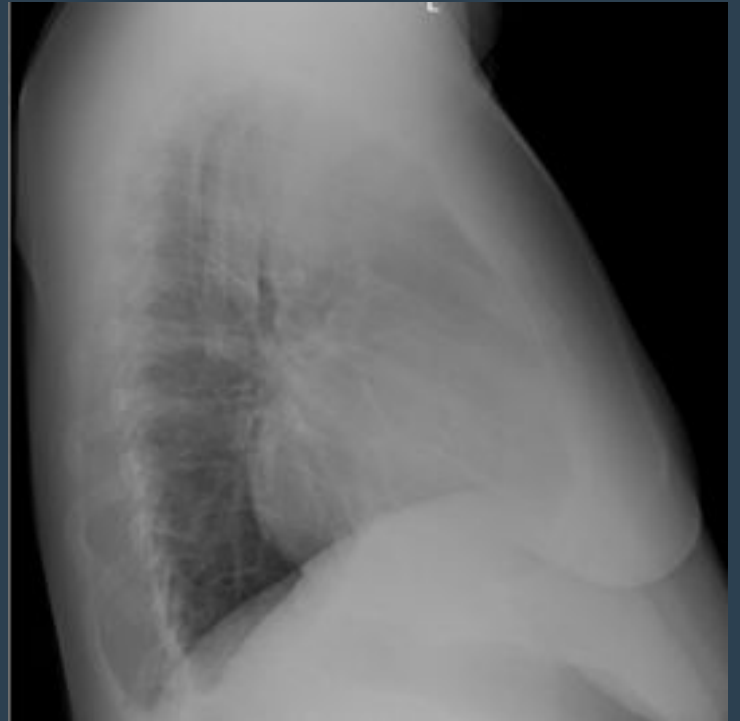
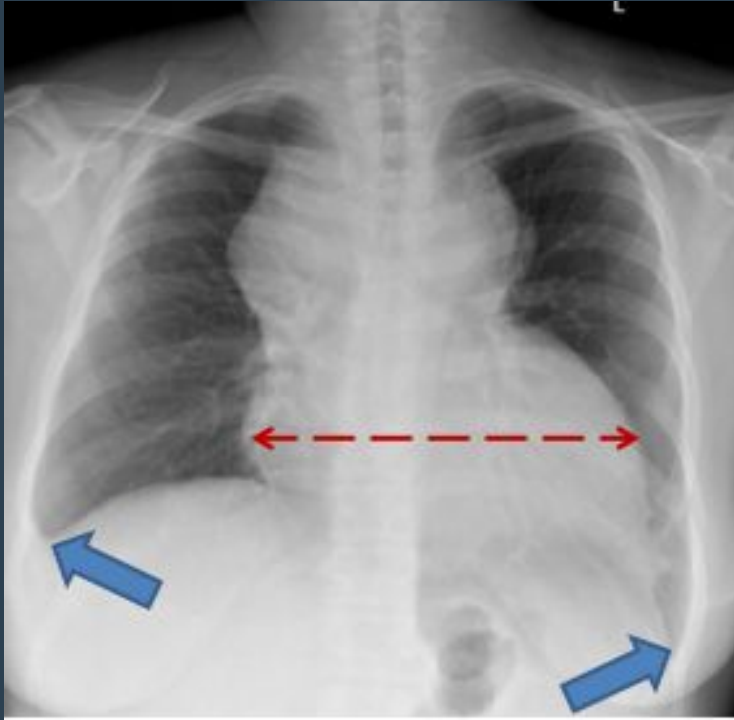
Answer →

### ❑ 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)

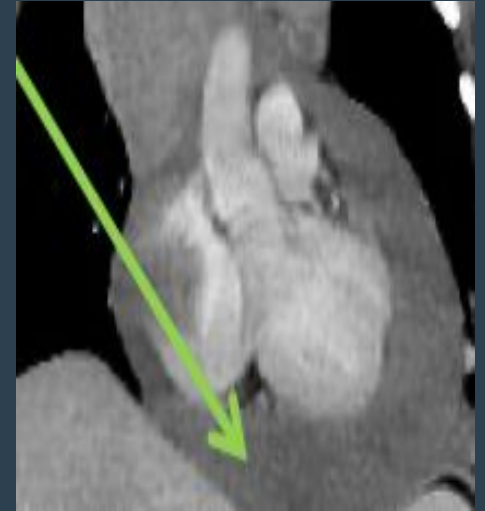
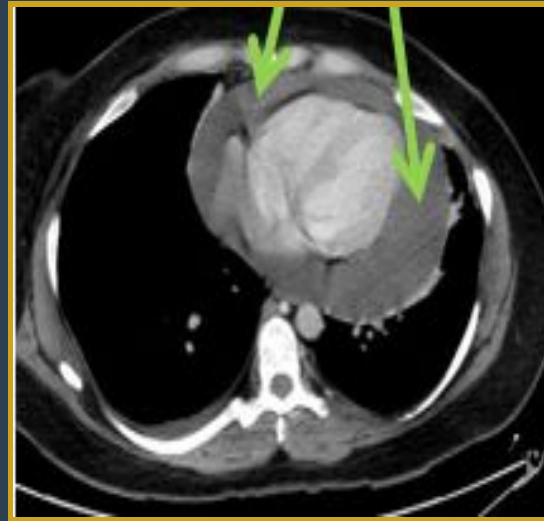
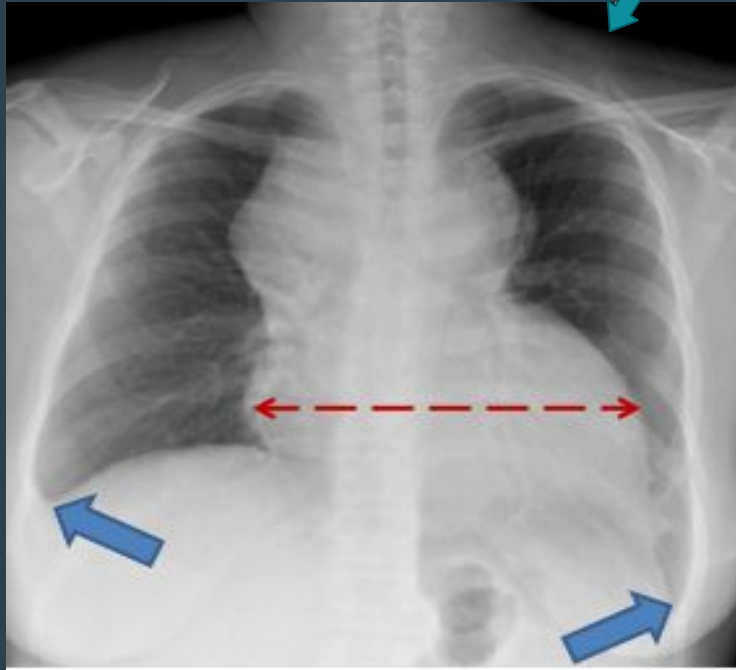
## □ Diagnosis?



Answer →



❑ **Diagnosis?** Pleural effusion and pericardial effusion

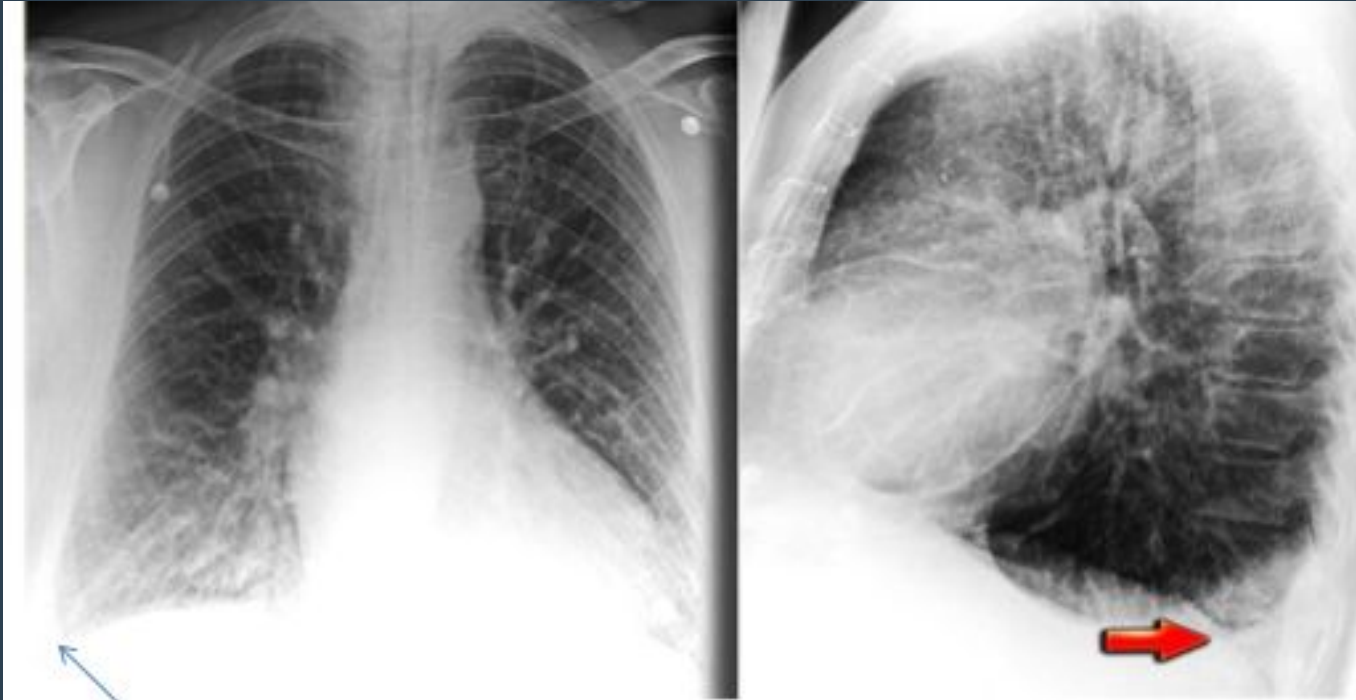


-Blunt of cost diaphragmatic angle, and Increased cardiothoracic ratio  
-widening of mediastinum



## Case 14

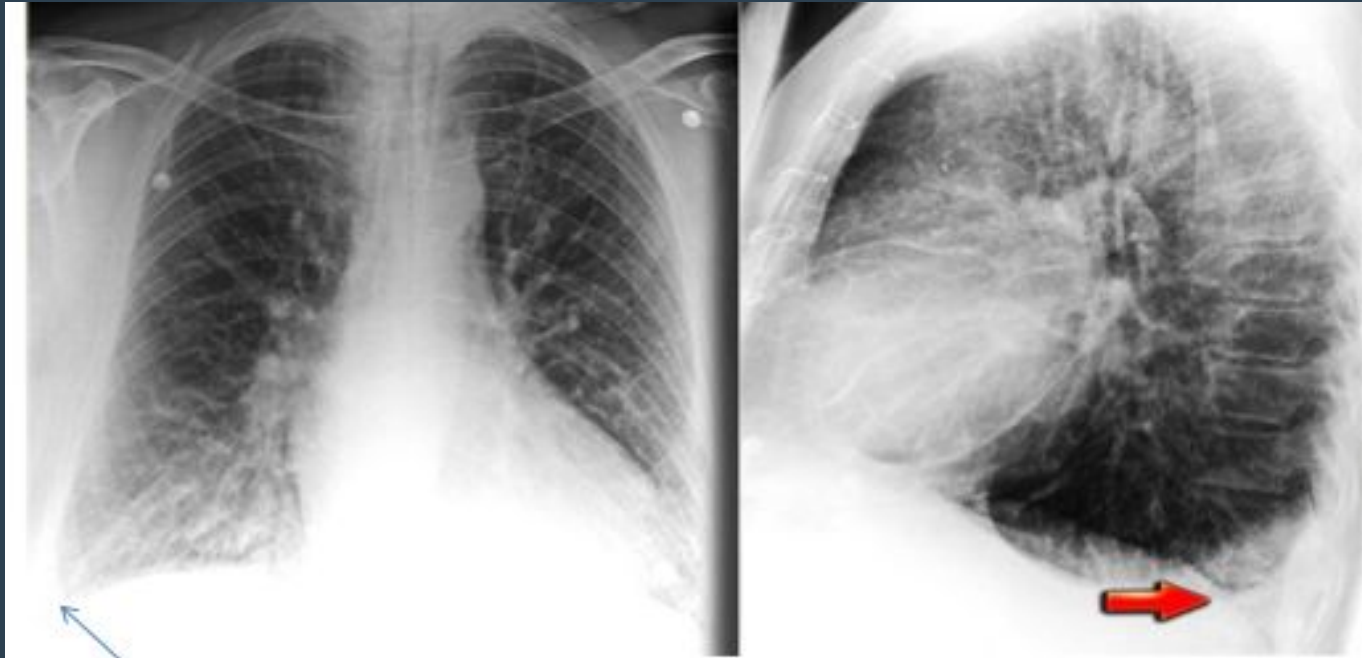
- ❑ Diagnosis?
- ❑ Abnormal?



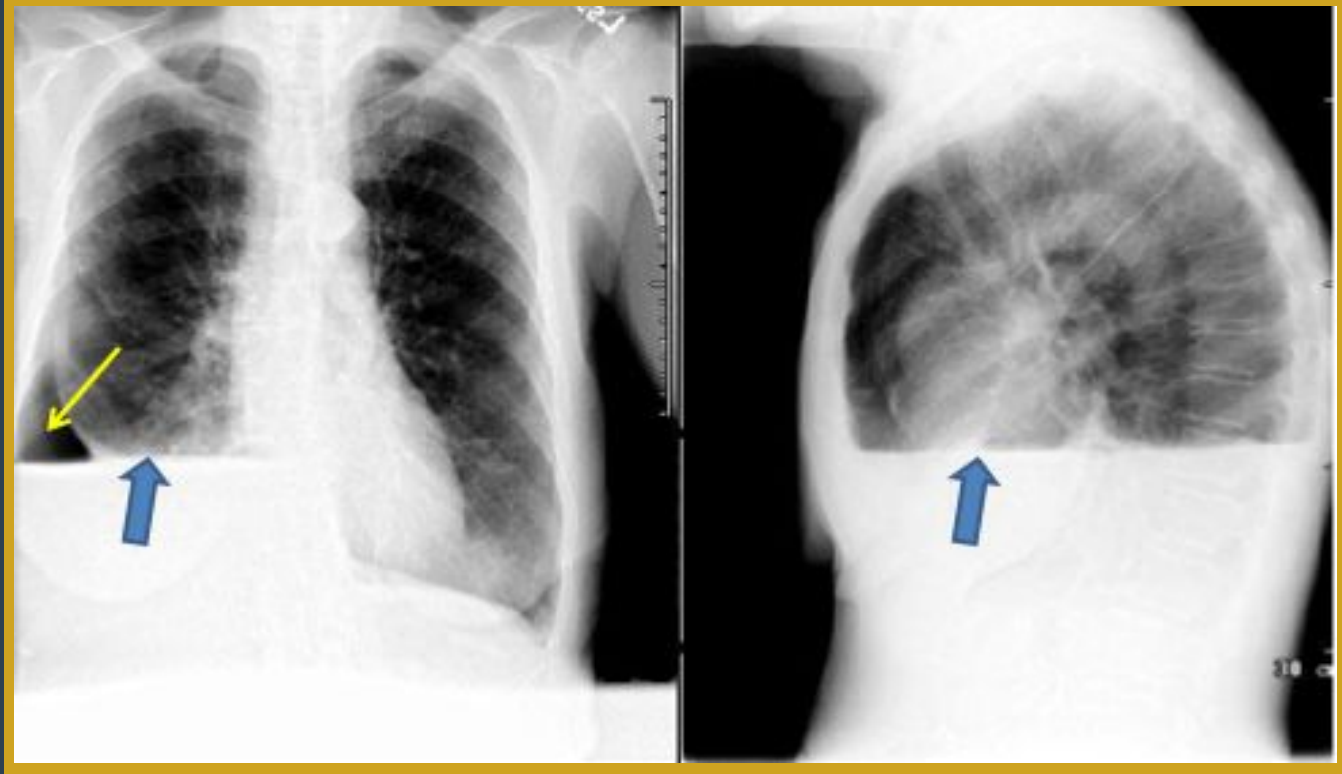
Answer →

## Case 14 (Answer)

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

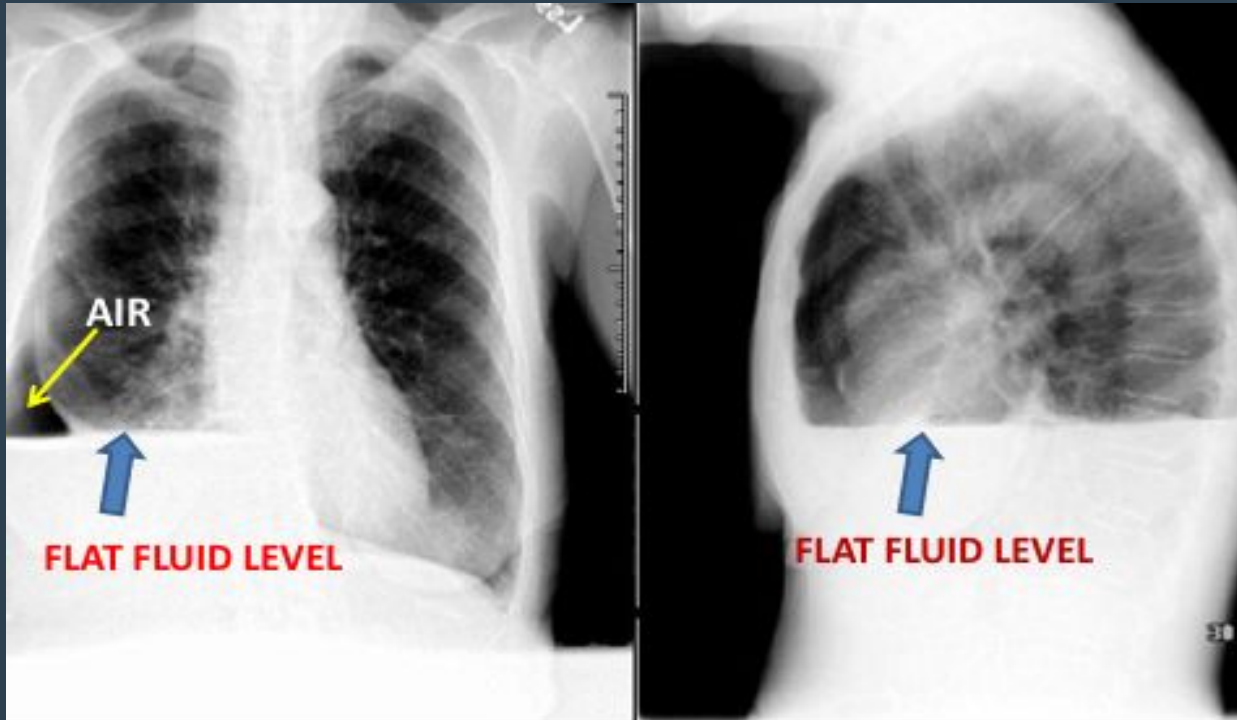


□ Diagnosis?



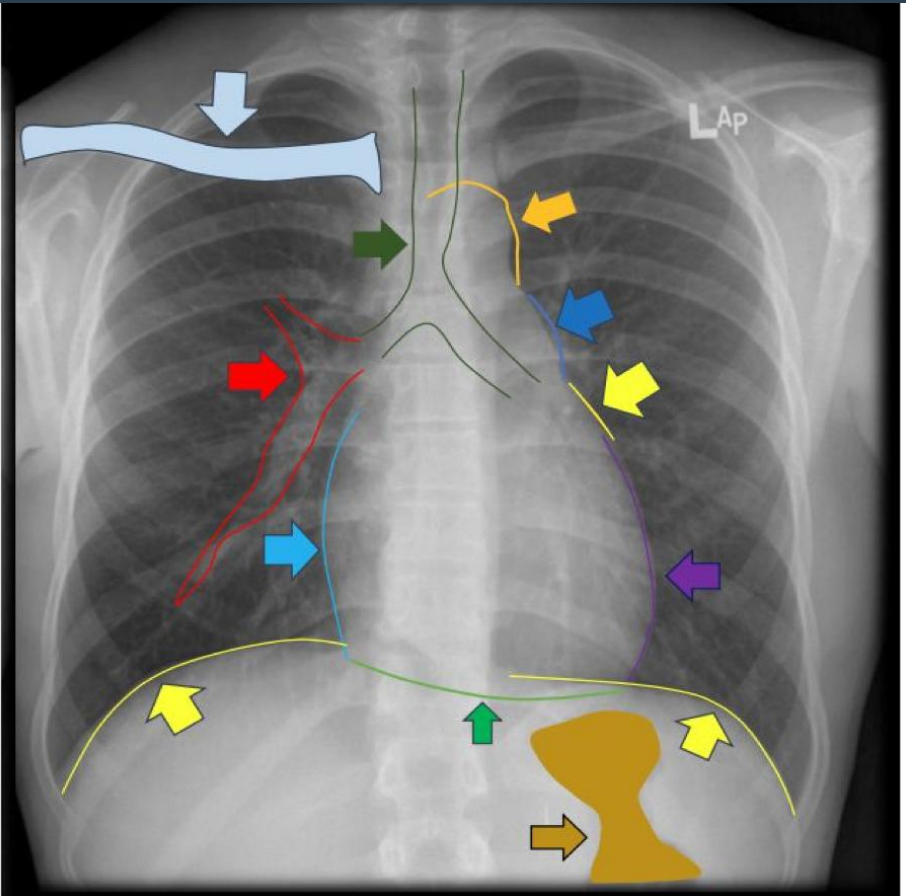
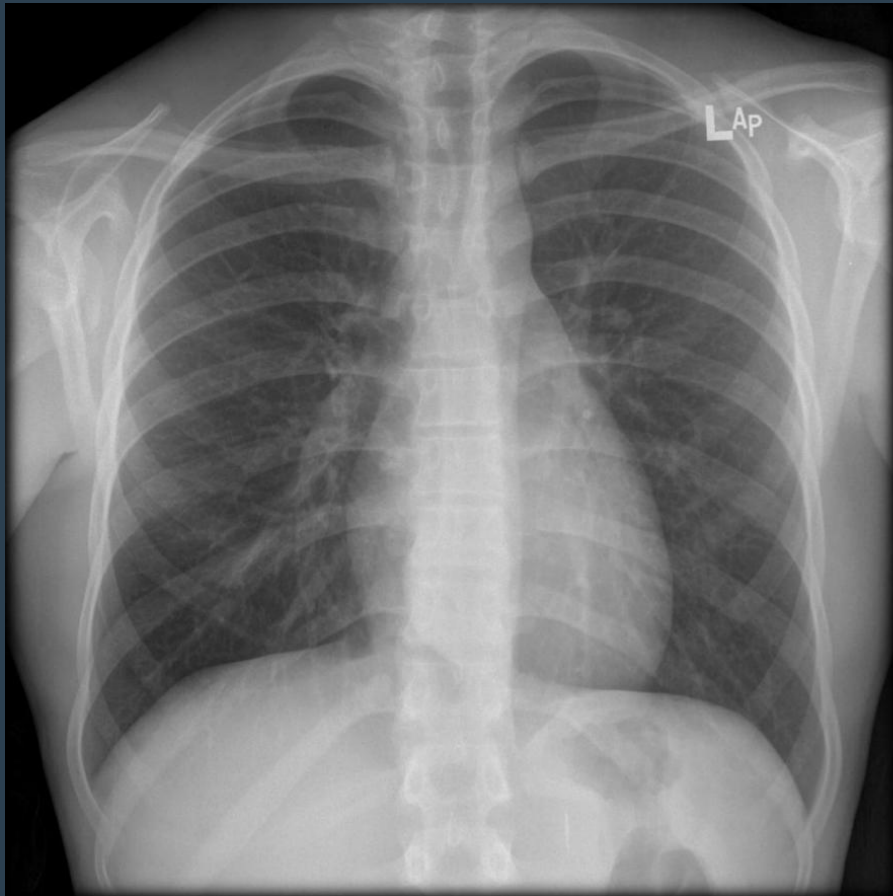
Answer →

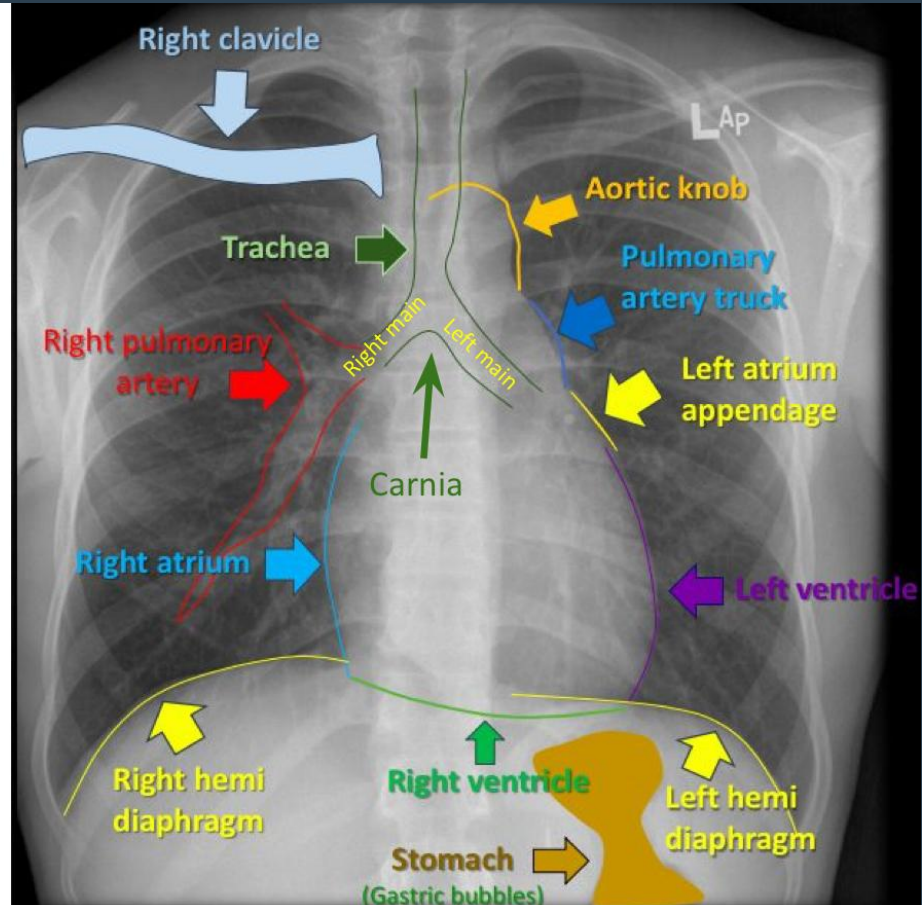
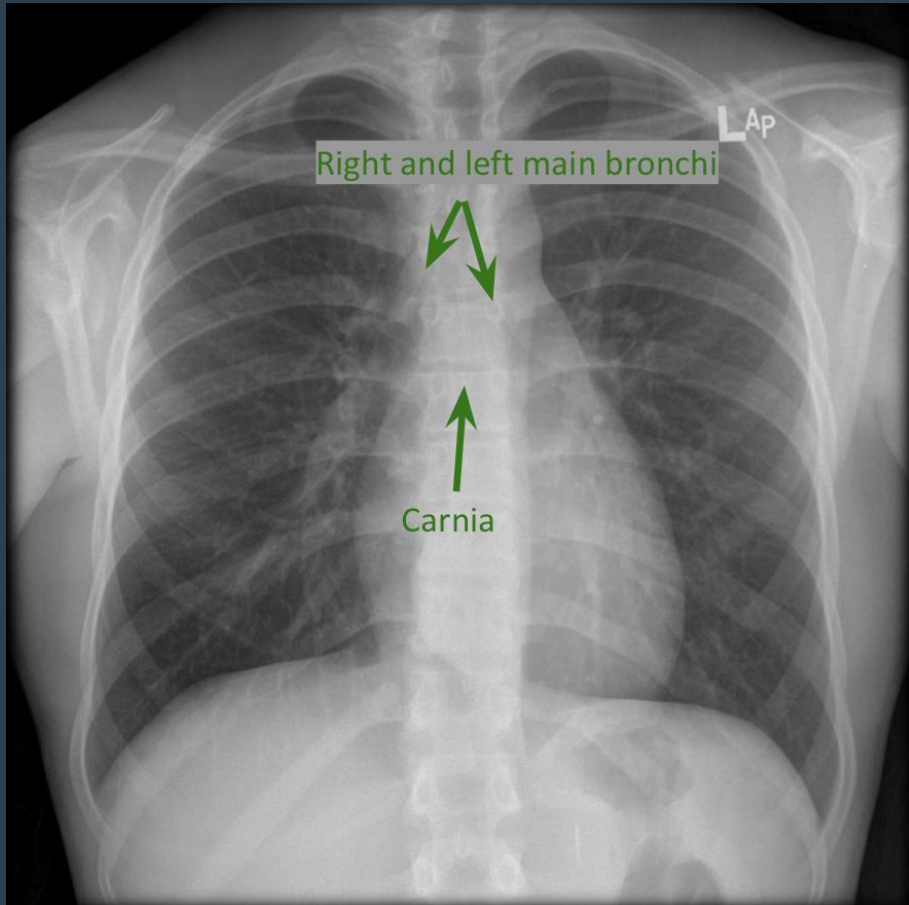
## ❏ Diagnosis? Hydro-pneumothorax



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)







# Quiz

1)

- Diagnosis?
- lobe Affected?



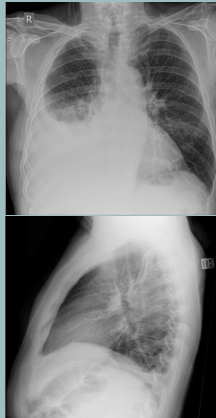
2)

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



3)

- What is the most likely diagnosis ?



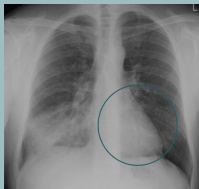
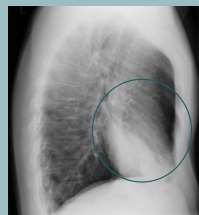
4)

- What is the most likely diagnosis ?



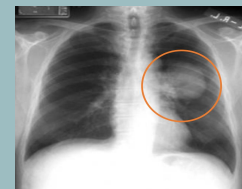
1)

- **Diagnosis?**  
Infiltration/pneumonia  
(Air space density).
- **lobe Affected?**
- Right middle lobe



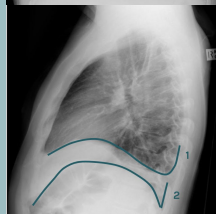
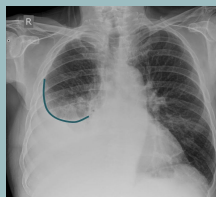
2)

- **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)

