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# Chest X-ray Interpretation

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# Disclosure

**Joseph S. Alpert, MD, FACC**

*Consultant Fees/Honoraria*

Bayer HealthCare; Boehringer Ingelheim; Daiichi Sankyo, Inc.; Johnson and Johnson; MedIQ; Roche; sanofi-aventis U.S. Inc.; Servier Pharmaceuticals, ZS pharmaceuticals, Roche.

*Data Safety Monitoring Board*

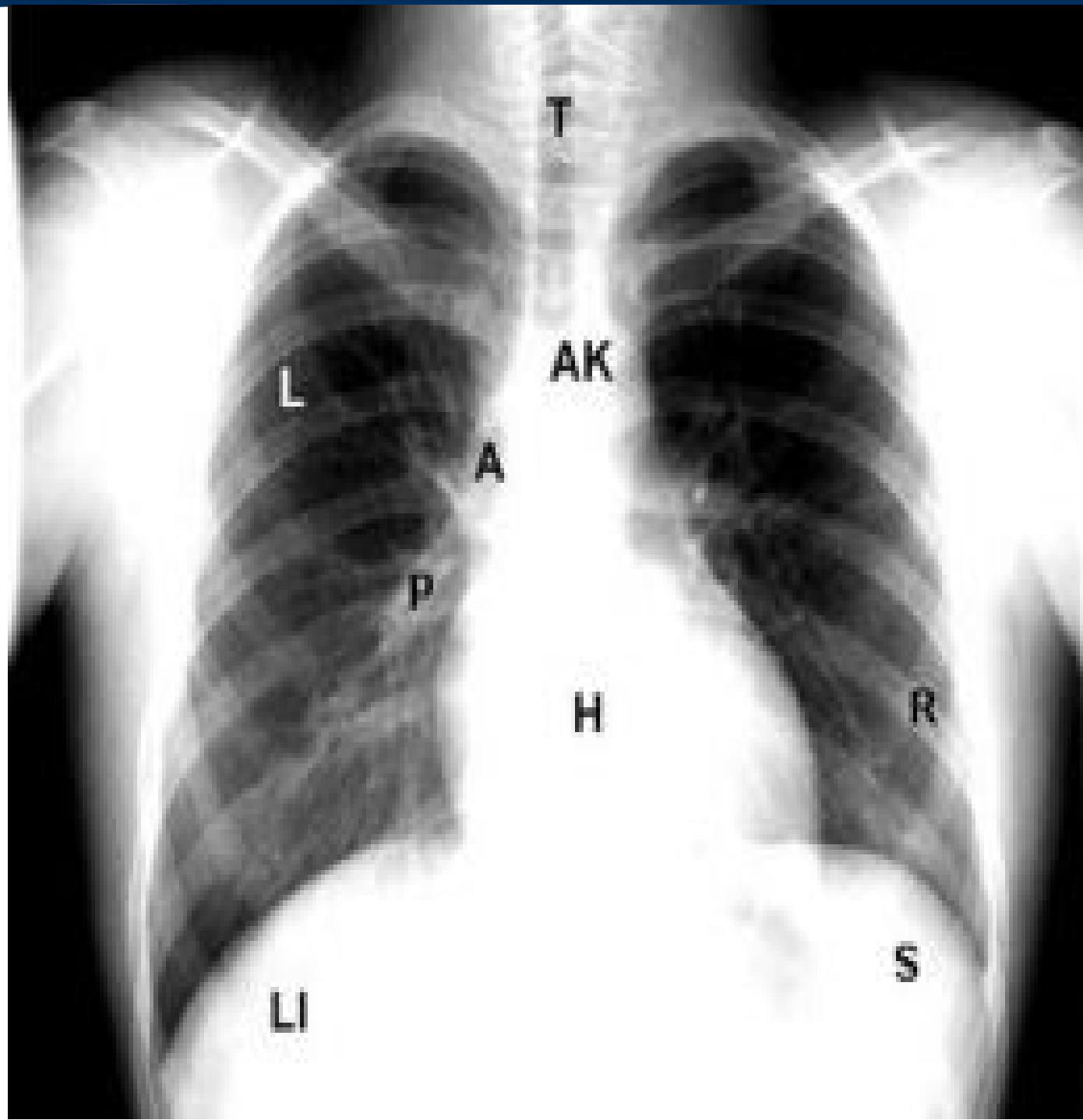
Bayer HealthCare; Duke Clinical Research Institute; Janssen Pharmaceuticals, Inc.; TIMI Clinical Research Group, Novo Nordisk.

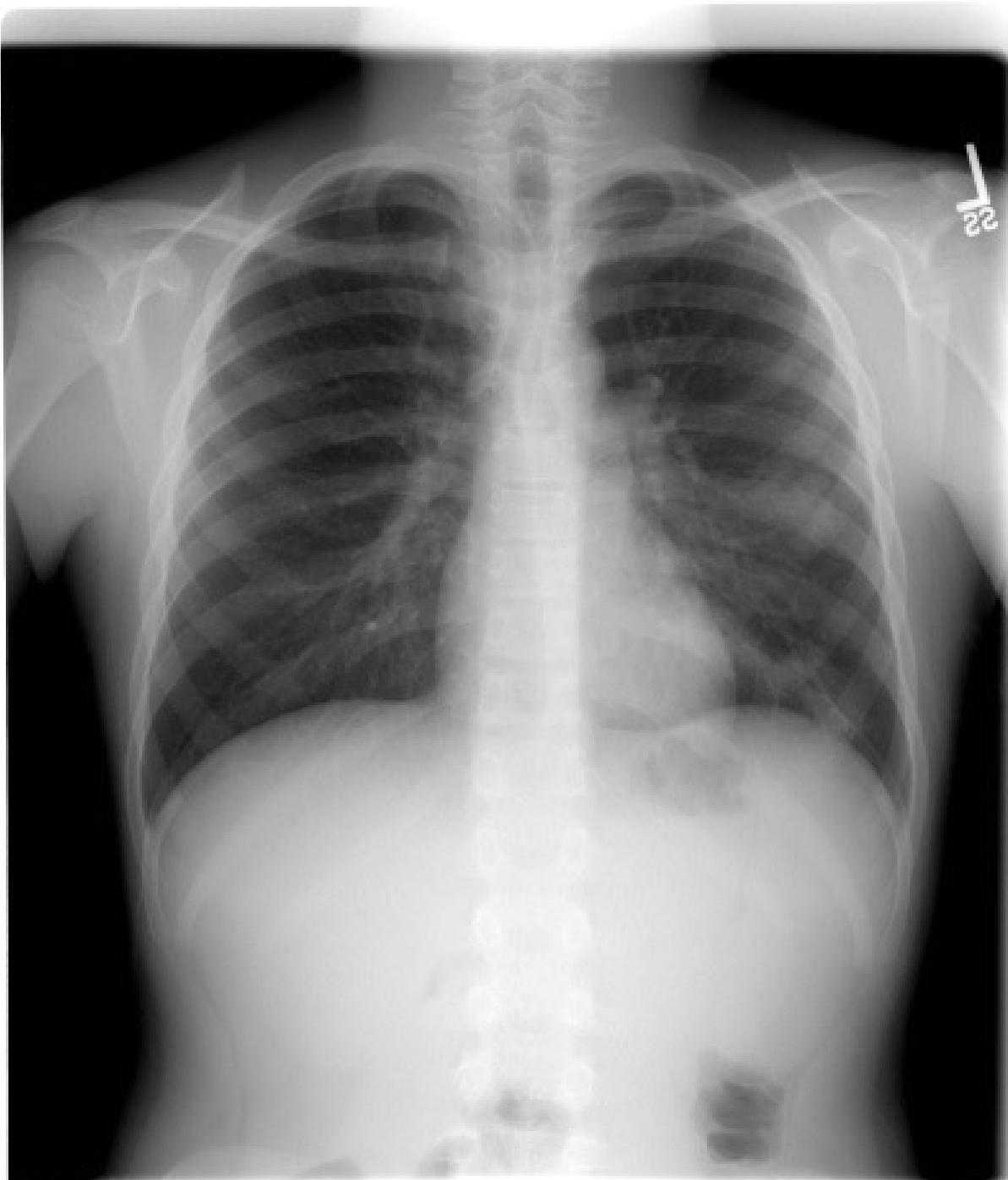
# The Chest X-Ray: Principles of Reading

1. The bones
2. The lungs
3. The heart
4. The vessels
5. Miscellaneous such as pacemakers, catheters, etc.



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**Normal  
chest  
xray**



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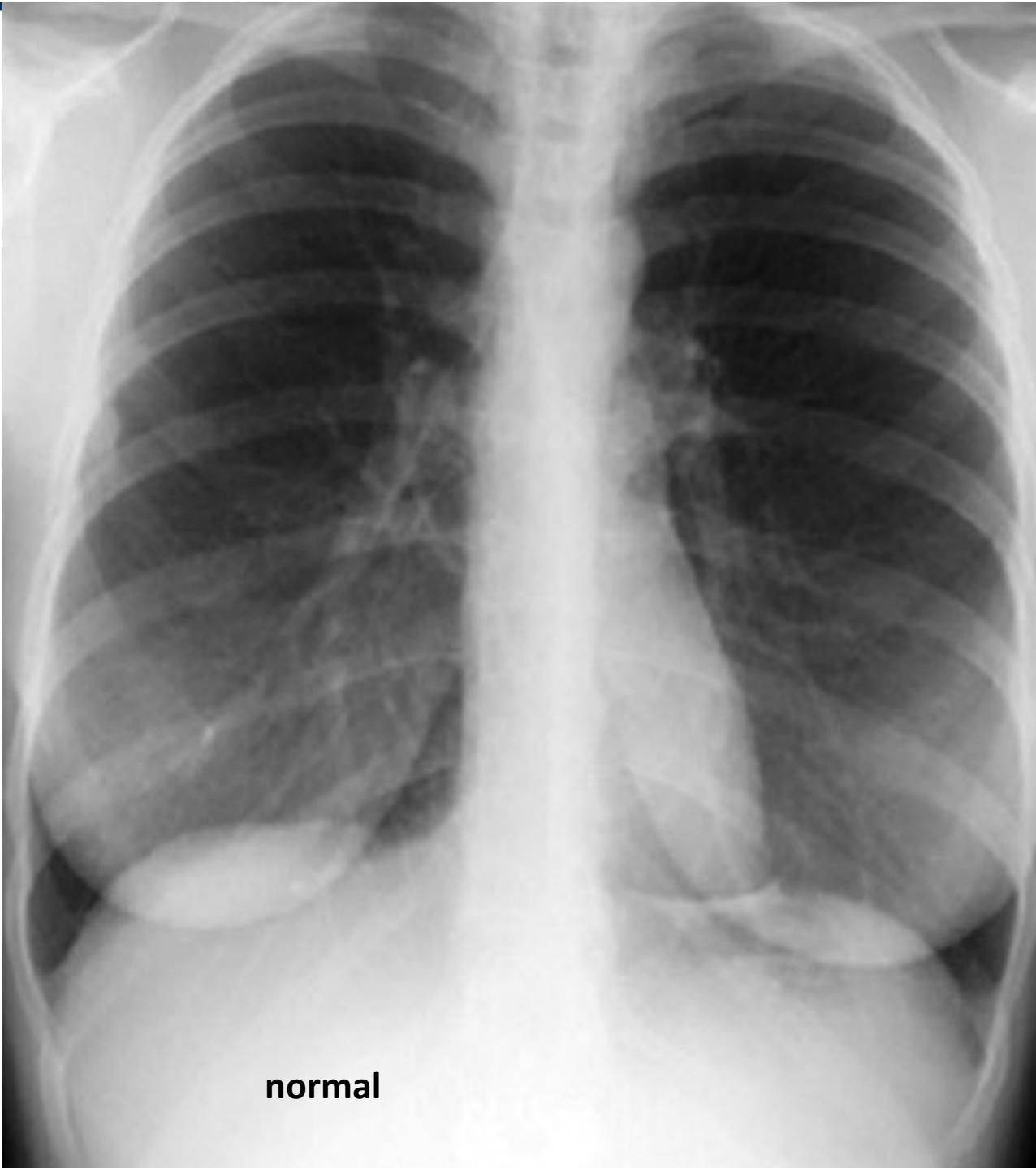


**Is this lateral  
chest x-ray  
from the  
same patient  
as the last  
film—the PA  
film?**



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- 1. Yes, it is the same patient**
- 2. No, it is not the same patient**
- 3. Yes, it is the same patient but a different view**
- 4. No, it is not the same patient; this patient is a female.**



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- 1. Is the Aortic knob enlarged?**
  
- 2. Is the heart enlarged?**
  
- 3. Are the lungs congested ?**



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**A. Is the aortic knob enlarged?**

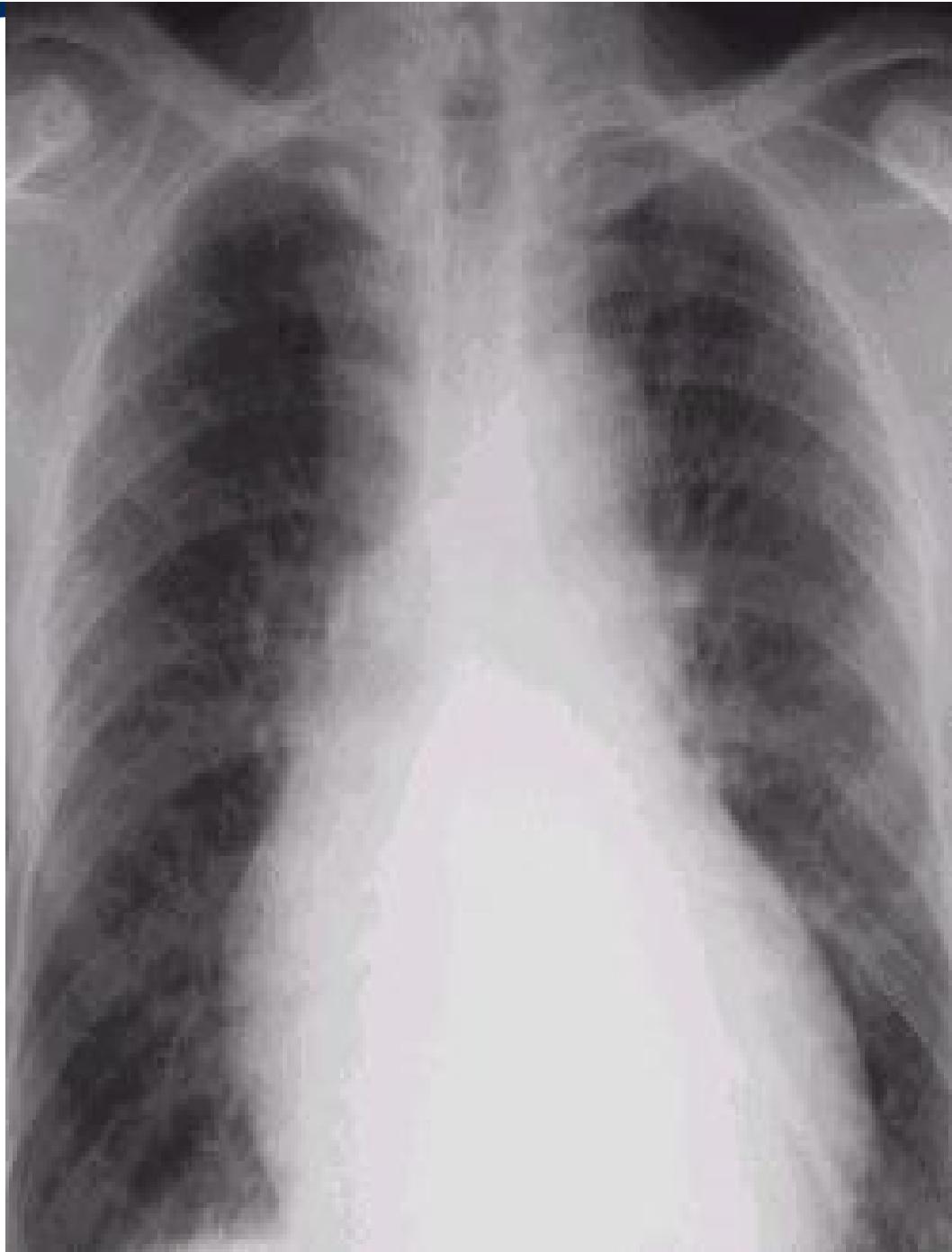
- 1. yes   2. No**

**B. Is the heart enlarged?**

- 1. Yes   2. No**

**C. Are the lungs congested?**

- 1. Yes   2. No**



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**Marked  
cardiomegaly:  
Which  
heart disease  
could cause  
the enlarged  
heart?**



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- A. Ischemic cardiomyopathy**
- B. Constrictive pericarditis**
- C. Aortic stenosis**
- D. Atrial septal defect**
- E. Atrial fibrillation**



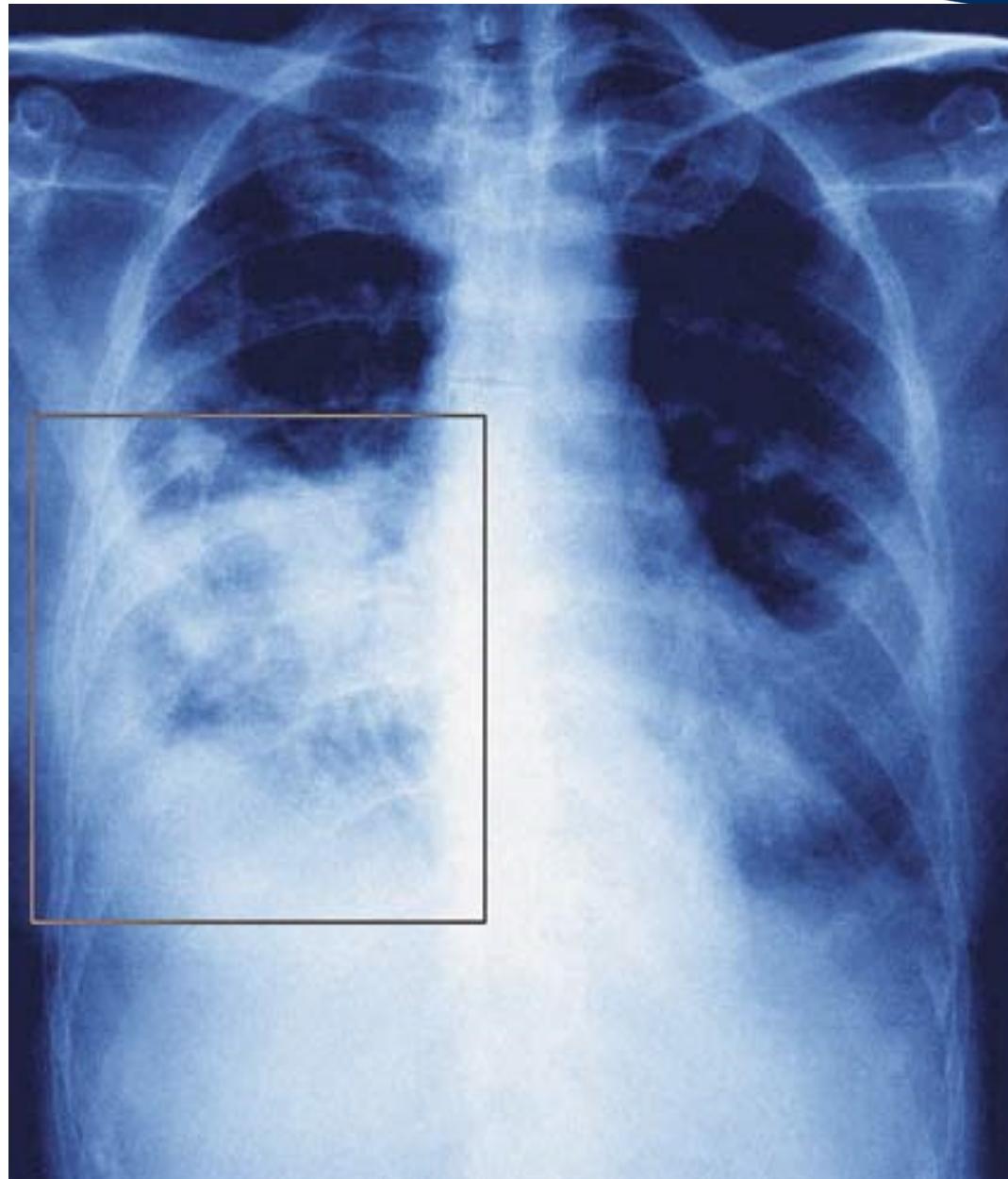
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# PLEURAL EFFUSION PERICARDIAL EFFUSION



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**Right and left pleural effusion**





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**What is  
abnormal  
in this  
chest  
xray?**



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**This  
patient  
does not  
have one  
of the  
following  
diseases.  
Which is  
the wrong  
one?**



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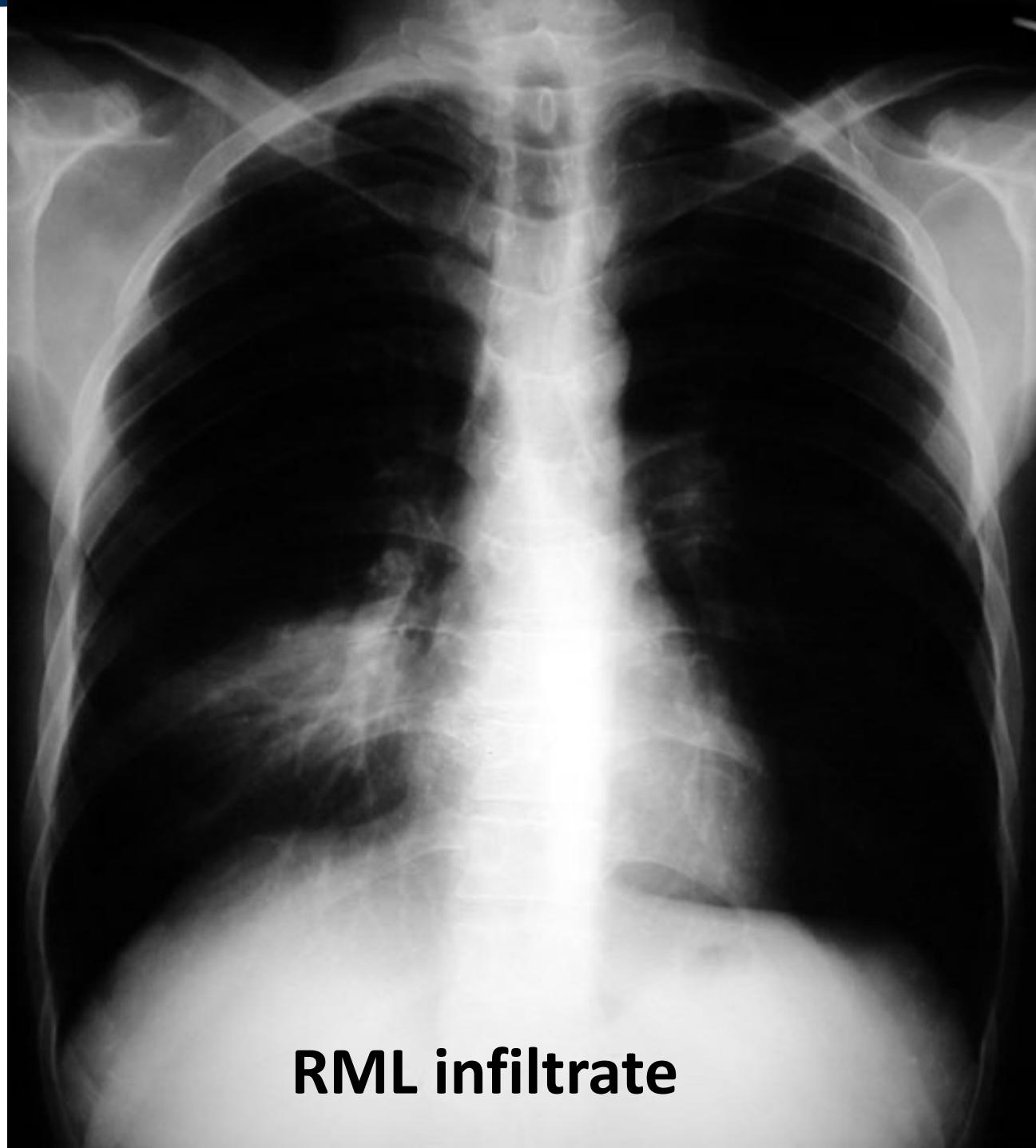
- 1. Large pericardial effusion**
- 2. Dilated cardiomyopathy**
- 3. End stage aortic insufficiency**
- 4. Ischemic cardiomyopathy with CHF**
- 5. Athlete's heart**



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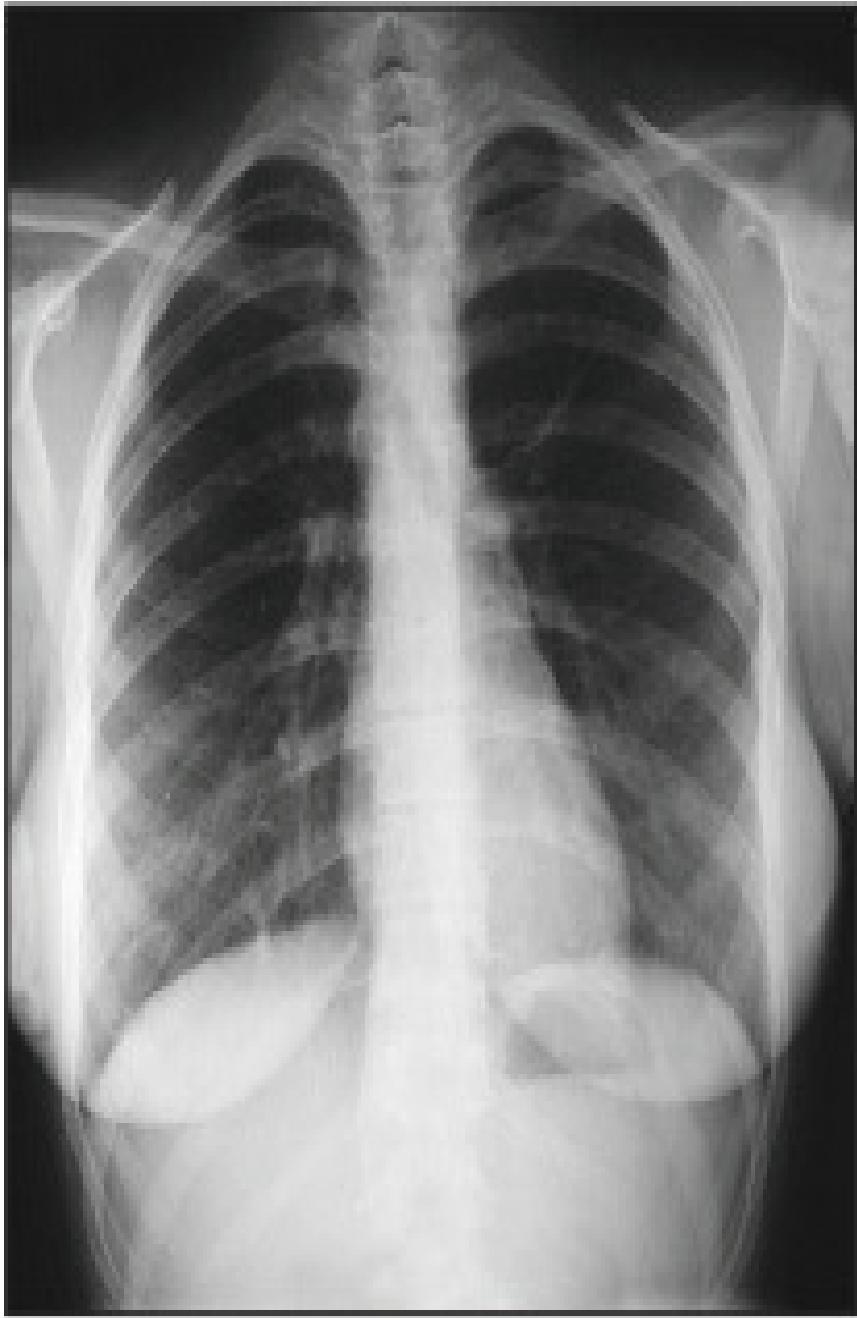
# PNEUMONIA LUNG ABCESS

**LLL infiltrate**

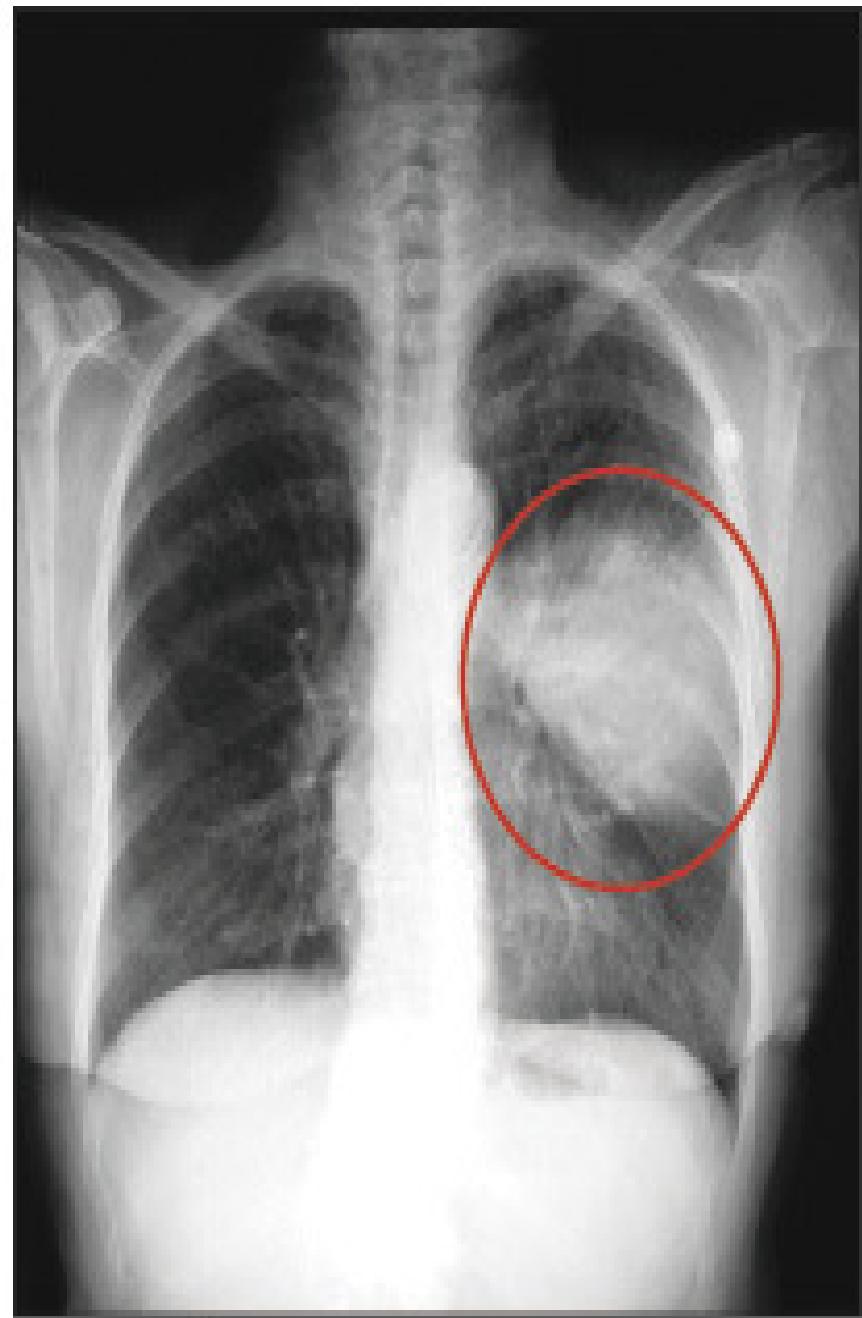


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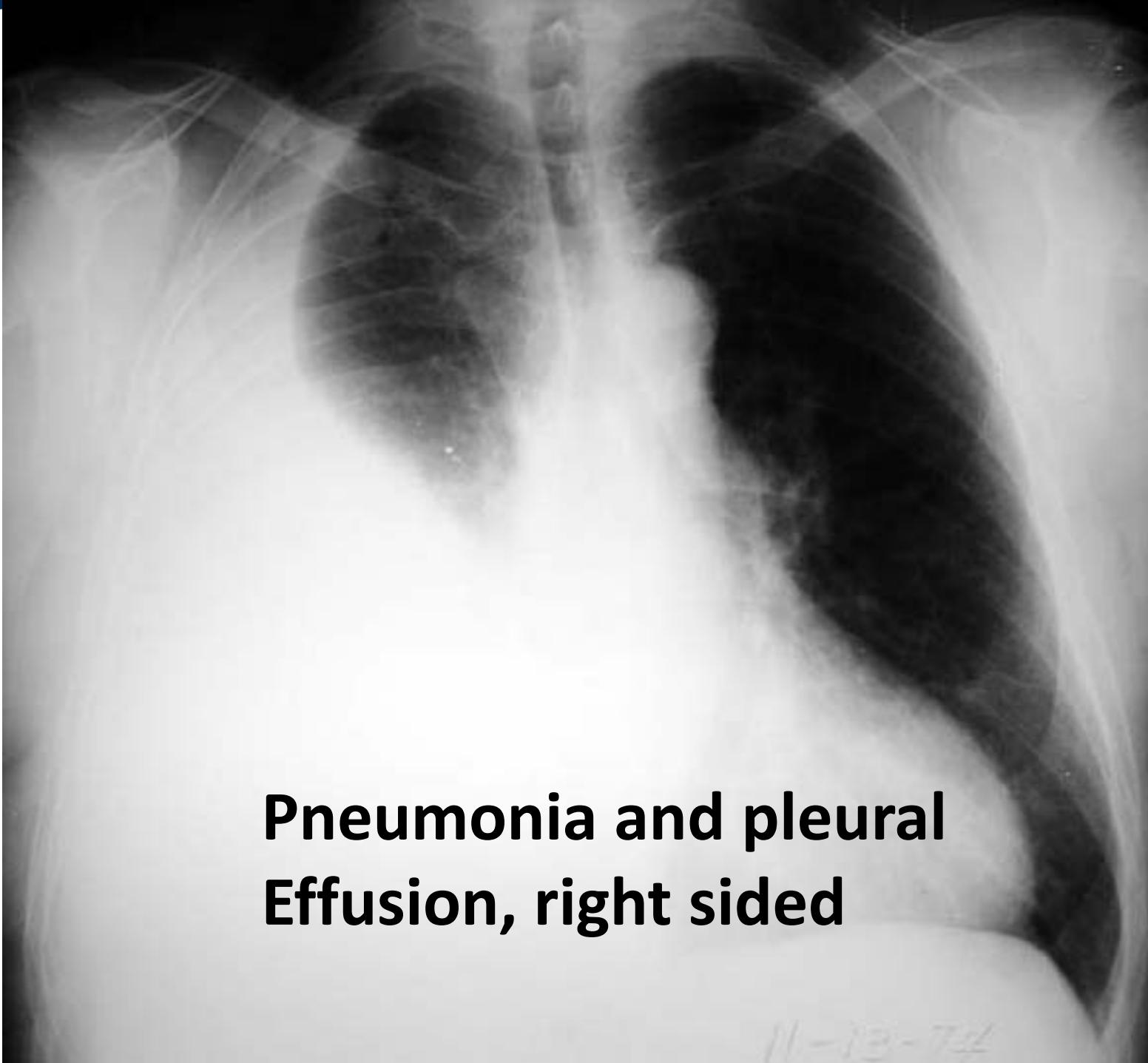
**RML infiltrate**



healthy lungs



lungs of a patient with pneumonia



**Pneumonia and pleural  
Effusion, right sided**



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Pneumonia  
bilateral;  
? of CHF  
as well.



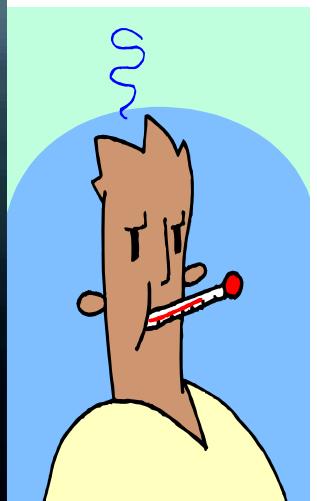


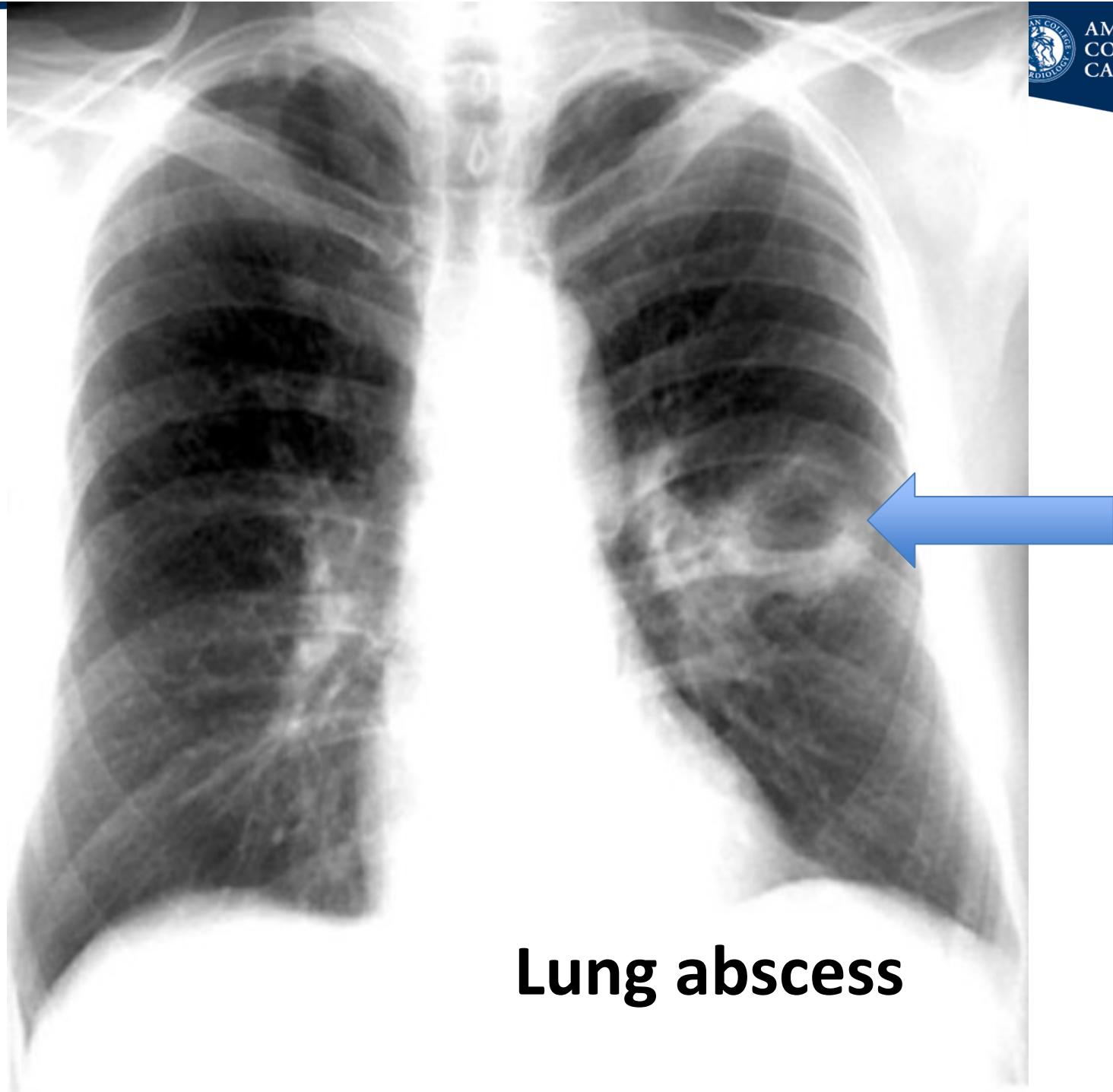
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TB



??





**Lung abscess**



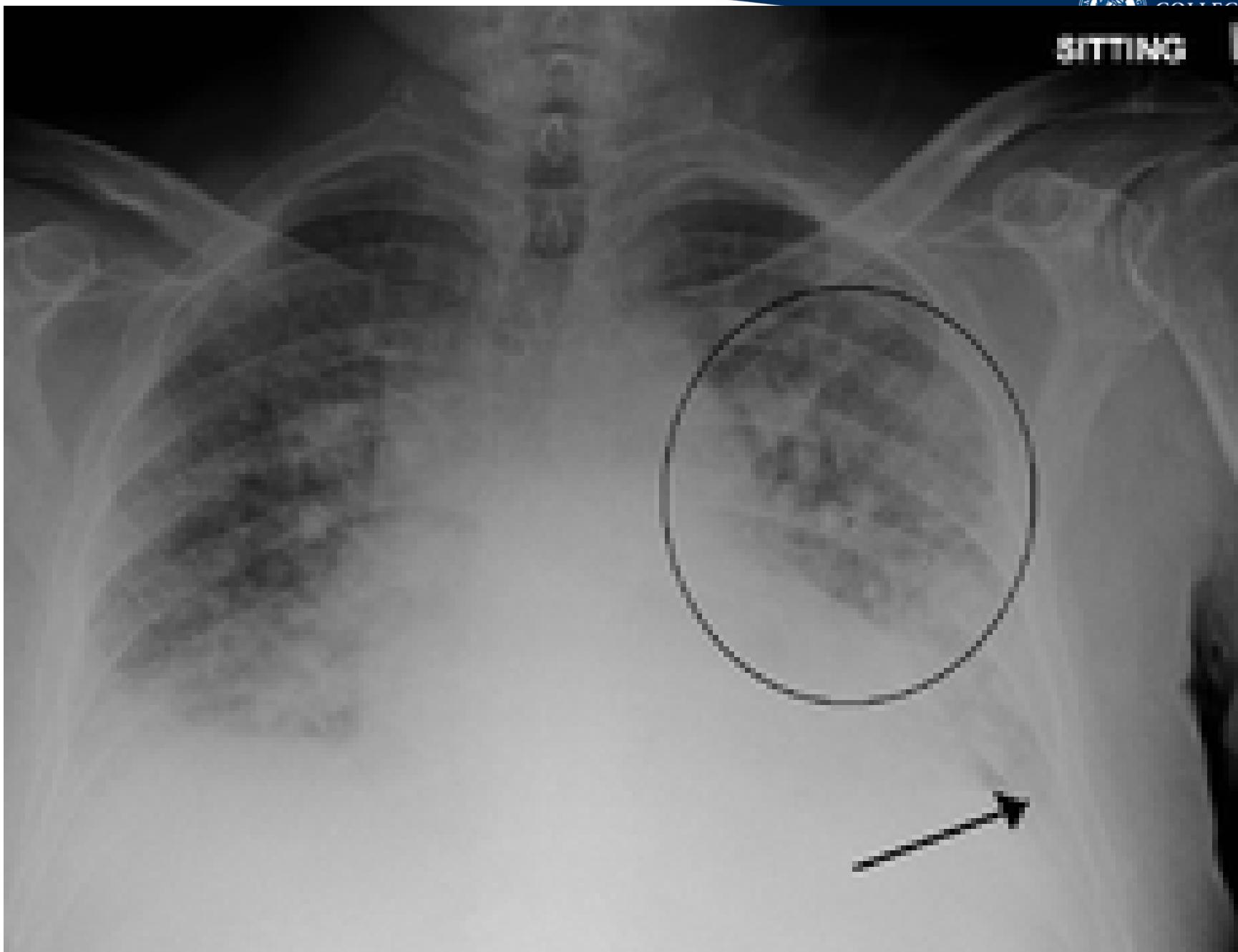
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# PULMONARY EDEMA



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SCREENING

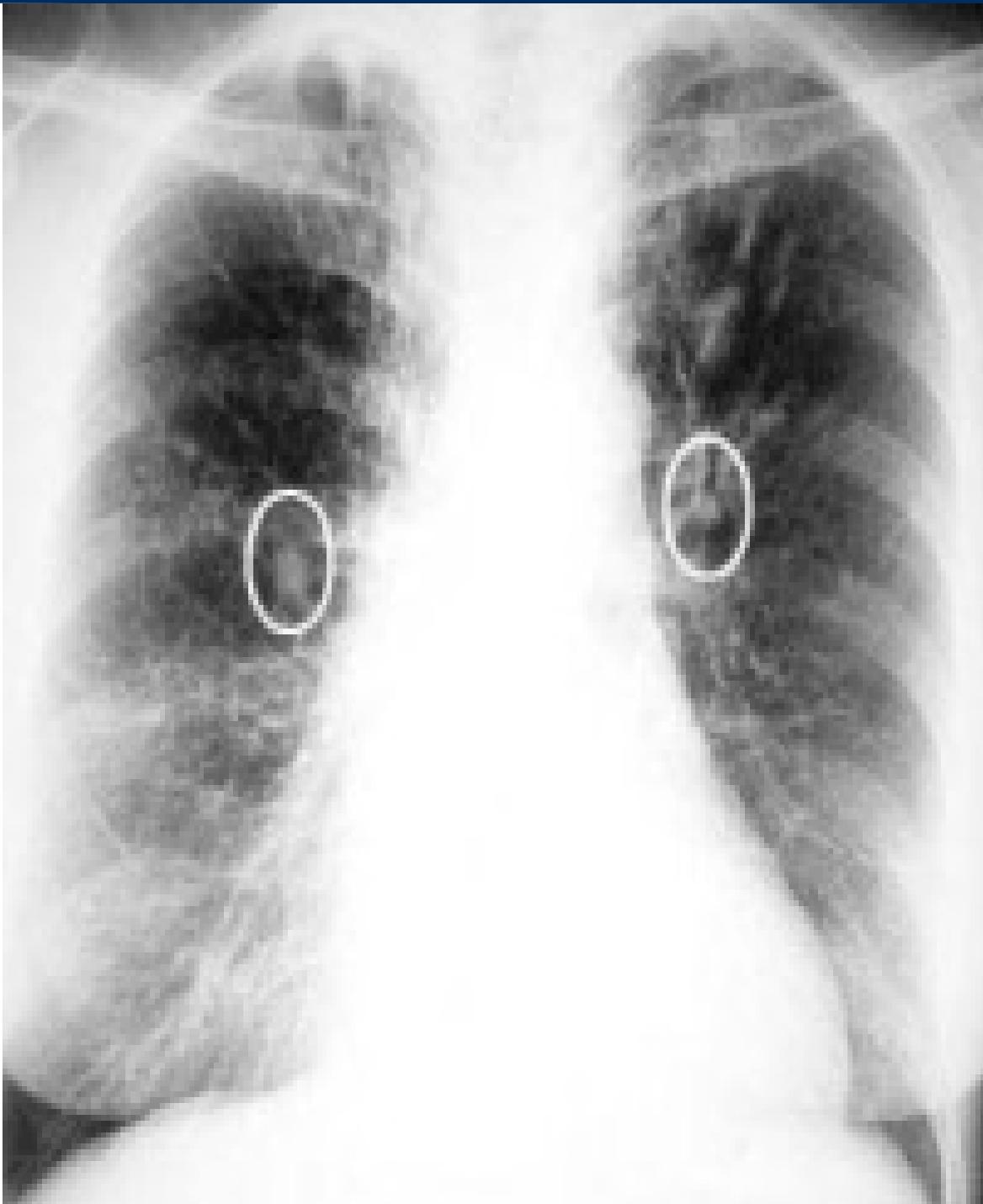




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# CANCERS – LUNG AND METASTATIC

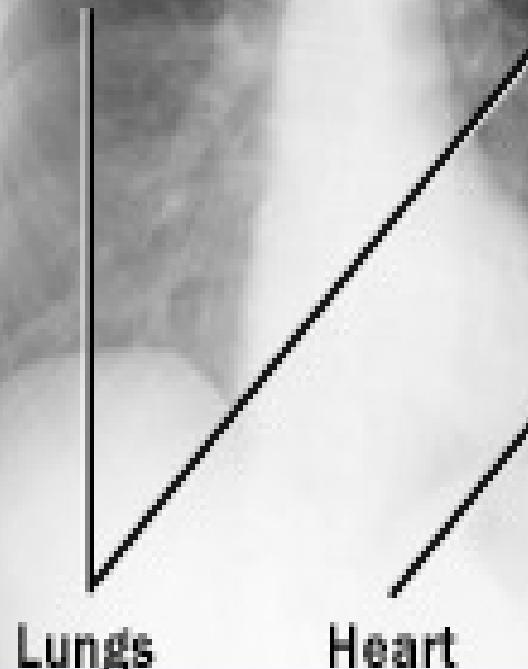
# Lung cancer



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Normal chest X-ray

2012



Abnormal chest X-ray

2016

Mass in the right lung







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# COPD

**COPD**



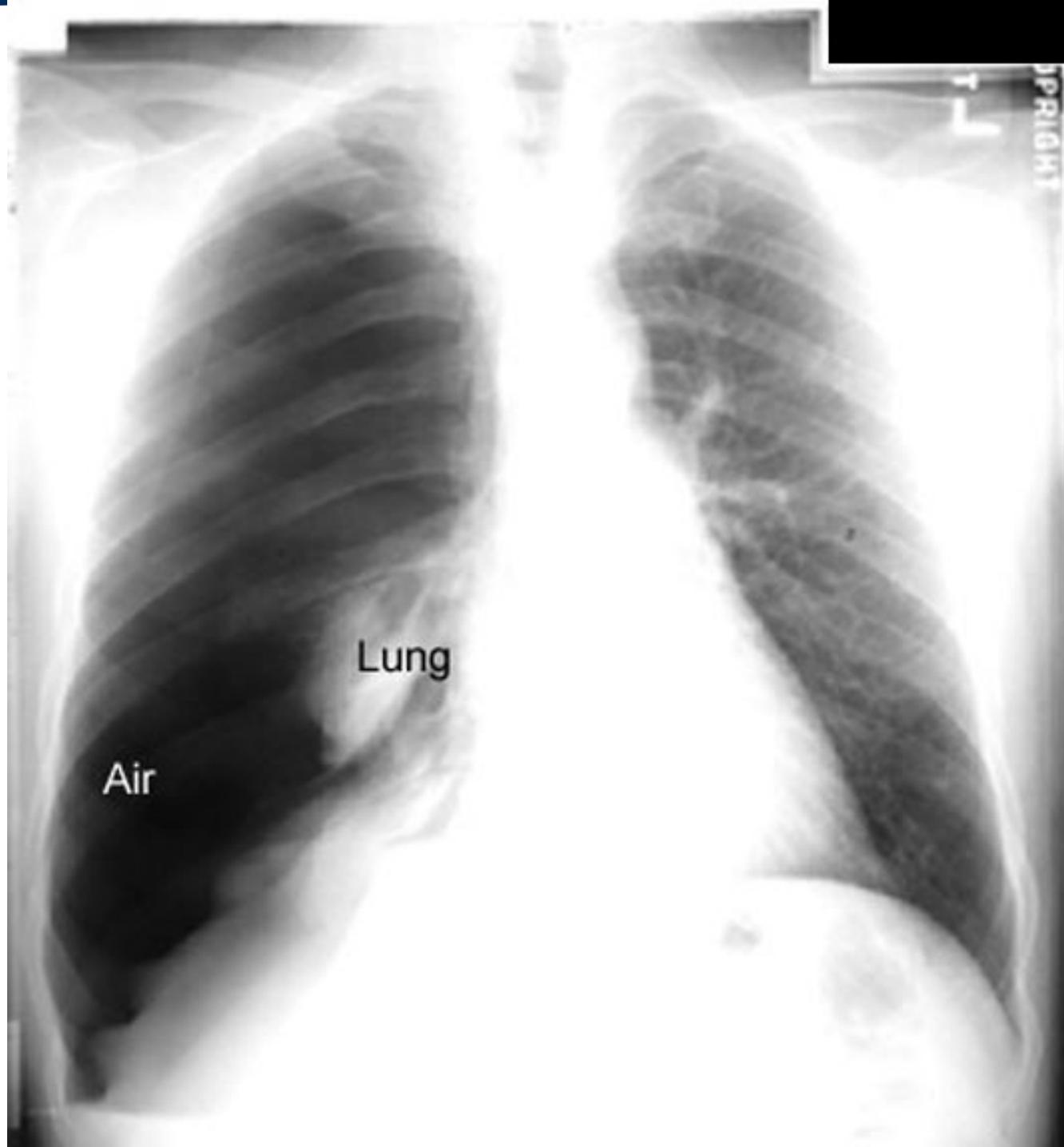
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# PNEUMOTHORAX

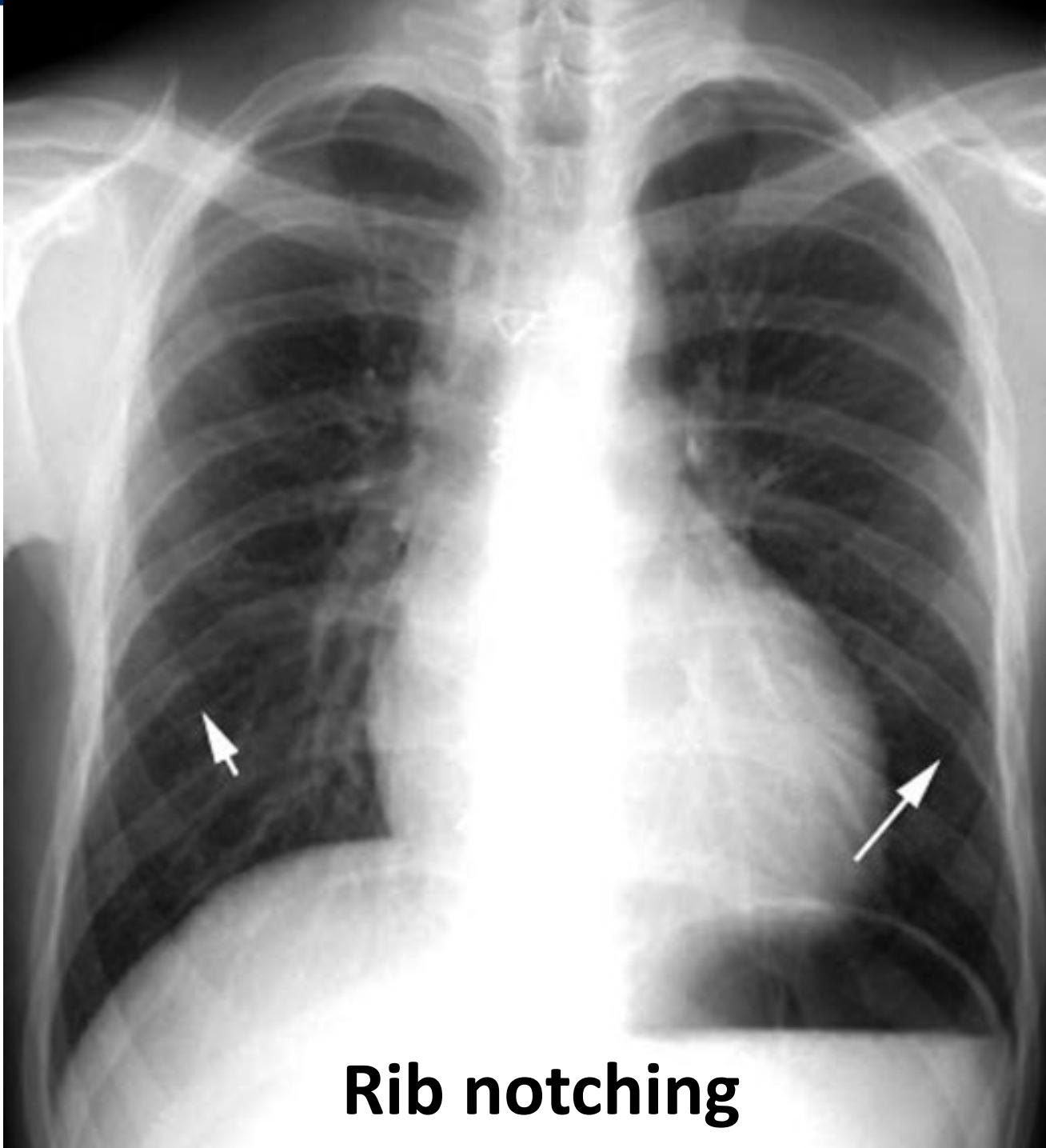


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# RIB NOTCHING – WHAT IS THE DIAGNOSIS?



**What  
is  
the  
diagnosis?**

**Rib notching**



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- 1. Dissection of the aorta**
- 2. Acute myocardial infarction**
- 3. Coarctation of the aorta**
- 4. Mitral stenosis**
- 5. Constrictive pericarditis**



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# **ANEURYSMS – DISSECTING AND ATHEROSCLEROTIC**



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## Dissection of the Aorta





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# DEVICES

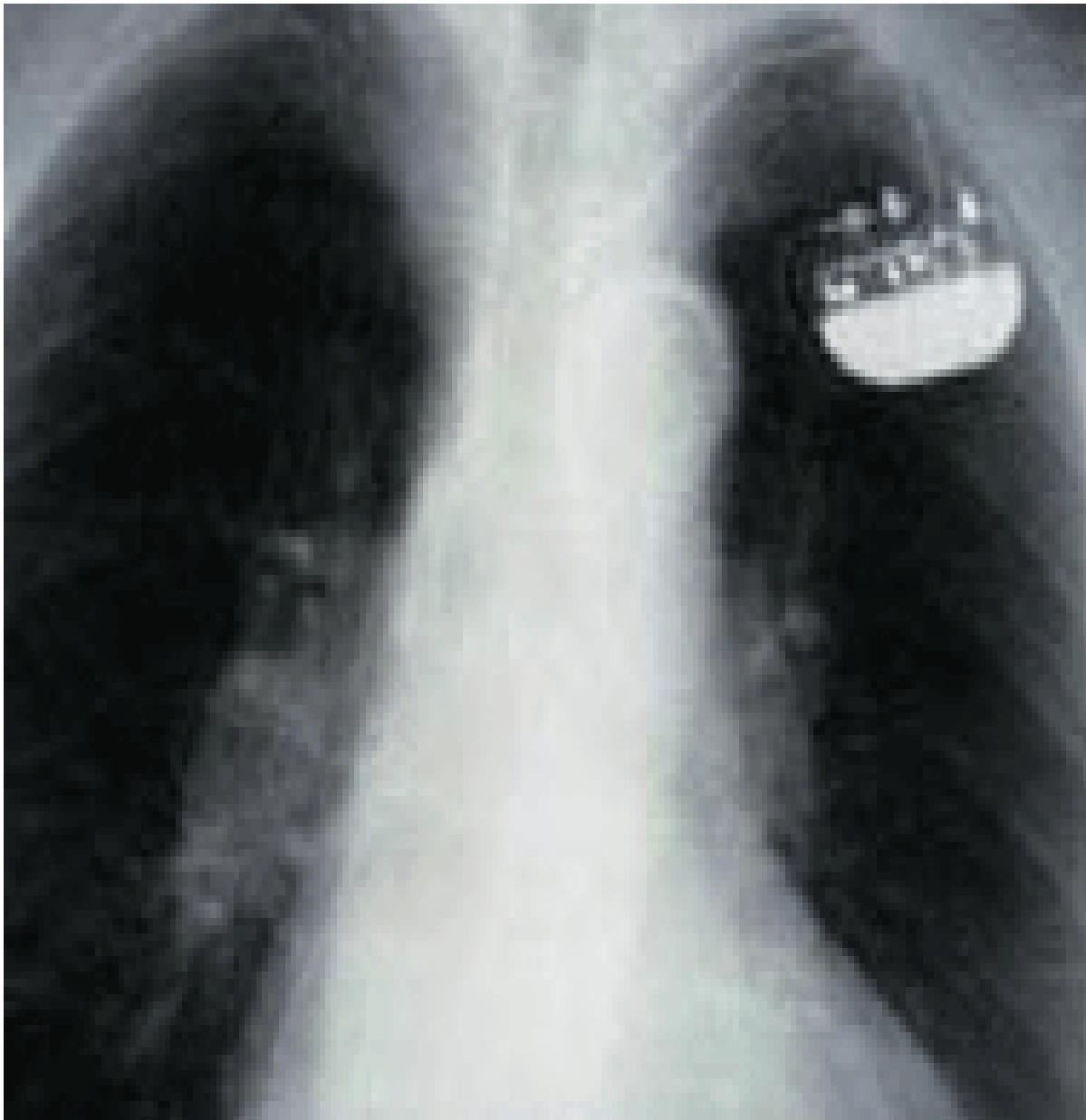
What  
is  
this?



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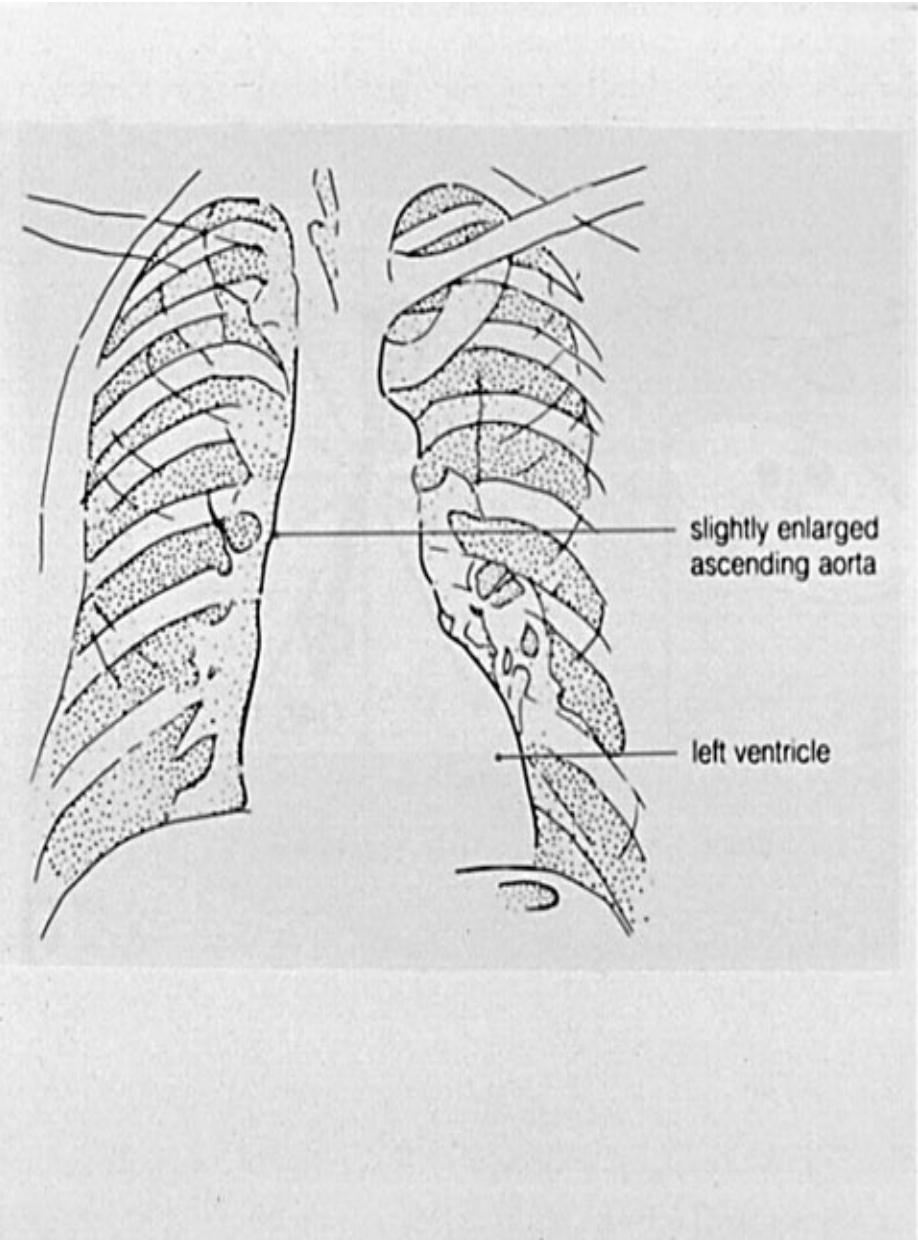


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**Case # 1: A 75 year old man with dyspnea on exertion, a recent syncopal episode, and a loud systolic murmur at the right sternal border.**

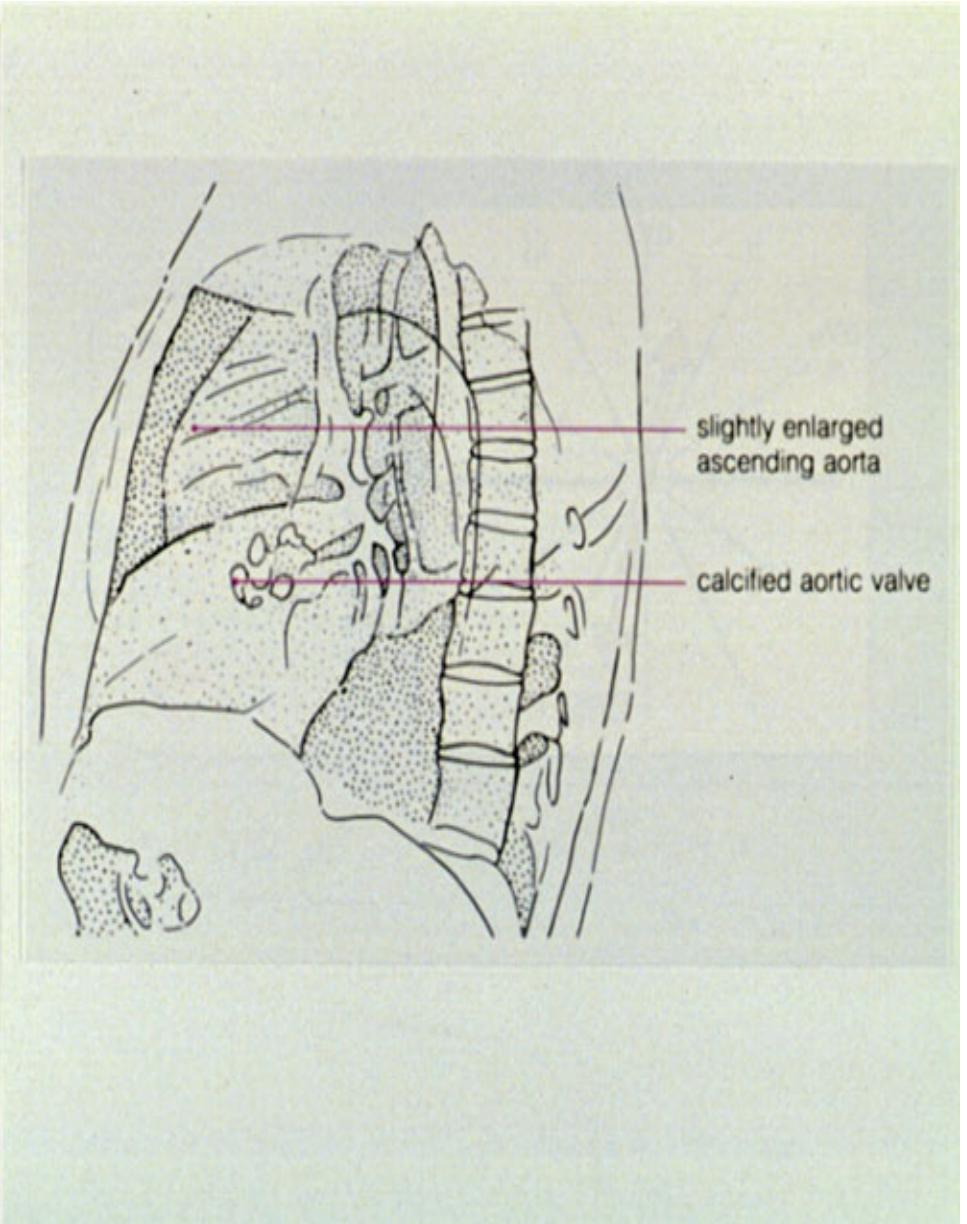
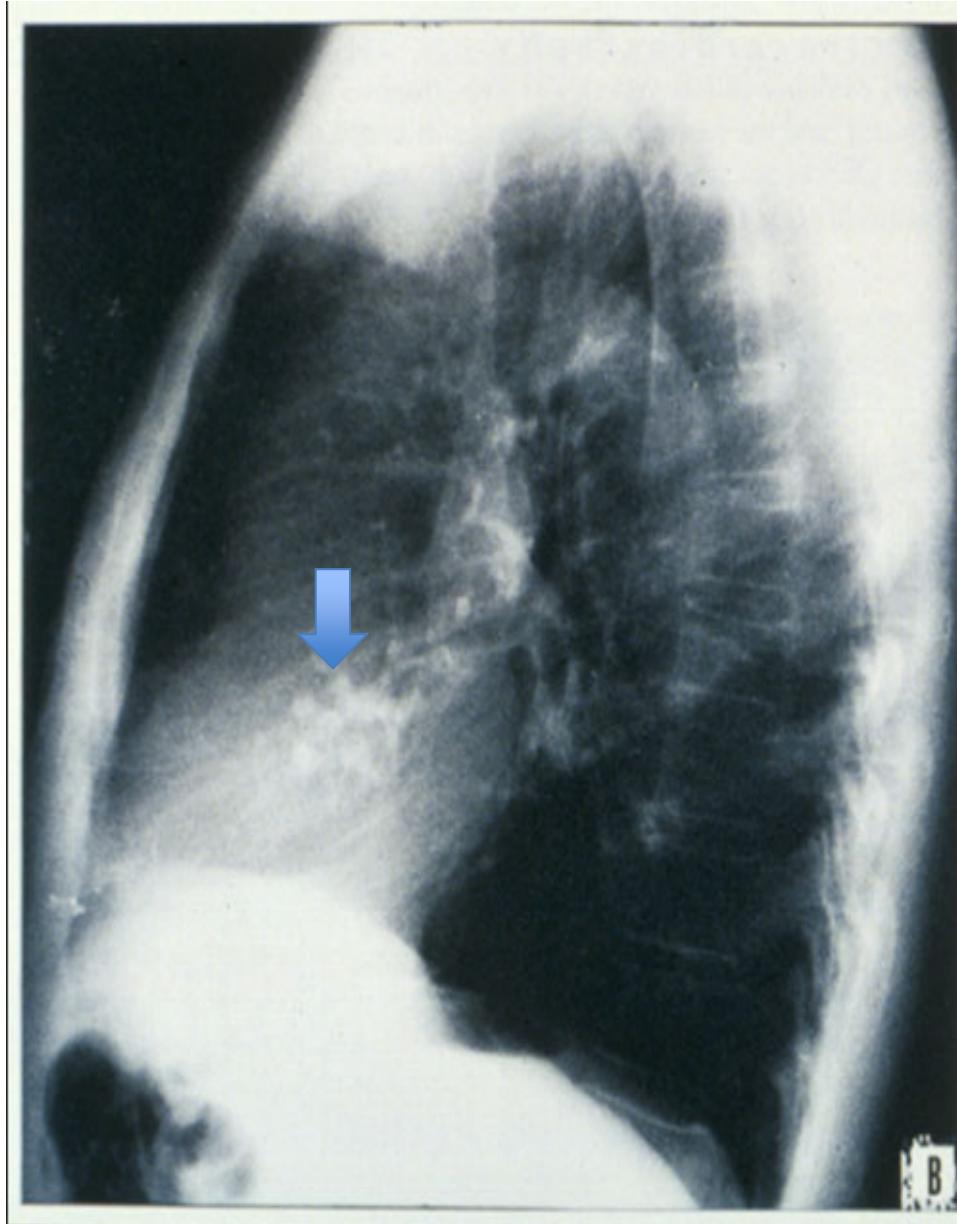


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**DO YOU SEE ANYTHING  
UNUSUAL IN THIS CHEST  
XRAY**



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**Silicone**



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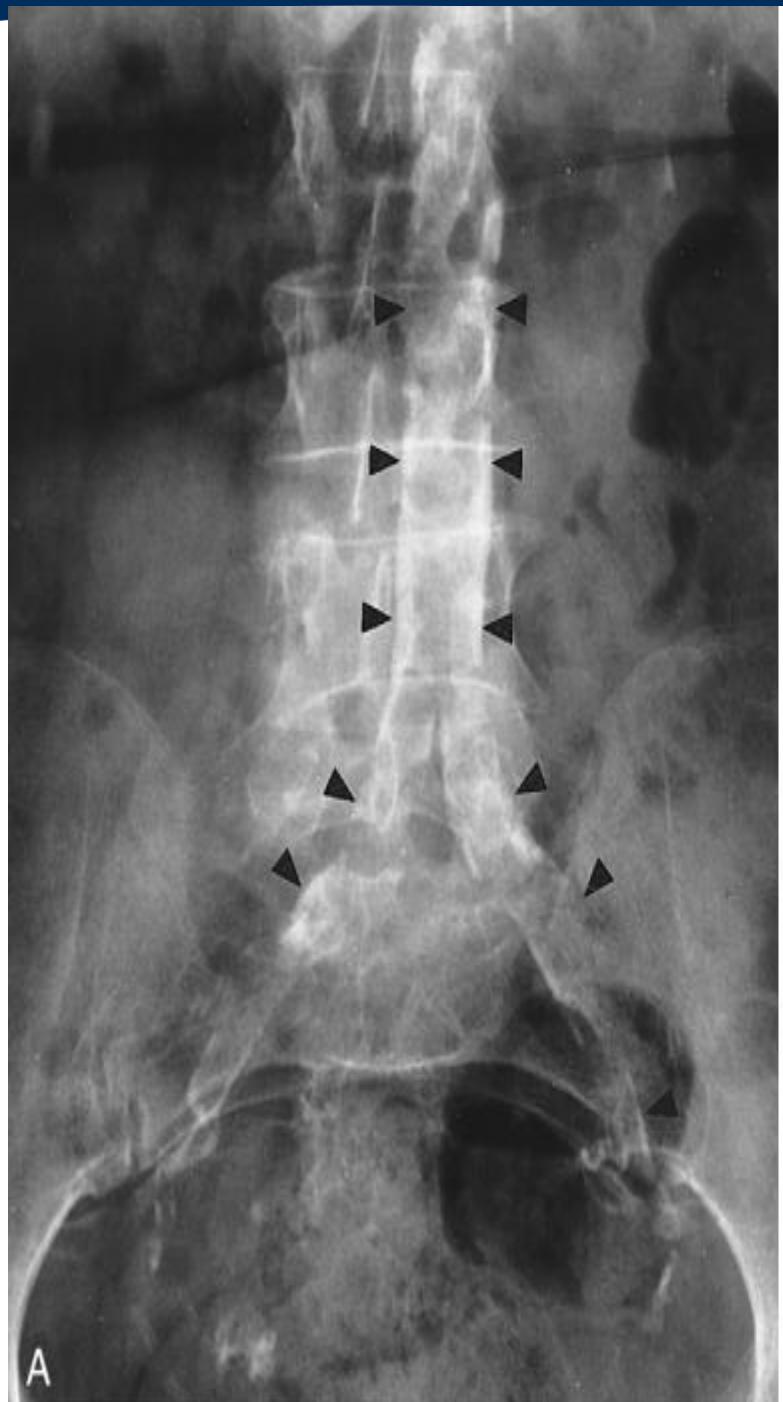
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# Can the cardiac specialist learn anything from the abdominal x-ray?



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**Case # 2: An 82 year old man is admitted to the hospital for severe right flank pain. Here is his abdominal x-ray on admission.**



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**Case # 3: A 40 year old man comes to the ER complaining of severe central chest pain that is worse when he lies down or takes a deep breath. He has had nasal congestion, cough, and fever for one week.**



PE

RV

LV

RA

LA

PE

RAW

P

A