The silhouette sign (Felson) And its derivatives

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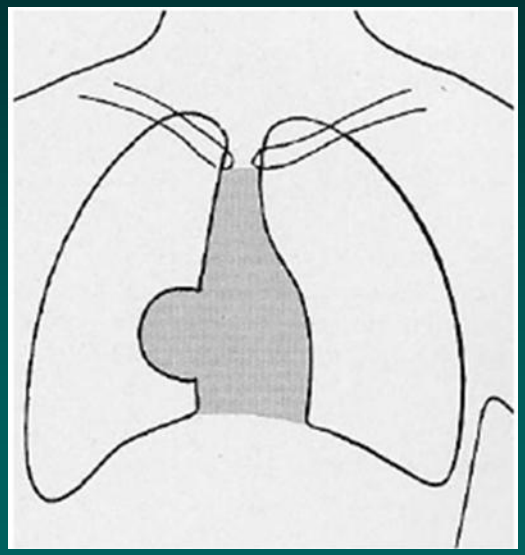
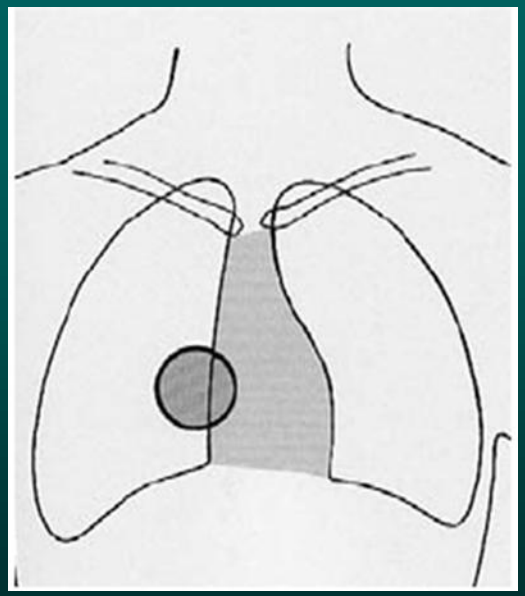
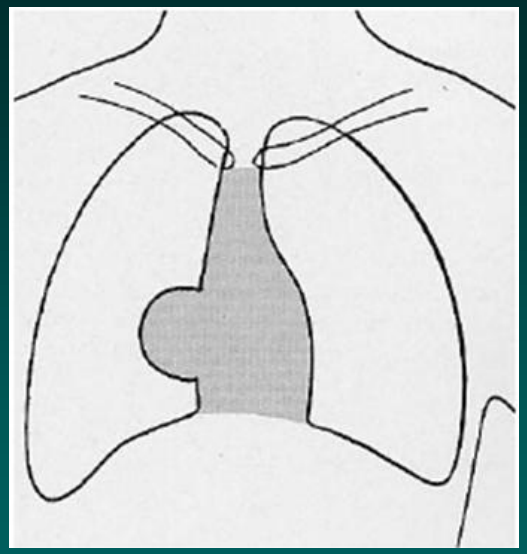
Soutien Pneumologique International / International Support for Pulmonology

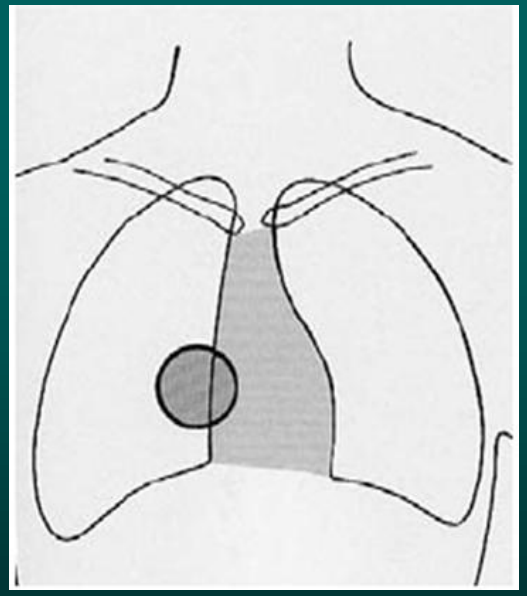
The silhouette sign

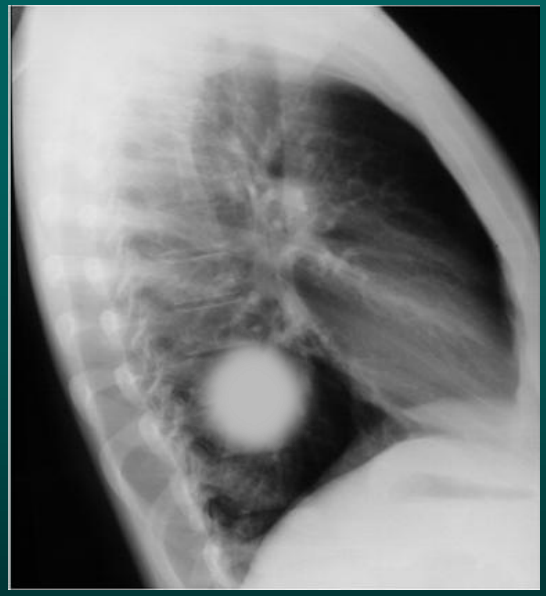


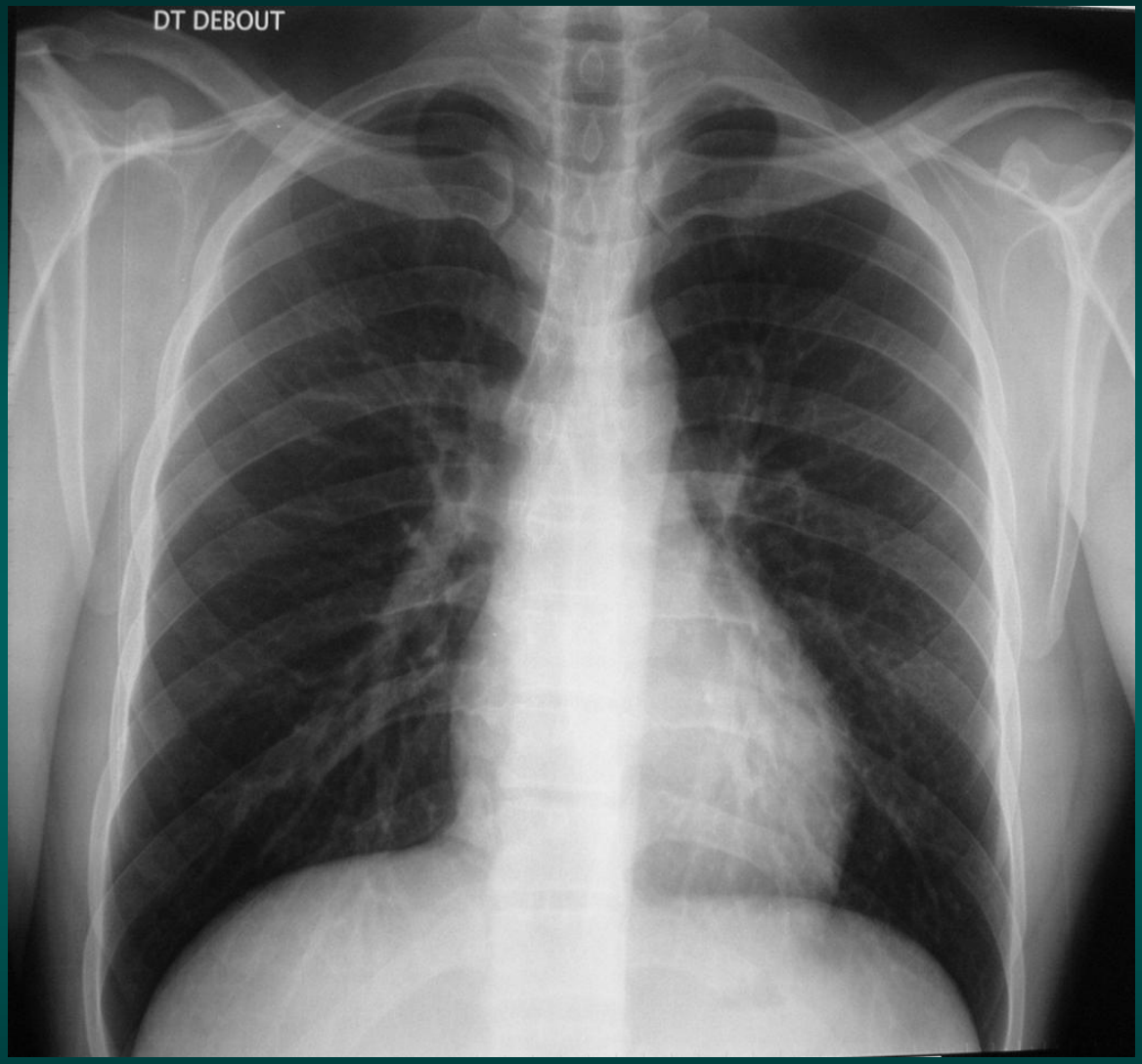


- When 2 opacities of the same density are in contact with each other, their contours disappear.
- When they are separated by any tissue of a different density (air), their respective contours are visible.

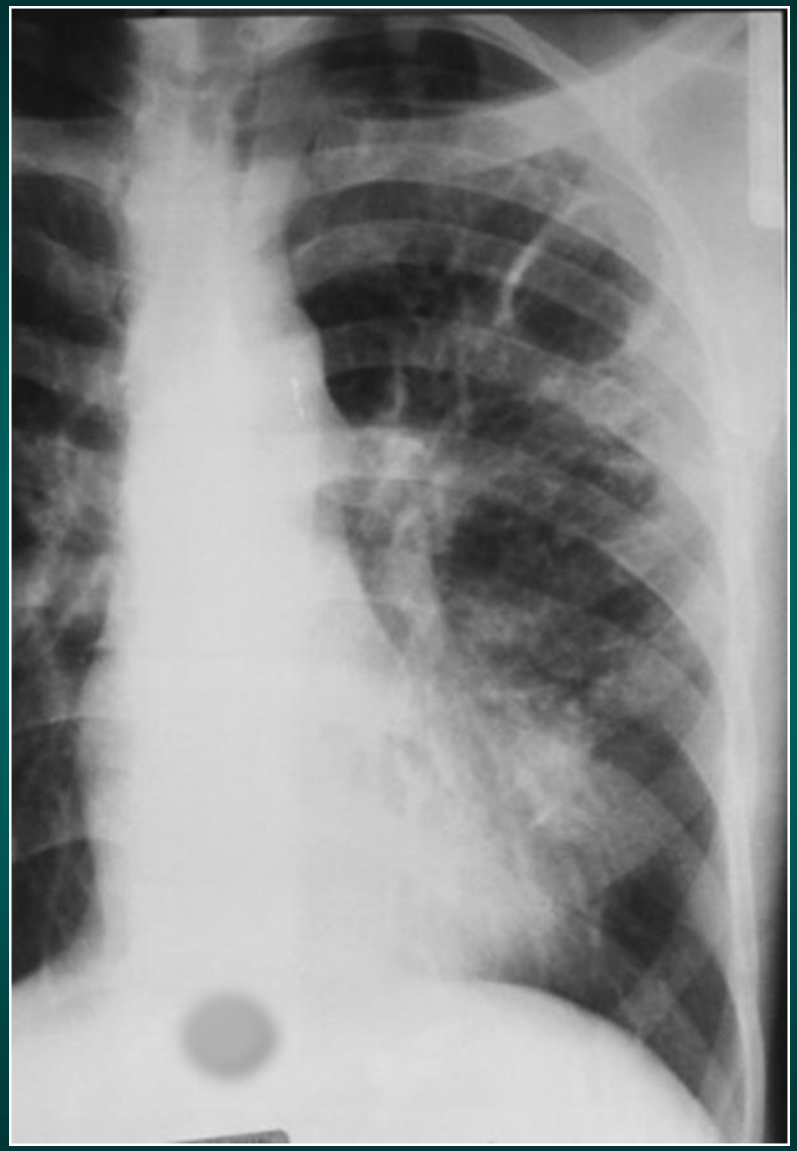


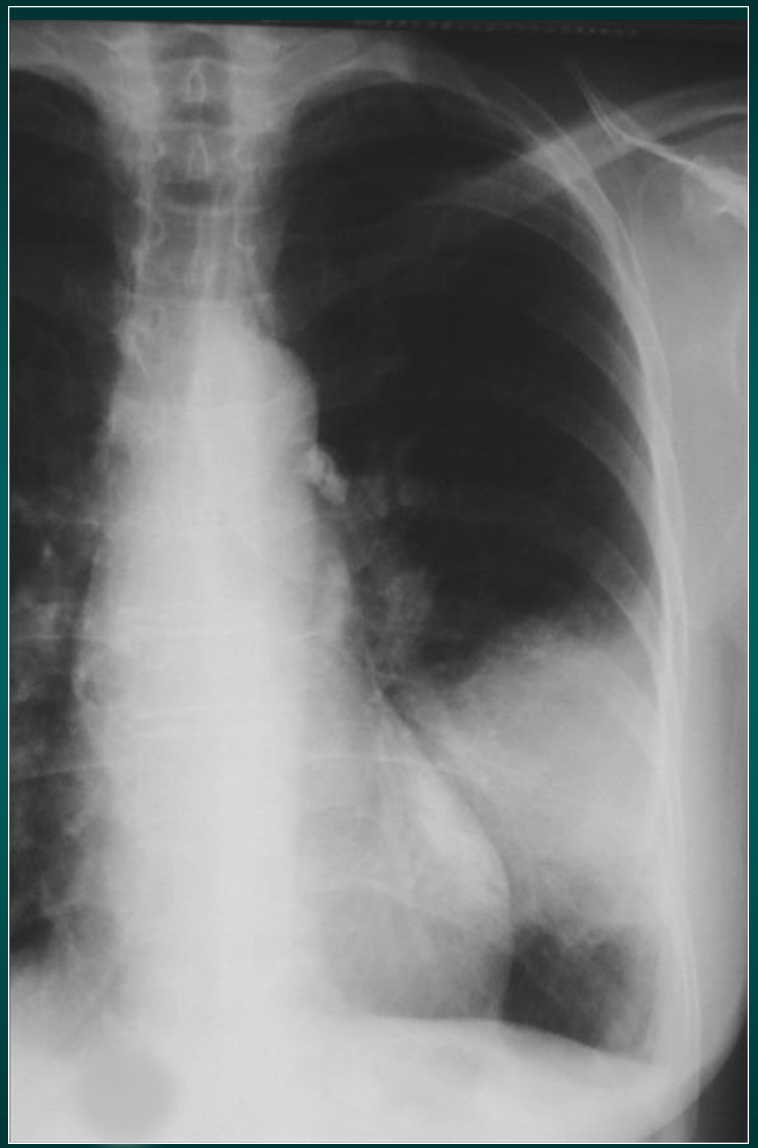


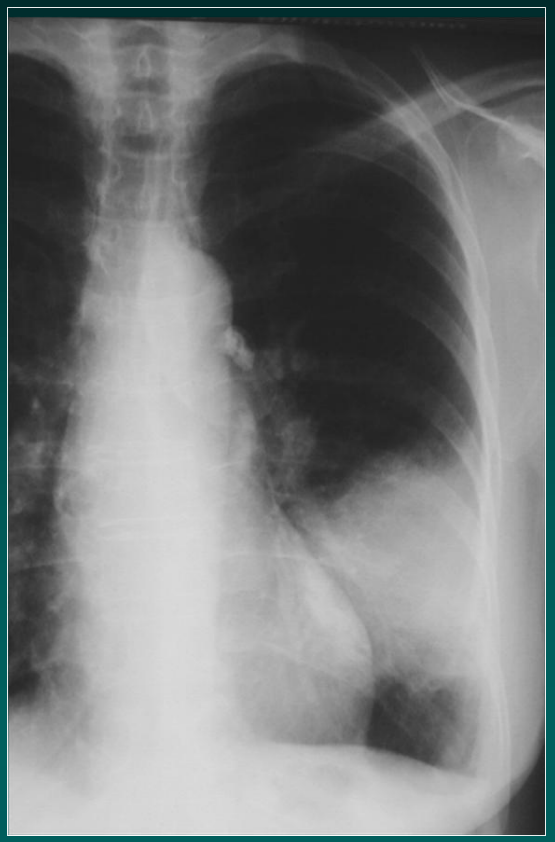


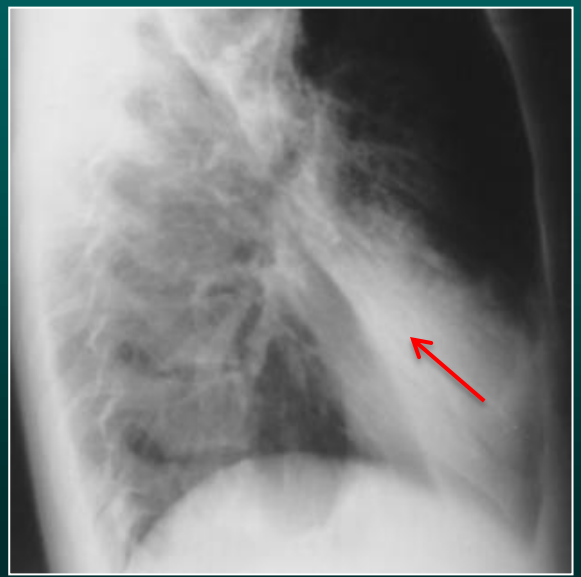


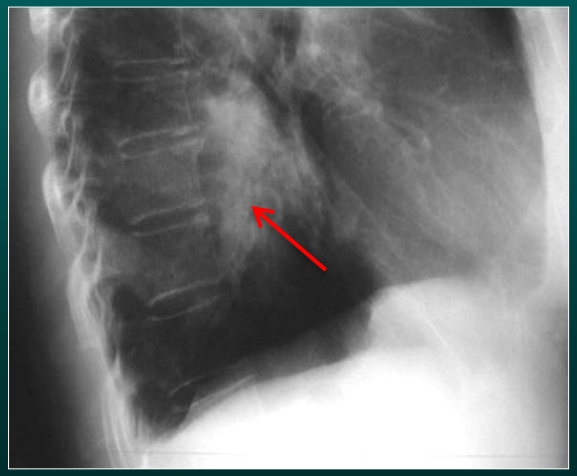
Normal chest radiography



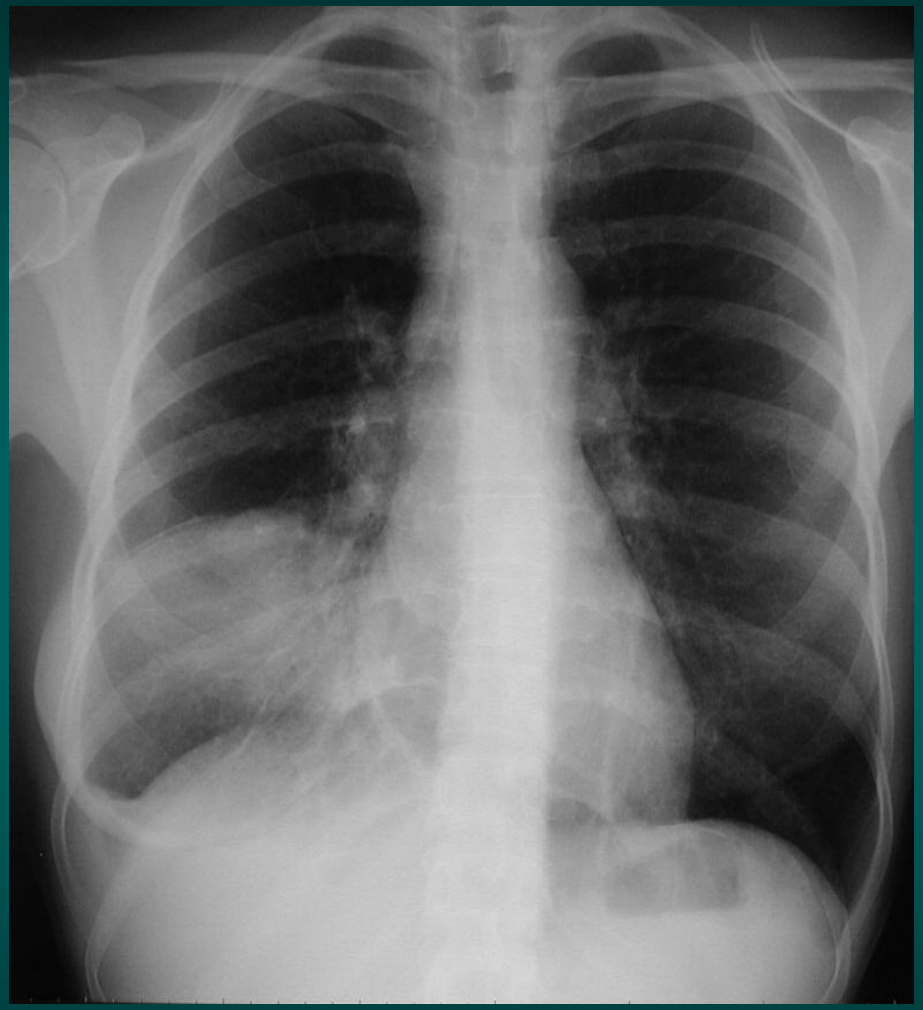


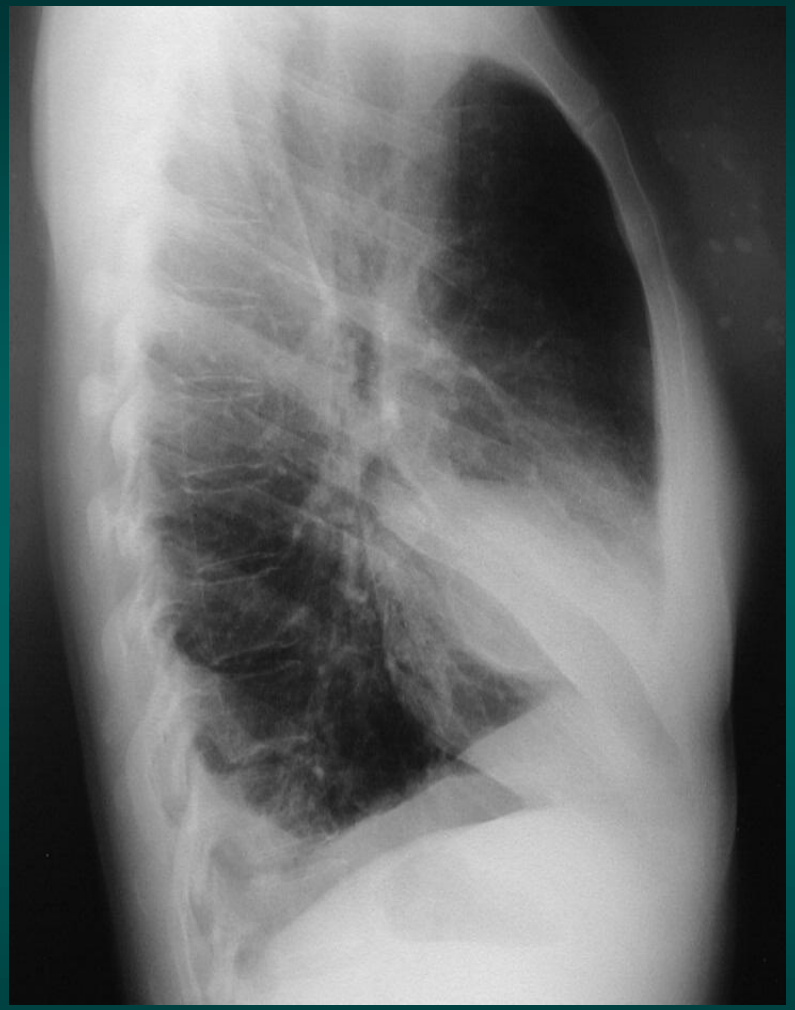






Anterior or posterior opacity?





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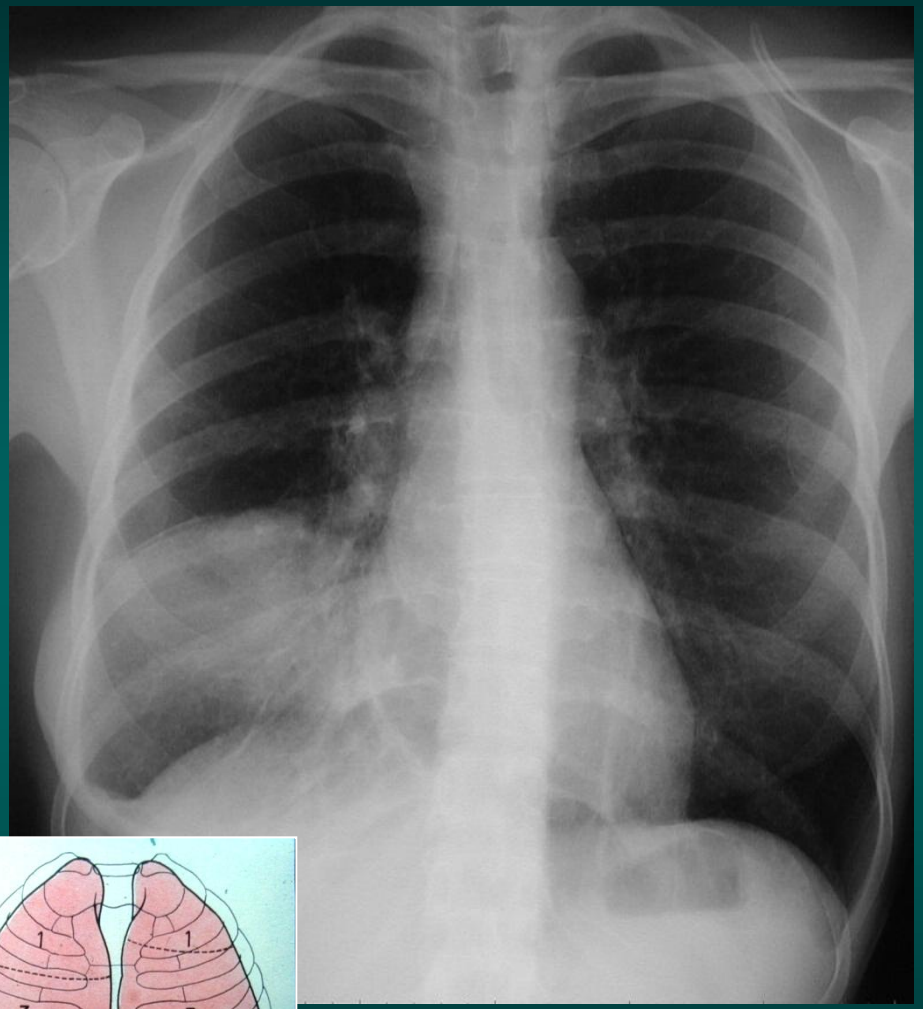
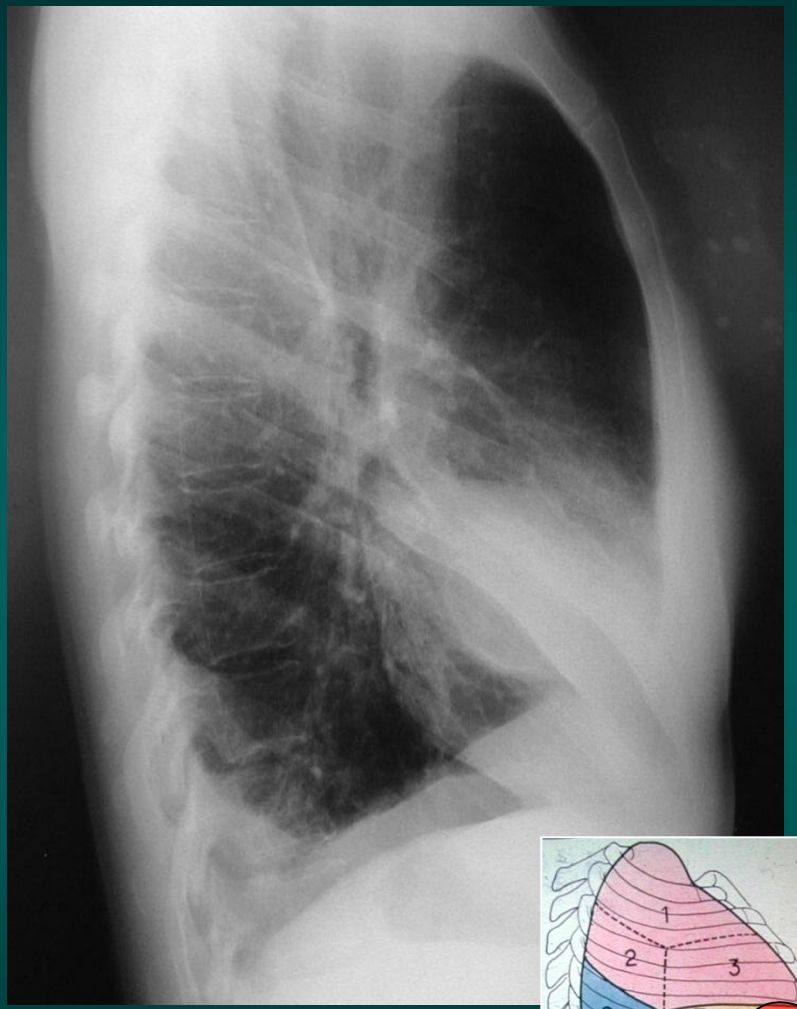
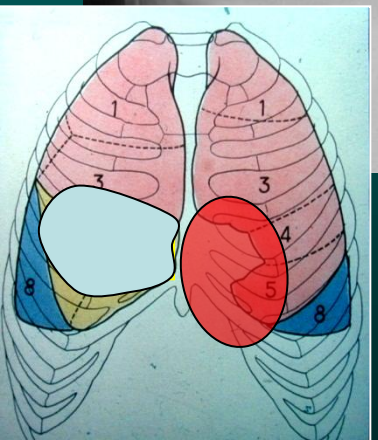
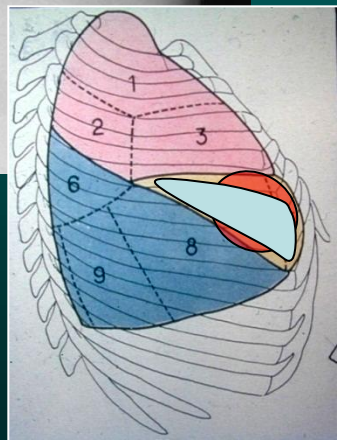




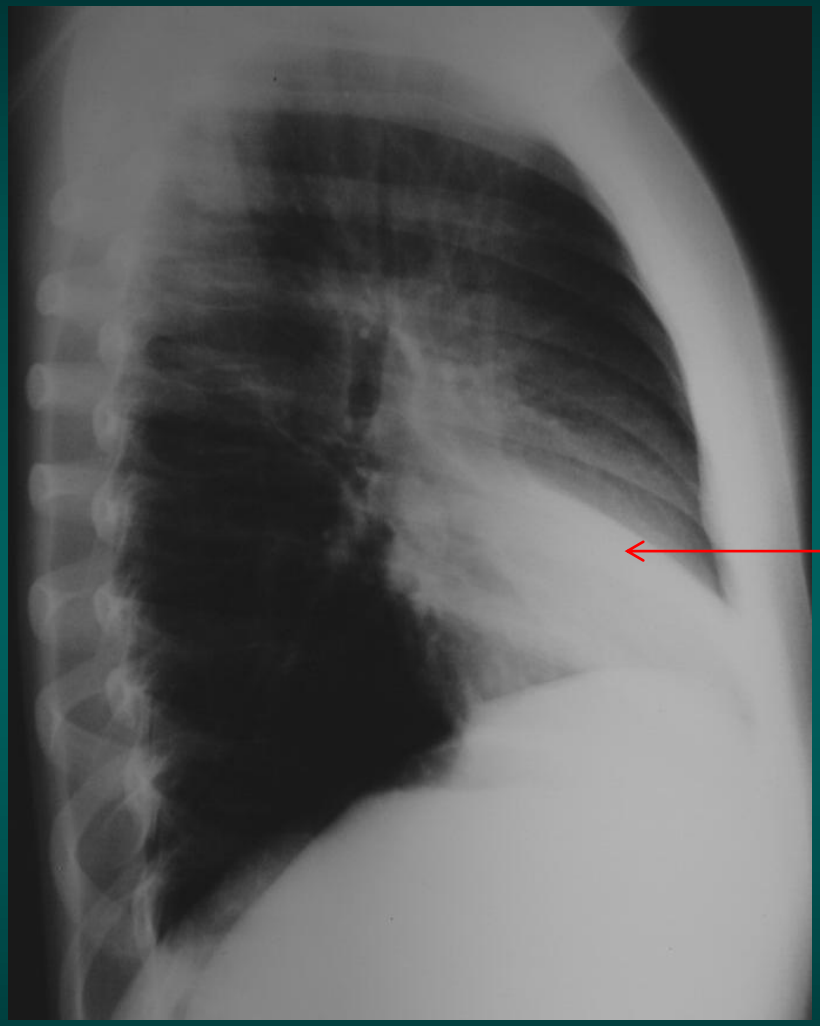




Anterior opacity: medium lobe, in contact with heart
(and small pleural effusion in posterior cul-de-sac)

Anterior or posterior opacity?

Anterior or posterior opacity?



Anterior opacity: middle lobe. The right heart contour disappears

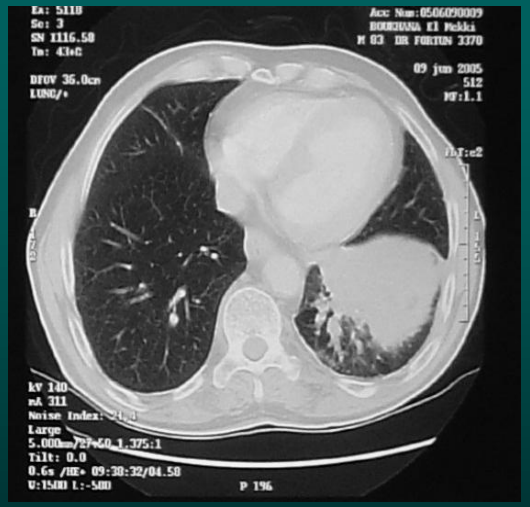
Anterior or posterior opacity?

Anterior or posterior opacity?

Posterior opacity: the right contour of the heart is visible. On the lateral view the posterior part
of the diaphragm in contact with the opacity has disapeared.

Anterior or posterior opacity?

Anterior or posterior opacity?



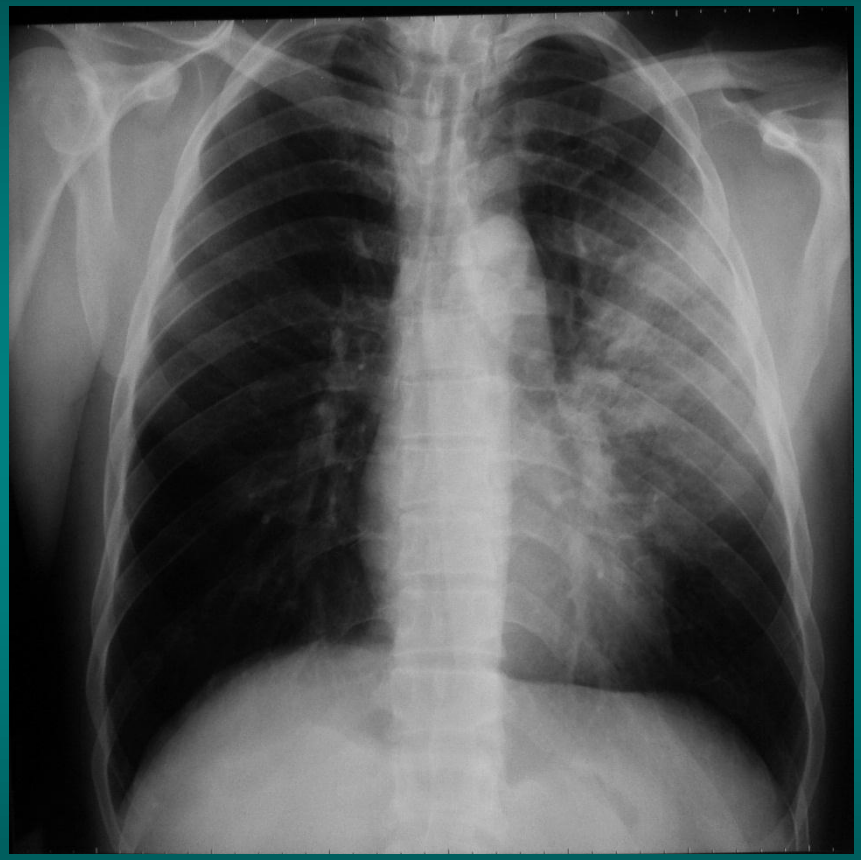
Posterior opacity: the left contour of the heart is visible

Anterior or posterior opacity?

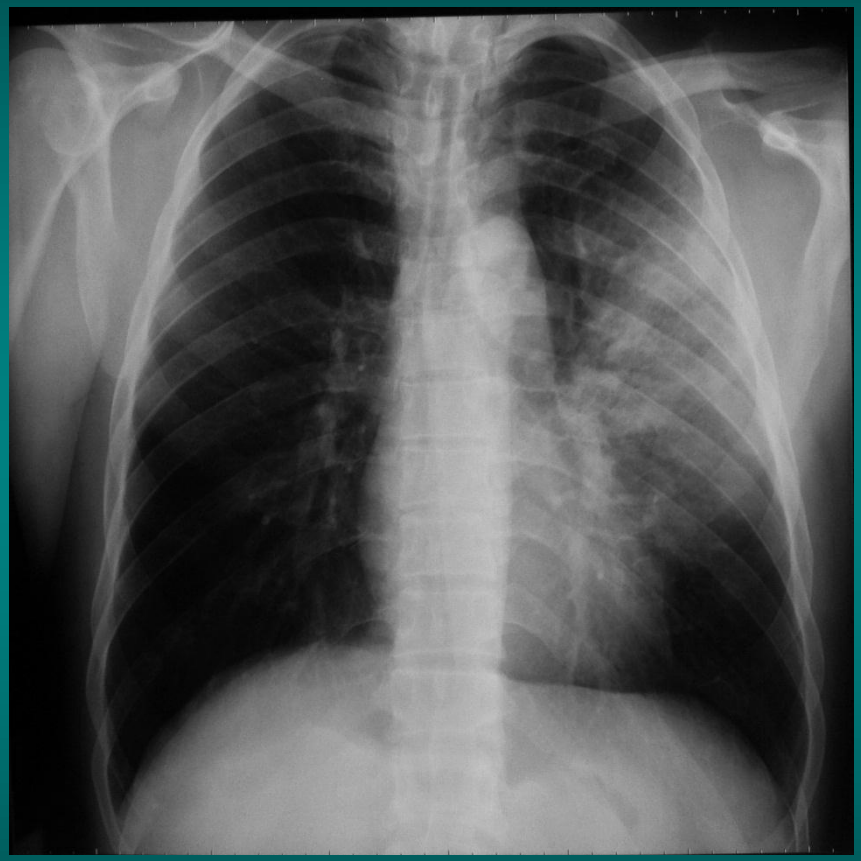
Anterior or posterior opacity?

The left contour of the heart is visible: posterior opacity

Anterior or posterior opacity
Superior or inferior lobe?

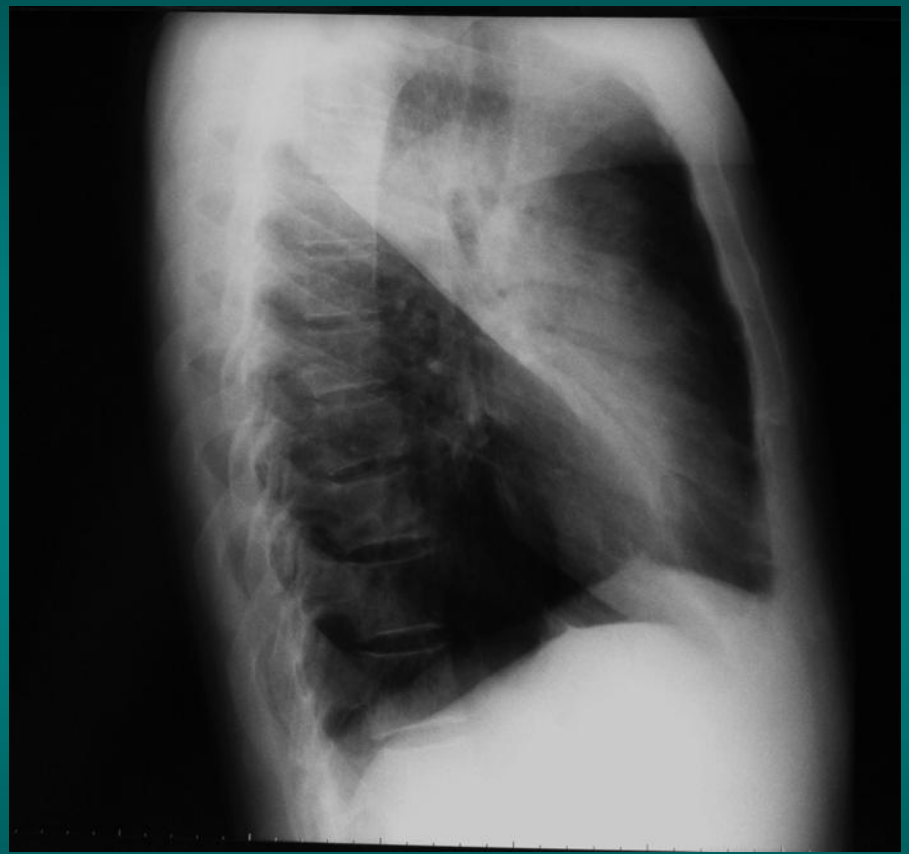


Left upper lobe



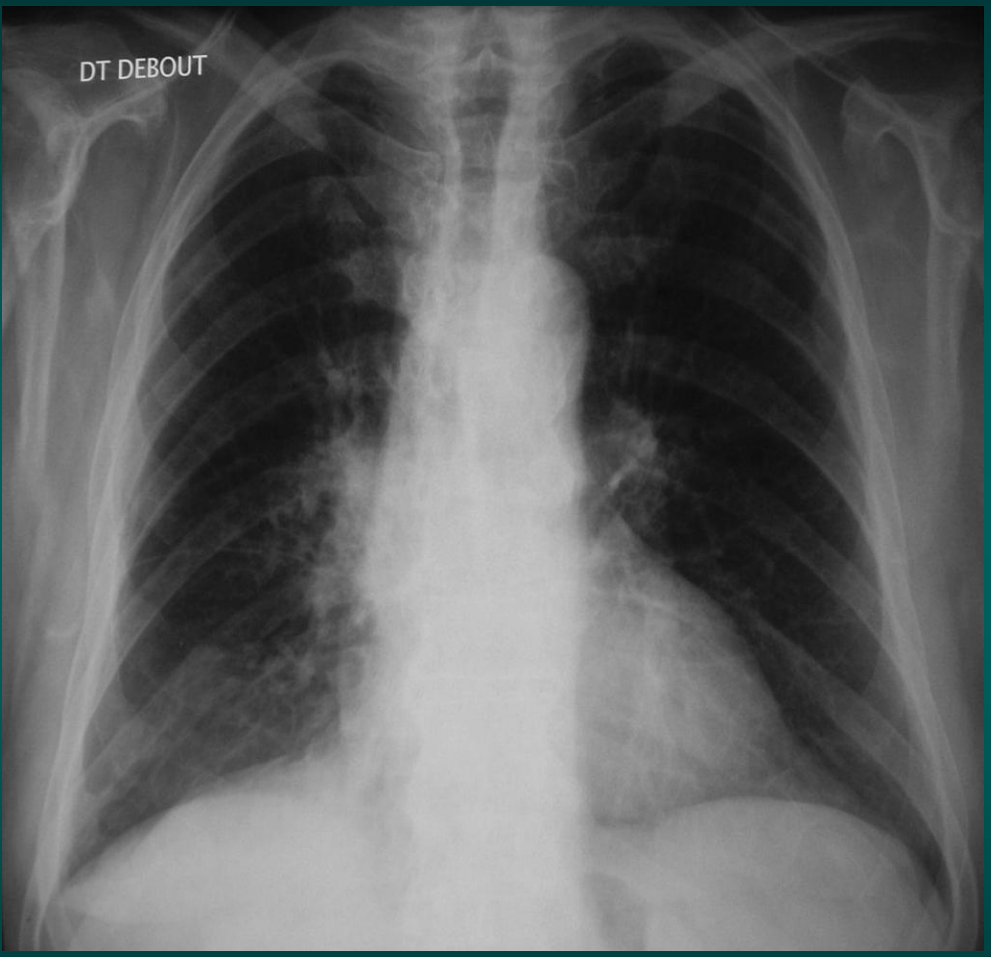
Positive silhouette sign
with cardiac edge

Left upper lobe

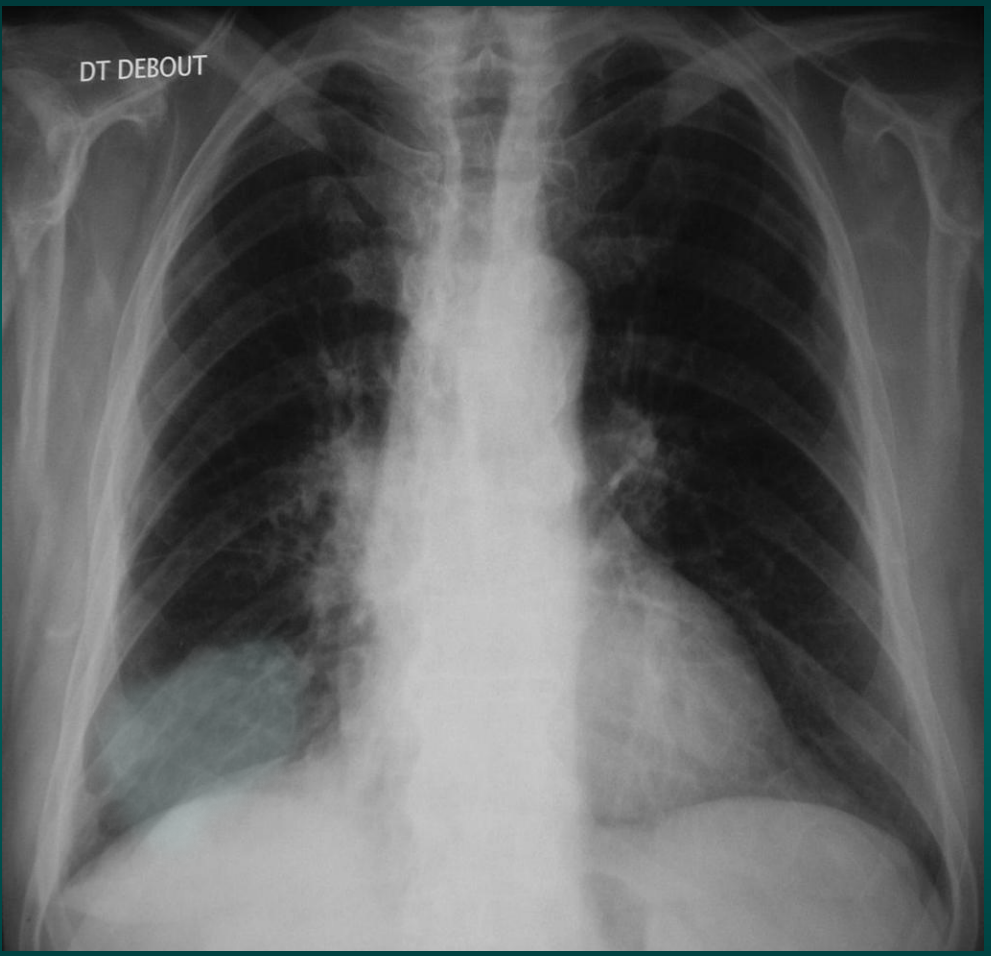


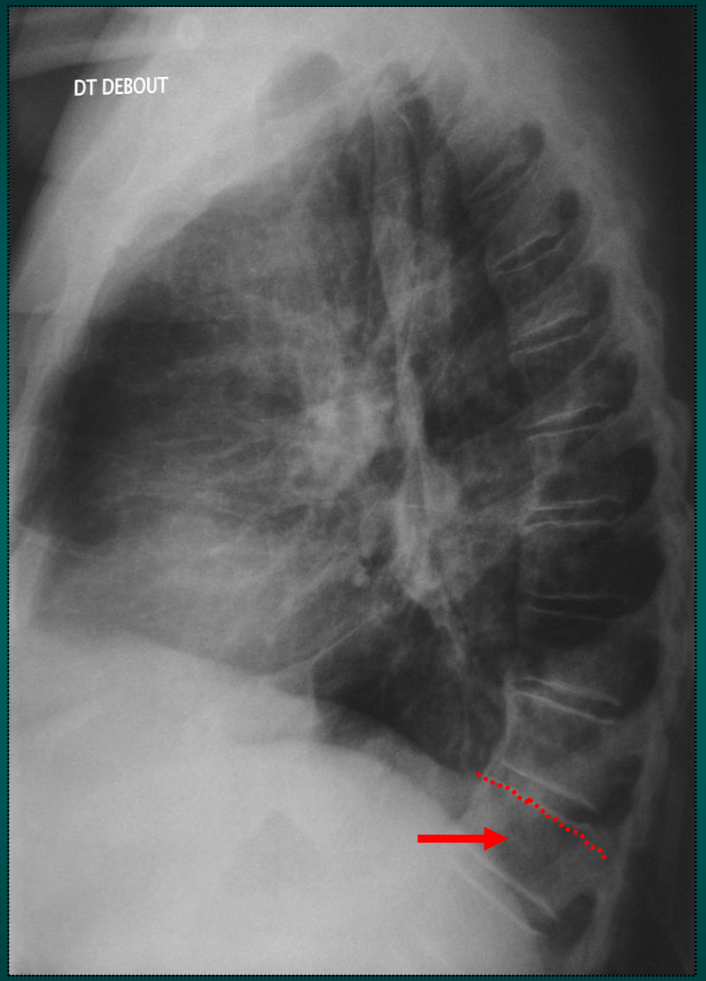
Remember in left lung :
Forward the fissure = upper lobe
Behind the fissure = lower lobe

Anterior or posterior opacity?



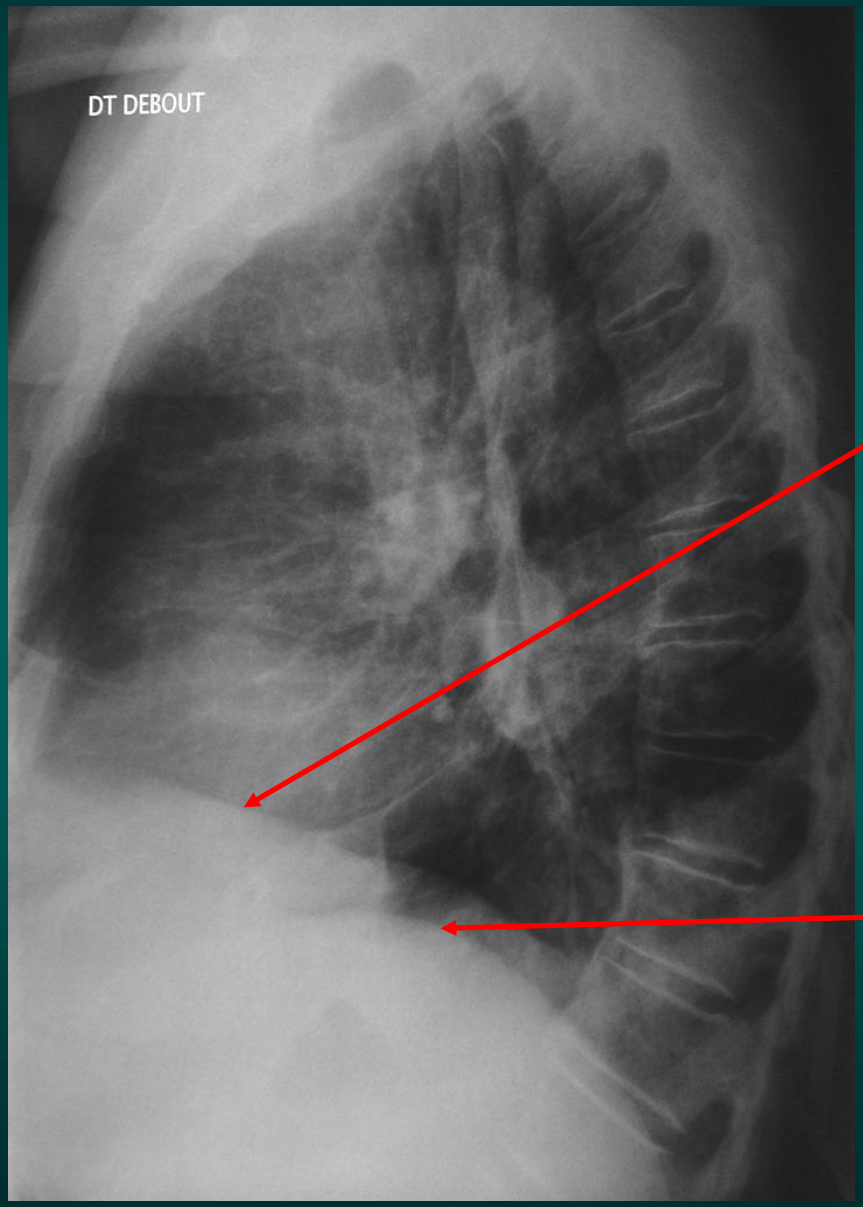
Right posterior opacity (right lower lobe)





Right posterior alveolar opacity. Notice the positive silhouette sign on the lateral view With the posterior part of the right diaphragm…

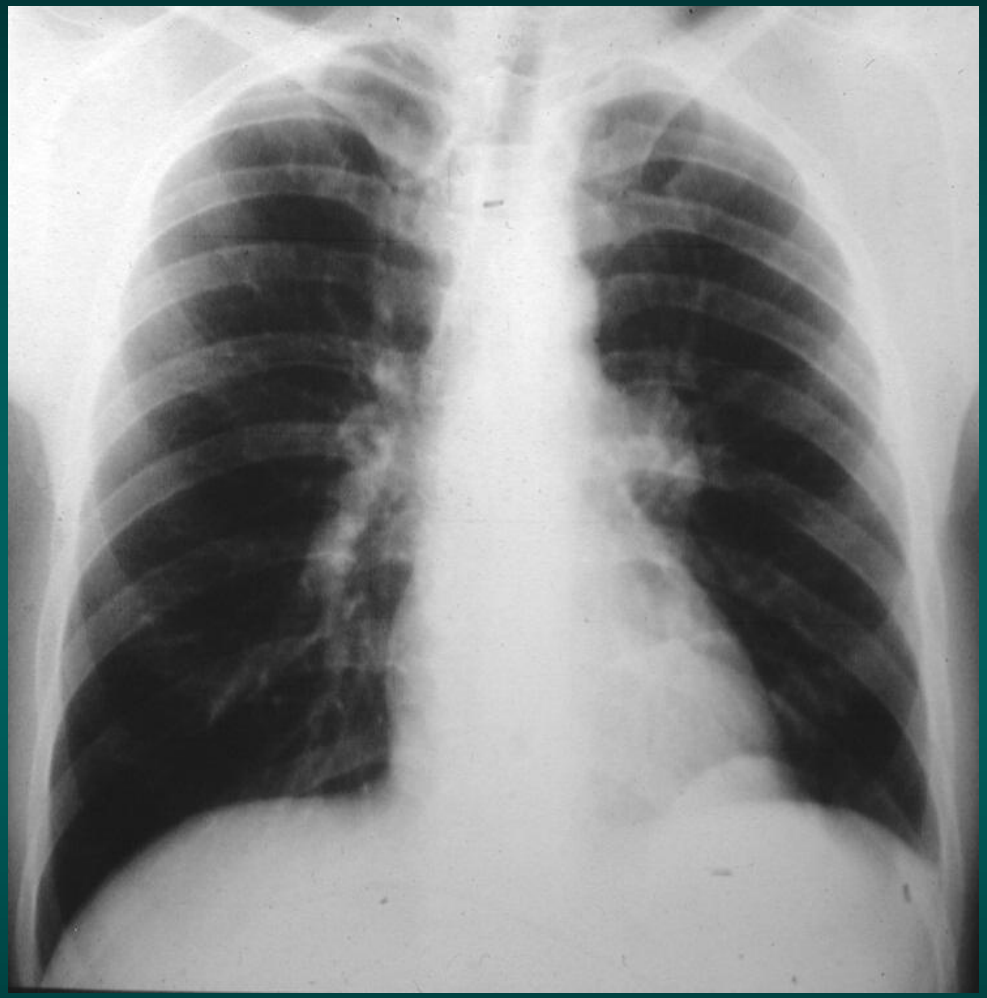
Application of the silhouette sign to the diaphragm



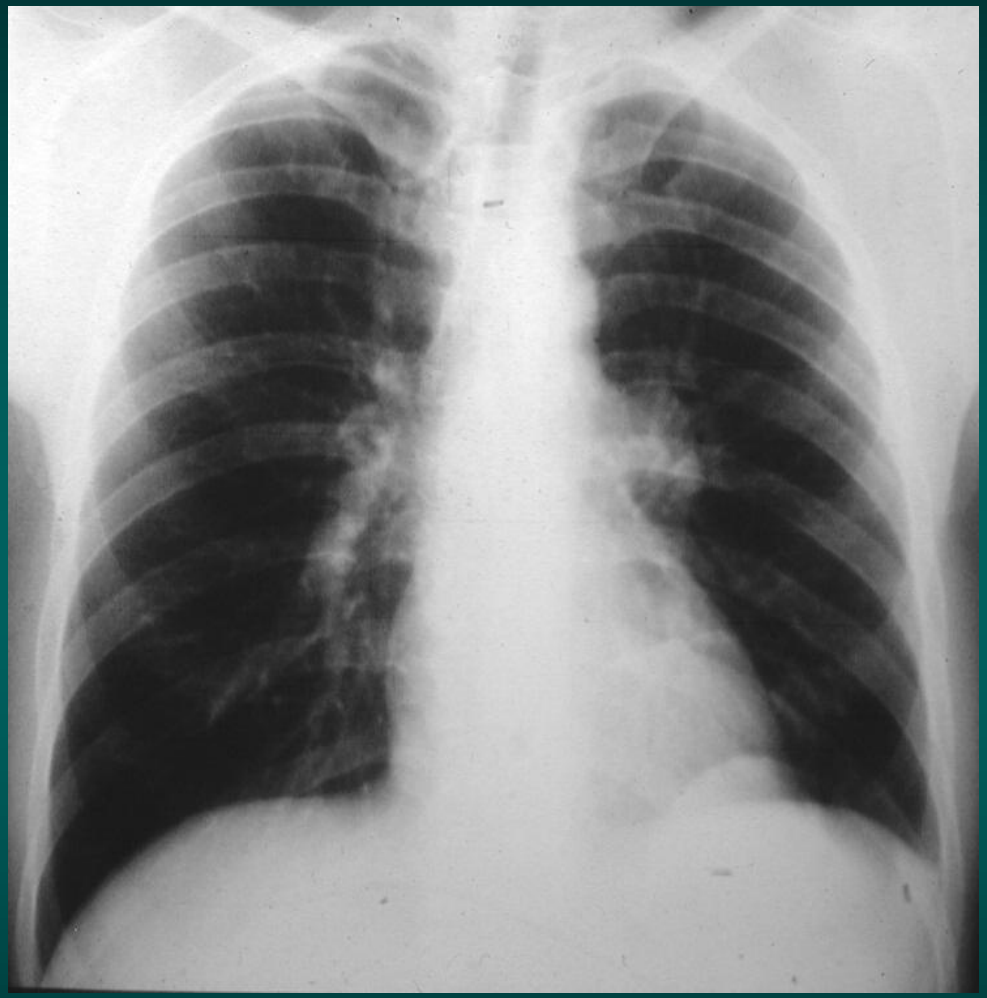
Right hemi diaphragm:
no silhouette sign with the heart

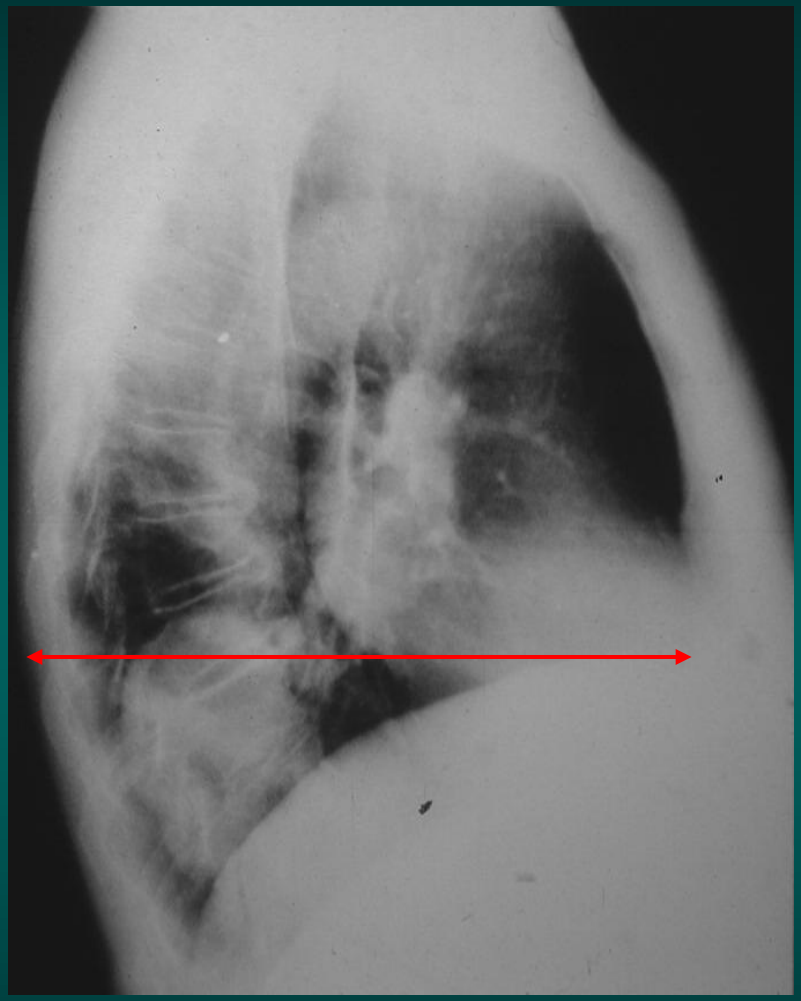
Left hemi diaphragm
Positive silhouette sign with the heart

Male, heavy smoker, weight loss, hemoptisis
AFB sputum negative



Male, heavy smoker, weight loss, hemoptisis
AFB sputum negative



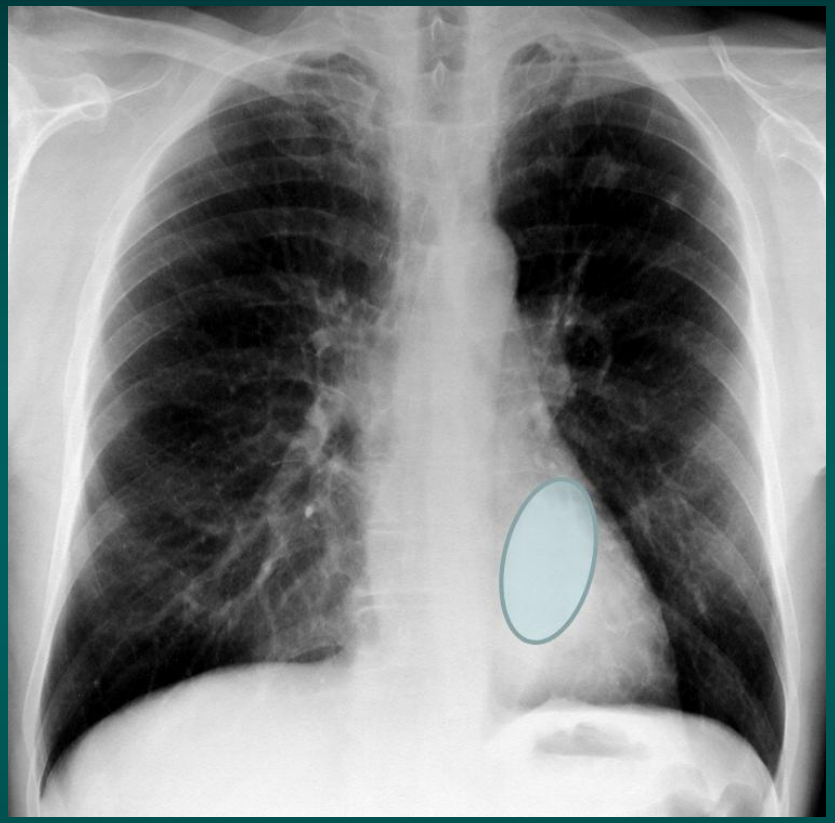


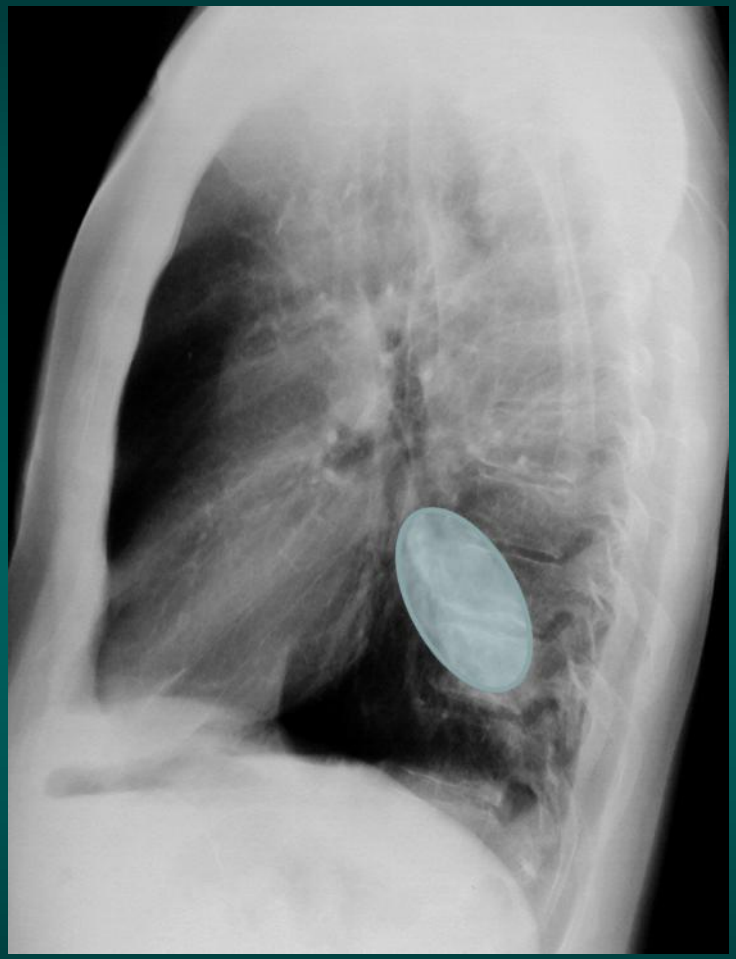
Round left opacity. Negative silhouette sign. The opacity is visible behind The heart, in the posterior cul de sac (bronchial cancer)

Male, one episode of hemoptisis, AFB sputum negative

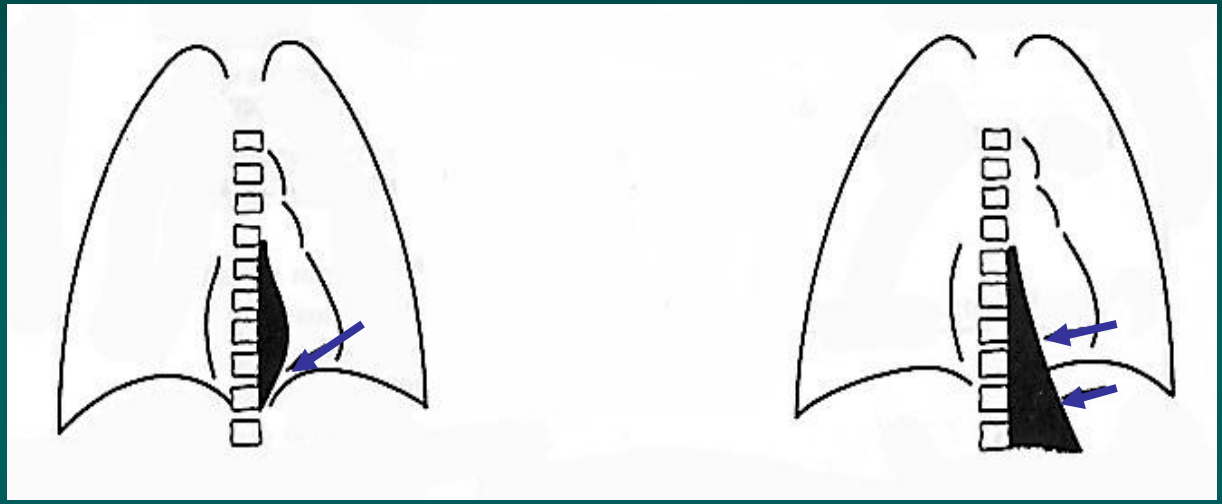
Male, one episode of hemoptisis, AFB sputum negative

Alveolar opacity visible behind heart silhouette:
posterior opacity (possible cancer)





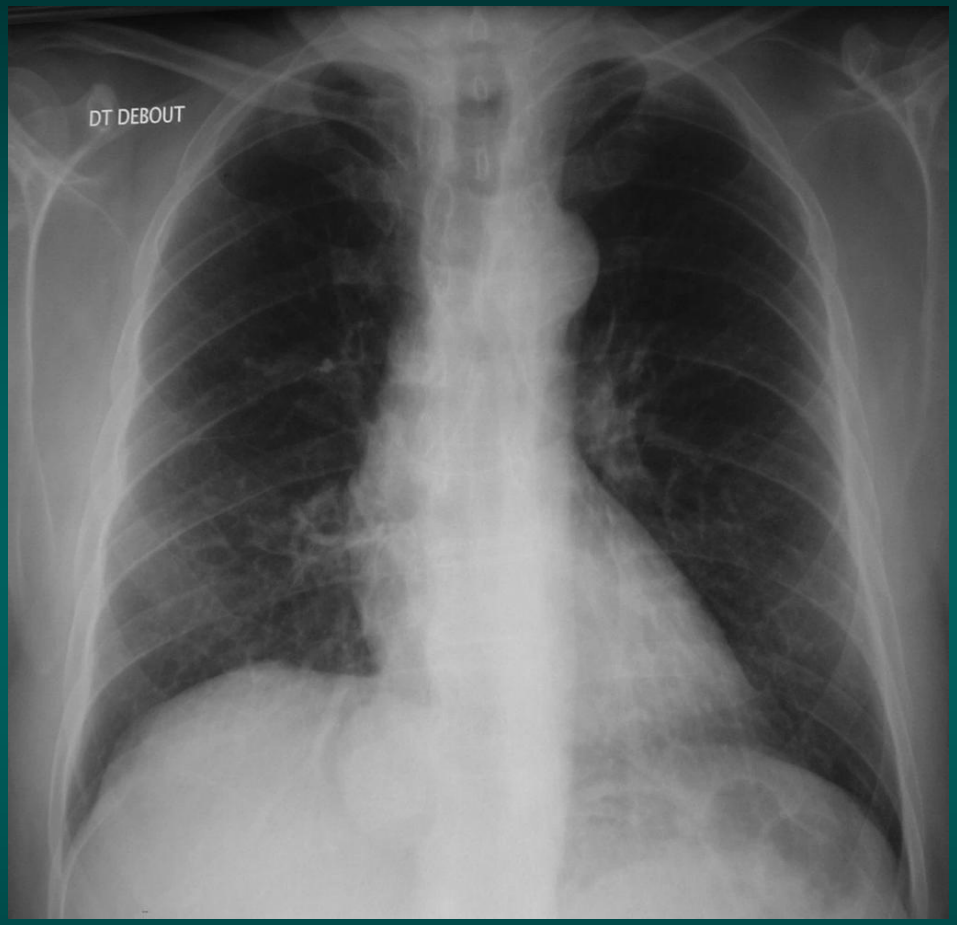
Application of the silhouette sign: Iceberg sign

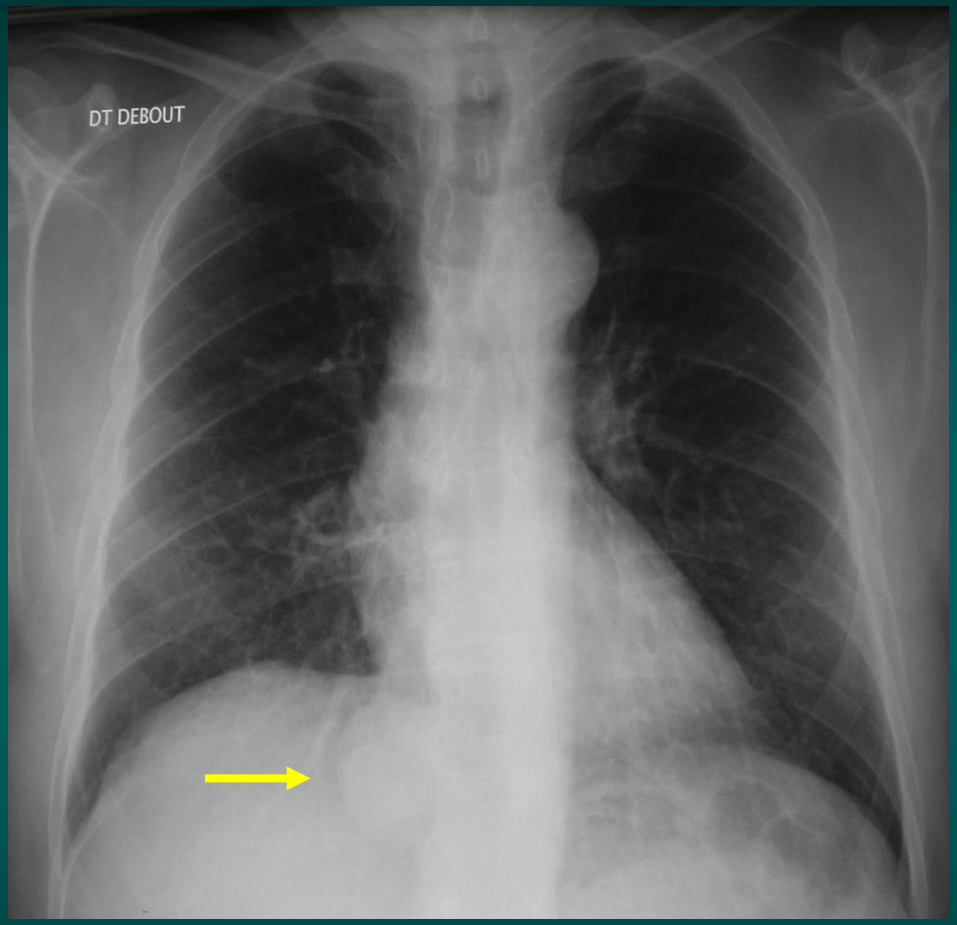


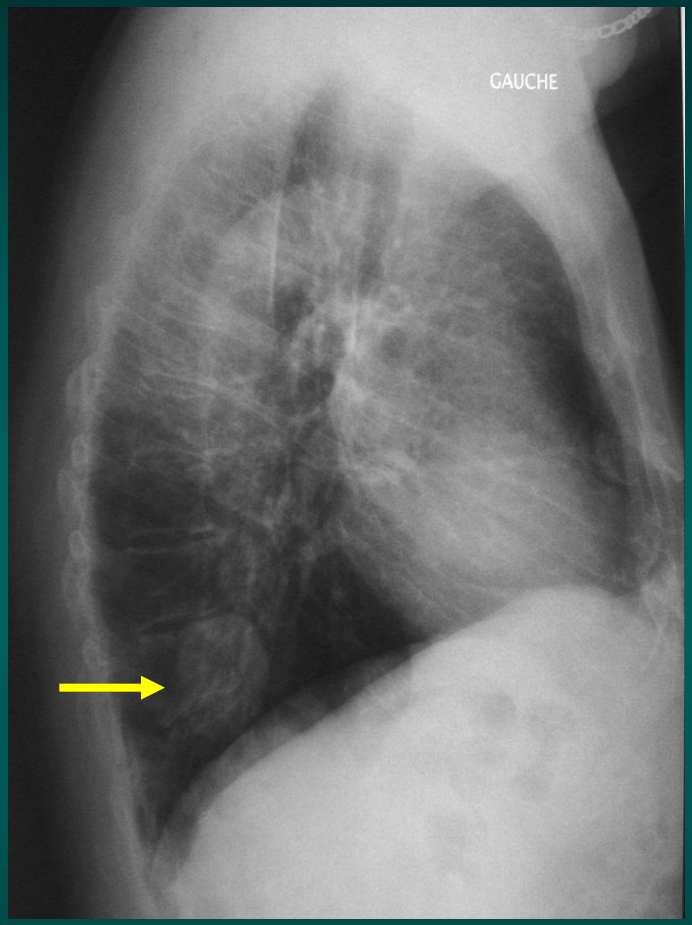
The opacity is above the diaphragm: the inferior edge is well visible because air density surrounding

The opacity is above **and** under the diaphragm: the inferior limit is lost in the abdominal opacities

What is abnormal on this CXR



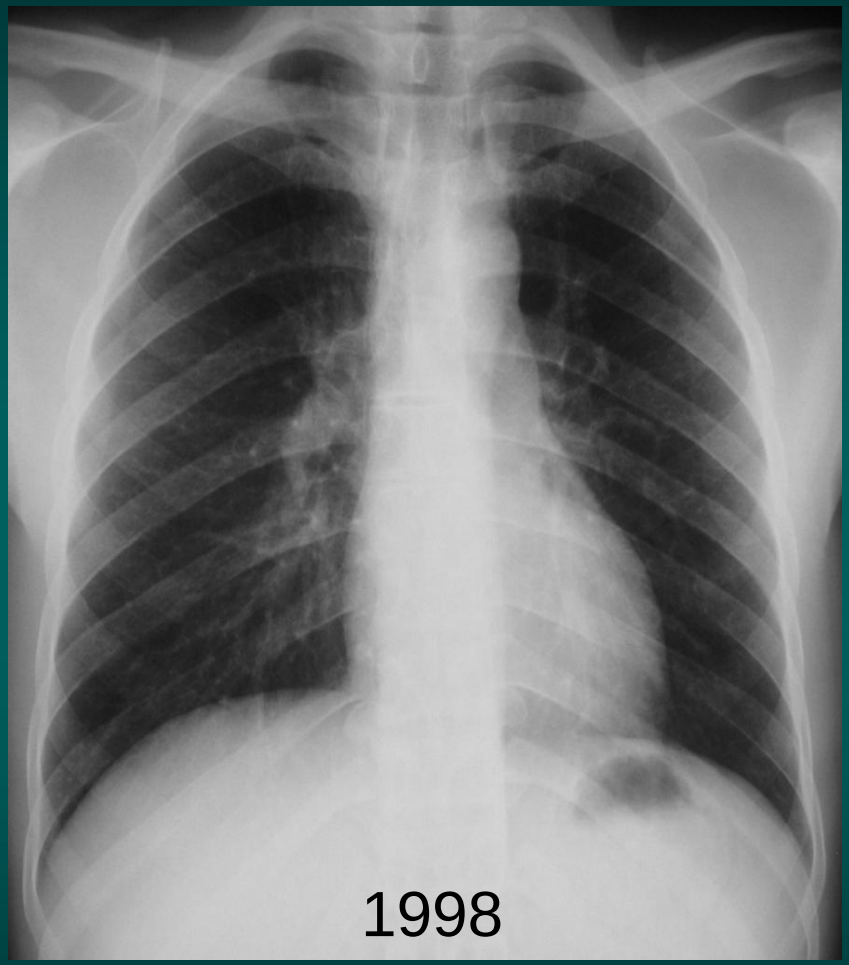


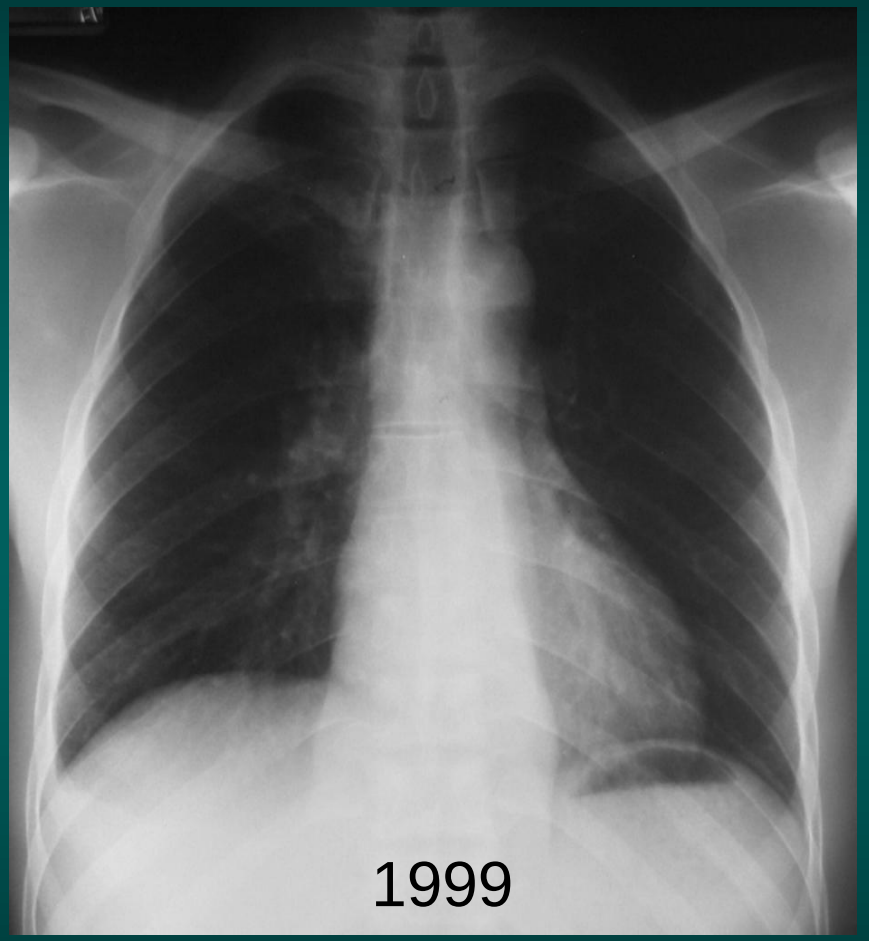


The opacity is completely intra-thoracic, behind the right diaphragm

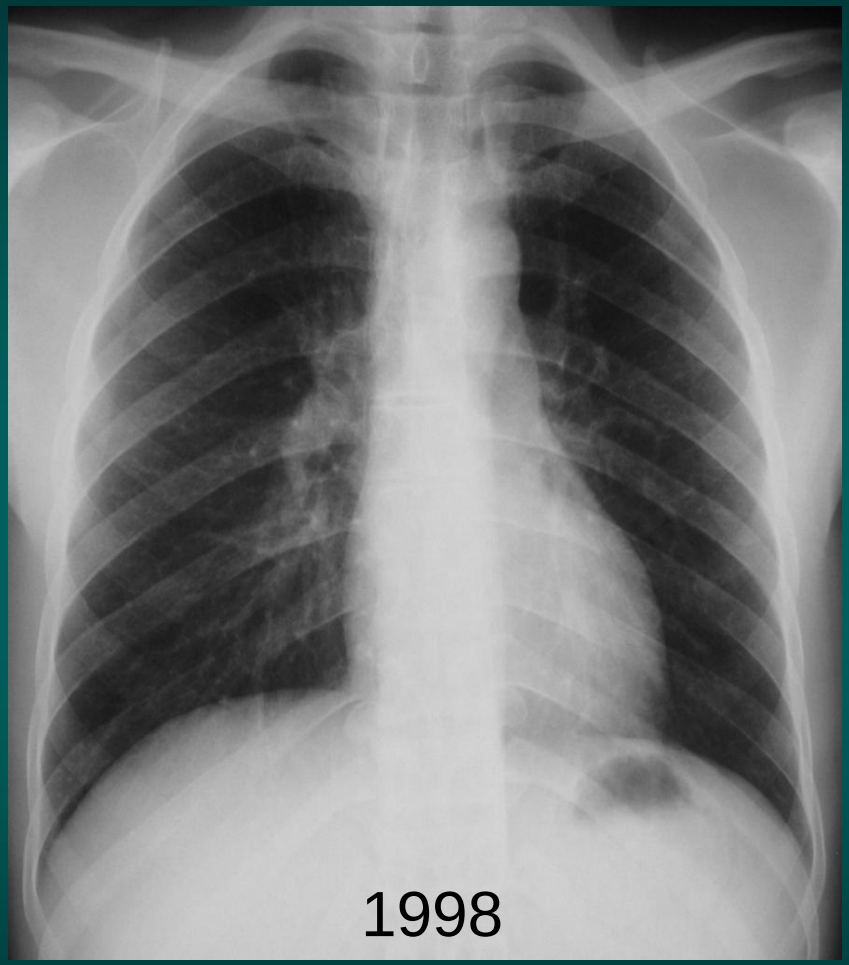
Caution to the hidden zones

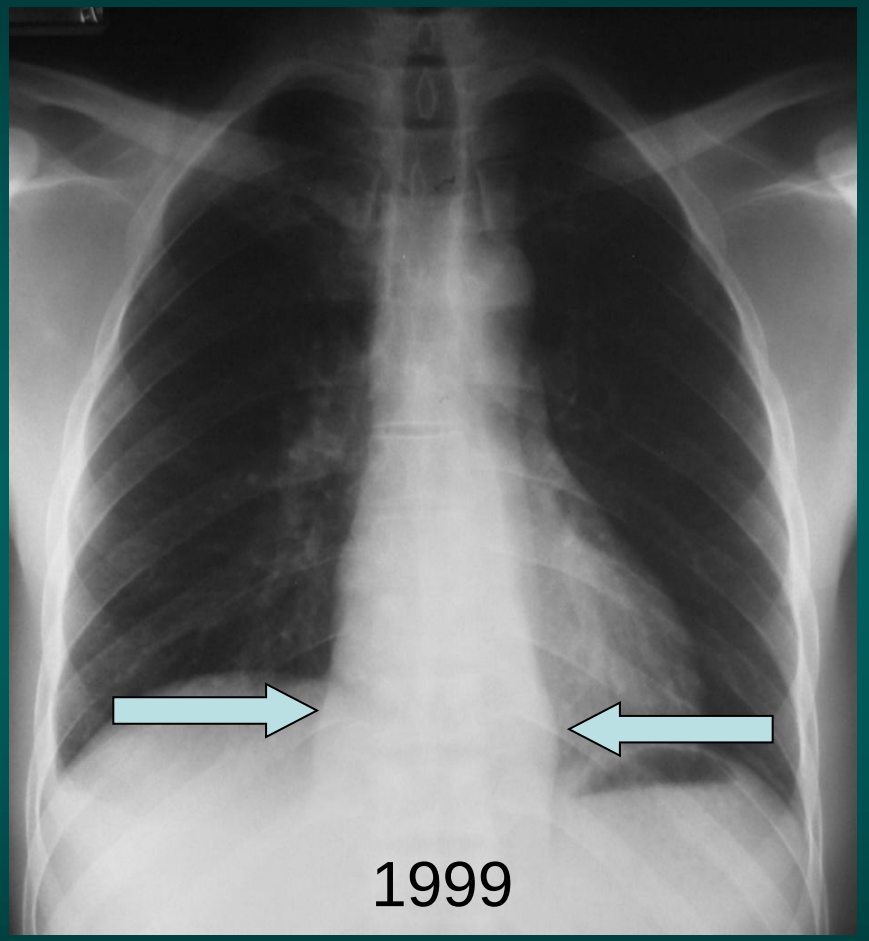
Male, 38 years old, increasing paint in the dorsal and lumbar area fot 3 monthes





Male, 38 years old, increasing paint in the dorsal and lumbar area fot 3 monthes





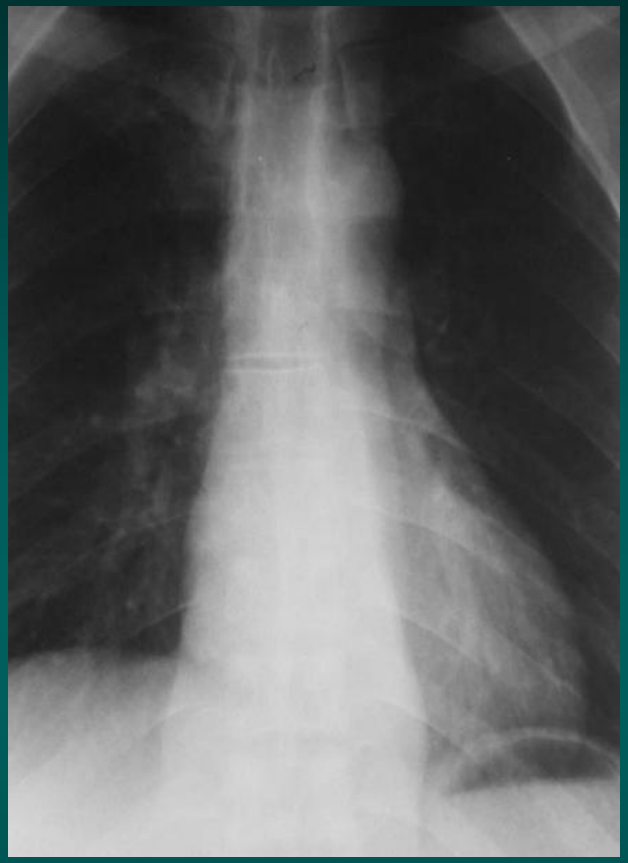
Pott's disease: the opacity is above and under the diaphragm

Pott's disease

Iceberg sign

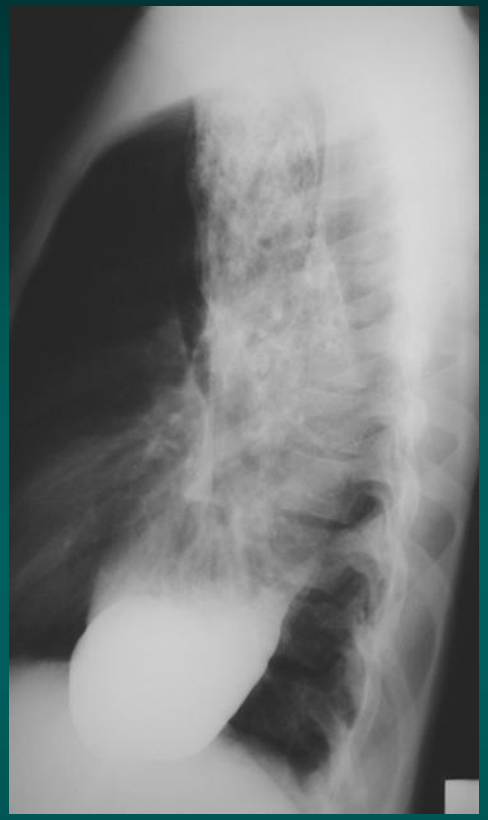
The opacity is above **and** under the diaphragm: the inferior limit is lost in the abdominal opacities

- Descending aortic pathology
- Oesophagus pathology
- Spinal column pathology



Spinal column pathology

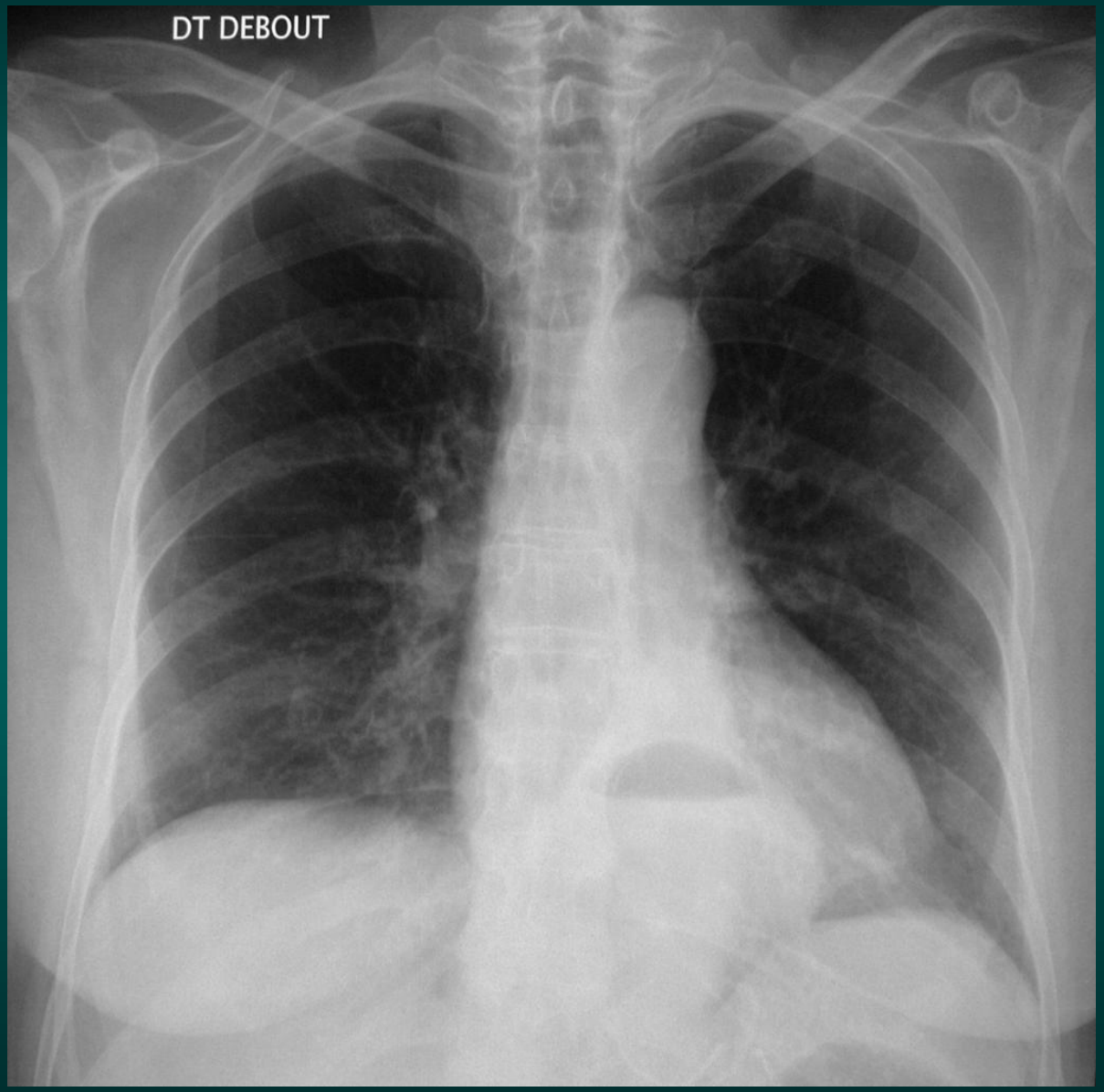
(Pott disease)



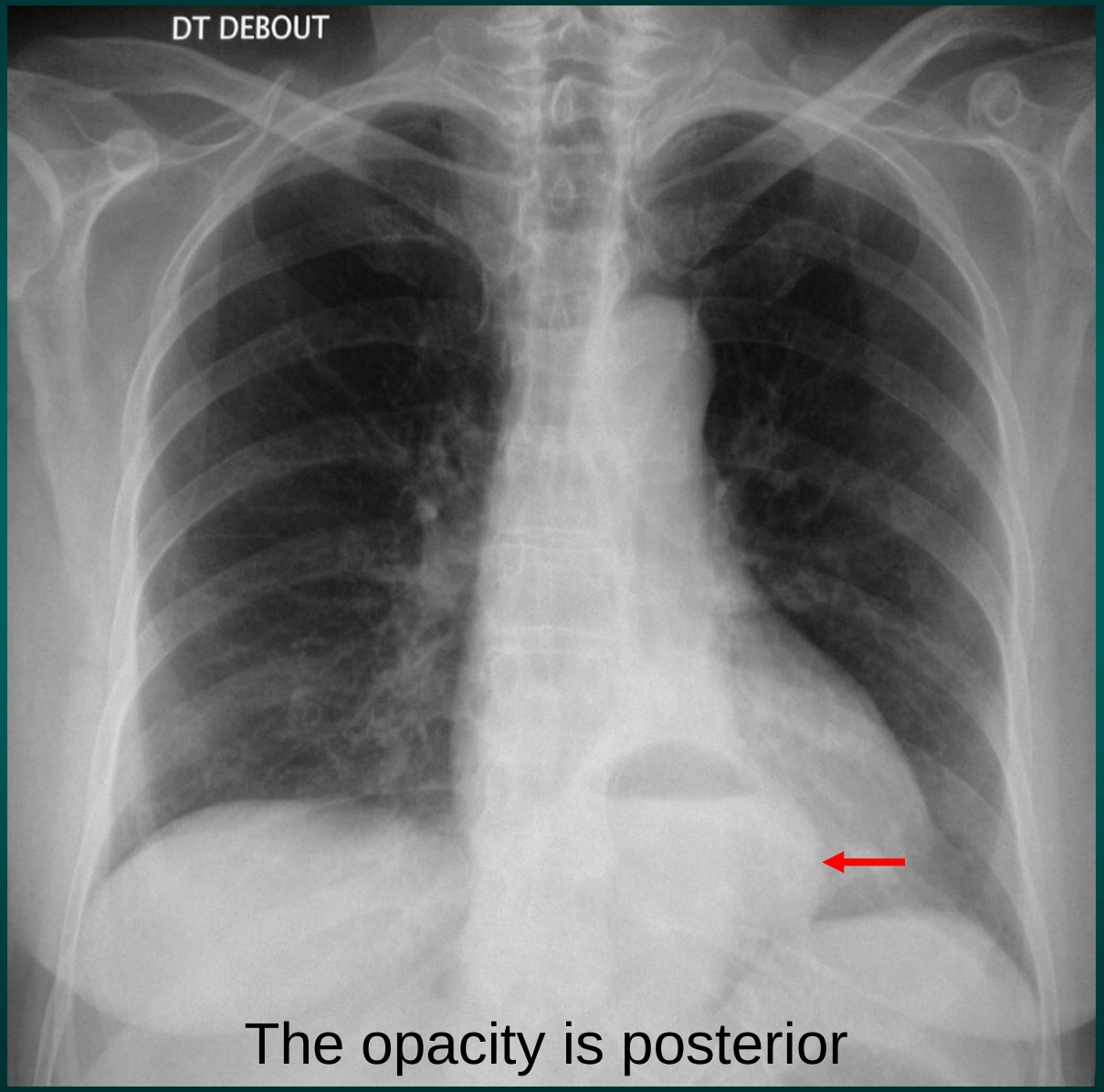
oesephagus pathology (mega-esophagus)

Descending aortic pathology (aveuvrysm)

Female, no symptoms except sometimes regurgitations



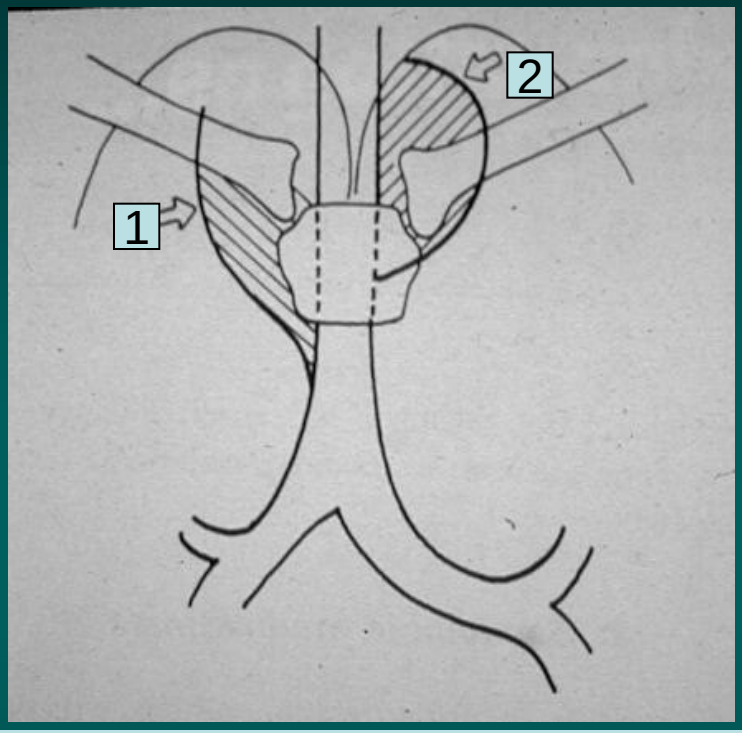
Female, no symptoms except sometimes regurgitations

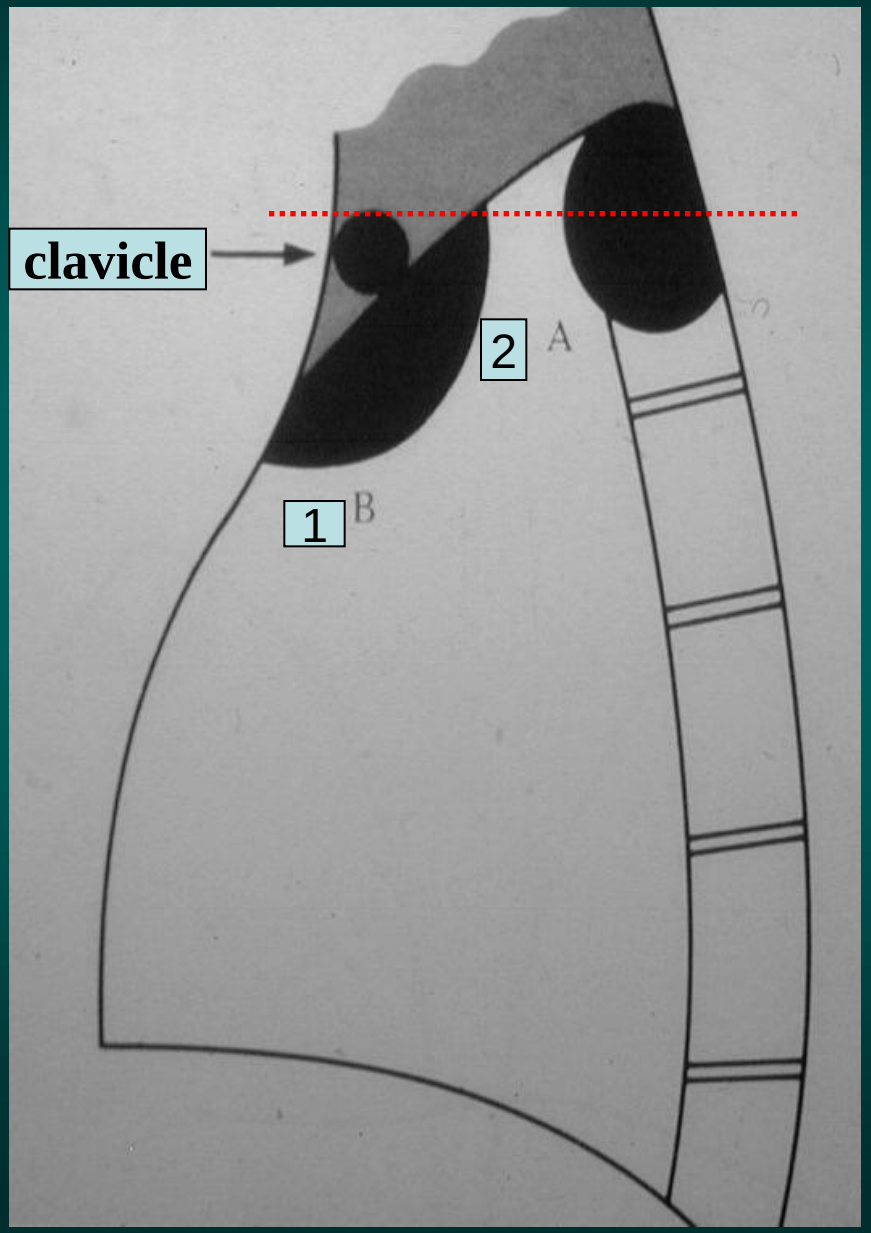


The opacity is posterior

Hiatal hernia

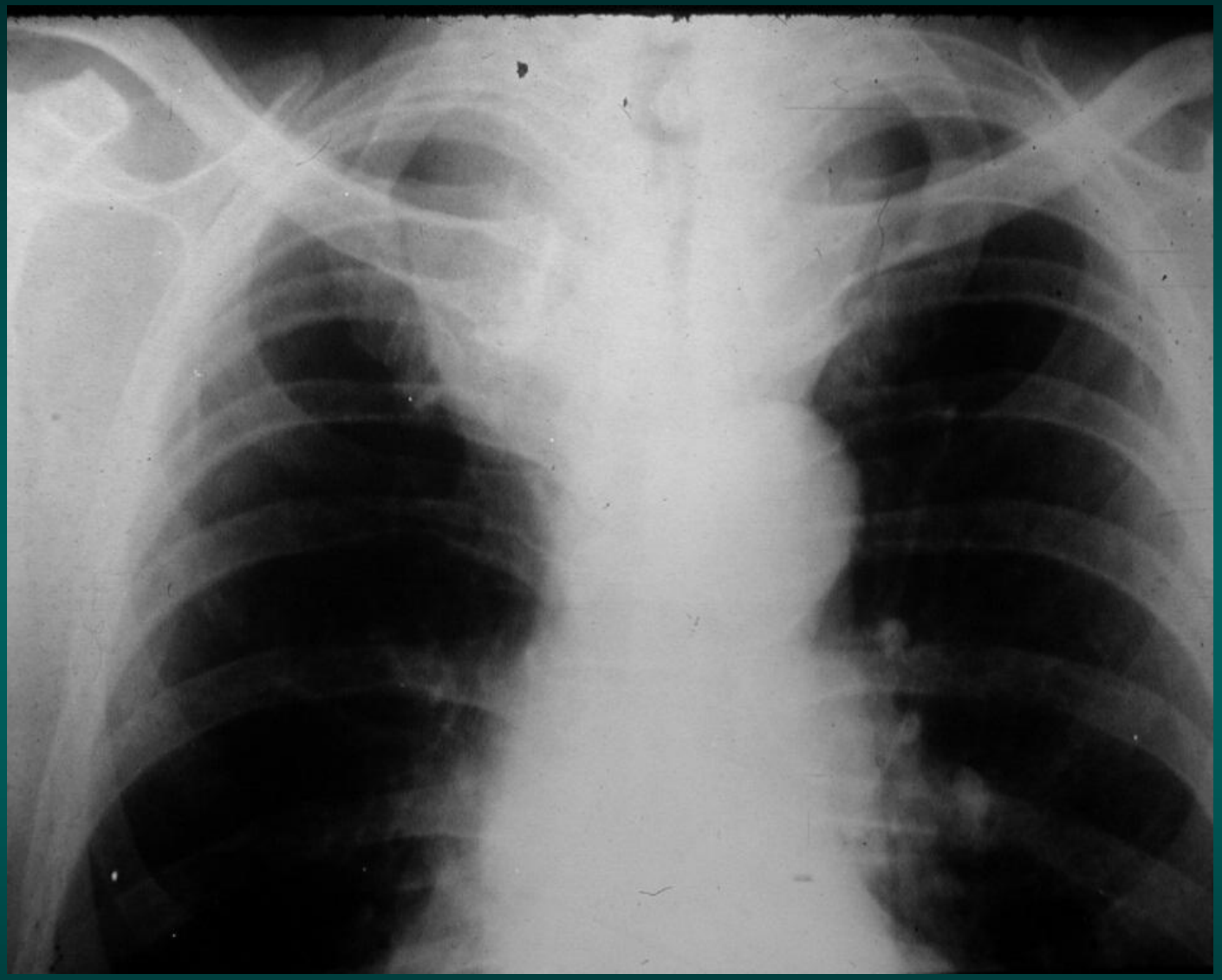
Application of the silhouette sign: The cervico-thoracic pass sign



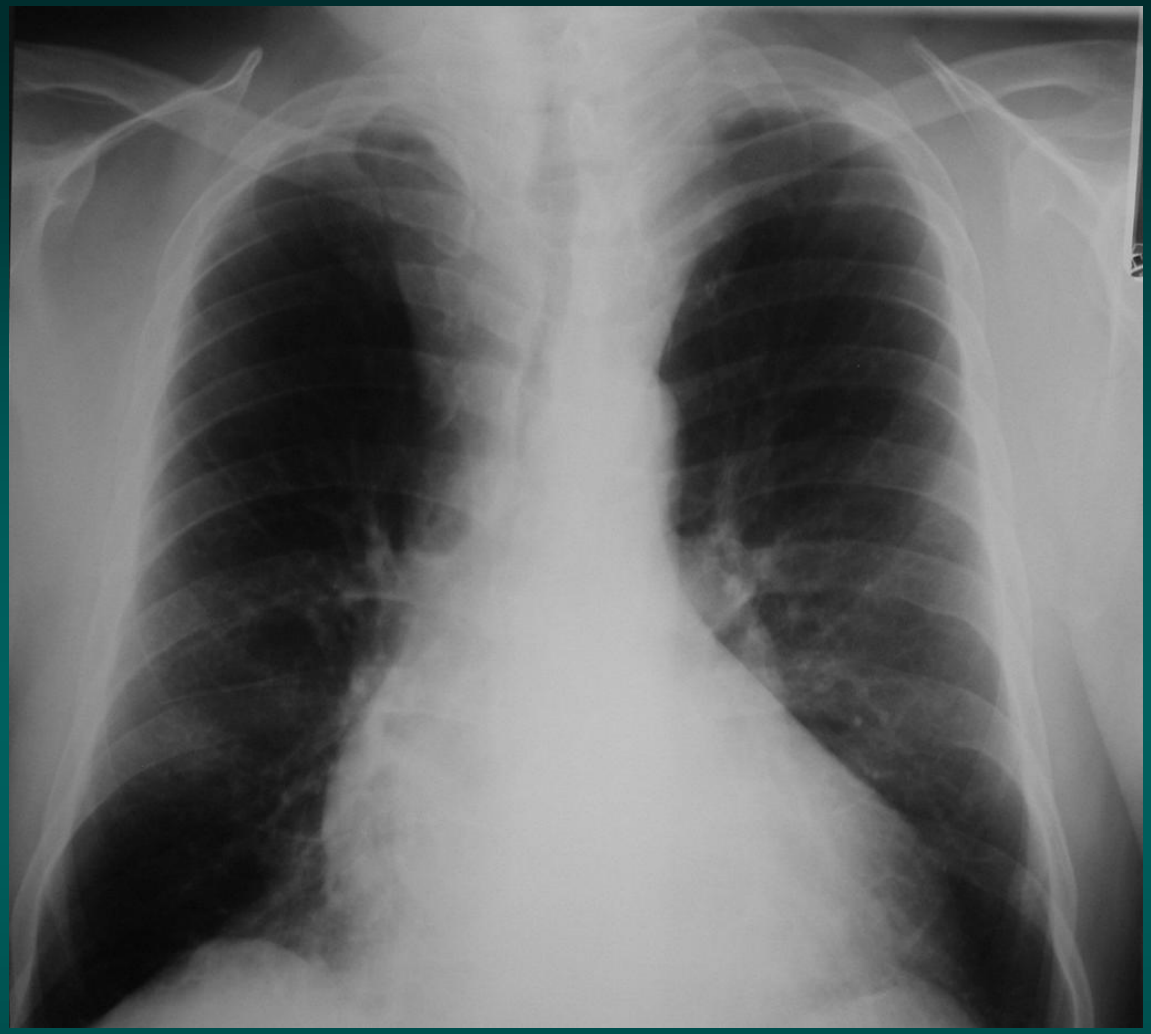


1: The external and superior edges of the mediastinal opacity disappear above the clavicles. This sign means that the opacity is anterior in the superior mediastinum

2 The superior edge of the opacity is visible in the pulmonary air: the opacity is posterior

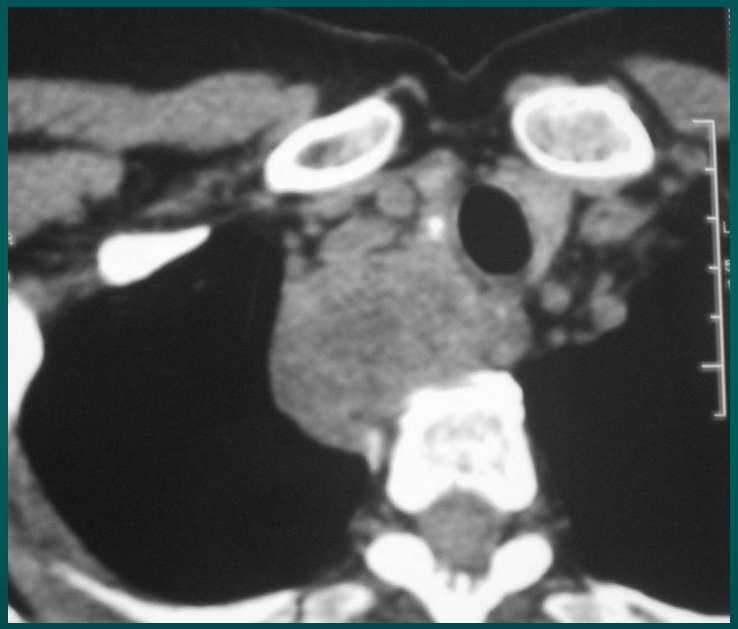


Anterior intrathoracic goitre



Anteror intrathoracic goitre.This goitre is compressive: notice the compression of the trachea

Posterior goitre (courtesy of Dr Bellamy)



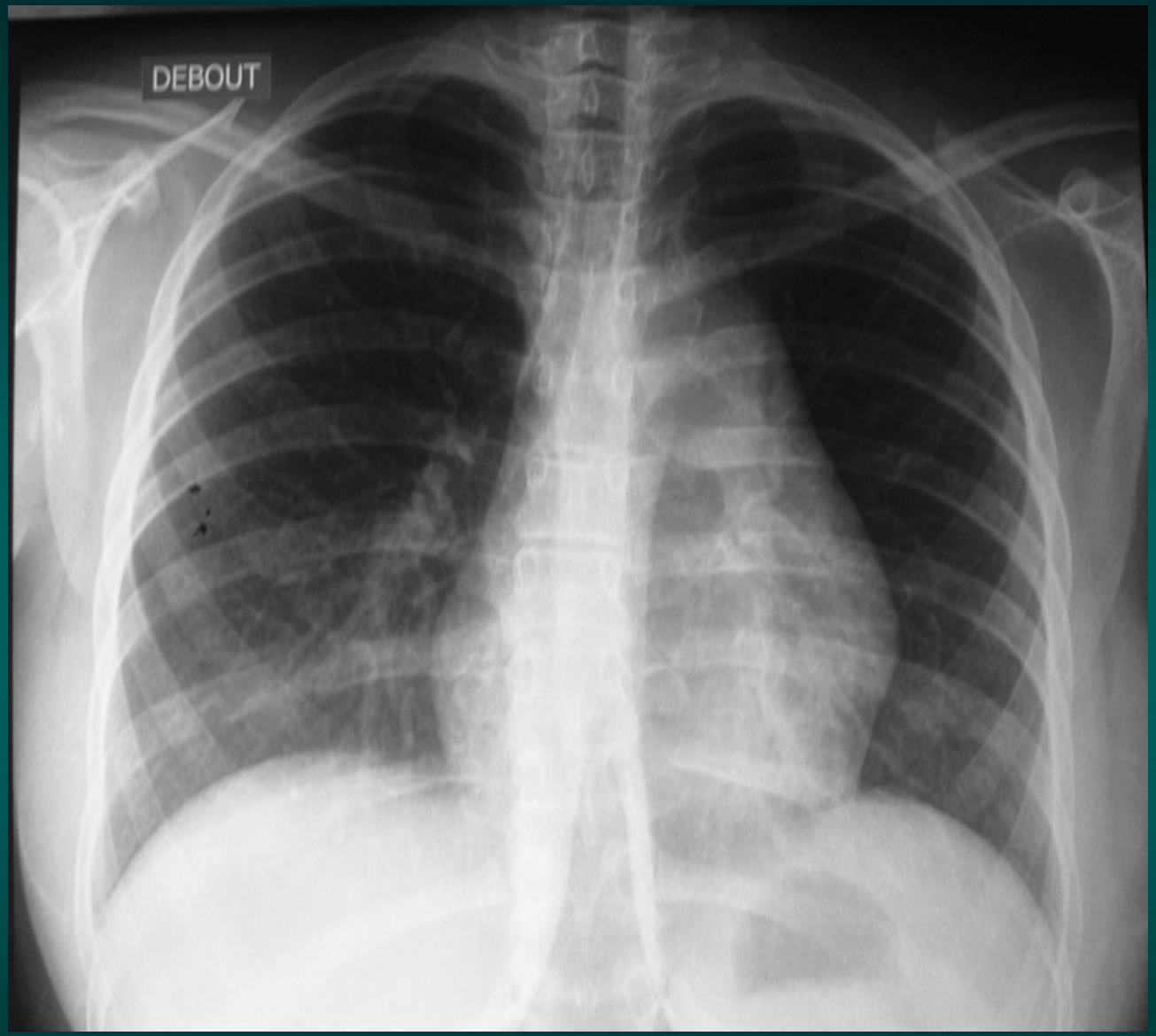
Posterior or anterior opacity ?

Posterior or anterior opacity ?

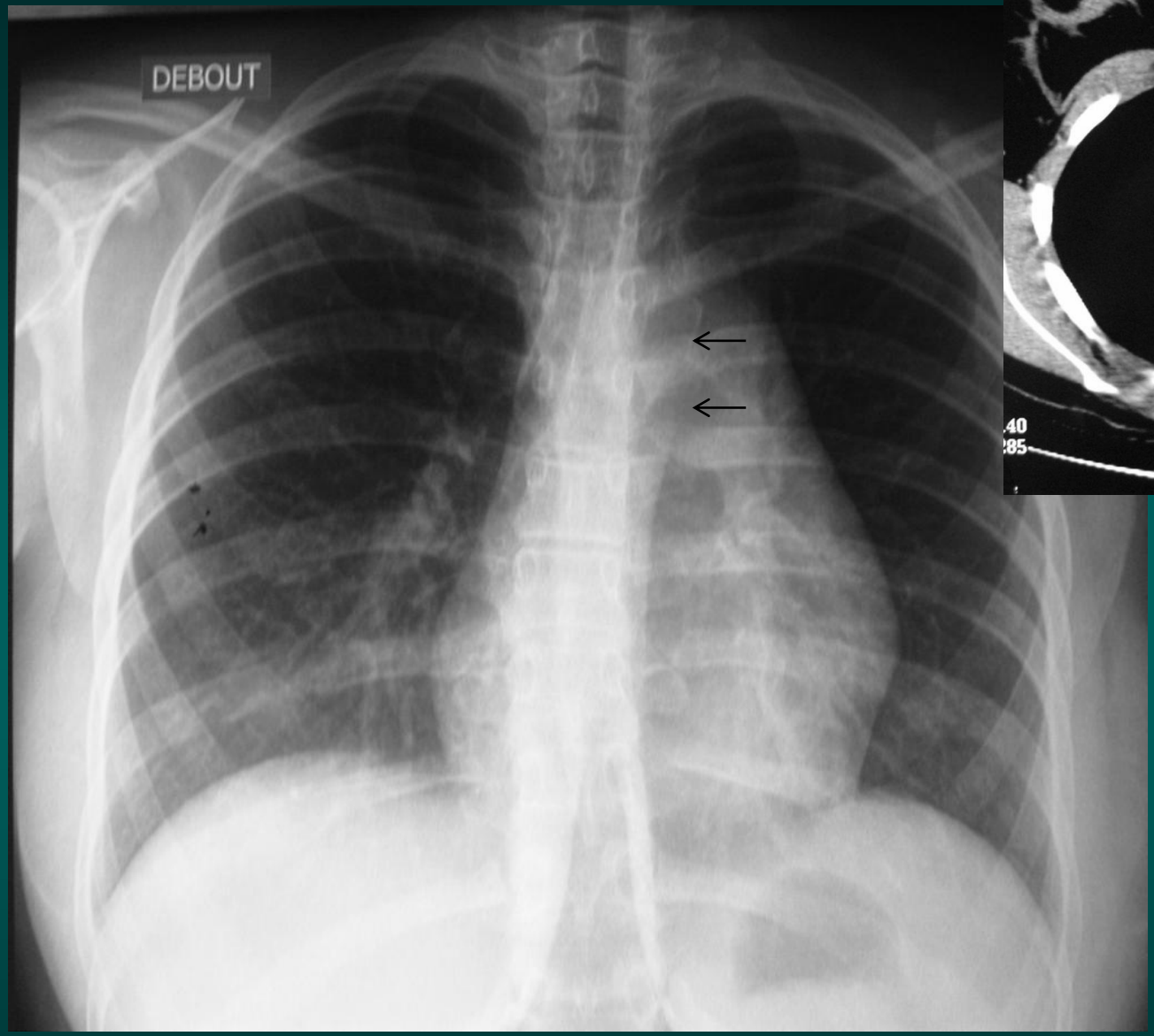
Posterior: bronchial cancer of the left lung apex

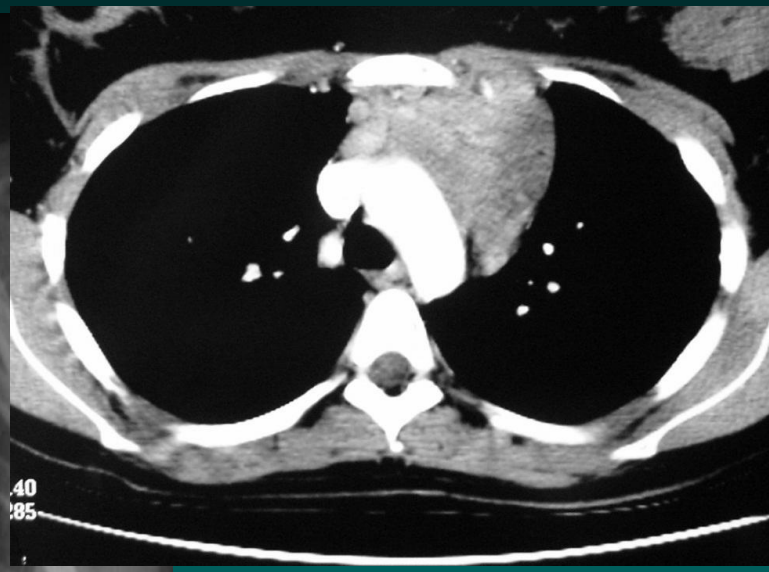
+++ notice the destruction of the posterior arch of the third rib

Posterior (bronchial cancer of the left lung apex)



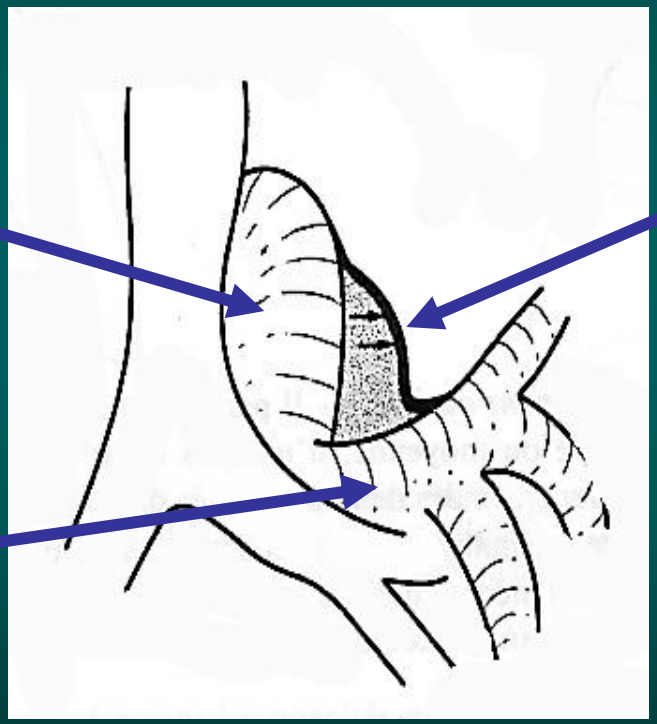
Young woman . Asthenia, weight loss and nocturnal sweet.





Silhouette sign applied to the mediastinum: disappearance of the aorta arch: contact with a tissular mass (Hodgkin’s adenopathy)

Application of the sihouette sign: Filling of the aorto-pulmonary space

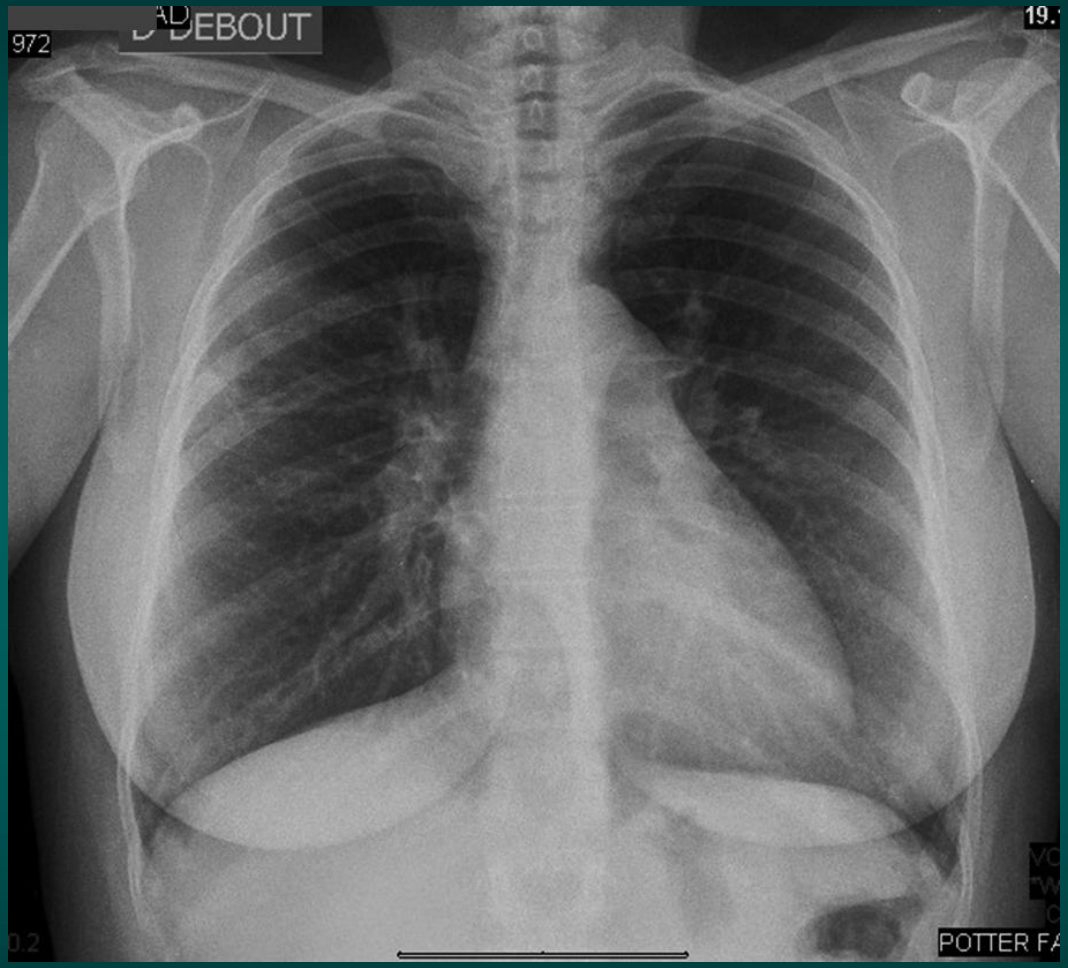


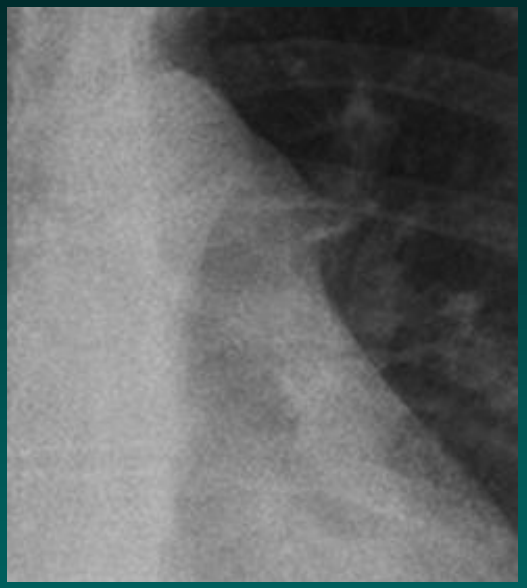
aorta

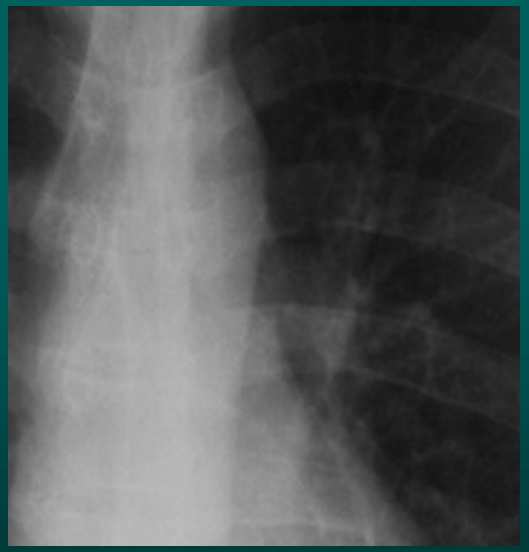
Pulmonary artery

Adenopathy in aorto-pulmonary space

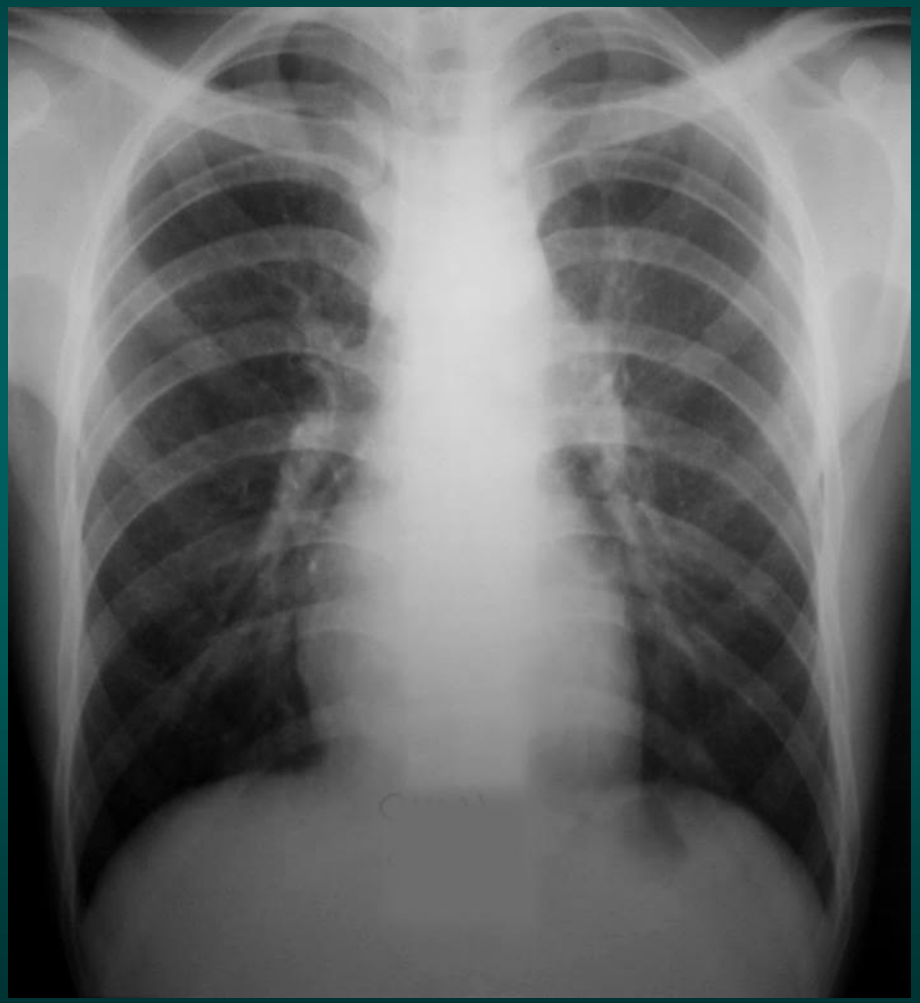
Filling of aorto pulmonary window

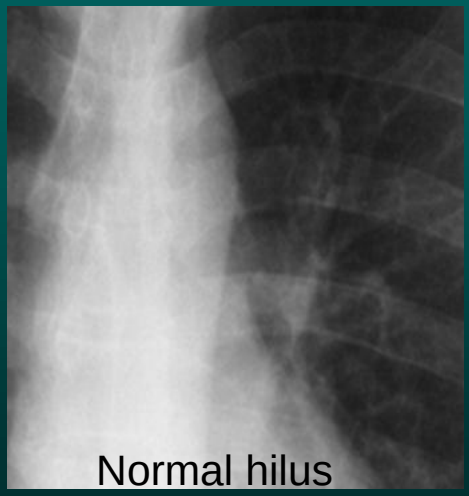






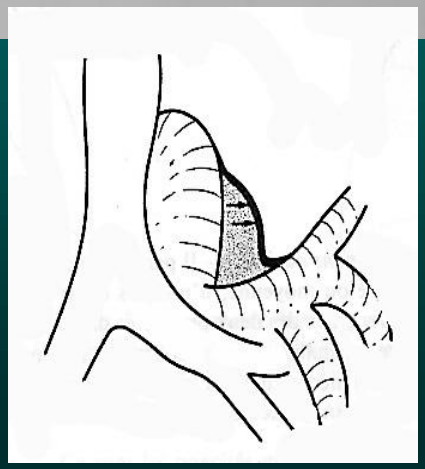
Filling of aorto pulmonary window



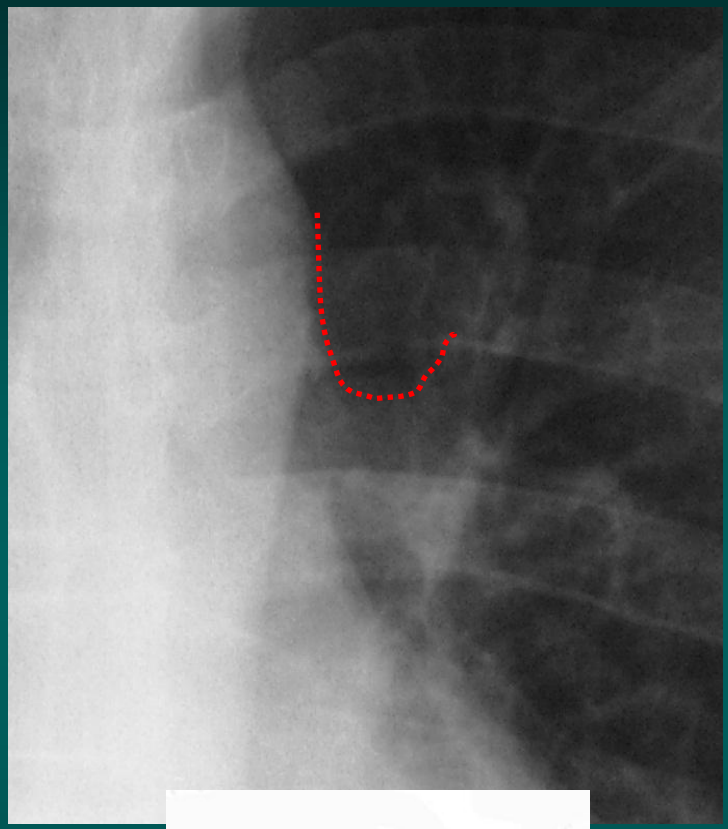


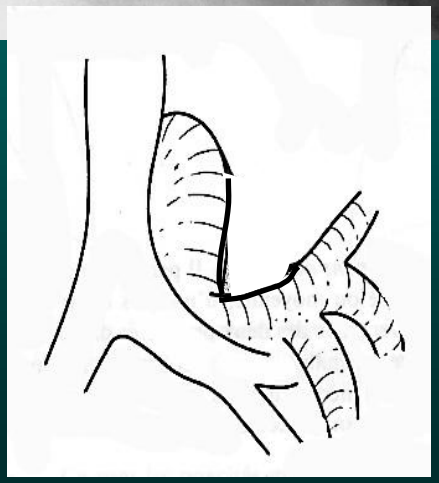
Normal hilus

Filling of the aorto-pulmonary space(adenopathy)



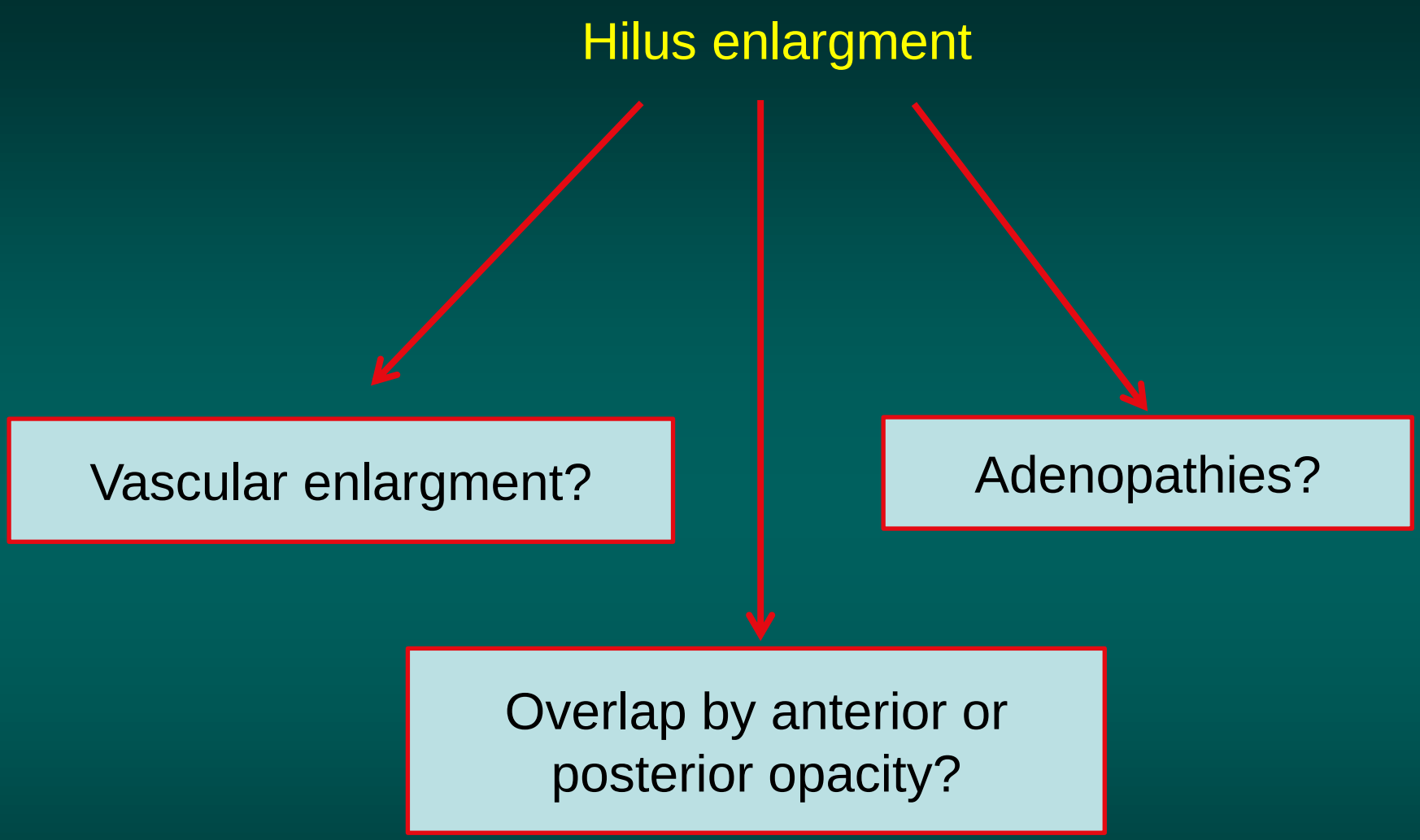
Normal left hilus





How to make diagnosis of a « big hilus »

(silhouette sign application)

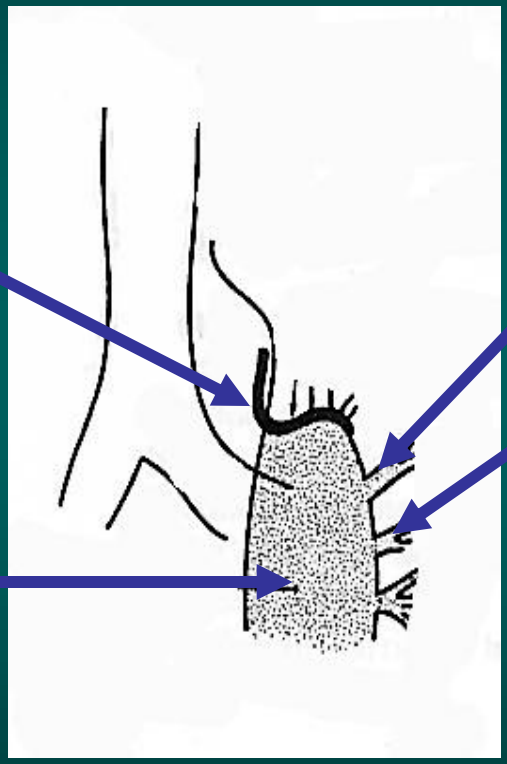

Hilus enlargment
Vascular enlargment?
Adenopathies?
Overlap by anterior or posterior opacity?

Vascular enlargment?

Convergence sign of the hilus

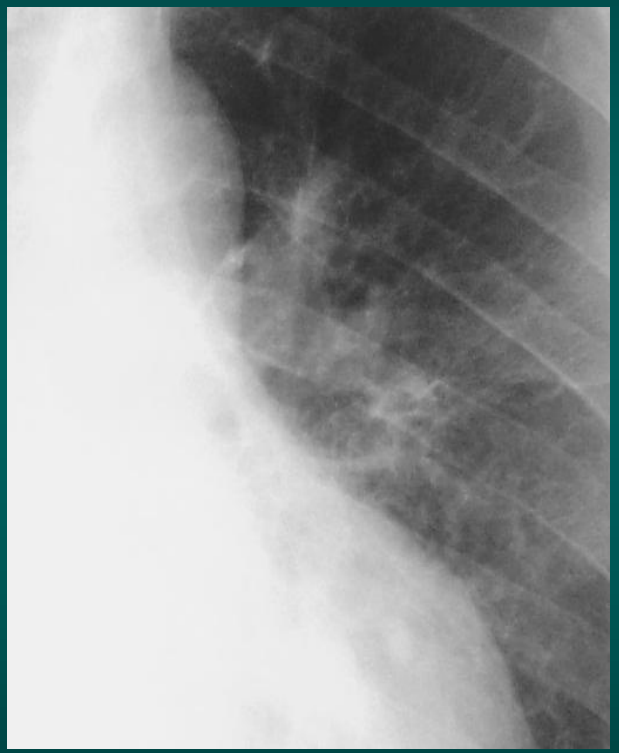
Aorto pulmonary space

Pulmonary artery

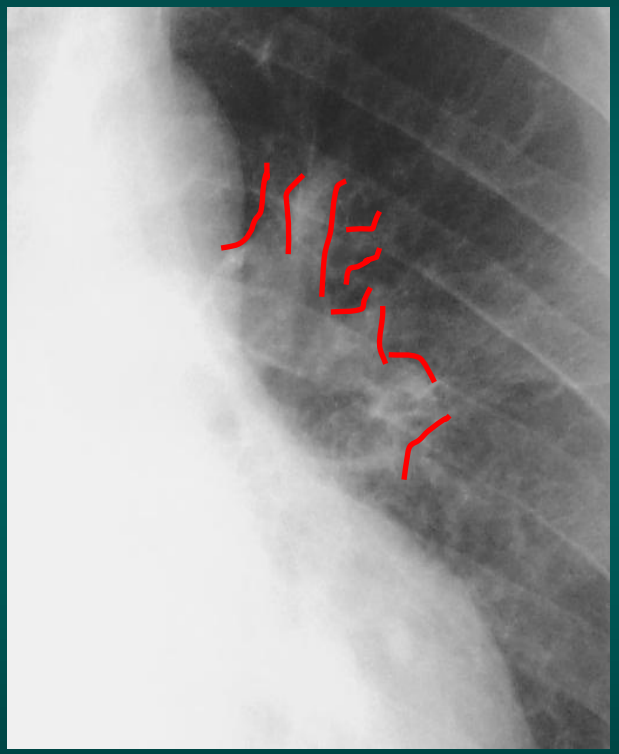


The ramifications of the pulmonary artery loose their silhouette on the edge of the opacity: this opacity is the pulmonary artery

Convergence sign of the hilus
(vascular opacity, pulmonary hypertension)



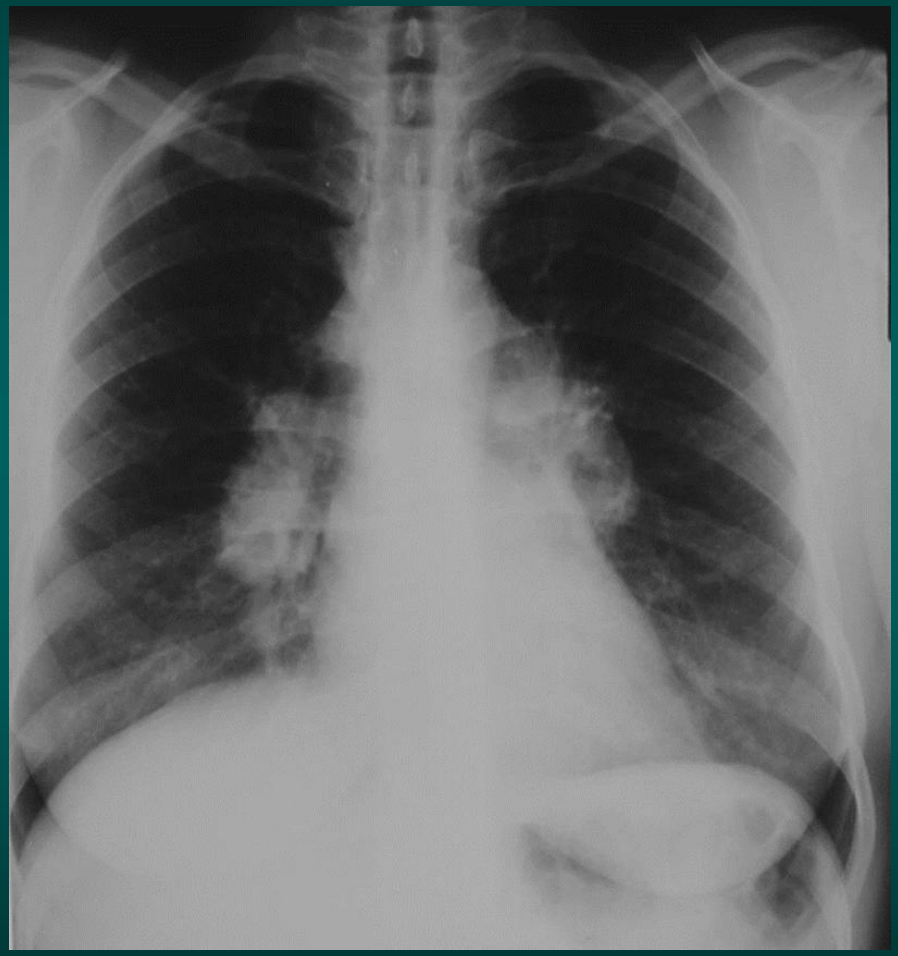
Convergence sign of the hilus
(vascular opacity, pulmonary hypertension)



Adenopathies?

Hilar adenopathies:

- Opacities with convexe external edge
- Opacities overlapping normal vascular opacities



Adenopathies?

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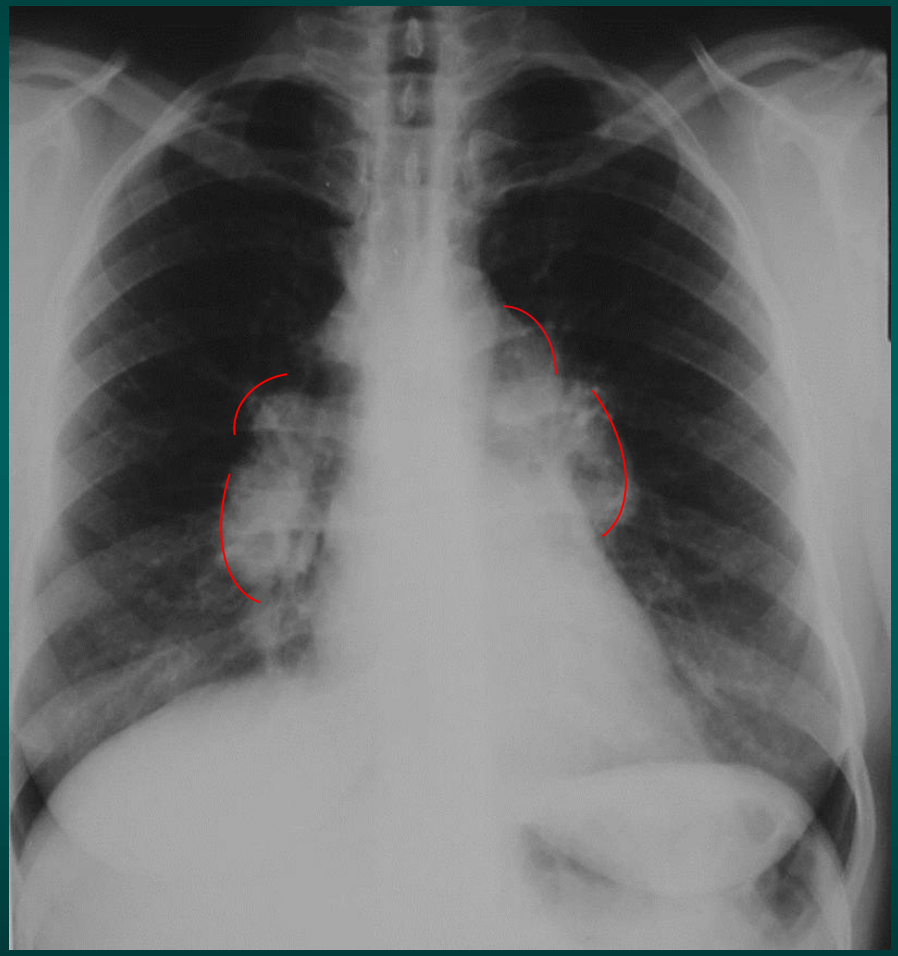
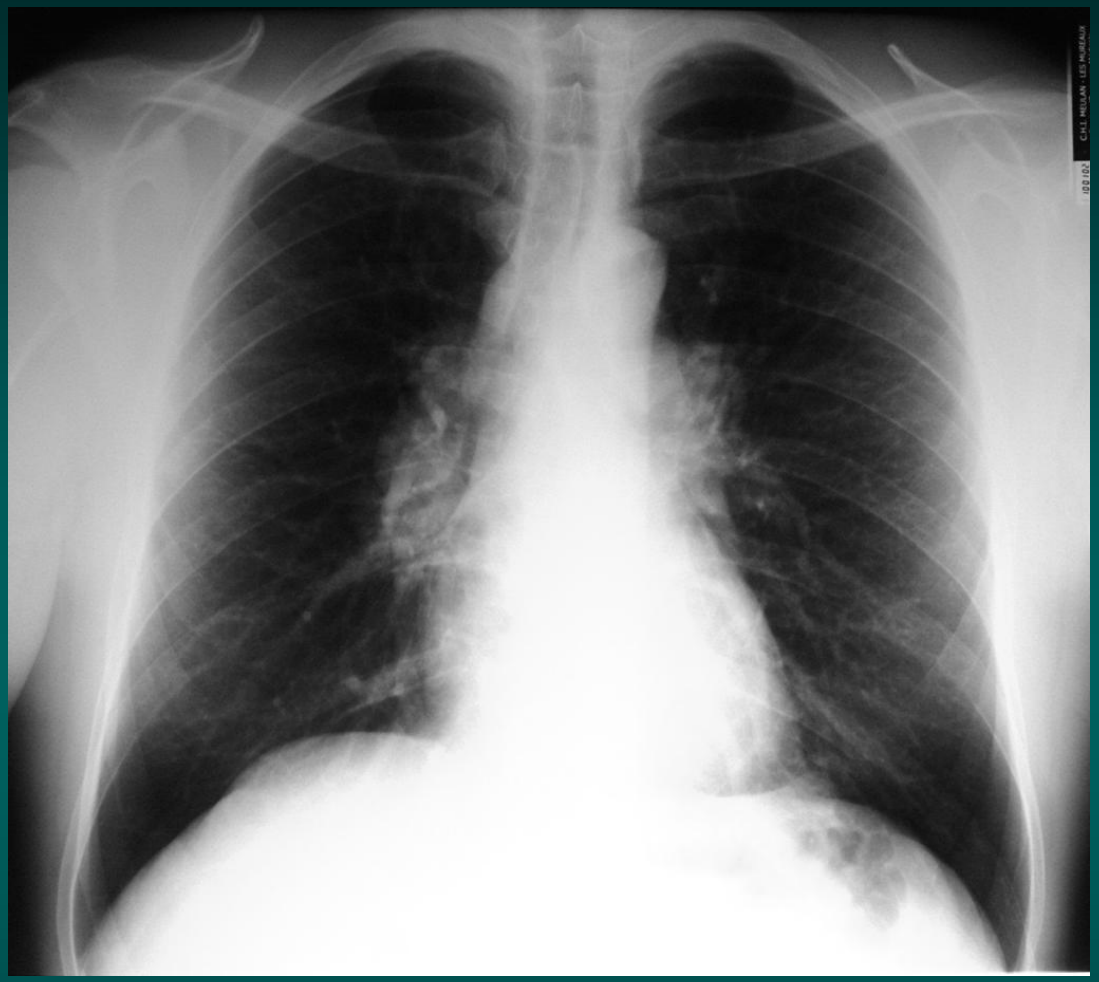
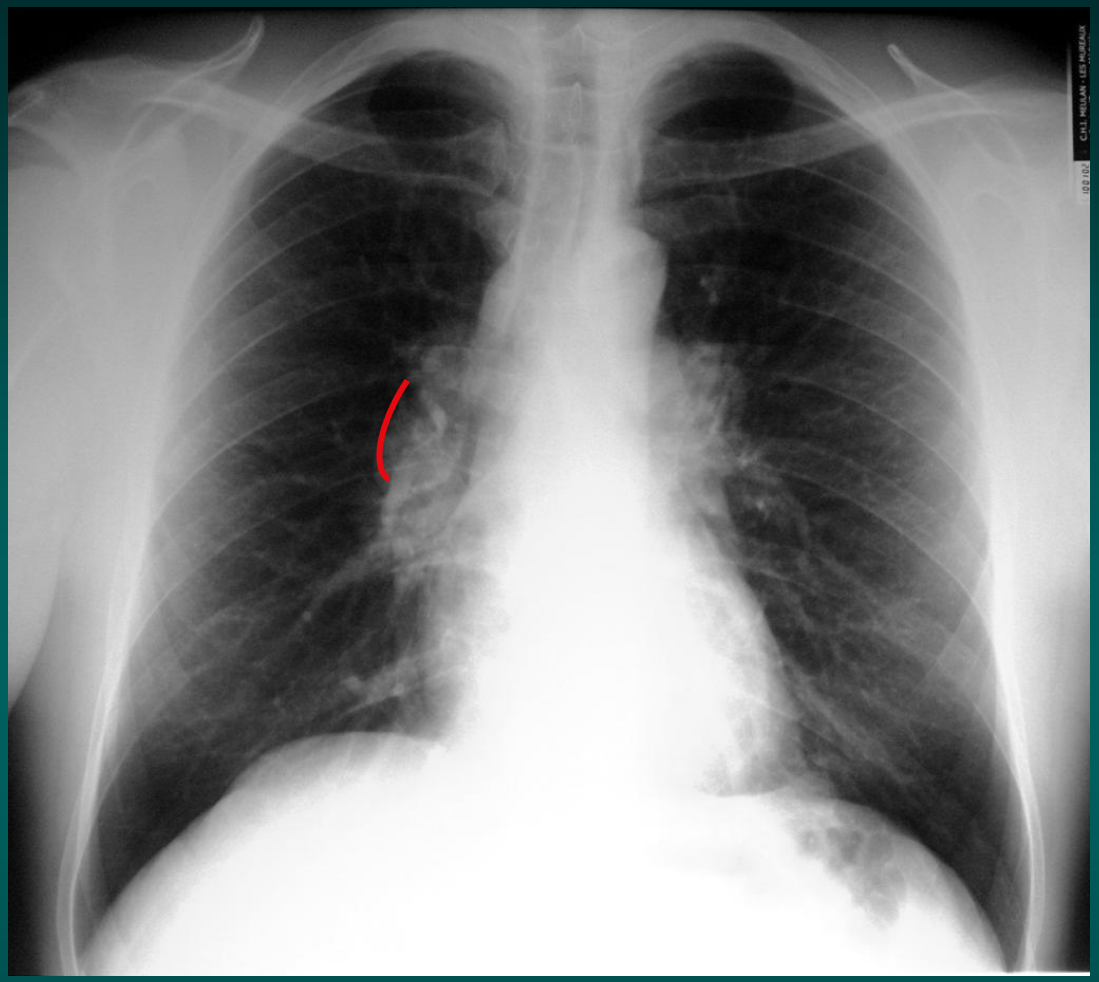
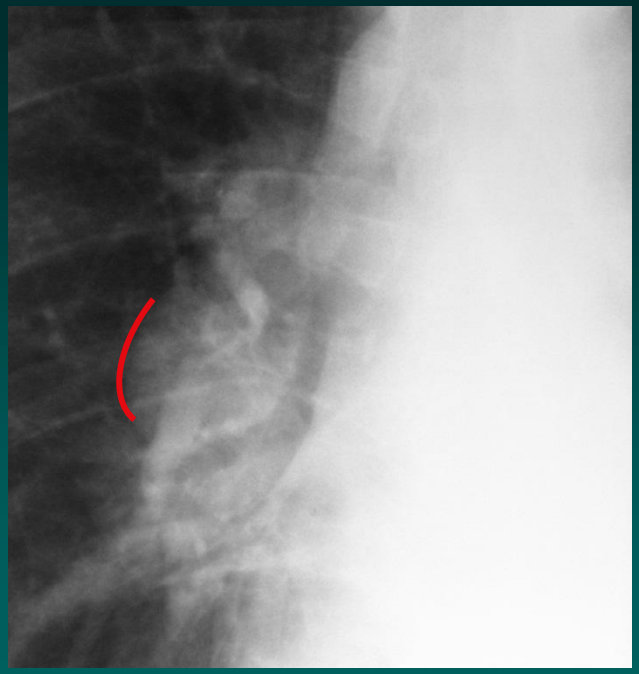
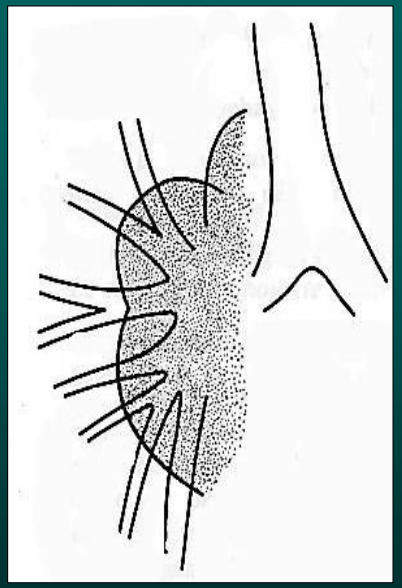




Bilateral TB adenopathies

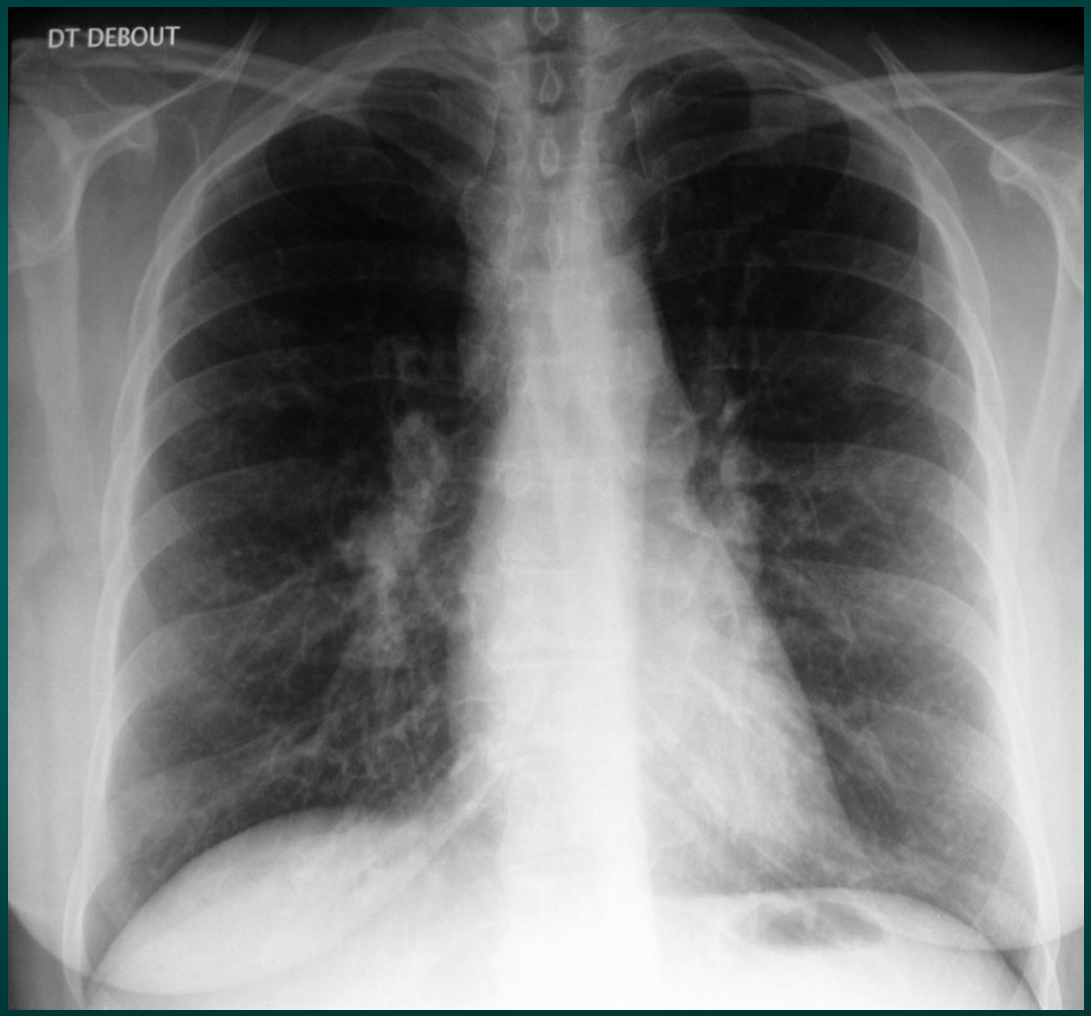


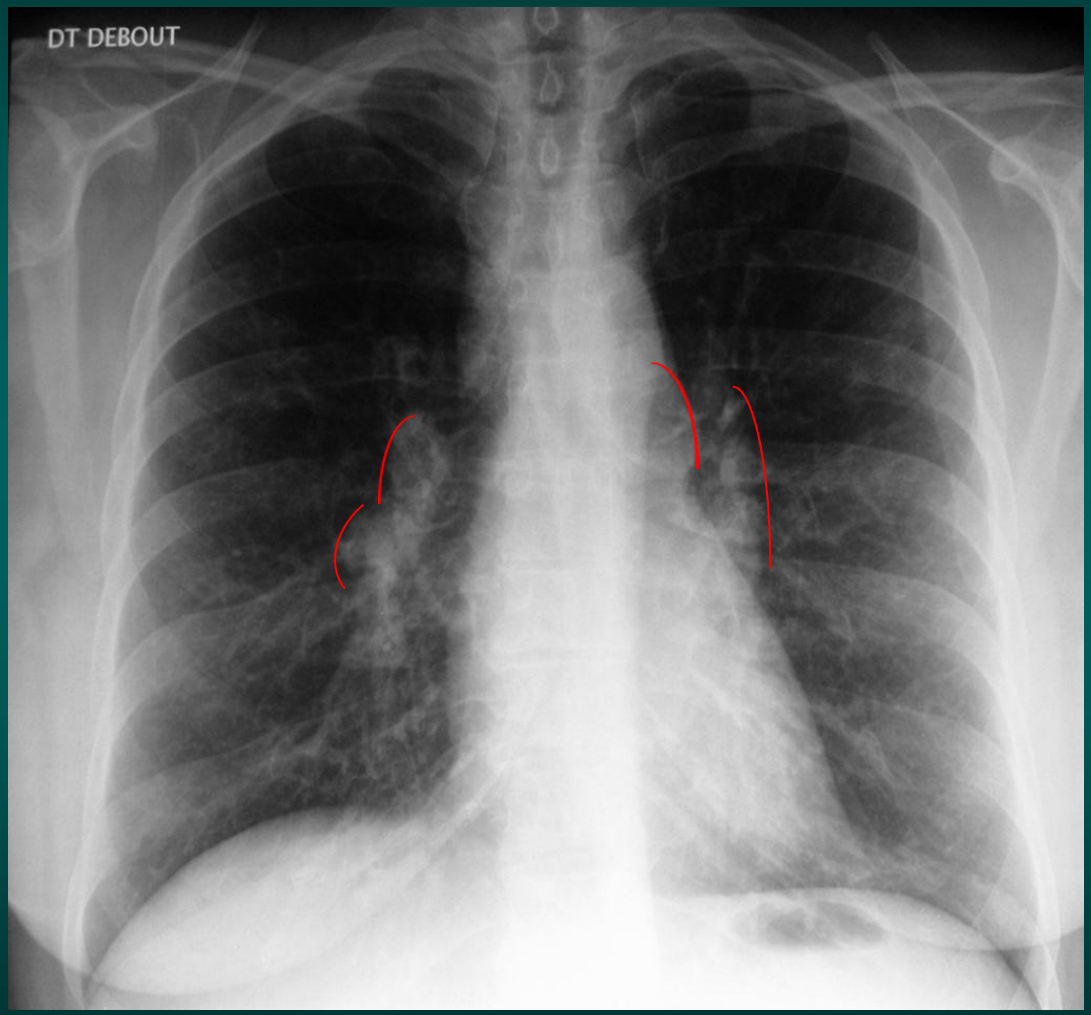


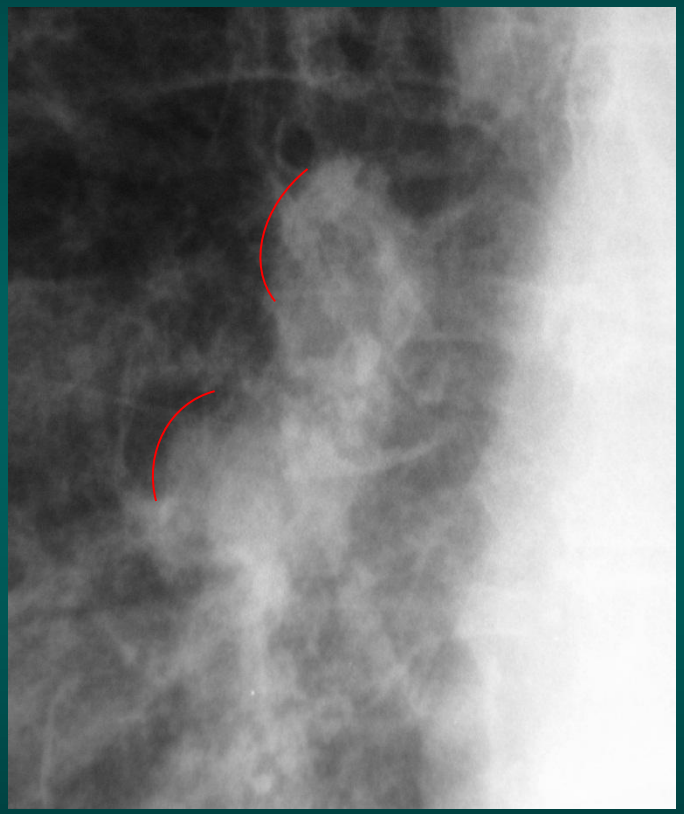


Bilateral TB adenopathies

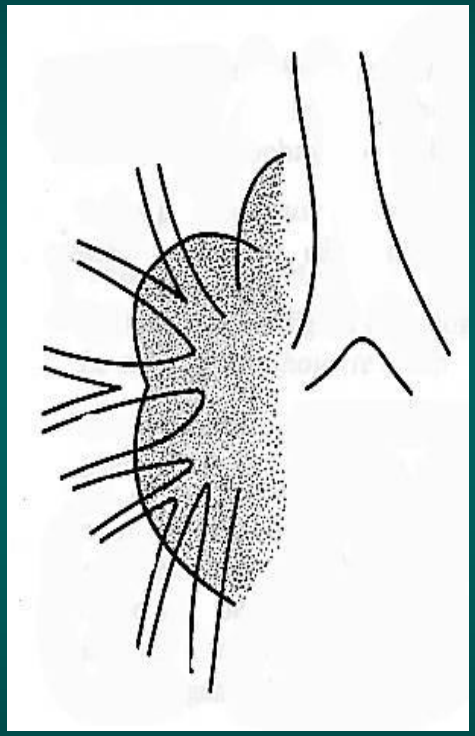
Bilateral adenopathies

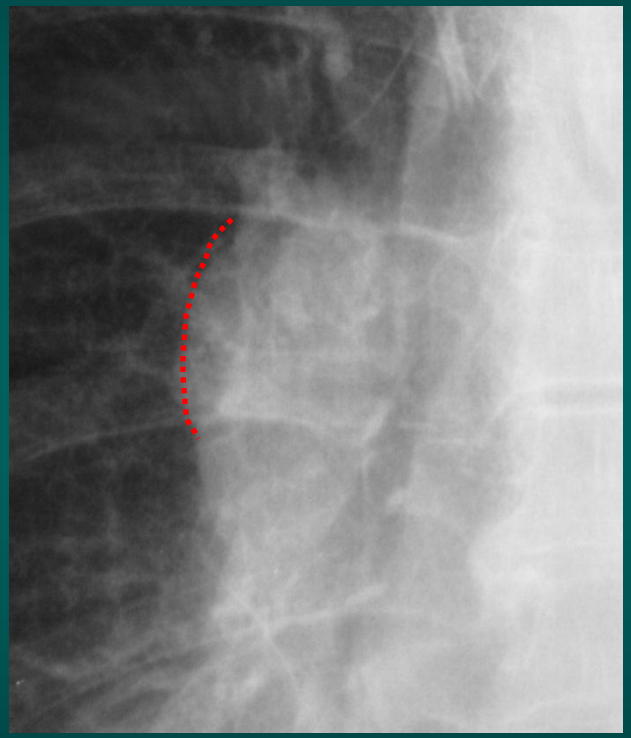



DT DEBOUT

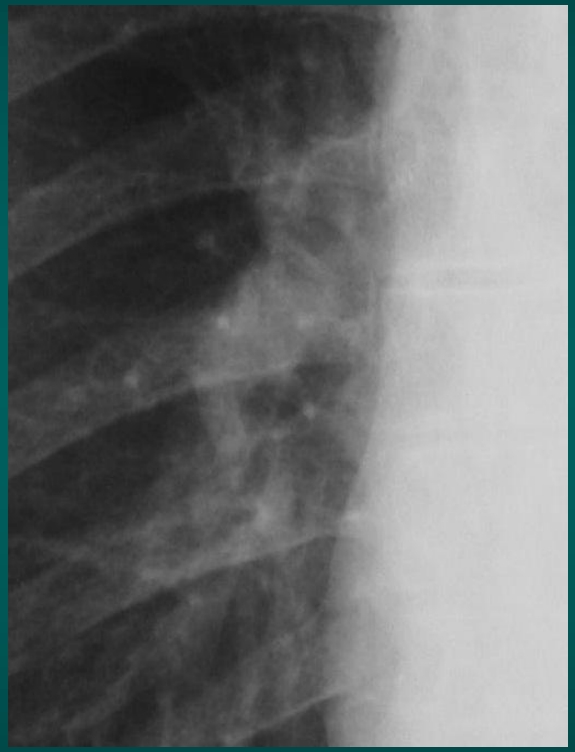


Hilar adenopathy

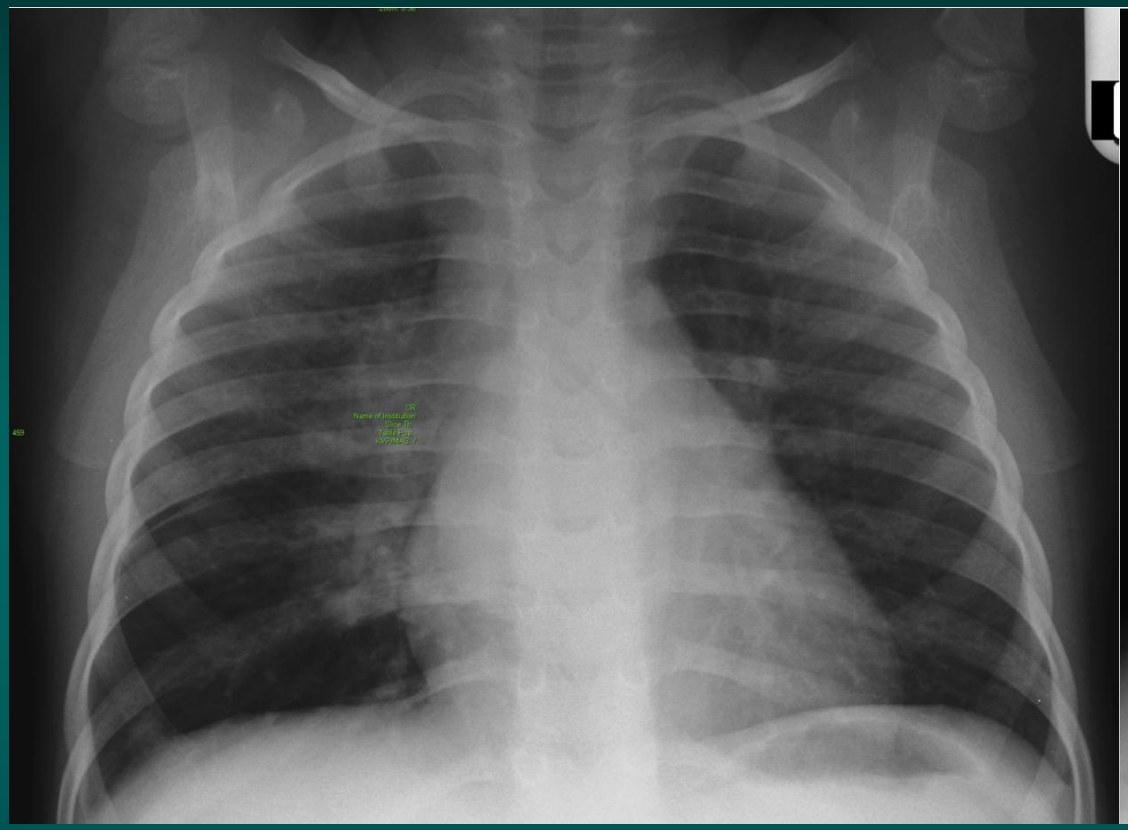


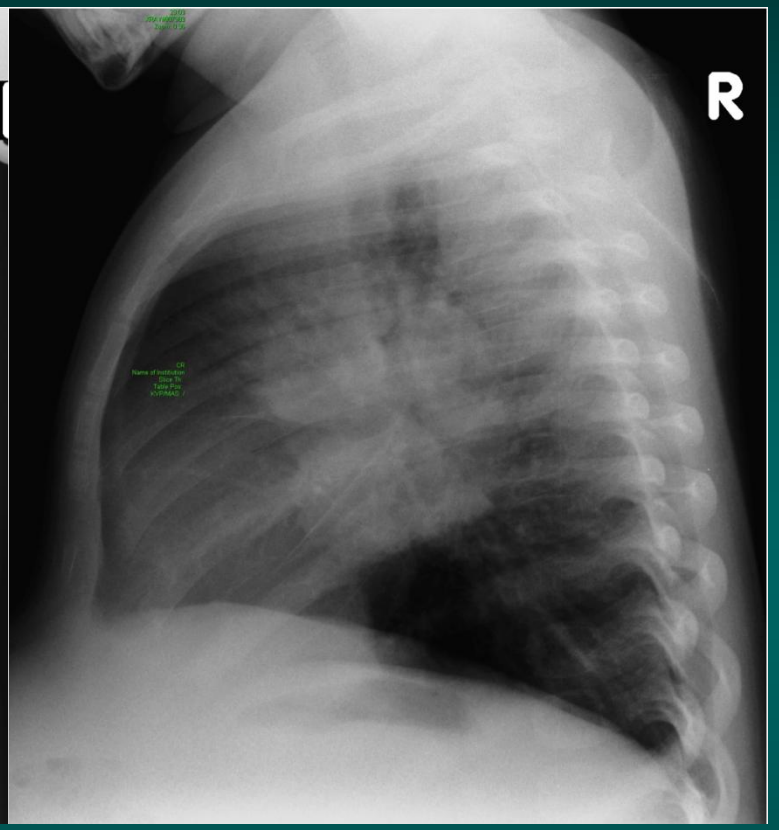


Normal hilus



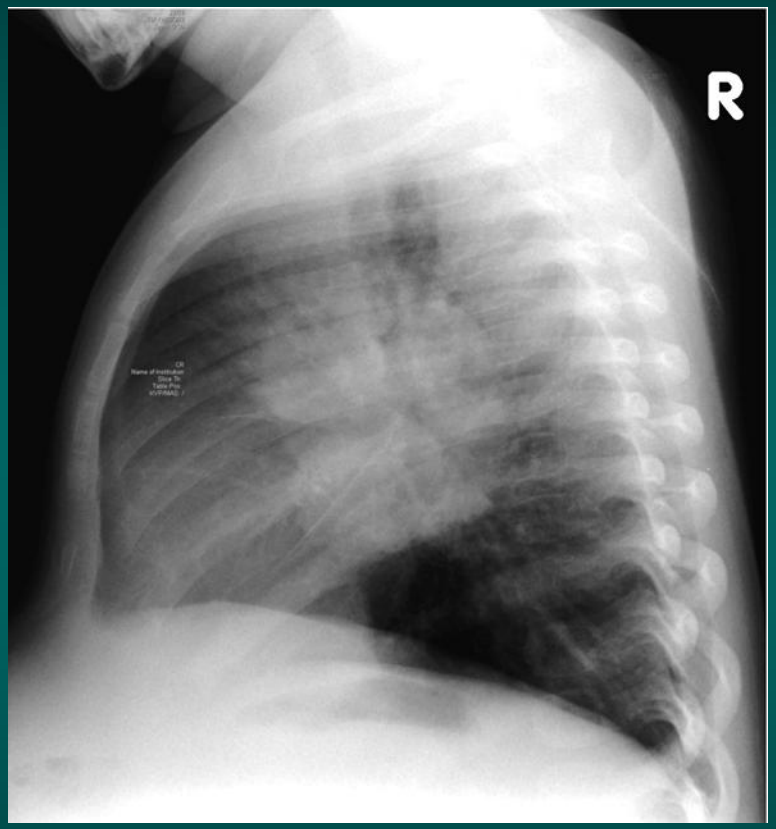
Lateral view is usefull to analyse
the involvment of the hilar and mediastinum lymph node



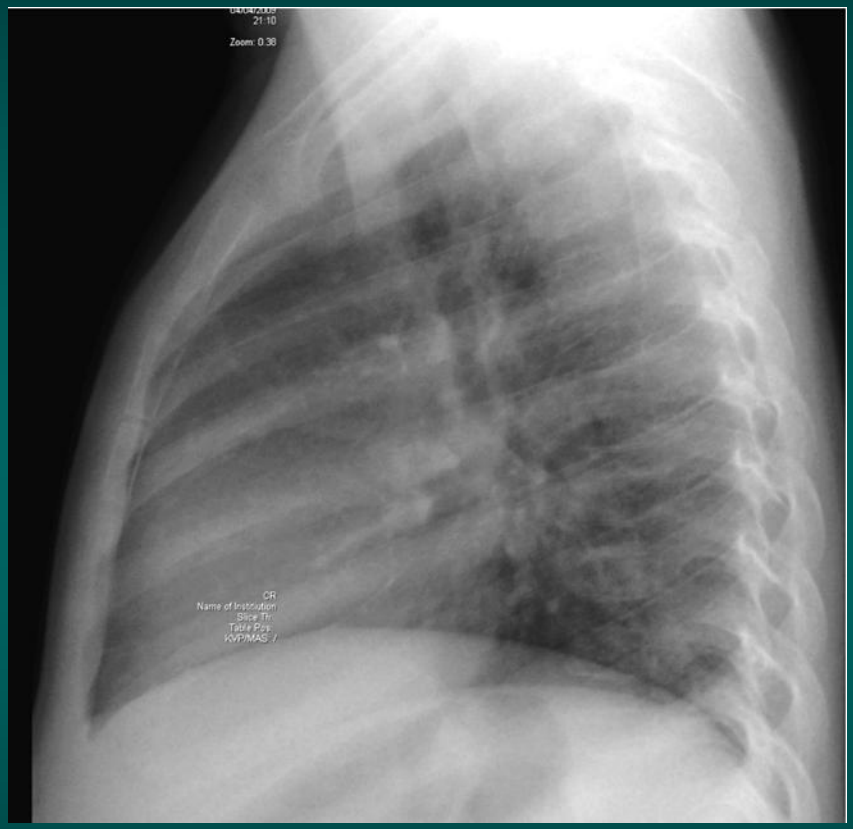


Lateral view is usefull to analyse
the involvment of the hilar and mediastinum lymph node
Especially in young children for TB adenopathies diagnosis

From Dr Pavvas AndronikouMBBCh, FCRad, FRCR, PhD



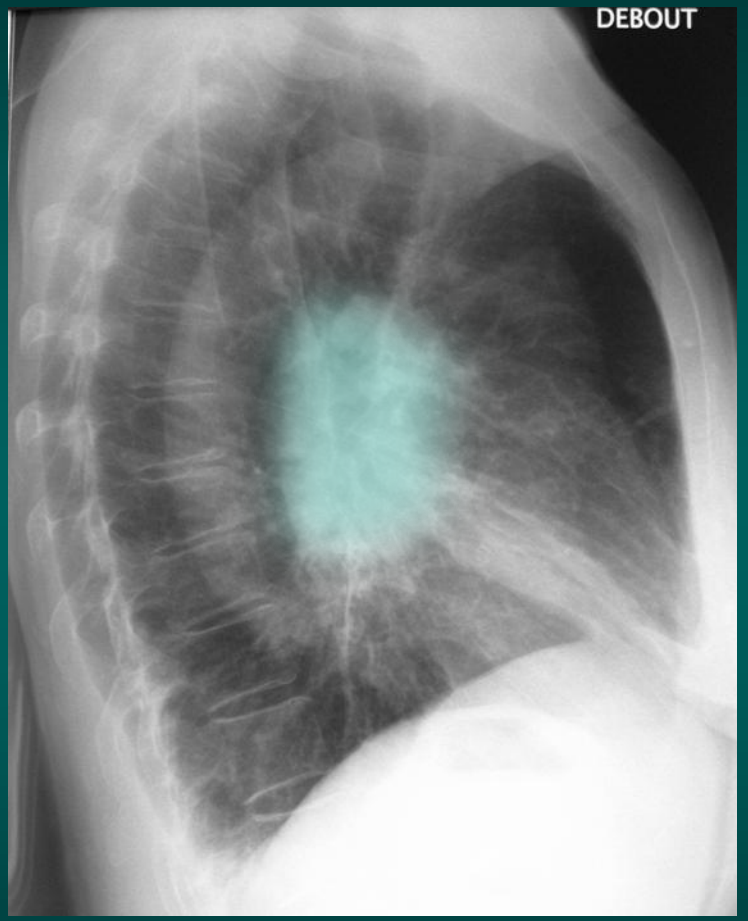
TB adenopathies



Normal lateral view

From Dr Pavvas AndronikouMBBCh, FCRad, FRCR, PhD


DEBOUT


DEBOUT

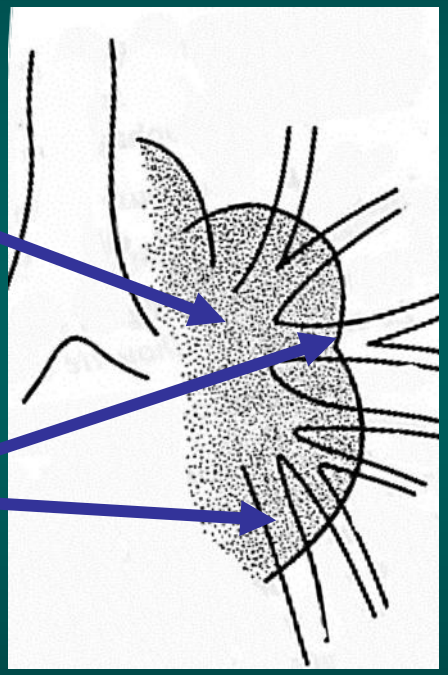
Normal lateral view

Overlap by anterior or posterior opacity

Opacitty overlaping the hilus

Normal vessels are visible through

The opacity



The hilus is overlapped by

- a posterior mass
- or an anterior lmass

(posterior or anterior overlap)

Lateral view is helpfull for diagnosis.

Right hilar adenopathy ?

Posterior overlap sign: right hilar opacity. The pulmonary artery is visible through the opacity, which does not erase the heart contour: This opacity is posterior. On front view this opacity could also suggest adenopathy. Lateral view make correct diagnosis: posterior mass (cancer)

When you doubt about hilar opacity
Ask for the lateral view

Left hilar opacity.
Adenopathy or not?

Posterior overlap sign: left hilar opacity. The pulmonary artery is visible through the opacity, which does not erase heart contour: This opacity is posterior.

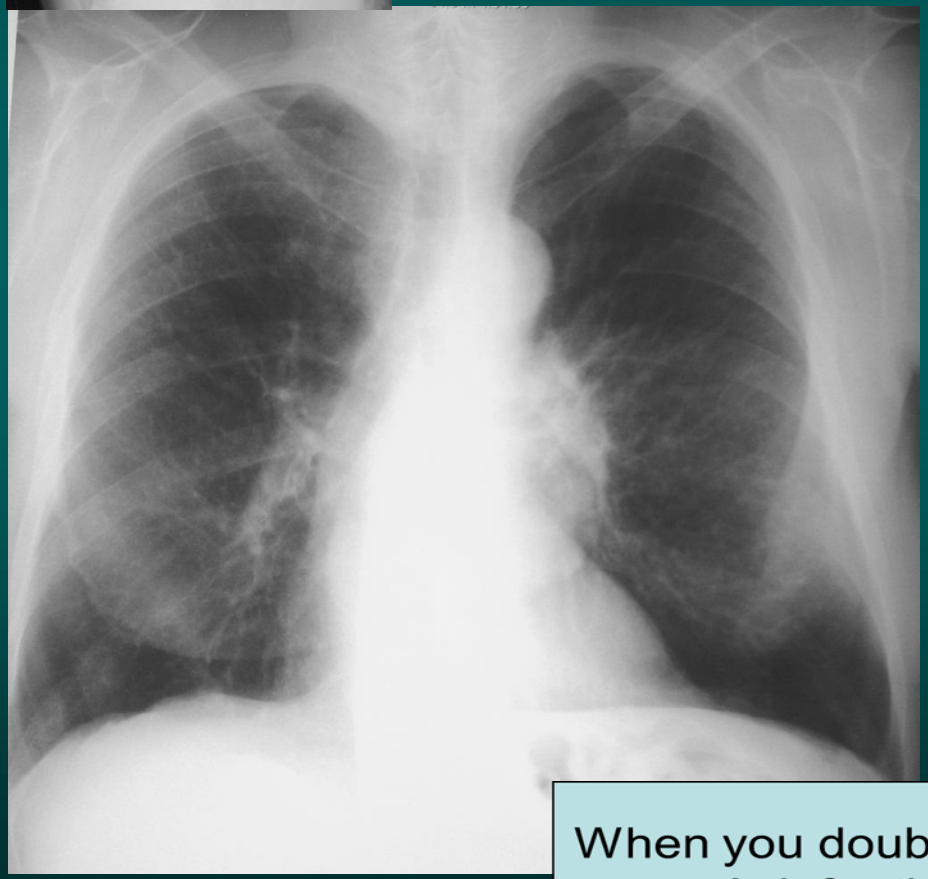
When you doubt about hilar opacity
Ask for the lateral view

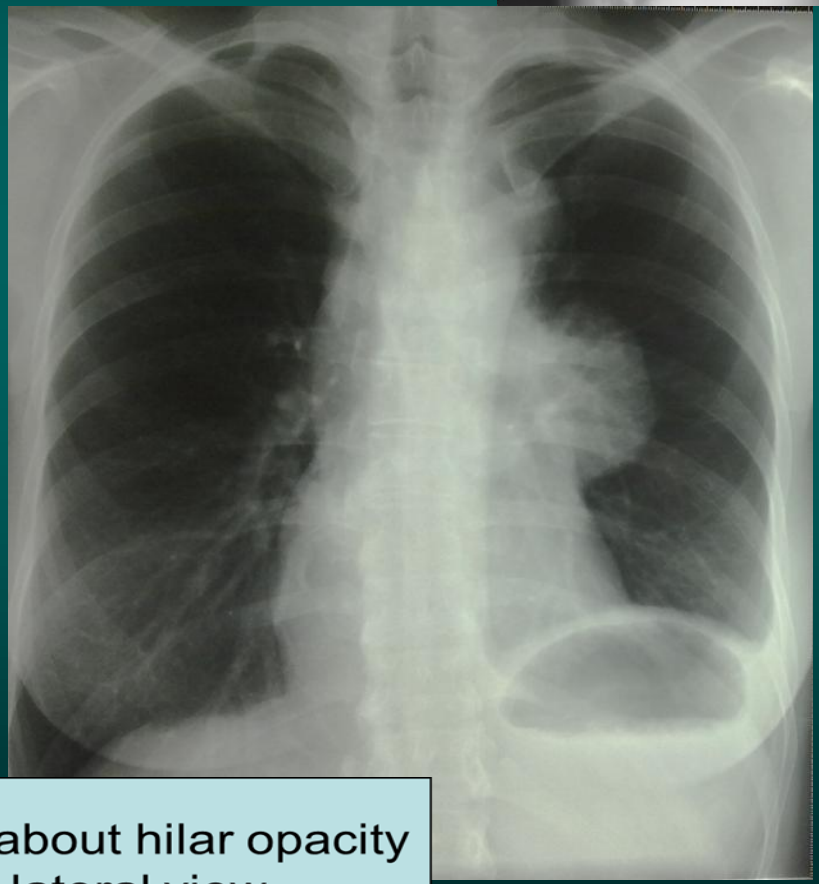
Left hilar opacity,
Adenopathy? Anterior mass?
Posterior mass?

Anterior overlap: Pulmonary artery is visible through the opacity. Cardiac edge is erased : anterior opacity, with filling of the retro sternal space on lateral view

Posterior overlap

Anterior overlap





When you doubt about hilar opacity
Ask for the lateral view