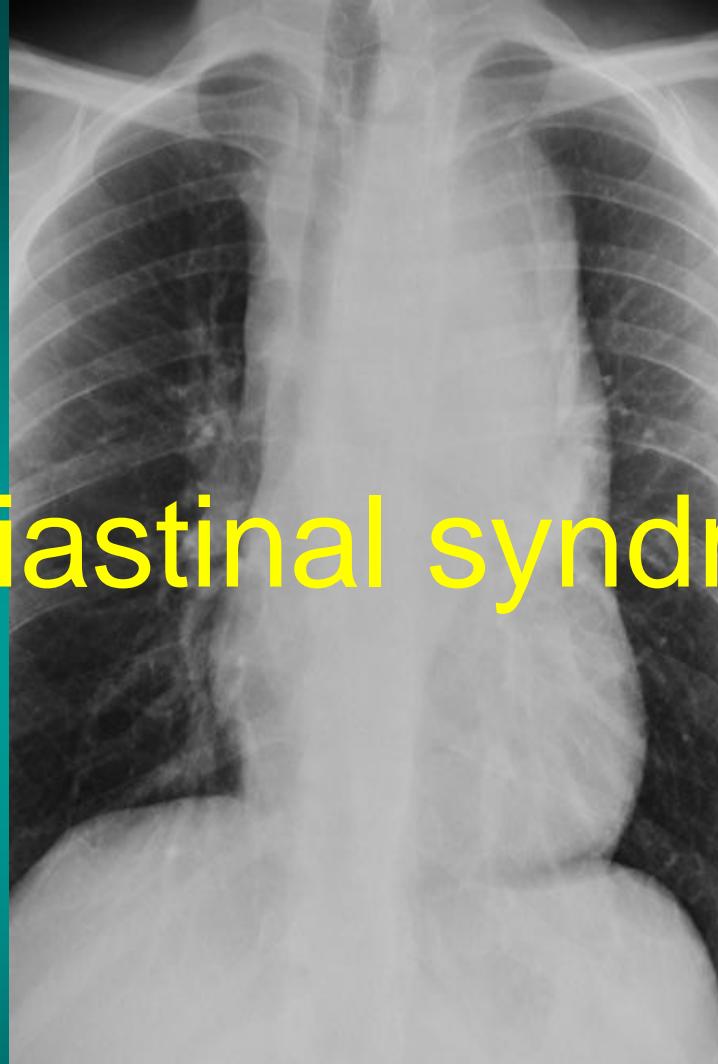




Soutien pneumologique international
International support for pulmonology



Mediastinal syndrome

Etienne Leroy Terquem – Pierre L'Her
SPI / ISP

Soutien Pneumologique International / International Support for Pulmonology

Mediastinum , anatomic recall

Space between the 2 lungs containing :

- The heart
- The big vessels (aorta, veina cava...)
- Oesophagus
- Nerves
- Nodes

Technical conditions to make a good analysis of mediastinum on a CXR:



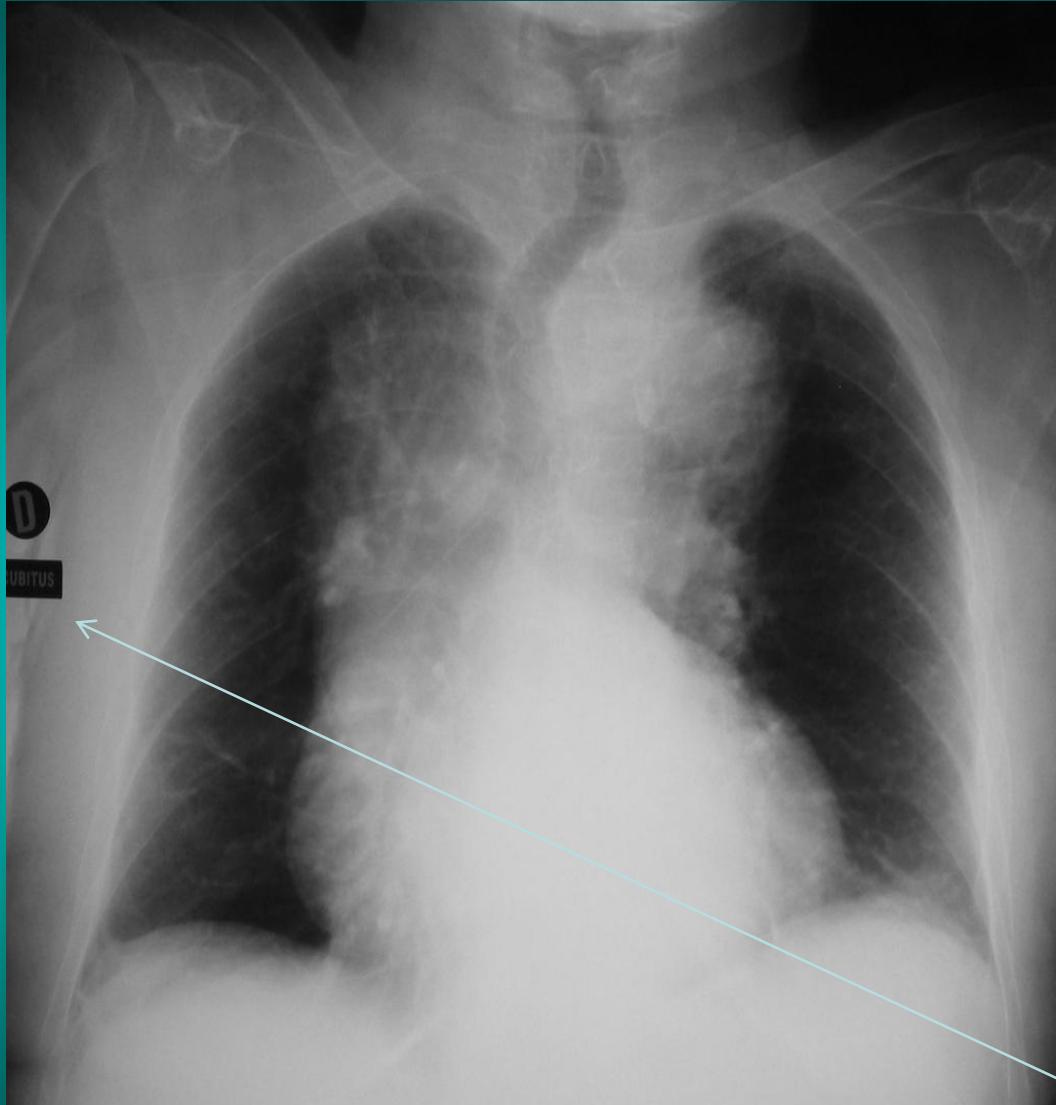
- correct inspiration : 9 posterior rib arches visible above the diaphragm (or 6 anterior rib arches above diaphragm)
- strictly front view :spinal line in the middle of the clavicle internal limits
- Postero anterior incidence of the X ray beam
- Adequat penetration / contrast

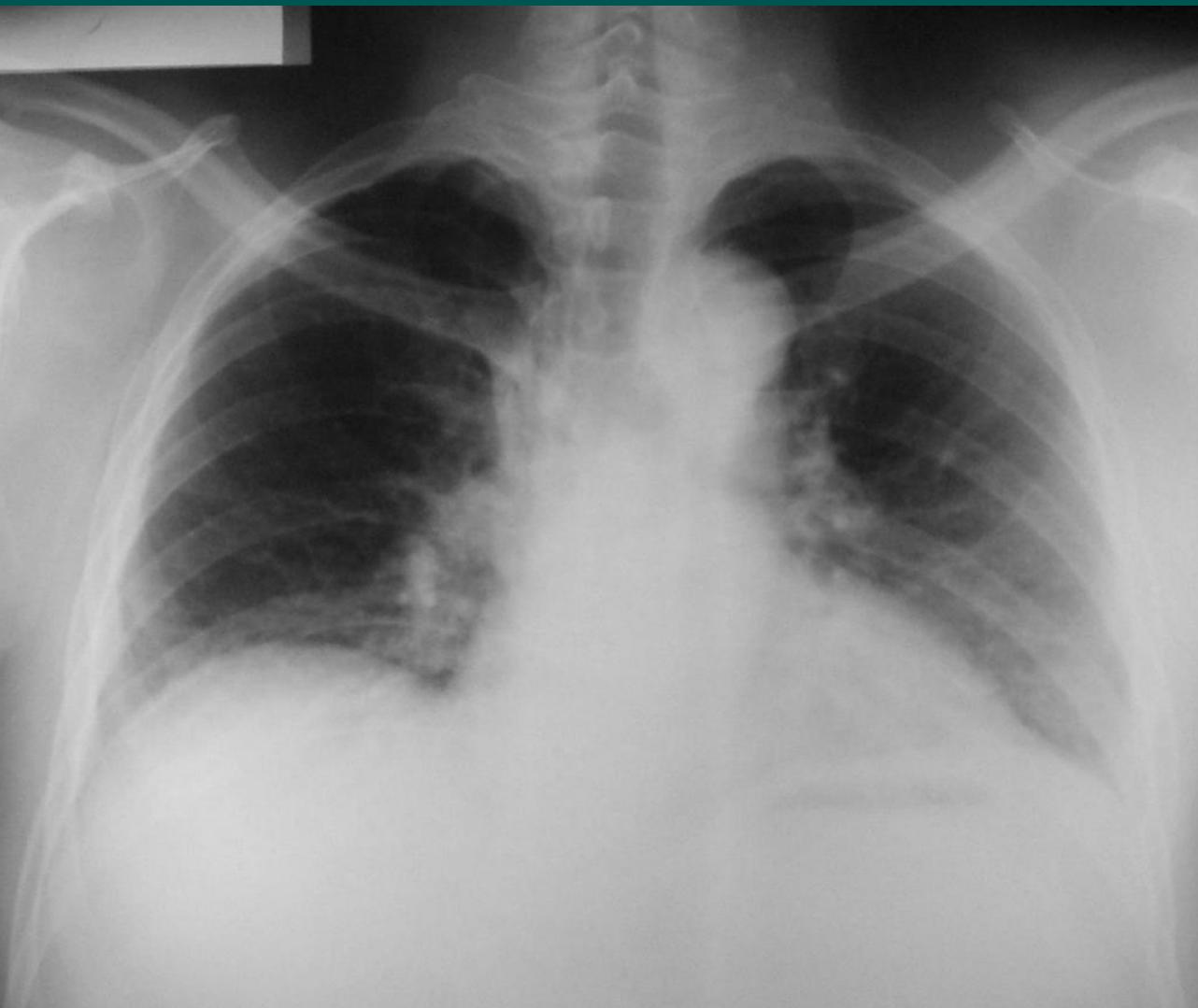
This is a trap picture:

The first impression is that mediastinum is enlarged. It is wrong because in this case the CXR has not been made in optimal condition: old woman with cyphoscoliosis and too tired to stand up: cxr in decubitus position.

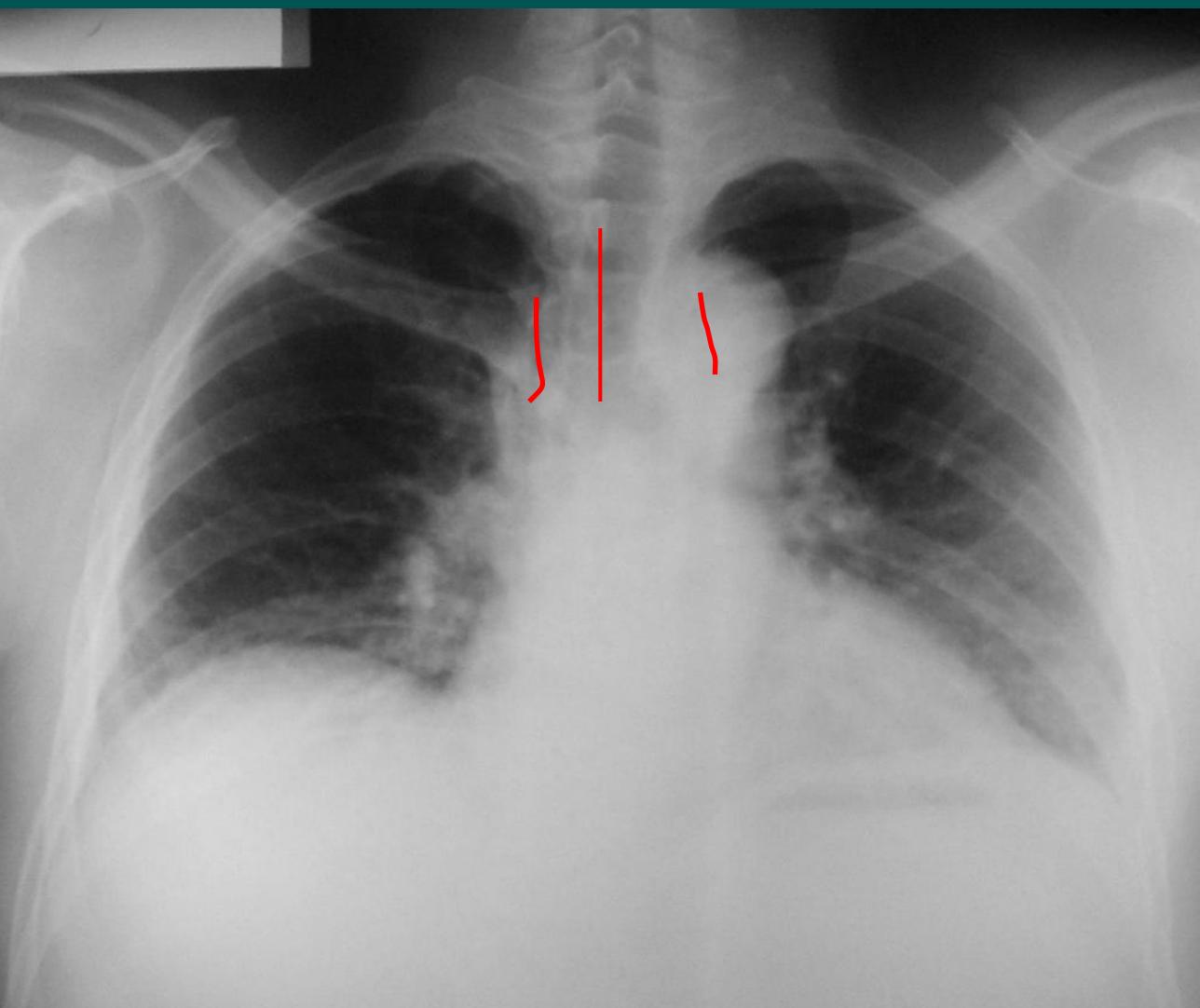
The consequence is a false enlargement of the mediastinum with overlap of the 2 hilus areas

(notice that the position of the patient has been notified on the right edge of the cxr)



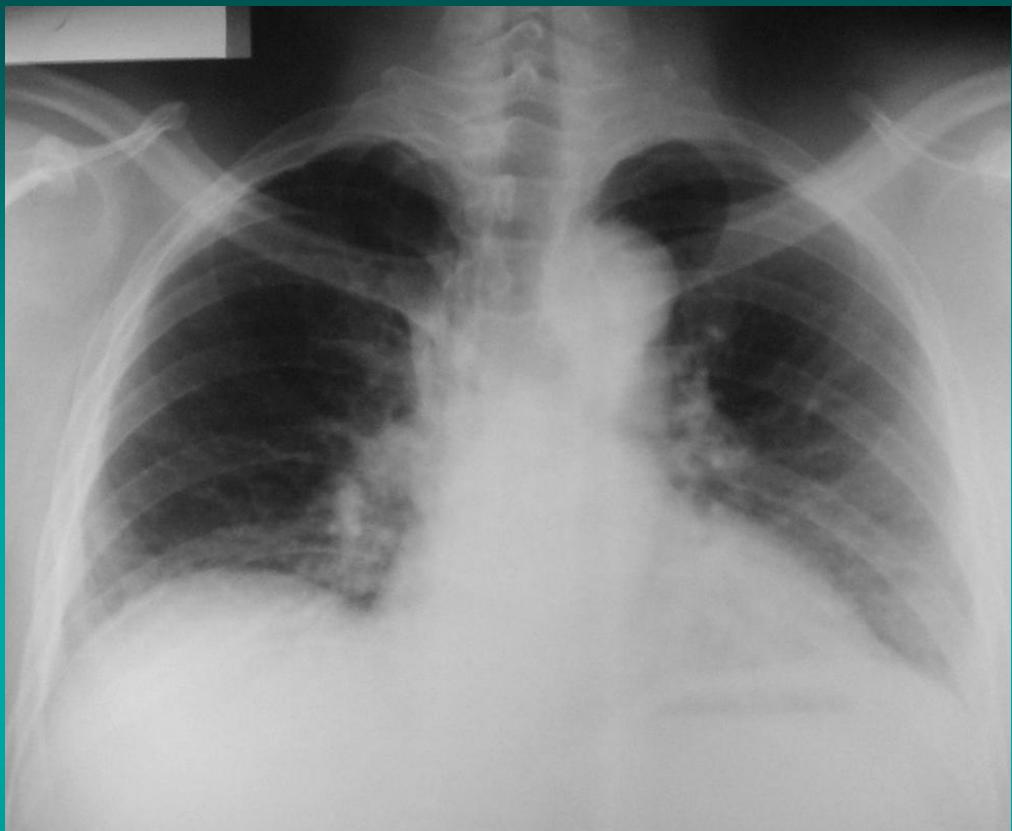


Is there a mediastinum enlargement?



This a trap picture:
false enlargement of the
mediastinum area, because
non complete inspiration.
(only 7 posterior ribs arches
visible above the
diaphragm. They should
be minimum 9) .

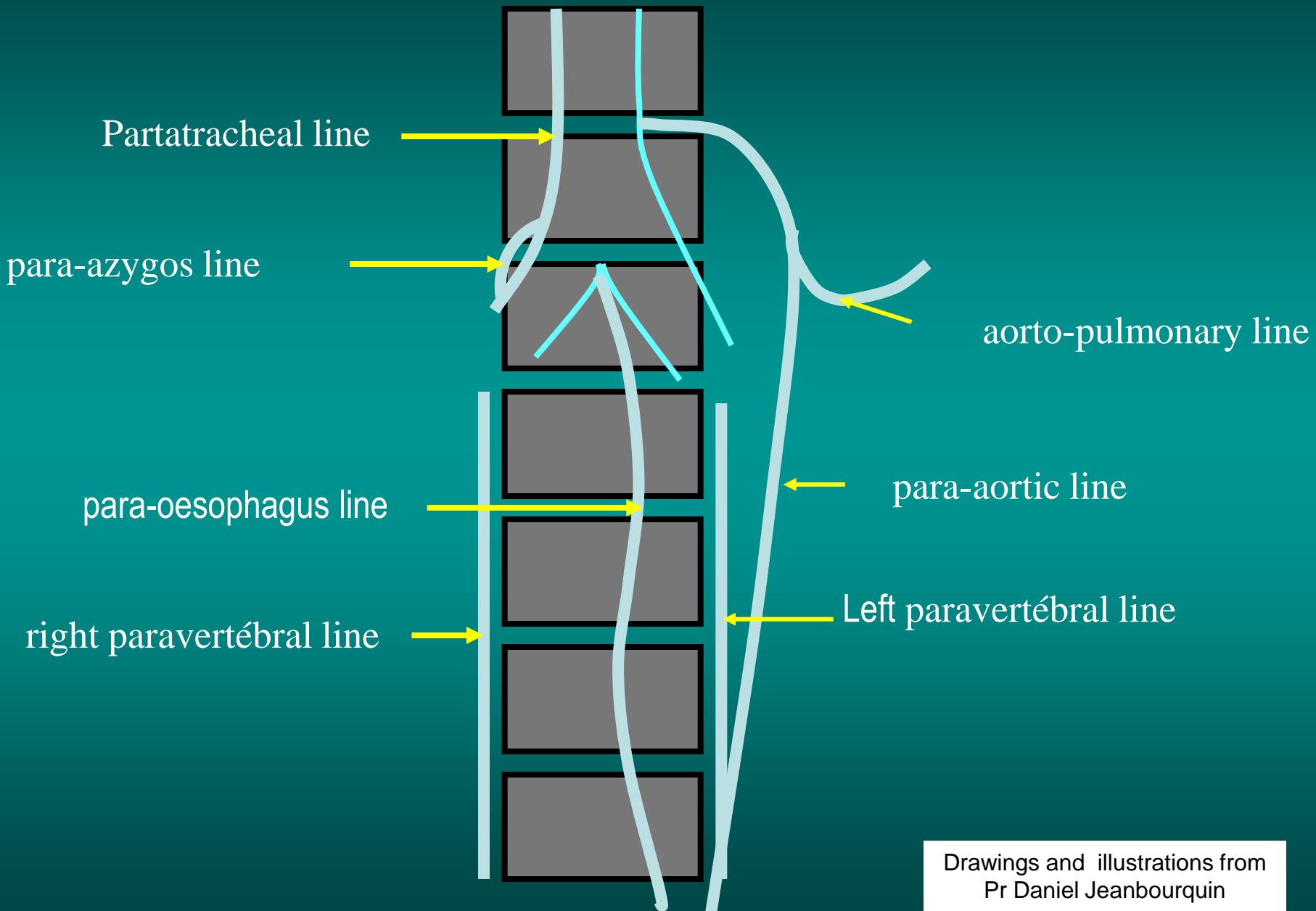
The incidence is not strictly
a front view
(the spinal cord line is not
strictly in the middle of the
clavicles internal limits)
which contribute to false
mediastinum enlargement

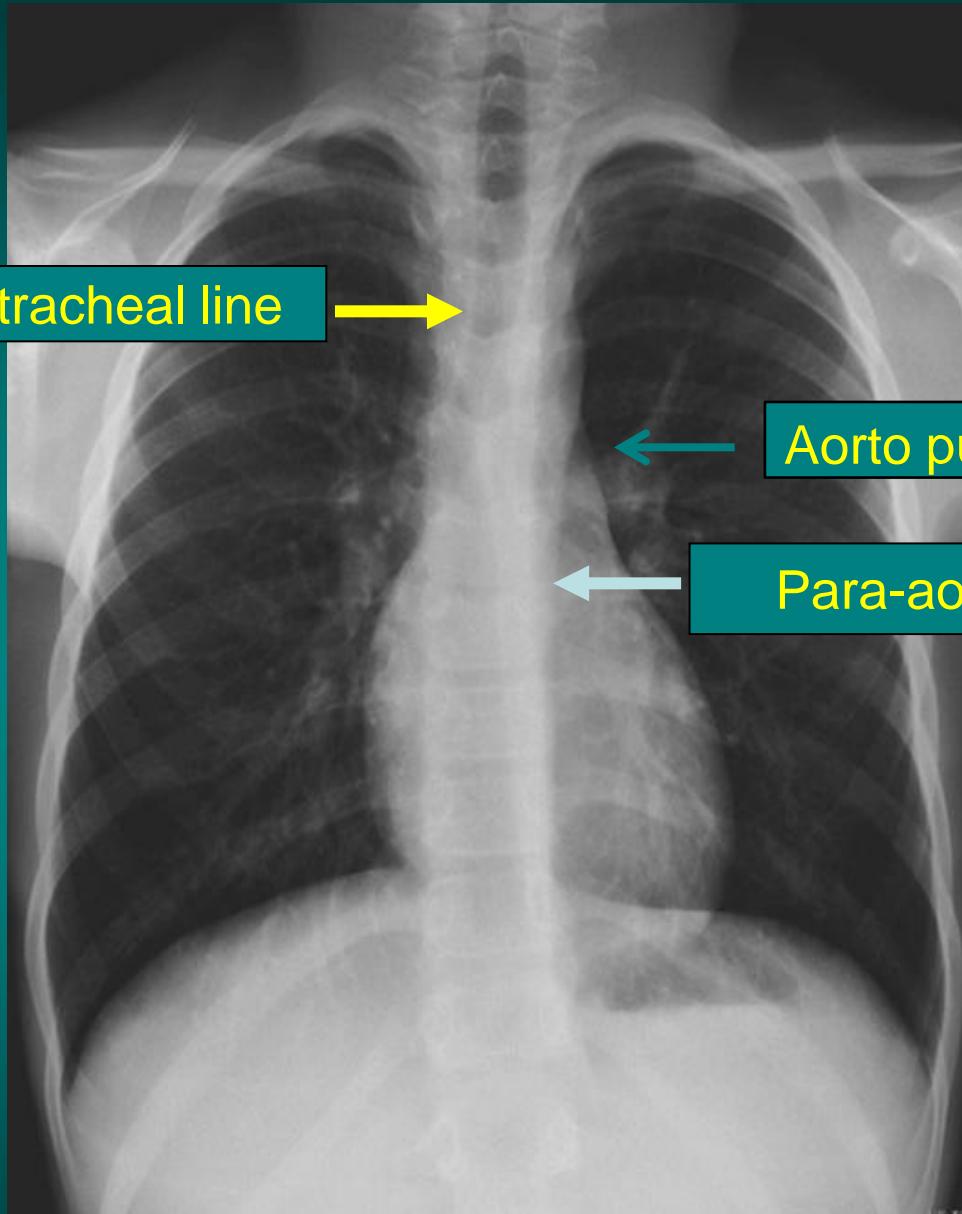


Good quality CXR:

- correct inspiration : 9 posterior rib arches visible above the diaphragm
(or 6 anterior rib arches above diaphragm)
- strictly front view :spinal line in the middle of the clavicle internal limits

Mediastinum lines





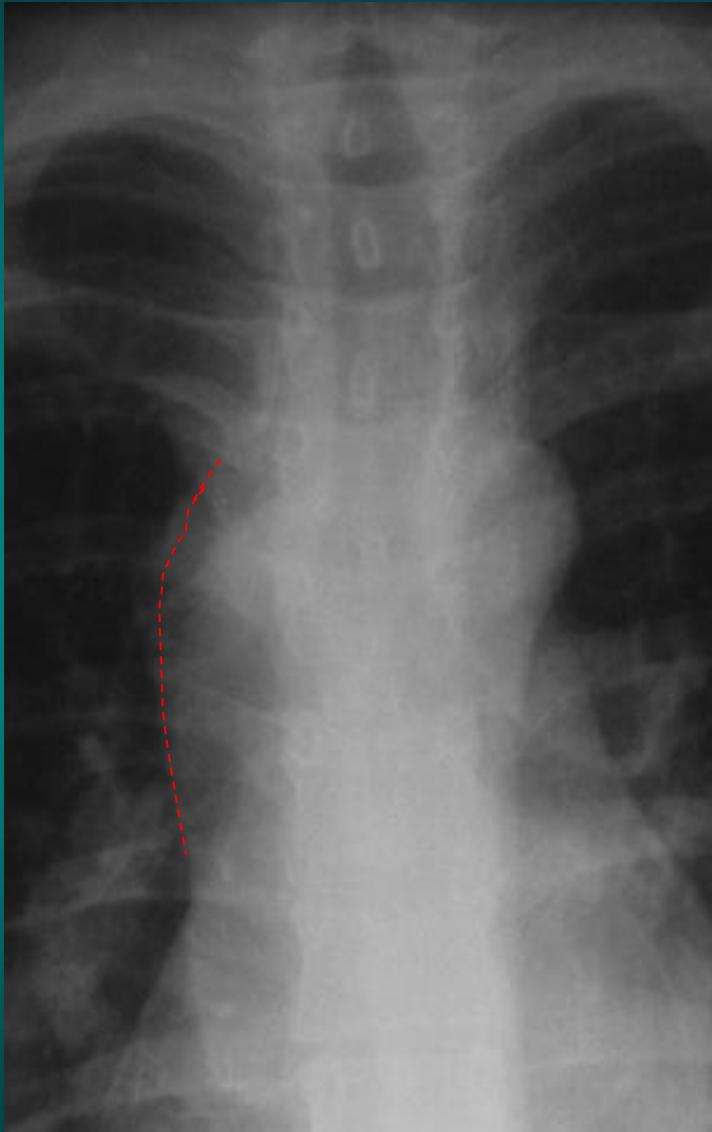
Right paratracheal line

Aorto pulmonary line

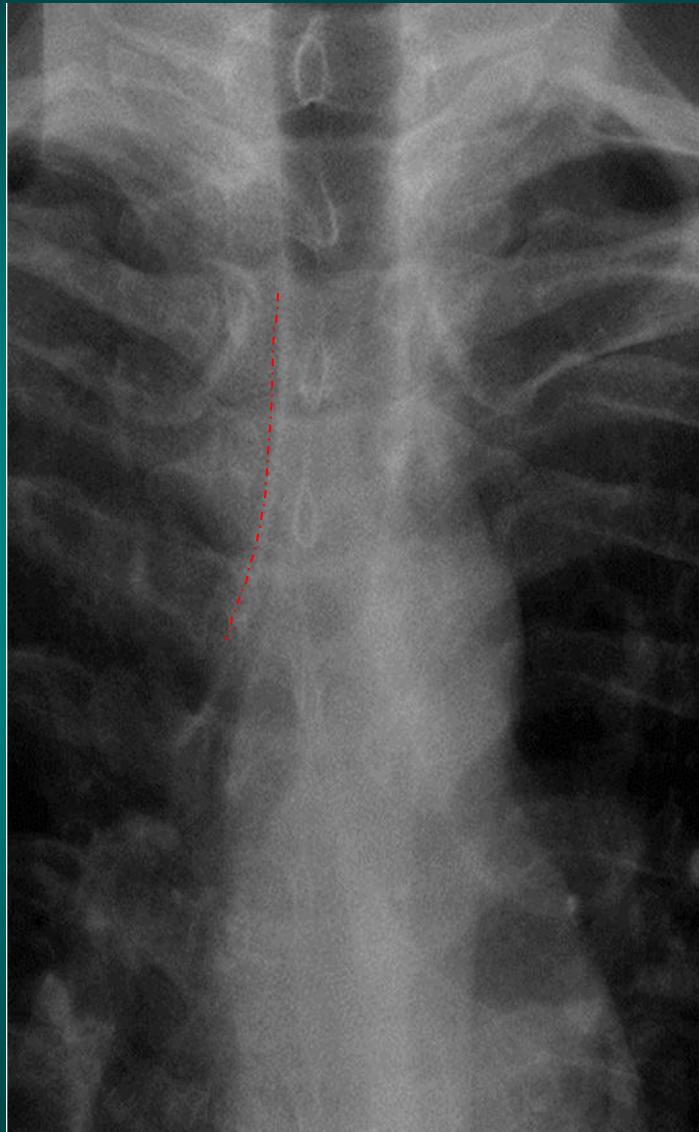
Para-aortic line

Three of them are really important.

Right paratracheal line

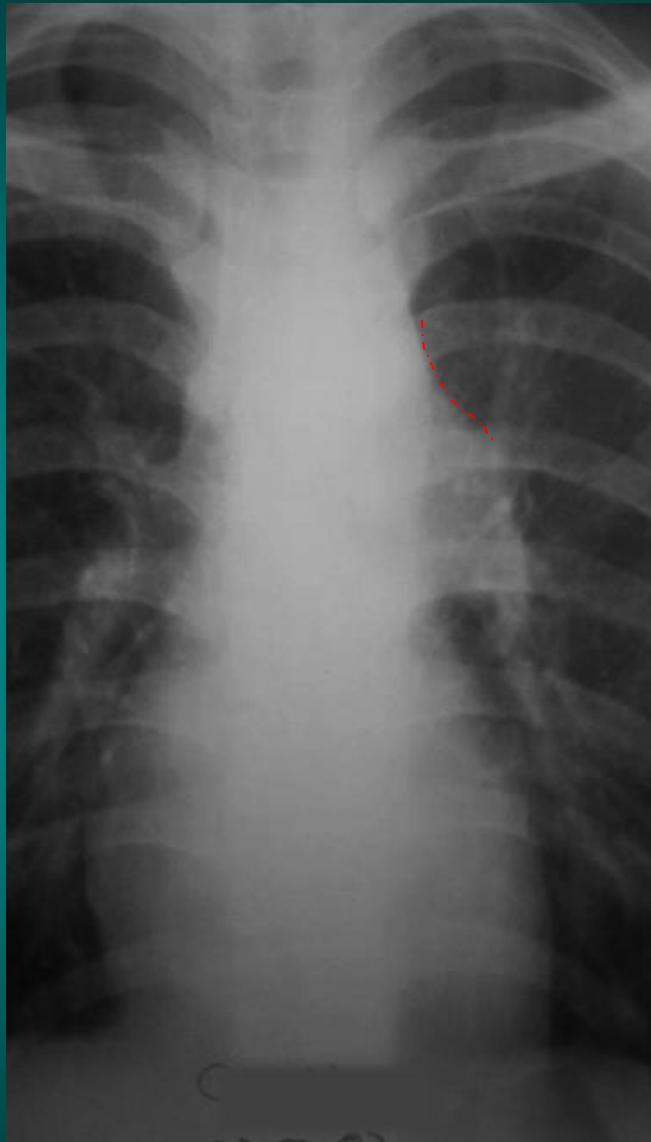


TB adenopathy in the latero-tracheal area

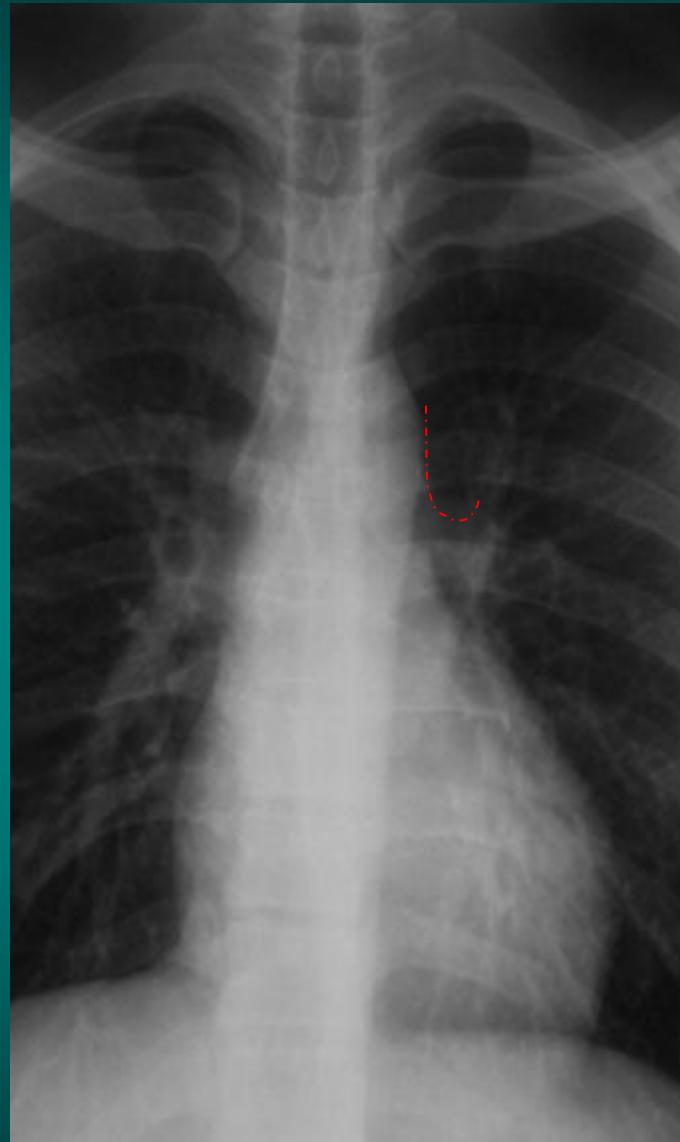


Normal CXR

Aorto pulmonary line

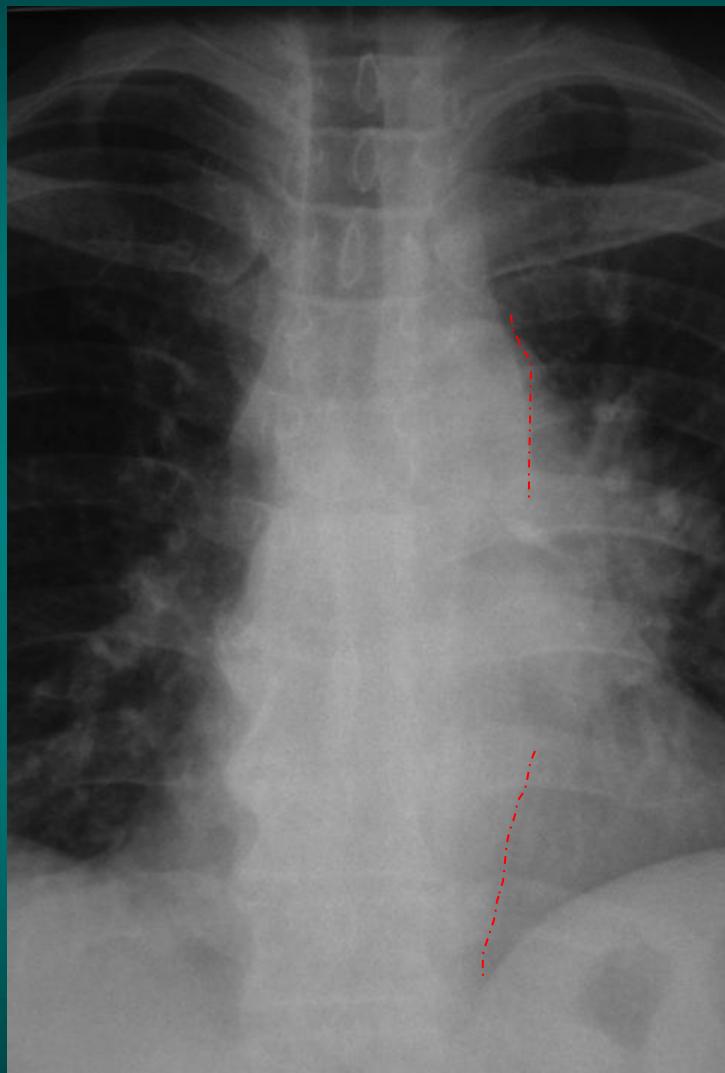


Adenopathy in aorto pulmonary window

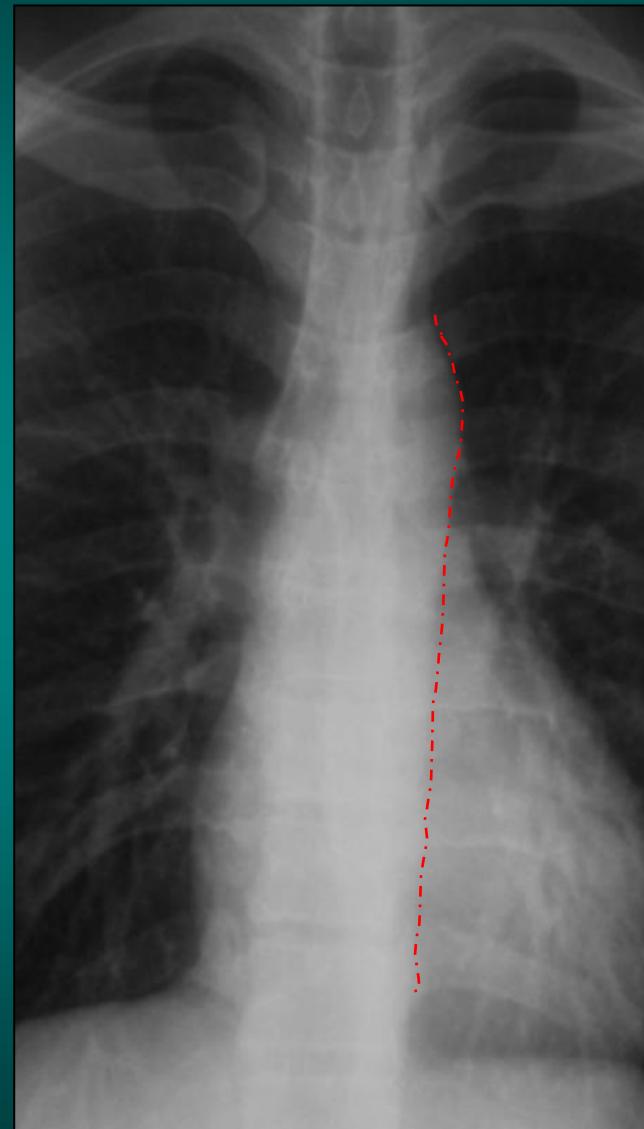


Normal CXR

Para-aortic line



Bronchial cancer in contact with descending aorta (positive silhouette sign)



Normal CXR

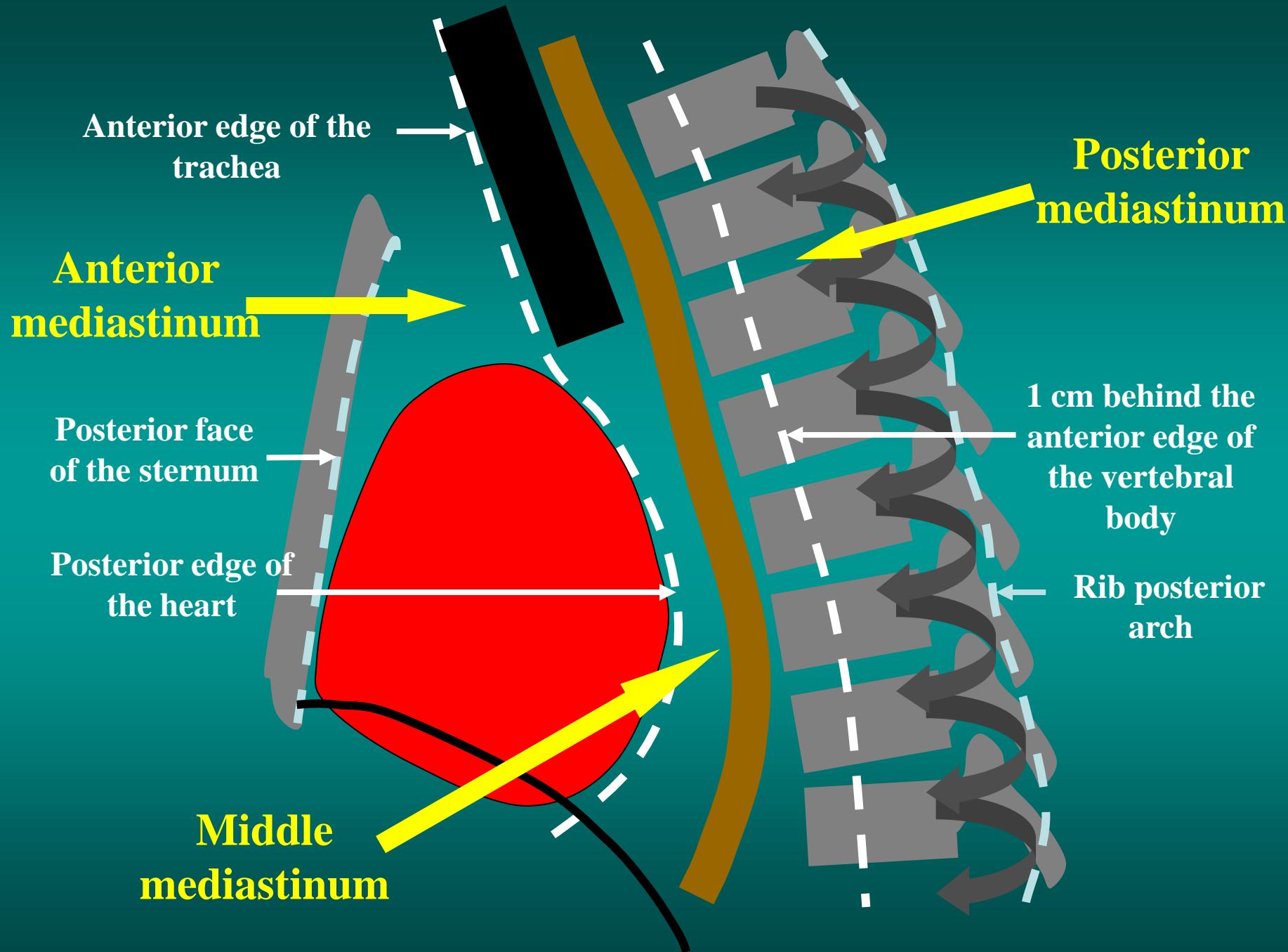
Division of the mediastinum

The different compartments

(Felson classification)

**For each compartment
Specific etiologies**

illustrations from
Pr Daniel Jeanbourquin. France



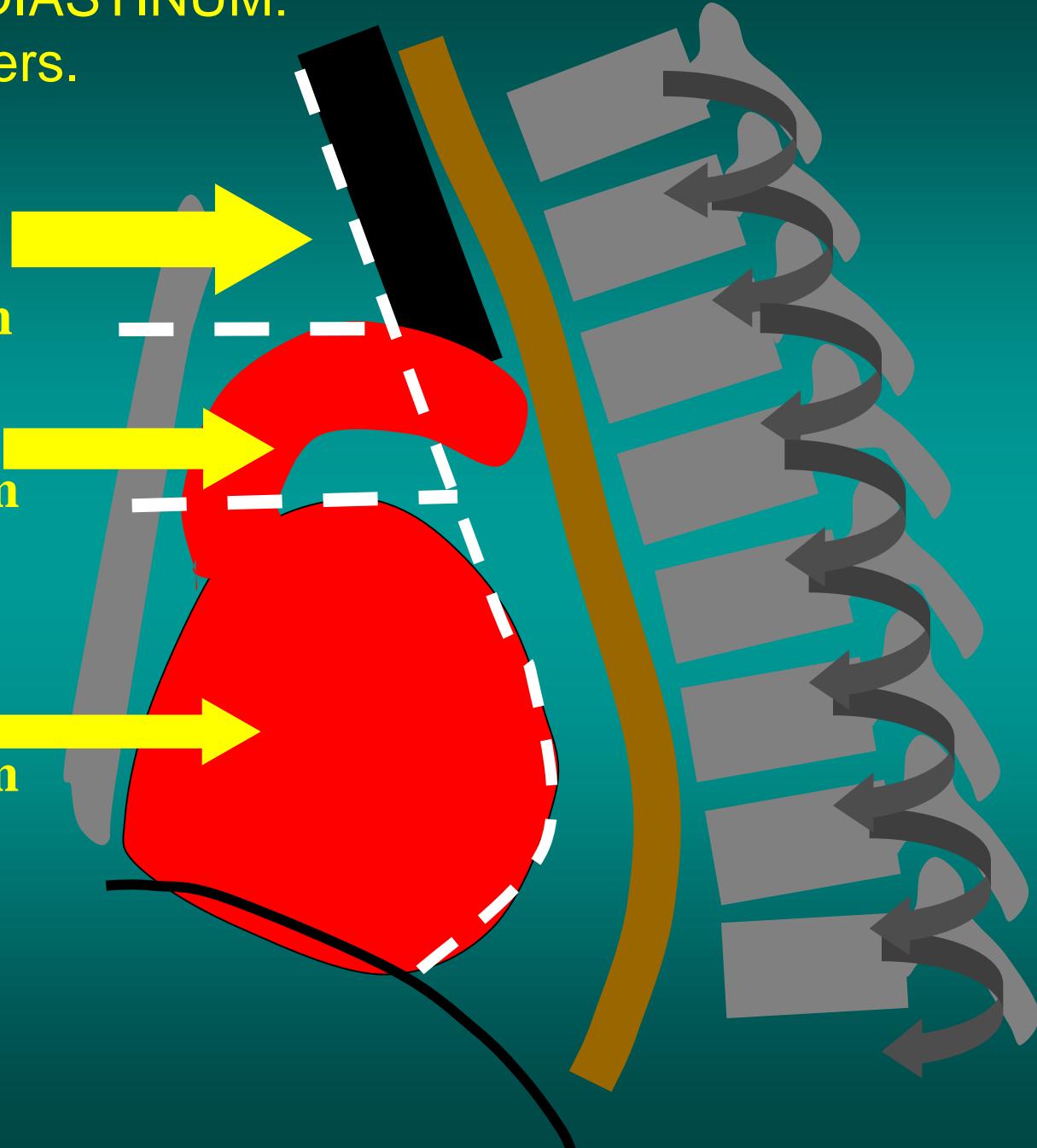
ANTERIOR MEDIASTINUM:

Three tiers.

Superior
mediastinum

Middle
mediastinum

Inferior
mediastinum



ANTERIOR MEDIASTINUM

Endothoracic goitre

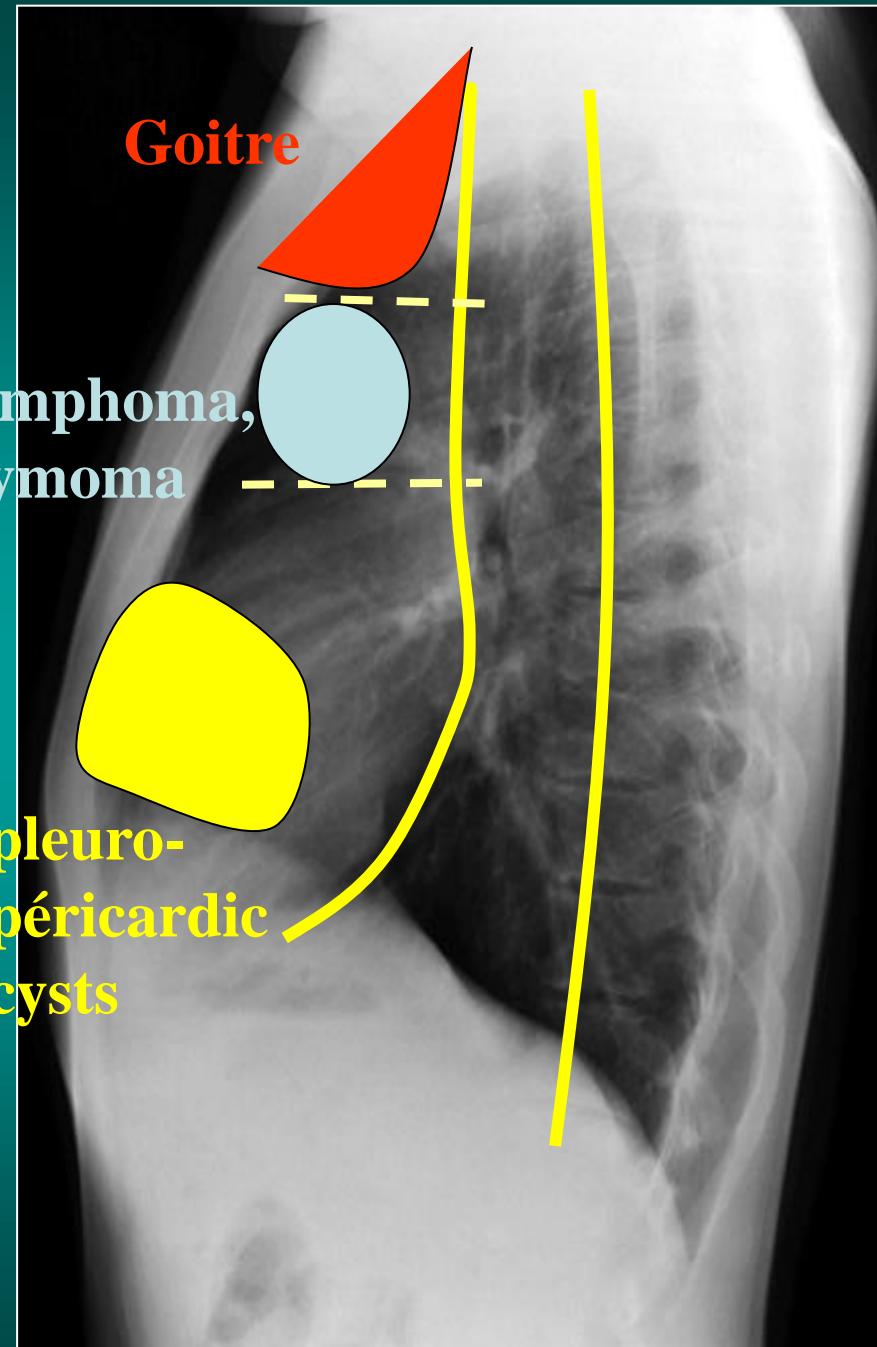
Lymphoma

Thymoma

germinal tumors

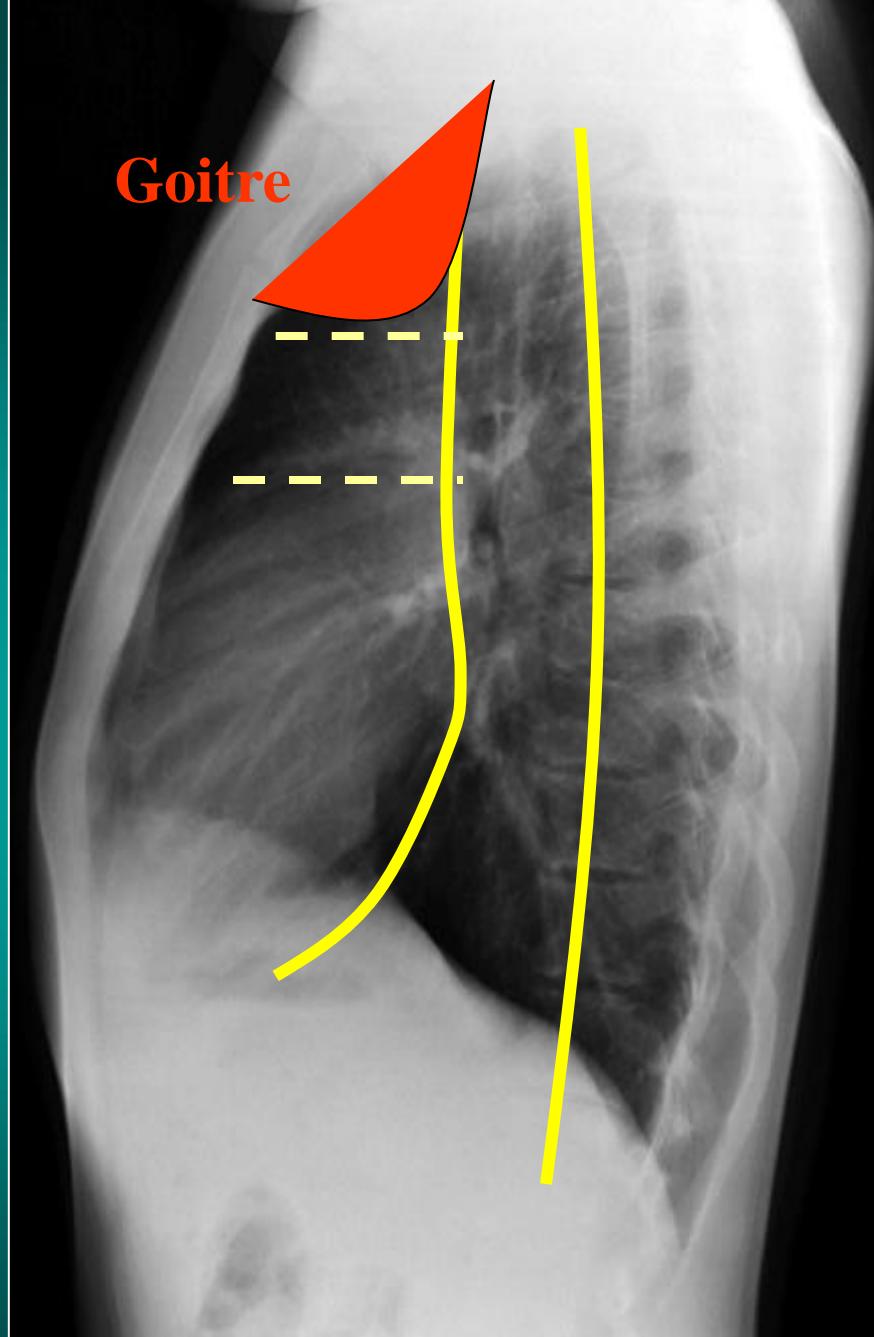
Ascending aortic
aneuvrysm

Pleuro-pericardic cysts
trans diaphragmatic
hernia

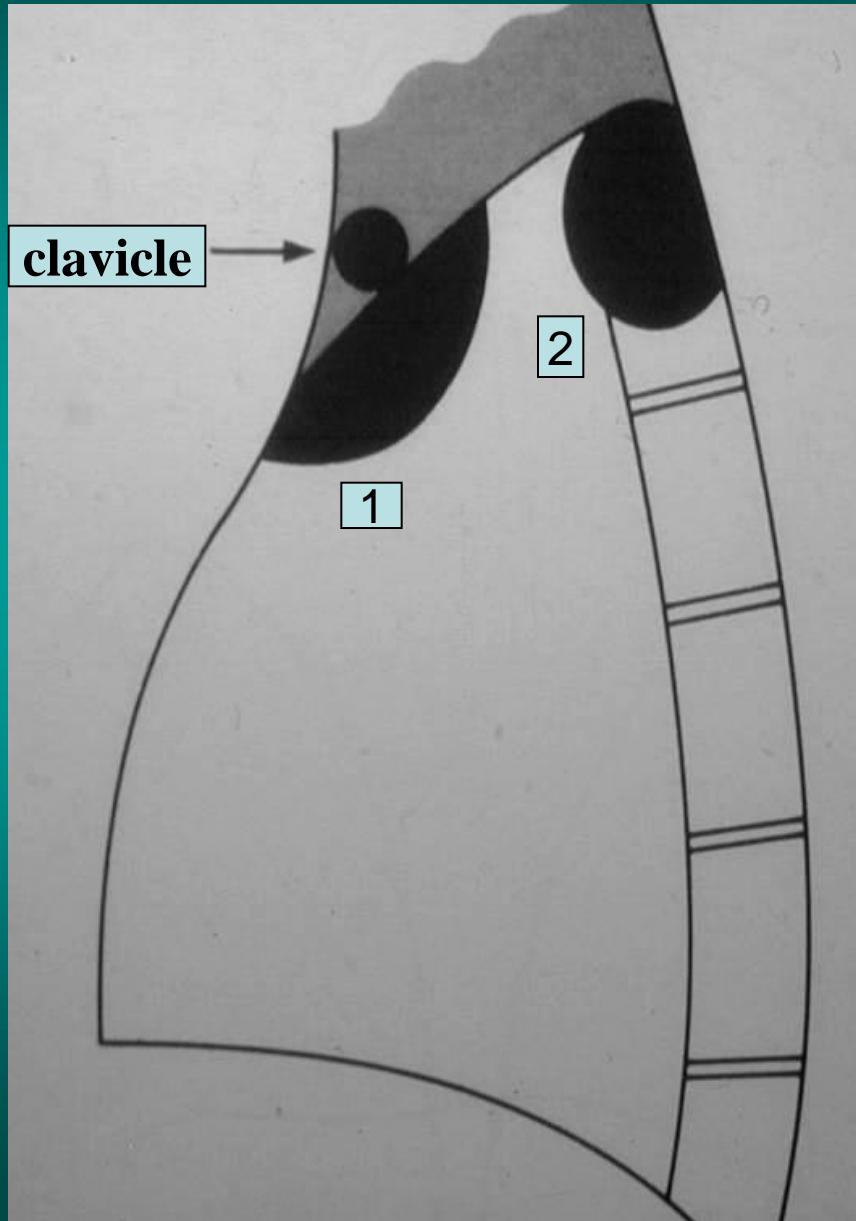
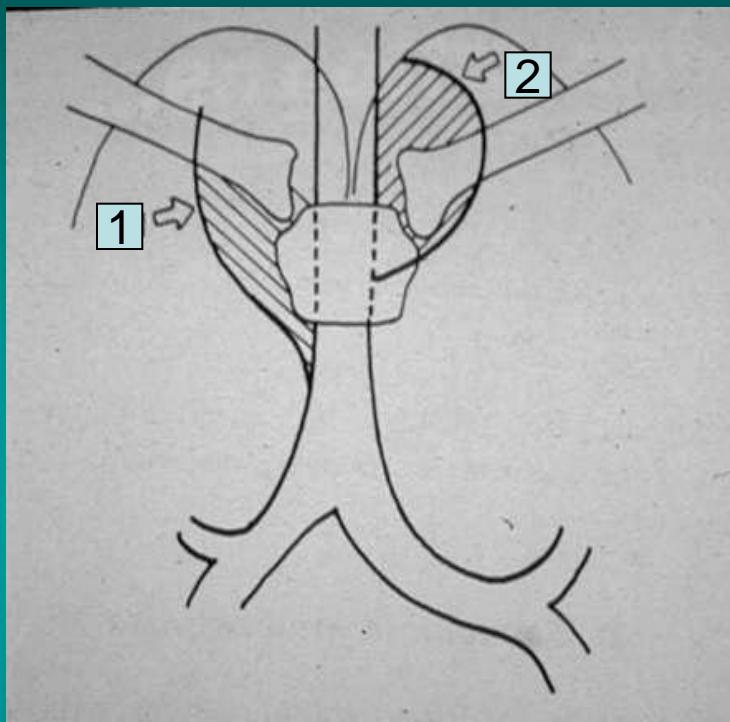


ANTERIOR MEDIASTINUM superior tier

Endothoracic goitre

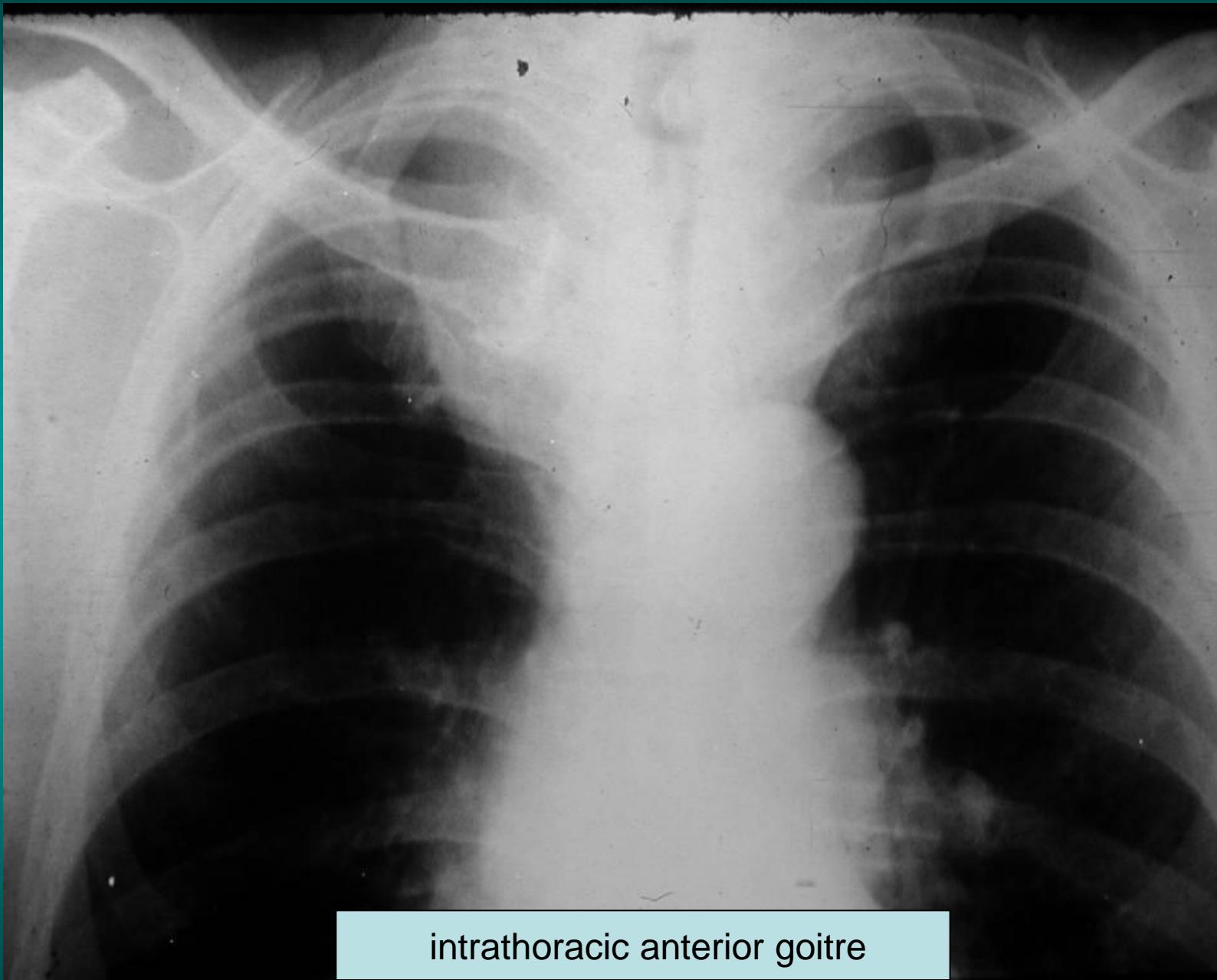


Application of the silhouette sign: The cervico-thoracic pass sign

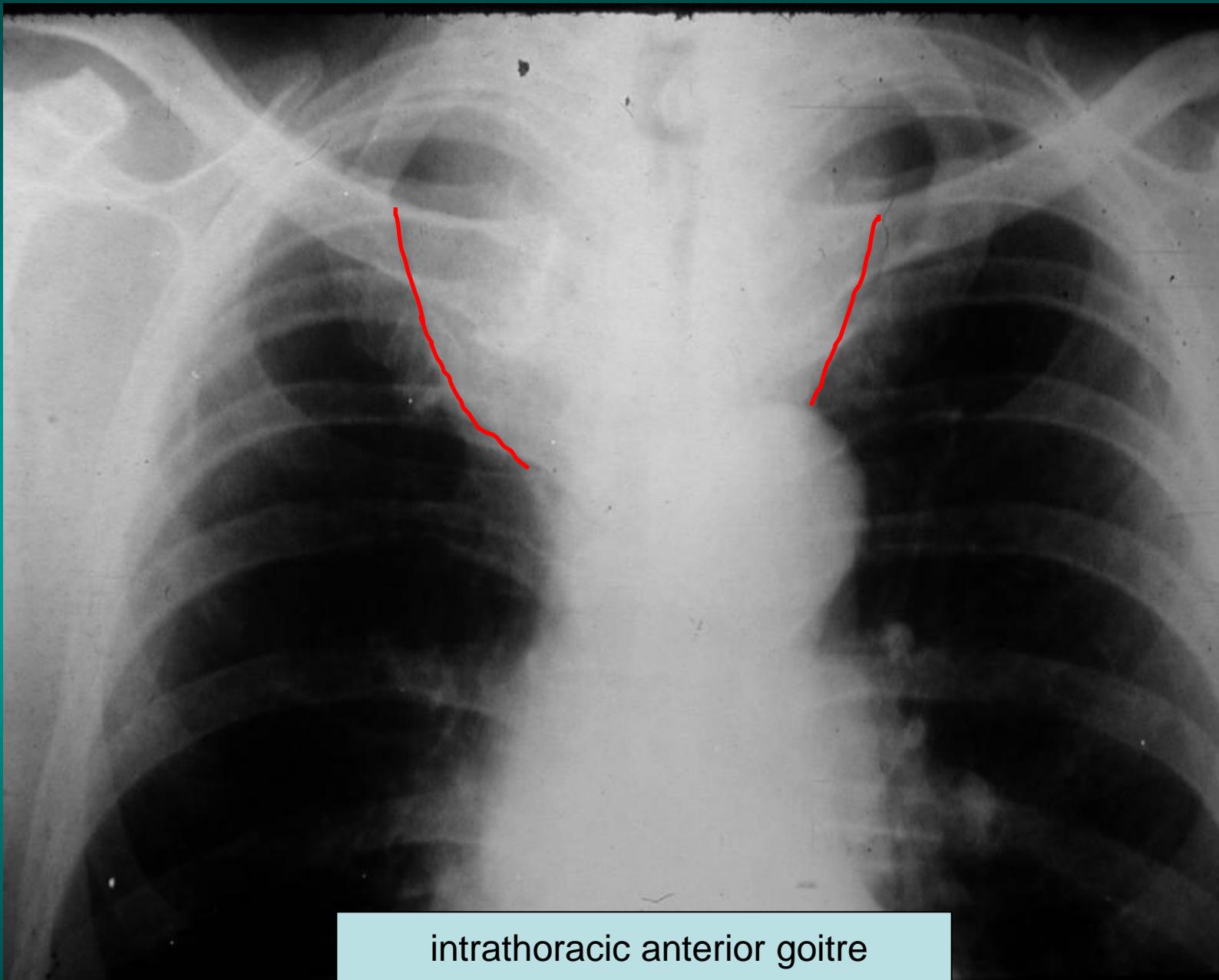


1: The external and superior contours of the mediastinal opacity disappear above the clavicles. This sign means that the opacity is anterior in the superior mediastinum

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

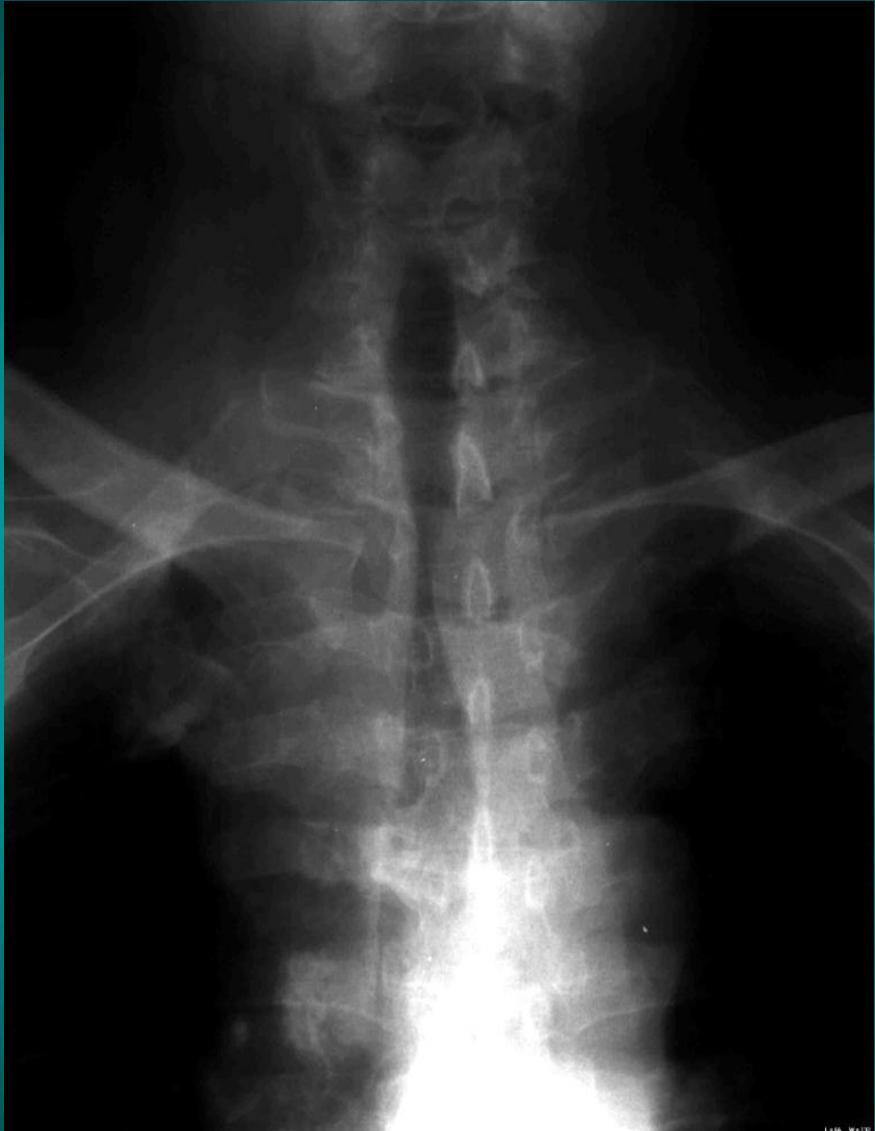


intrathoracic anterior goitre



intrathoracic anterior goitre

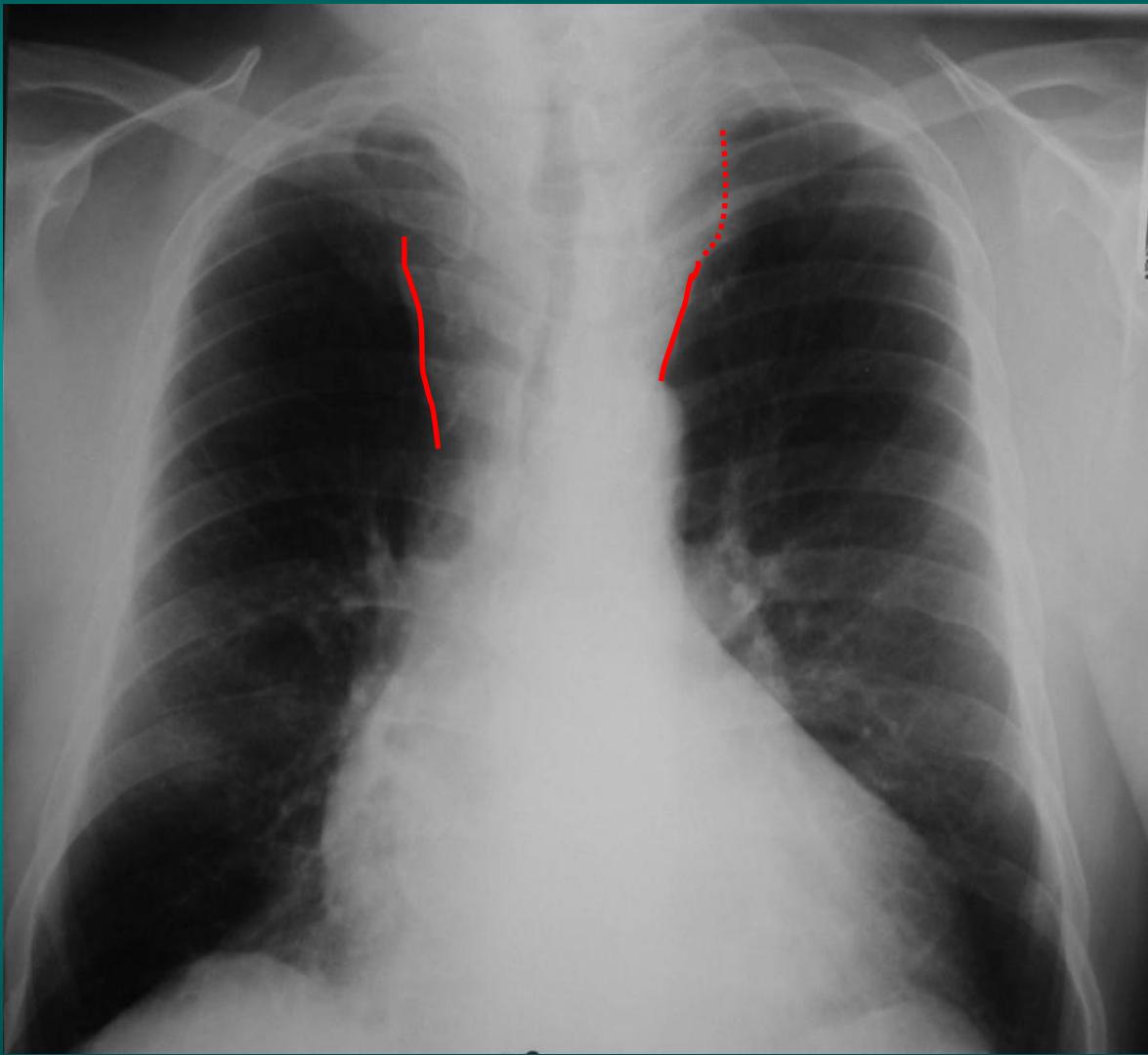
intrathoracic goitre
(compression of the
trachea: main complication
of intra thoracic goiter)



anterior intrathoracic goitre with tracheal compression

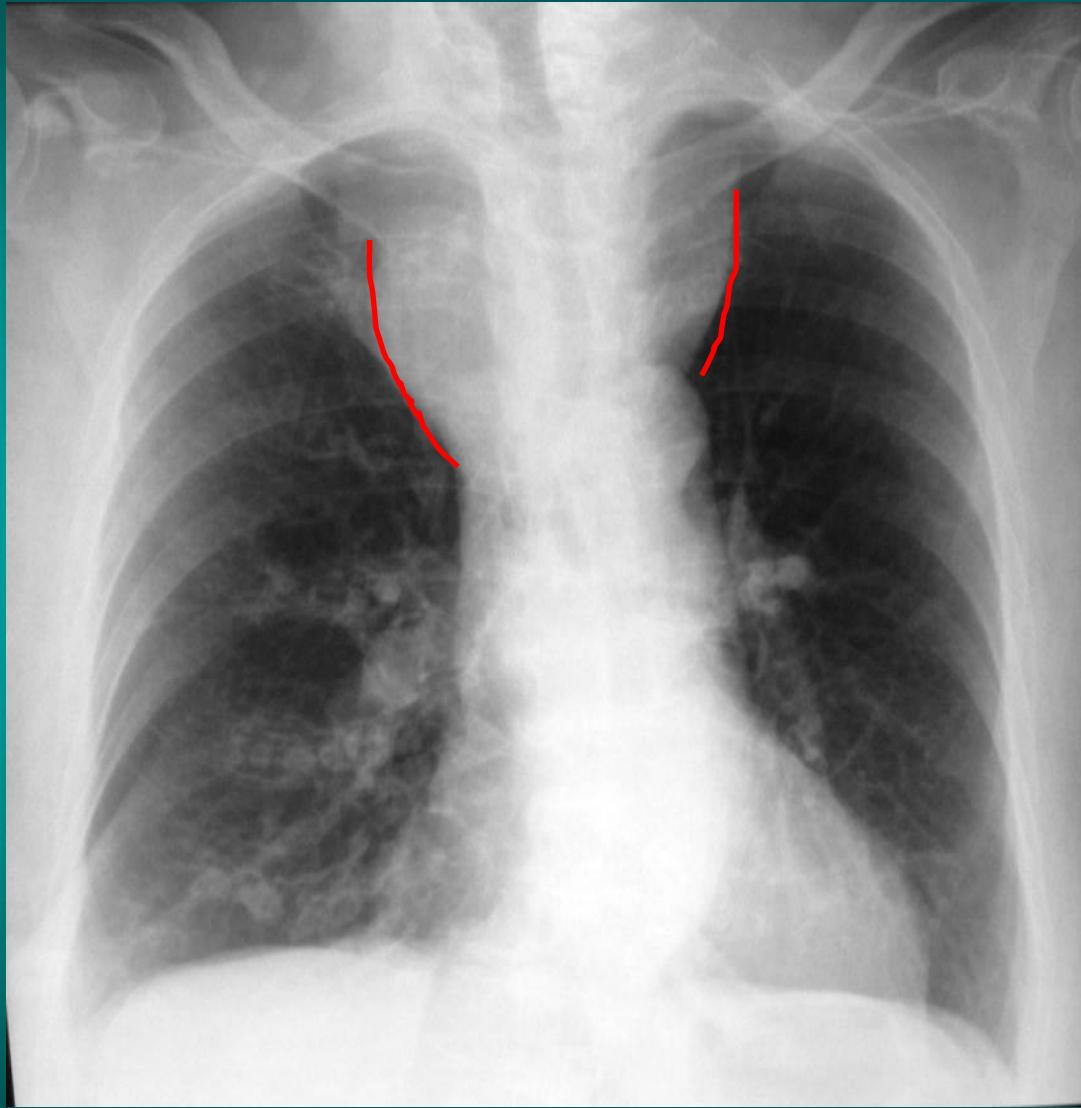


anterior intrathoracic goitre with tracheal compression





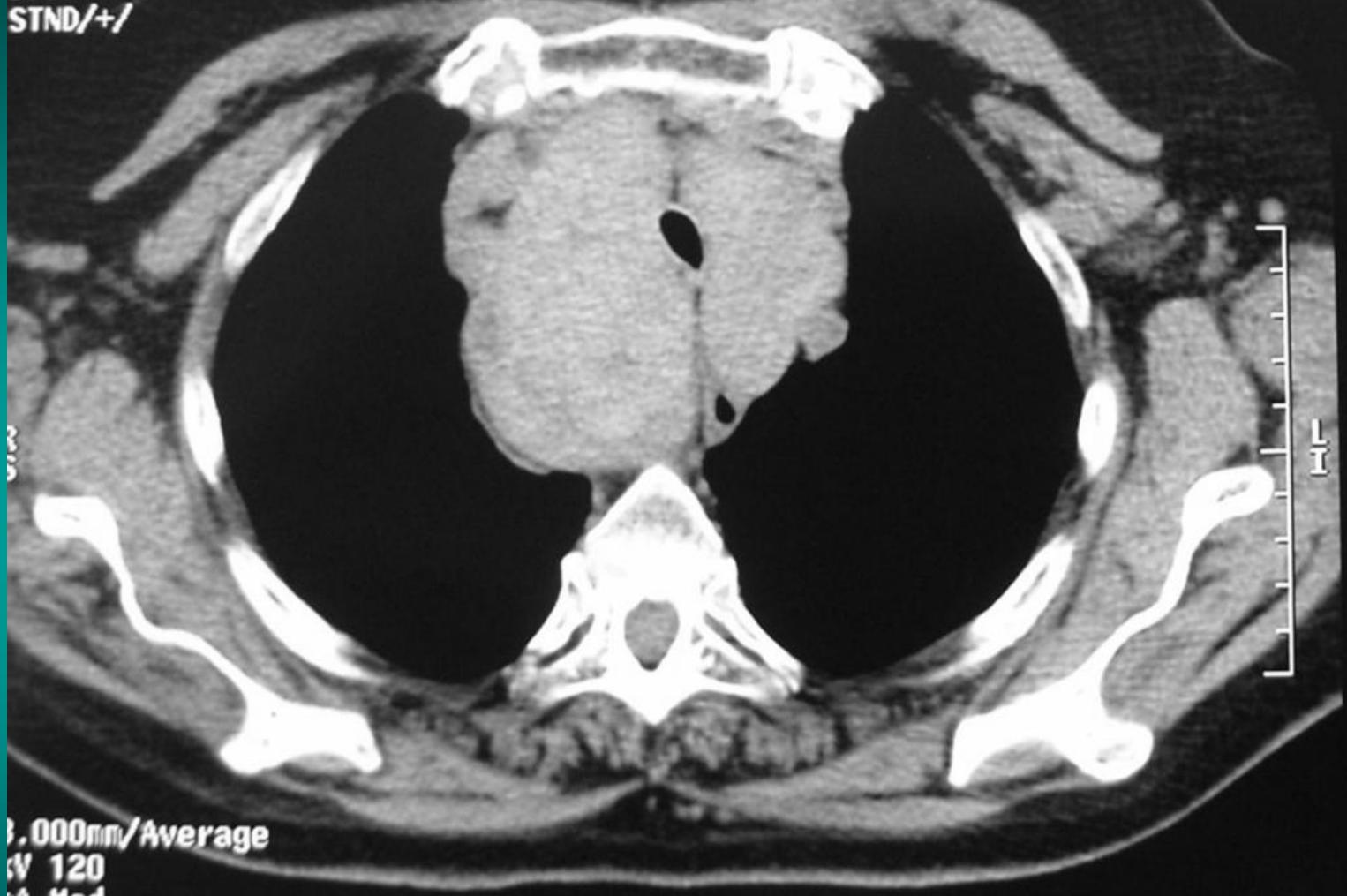
intrathoracic anterior goitre



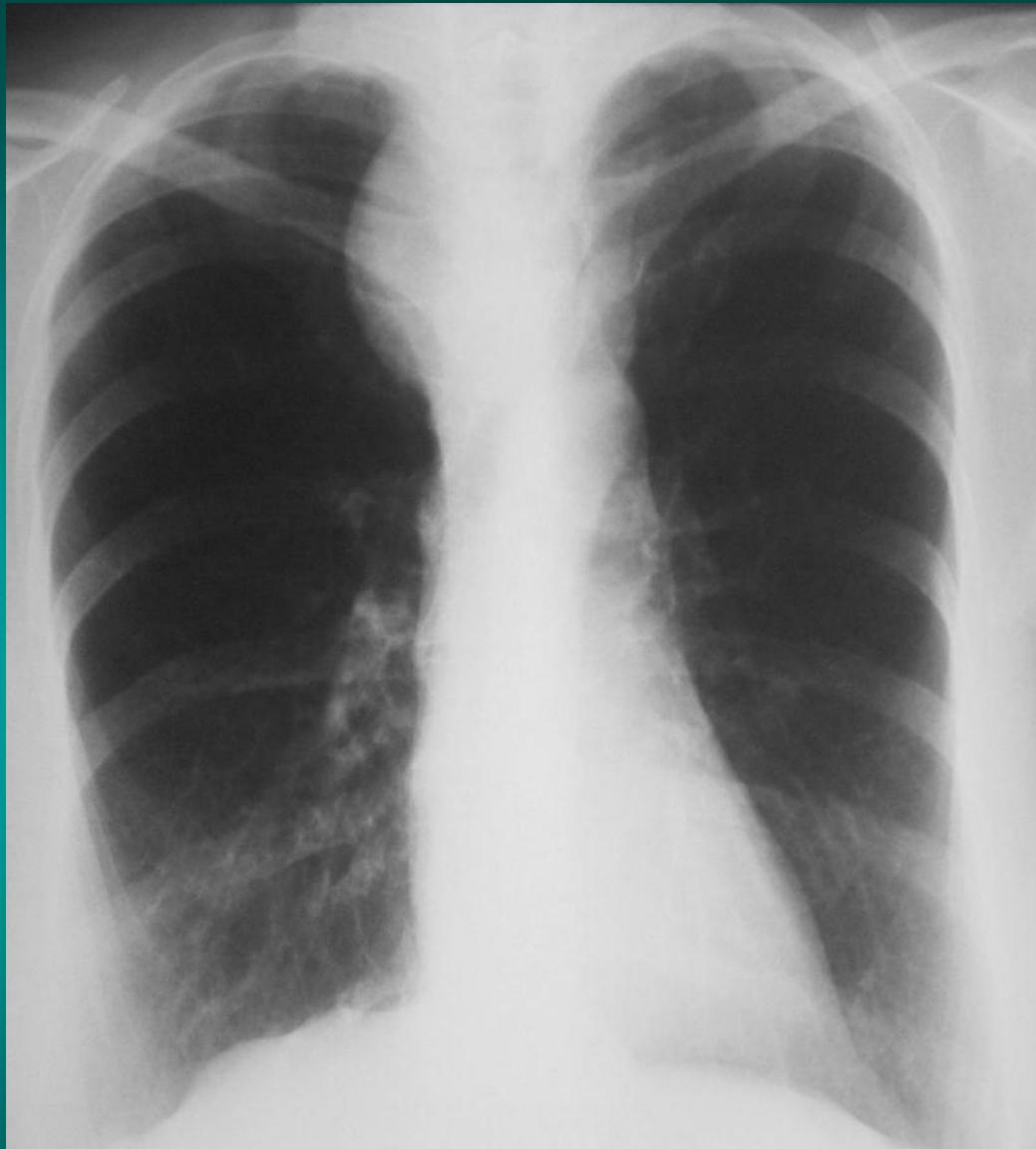
intrathoracic anterior goitre

L: 4.75 (CUT)
DFOV 30.5cm
STND/+/

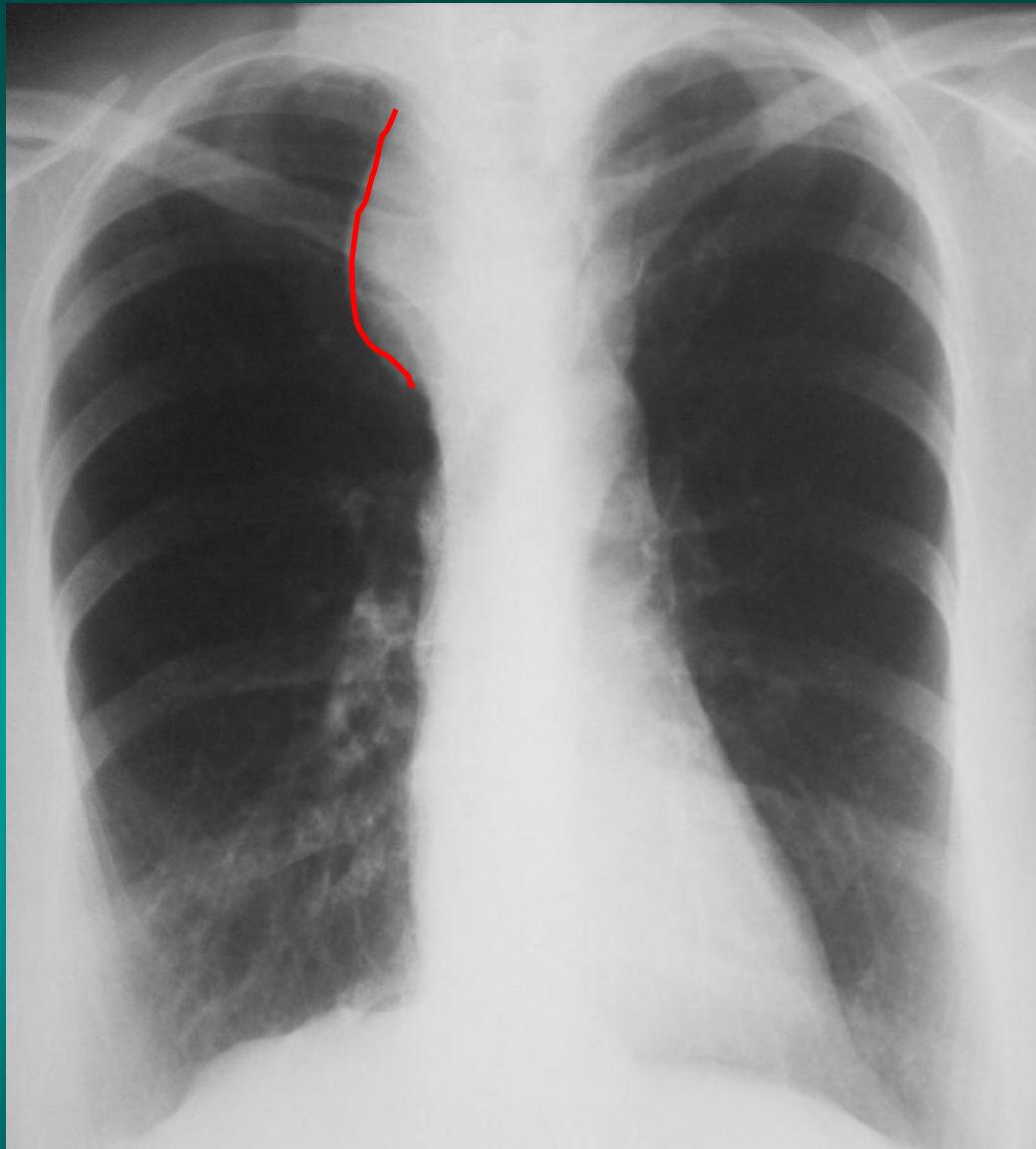
10 mar 2009



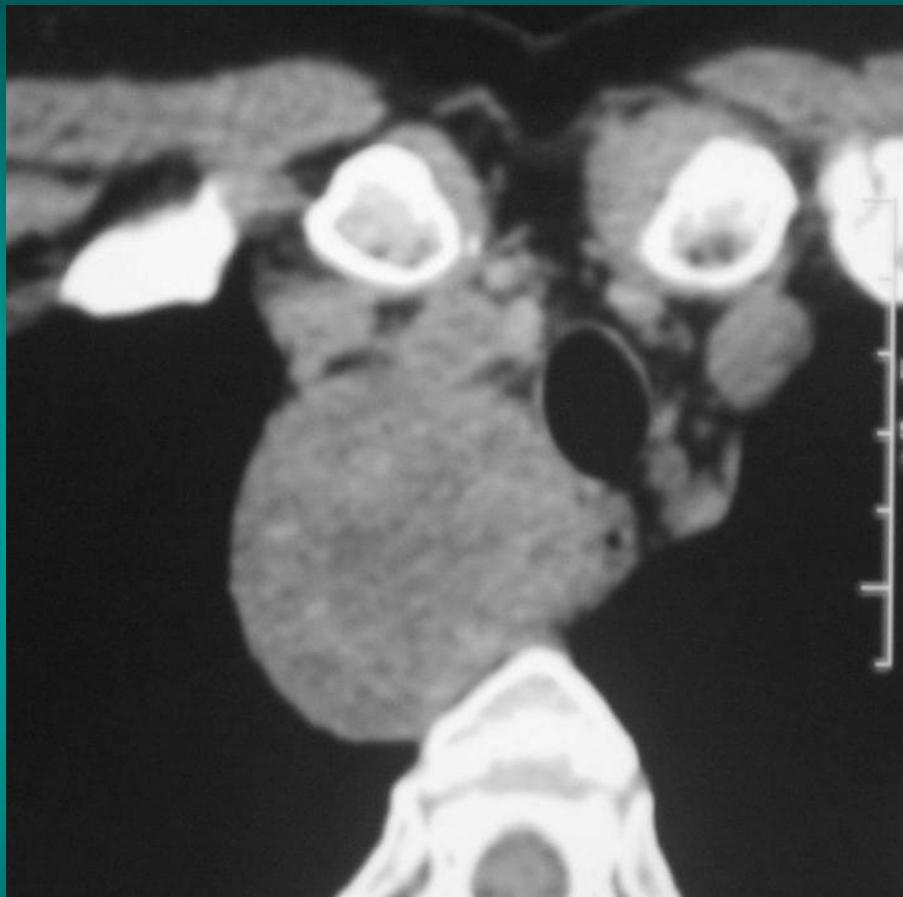
**intrathoracic goitre
(compression of the trachea)**



Posterior goitre Courtesy of Dr. Bellamy



Posterior goitre Courtesy of Dr. Bellamy



ANTERIOR MEDIASTINUM MIDDLE TIER

ANTERIOR MEDIASTINUM

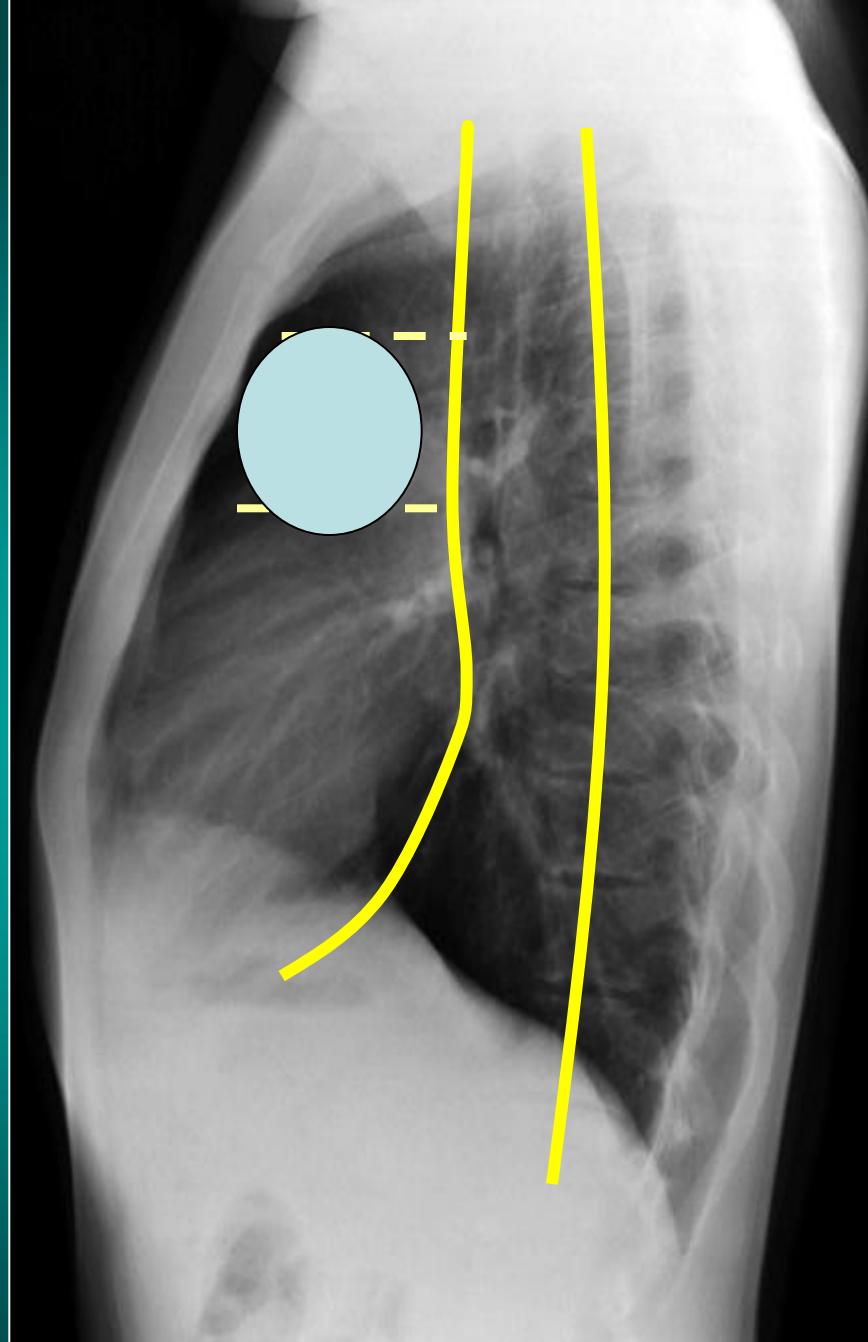
Middle tier

Lymphoma

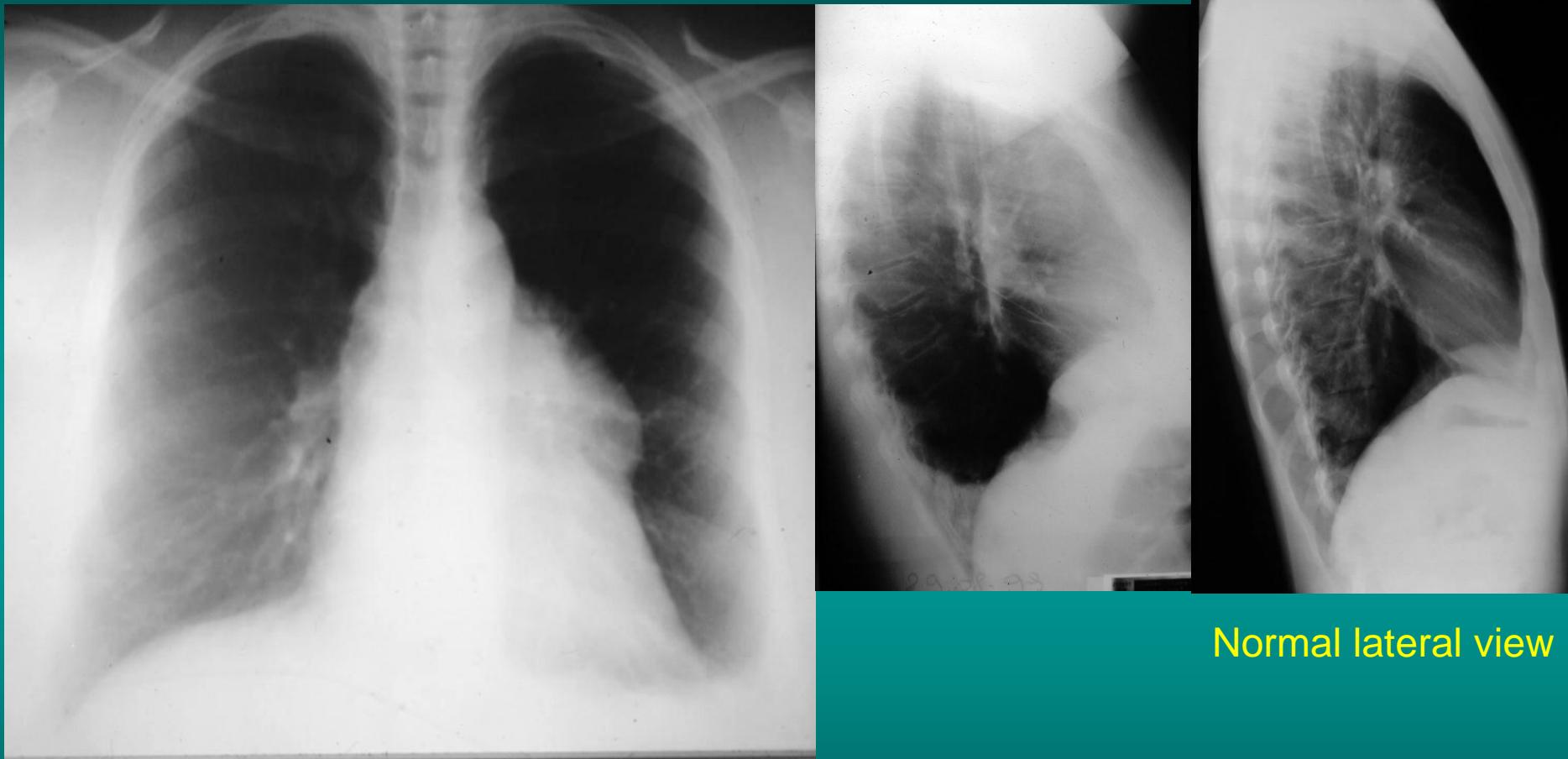
Thymoma

germinal tumours

Ascending aorta
aneuvrysm



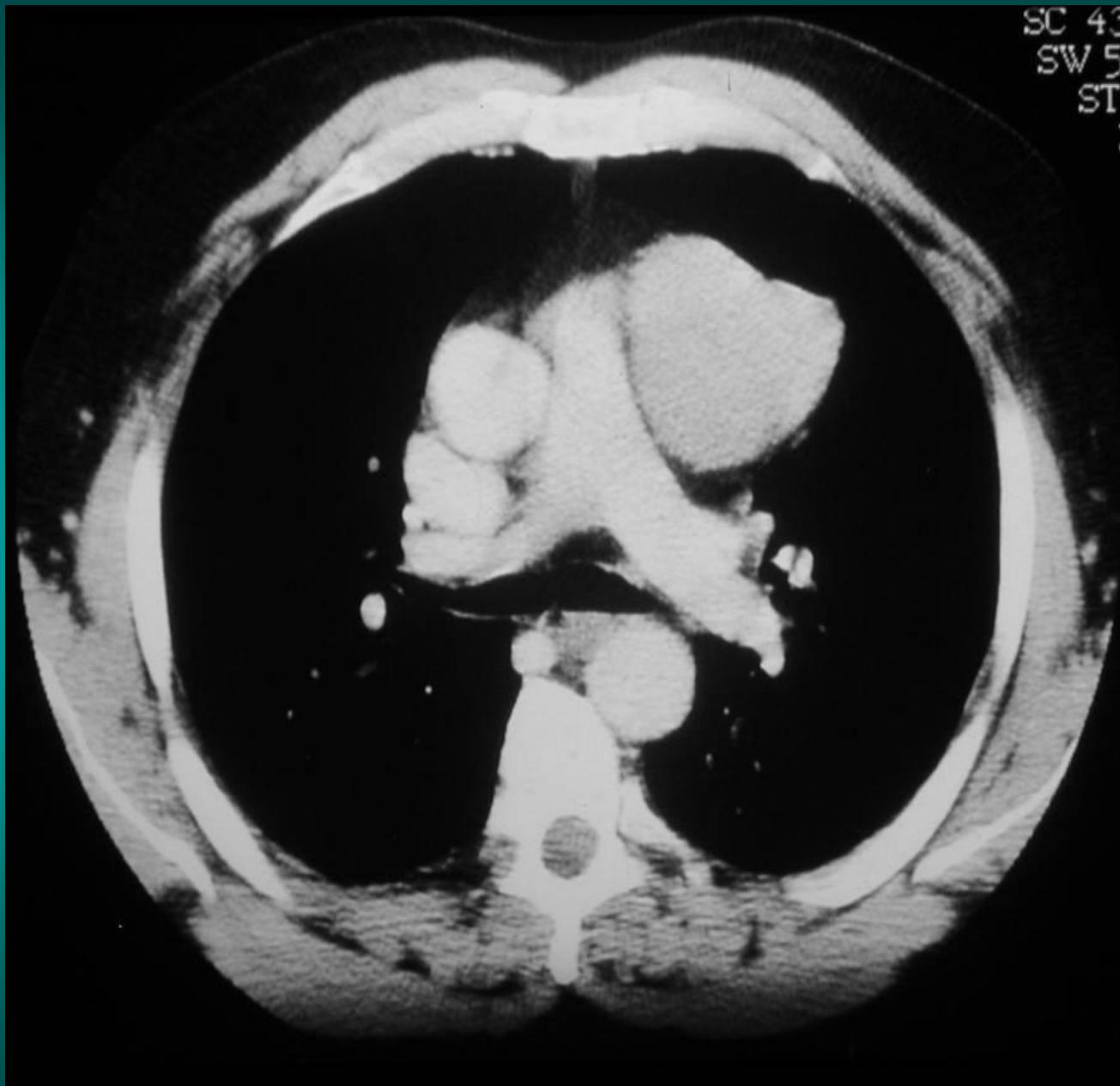
Thymoma



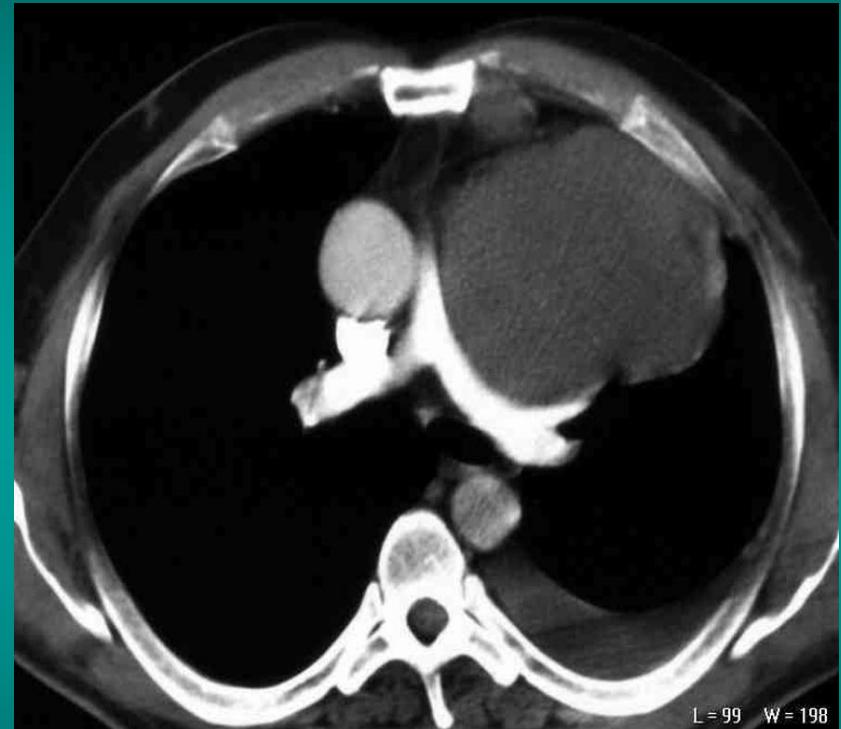
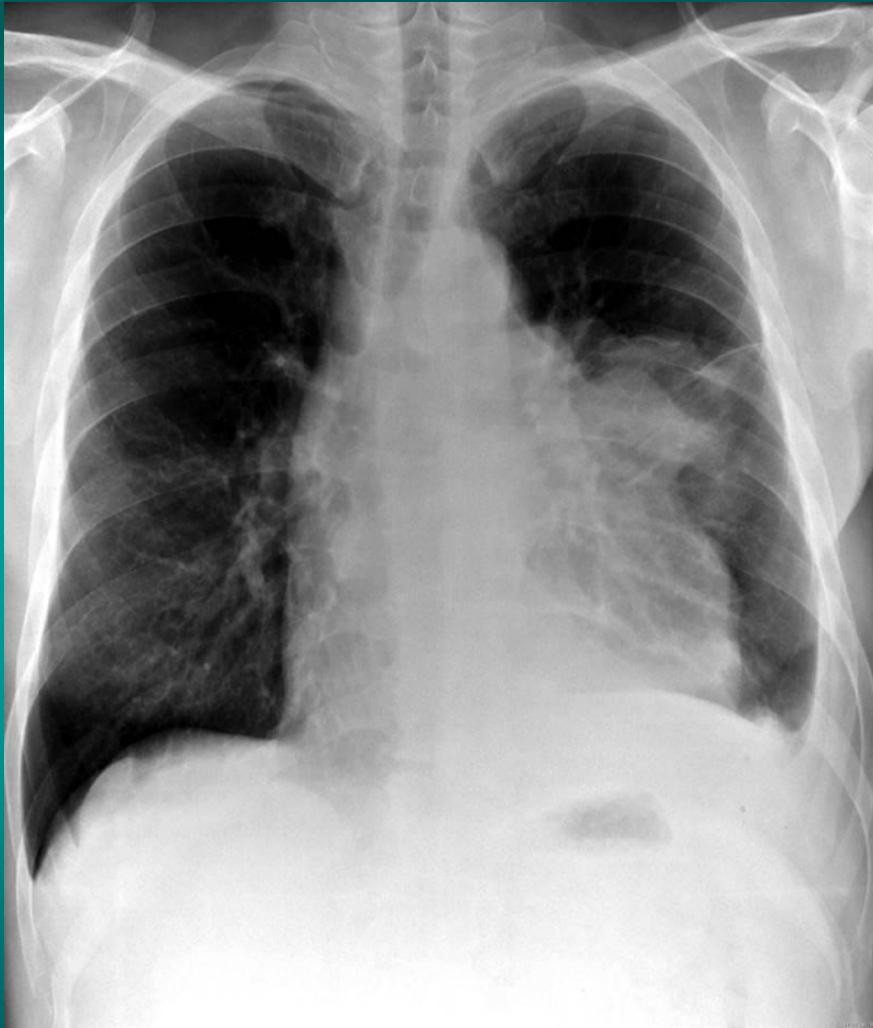
Normal lateral view

Notice that the retro-sternal space is filled by the tumour

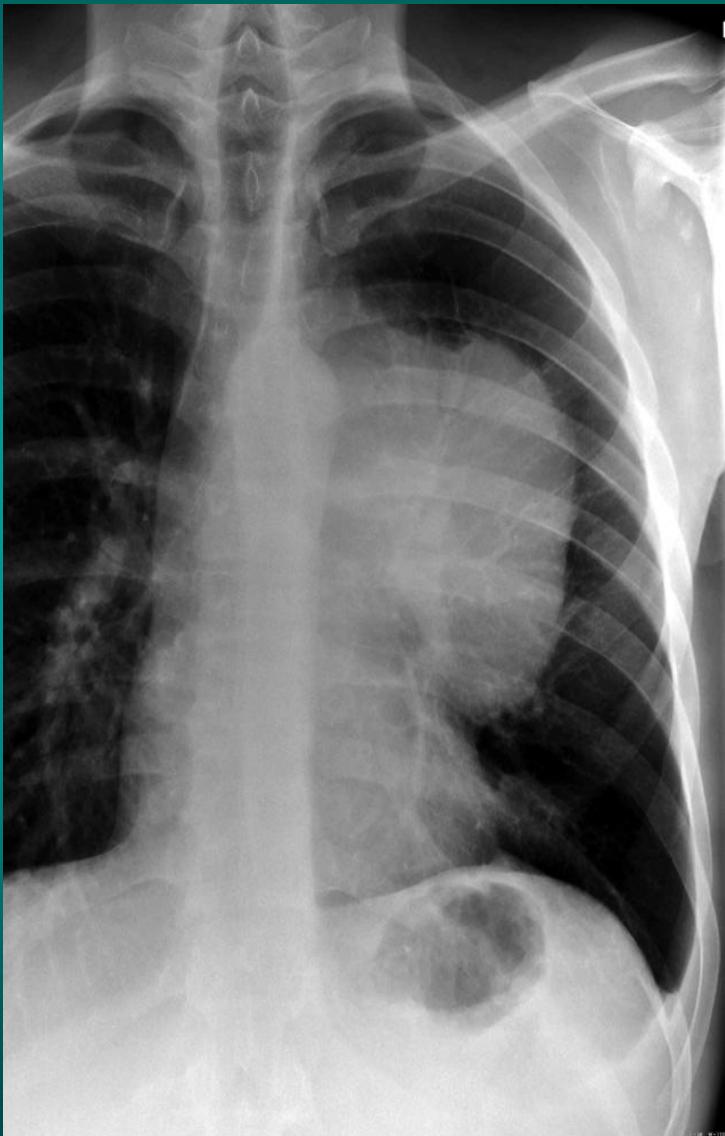
SC 43
SW 5
ST
2



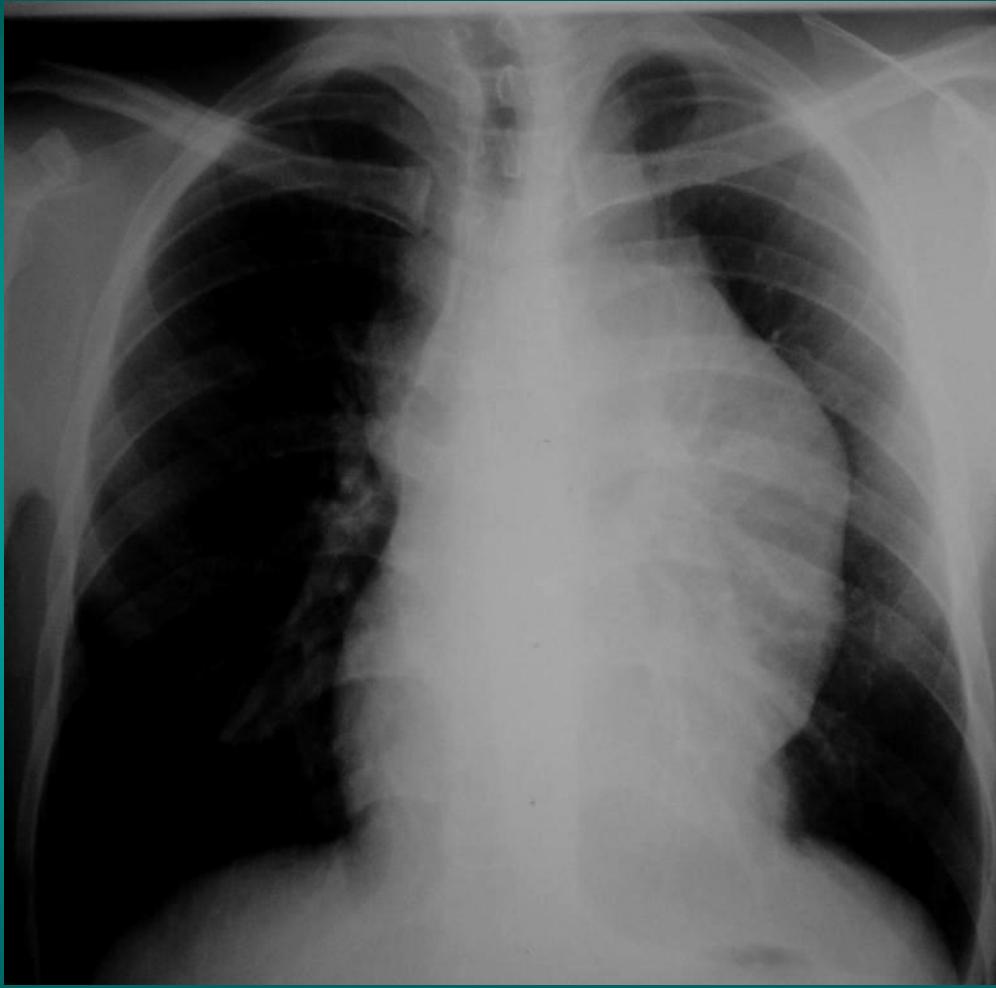
Thymoma



germinal tumour

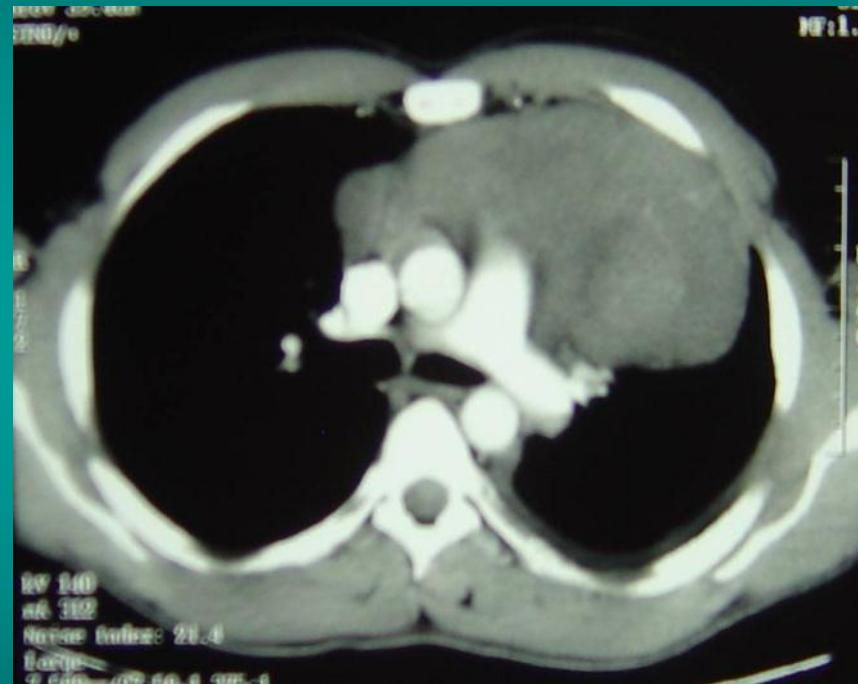
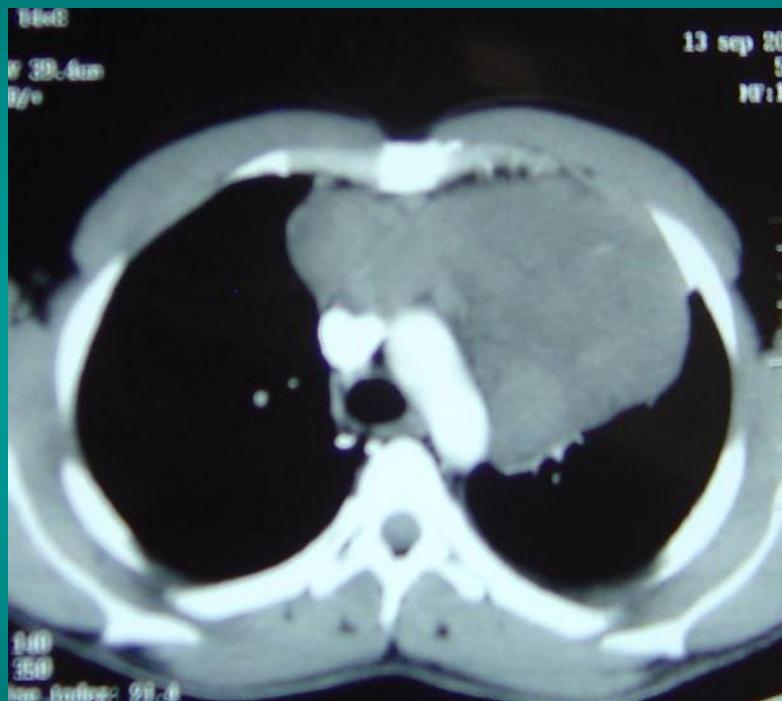


Man, 21 years old, worsening condition, asthenia, 38°C fever, weight loss (-5kg in 2 months), nocturnal sweating.

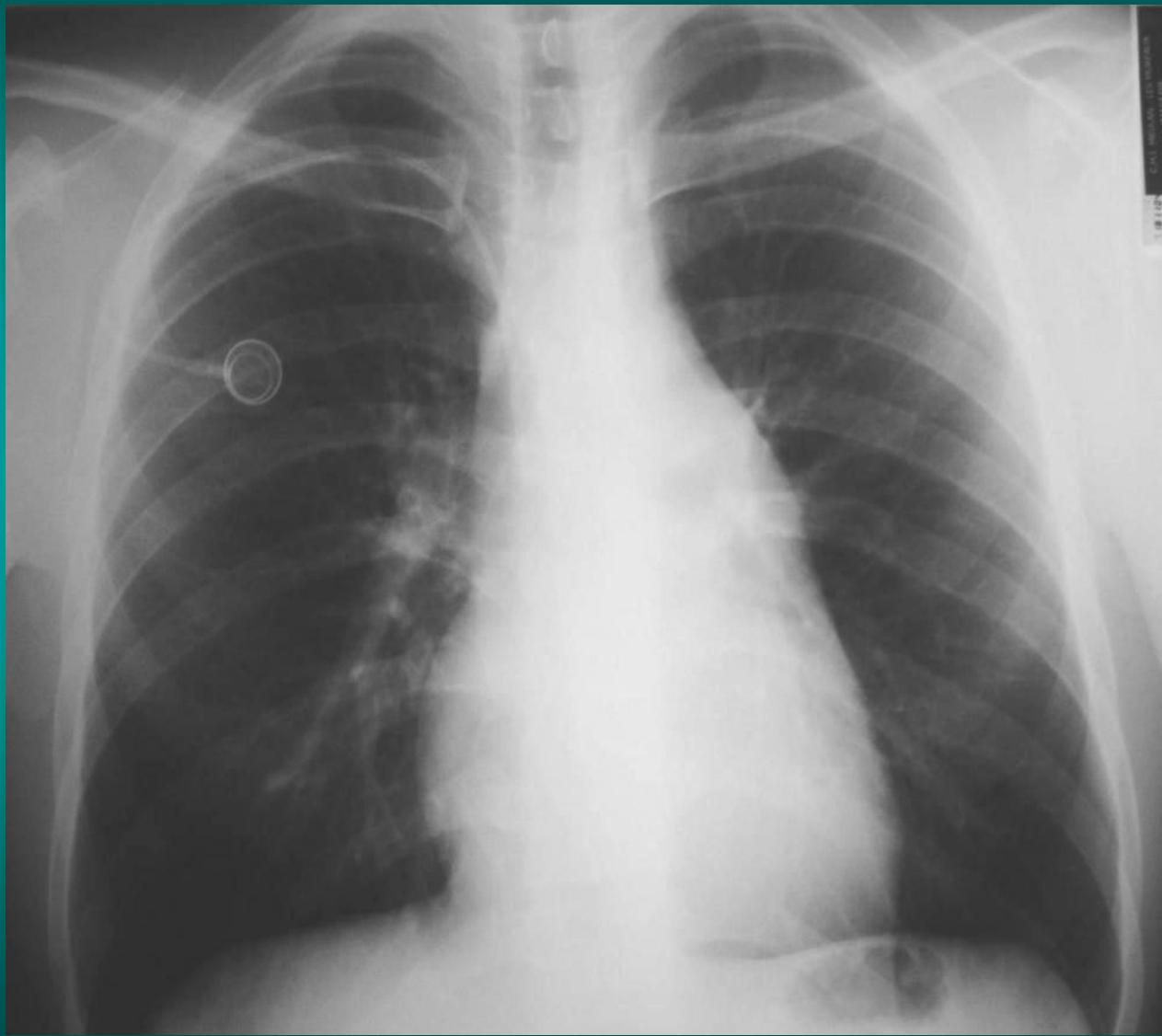


Notice the silhouette sign with heart (anterior mediastinum)
And with the aortic arch (extension to the middle mediastinum)

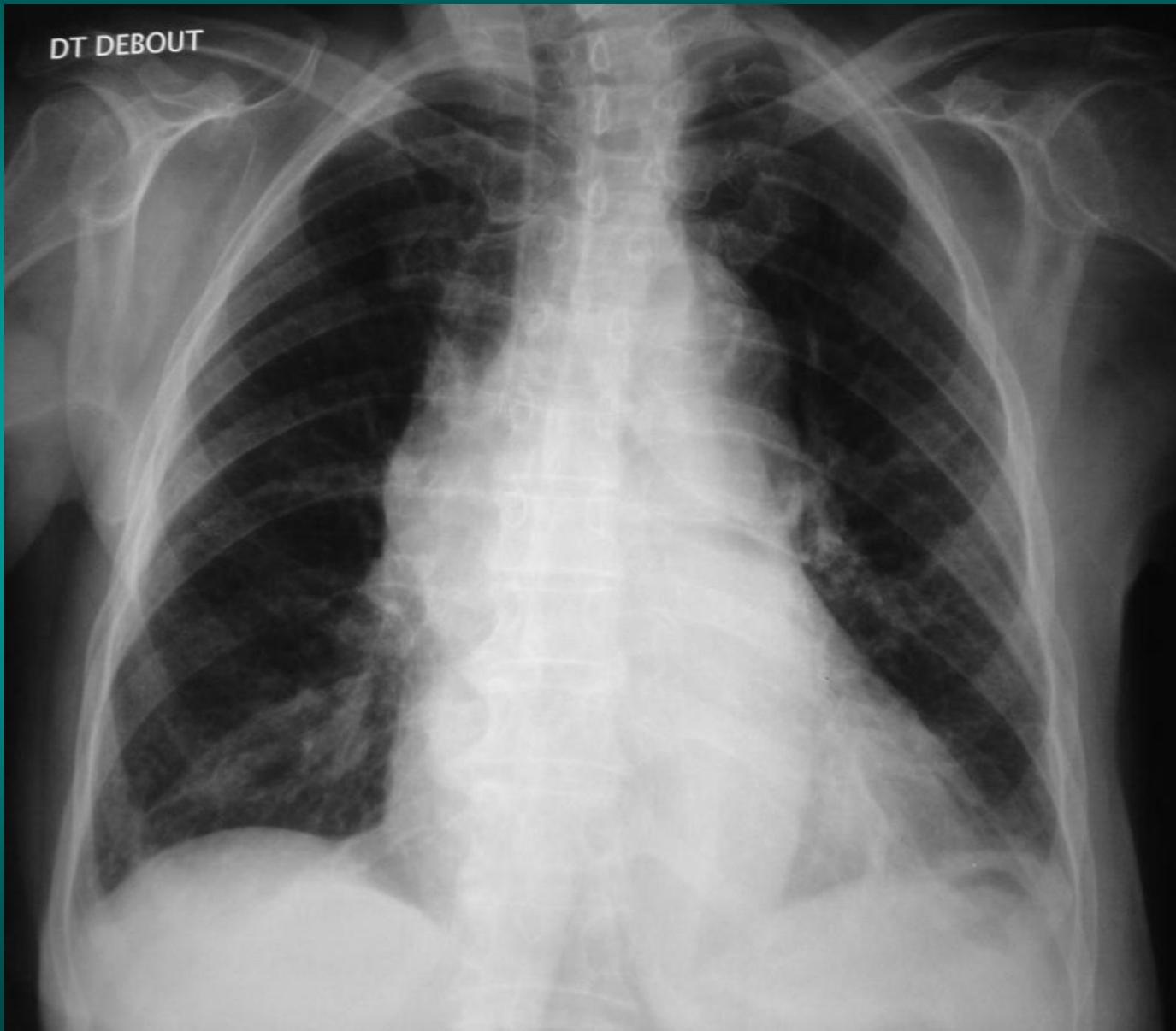
Hodgkin's disease

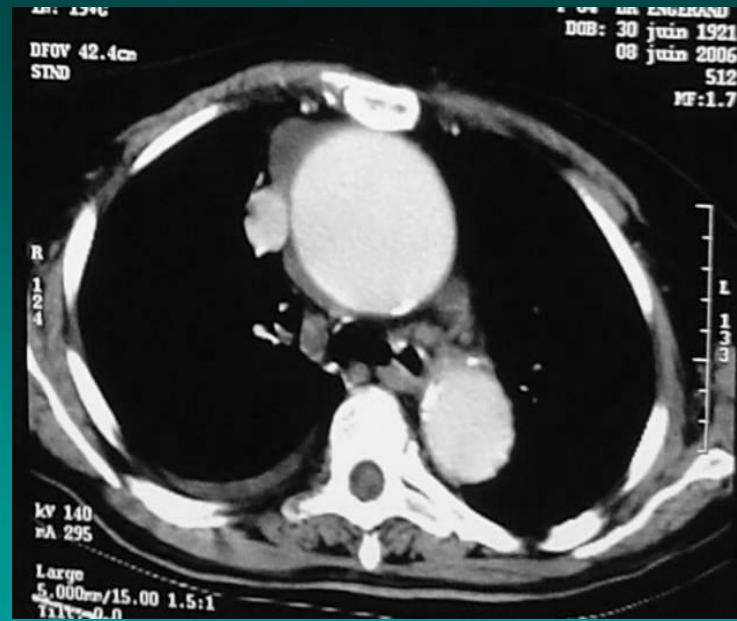
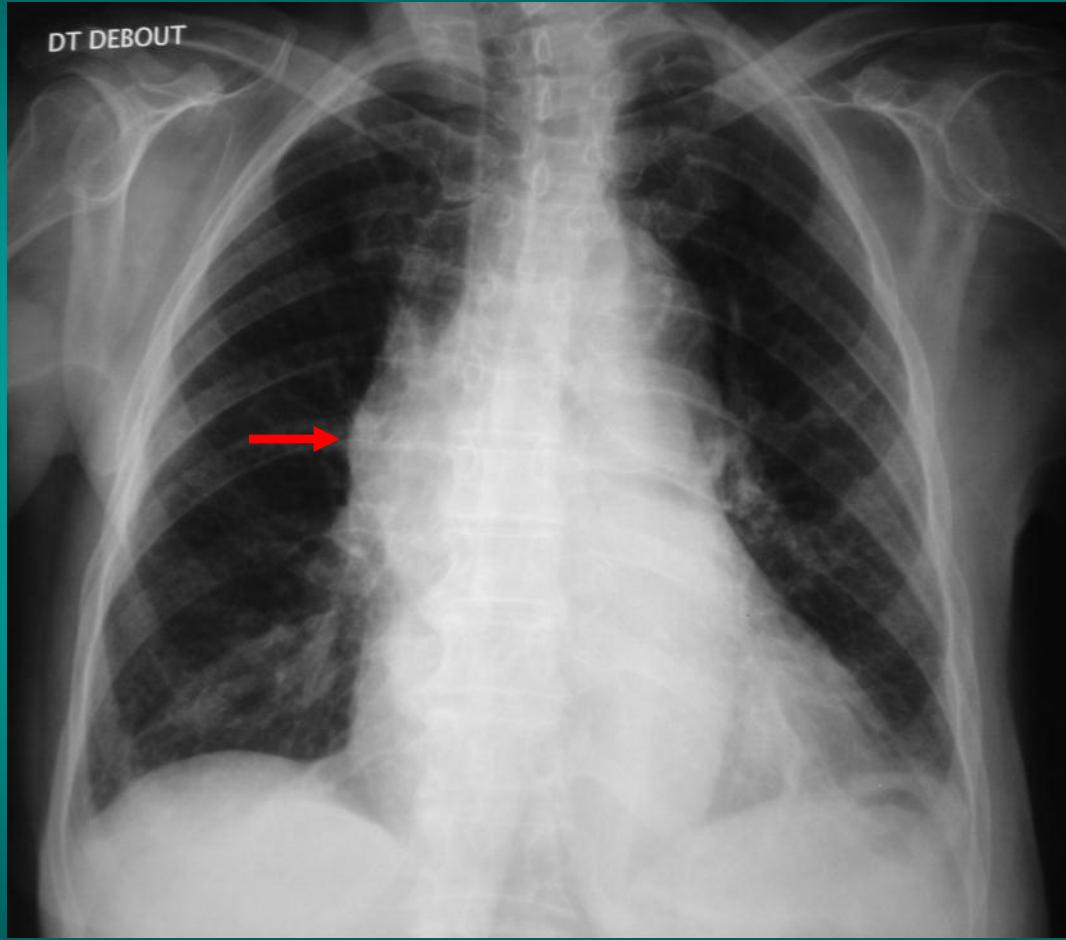


Chest x-ray after chemotherapy



DT DEBOUT





Ascending aorta aneurysm

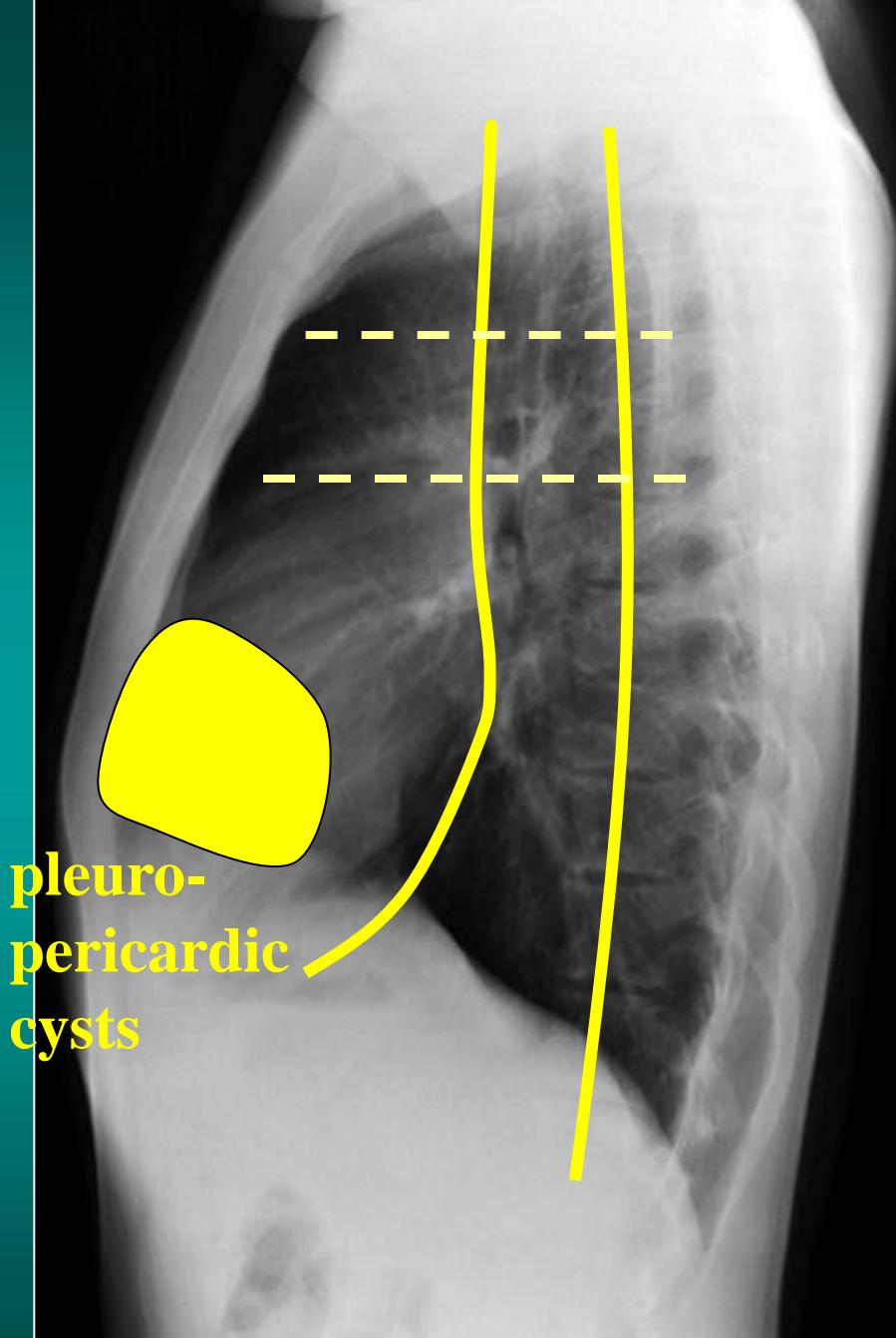
Anterior mediastinum inferior tier

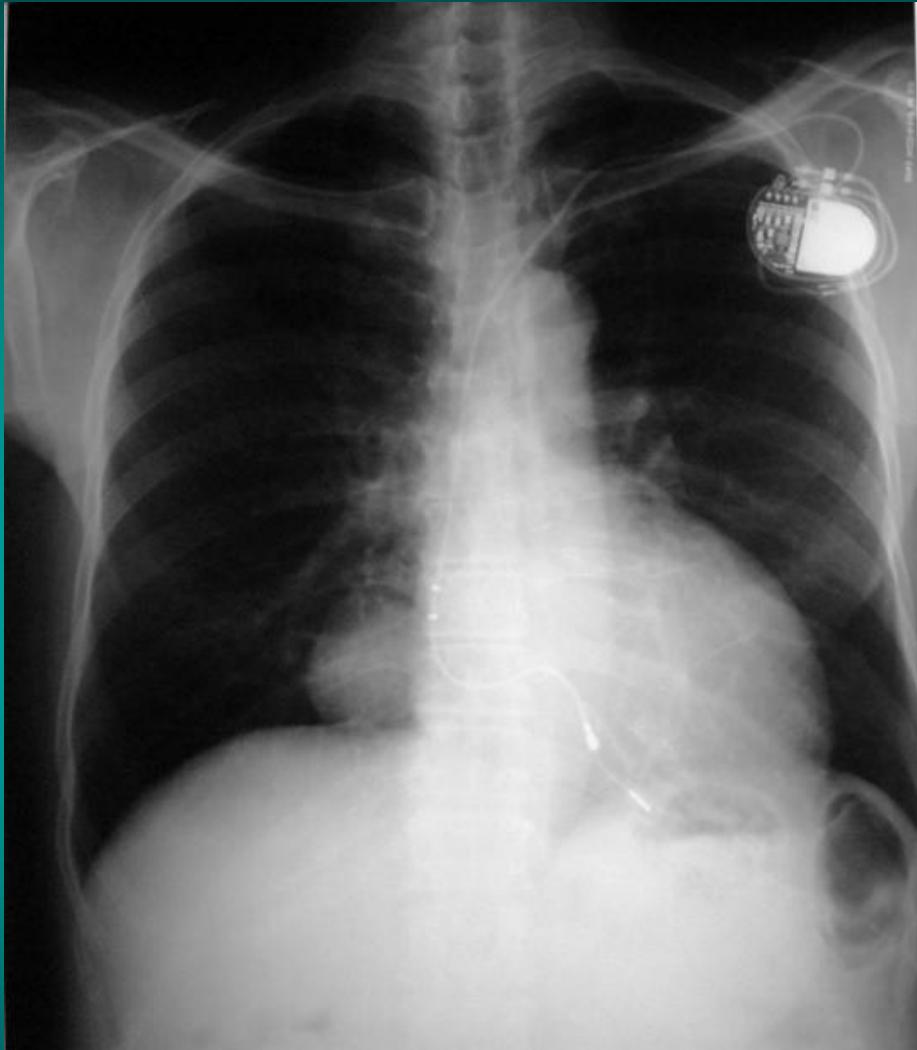
ANTERIOR MEDIASTINUM

Inferior tier

Pleuro-pericardic cysts

And trans
diaphragmatic hernia



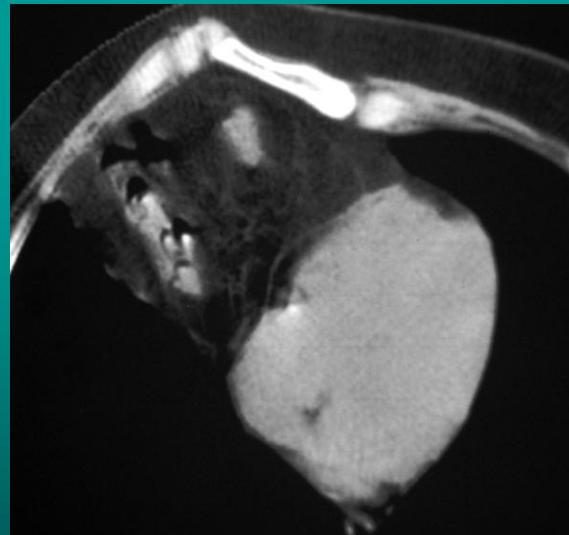
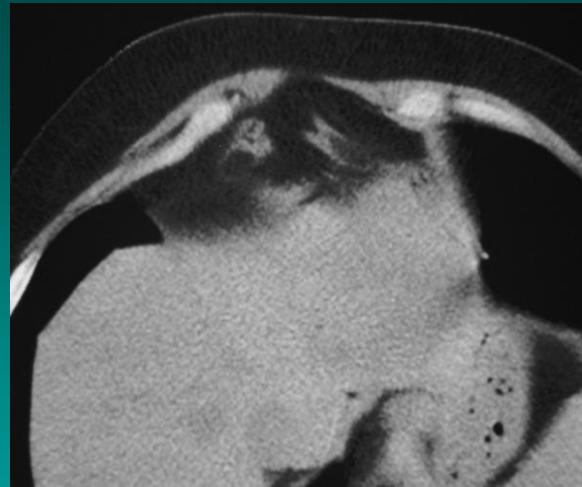


Courtesy Dr L. Kalisa-Rwanda

Pleuro pericardial cyst

Trans diaphragmatic hernia

(Morgani hiatus hernia)



Middle mediastinum

Middle mediastinum

ADENOPATHIES

-TUBERCULOSIS

-bronchial cancer

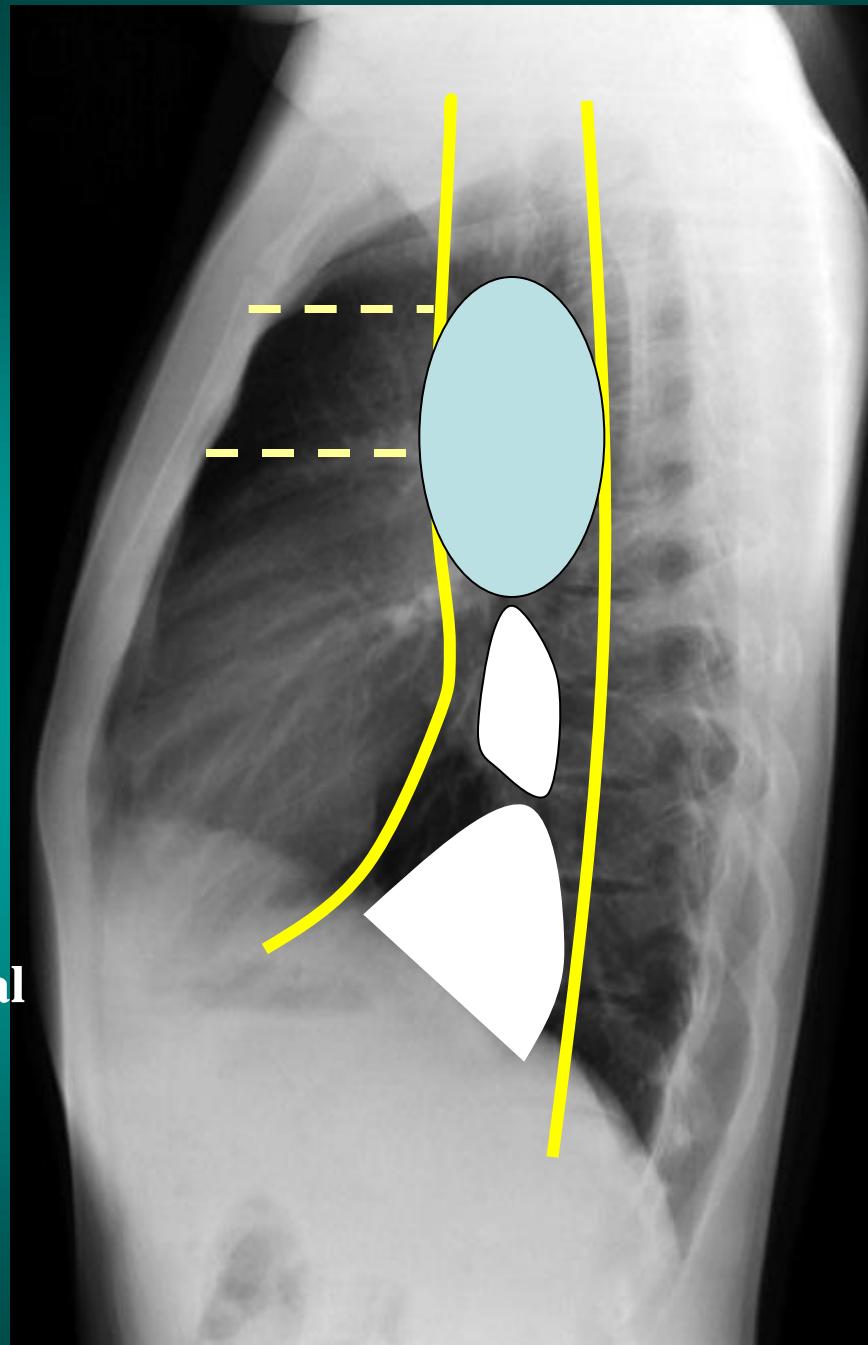
-lymphoma

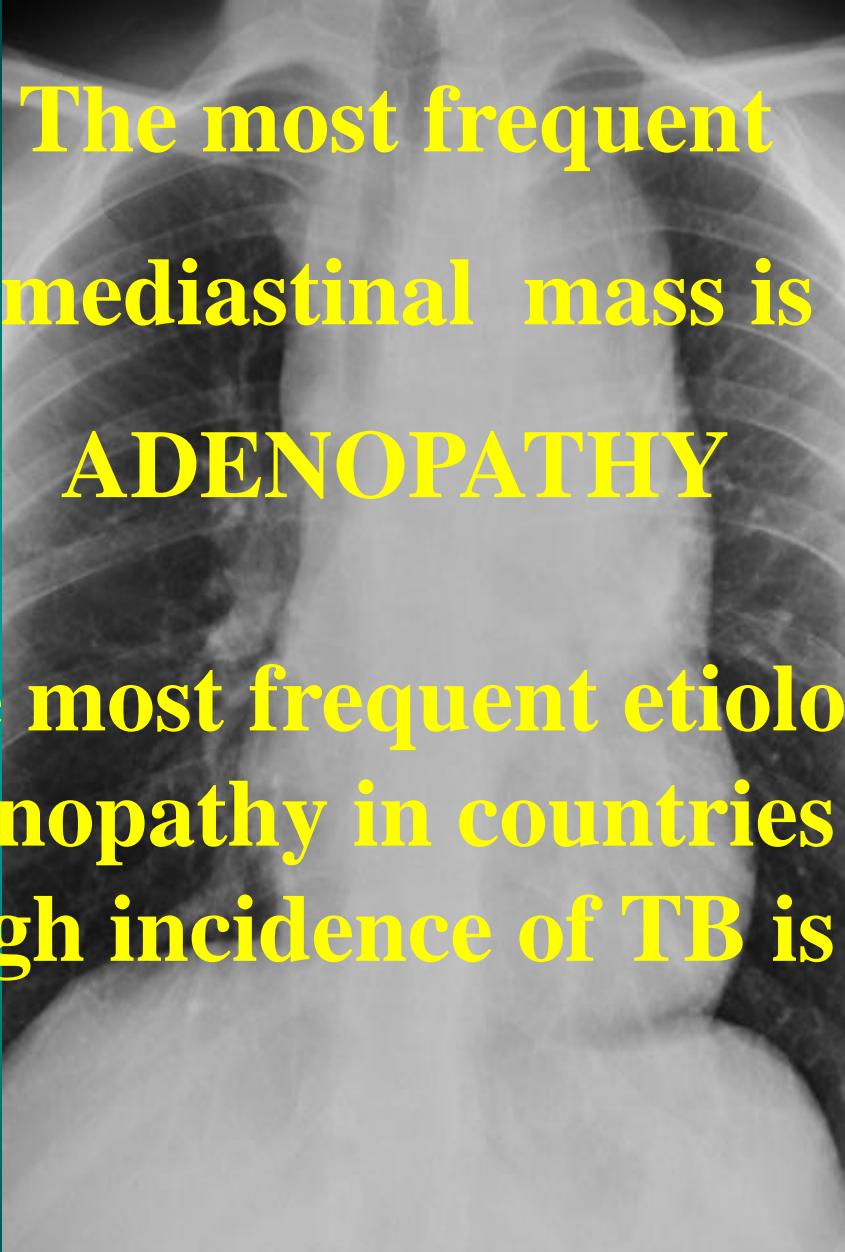
-sarcoïdosis

bronchogenic cysts

Oesophageal pathology (hiatal hernia)

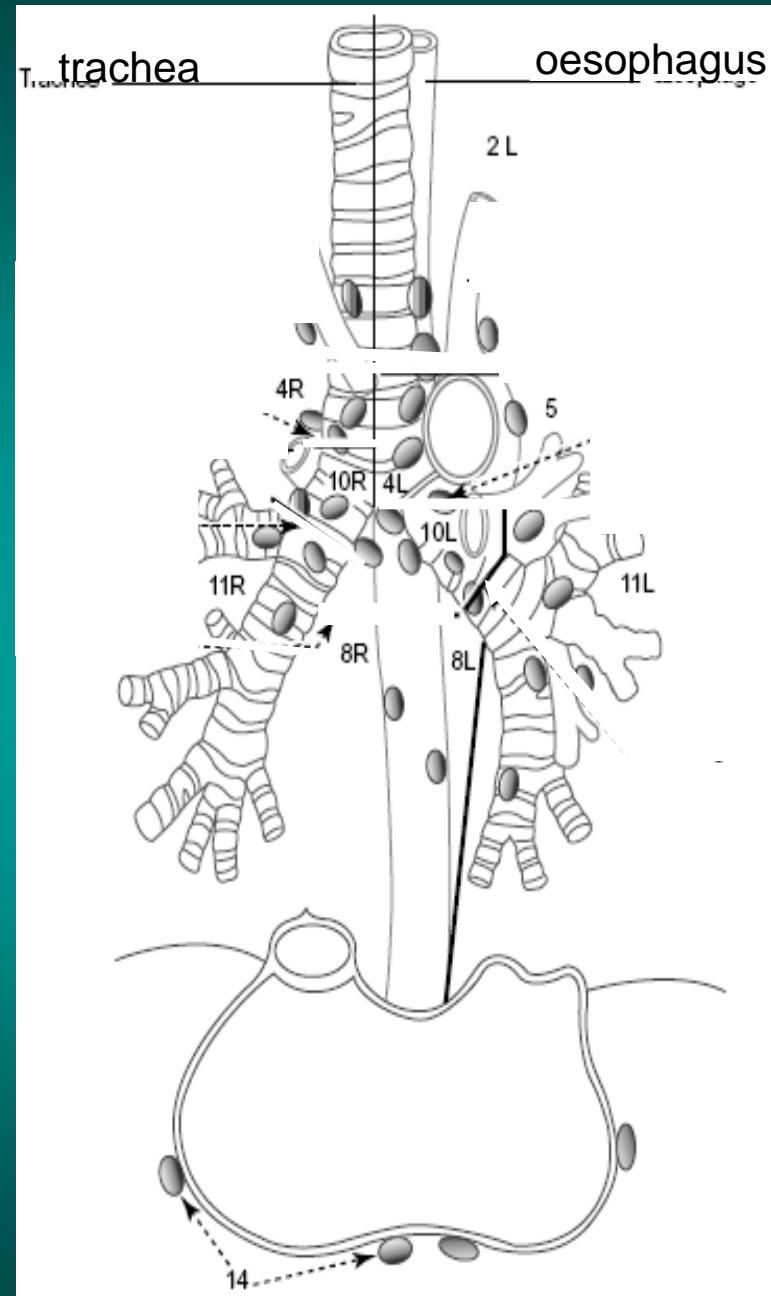
vascular lesions (aortic aneurysm)

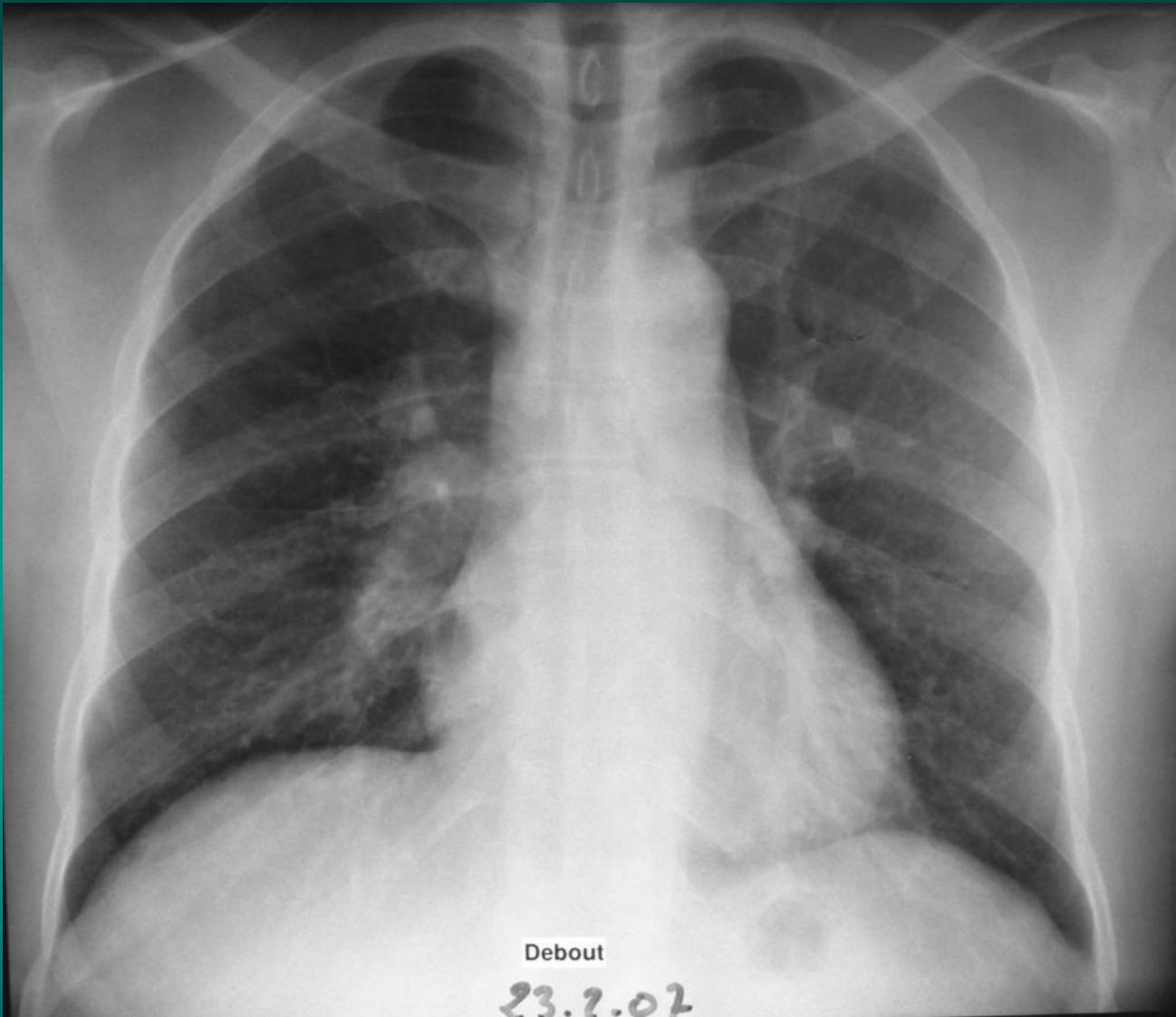




**The most frequent
mediastinal mass is
ADENOPATHY**

**The most frequent etiology of
adenopathy in countries with
high incidence of TB is TB**

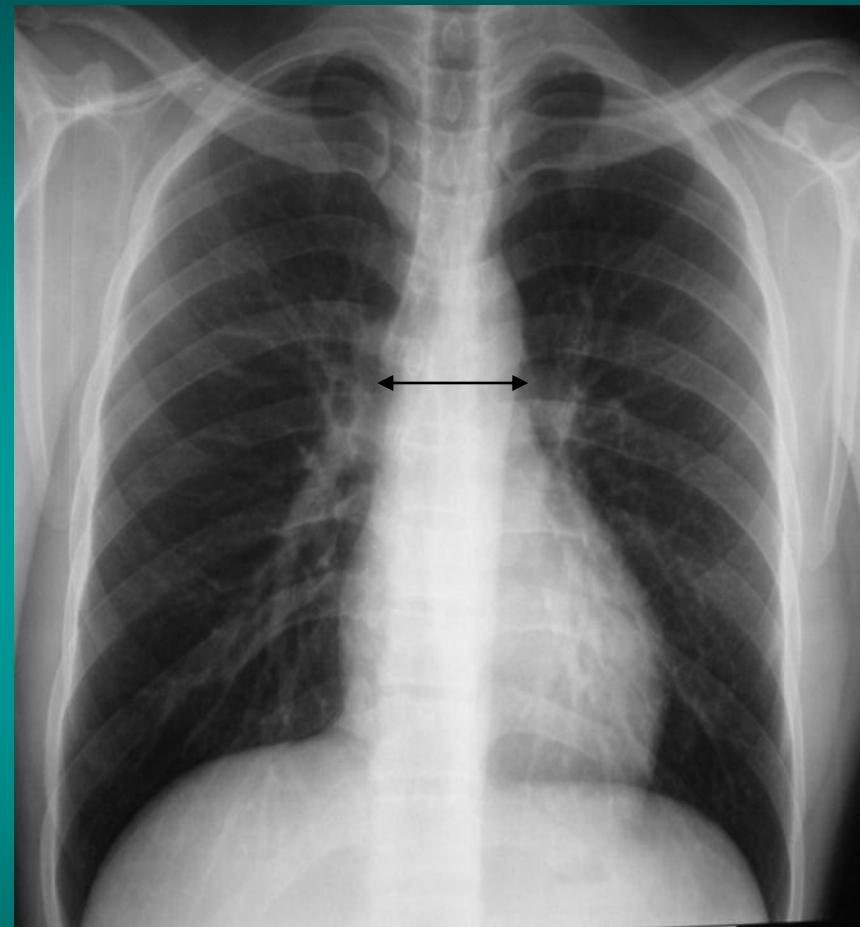
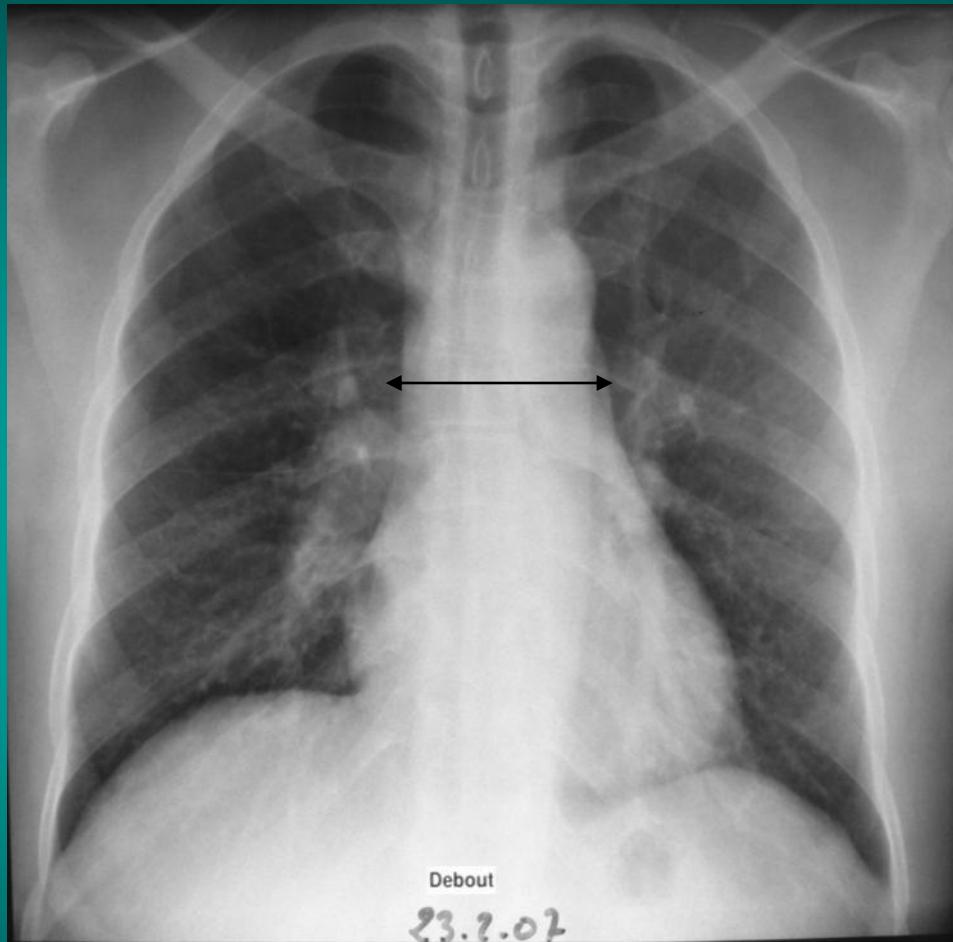




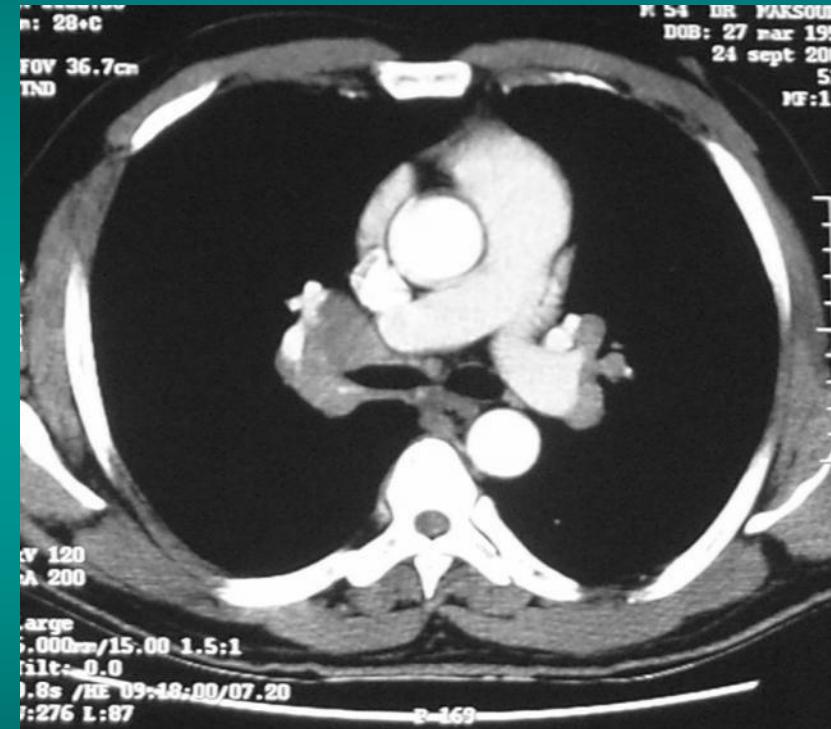
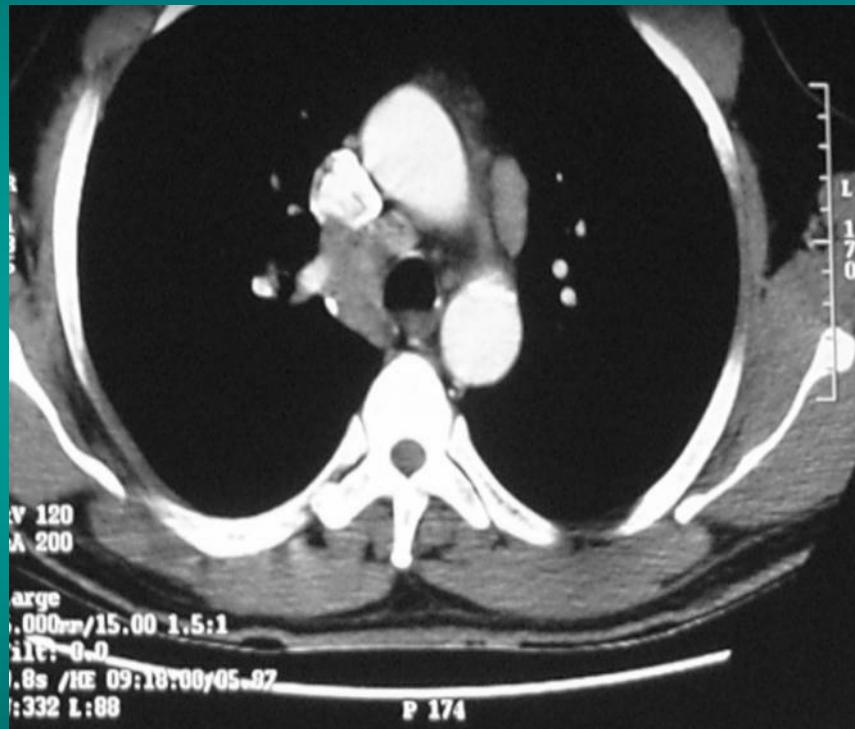
Debout

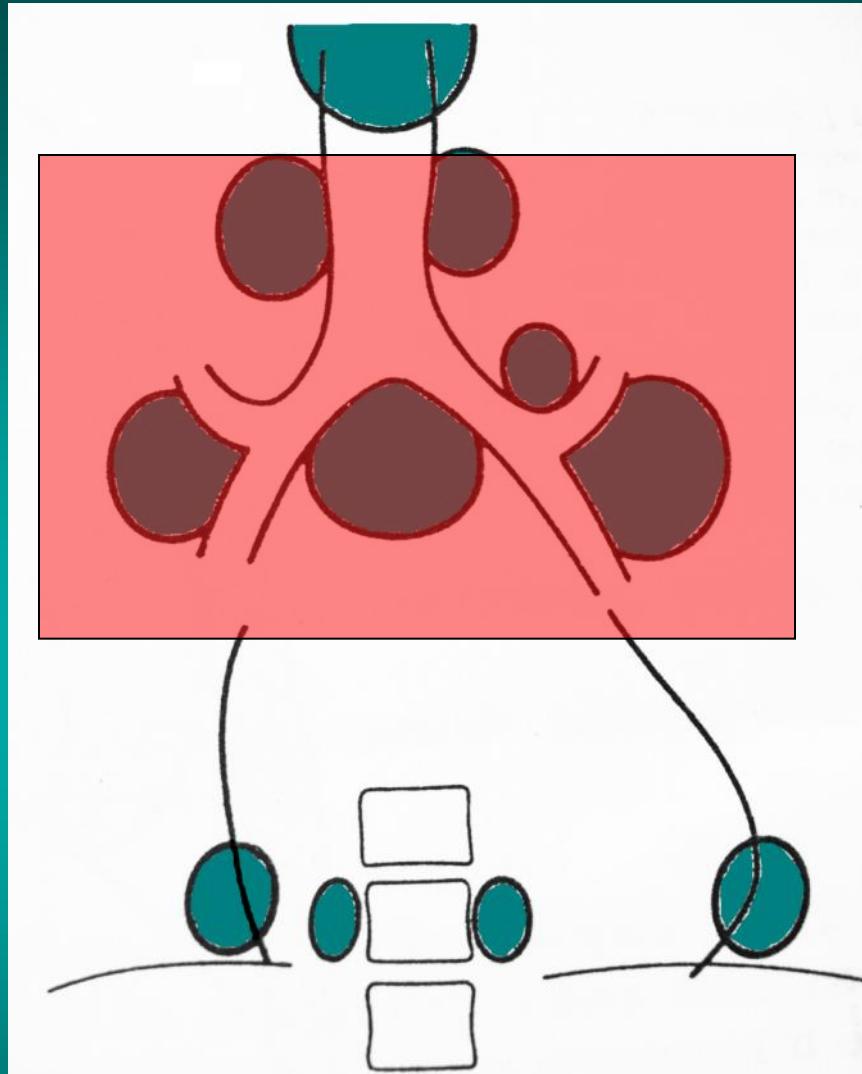
23.2.02

right hilar and mediastinal adenopathy
tuberculous adenopathy



Mediastinal enlargement suggesting adenopathies of superior mediastinum (normal x-ray image on the right)





The most frequent localisations of TB adenopathies.
In this area, lateral view is very useful for diagnosis



Lateral view is very usefull for diagnosis of mediastnum adenopathies
in sub carena and inter tracheo bronchial areas



Rx normale

Lateral view is very usefull for diagnosis of mediastnum adenopathies
in sub carena and inter tracheo bronchial areas



Right hilar adenopathy. Is there mediastinum associated adenopathies?
Notice mediastinum enlargement

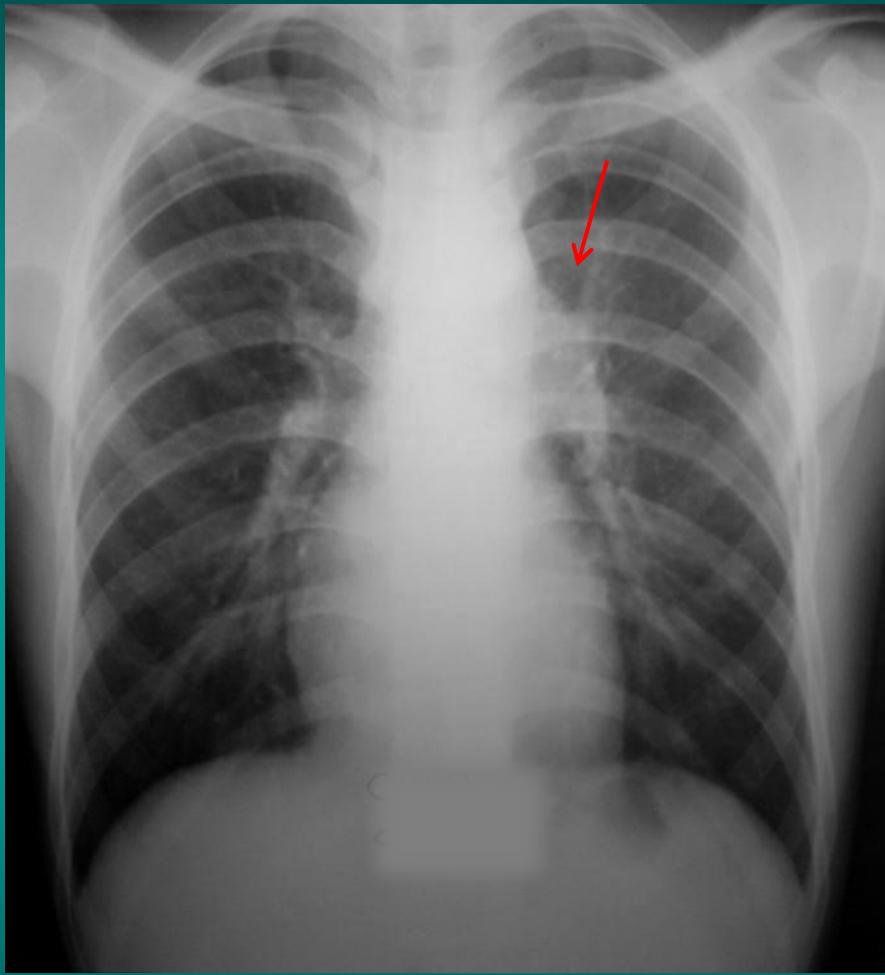


Normal lateral view

Lateral view, previous case : hilar and mediastinum adenopathies.. On the right side normal lateral view.

Lateral view is useful to confirm hilar and mediastinum adenopathies in the carena area.

Notice partial atelectasis of the middle lobe .

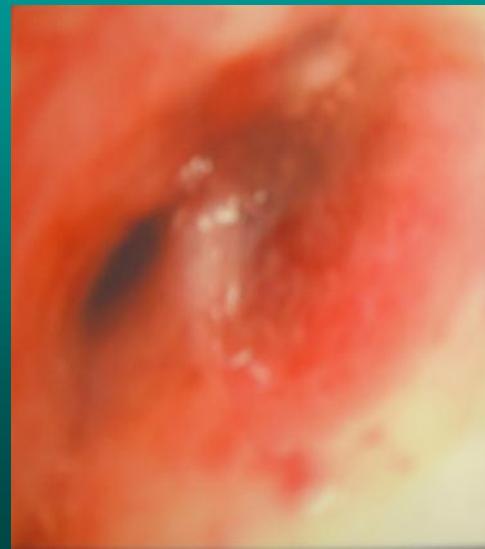


Aorto-pulmonary space
Adenopathy



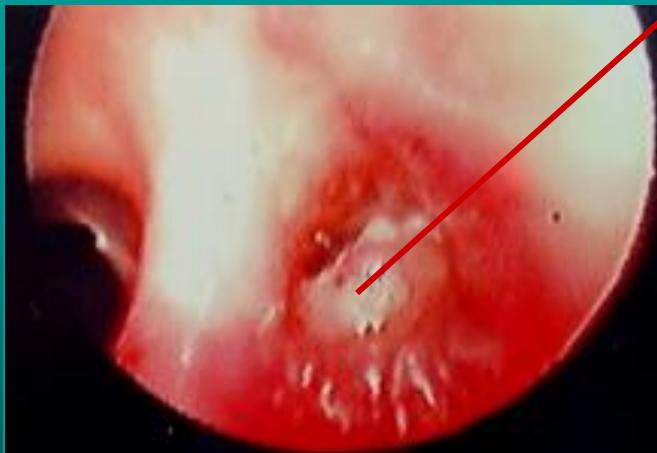
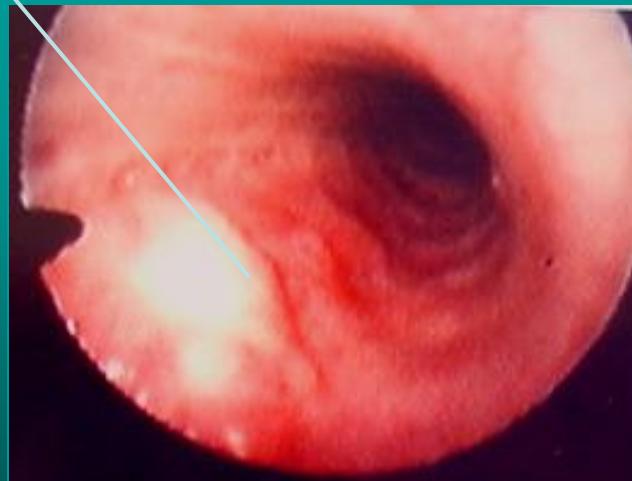
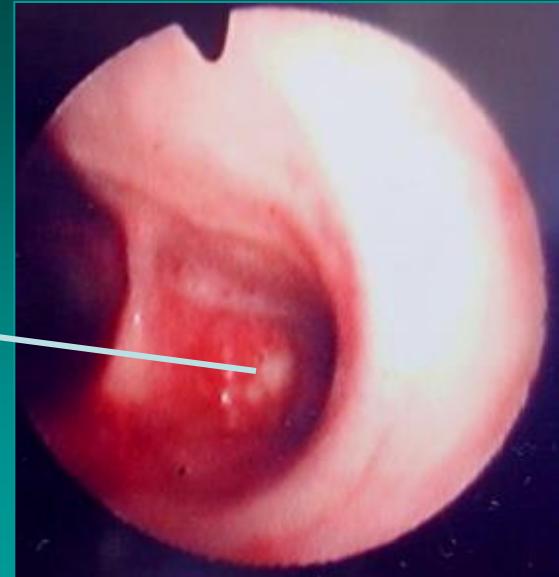
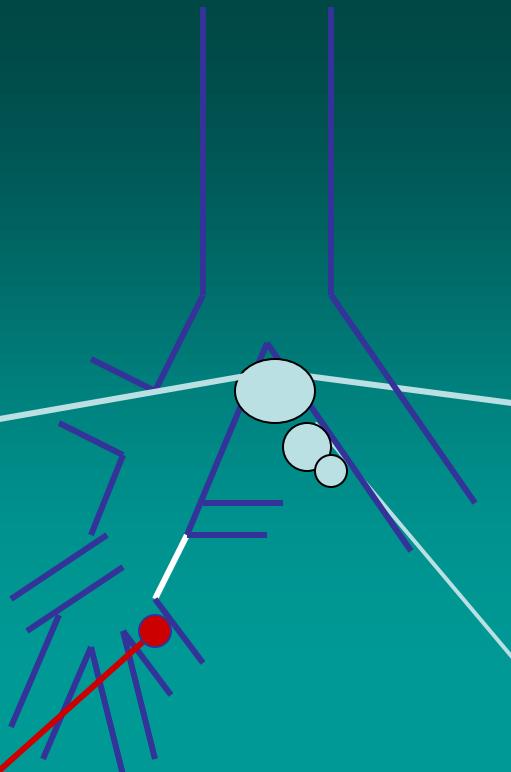
Normal chest x-ray

Tuberculous adenopathy . Scannographic and endoscopic views



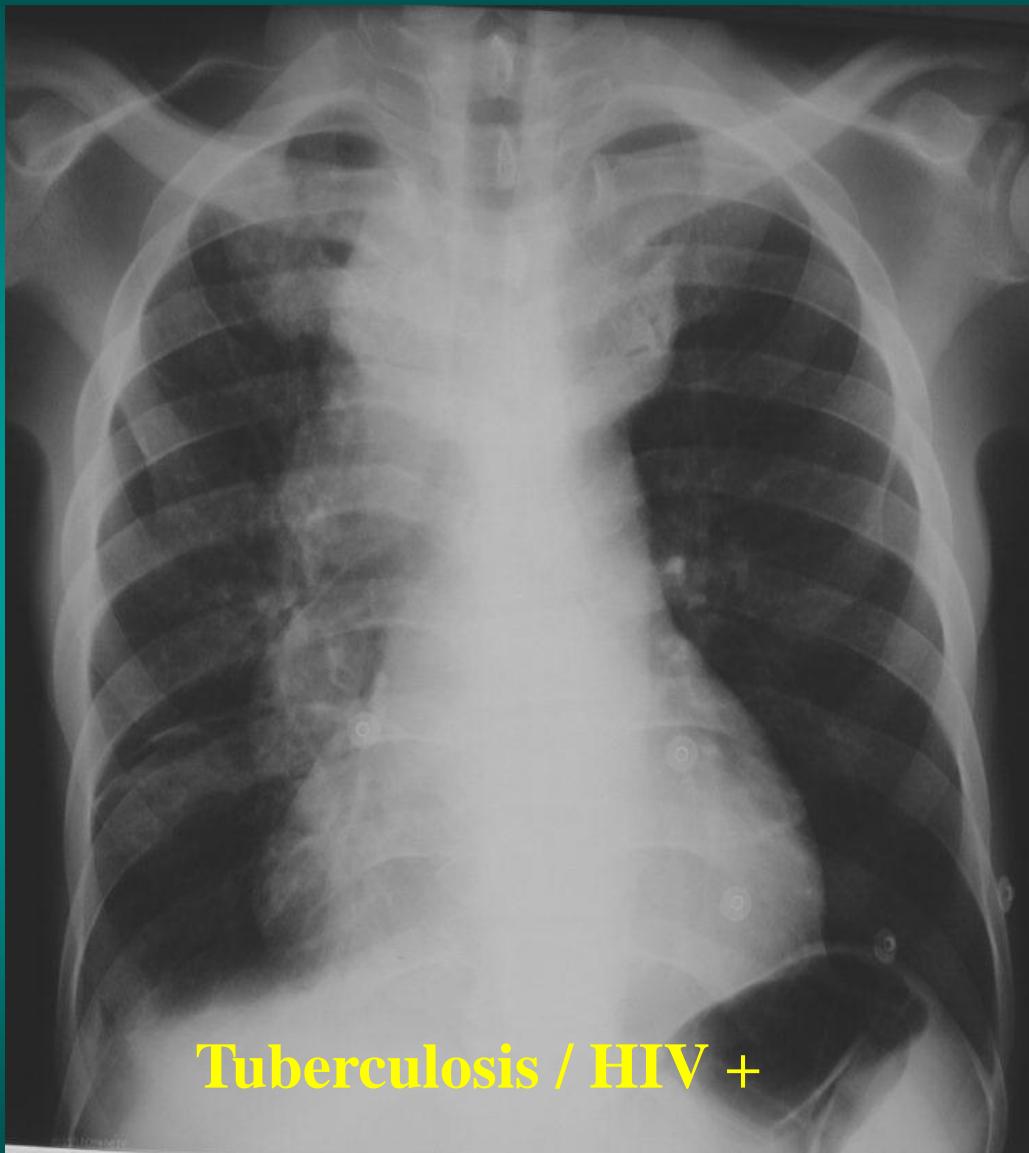
Tuberculous adenopathies





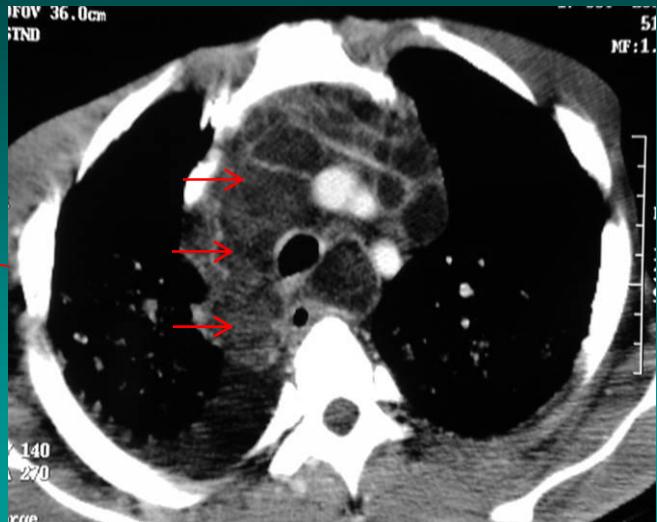
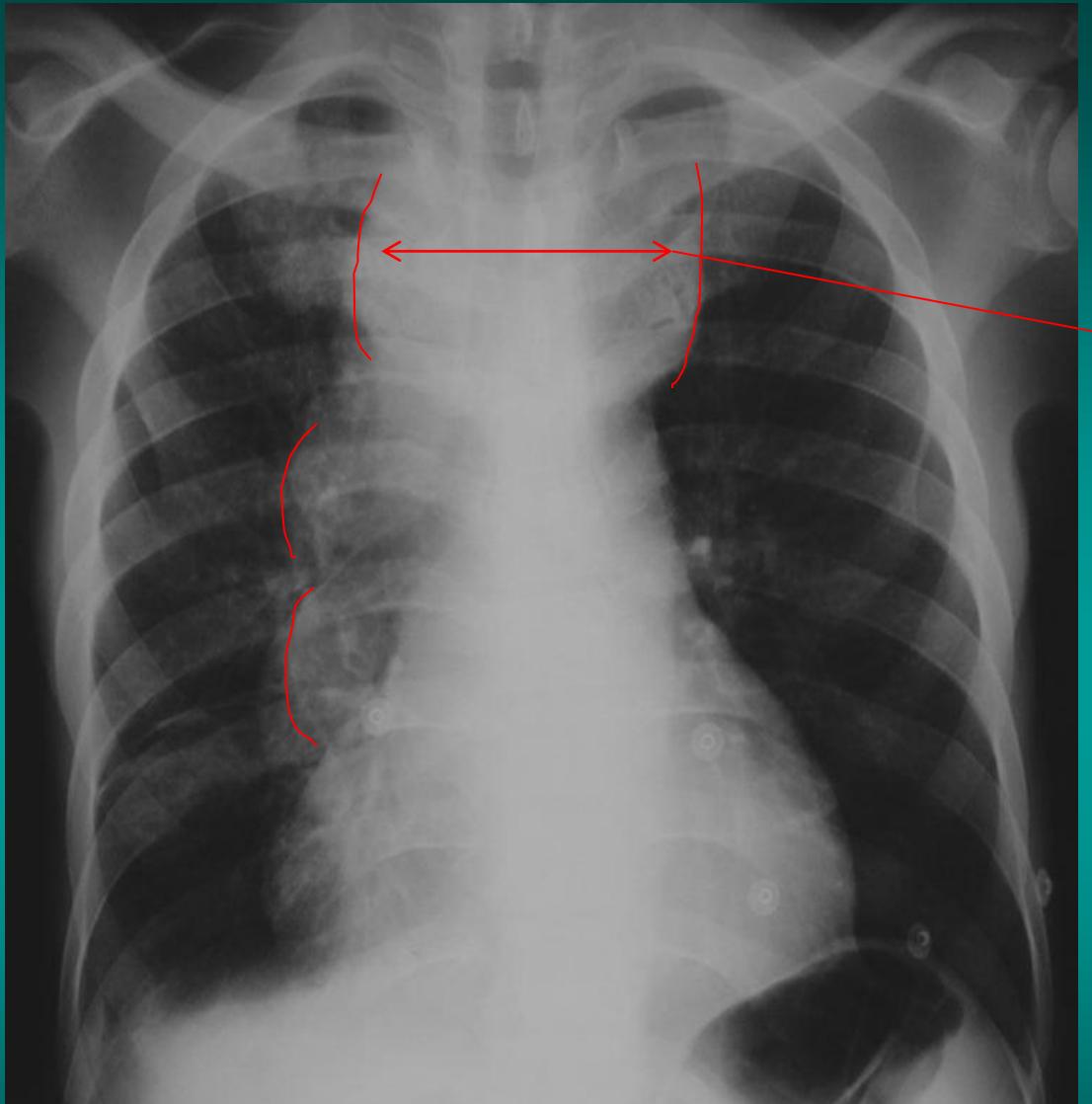
Tuberculous adenopathy with bronchial lesions

Tuberculous adenopathies are very frequent in cases of AIDS,
and sometimes very bulky



Tuberculosis / HIV +

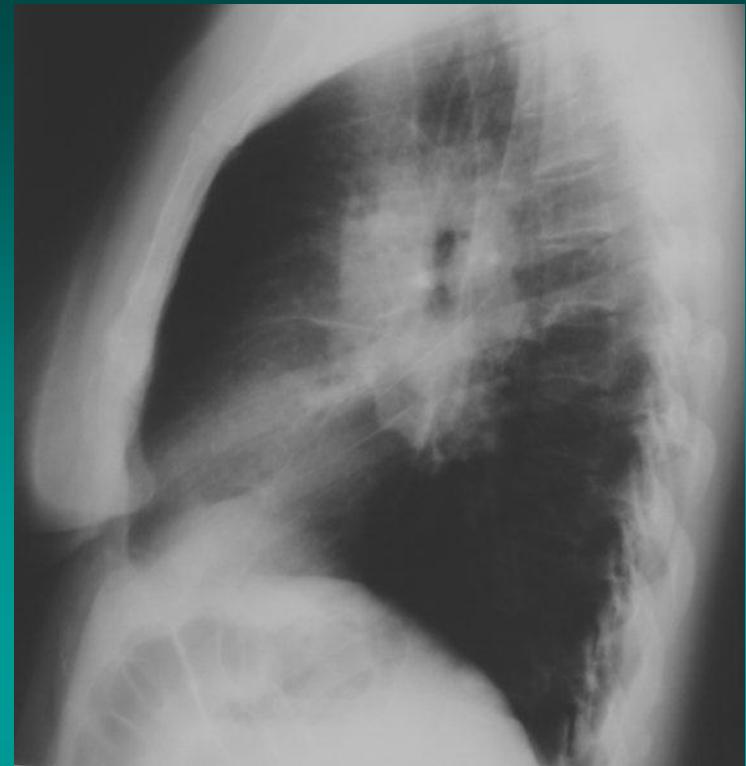




Here you see a CXR of TB/HIV co-infection:
bulky bilateral adenopathies (associated TB
intra abdominal adenopathies)

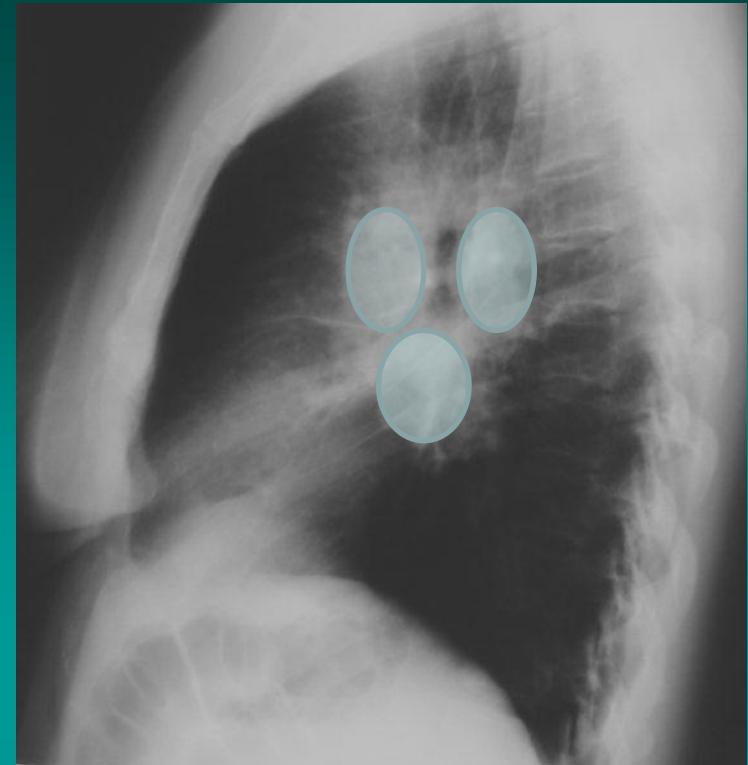
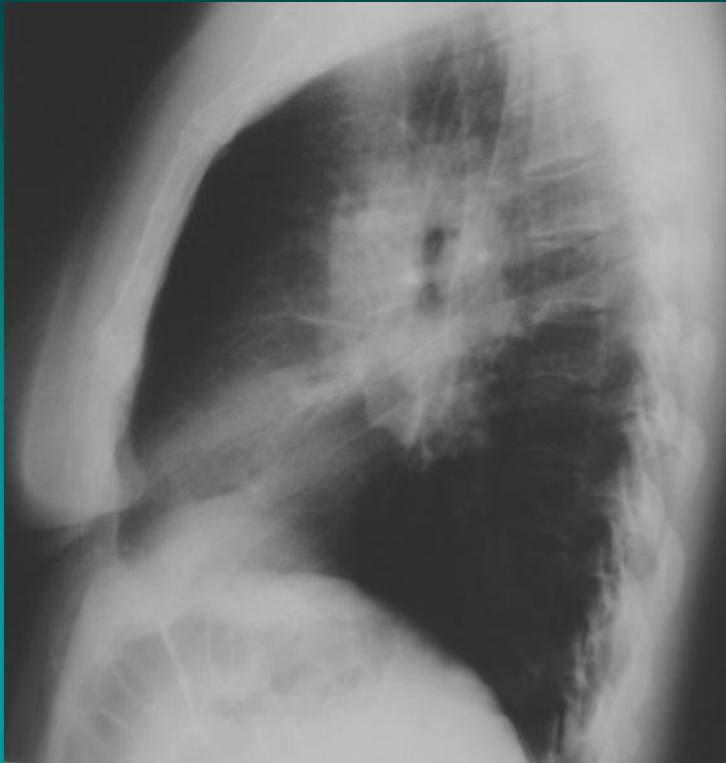
Normal scan

Part 4 : tuberculous adenopathies



Sarcoidosis

In countries with high incidence of TB this CXR would strongly suggest TB adenopathies



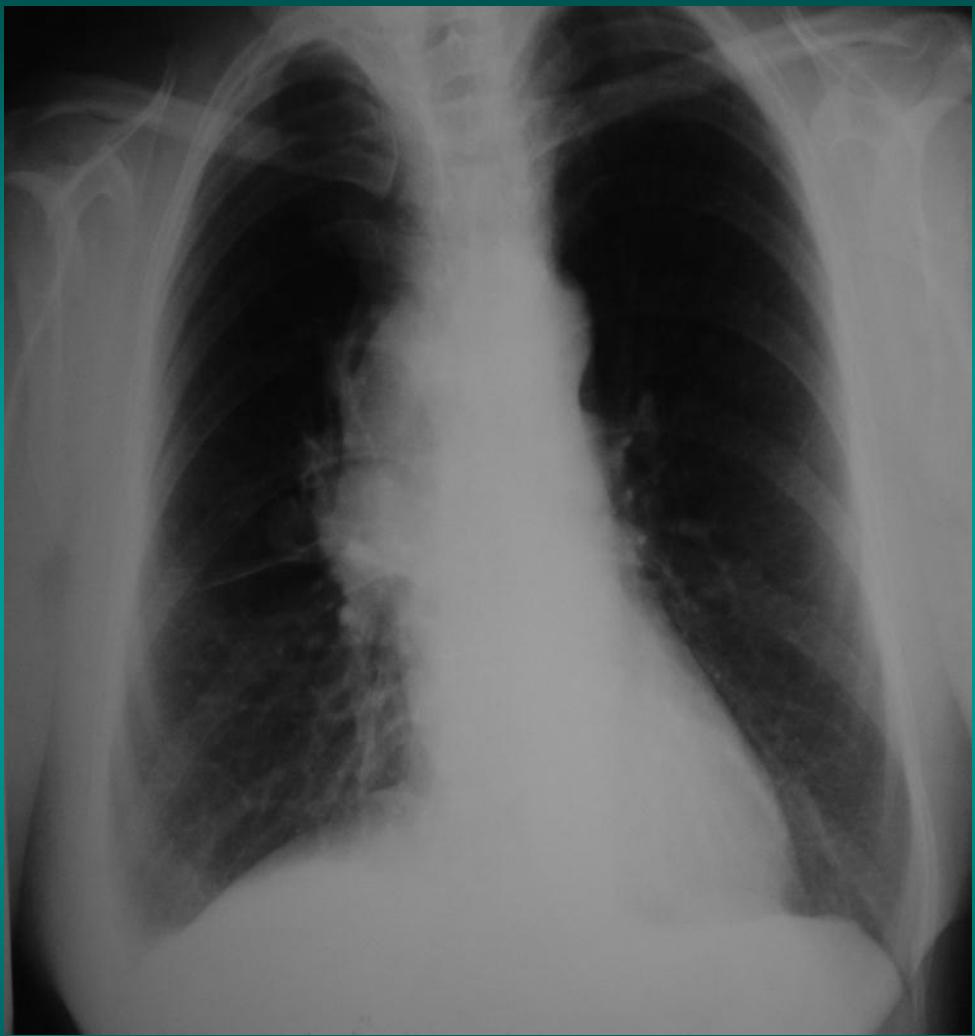
Lateral view is very useful for diagnosis of hilar and mediastinum adenopathies

But mediastinum adenopathies
are not always tuberculous



Bronchial carcinoma

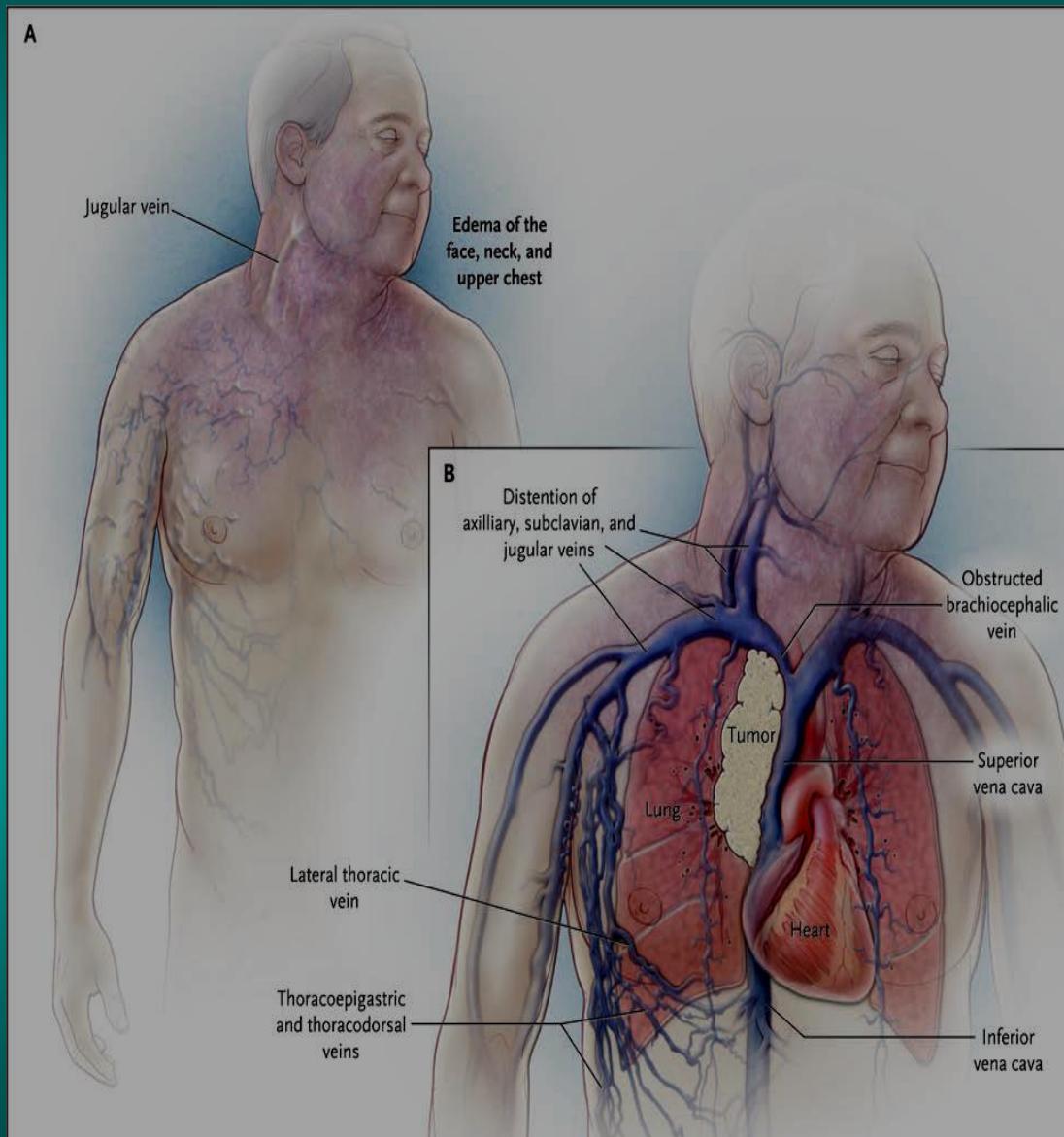




Bronchial carcinoma
with superior vena cava syndrome

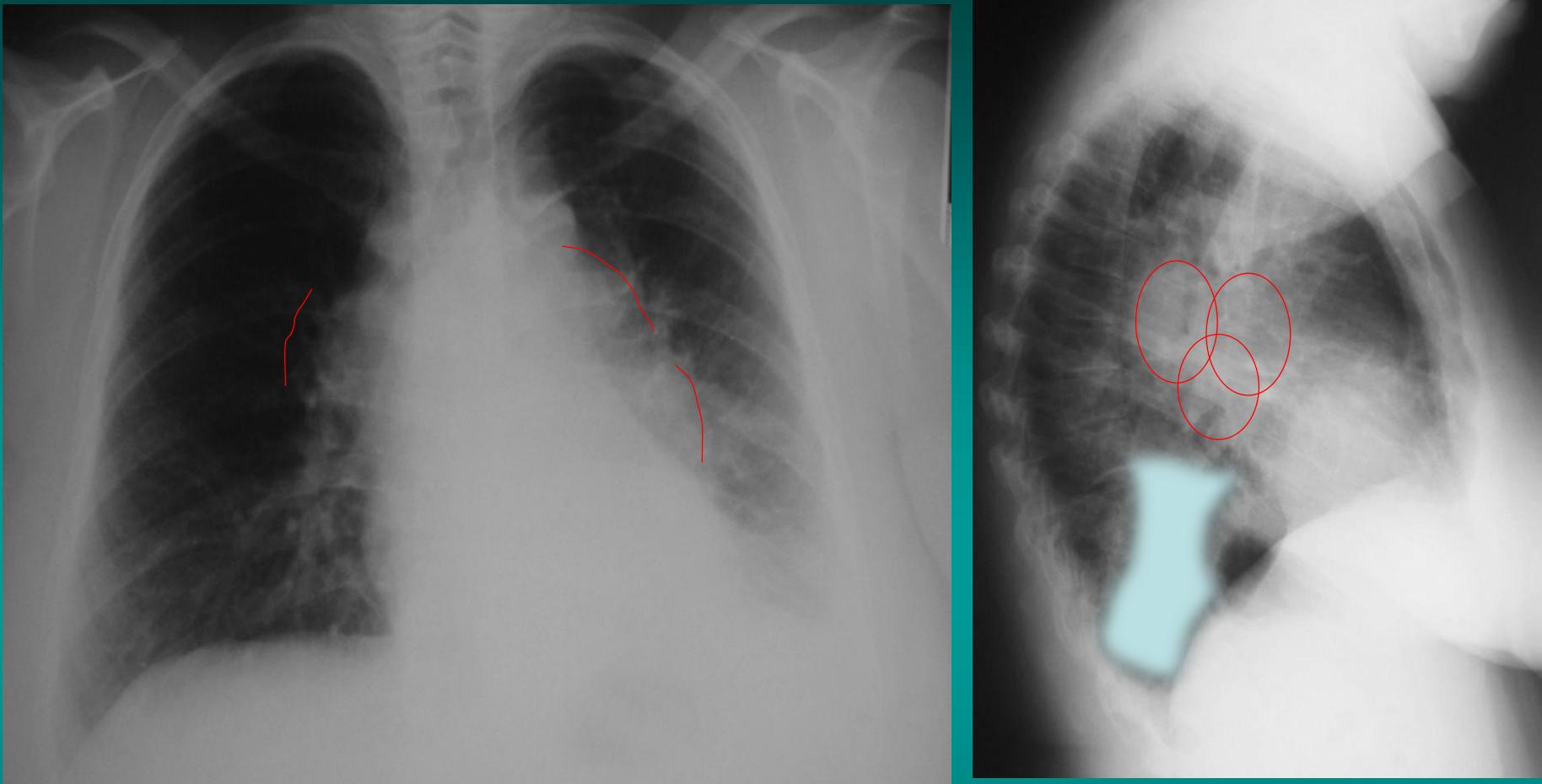


Superior vena cava syndrome





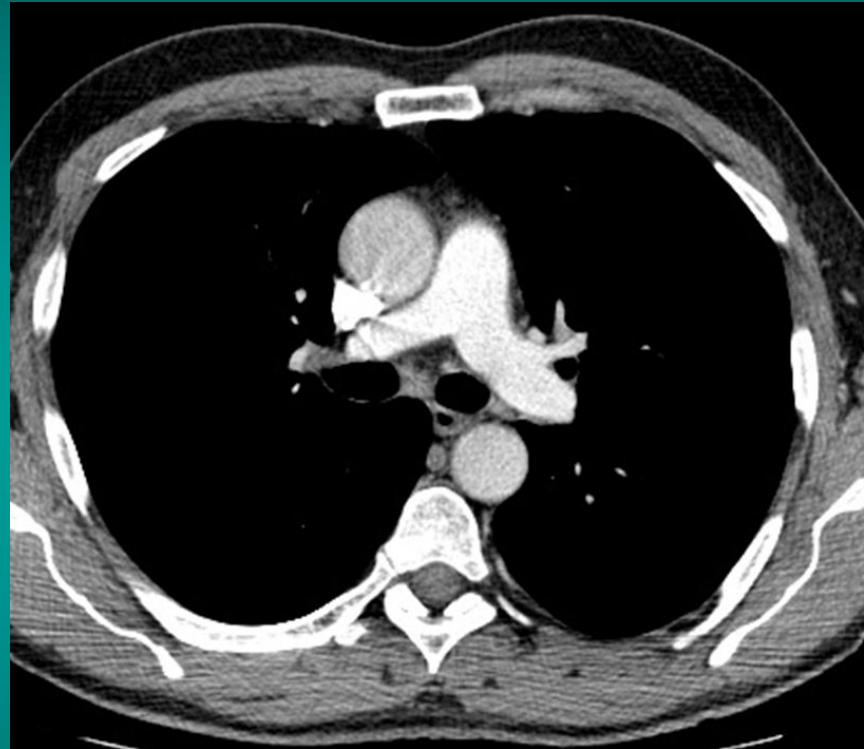
Small cell carcinoma bronchial cancer



Bilateral adenopathies and left inferior opacity with retraction: probable left inferior atelectasis*: In adults the association of hilar adenopathies with atelectasis strongly suggests bronchial cancer.



Previous case



Normal scan view

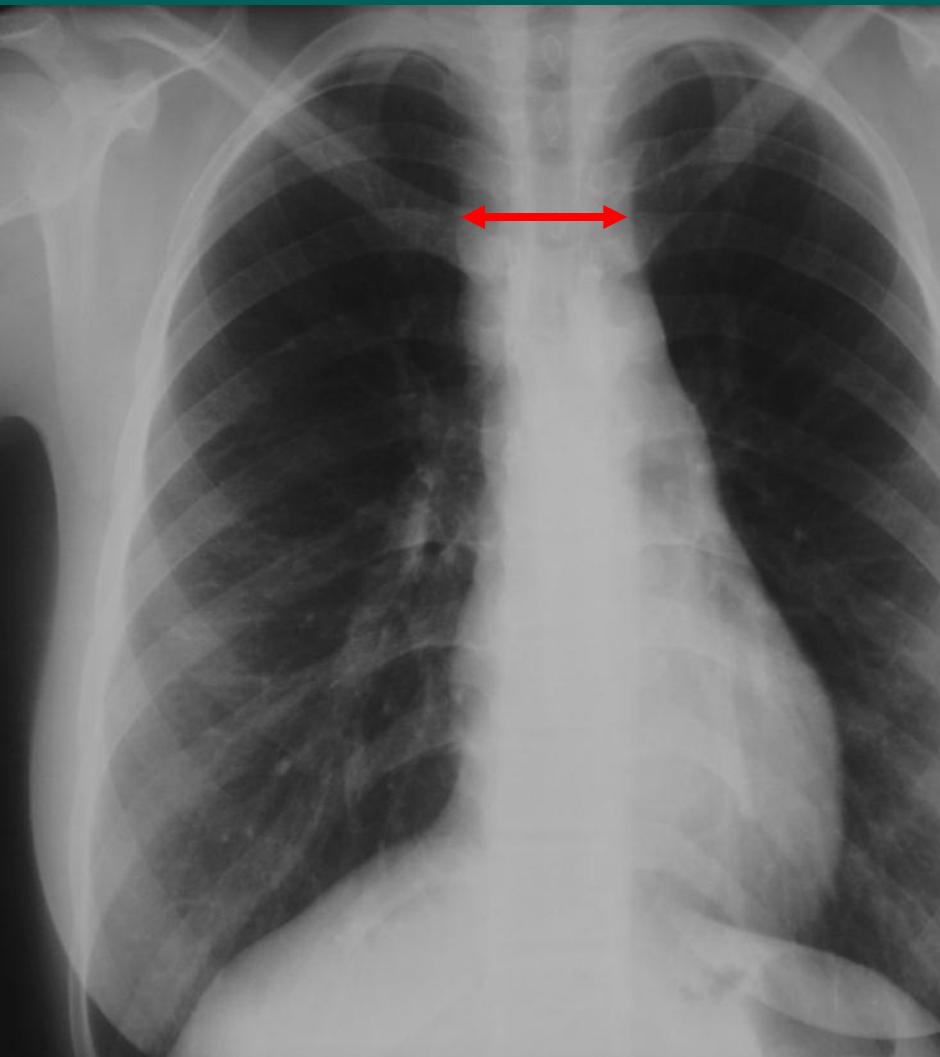
After
chemotherapy



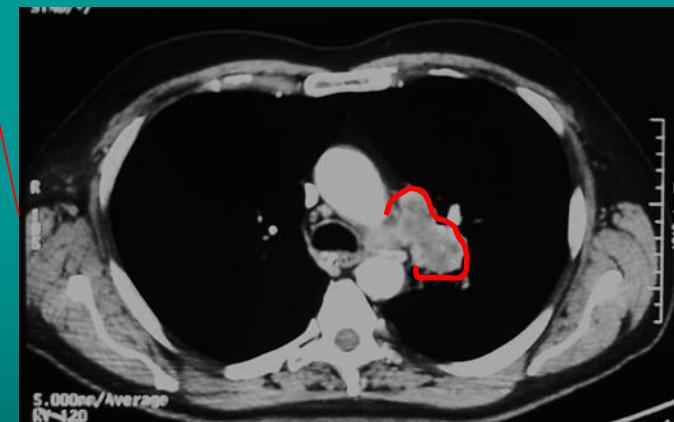
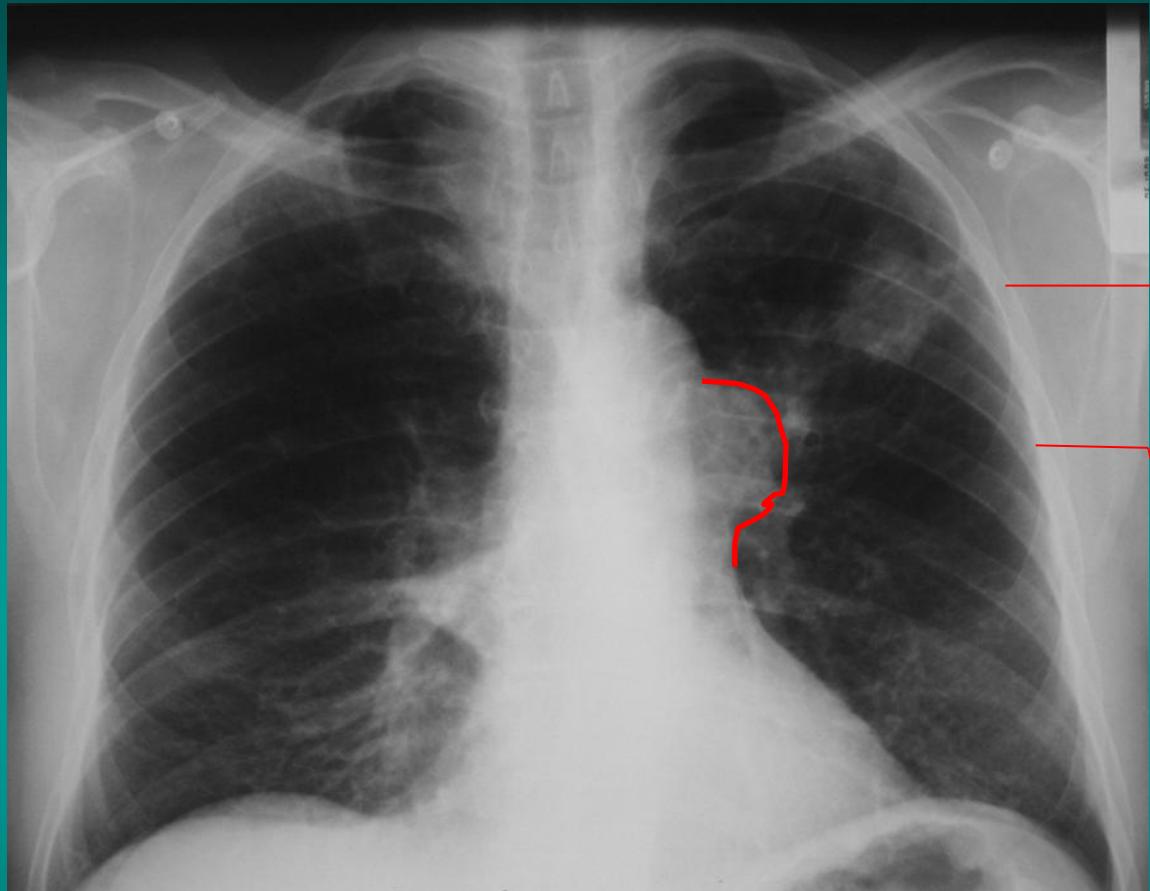
Young woman, 19 years old, Hodgkin's disease.



Young woman, 19 years old, Hodgkin's disease.



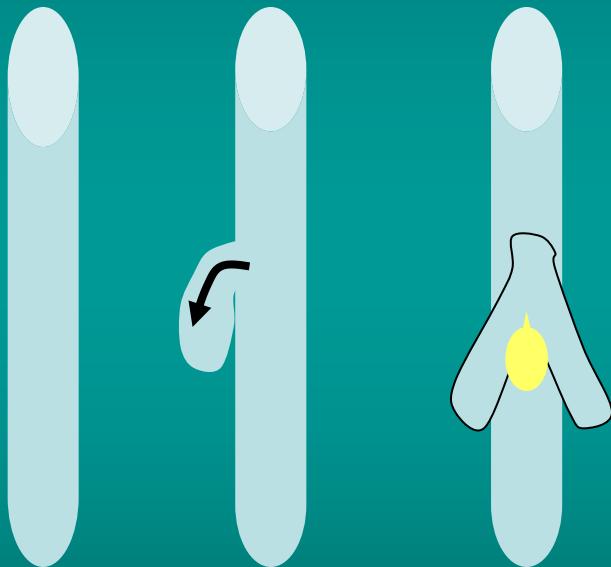
normal view



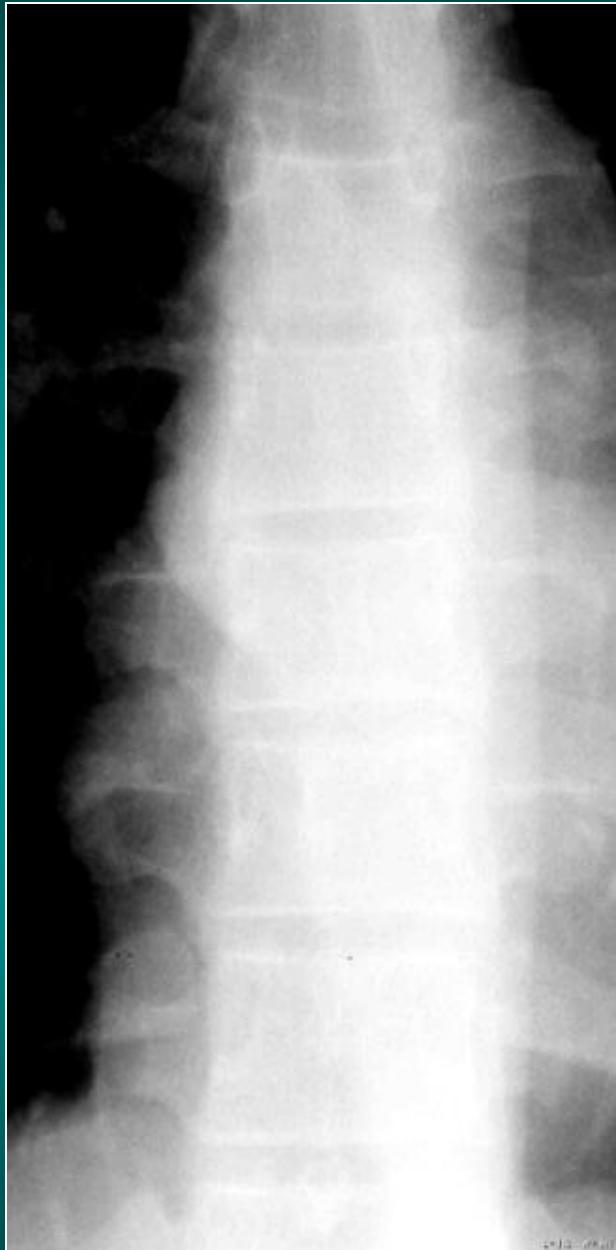
Bronchial cancer with
hilar adenopathies

Bronchogenic cysts

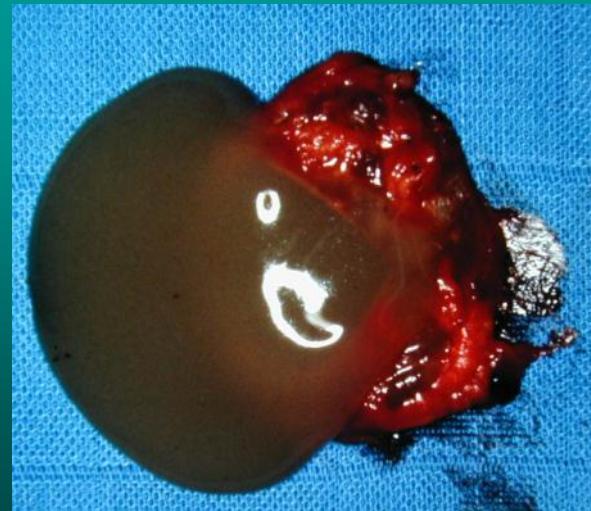
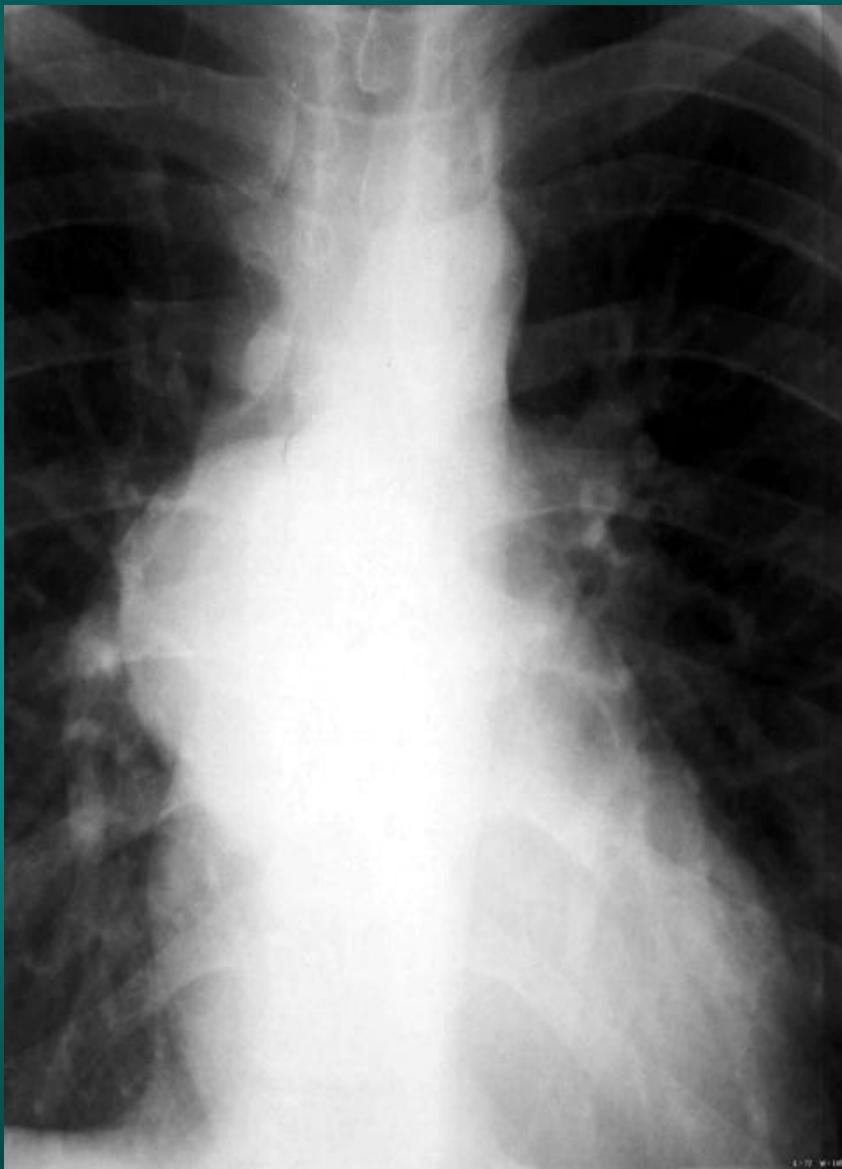
10% of mediastinal tumours



embryology

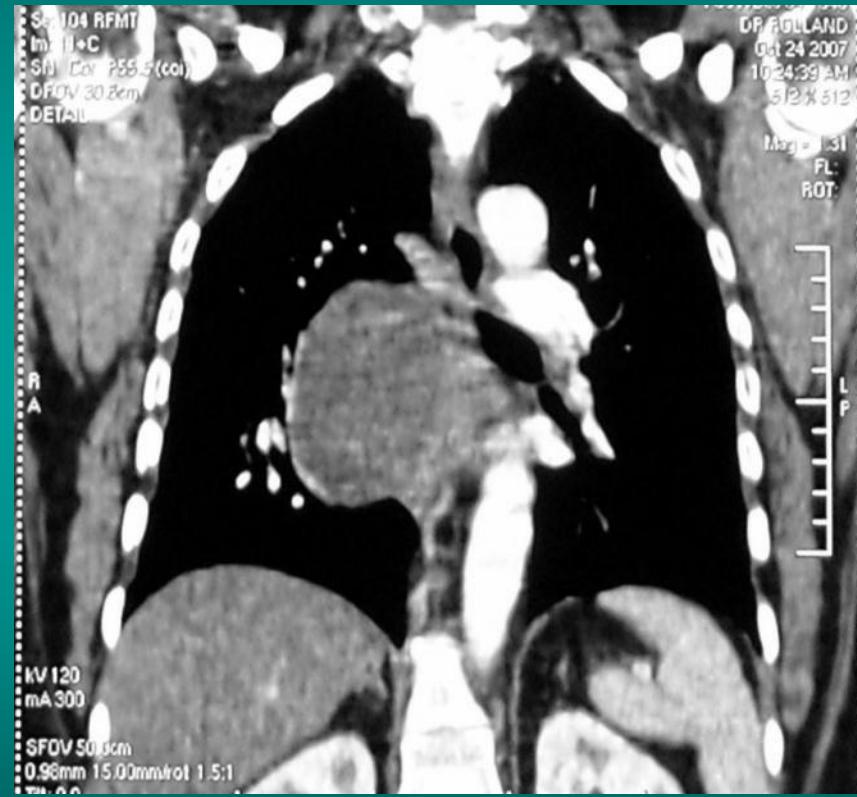
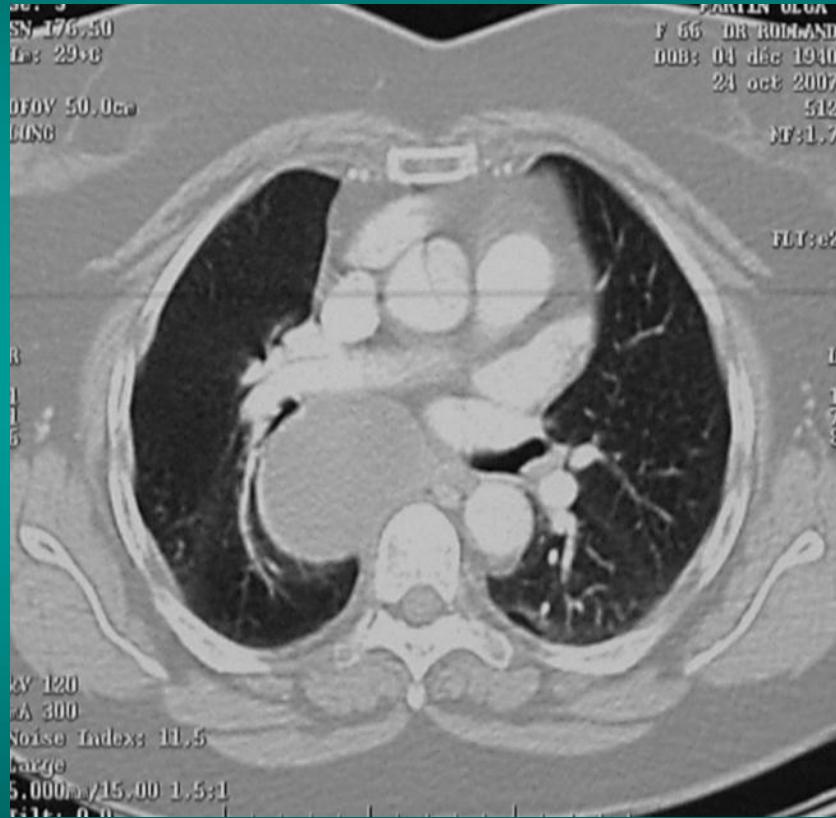


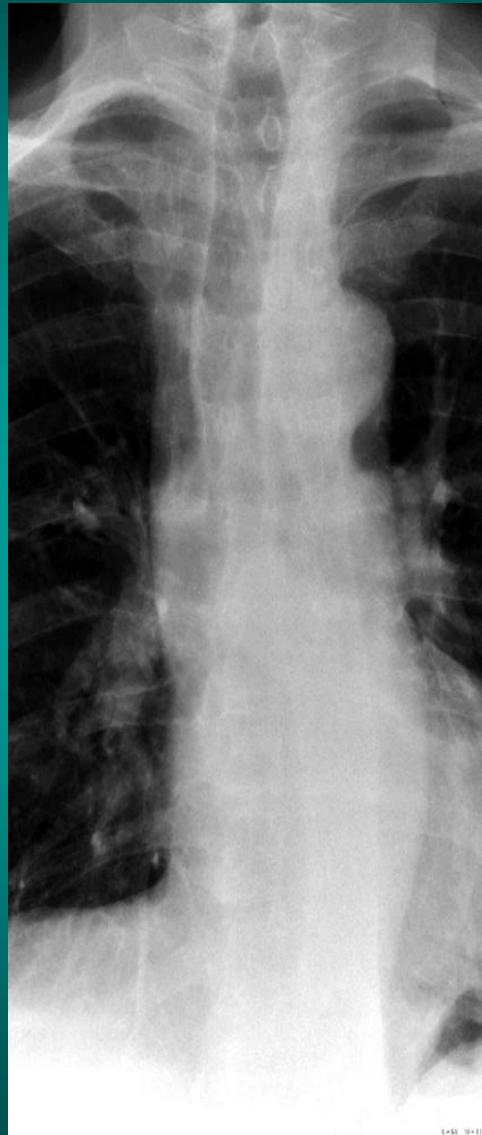
Bronchogenic cysts





Bronchogenic cyst (courtesy of Dr. Bellamy)

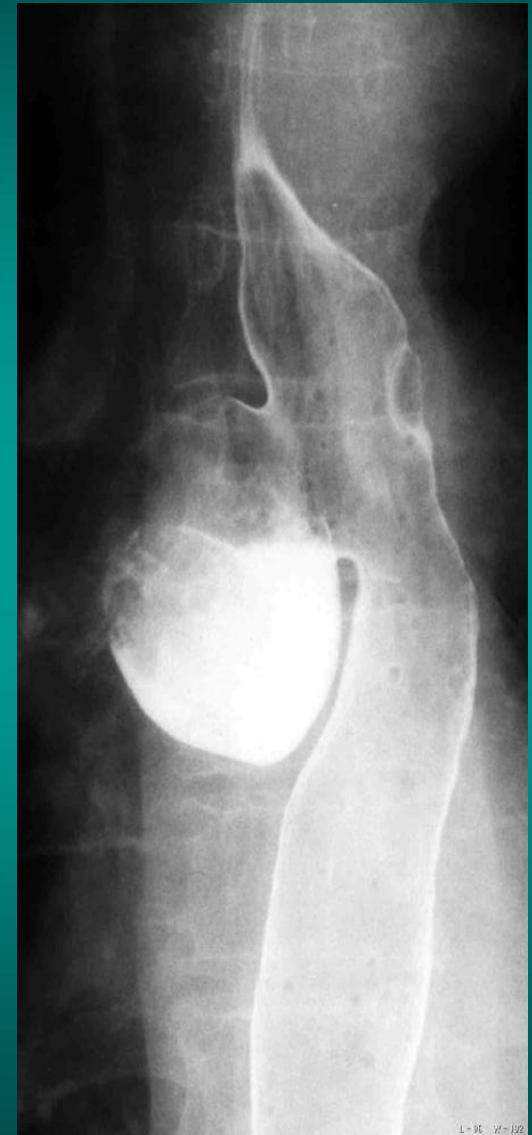


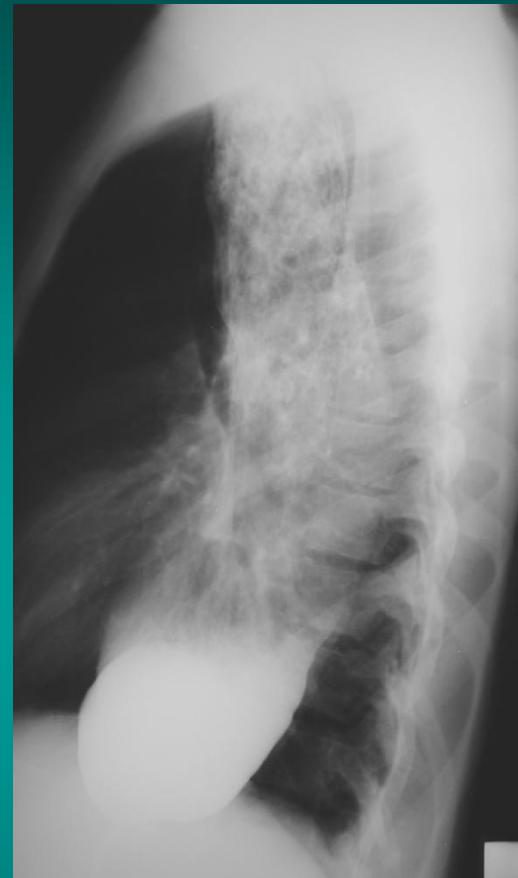


**oesophageal
diverticulum**

**Oesophagus
pathology is not well
visible on CXR**

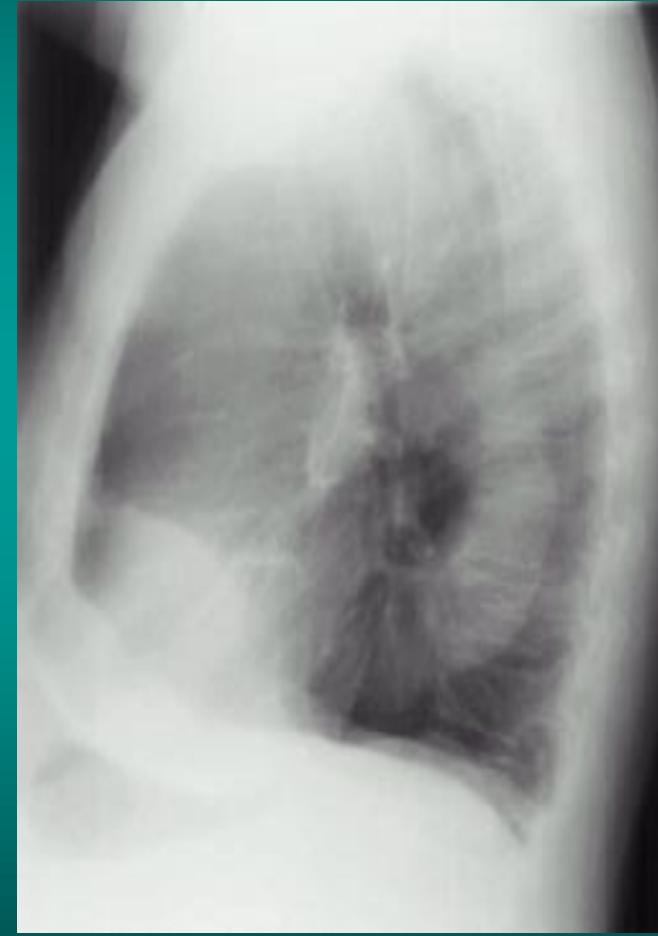
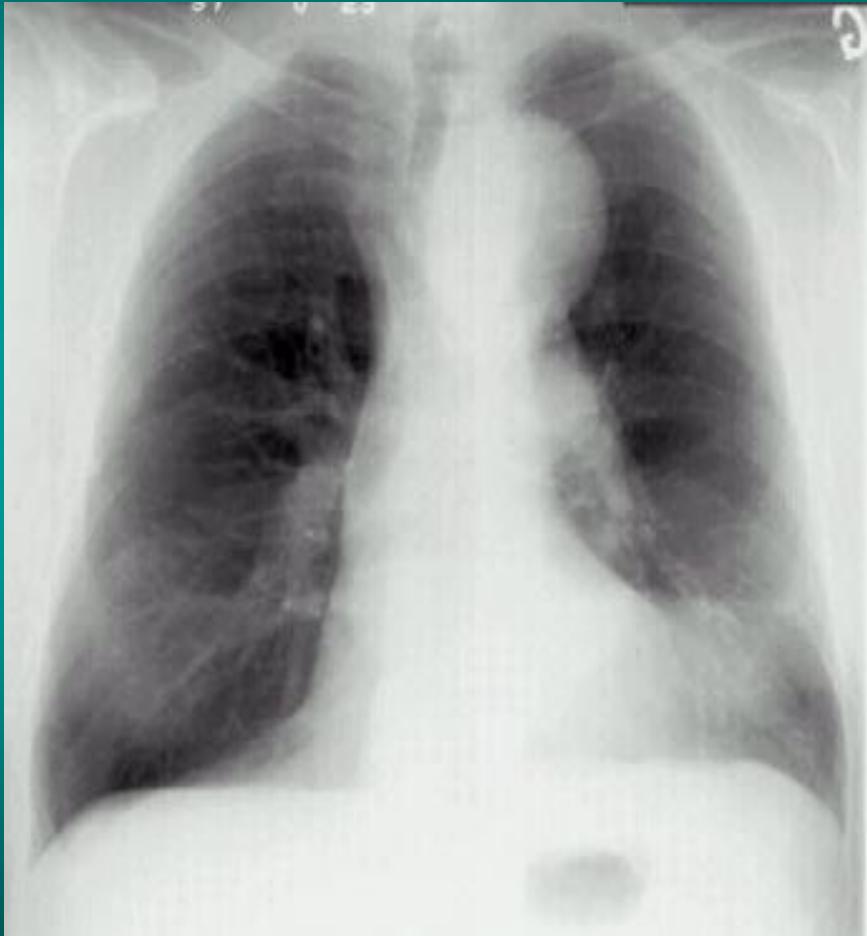
**If no scanner ,use
baryte opacification**





Mega-oesophagus

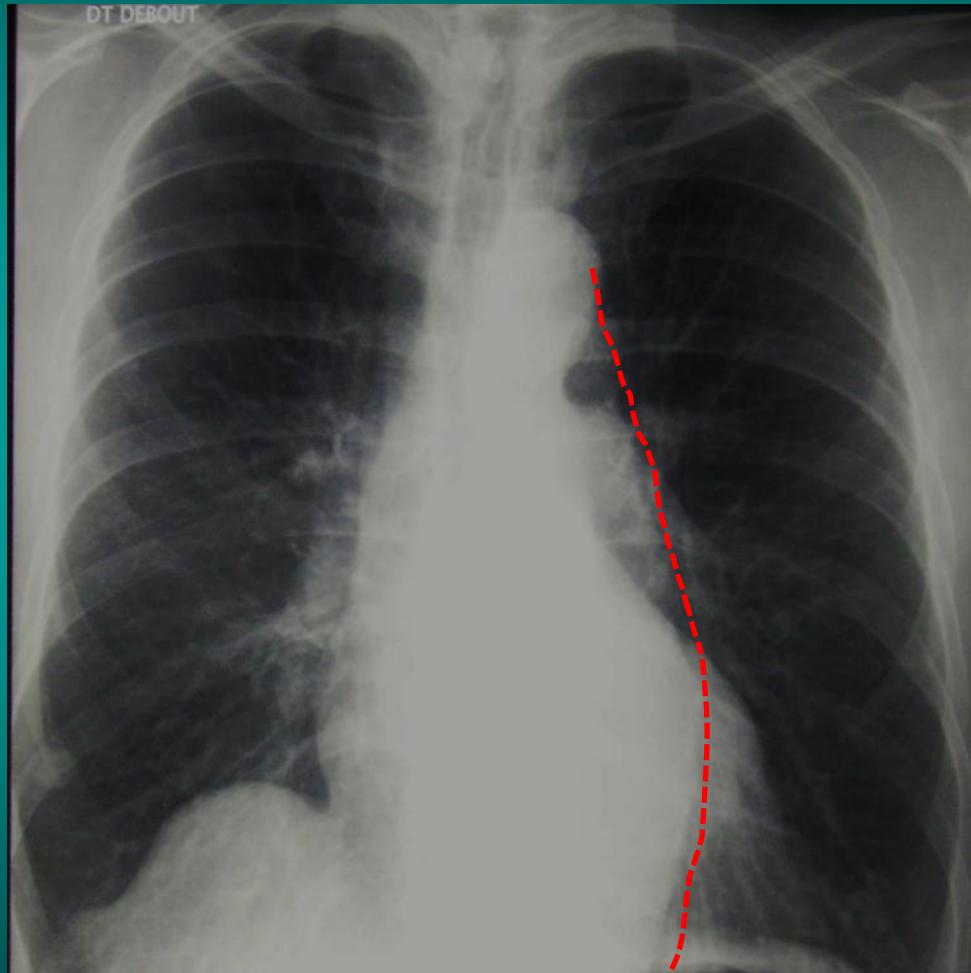
Aorta arch aneurysm

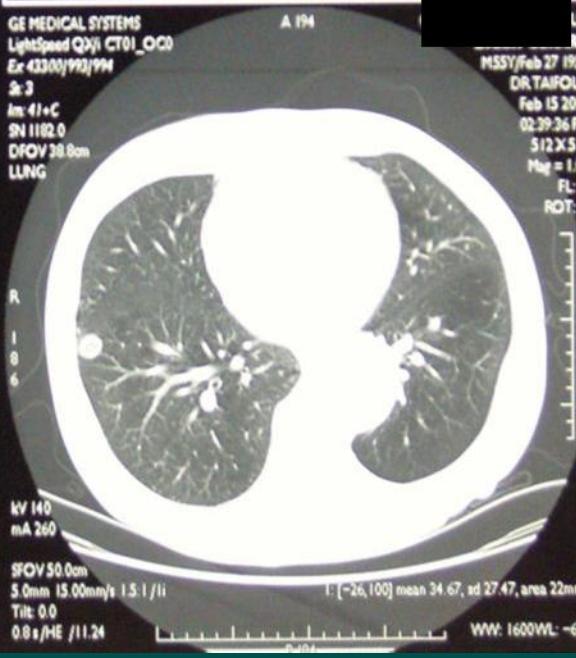
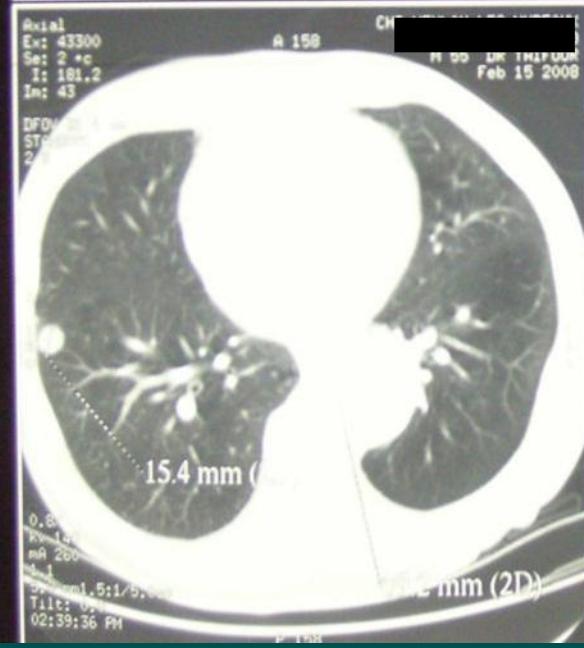
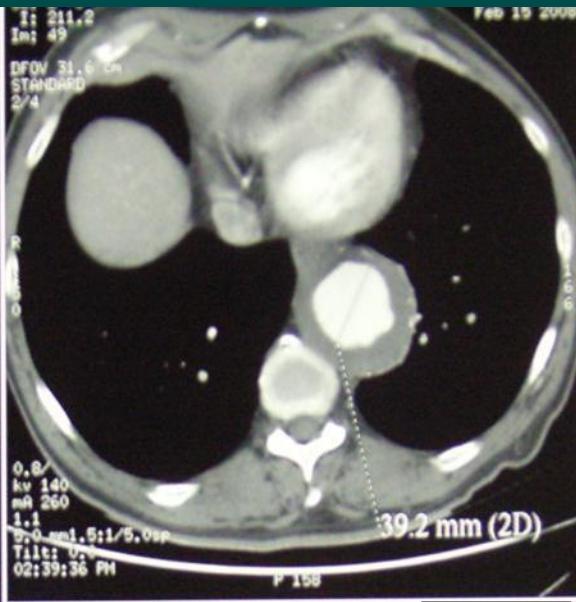
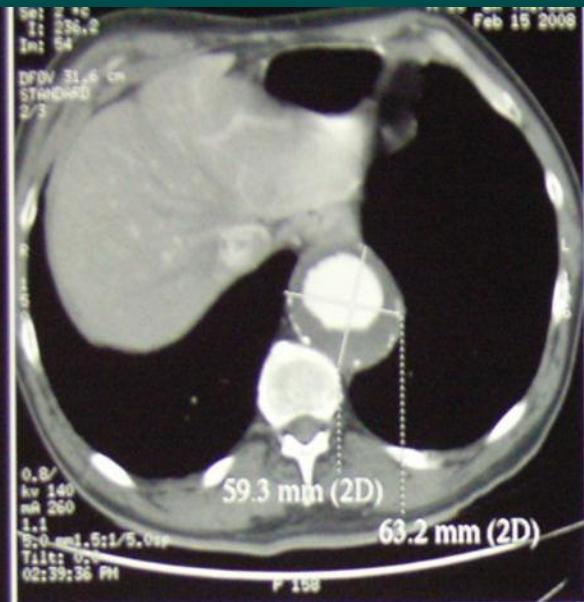


Descending aorta aneurysm



Descending aorta aneurysm

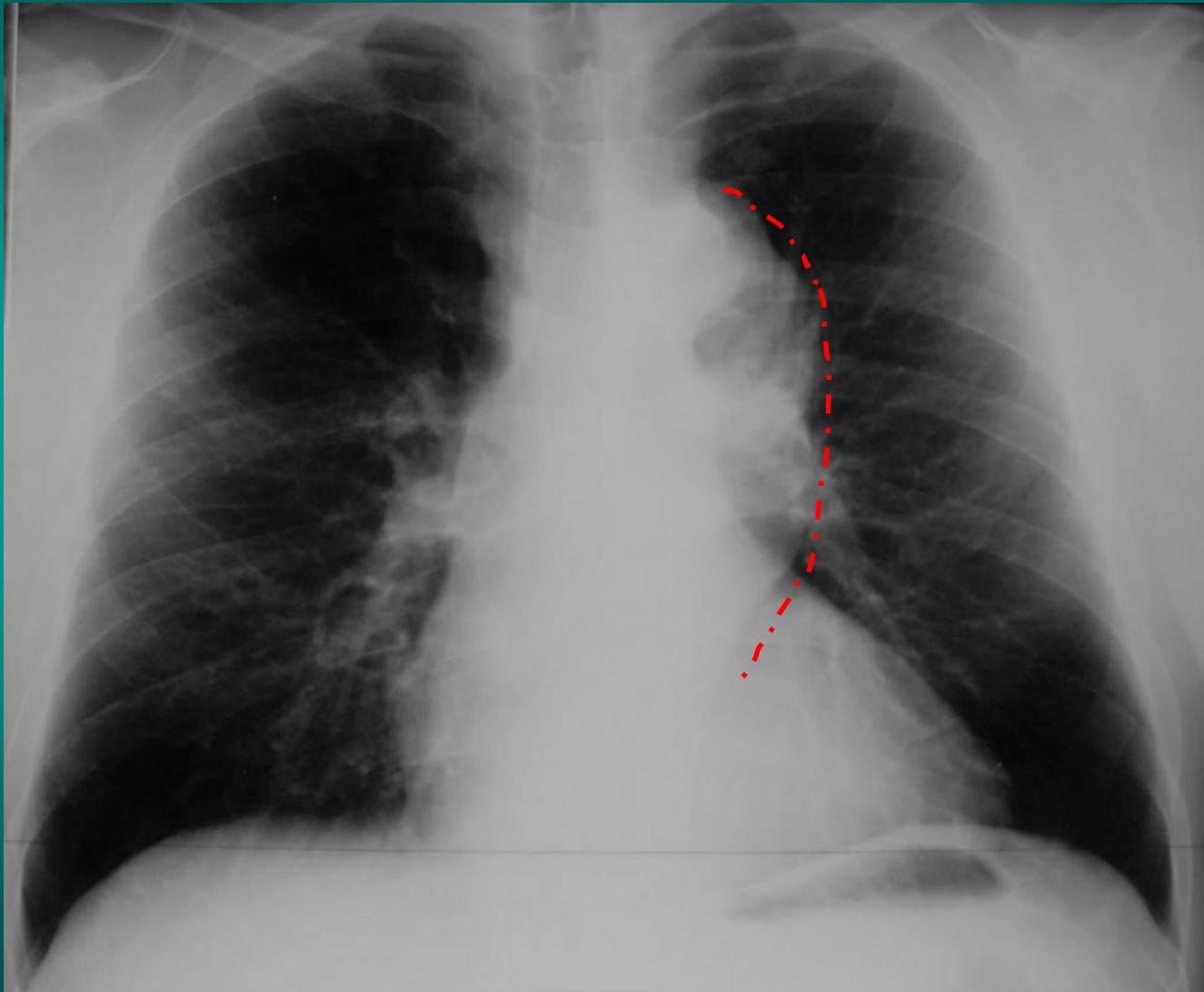




Aneurysm of aortic arch and descending aorta

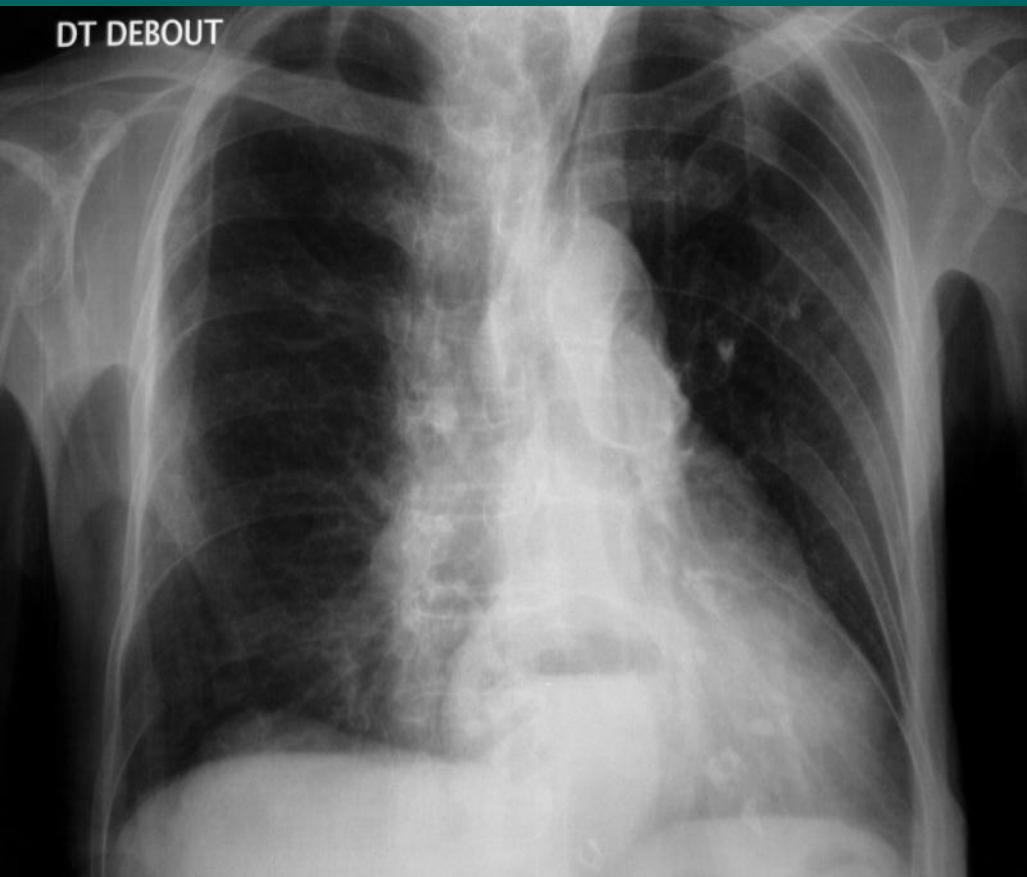


Aneurysm of aortic arch and descending aorta

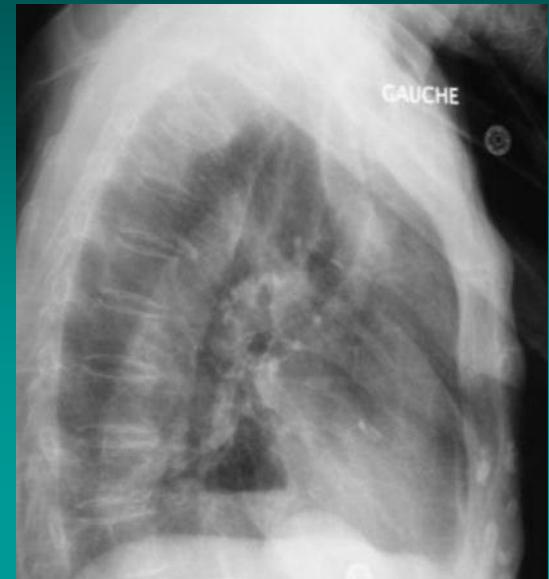


Hiatal hernia: round opacity, in retro-cardiac situation, with a liquid level, disappearing in decubitus position

DT DEBOUT



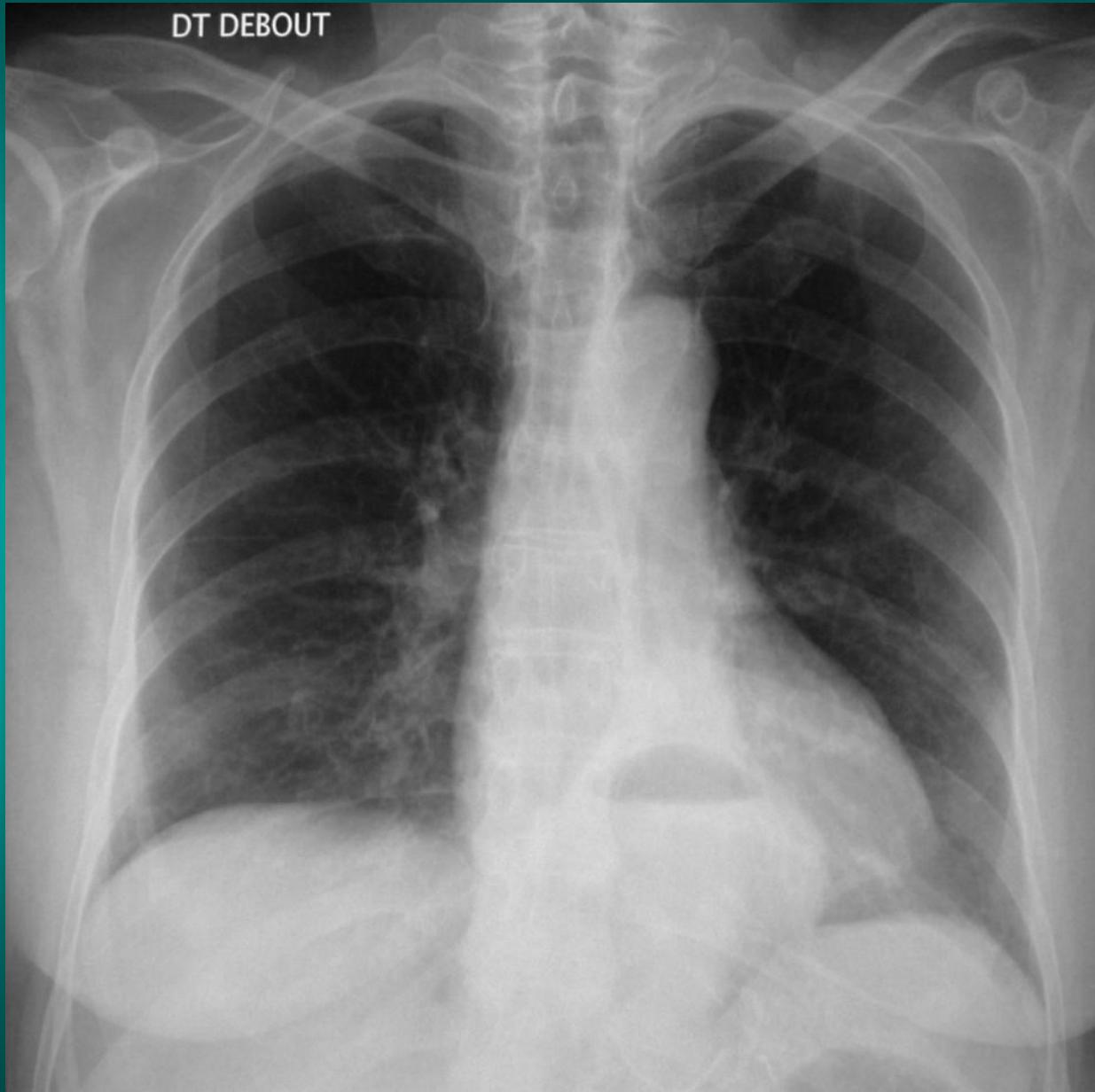
GAUCHE

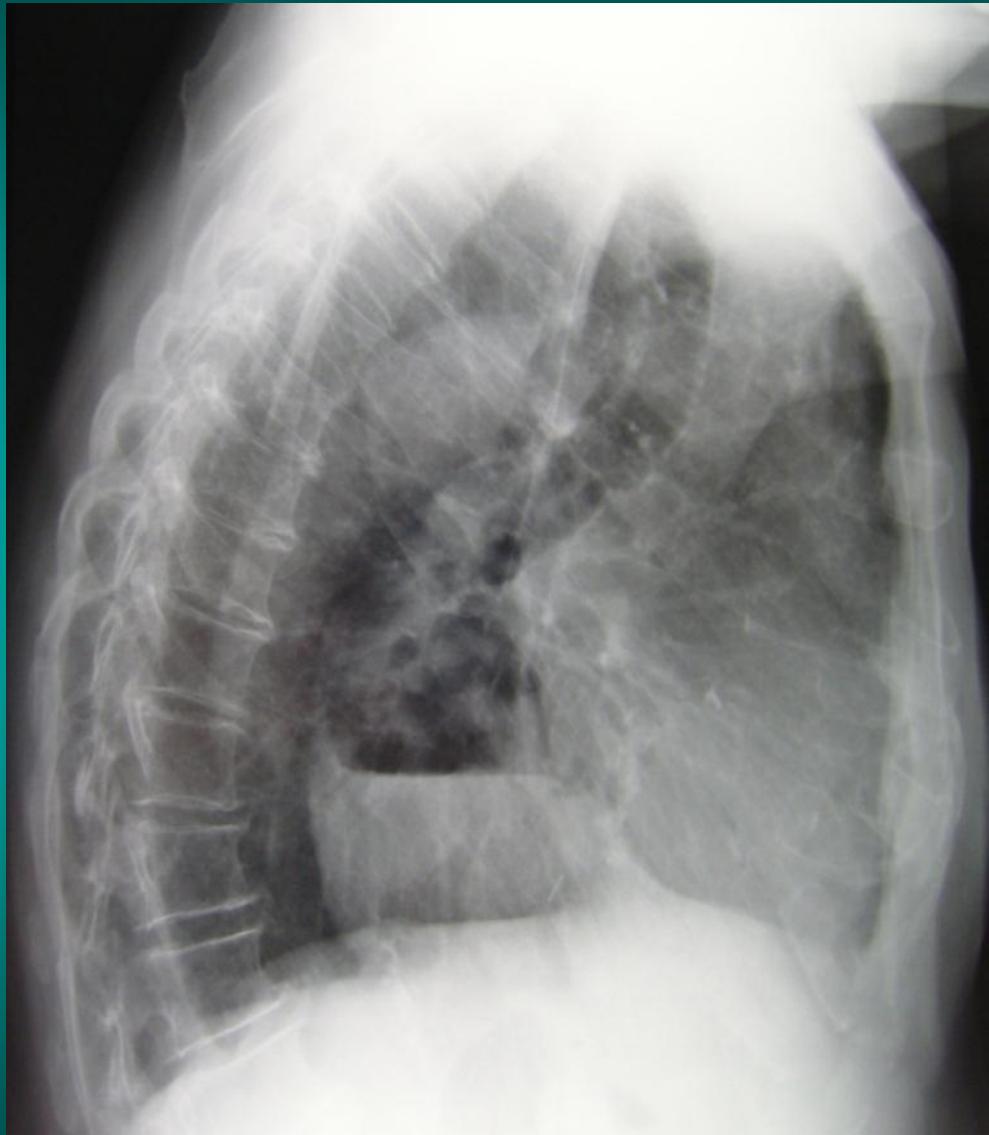


DT COUCHE

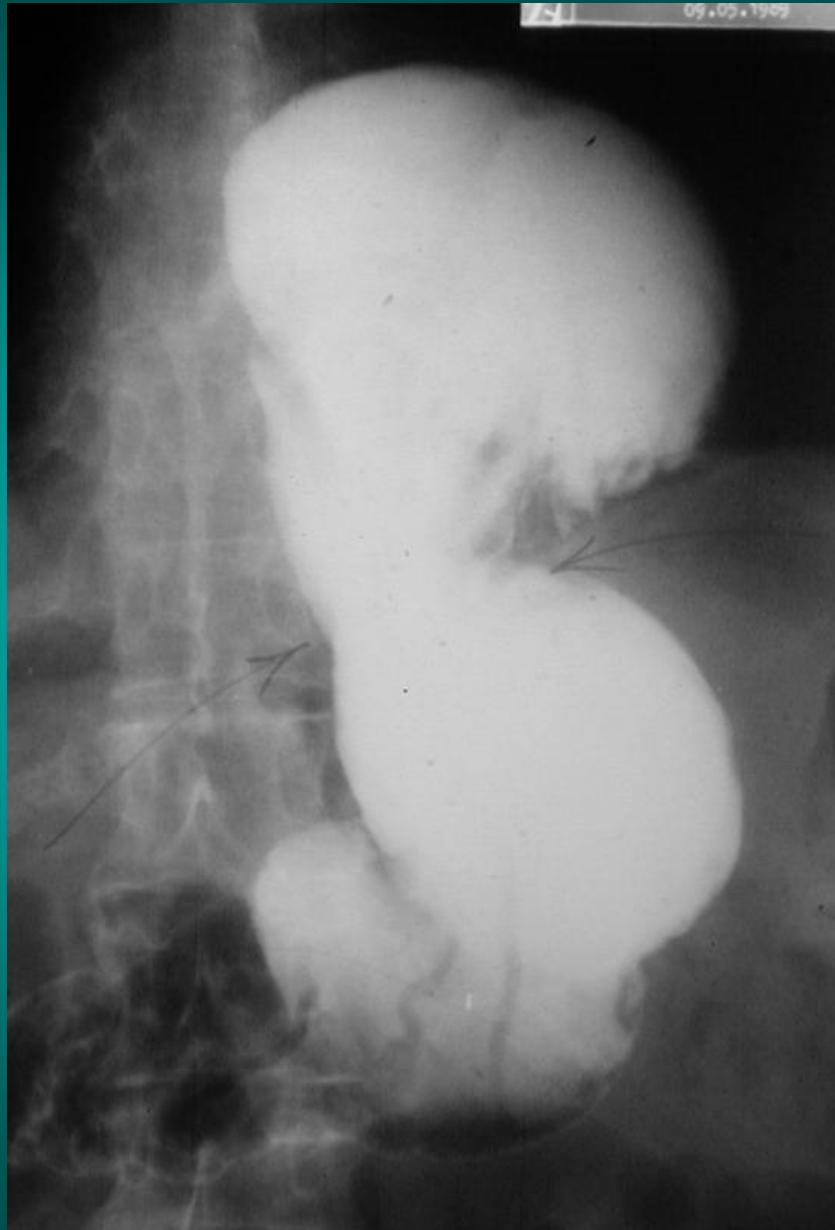


DT DEBOUT



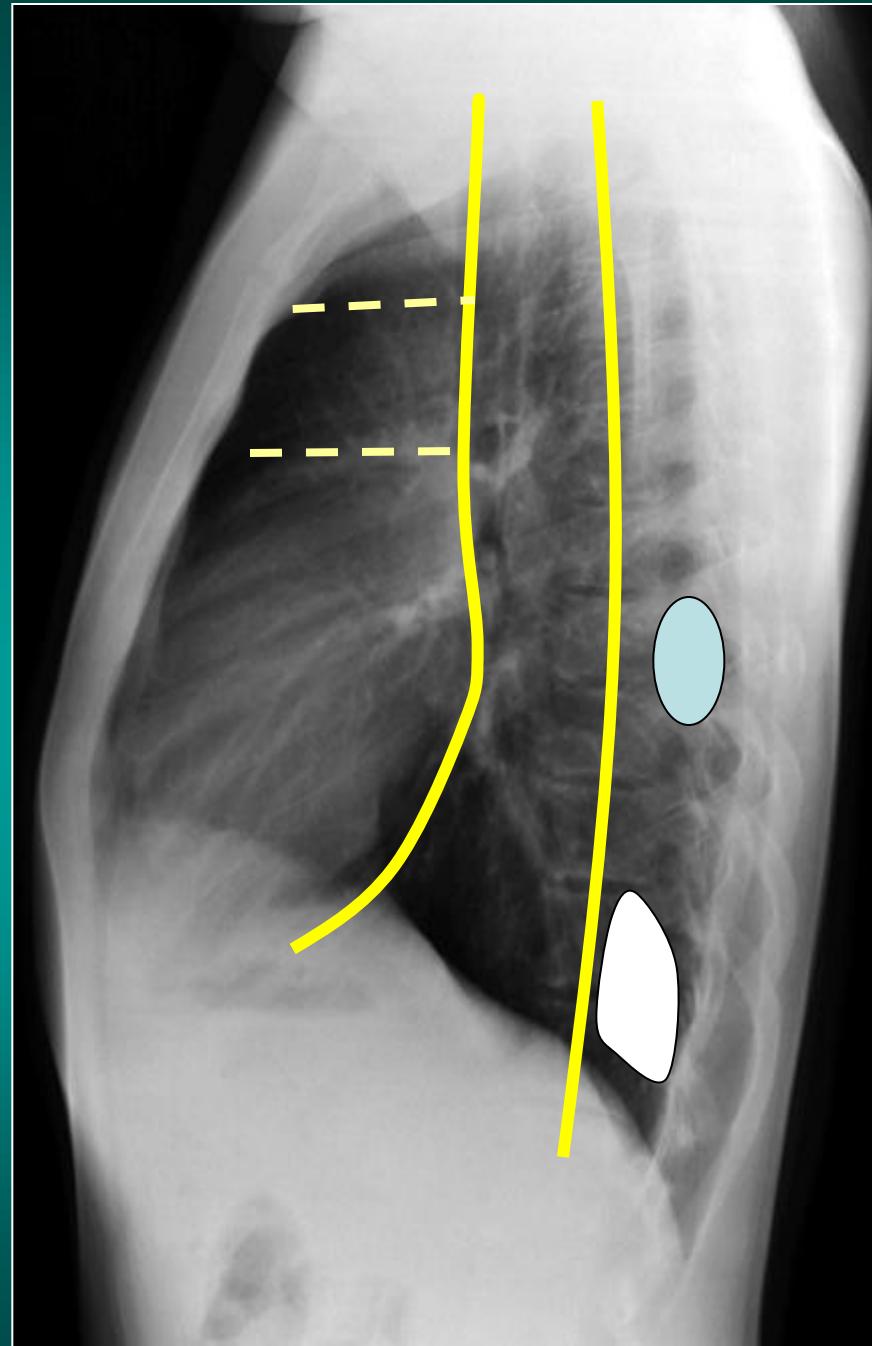


Hiatal hernia



Posterior mediastinum

- Neurogenic tumours
- and rachis pathology



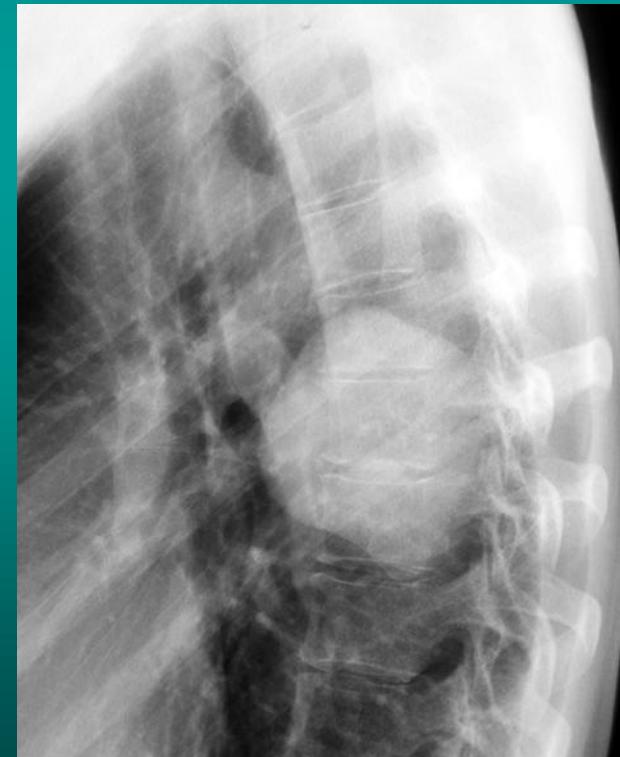
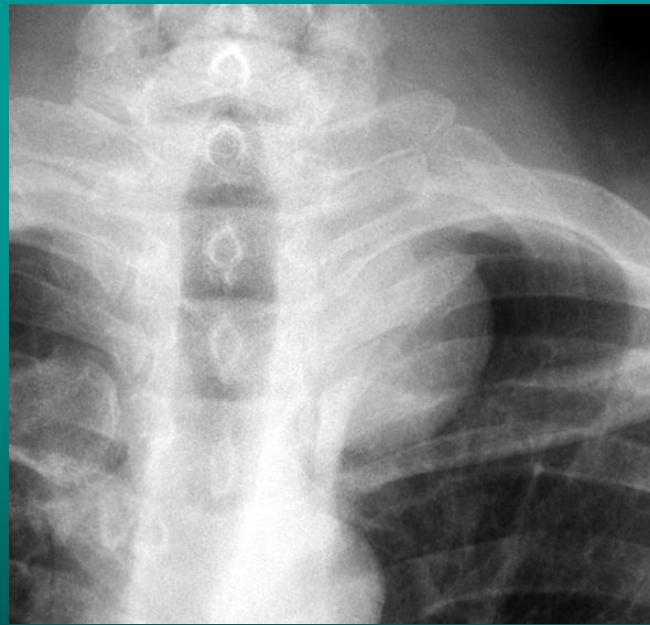
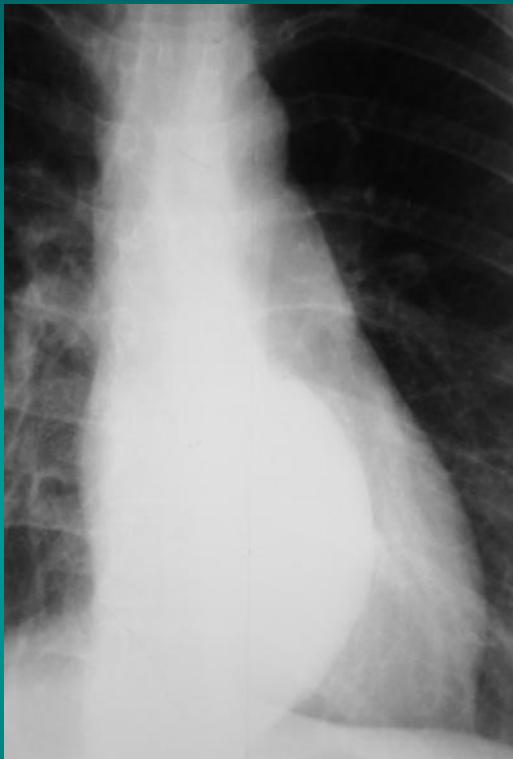
Neurogenic tumours

- ▶ Tumours of the nervous sheath (adults++):
 - Schwannoma (benign or very rarely malignant), the most common
 - Neurofibroma
- ▶ Tumours of the nervous cells:
 - neuroblastoma, ganglioneuroblastoma (children+++)
 - ganglioneuroma (adults)
- ▶ Tumours of the paraganglions:
 - paraganglioma

Malignant tumours: Adults: 1 to 4%

Children: 40 to 60%

Neurogenic tumours

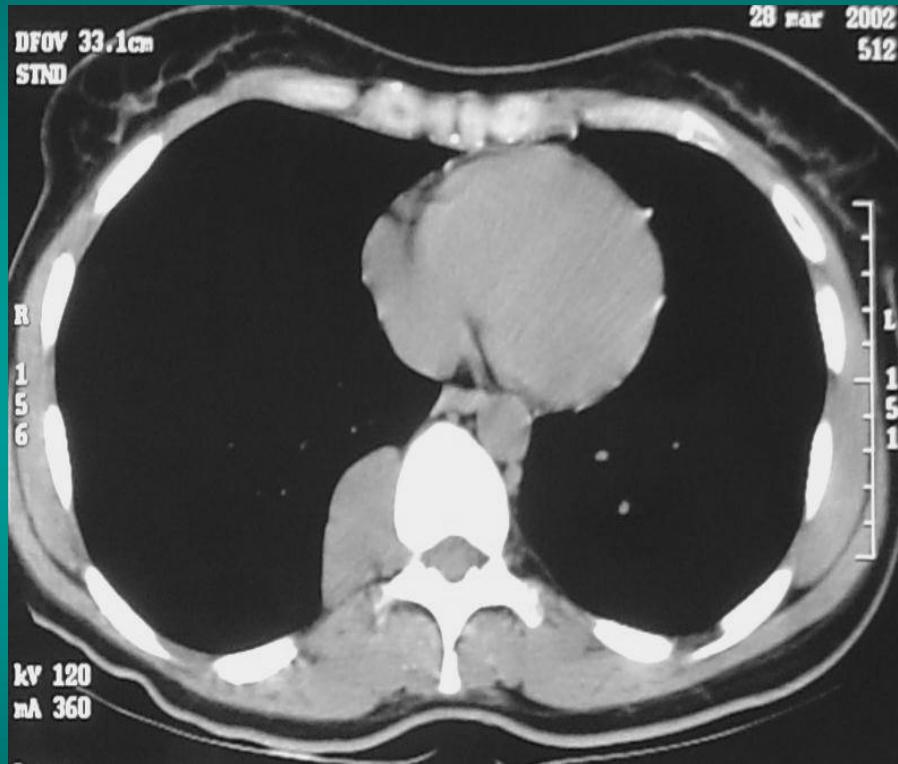


Courtesy Pr Jeanbourquin France



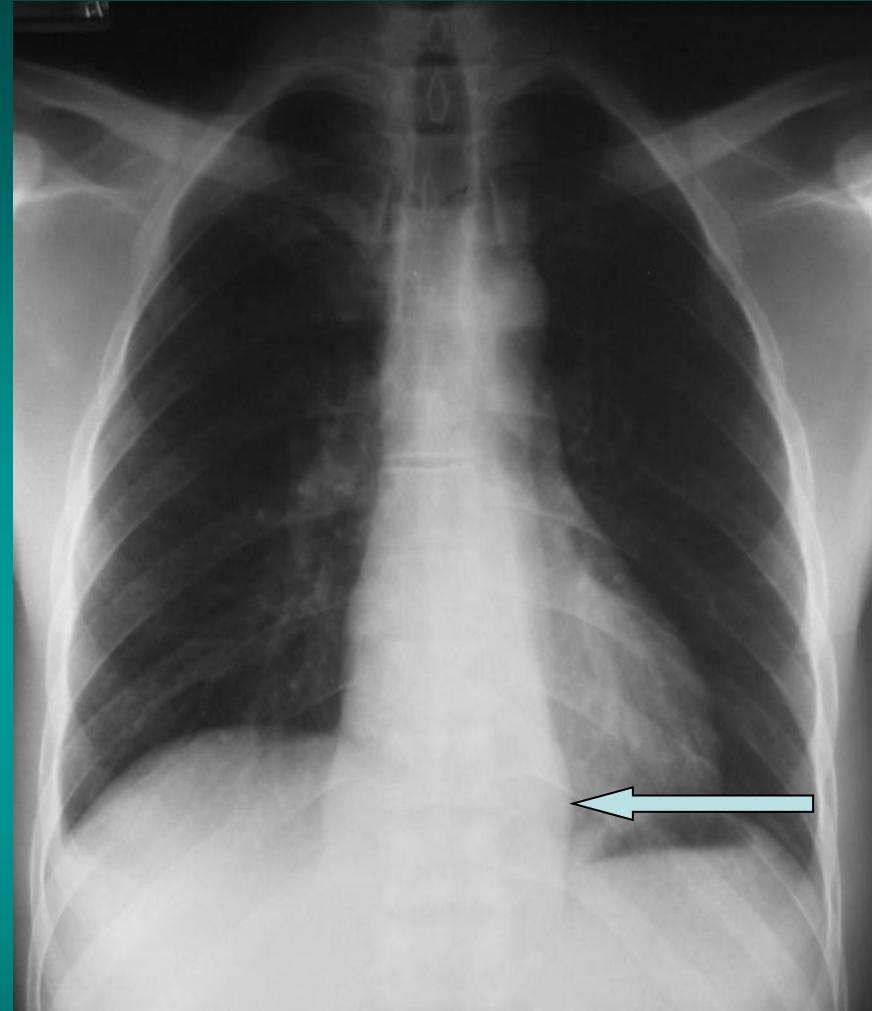
Woman, 35 years old
systematic radiologic examination

Scanner and MRI: neurogenic tumour of the posterior mediastinum





1998



1999

Pott's disease: tuberculosis of para vertebra and psoas muscles and of vertebra corpus

In cases of posterior mass, always look at the rachis and consider Pott's disease.

