Basic Interpretations of CXR (1)
胸部X光片基本判讀須知

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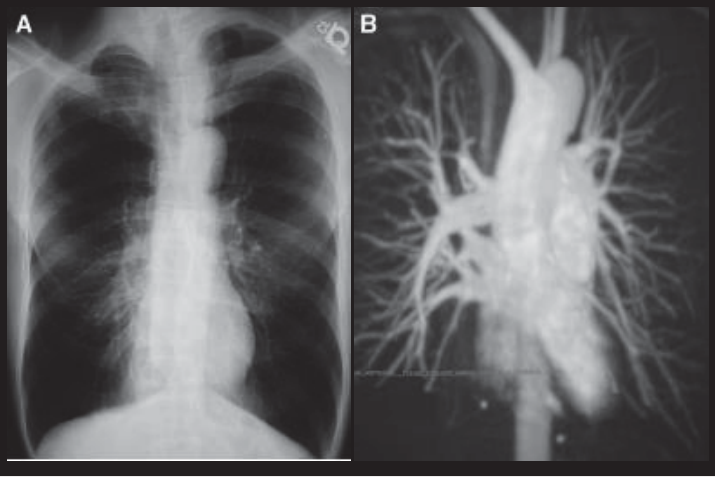
Standing PA chest radiograph


Standing chest radiograph in lateral (Lat) view --- Rt / Lt


Supine AP chest radiograph

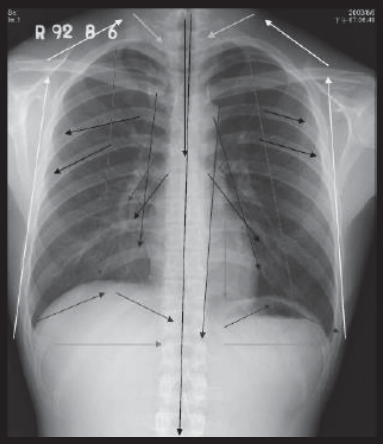

Correlation between frontal radiograph of the chest (A) and the frontal view of MIP image of MRA (B)



CXR reading

- Name, chart Number, date
- Quality of CXR Film
- Age, Gender, characteristics of body built
- Position
- Reading sequence
- Patterns of Lesions
- Impression and Management

Steps of CXR Reading



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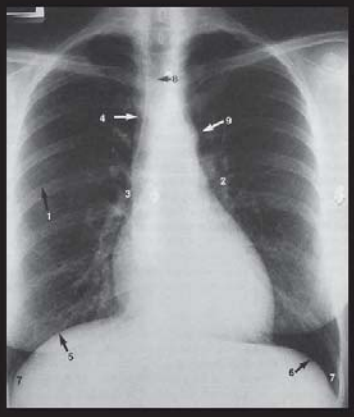
Normal CXR: PA view

1.Horizontal fissure：
6th rib in axillary line
2.Left hilum：
2.5 cm higher than right
3.C/T ratio：
<1/2
4.White edge of trachea：
<2-3mm
5.Right diaphragm：
3cm higher than left (6.)
7.C-P angle
8.Trachea
9.Aortic knob



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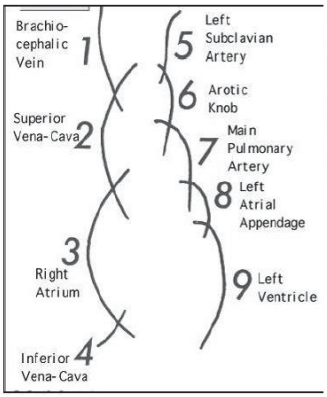

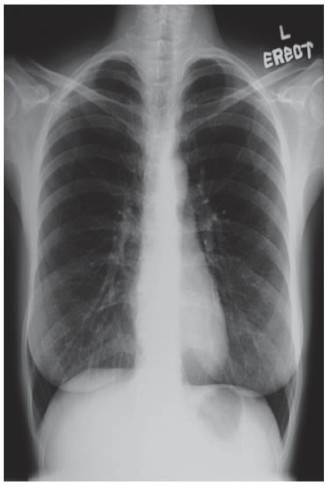

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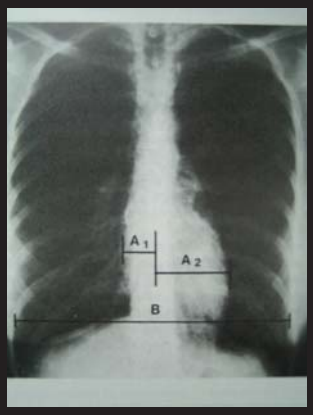
Evaluation of heart size by standing PA CXR



- Cardiothoracic index (ratio) = (A1+A2)/B
- Normal C-T index:

<5 y/o : < 0.5-0.6
> 5 y/o : < 0.5

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年齡大小？

- 1st costal cartilage calcification：30~40 y
- Tortuous aorta：50~60 y
- Aortic knob calcification：> 70 y

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Congenital heart disease

Tetralogy of Fallot

Patent ductus arteriosus

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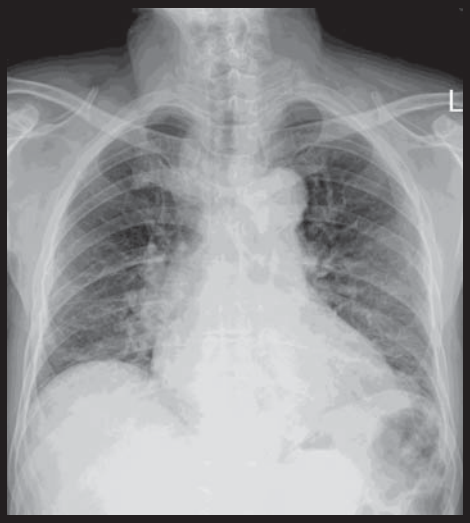
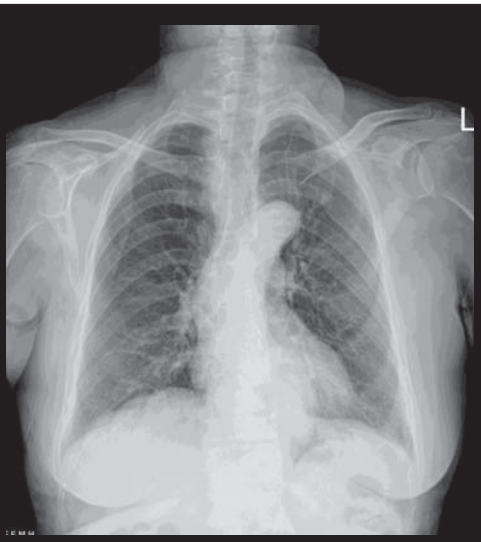


M/70

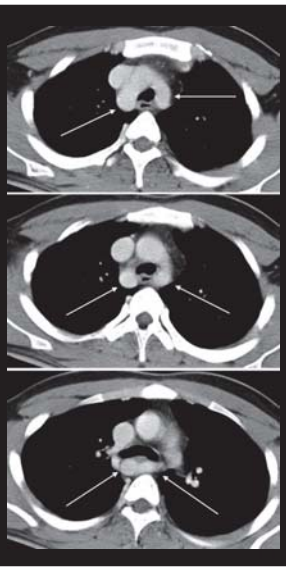
Mitral stenosis → Enlarged left atrium



F/76

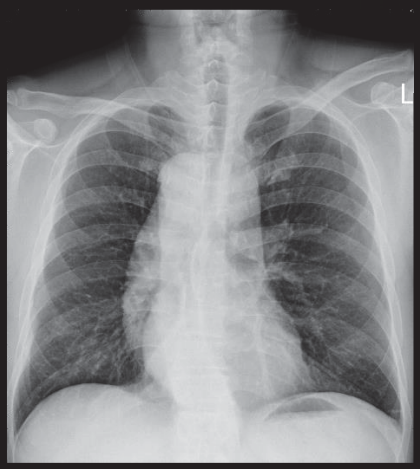
Sliding hiatal hernia of stomach

M/22
CXR for trauma at ER



Double aortic arch

M/77, Chest pain → CXR at ER



Right-sided aorta

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F/34, physical check-up

Situs inversus totalis

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A supine AP CXR of a 1 year-old male

A large thymus gland

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Pathological features/radiological signs on CXR

- Signs for localizations of lung lesions
- Signs related to lung collapse
- Signs related to pleural lesions
- Signs related to malignancy
- Sign for pneumomediastinum
- Signs for pneumothorax
- Other signs

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Radiological signs for localizations

- • 輪廓徵(Silhouette sign)
- • 頸胸徵(Cervicothoracic sign)
- • 肺門覆蓋徵(Hilum overlay sign)
- • 肺門緊集徵(Hilum convergence sign)
- • 肋膜外病灶徵(Extrapleural sign)
- • 不完全邊緣徵(Incomplete border sign)
- • 空氣支氣管像徵(Air bronchogram sign)

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Silhouette sign

- Definition:

  An intra-thoracic opacity, if in anatomic contact with a border of heart or aorta, will obscure that border
- Any intra-thoracic lesion anatomically contiguous with a border or a normal structure will obscure that border

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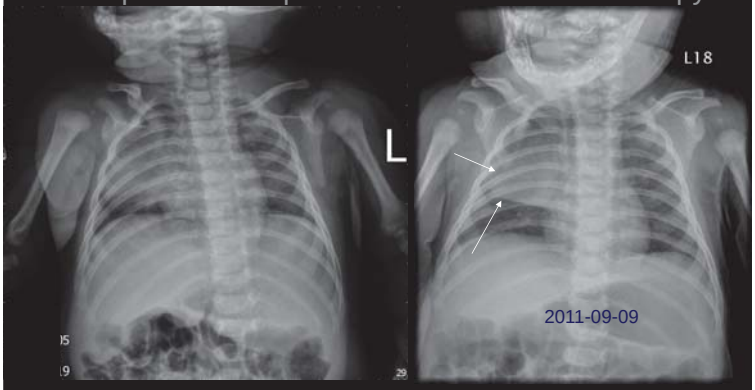
F/2m, CC: Fever, CXR (2011-09-05)
→ suspected RUL pneumonia → antibiotics therapy



Prominent thymus gland – 'Sail sign'

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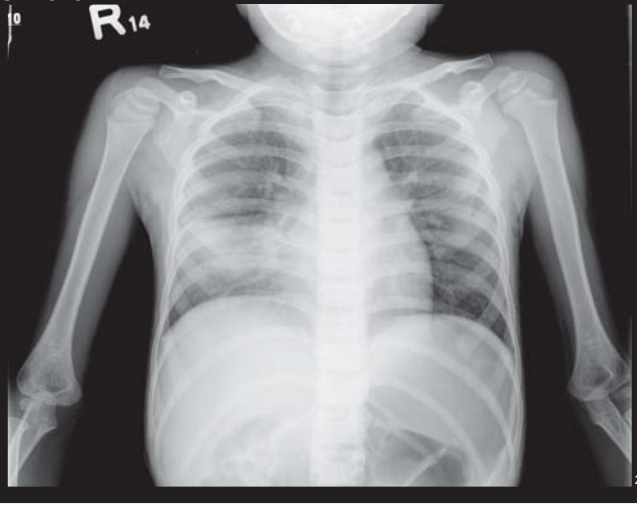
F/3
CC: Fever

Lobar pneumonia in RML --**"Silhouette sign"**



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Cervicothoracic Sign

- Used to determine location of mediastinal lesion in the upper chest
- Based on principle that an intrathoracic lesion in direct contact with soft tissues of the neck will not be outlined by air
- Uppermost border of the anterior mediastinum ends at level of clavicles

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Cervicothoracic Sign

- Middle and posterior mediastinum extends above the clavicles
- Mediastinal mass projected superior the level of clavicles must be located either within middle or posterior mediastinum
- More cephalad the mass extends the most posterior the location

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M/50
Dyspnea

Superior middle and posterior mediastinal mass

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Hilum overlay sign

- The ability to see the edges of the vessels through the mass implies that the mass is not contacting the hilum, and is therefore either anterior or posterior to it.

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Hilum convergence sign

- A useful chest radiograph sign to help distinguish a bulky hilum due to pulmonary artery dilatation from a mass/nodal enlargement.
- In the former, pulmonary vessels can be seen to converge and join a dilated pulmonary artery.

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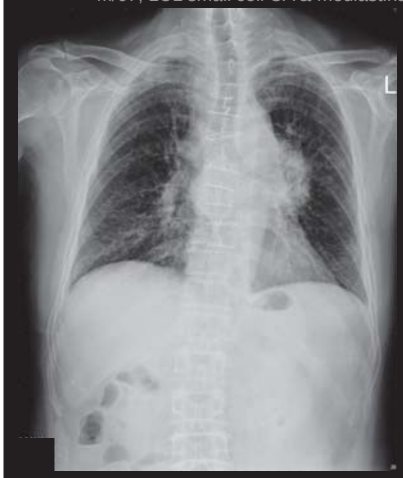
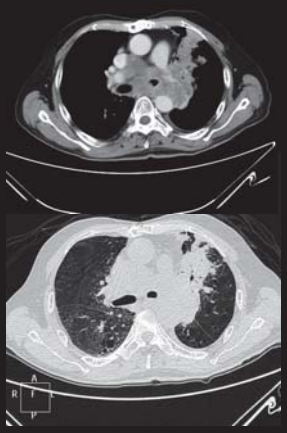
M/67, LUL small cell CA & mediastinal lymphadenopathies





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Extrapleural sign

- The appearance of a pulmonary opacity with oblique margins that taper slowly to the chest wall when the lesion is viewed tangentially to the x-ray beam.
- The lesion is extrapleural in nature, as opposed to intrapulmonary where an acute angle would be expected as the lesion meets the lung periphery.

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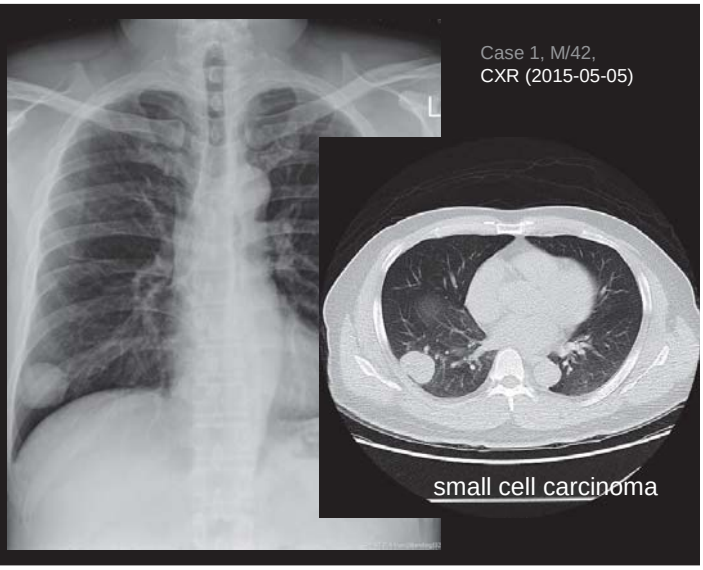

Incomplete border sign

- Useful to depict an extrapulmonary mass on chest radiograph.
- An extrapulmonary mass will often have a inner well defined border and an ill-defined outer margin
- 肋膜外病灶只有在突入肺內的部分與肺內空氣產生對比,故可見該突入部分的邊緣, 而病灶位於縱膈或橫膈或胸壁內的部分則 因positive silhouette sign的緣故,因此 看不到該部分的border

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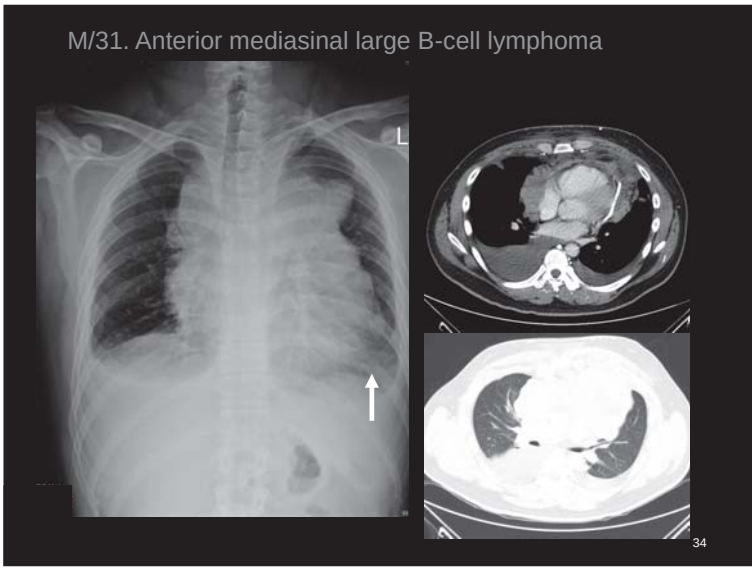

Incomplete border sign

- Common **pleural masses**: loculated pleural collection, hematoma, pleural plaques, fibrous tumour of pleura
- **Extrapleural causes:** In adults, skeletal metastases are the most common malignant chest wall neoplasm while chondrosarcoma is the most common primary malignant tumor.

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Collapse/Atelectasis

- 上三角徵(upper triangle sign)
- 主動脈球被覆徵(top-of-the-knob sign)
- 平腰徵(flat waist sign)
- Luftsichel sign

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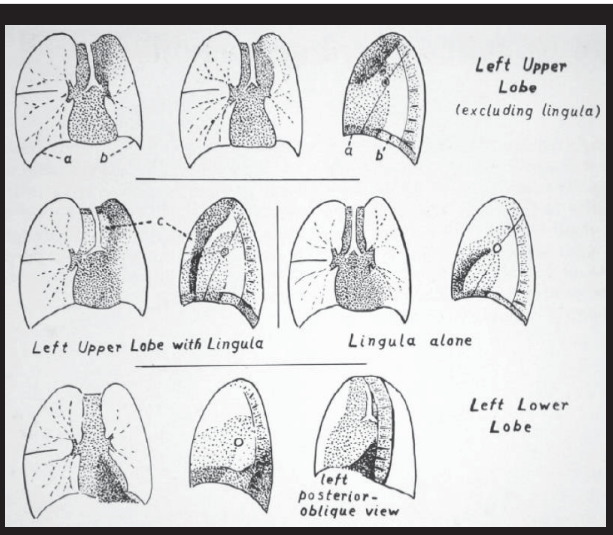

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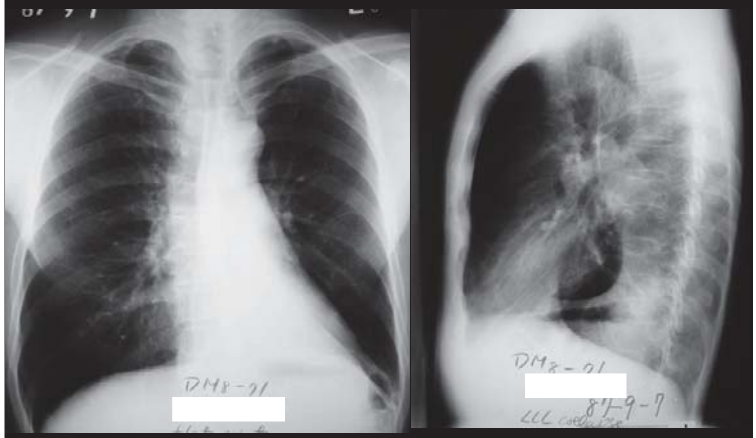
Flat waist sign → LLL collapse



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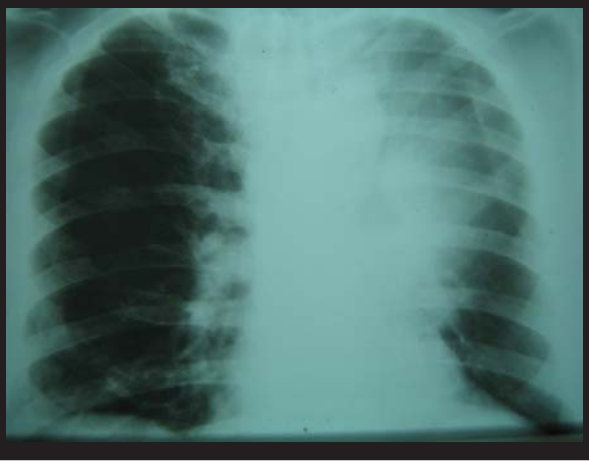
Lung cancer with obstructive pneumonia – partial collape of LUL



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Meniscus sign

- Pleural effusion – due to capillary phenomenon
- Mycetoma – due to air retained inside a cavitary mass

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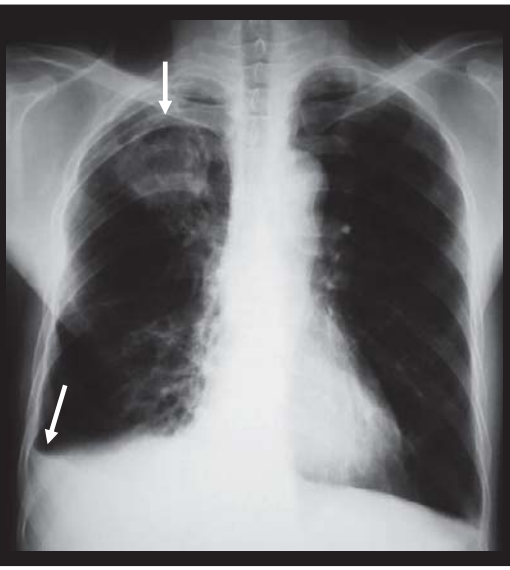

Meniscus sign
1. Pleural effusion
2. Mycetoma

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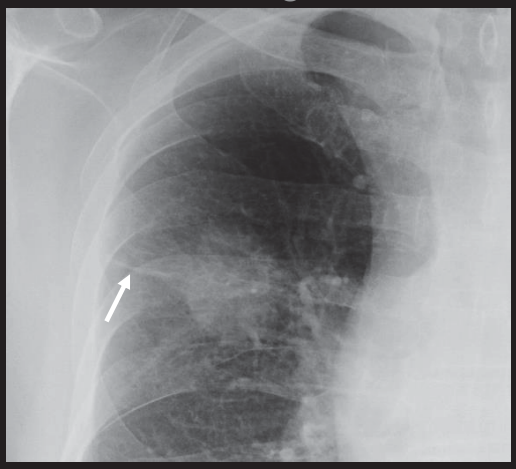
Signs related to malignancy

- Reverse S sign; Golden's S sign
- Tail sign

M/77:
Golden's S sign for lung CA causing collapse of RUL

Tail sign



Thank you for your attention!