

The Interpretation of Chest Radiograph

正常的胸部X光片及判讀原則

國軍左營總醫院內科部

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DATE: 114-03-29

Book List

- 實用胸腔X光診斷學(江自得醫師)
- Reed: Chest Radiology
- Armstrong: Imaging of disease of the Chest



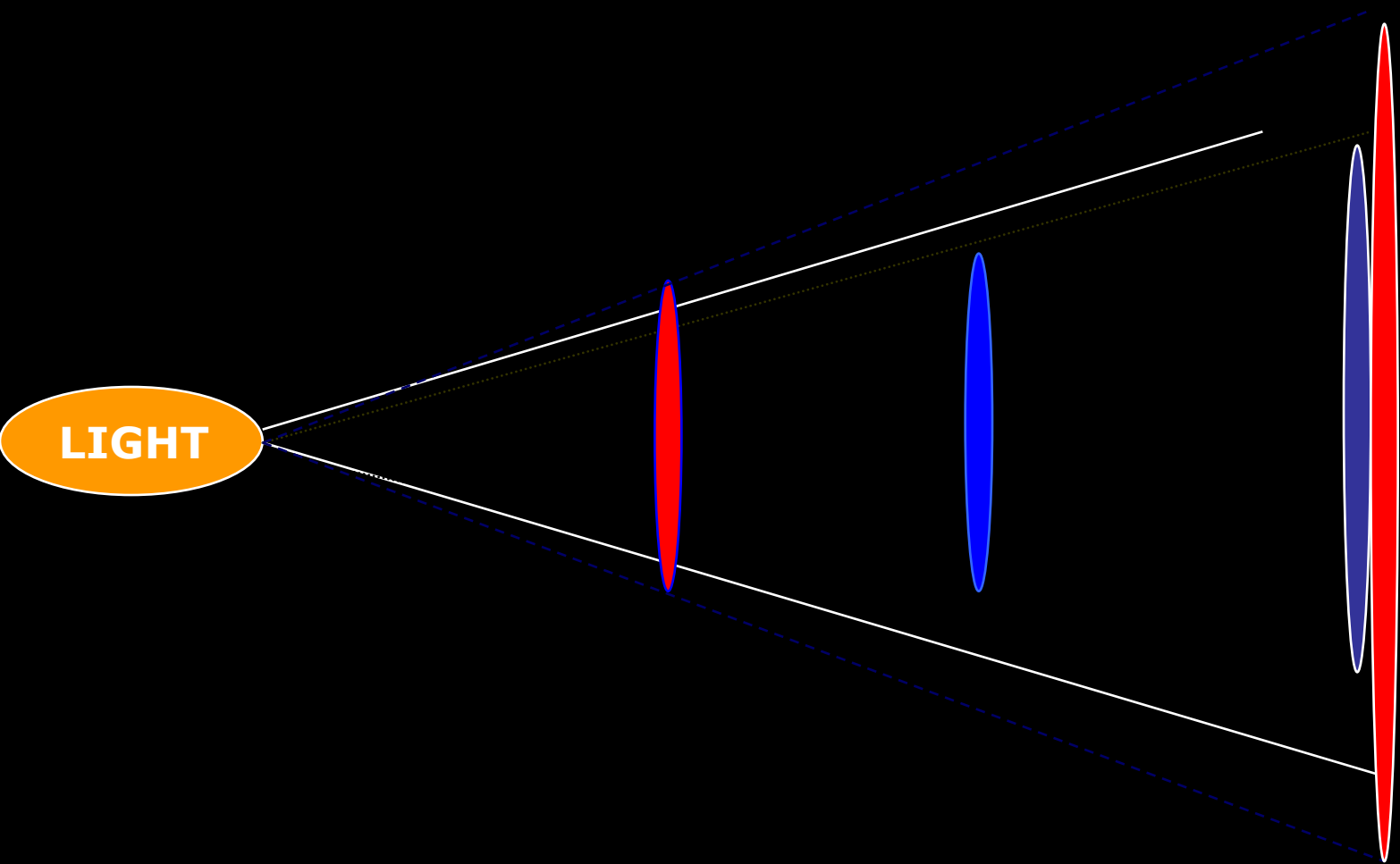
常見CXR的照相方式

■ Routine

- PA (standing) view
- L't lat view, R't lat view

■ Non-routine

- AP (supine) view
- L't decubitus view, R't decubitus view
- Lordotic view
- LAO or RAO view



物體離光源越近 投射陰影越大

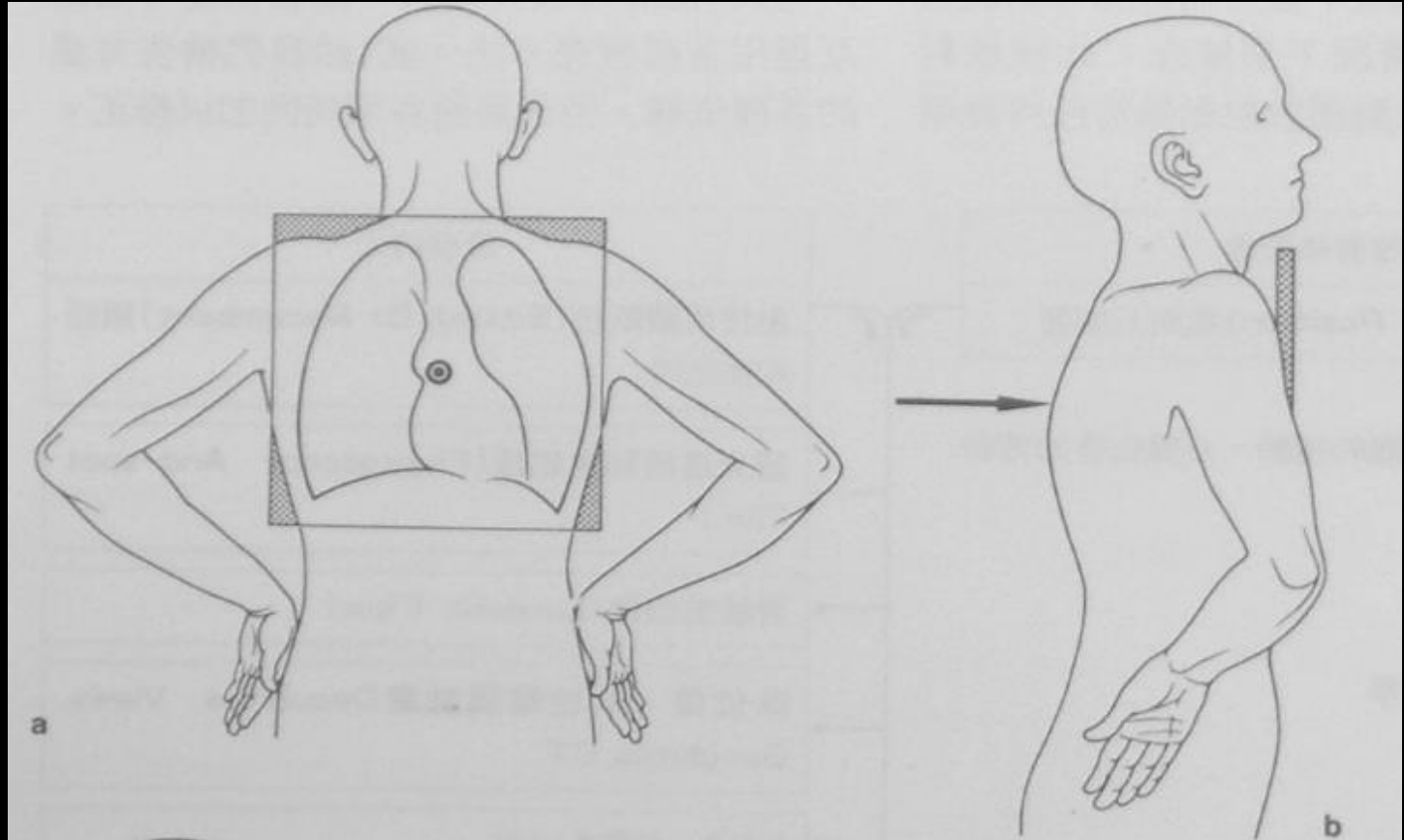
Frontal view (PA view)

■ PA (post-ant.)

■ 胸部抵住置片箱

■ 手背放在腰部

■ 手肘盡可能向前
壓把肩胛骨移開
肺野區

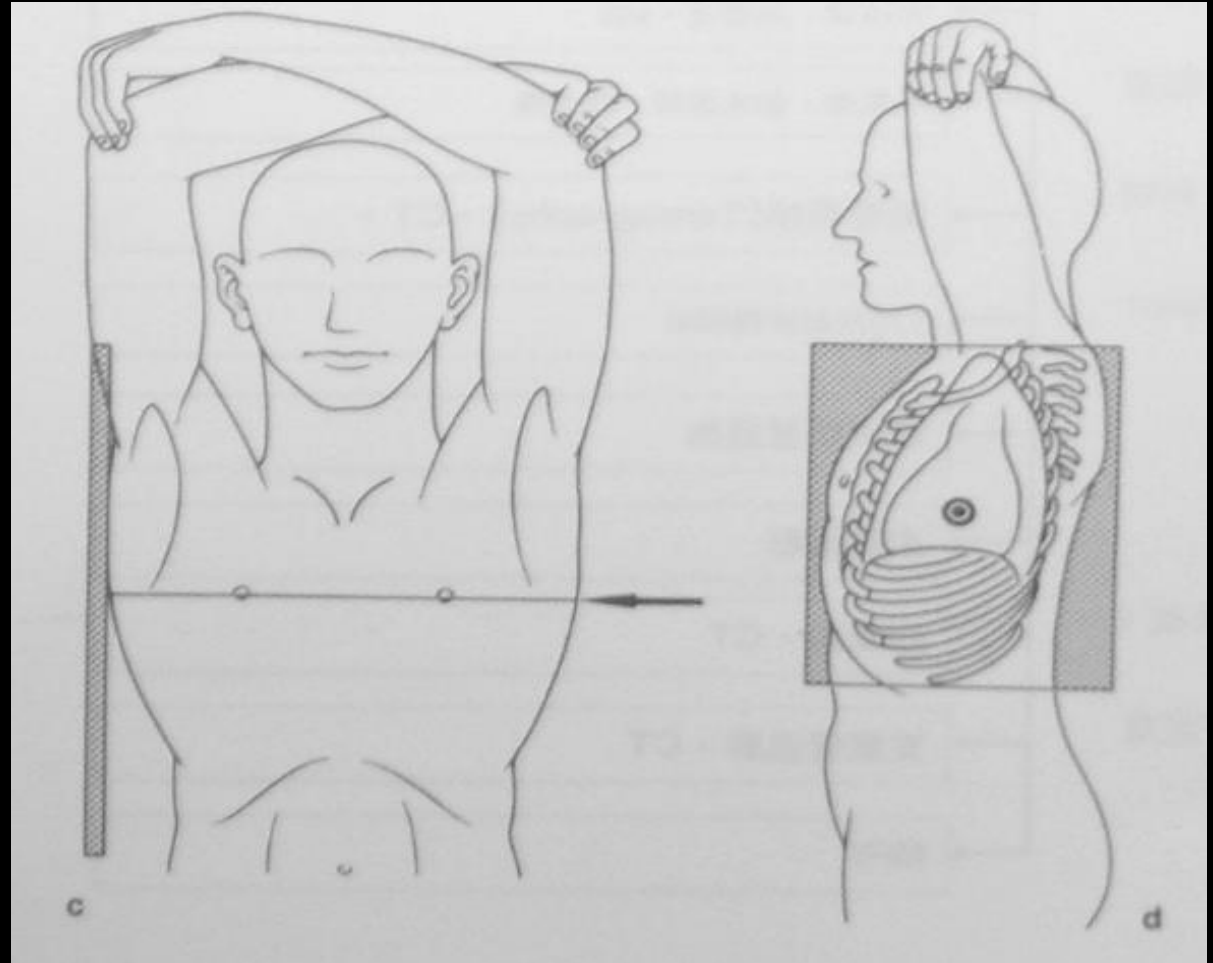


PA view

07.03.2005 10:29

Lateral view

- 舉高雙臂
- 於深吸氣時攝影
- X-ray dosage為PA view的2倍左右
- 看病灶位置選擇，如果lesion在左邊，則安排left lateral view.



Left Lateral



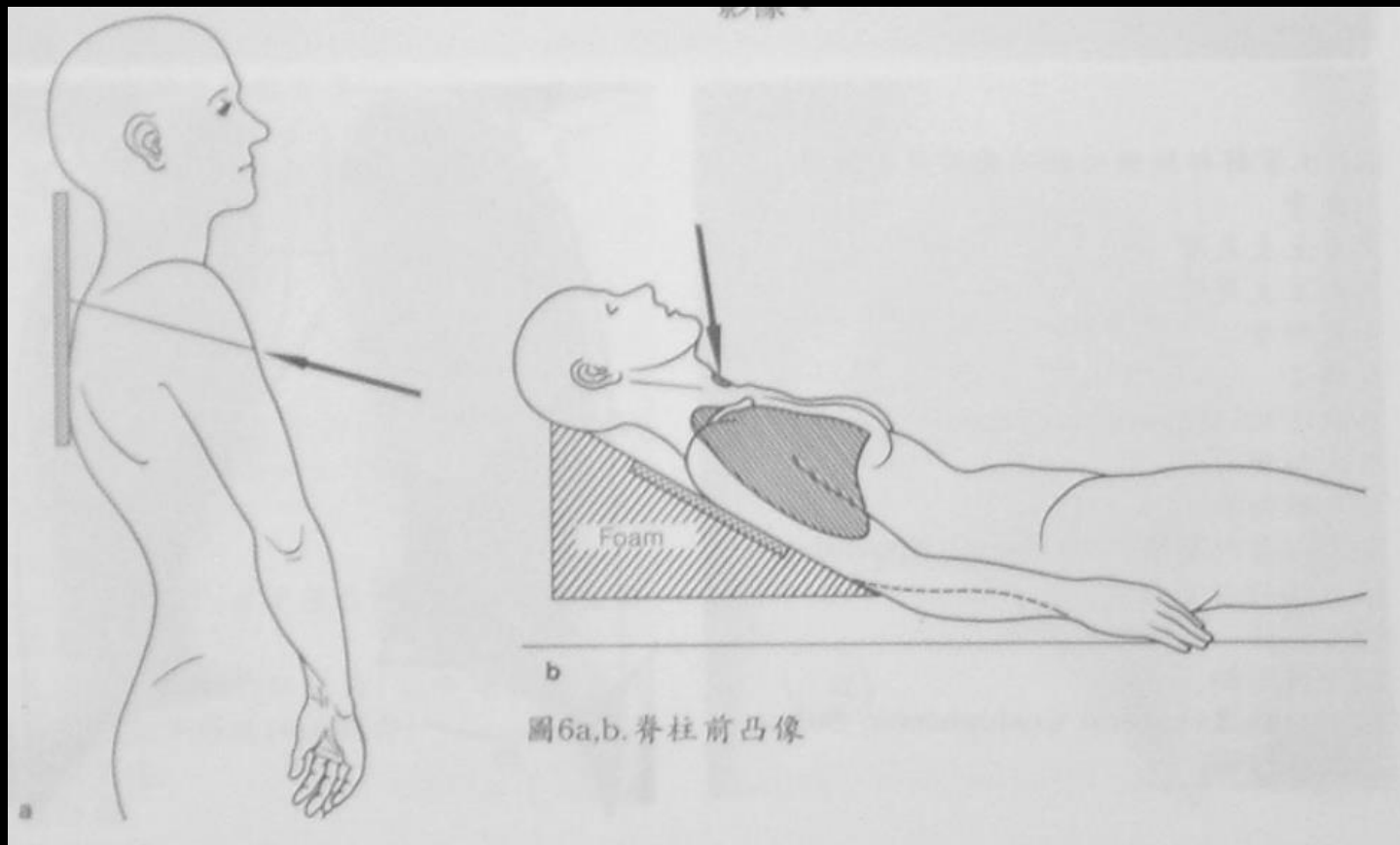
R't Lateral

07.03.2005 10:31



Lordotic view

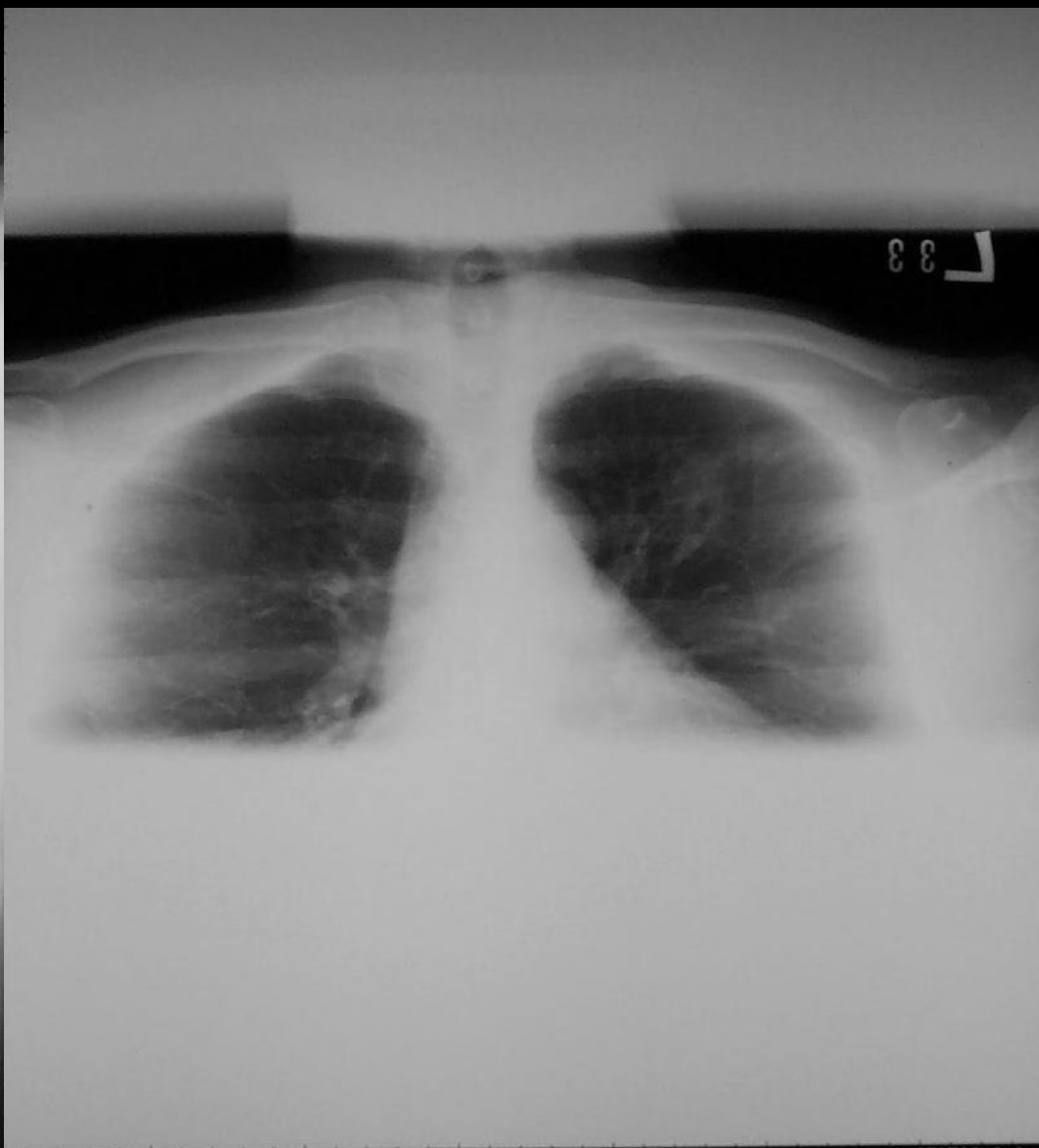
- 彎曲身體上半部
(約30度)使背後的
肩部靠近片匣
- 用來確認肺尖、
RML/Lingular lobe
等被肋骨遮蓋住的
病灶



Lordotic View



07.03.2005 10:42



ID: 60394-1
REF: -63.4MM
004051.60H
LU: 5/27 TM: 1/1
FOV: 35.0
USHARP

IMATRON C-150HP
UGH TAIPEI
LU-Y-W 53Y M
17AUG2000
512



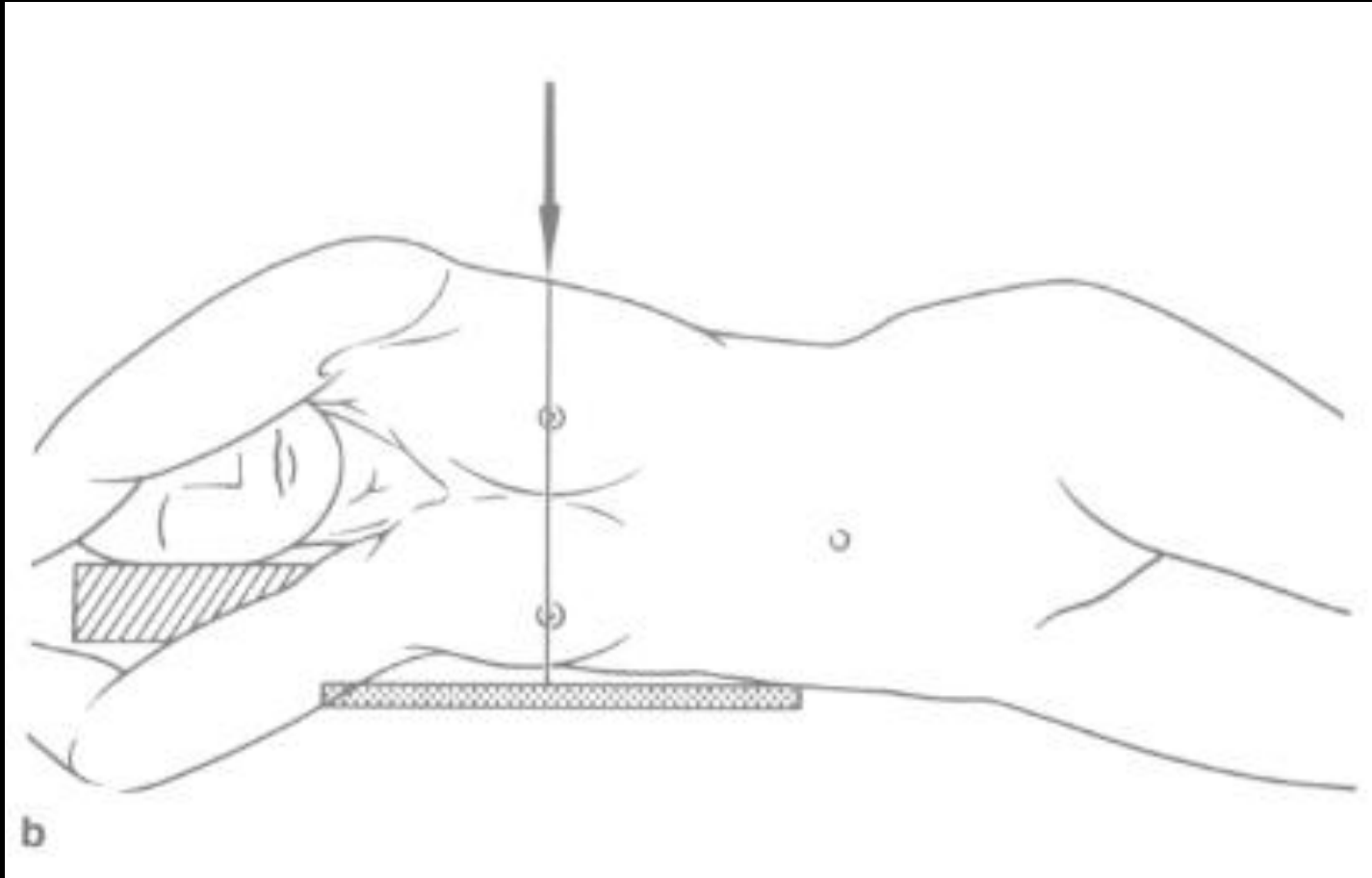
R

L

130 KV
604 MA
HED CM
1.5 MM
TILT: 0 SLEW: 0
0.50 SEC 15:52:29

L: 700 W: 1600

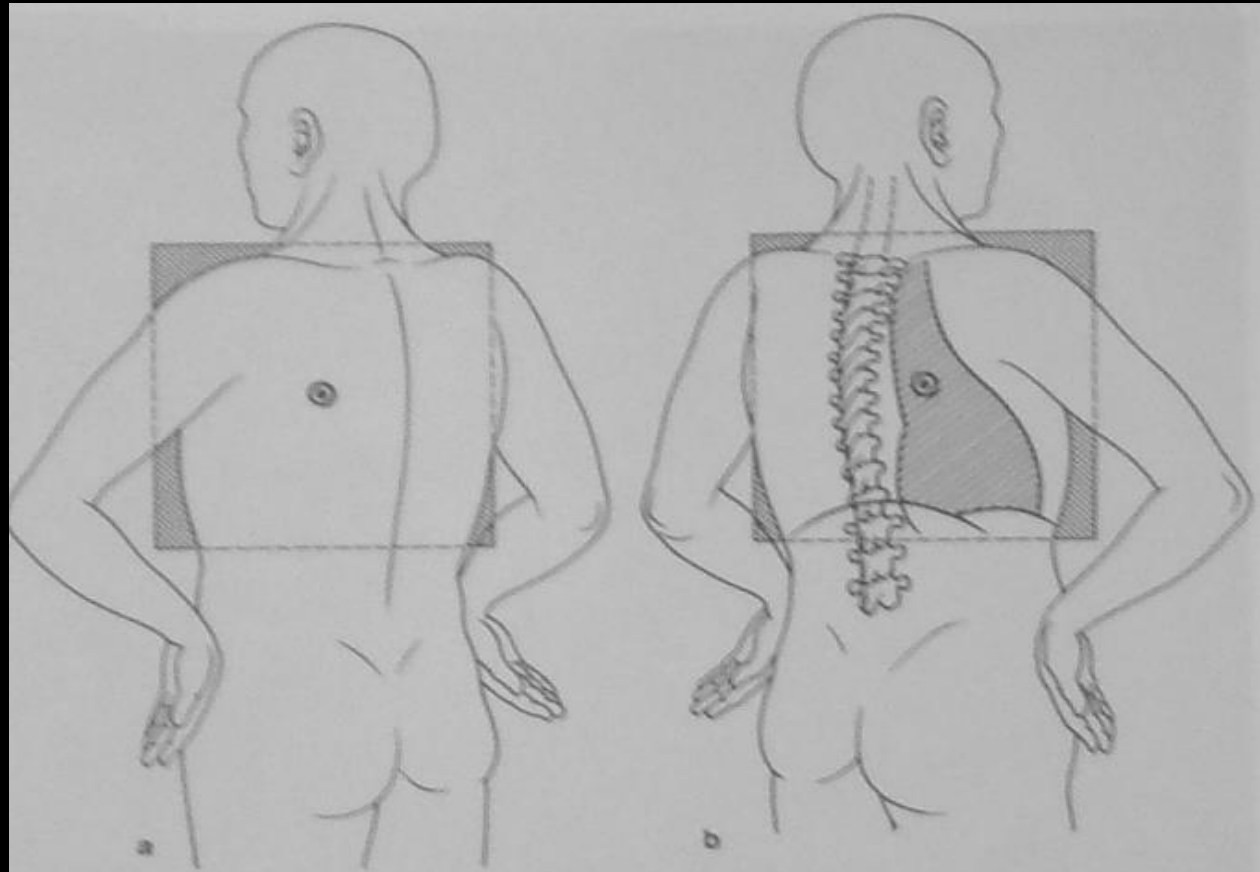
Decubitus View



- 區別pleural effusion和pleural thickening
- 發現pneumothorax, fungus ball

RAO & LAO view

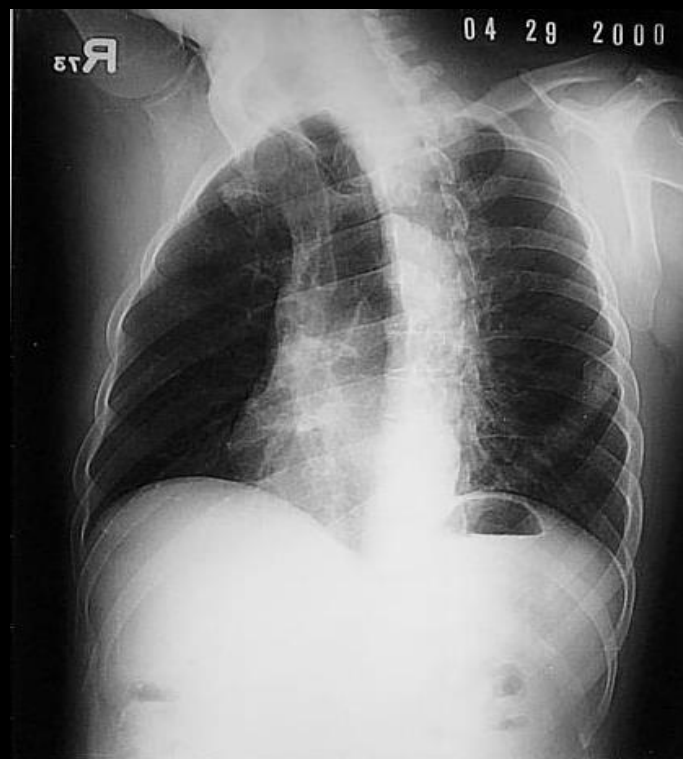
- 病人身體面對底片轉45度，並以右(或左)前胸壁靠近片匣
- 目的：避開superimposed lesion
 - RAO: RLL, LUL
 - LAO: LLL, RUL, RML



PA view



RAO



LAO



胸部X光片之判讀要領

■片子：良好

- 照相品質
- 病人姿勢
- 基本資訊

■知識：

- 了解正常解剖學與影像
- 以patterns & signs作鑑別診斷
- 熟悉疾病之典型表現，再學習其多樣化表現

■技巧：

- 固定的判讀程序，避免遺漏。
- 利用不同階段的X光片，以病灶的時序變化作鑑別診斷
- 利用不同的照像技術
- 參考臨床資料

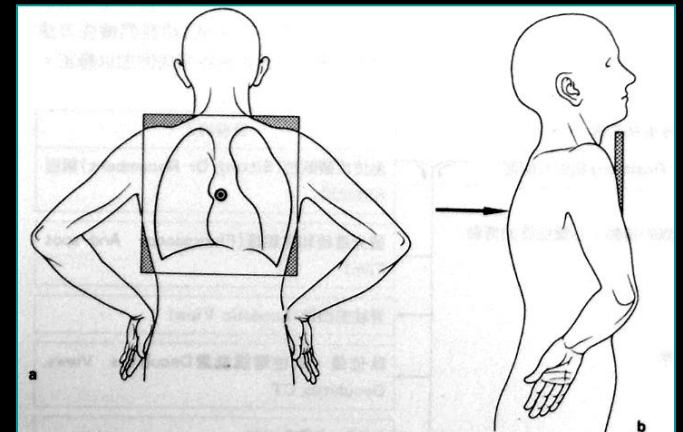


好的胸部X光片

- 看的範圍愈多愈好

常規正面像

- 立姿
- 深吸氣
- 後前像 (PA)
- 距離 6 英尺
- 暴露適當



照相品質好不好

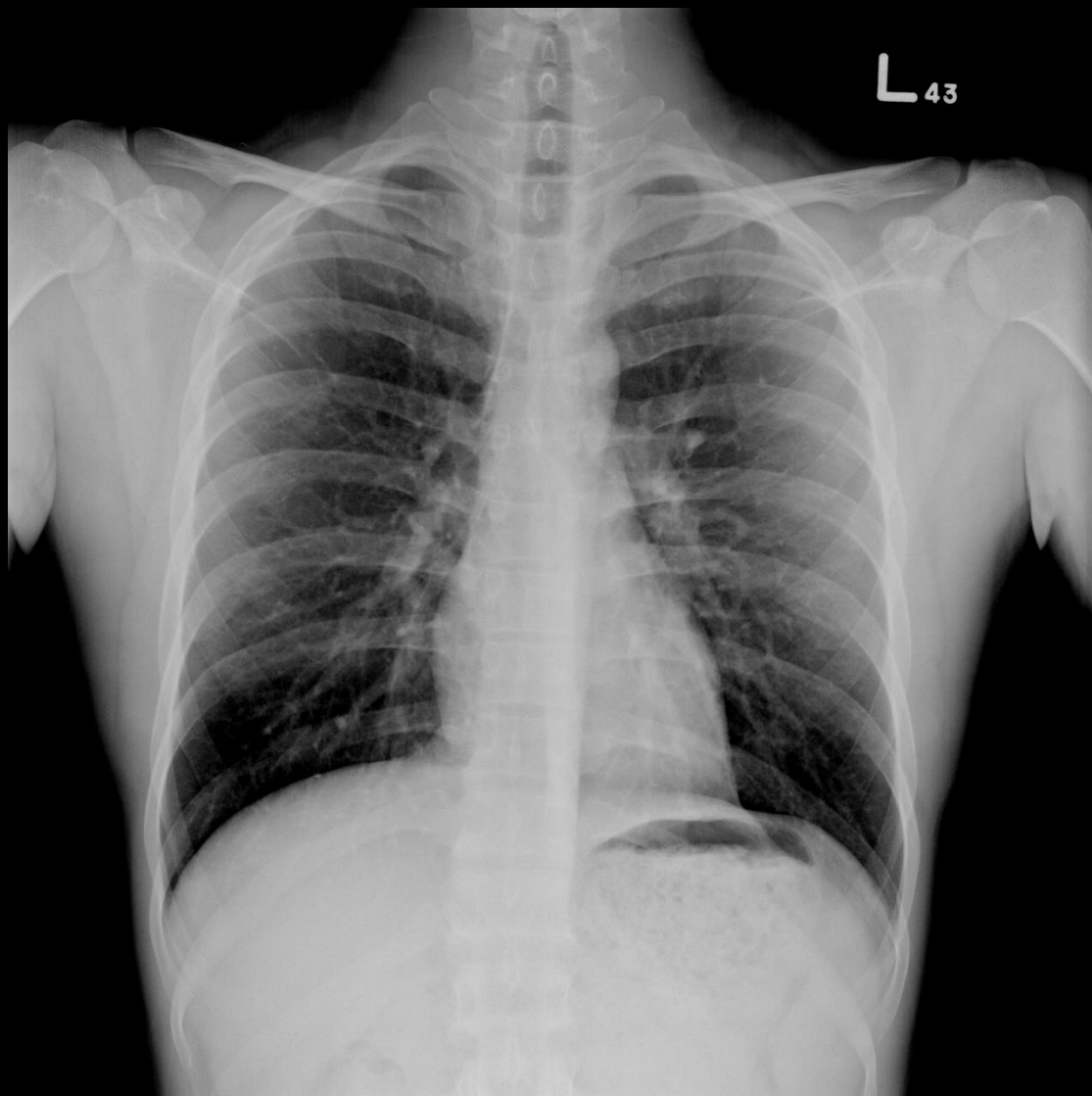
■ 片子夠大：應該涵蓋

- Neck: 以免loss trachea 病變
- 胸廓: 以免loss soft tissue/ bony lesions
- Diaphragm: sub-diaphragm lesions, 如liver, gastric bubble
- Bil CP angle: 以免loss少量 P.E.

■ 吸氣充足：

- 正常PA view : diaphragm中心點與肋骨交會(前6後10)

■ 曝光適當



如何判斷曝光好不好？

- Trachea與carina隱約可見
- 下段vertebra清晰可見
- 脊柱間盤隱約可見
- 心臟後與橫膈下方的肺紋可識
- 兩側肺紋至外三分之一清晰可見



曝光良好的CXR

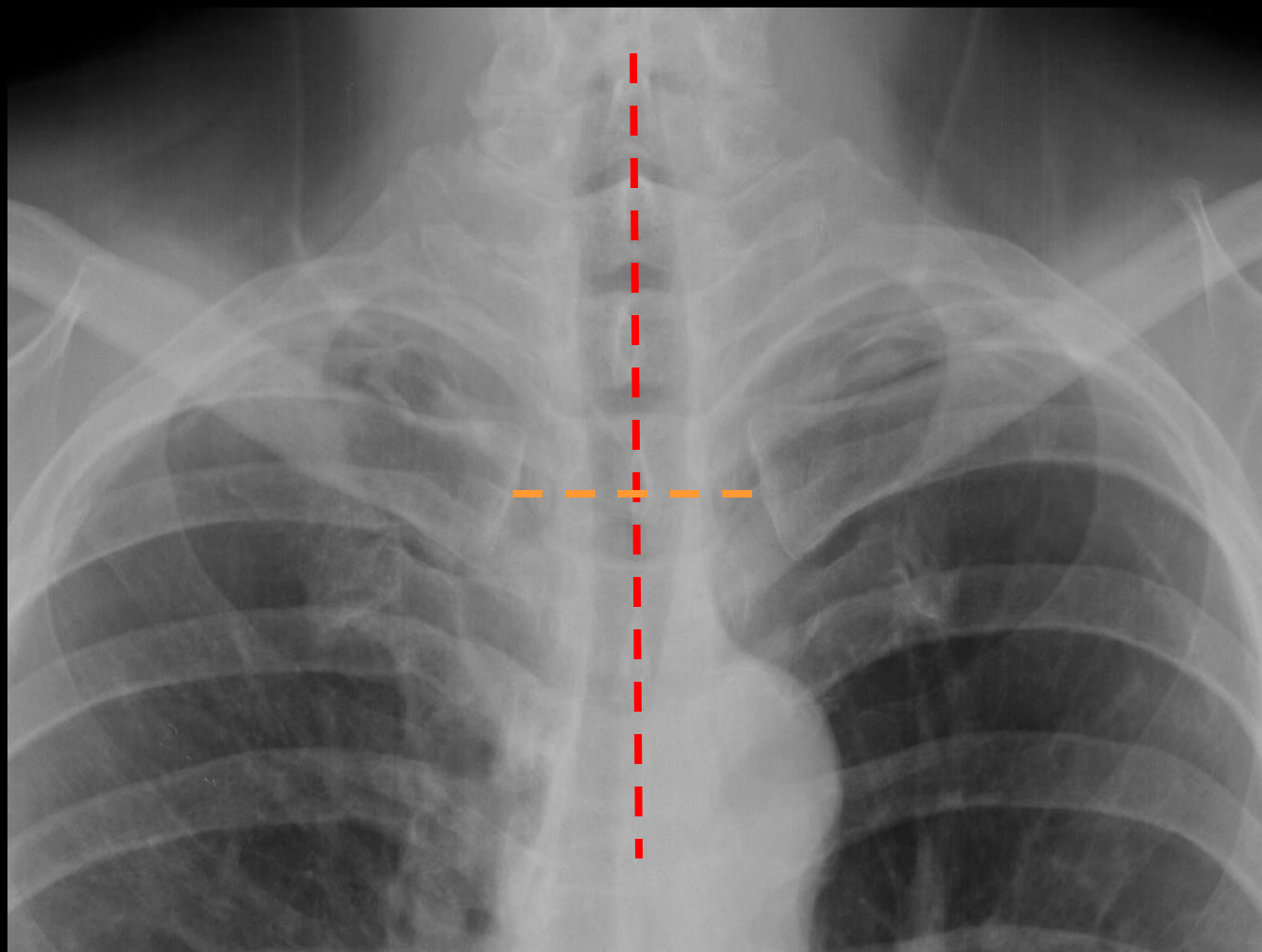


- 曝光太強:過黑，會miss tiny lesions
- 曝光適當
- 曝光太弱:過白，會miss 縱隔腔內、心臟後的病變

照像姿勢好不好(正不正)

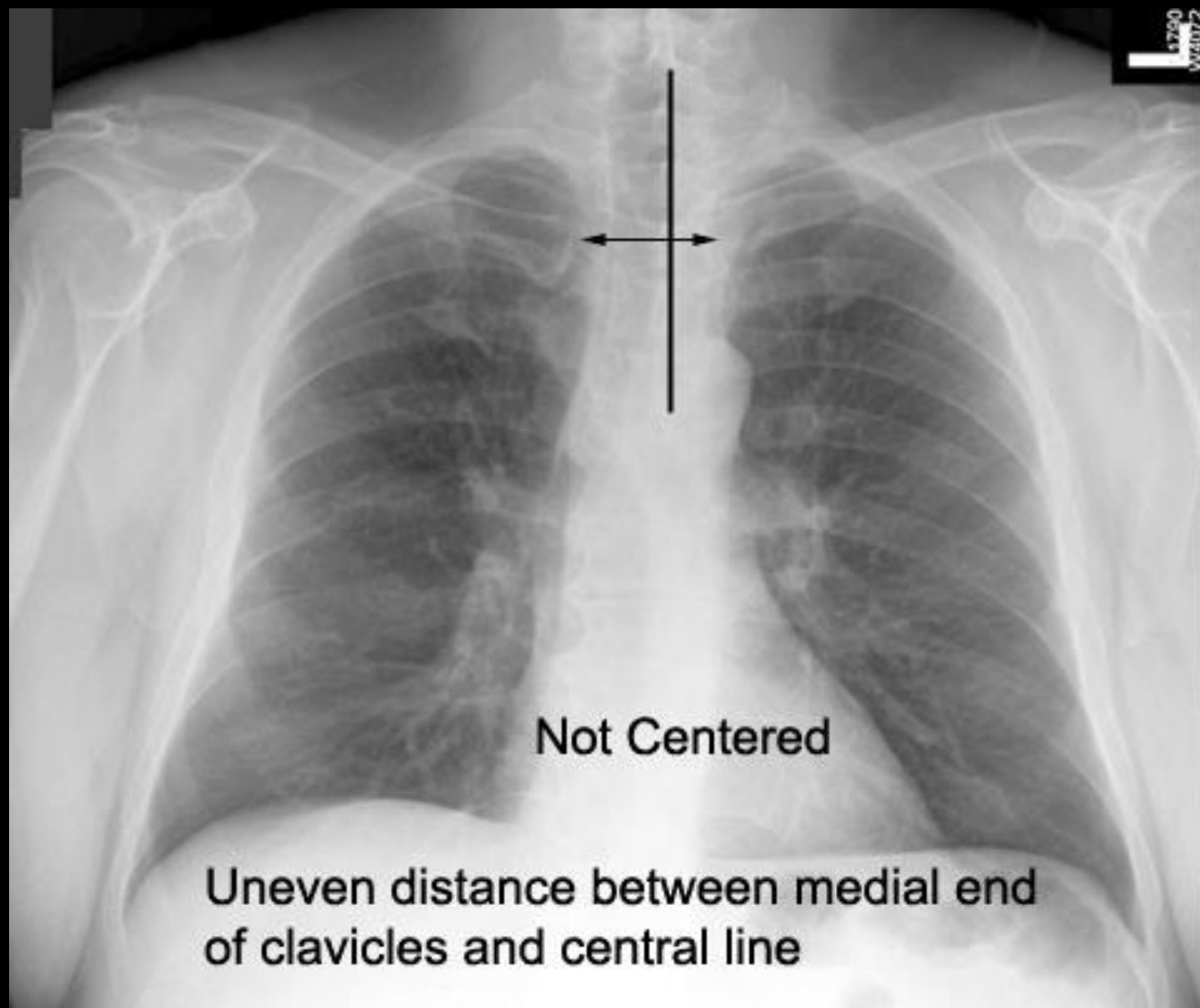
觀察重點：

- Spinal process 是否在兩鎖骨的中線
- 氣管 是否居中(較不一定, 因氣管可能受mediastinum的影響)



Is this film centered ?

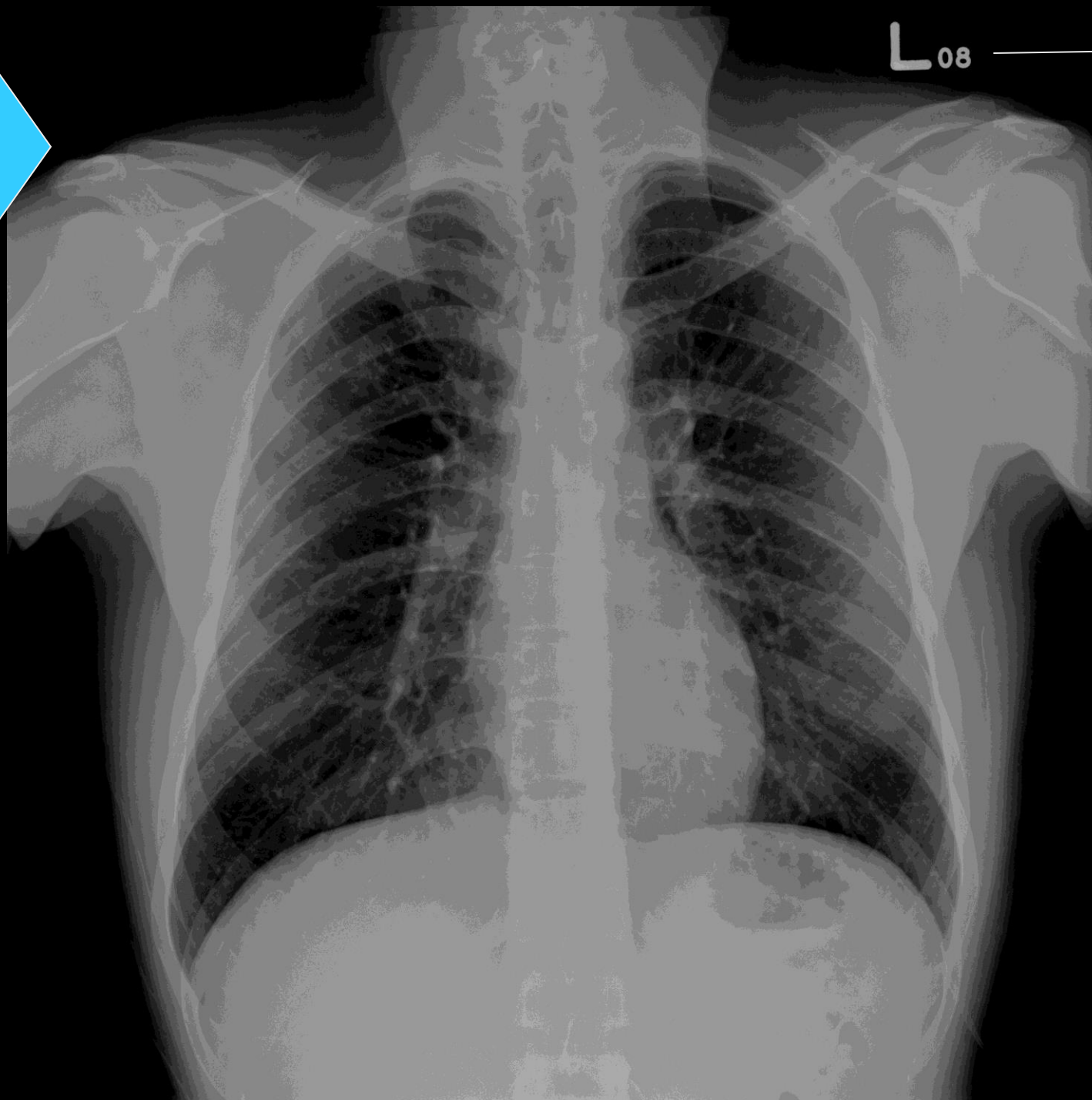




開始判讀前的基本資訊

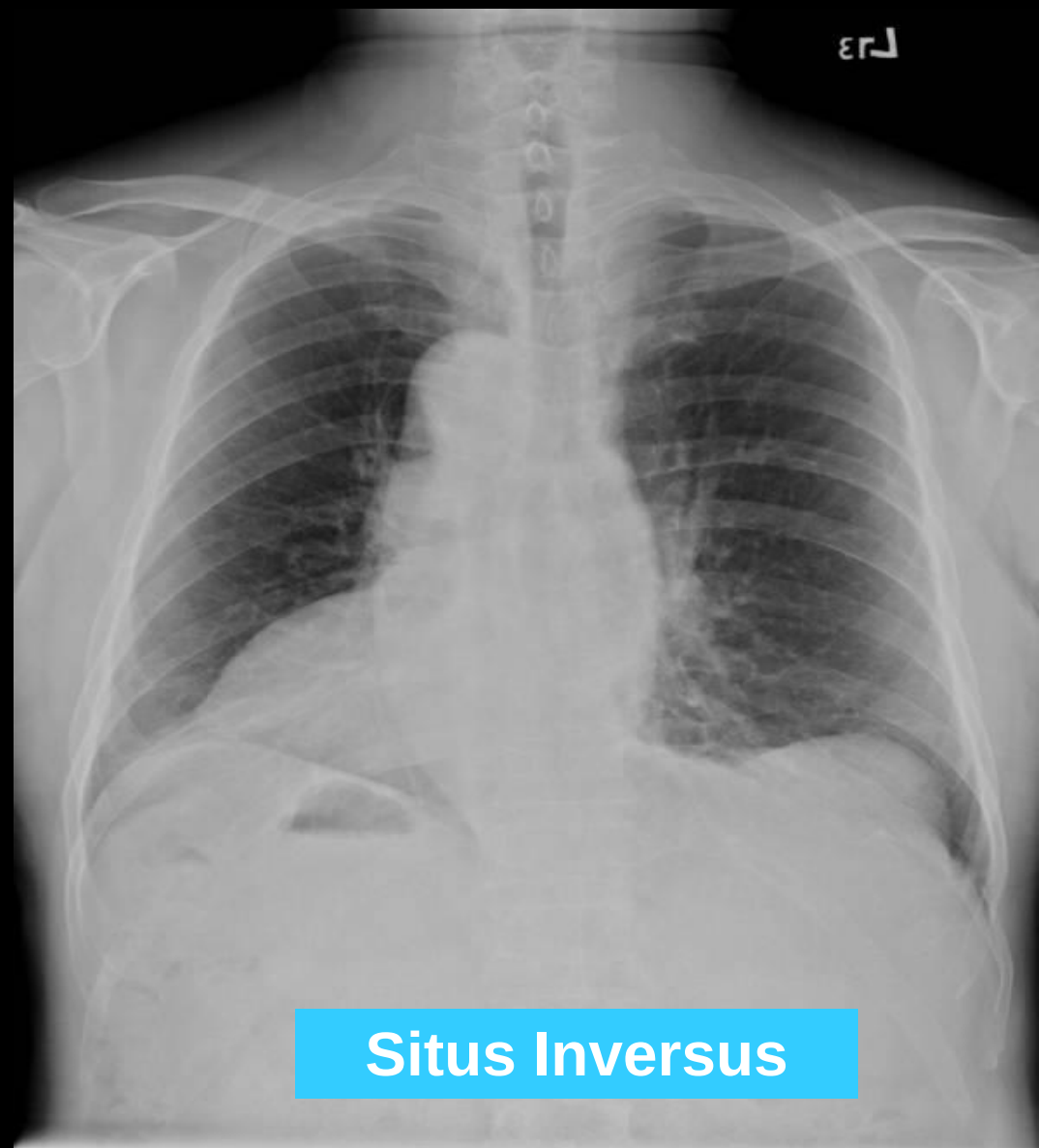
- 確認病人的姓名、病歷號及申請單號碼
- 確認左或右的字牌
- 做全般性的觀察(general screening)

姓名
病歷號
申請單
性別



L 08

左邊



General Screening (1)

■ 照相的體位(standing or lying)

■ 觀察重點：

- Scapular有沒有打開：看tip of scapula

- Clavicle走向：站著照clavicle比較平，躺著照clavicle會變斜上揚

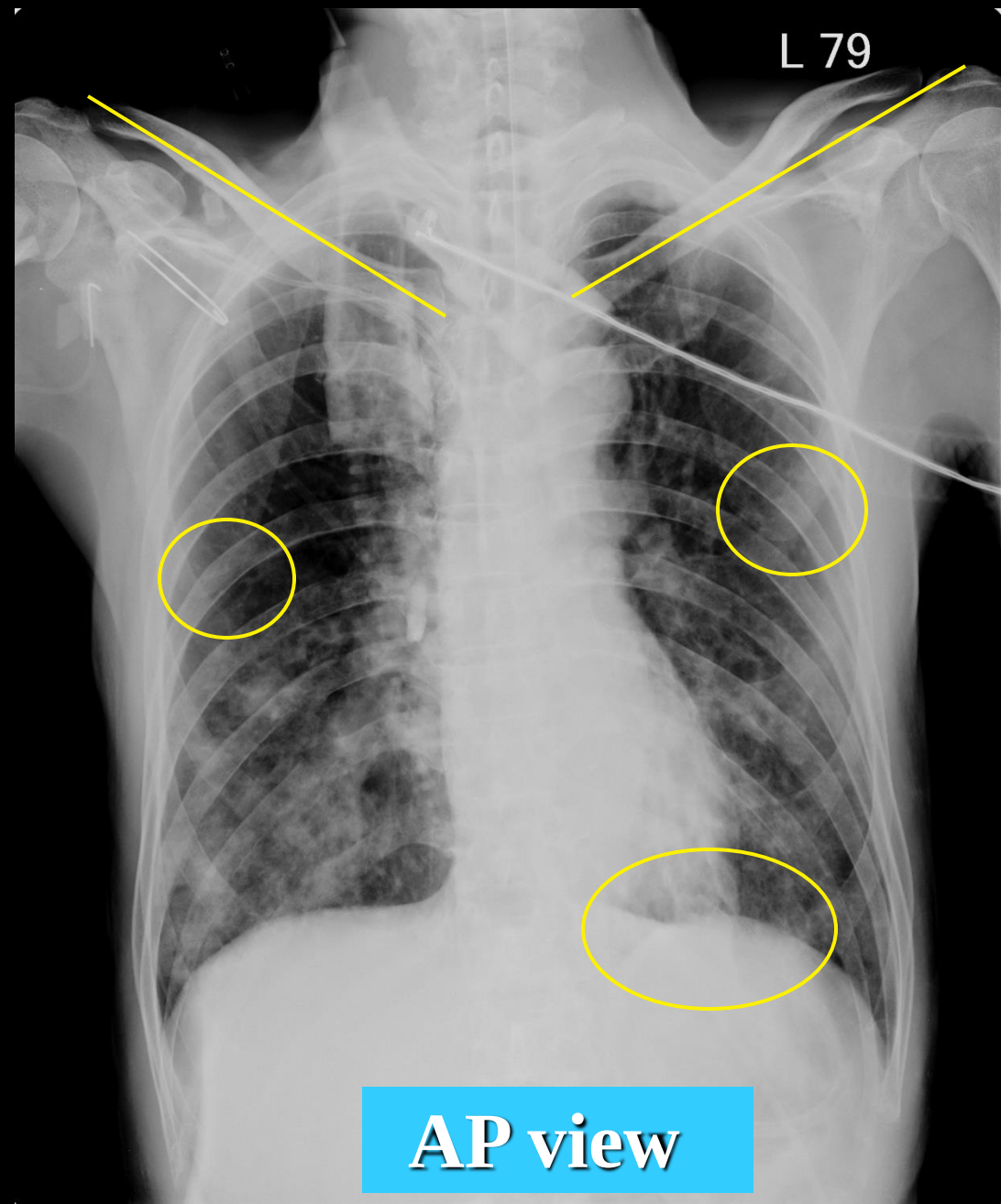
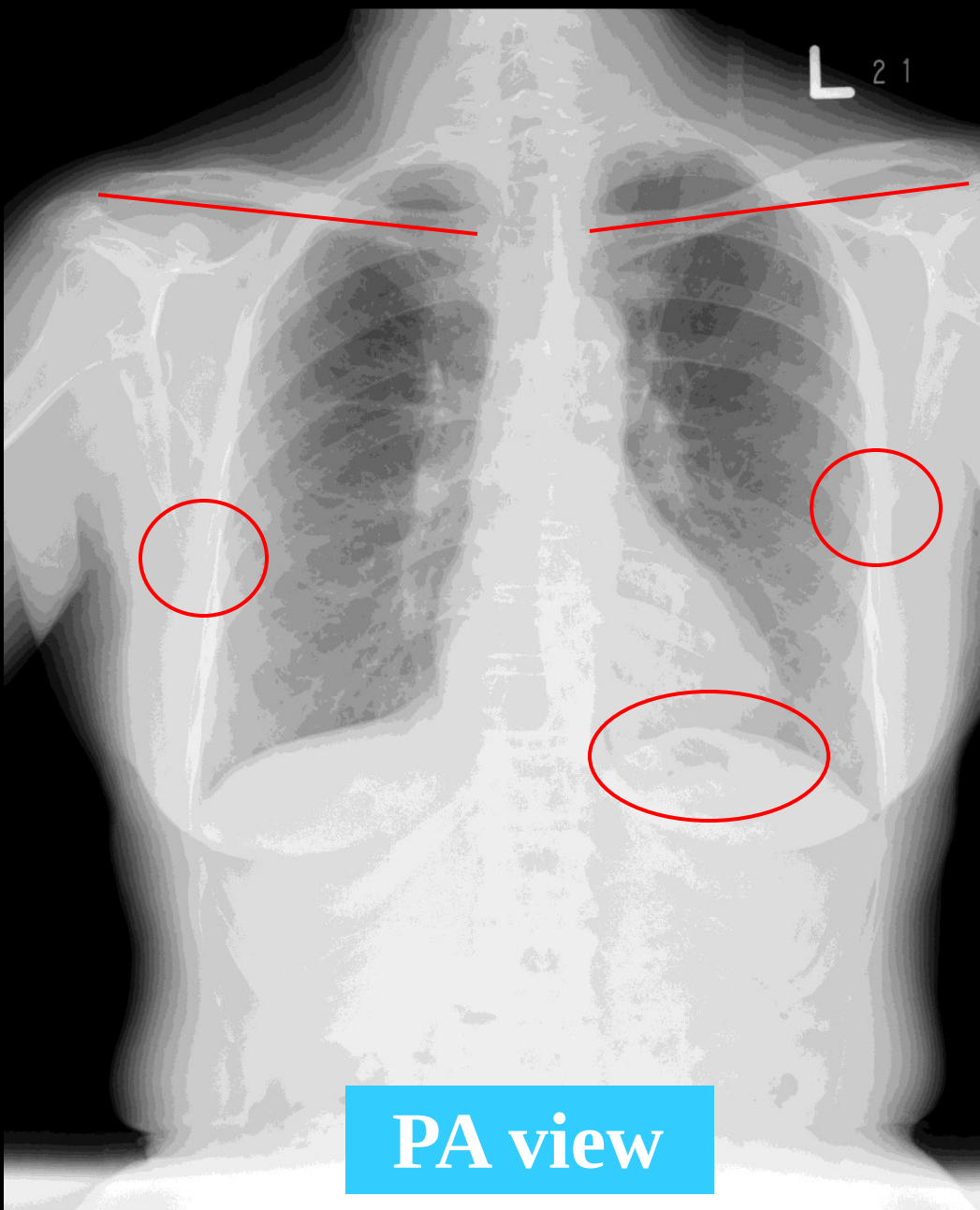
- Gastric-bubble內是否有air-fluid level

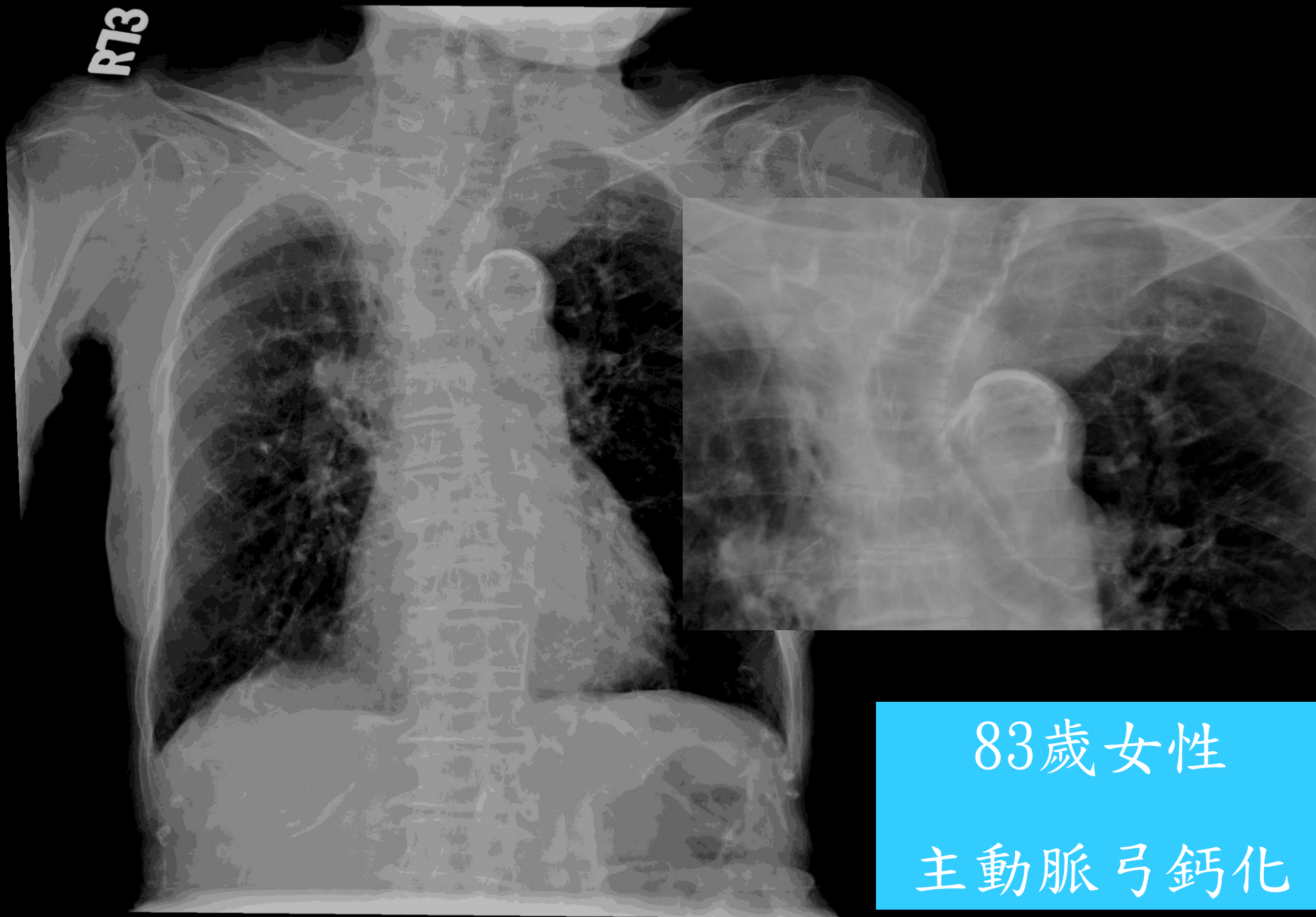
■ 通常躺著照相，表示病情較為嚴重。

■ 年齡

■ 第一根肋軟骨鈣化: 30-40 y/o

■ Tortuosity of aorta & calcification of aortic knob: 50-60 y/o





83歲女性
主動脈弓鈣化

General Screening (2)

■ 性別

- Calcification of costal cartilage的形態

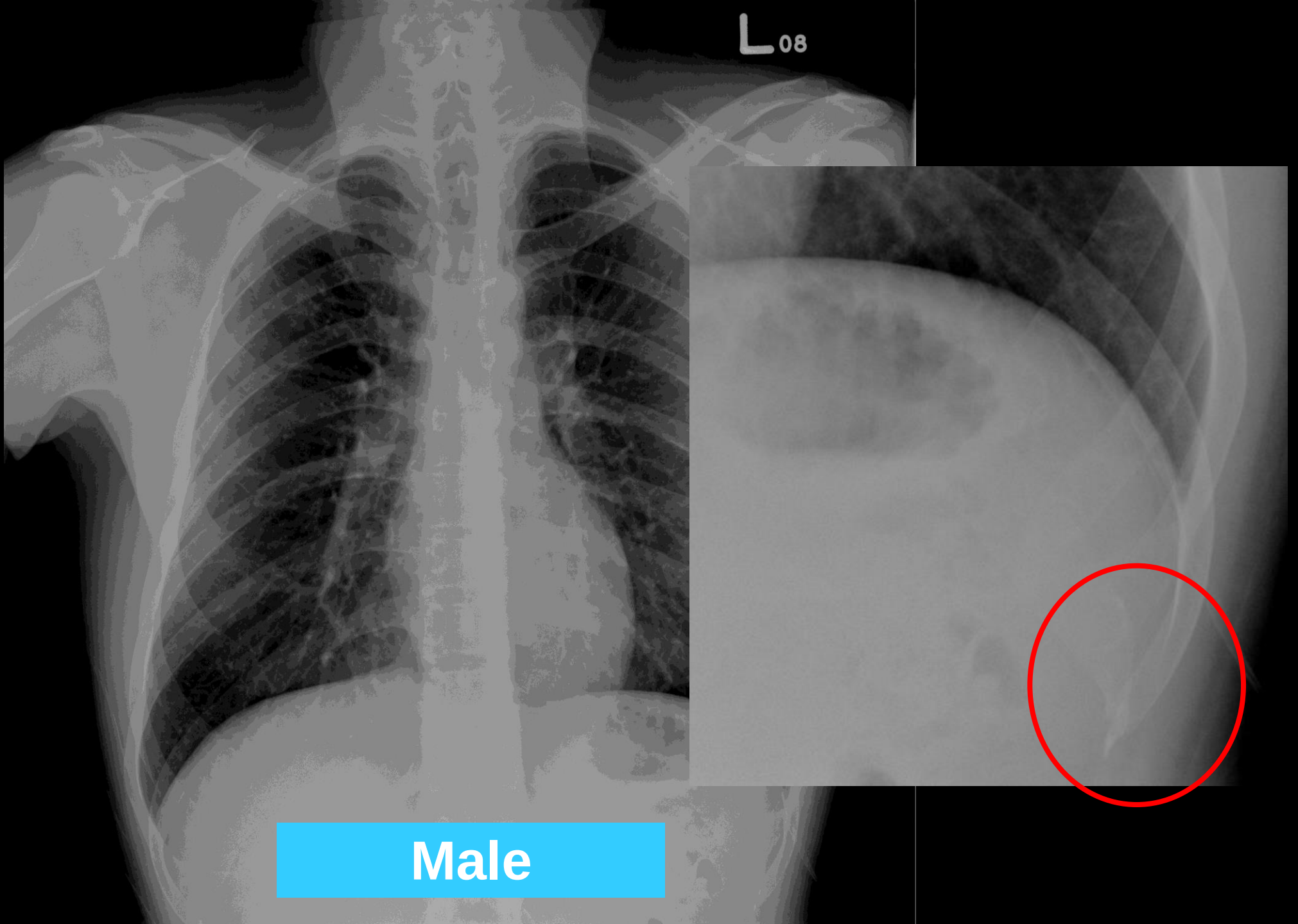
 - M: peripheral (vaginal type)

 - F : central (penial type)

- Breast shadow

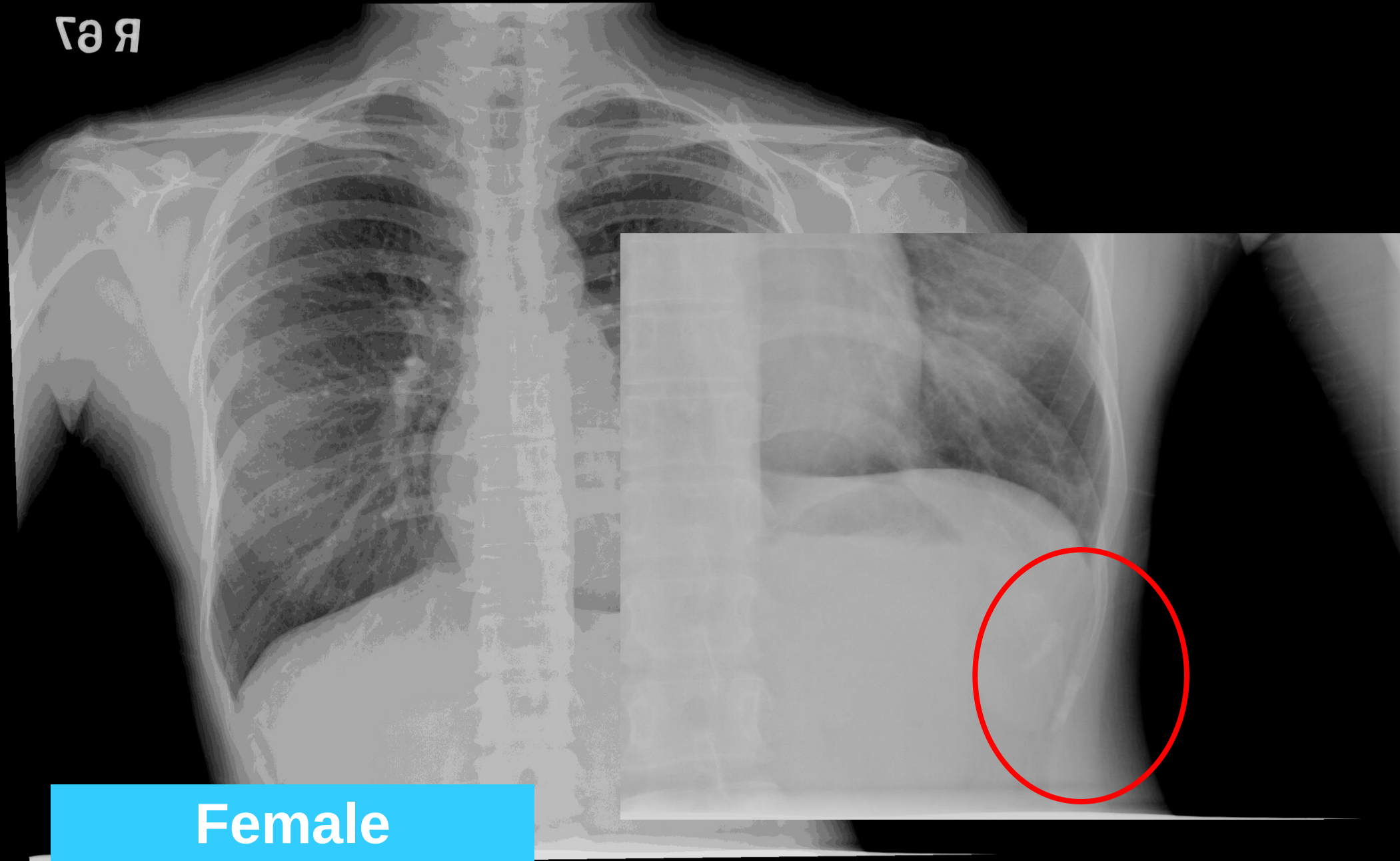
- 男性通常身材較女性高大

L08



Male

7a Я



Female

胸部X光片之判讀要領

■ 片子：良好

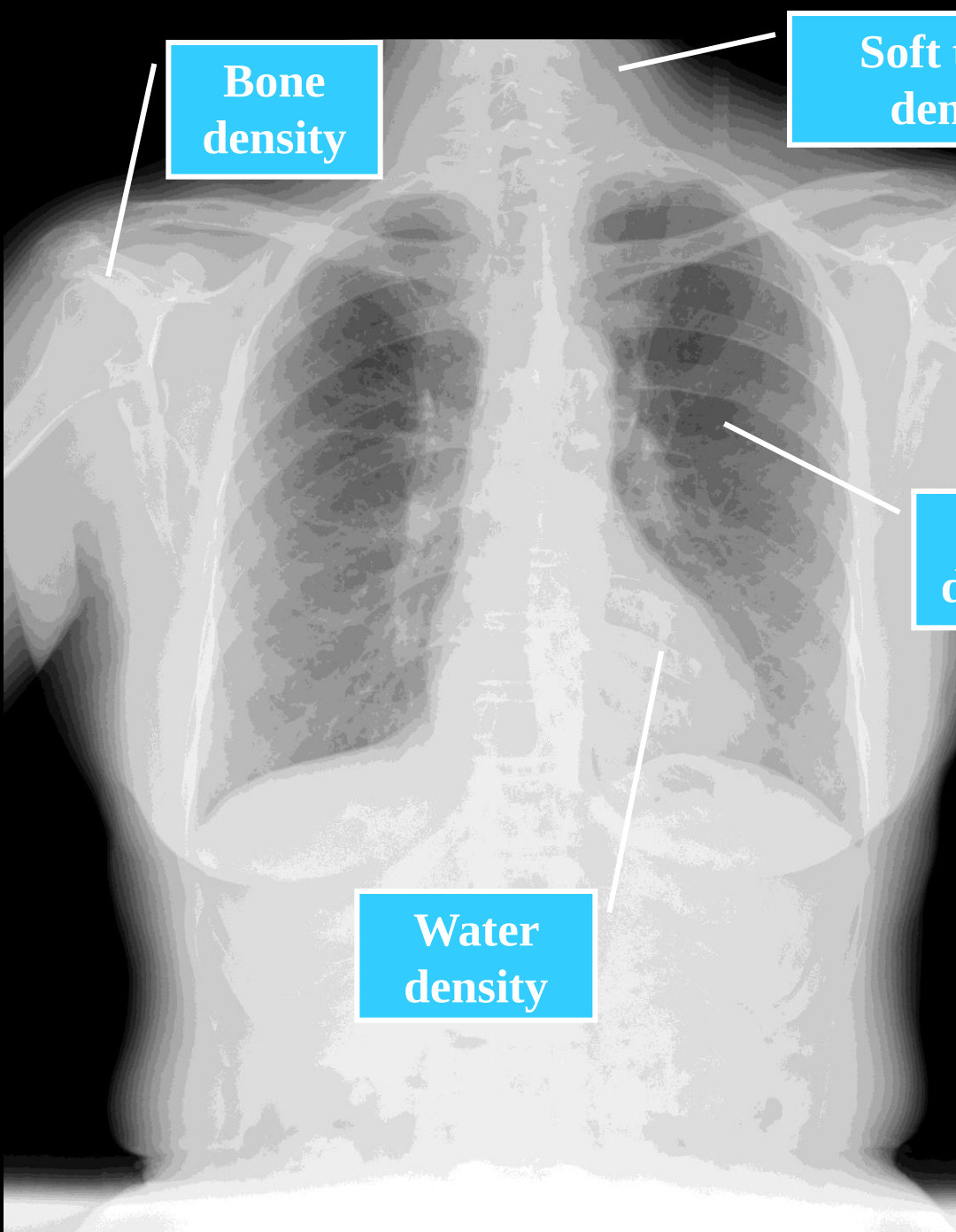
- 照相品質
- 病人姿勢
- 基本資訊

■ 知識：

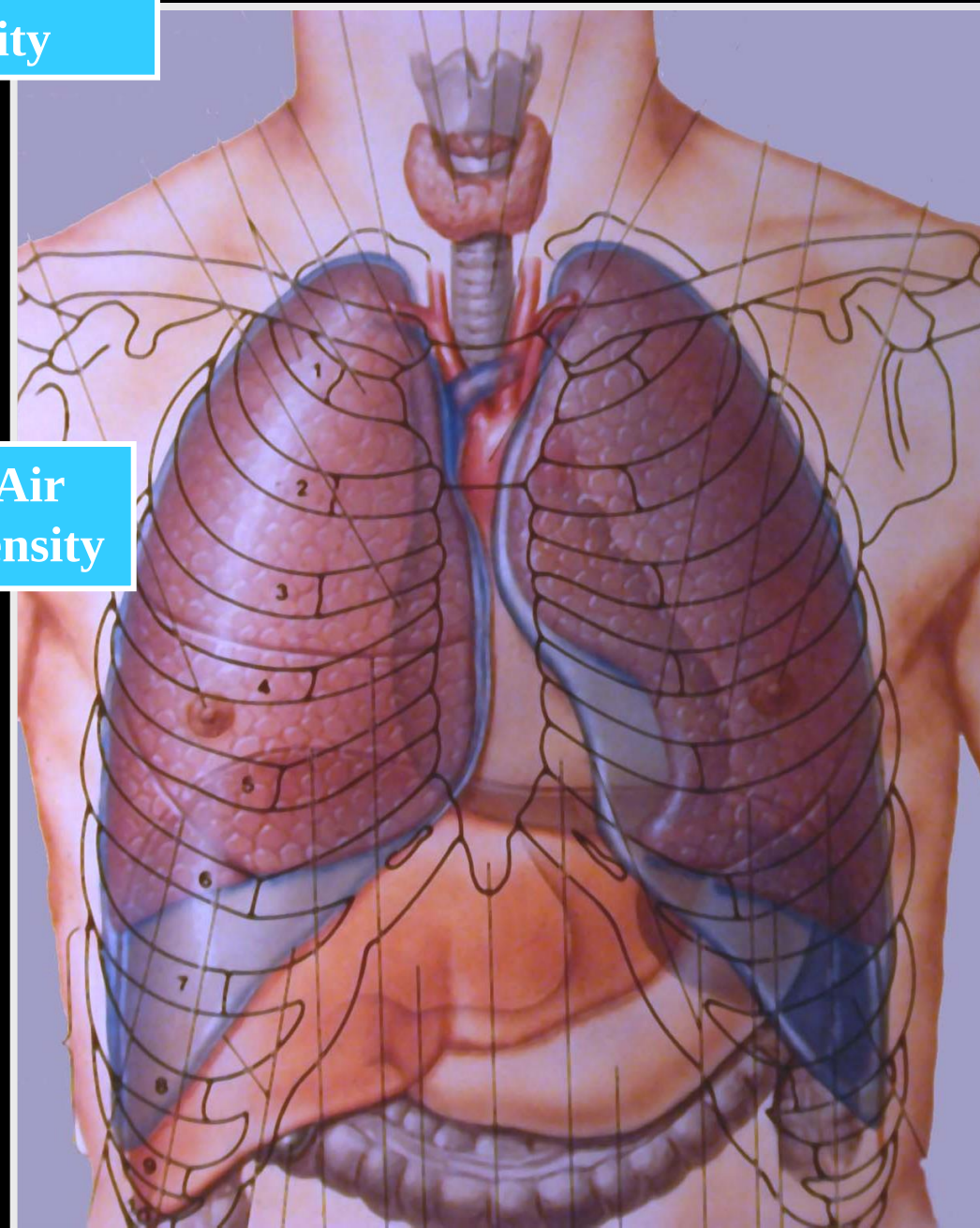
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■ 技巧：

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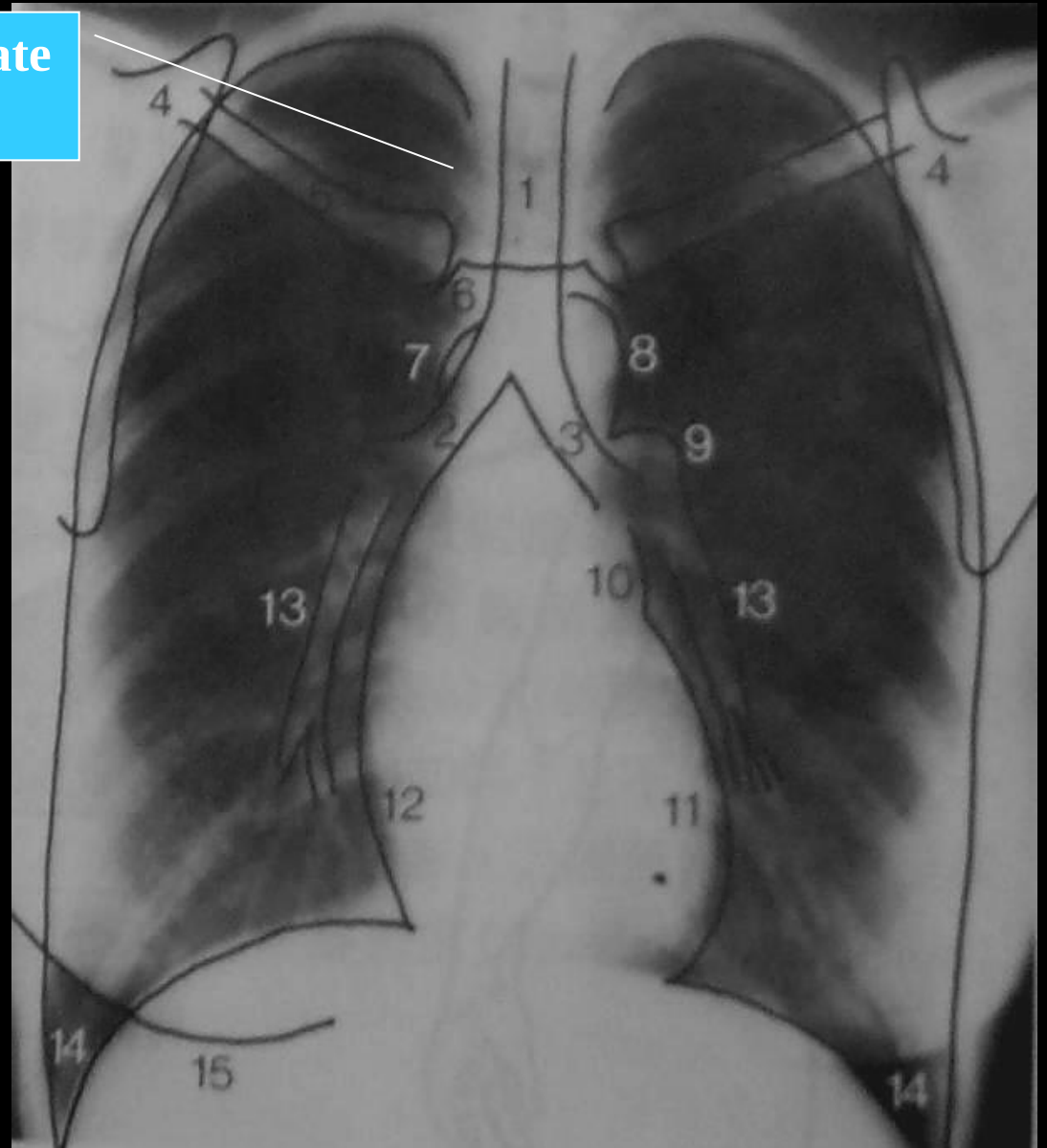
Air density

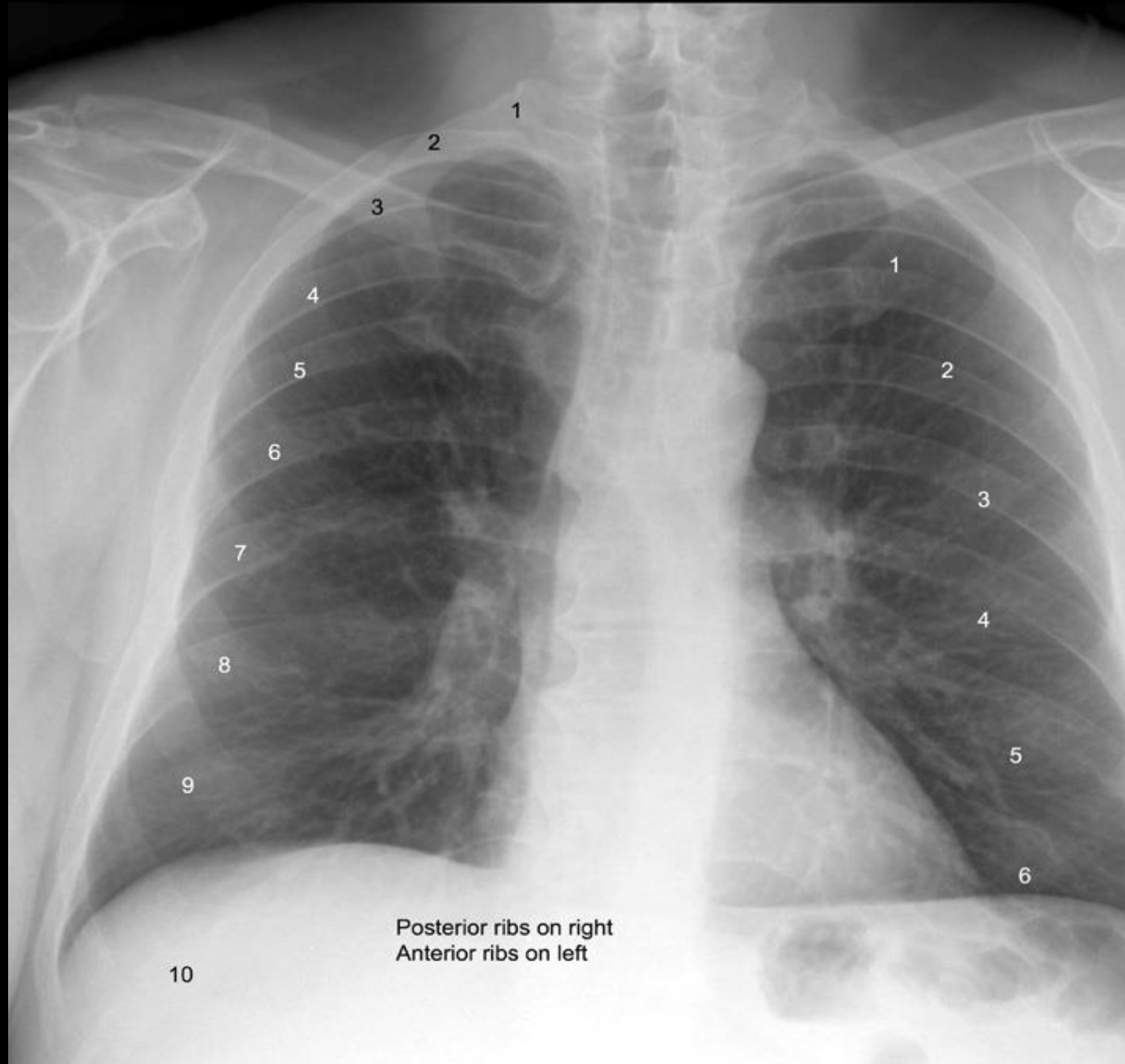


Frontal View

Innominate
artery

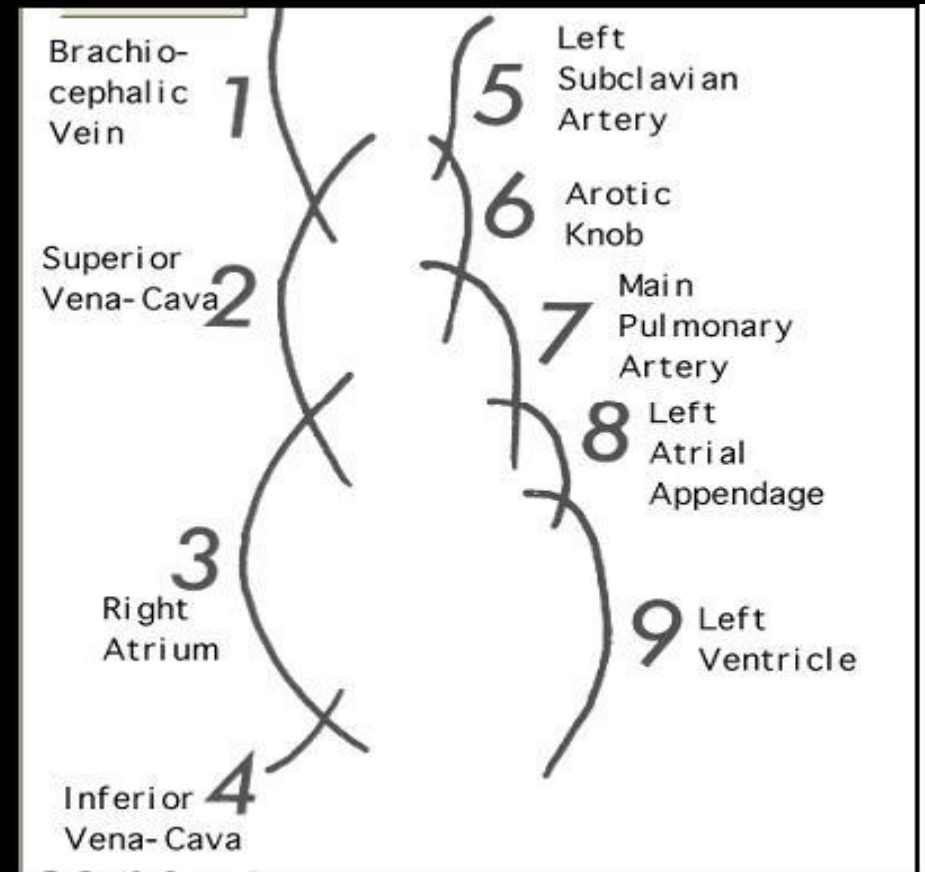
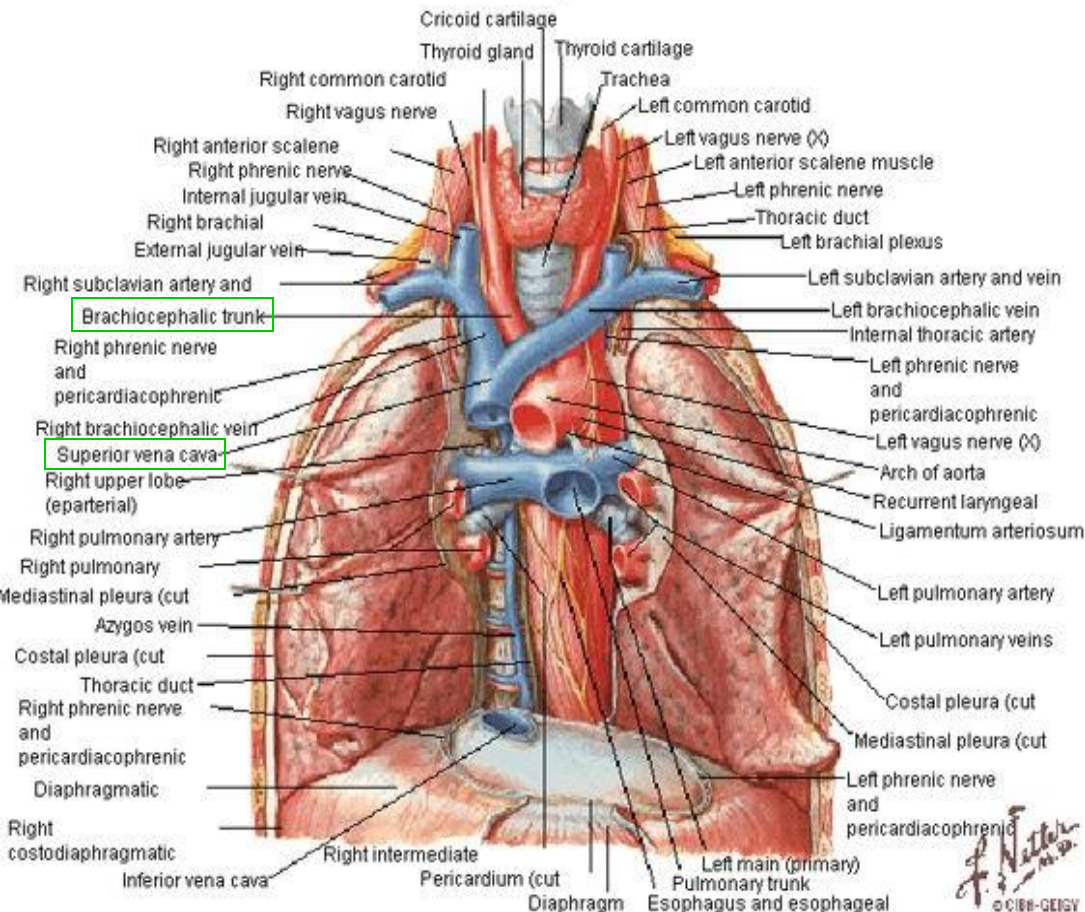
1. Trachea
2. Right main bronchus
3. Left main bronchus
4. Scapula
5. Clavicle
6. Manubrium Sterni
7. Azygous vein
8. Aortic arch
9. Left pulmonary artery
10. Left atrial appendage
11. Left heart border
12. Right heart border
13. Interlobar pulmonary artery
14. Costophrenic angle
15. Breast shadow





Cardiovascular shadow

Main Bronchi With Pulmonary Arteries and Veins in Situ



Frontal View

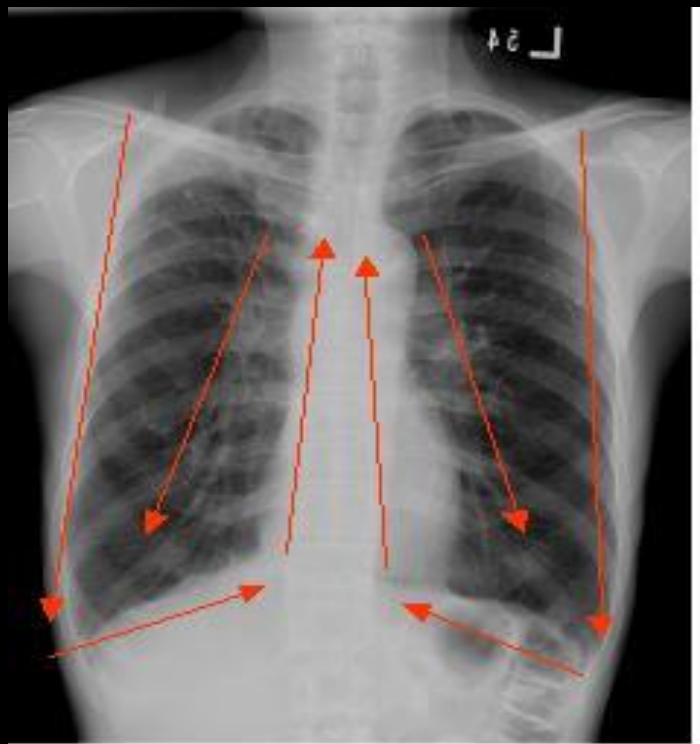
系統性的判讀

每個人可以建立自己的讀片順序

1. 胸廓及其外軟組織
2. 橫膈及腹部器官
3. 縱膈
4. 大氣道
5. 肺門
6. 肺區(肺裂、肺紋及支氣管分支)

Felson: **T**here **A**re **M**any **L**ung **L**esions

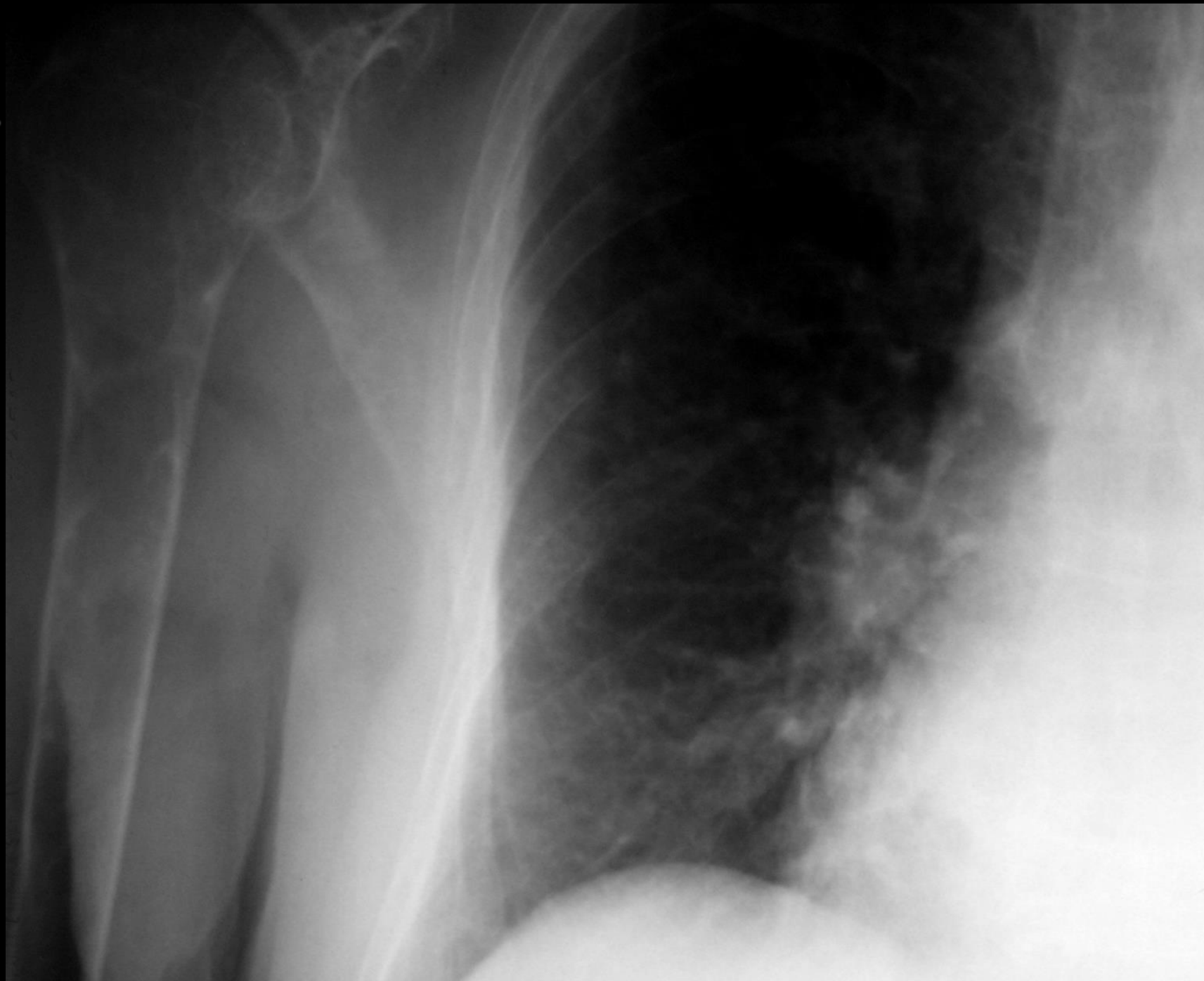
1. T(thorax):胸廓及其外軟組織
2. A(abdomen):橫膈及腹部器官
3. M(mediastinum):縱膈，含大氣道和肺門
4. L(單側肺區):肺裂、肺紋及支氣管分支
5. L(兩側肺區左右比較)



胸廓：Bone (Frontal View)

- General appearance
 - Scoliosis, kyphosis, kyphoscoliosis
- Osteoblastic change
 - Prostate ca.
 - Breast ca.
- Osteolytic change
 - Metastasis, multiple myeloma
 - Osteoporosis

Myeloma – Osteolytic Lesions



胸廓：Bone (Frontal View)

■ Rib

- 在lateral view中區別左右側的rib：

 - Big rib sign,

 - Vertical displacement sign

- Extra – Cervical rib

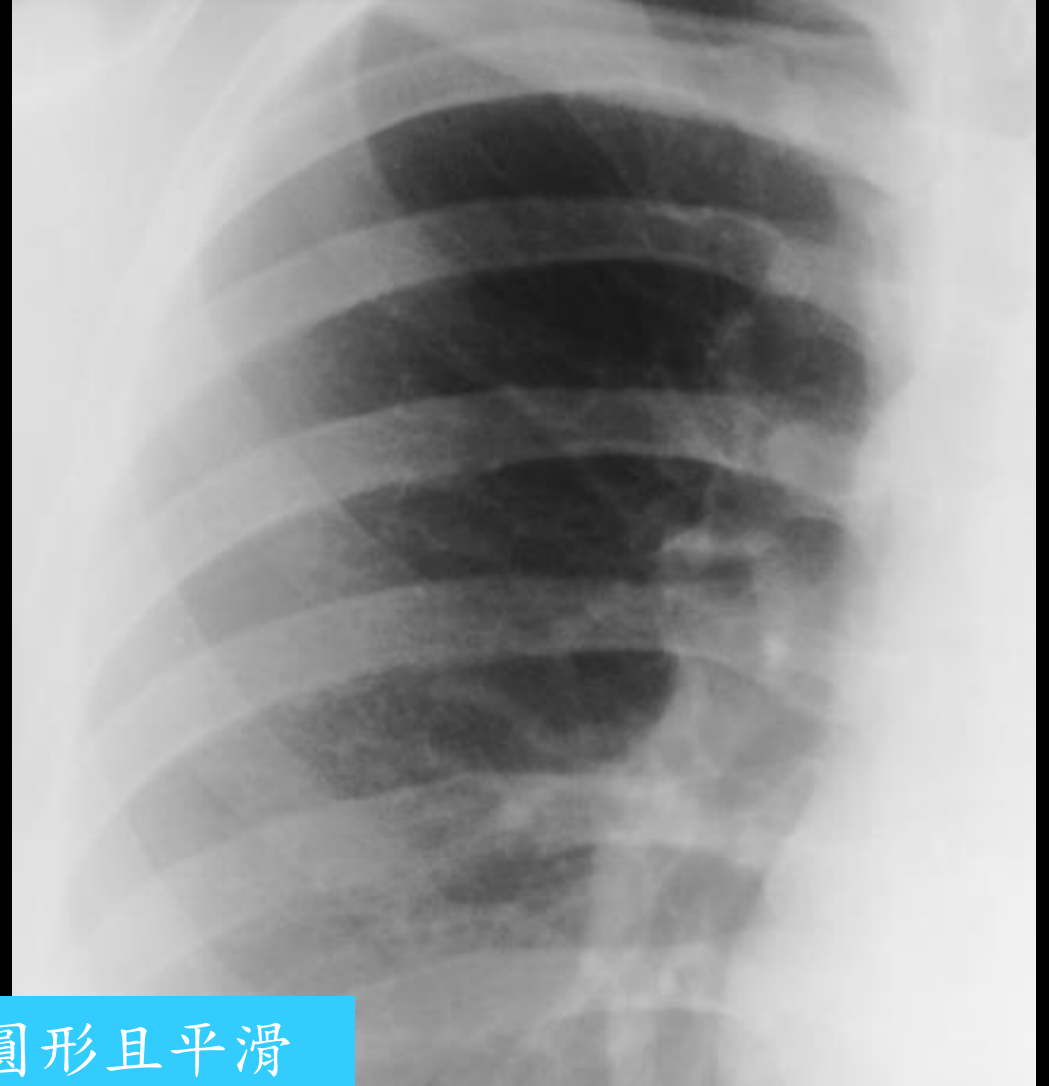
- Upper margin – Metastasis

- Lower margin – Notching: Coarctation of aorta

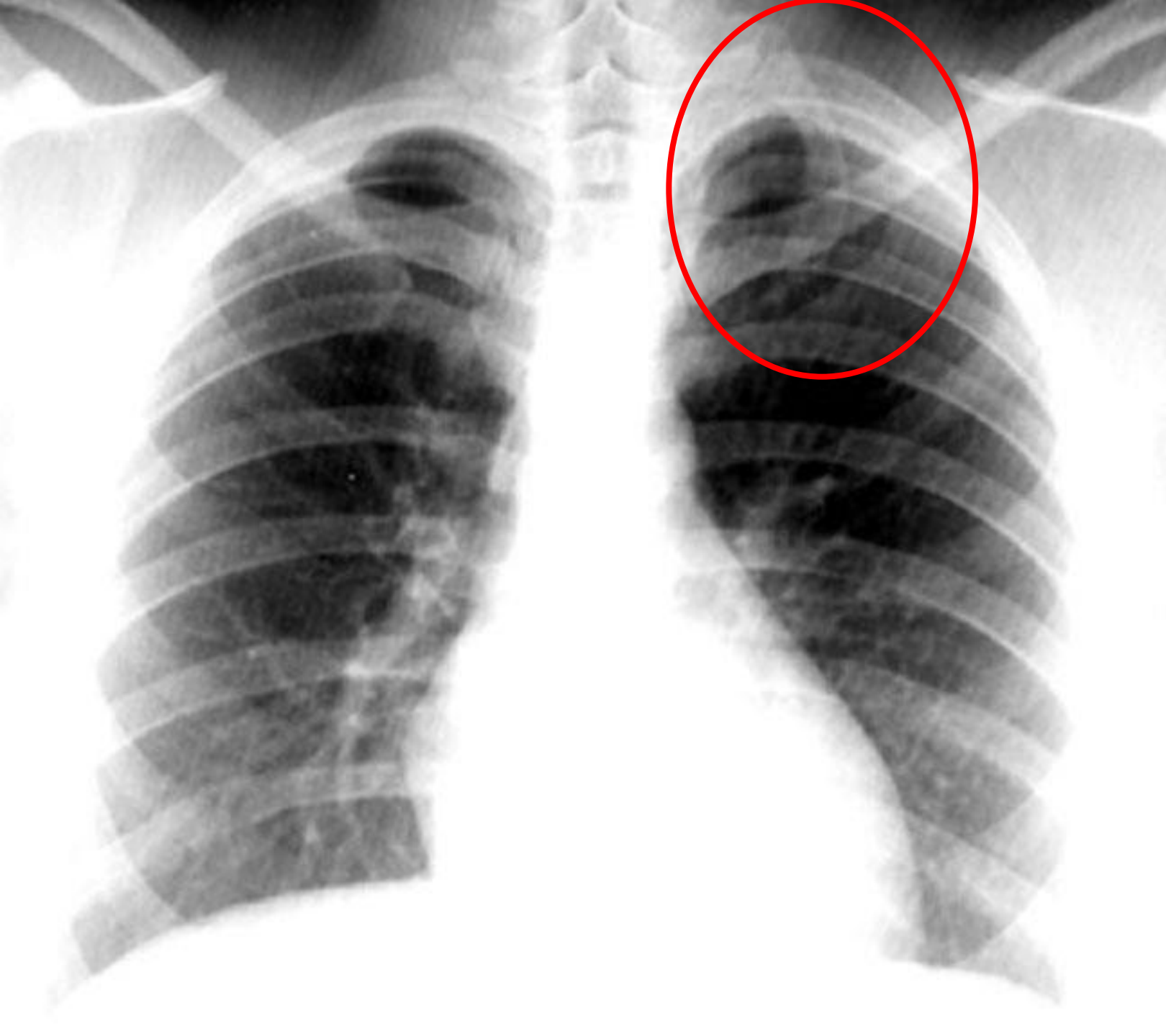
- Expansion – Healing of fracture, tumor

- Diffuse enlargement – Extramedullary hematopoiesis

Normal Ribs



外緣：呈半圓形且平滑

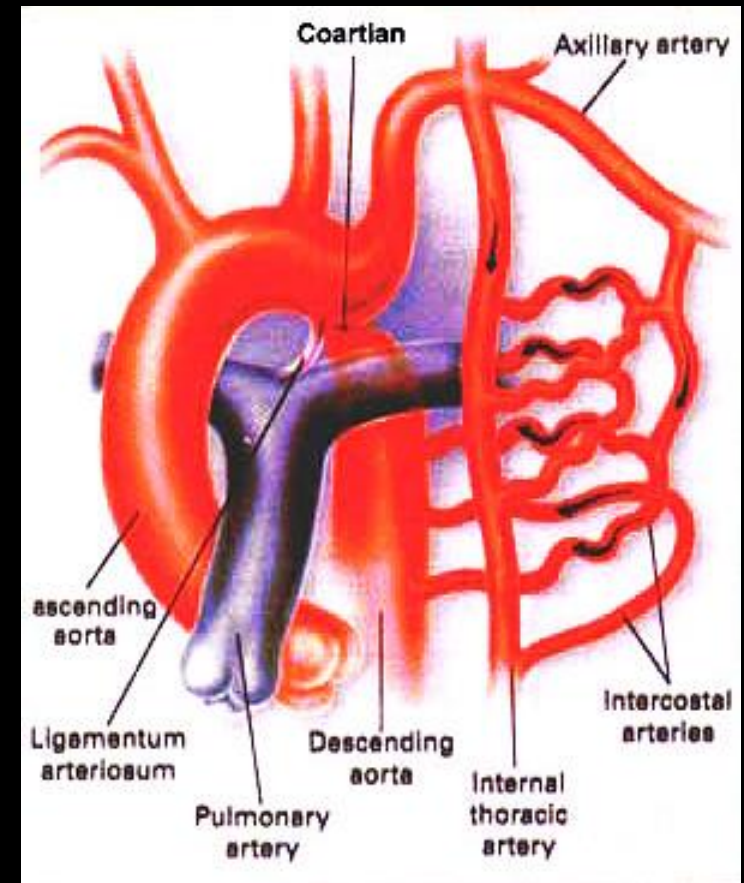


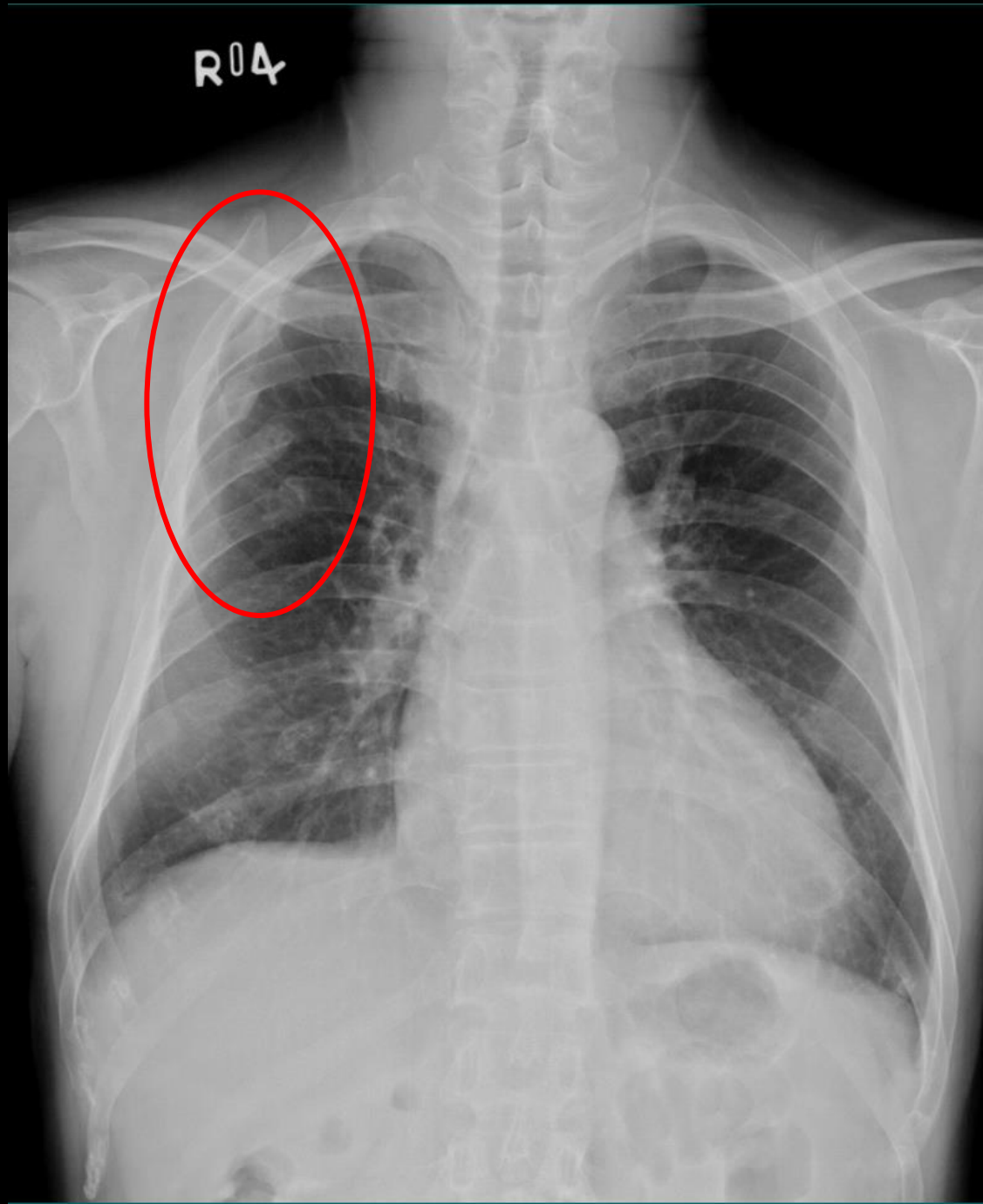
Left Cervical Rib



Rib notch

Coarctation of Aorta





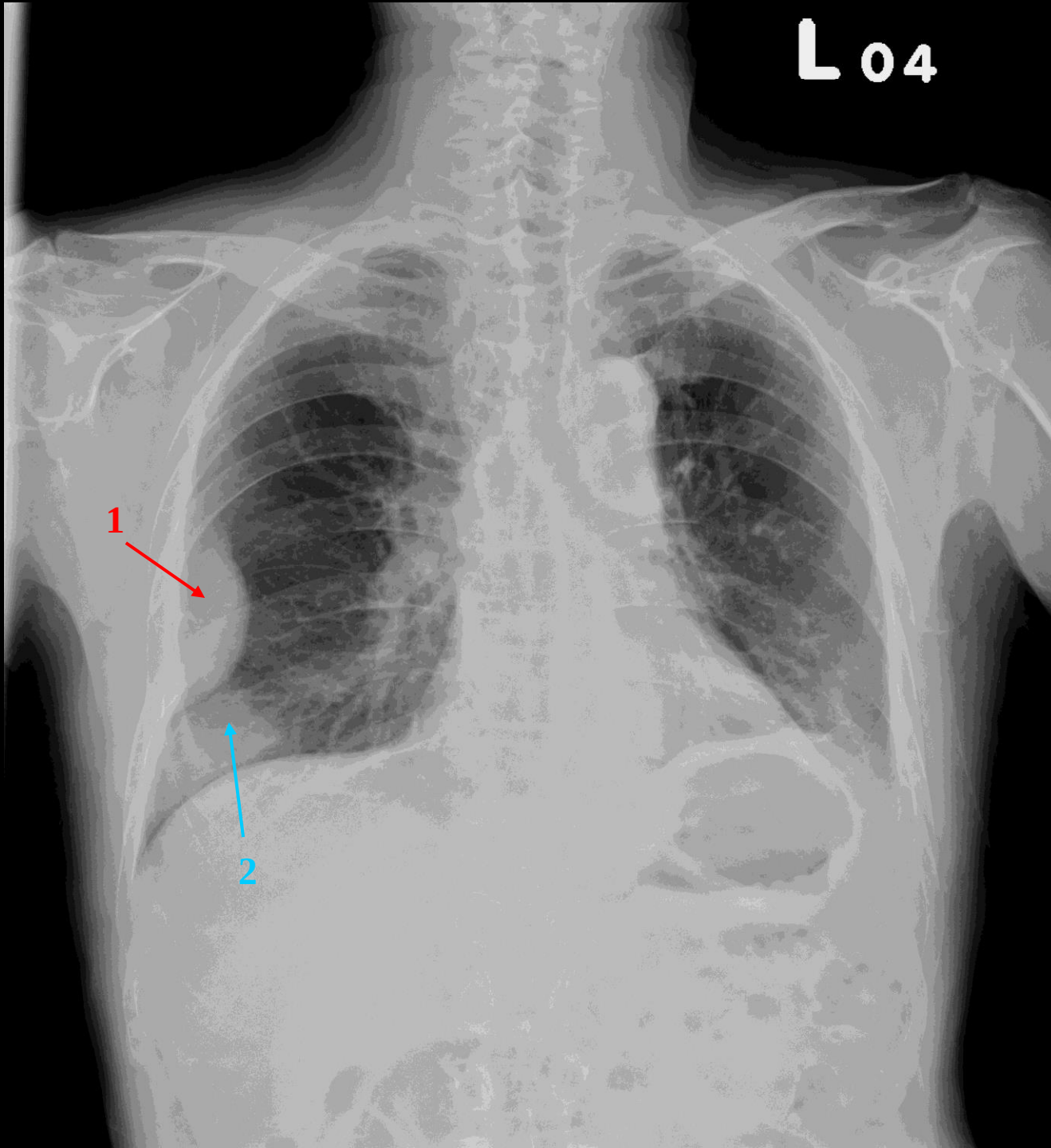
**Rib Fracture,
healing**

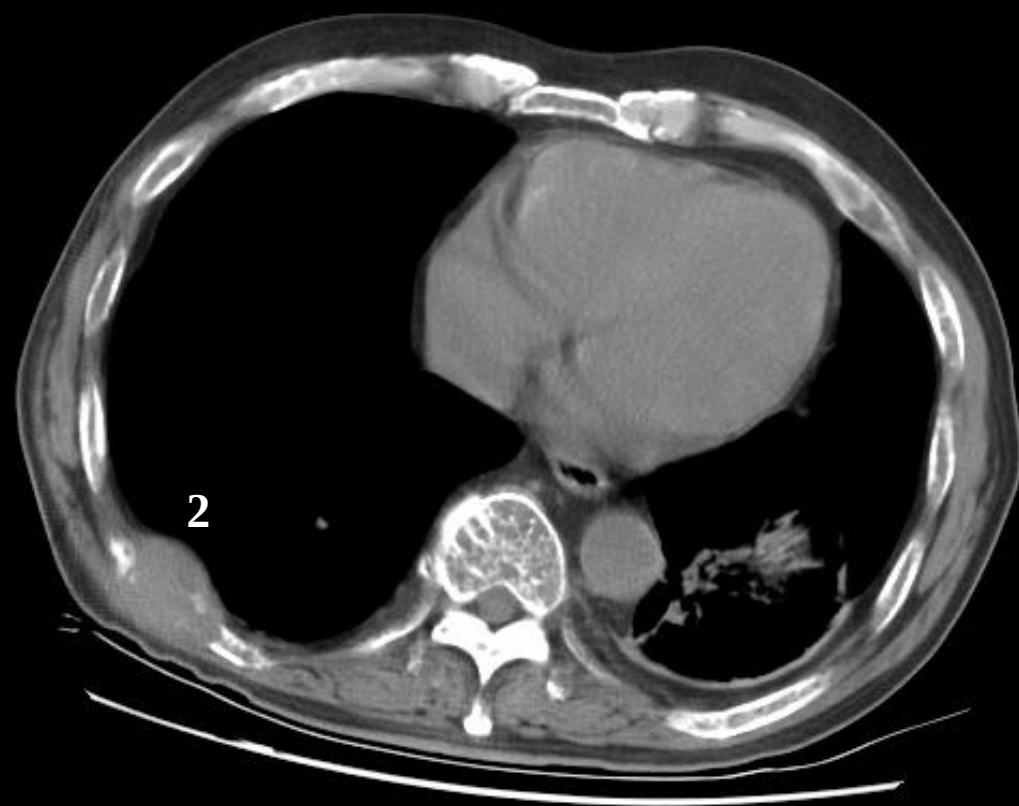
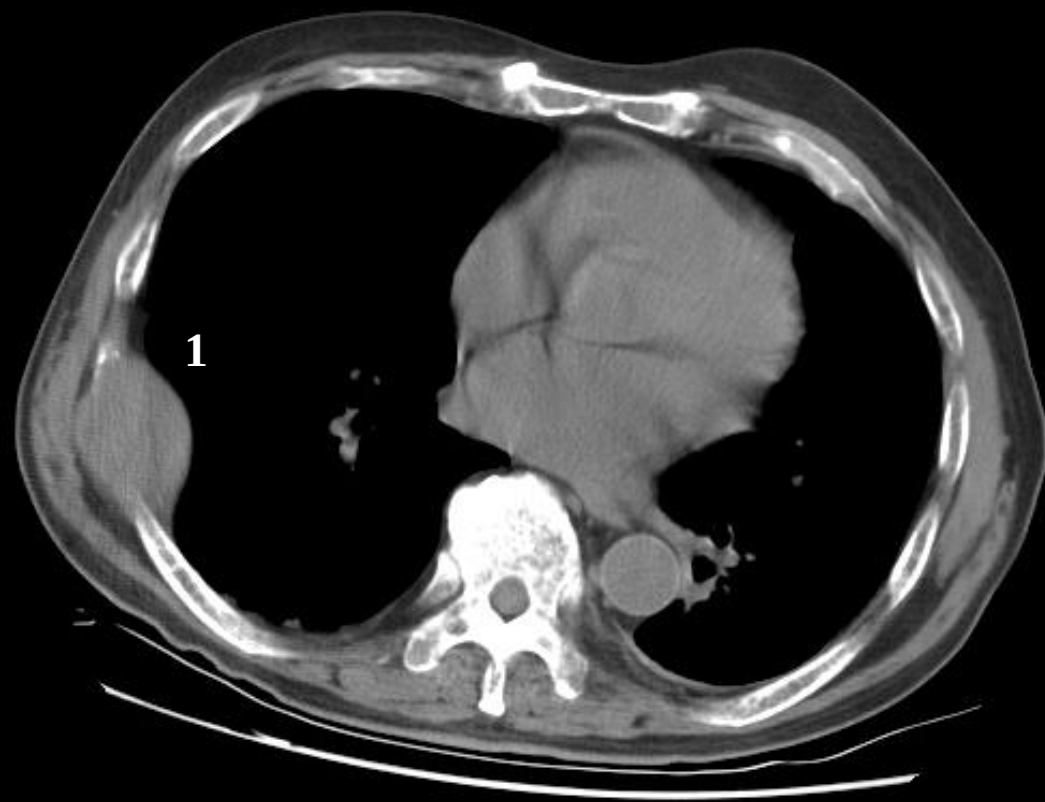
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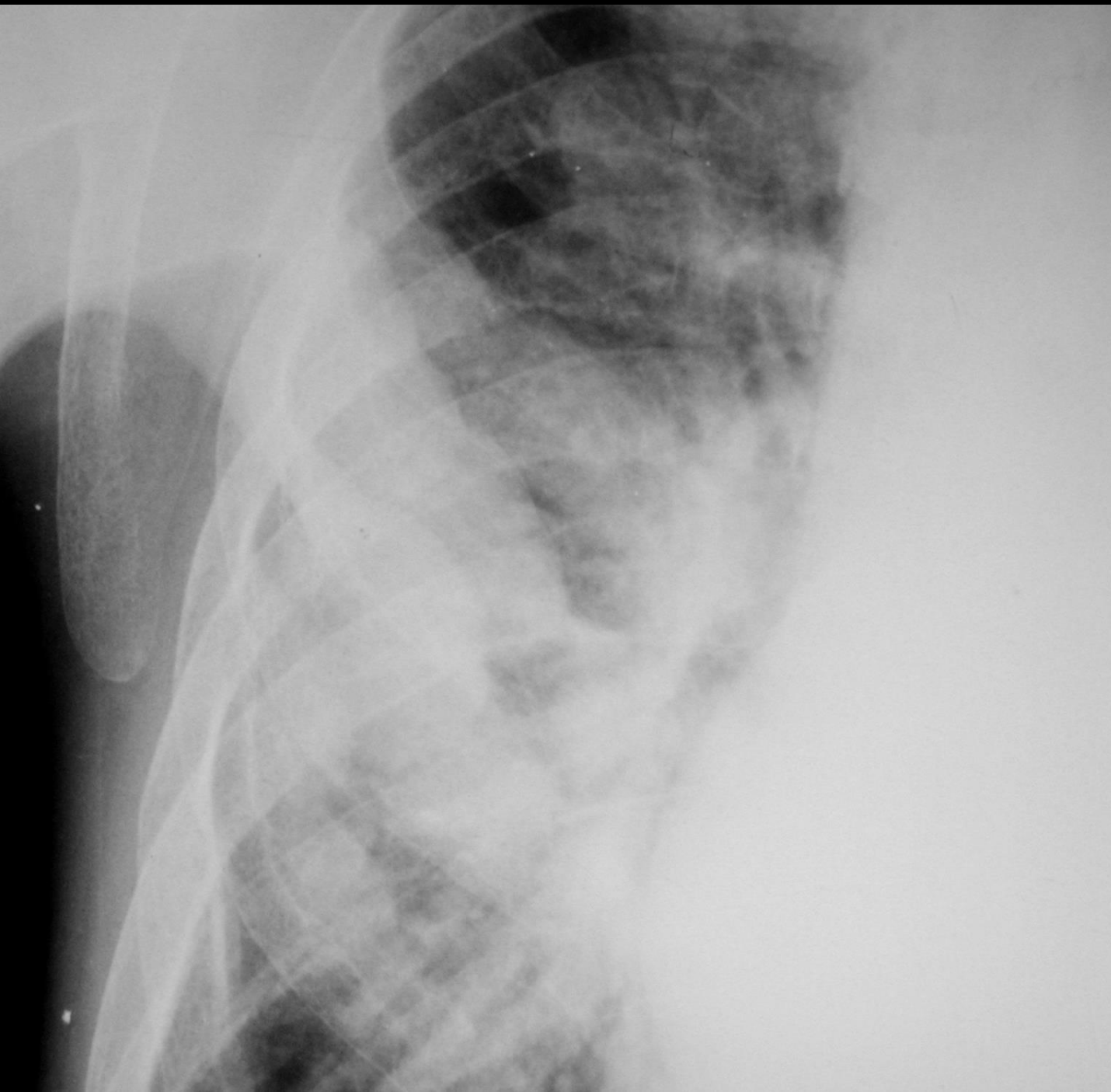
**Multiple myeloma
(plasmacytoma)**

1

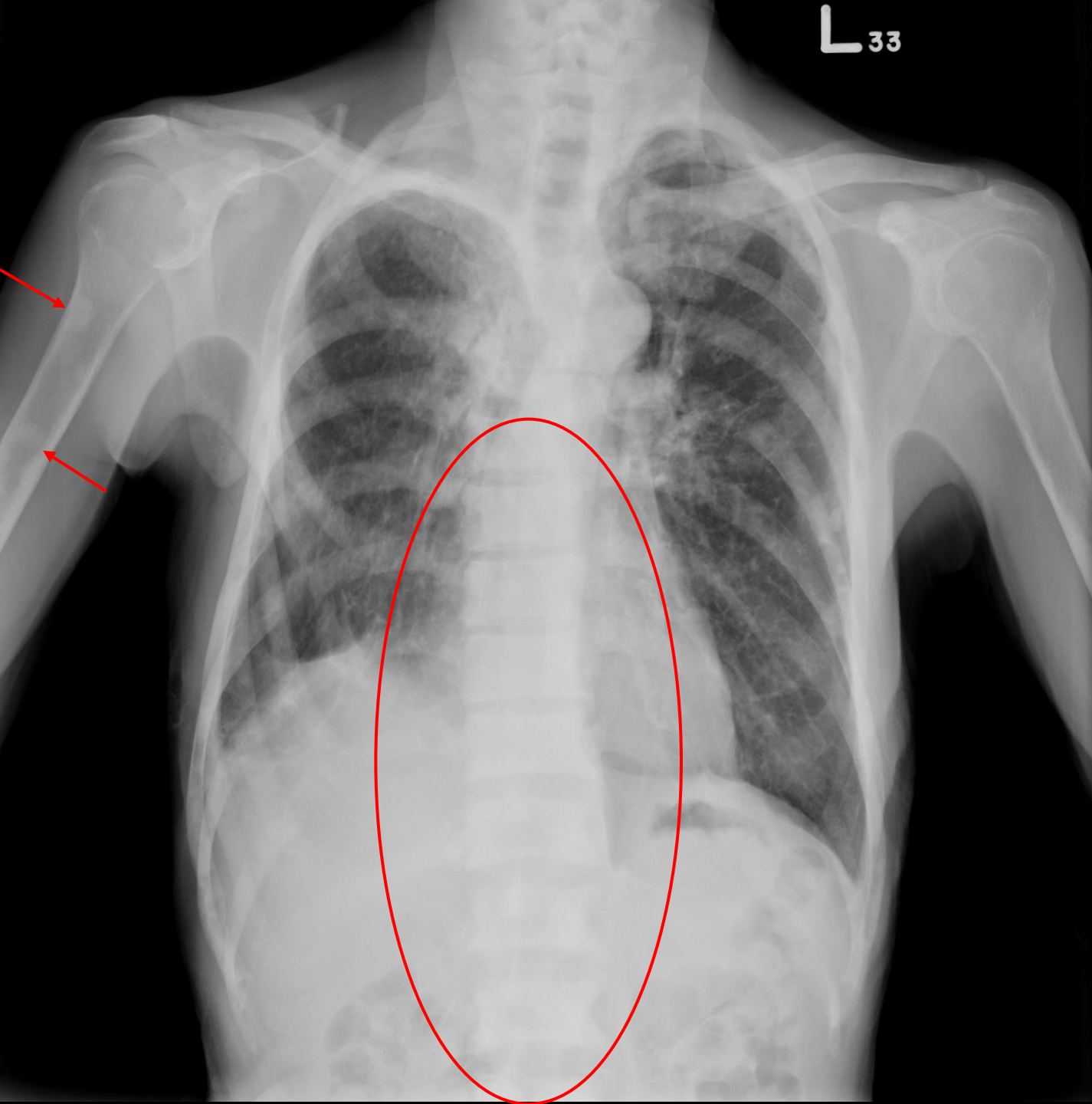
2







Thalassemia



Prostate cancer
Osteoblastic lesions

袁 x 林 16609486

胸廓：Bone (Frontal View)

■ Sternum

- Pectus excavatum (Funnel chest)

- Pectus carinatum (Pigeon chest)

■ Spine: the lower, the more radiolucent of density

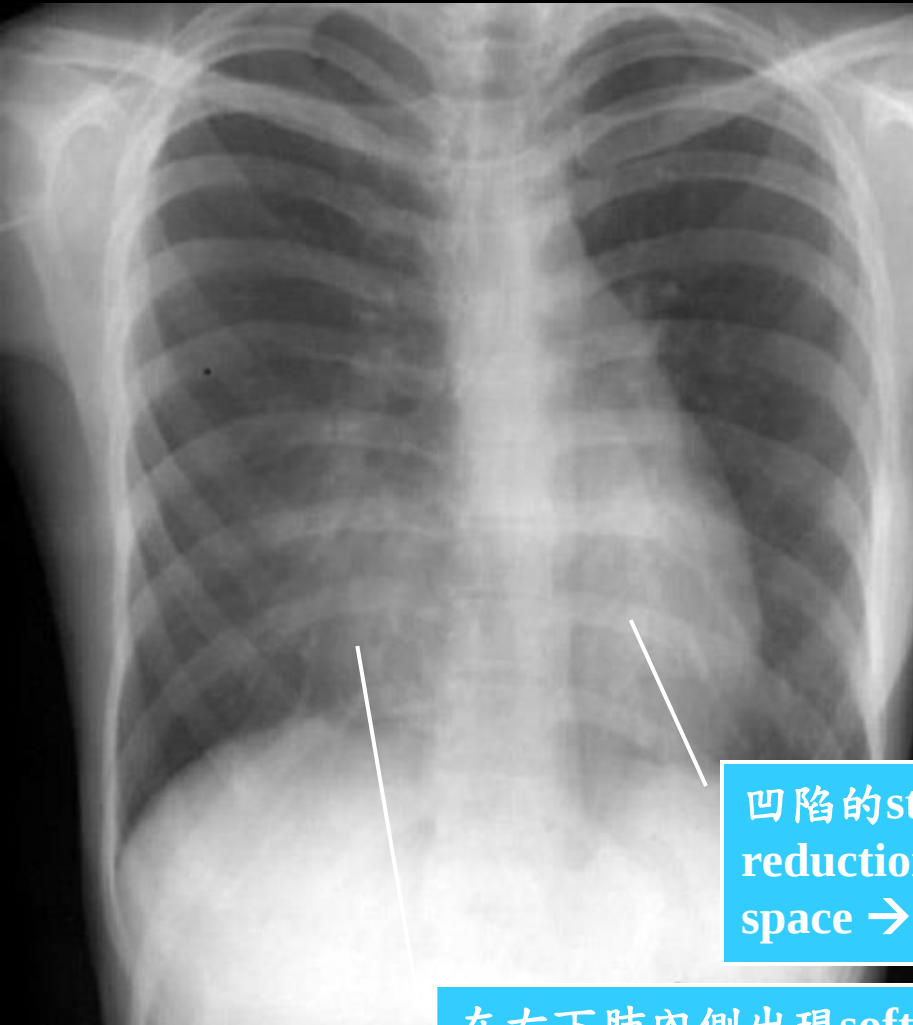
- Compression fracture/osteoporosis

- Bamboo spine

- TB spine

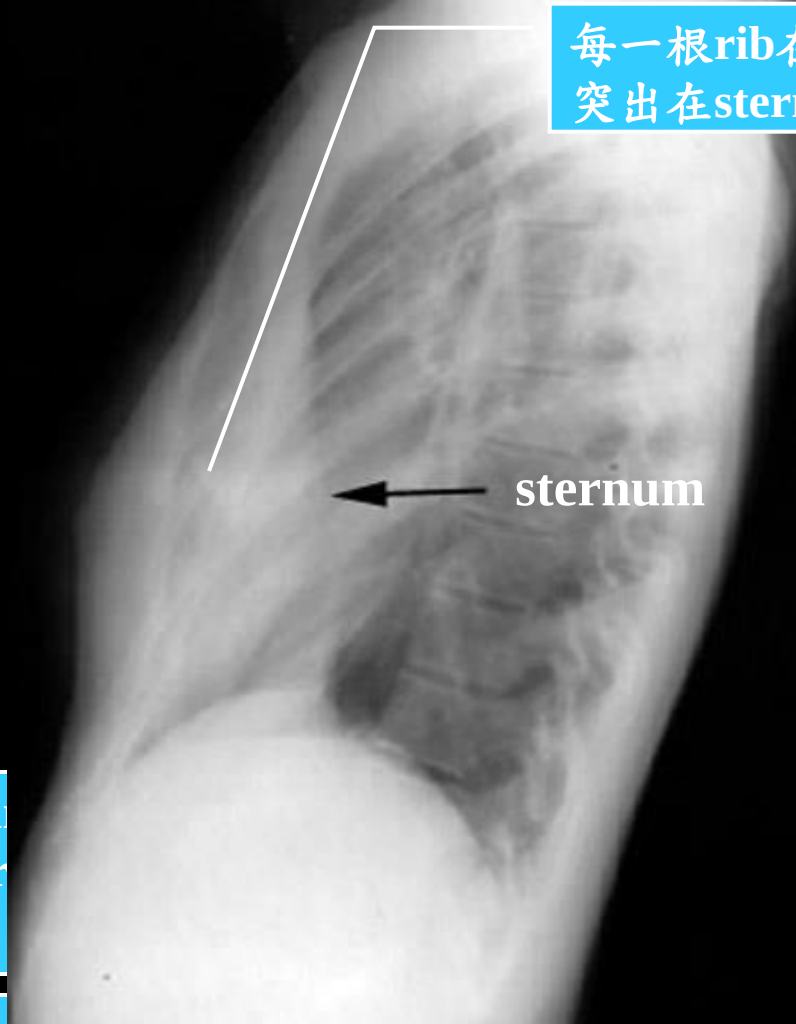
- Metastasis (osteoblastic, osteolytic)

Pectus Excavatum (漏斗胸)



凹陷的sternum
reduction of r
space → Left

在右下肺內側出現soft-tissue density，使得右邊 heart border不清楚



每一根rib在lateral view都突出在sternum的前面

sternum

downward
改字"7"), which
allel to each

ometimes angle

slightly upward.

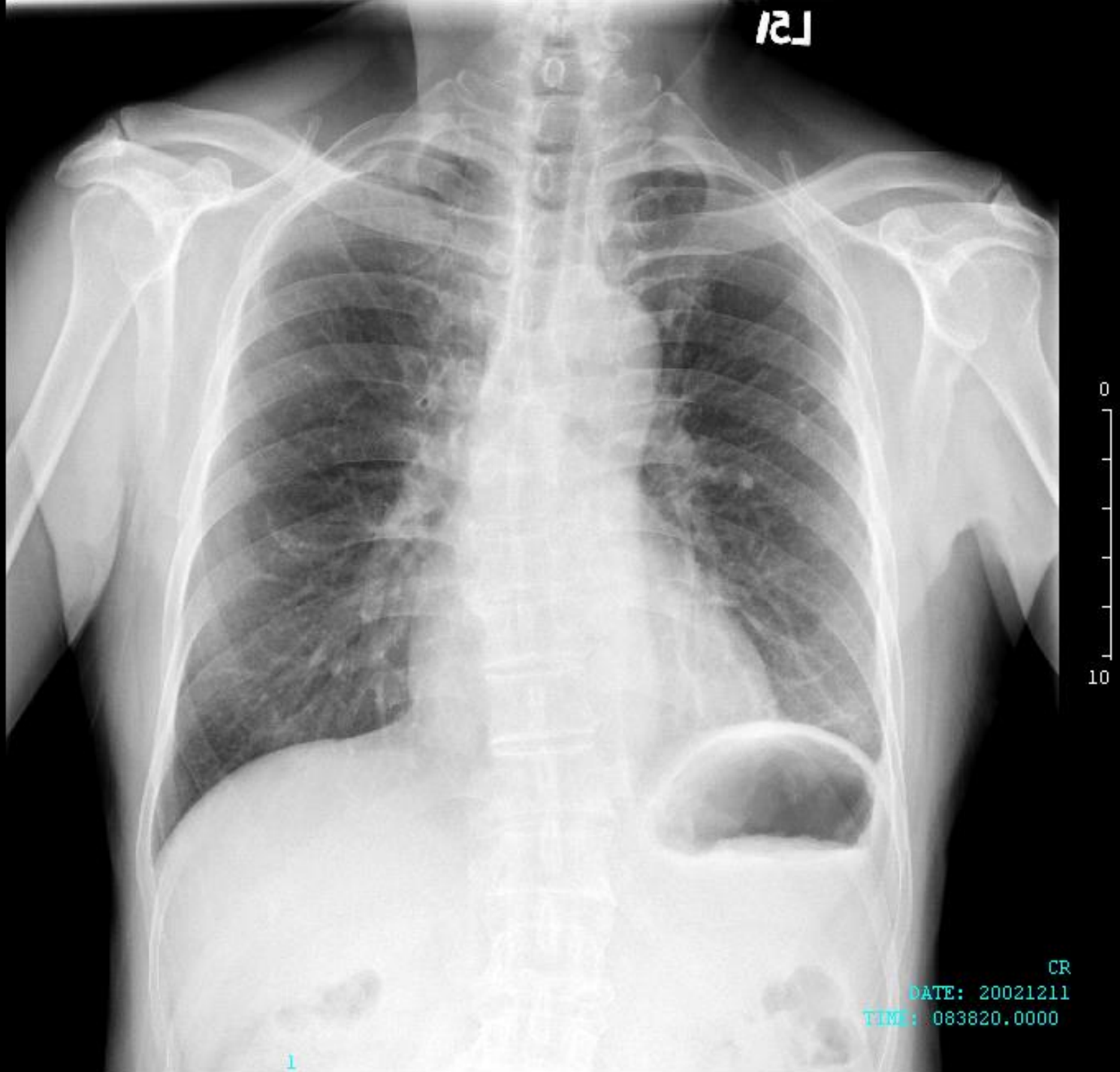


T4

脊椎骨影像由上往下
逐漸變黑

T11

Scoliosis





**AS with bamboo
spine**

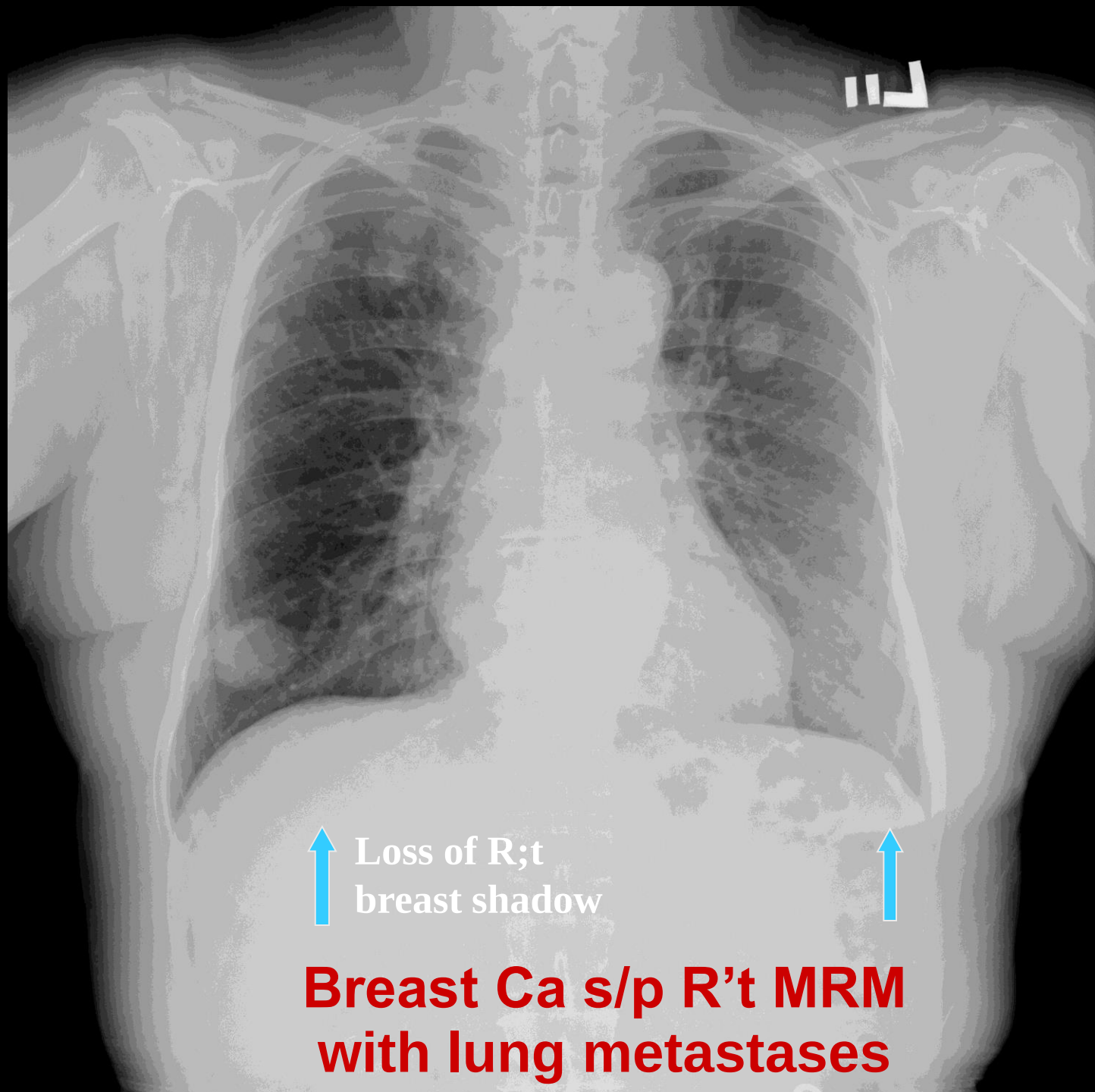


Thoracoplasty

胸廓：Soft Tissue (Frontal View)

- Breast shadow
- Subcutaneous emphysema
- Subcutaneous abscess/cellulitis
- Neck mass/soft tissue mass
- Gastric bubble
 - Upper border > 2cm -- Subpulmonic effusion
 - Intra gastric mass -- Gastric ca.
 - Extra gastric mass -- Spleen or kidney
 - Absence -- Hiatal hernia, achalasia





↑ Loss of R;t
breast shadow

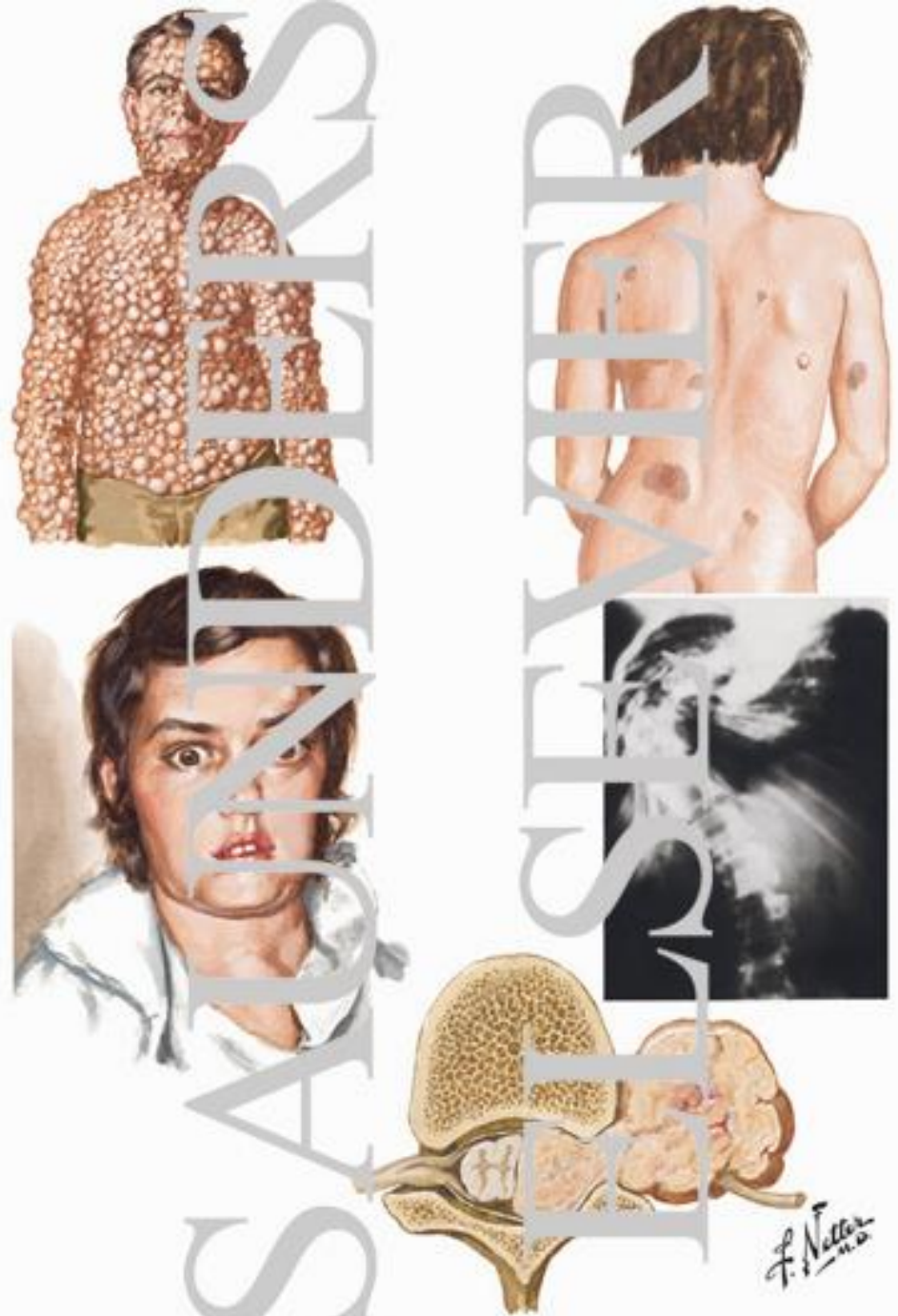
**Breast Ca s/p R't MRM
with lung metastases**

軟組織密度變化：Subcutaneous emphysema



胸廓之軟組織：

**Neurofibromatosis
with lung
involvement**



Pleura

- Pleural thickening / pleural fibrosis(fibrothorax)
/ pleural plaque / pleural calcification
- Pneumothorax
- Pleural mass
- Pleural effusion
- Costophrenic (C-P) angle blunting
 - Pleural thickening
 - Pleural effusion



Skin folds

Pneumothorax

Skin fold

- 可以一直trace到lung field以外
- 線條以外的lung field內可以看到lung marking

X光



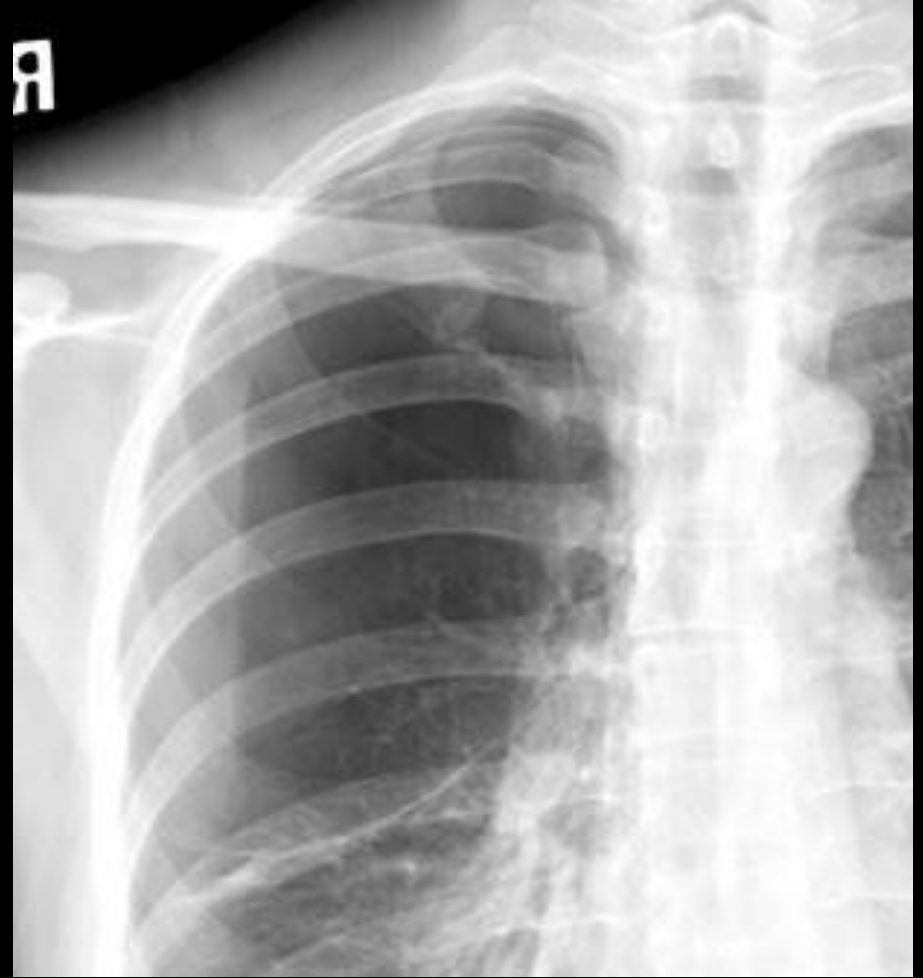
皮膚



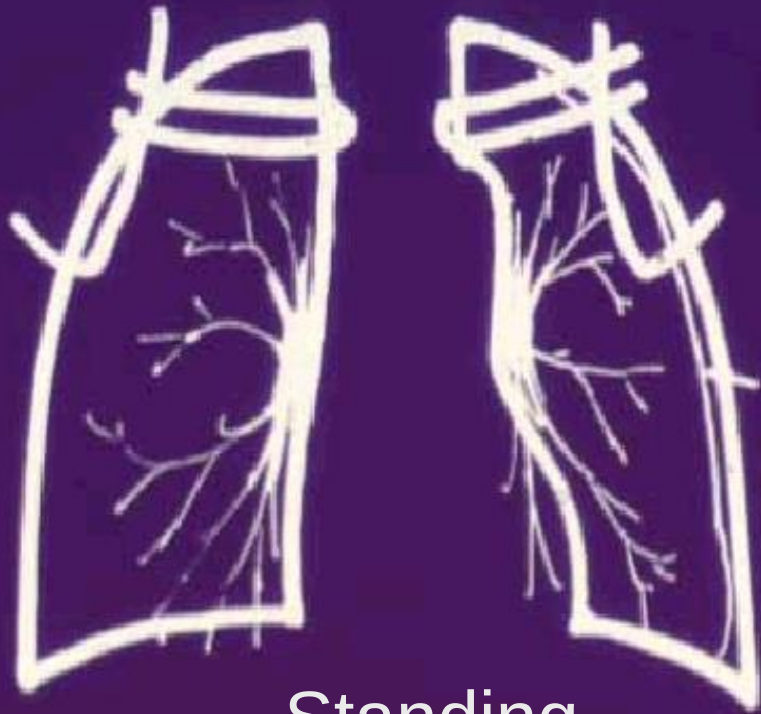
X光片匣



Pneumothorax



giant bullae



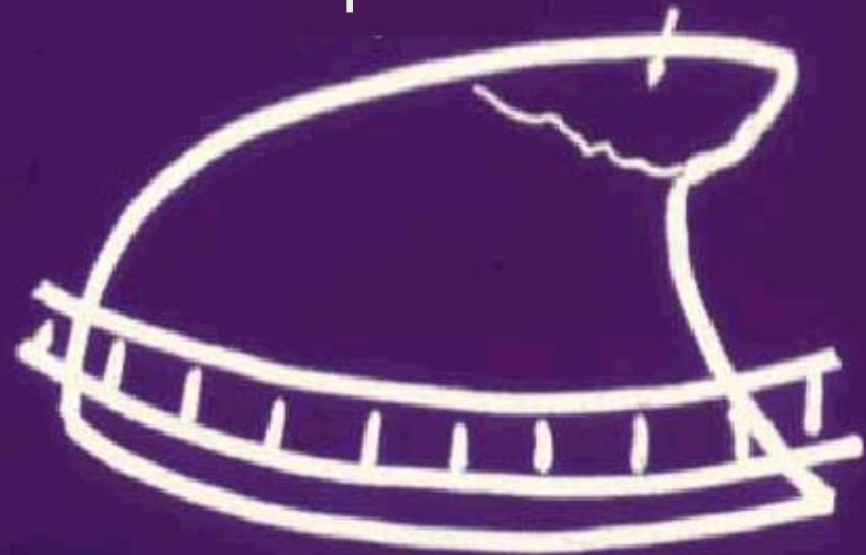
Standing



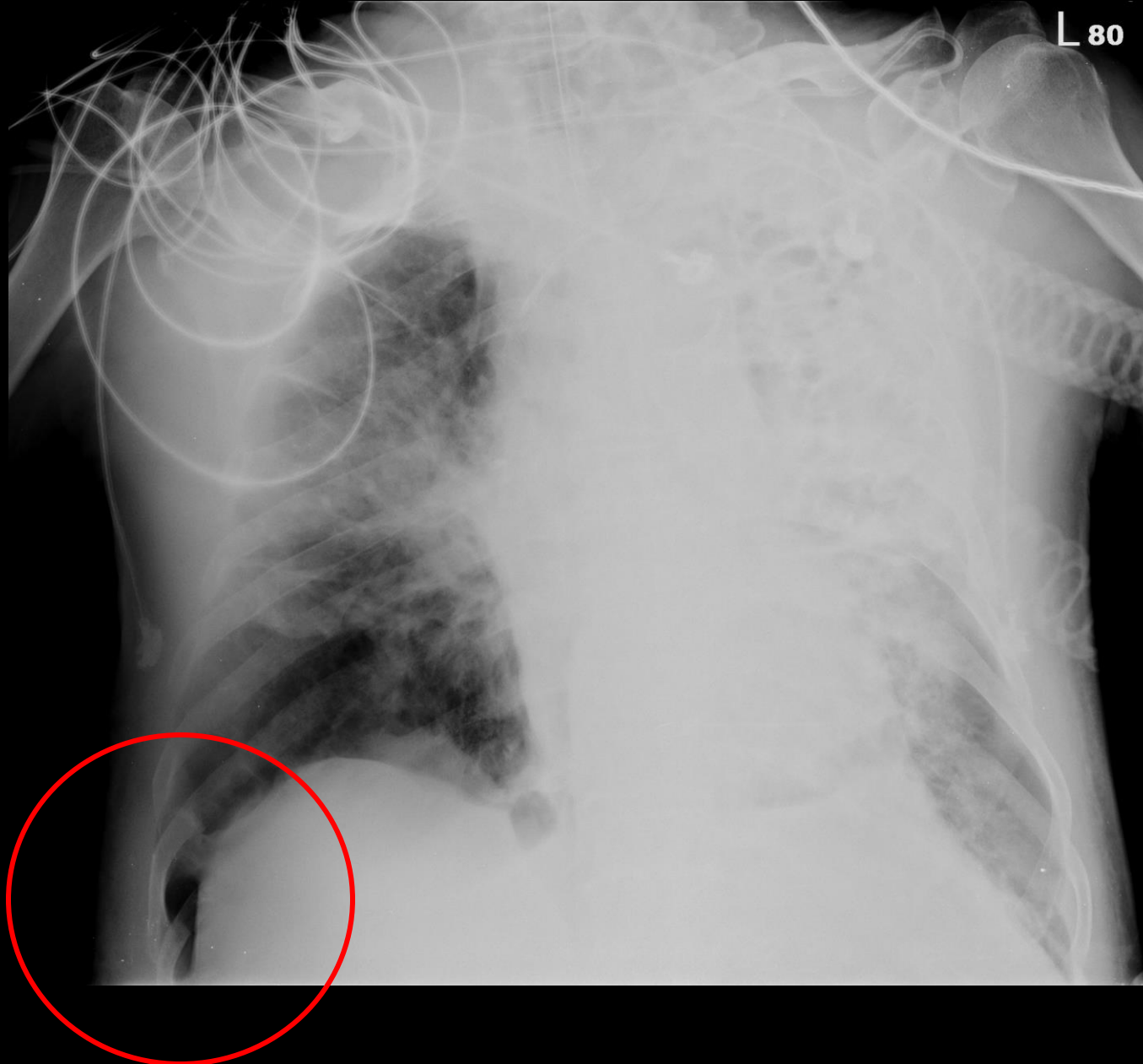
supine

air

Pneumothorax



Pneumothorax- deep sulcus sign



橫膈、橫膈下影像

- 位置：前高後低, 右高左低, 內高外低
 - 右橫膈: 10~11 post. rib; 左橫膈: 略低 0.5-1 vertebral body(約1-2cm)
 - 最高點在內1/3處
 - 左側橫膈高於右側橫膈：異常
 - 肺部因素：L't lung volume reduction
 - 橫膈因素：diaphragmatic hernia, subpulmonic effusion
 - 腹腔內因素：lesion把L't diaphragm往上頂
- 胃氣：
 - 距左橫膈 < 1cm; > 2cm要懷疑subpulmonic effusion
 - 胃內有沒有東西 (gastric Ca)
 - Gastric air不見：hiatal hernia, achalasia, 躺著照
- Liver：
 - Liver abscess: air-fluid level within liver density
 - 利用腸氣(colon gas)可判斷肝脾大小
- Subphrenic gas：PPU, subphrenic abscess, interposed colon

橫膈、橫膈下影像

■ 橫膈前高後低

■ 如何辨認左右橫膈：

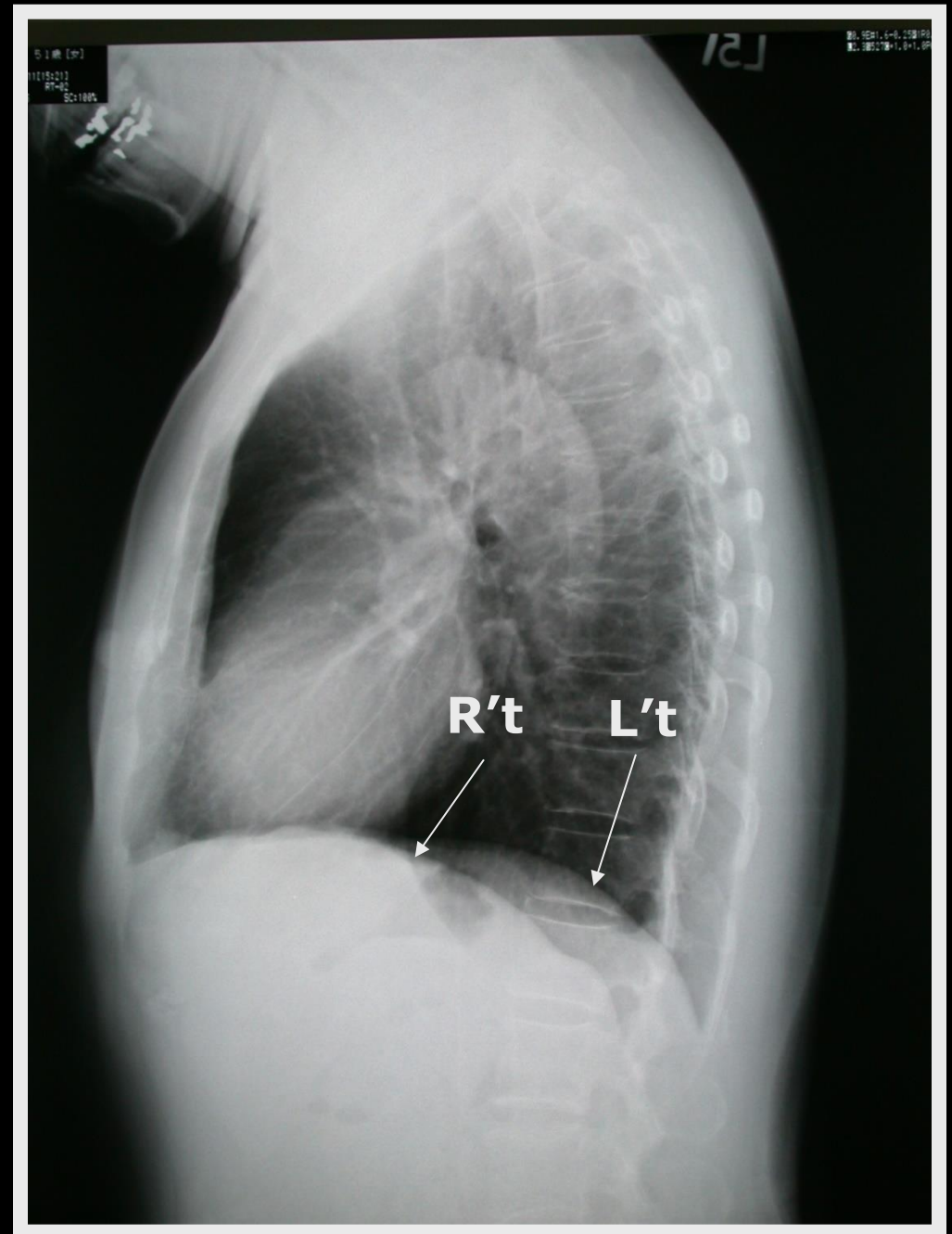
右：1. 被胃部空氣跨越者

2. 和下腔靜脈相連者

3. 前端橫膈仍清楚可見

左：1. 前端融入心臟影像
(silhouette)

2. 在L't lateral view中與
較粗肋骨相連者(big
rib sign)





駝峰狀

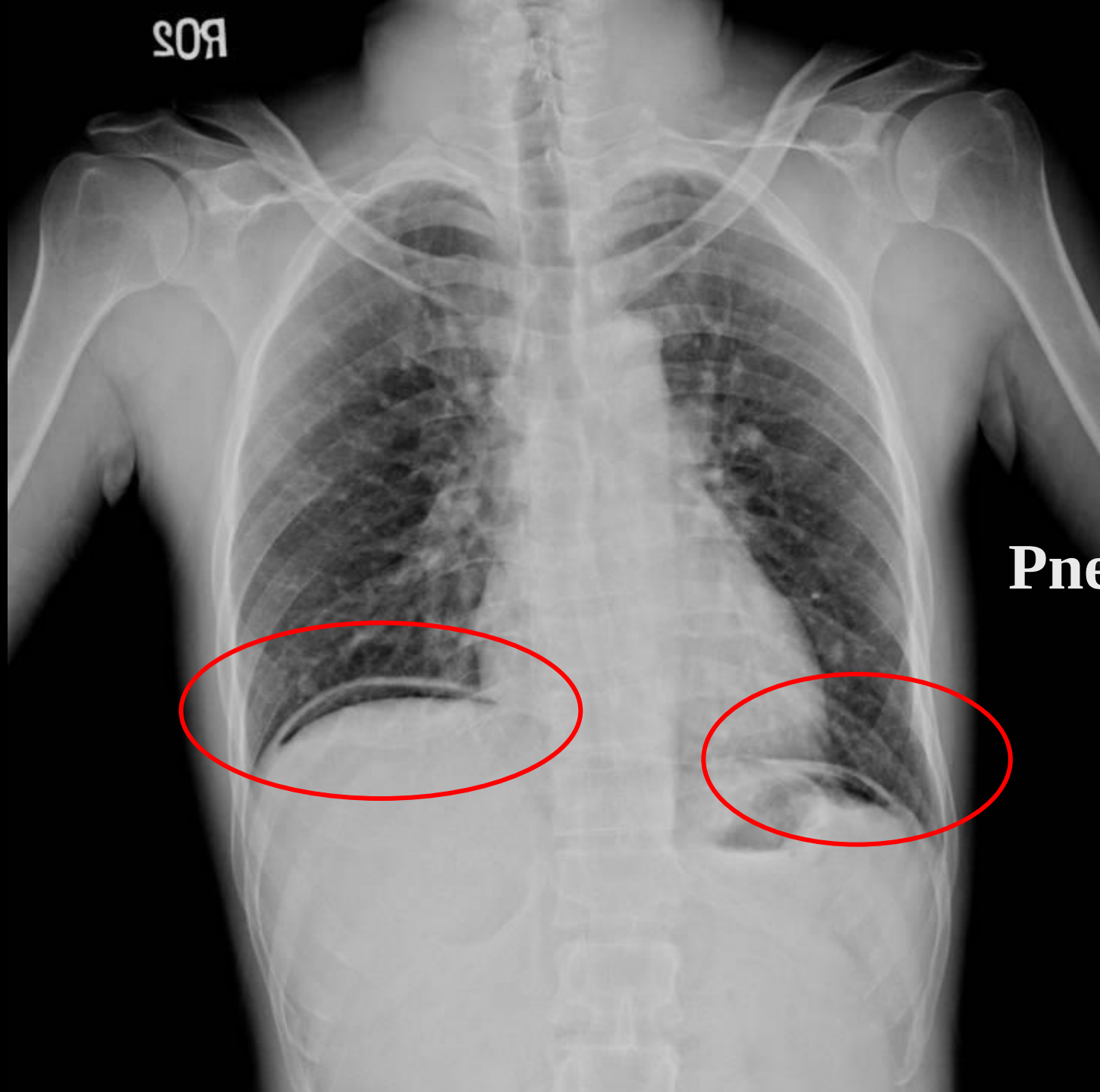
Normal



扁平狀

COPD

R09



Pneumoperitoneum

Mediastinum 縱隔

■ 心臟

Heart shadow

Cardiothoracic Index

■ 大血管

Aorta

Pulmonary arteries

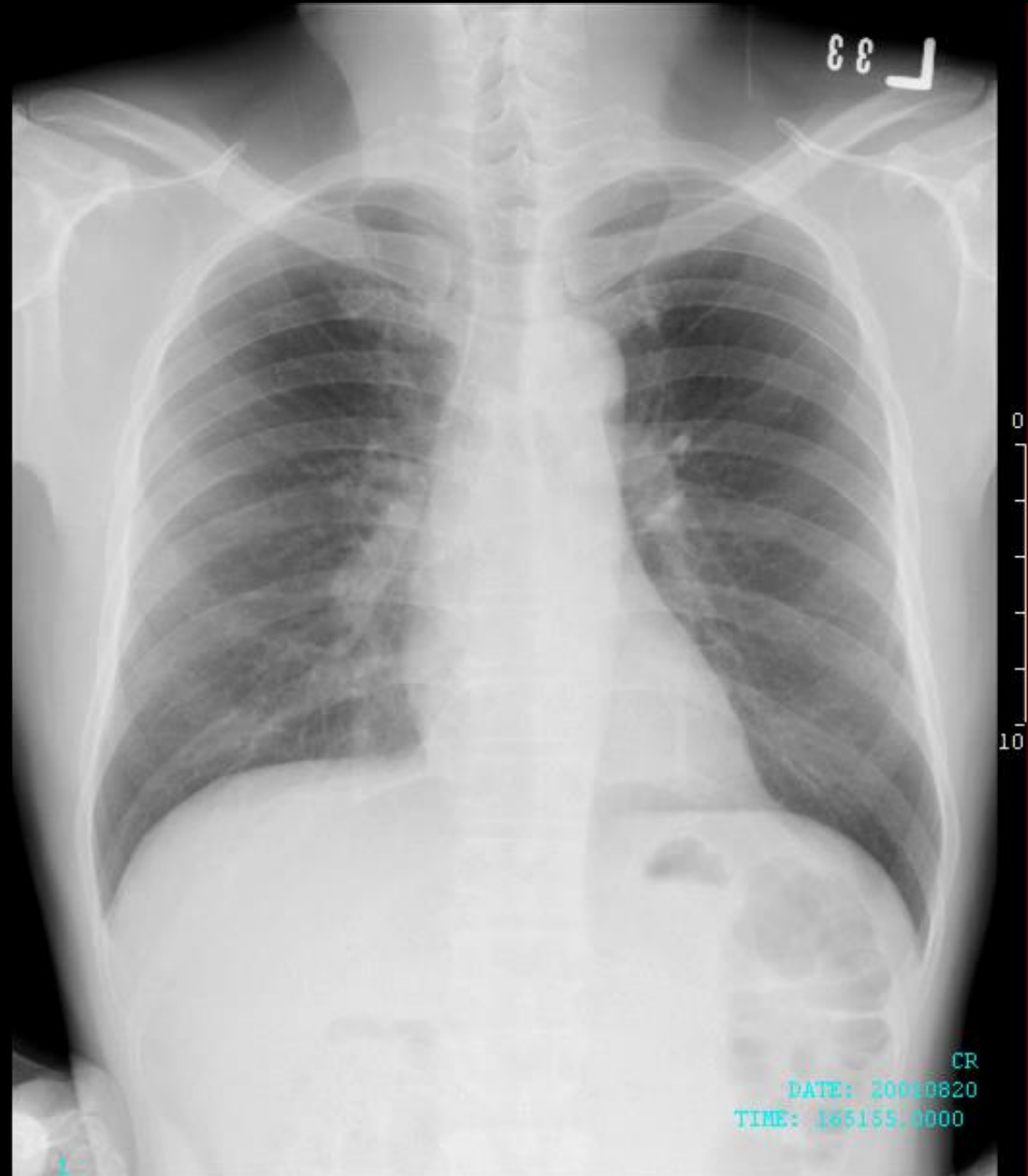
■ 大氣道

Endotracheal/endobronchial

Subcarinal angle 75°

■ 食道

■ 肺門



Mediastinum 縱膈

懷疑縱膈病灶-務必看側位照
上、前、中、後縱膈

心臟

大血管

Aorta

Pulmonary arteries

大氣道

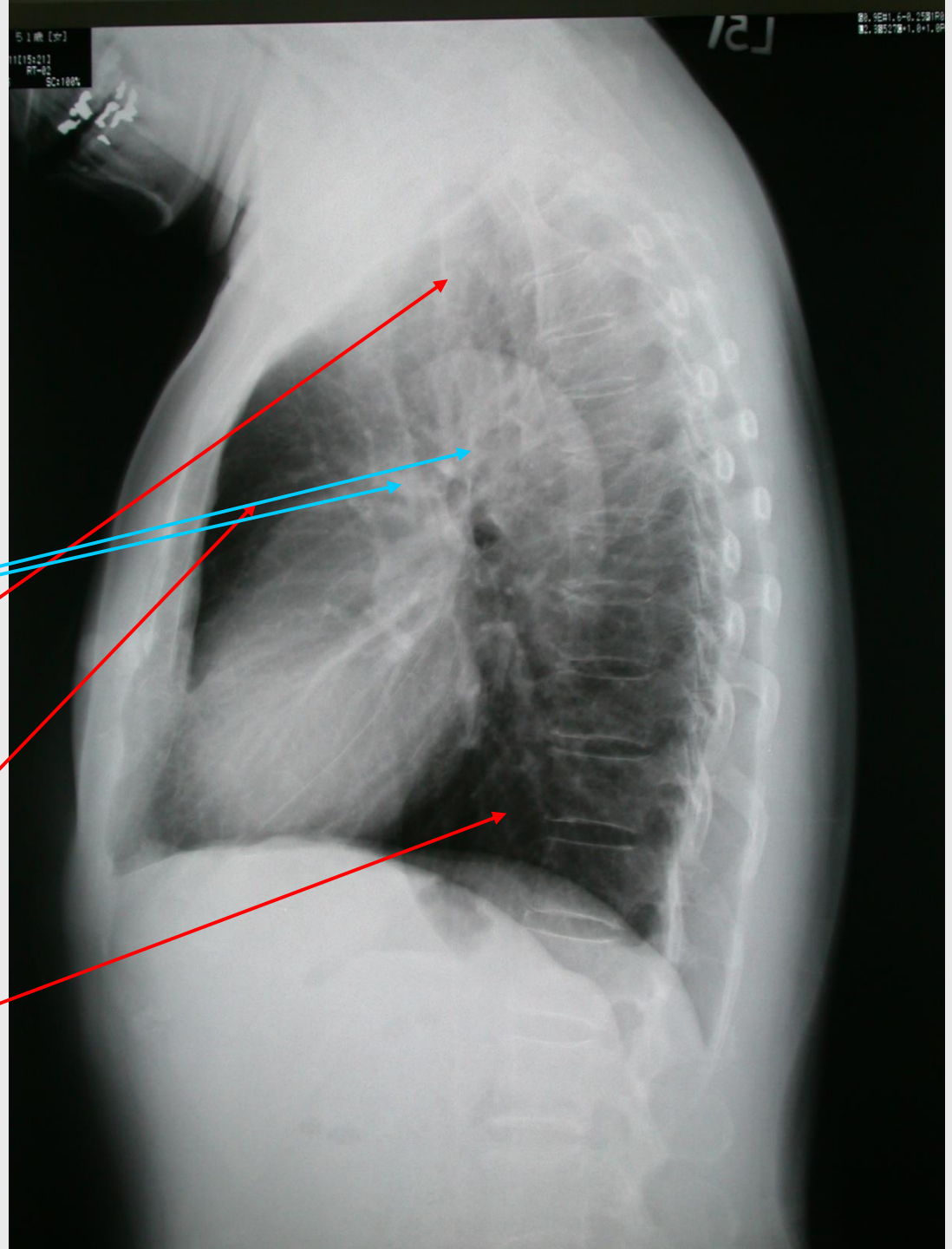
Posterior tracheal stripe

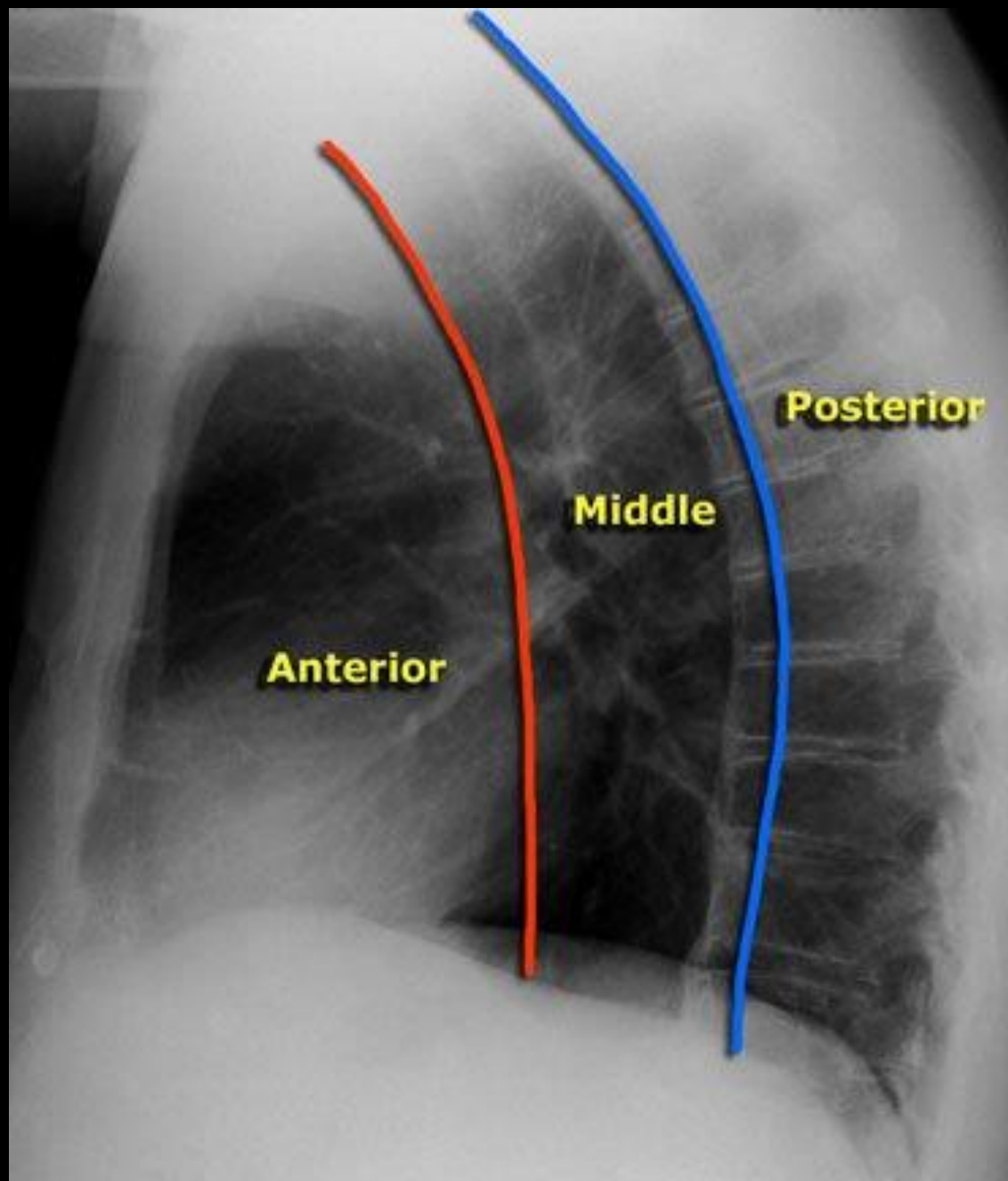
食道

肺門

Retrosternal triangle

Retrocardiac triangle





縱隔

前中後縱隔

Anatomy Landmarks

Anterior
Middle
Posterior

} mediastinum

- 氣管前緣-心臟後緣
- 椎體前緣向後1 cm

Mediastinum

■ Shift

■ Widening

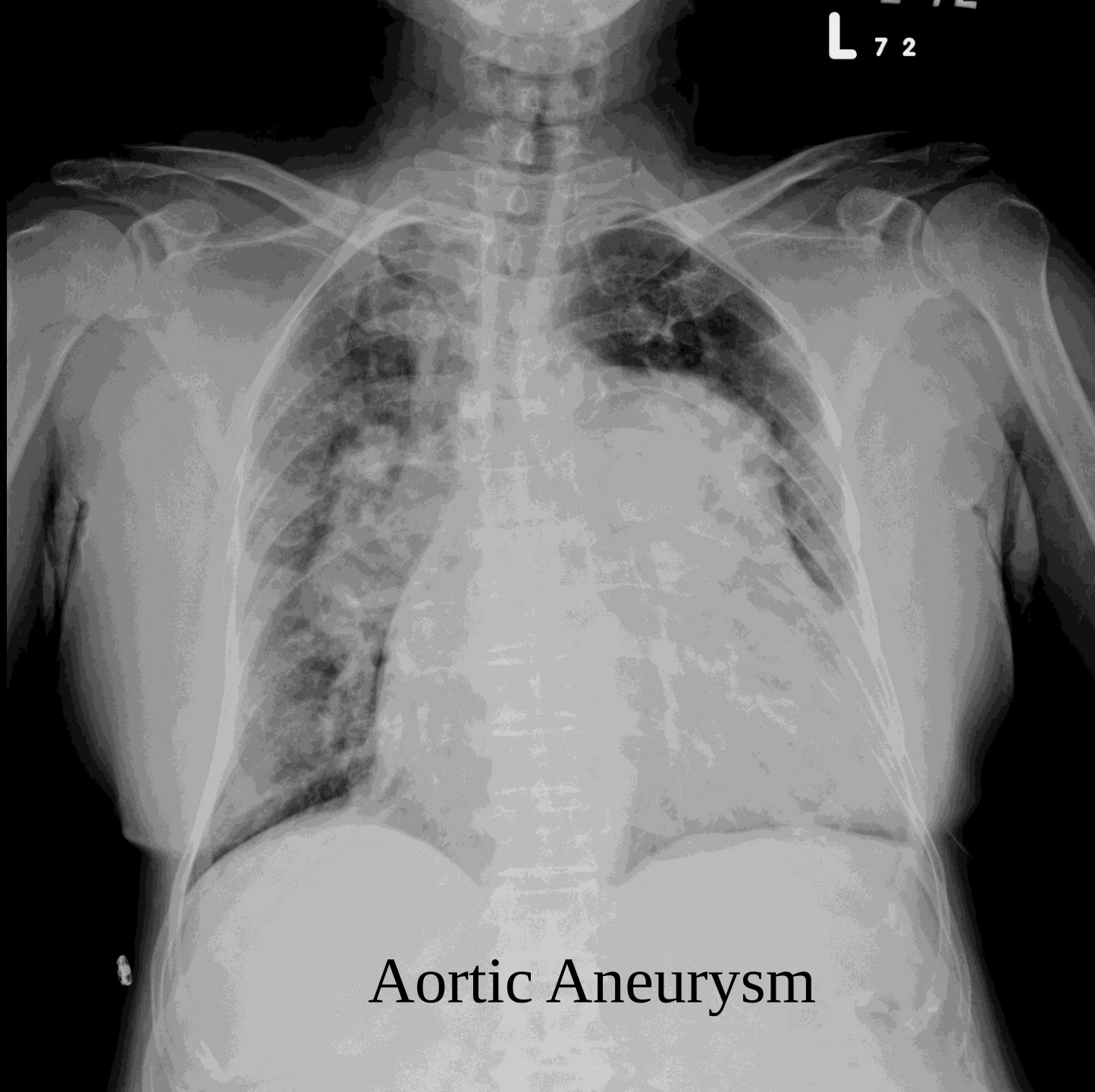
- Aortic aneurysm
- Lipomatosis
- Mediastinitis (air-fluid level)

■ Soft tissue density

- Mass, neoplasm

■ Air or air-fluid level

- Pneumomediastinum
- 食道病變：esophagus reconstruction, esophageal cancer, achalasia
- Hernia

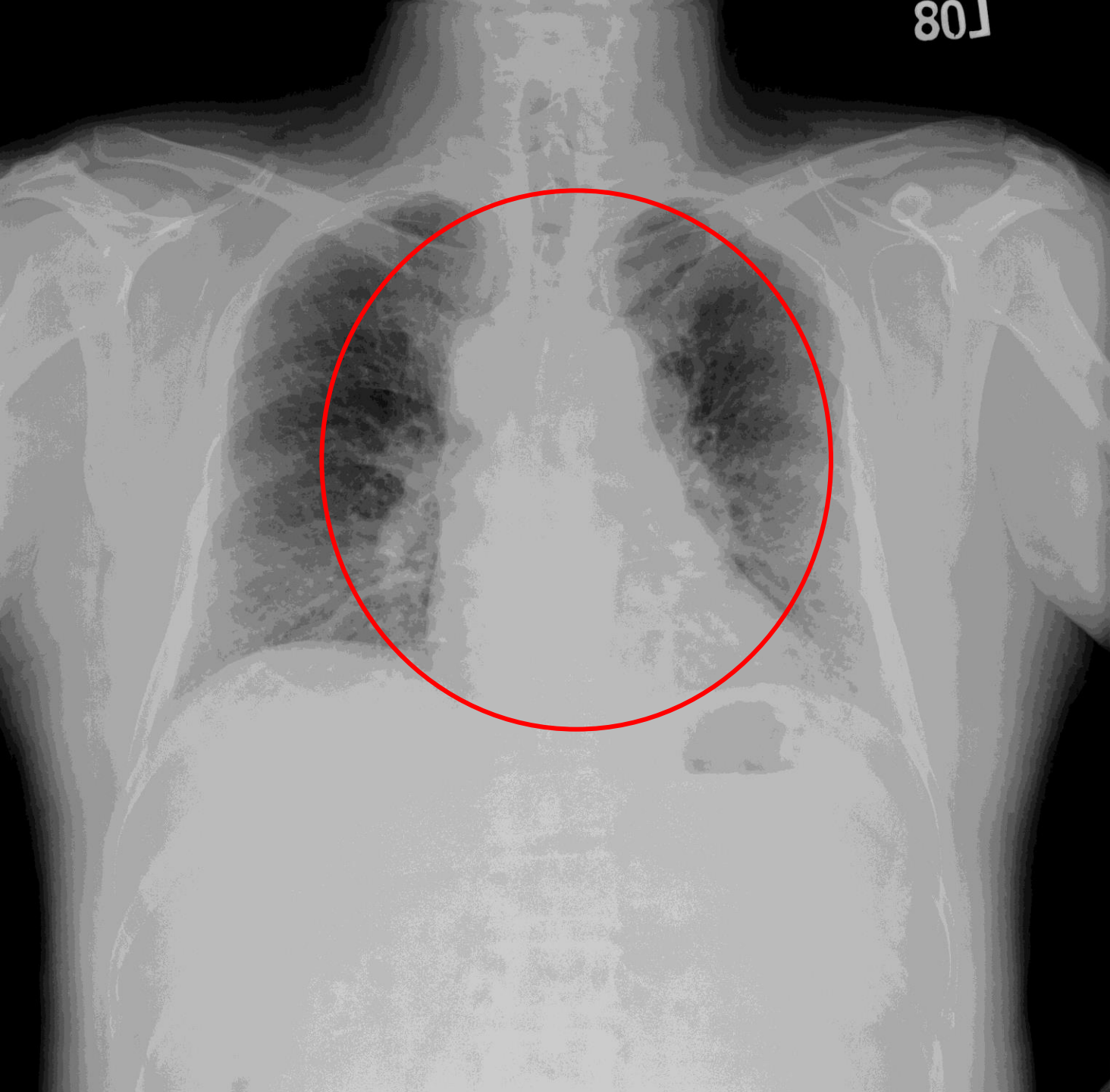


Aortic Aneurysm

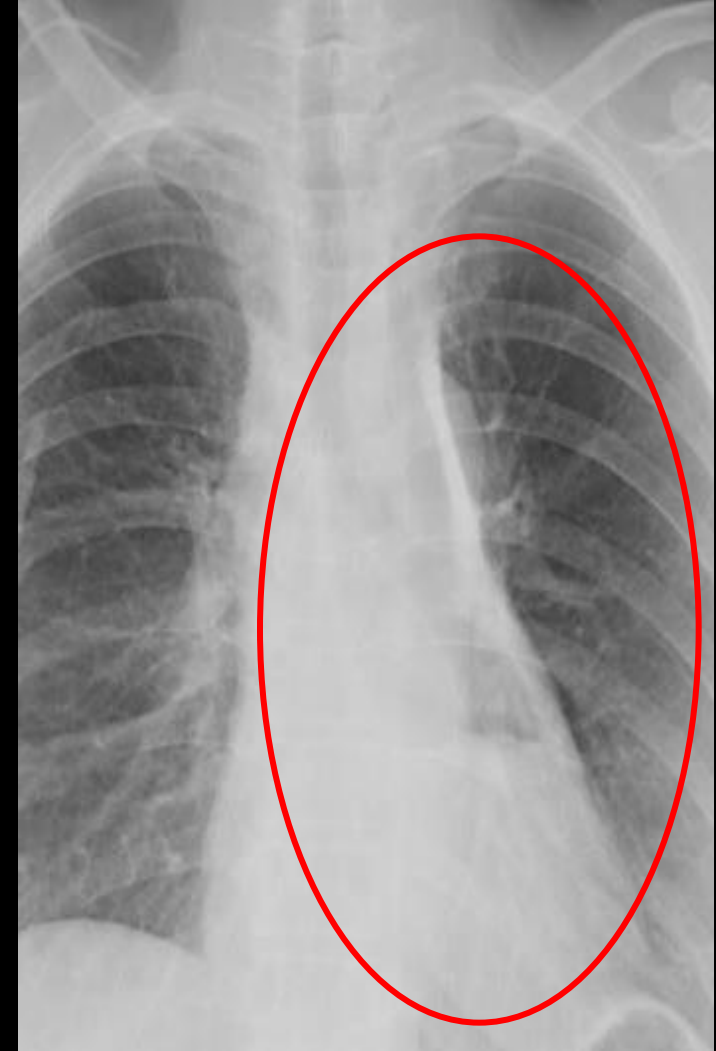


Dissecting Aneurysm

- Mediastinal widening
- **Inlet to outlet shadow** on left side
- Retrocardiac: Intact silhouette of left heart margin
- **Hilum overlay sign**: Density behind left lower lobe



Lymphoma



**Esophageal
Reconstruction**



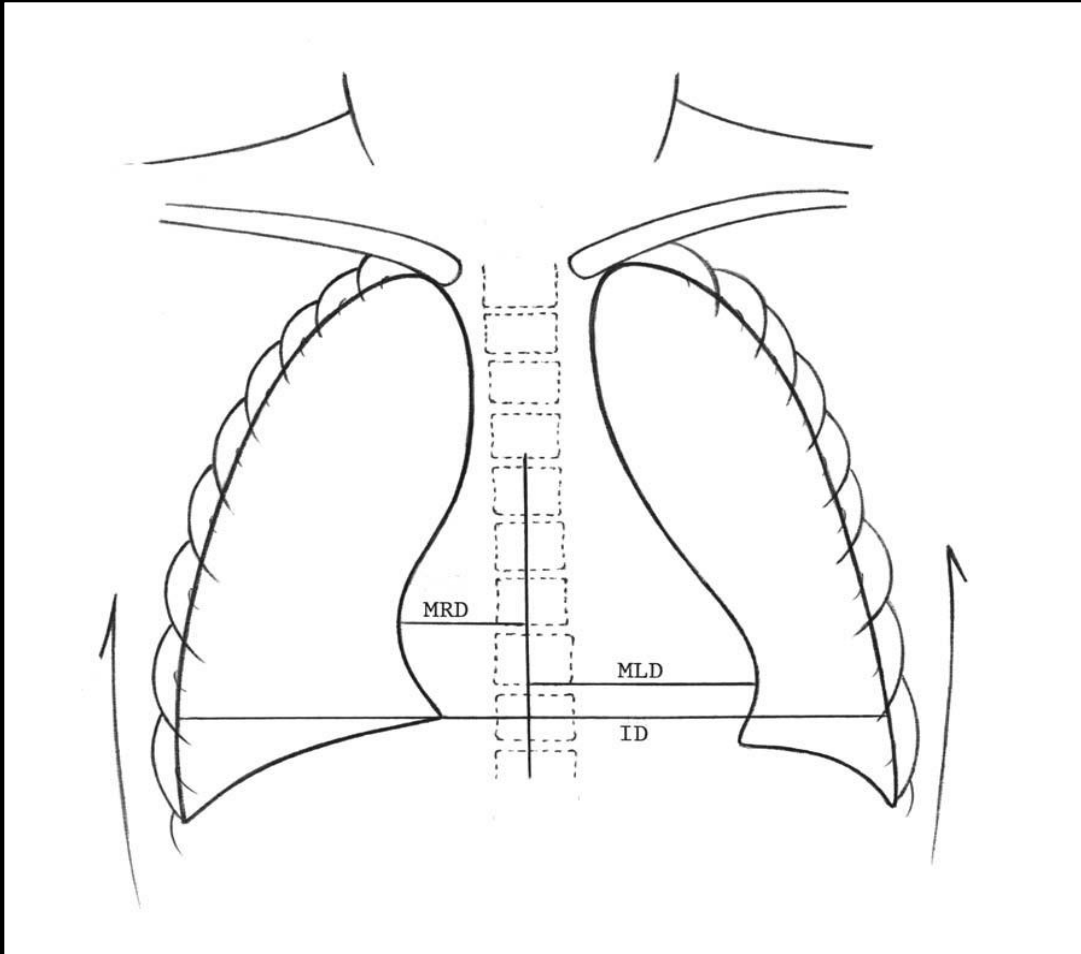
Achalasia cardia

Heart

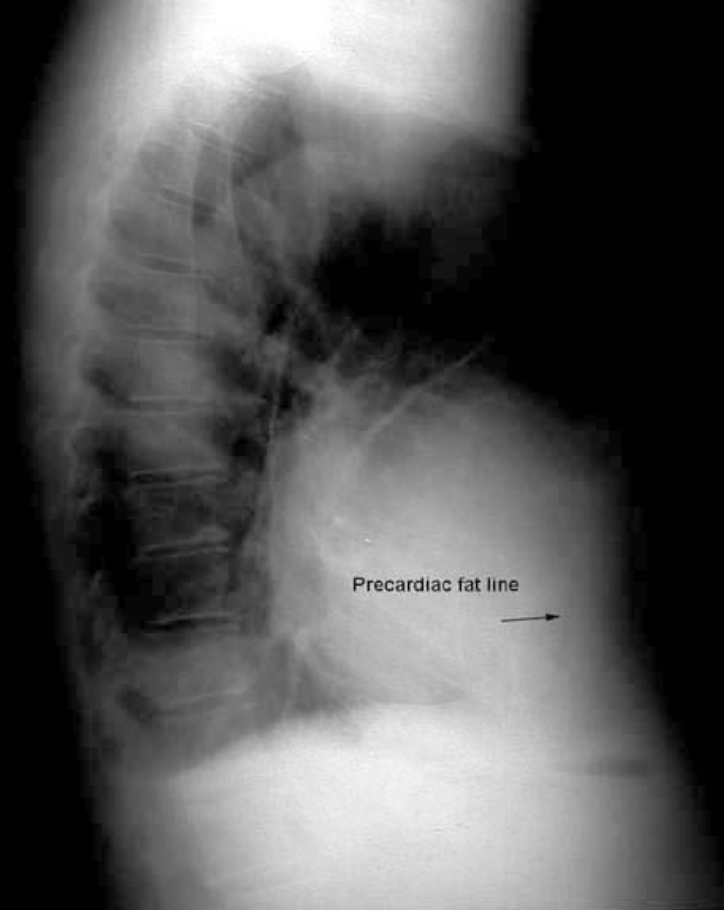
- Size change: Cardiothoracic (C-T) ratio
- Signs:
 - Water bag: Pericardial effusion
 - Boot-shaped: Tetralogy of Fallot (TOF)
 - Straight Lt heart border(Flat-waist sign) : LLL atelectasis
 - Double density of right heart border (Double contour sign): LAE
- Pericardiac mass: 心臟、橫膈、肺、其他縱膈腫塊
 - L: LV aneurysm
 - R: Morgagni hernia
 - R / L: Epicardial fat pad, pericardial cyst, diaphragmatic hernia, lung mass
- Pericardial calcification: constrictive pericarditis
- Retrocardiac density: 死角

Cardiothoracic Index

正常成人 < 0.5 in PA view



- ID = internal diameter of chest at level of right hemi-diaphragm
- MRD = greatest perpendicular diameter from midline to right heart border
- MLD = greatest perpendicular diameter from midline to left heart border
- CT index = $(MRD + MLD)/ID$



Pericardial Effusion

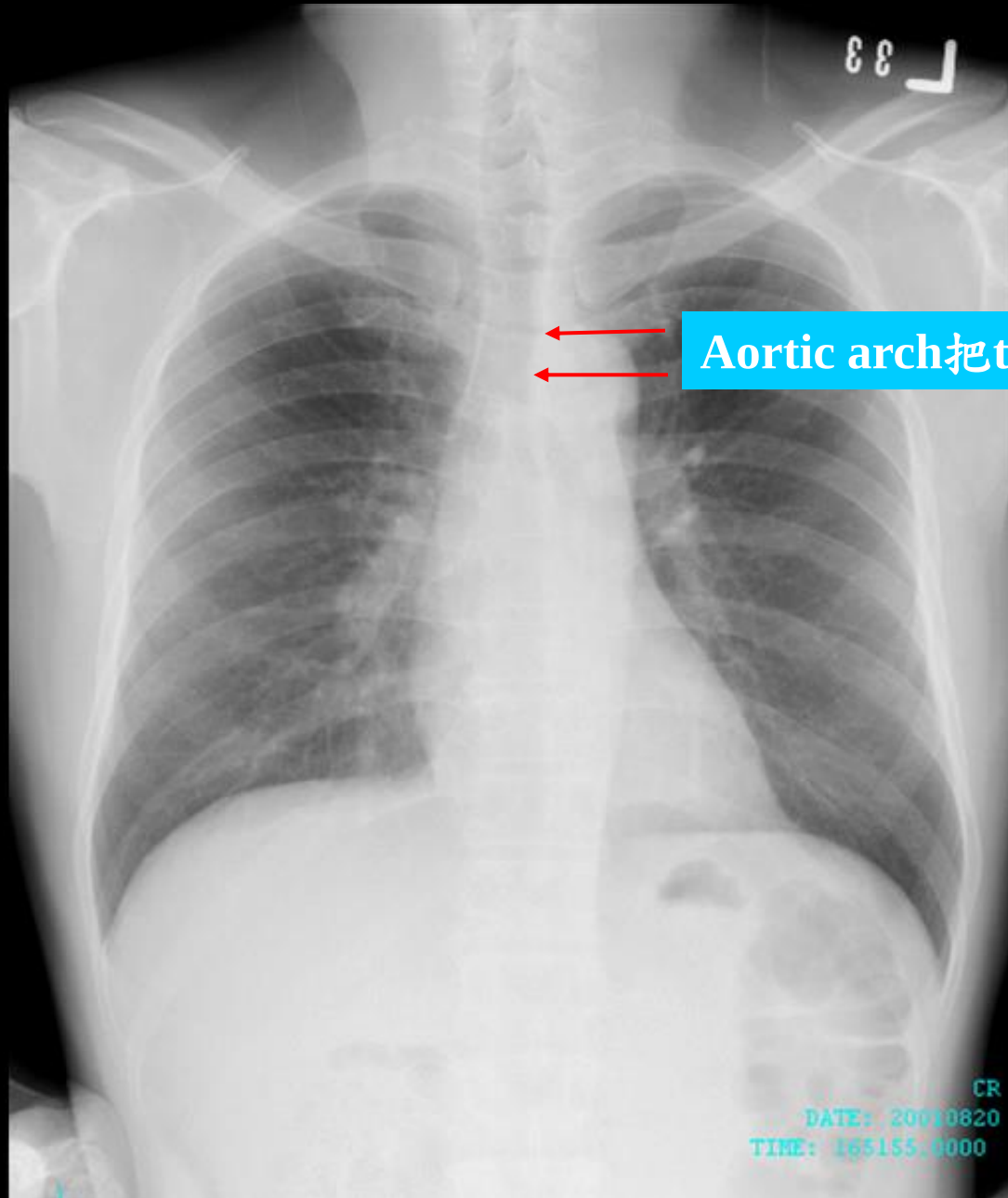
- Enlarged "cardiac" density
- Water bottle appearance
- Pulmonary olegemia
- Precardic fat line in lateral view below



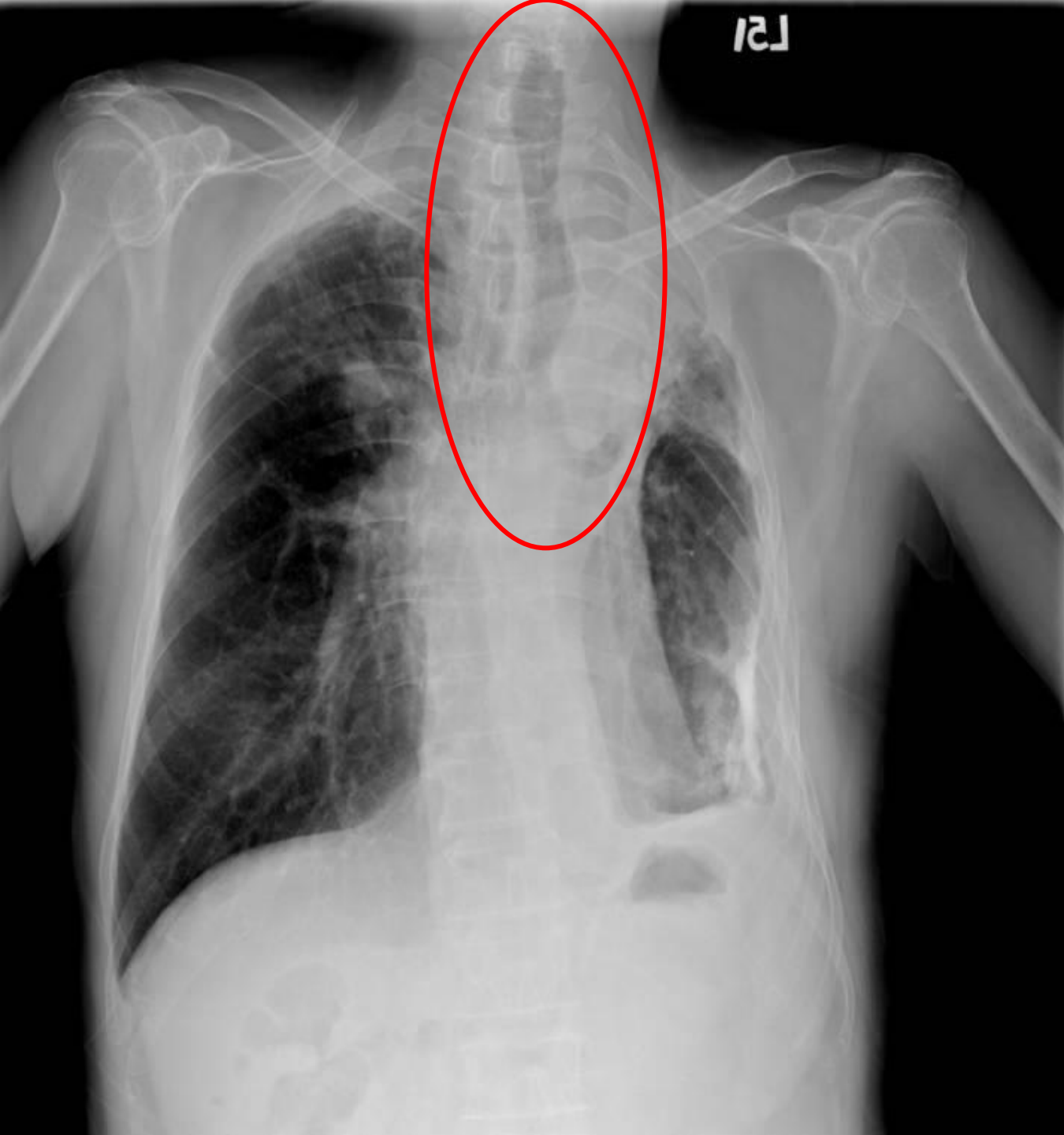
Pneumopericardium

Airway

- Diameter change: (Normal < 2-2.5cm)
 - Stenosis
 - Dilate: tracheomalacia
- Deviation:
 - Pathological change
 - Aortic notch compression
- Tumor:
 - Tracheal tumor; hamartoma; carcinoid tumor; cylindroma
- Carina angle: (正常約75°; Rt : 30 °, Lt: 45 °)
 - < 60°: lower lobe volume reduction
 - > 90°: upper lobe volume reduction, LAE, pericardial effusion, subcarinal LAP



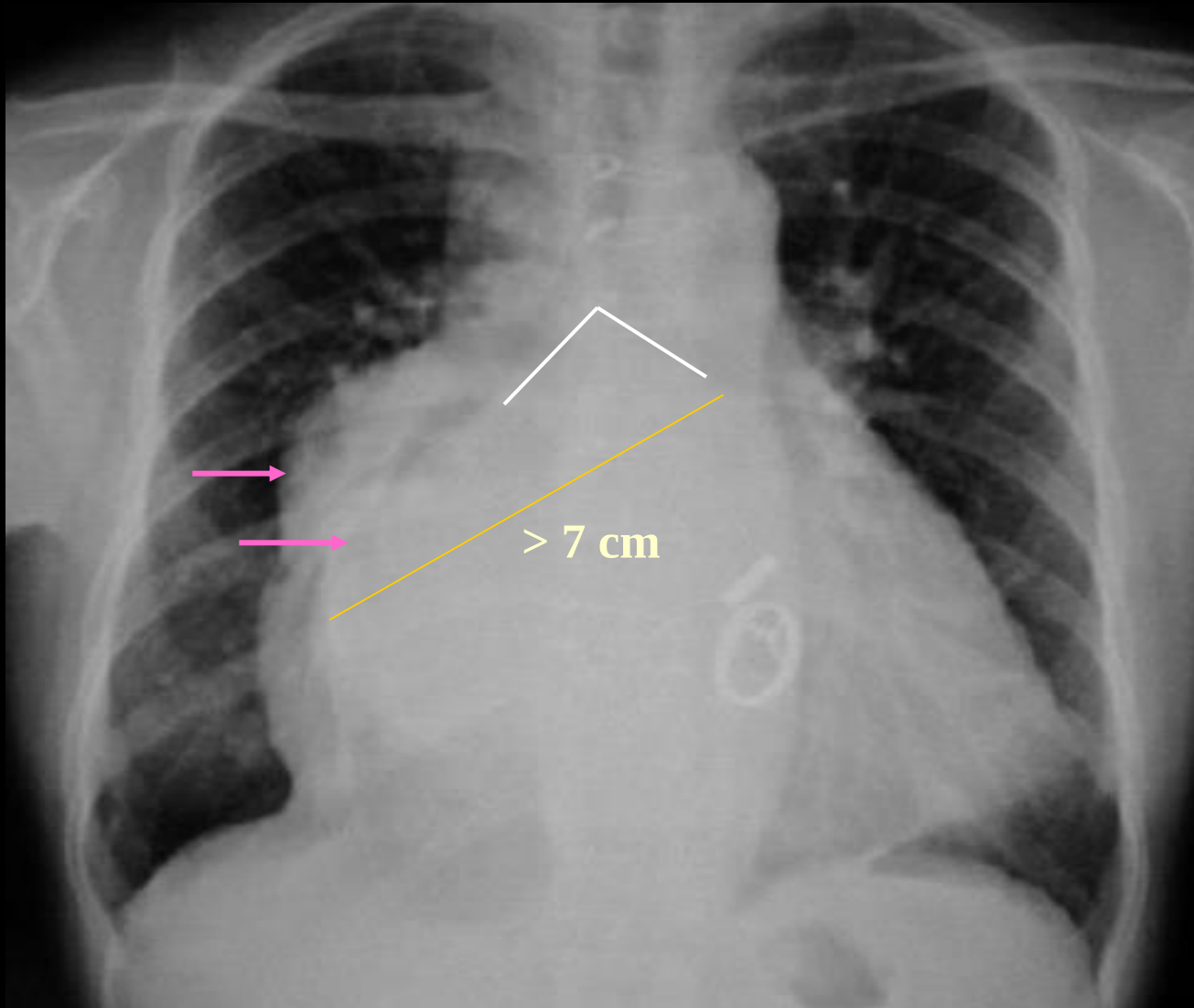
Aortic arch把trachea推向右側



LUL volume reduction

– Left deviation of trachea

LAE



- **Double contour** of R't heart border
- **Distance** between midpoint of double contour-LMB **>7 cm**
- **Subcarina Angle** **>75 °**

Hilum

- 觀察重點：

- 大小、位置、形狀、濃度(density)

- 位置：

- 正常：左高於右(97% , 0.75-3cm , 左右等高(3%))

- 異常：右高於左

- 右側肺門：R't superior pulmonary vein 和 inferior limb of R't pulmonary artery 的 交點

- 左側肺門：upper margin of L't pulmonary artery trunk and LMB 的 中點

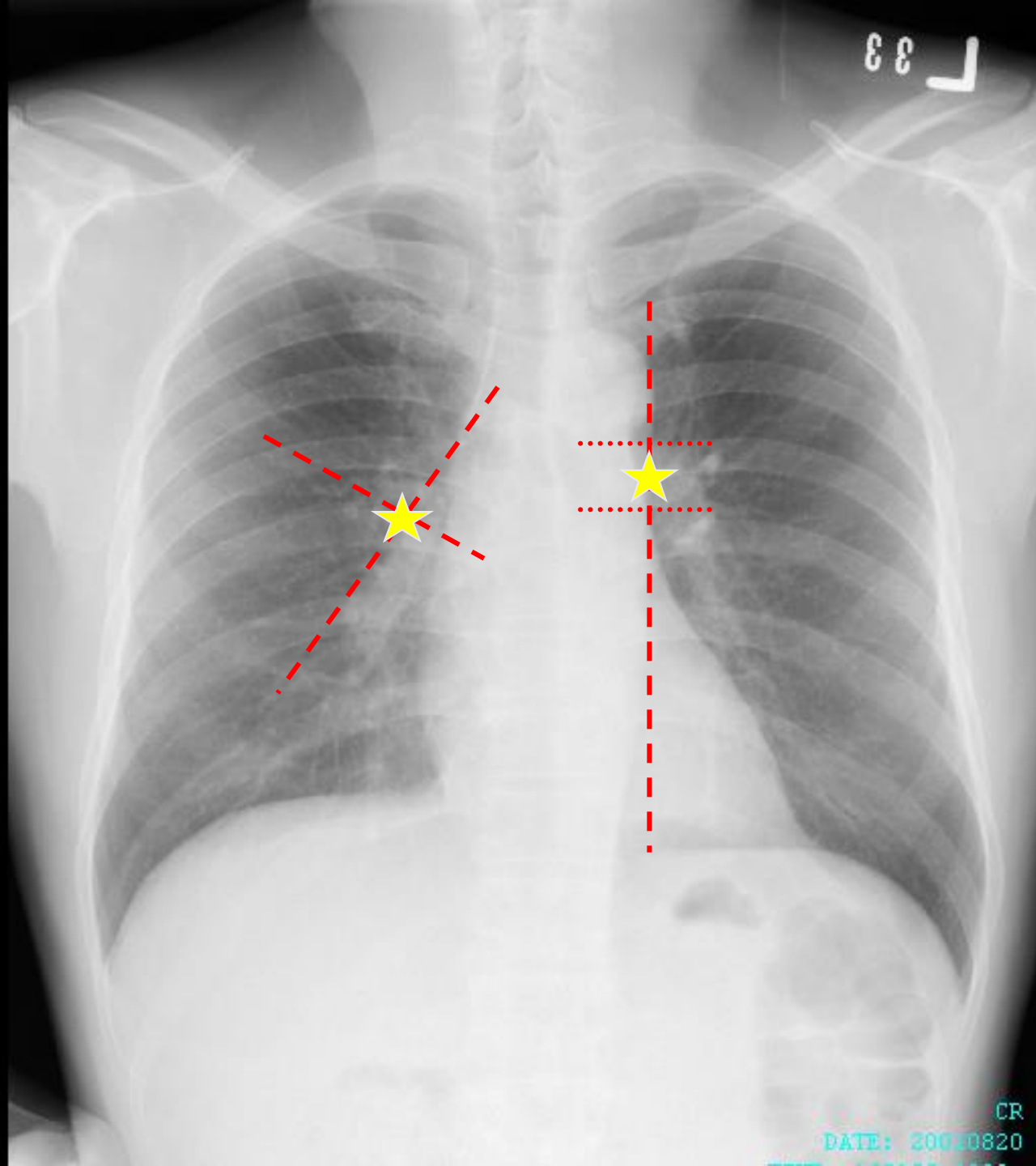
- Hilum enlargement

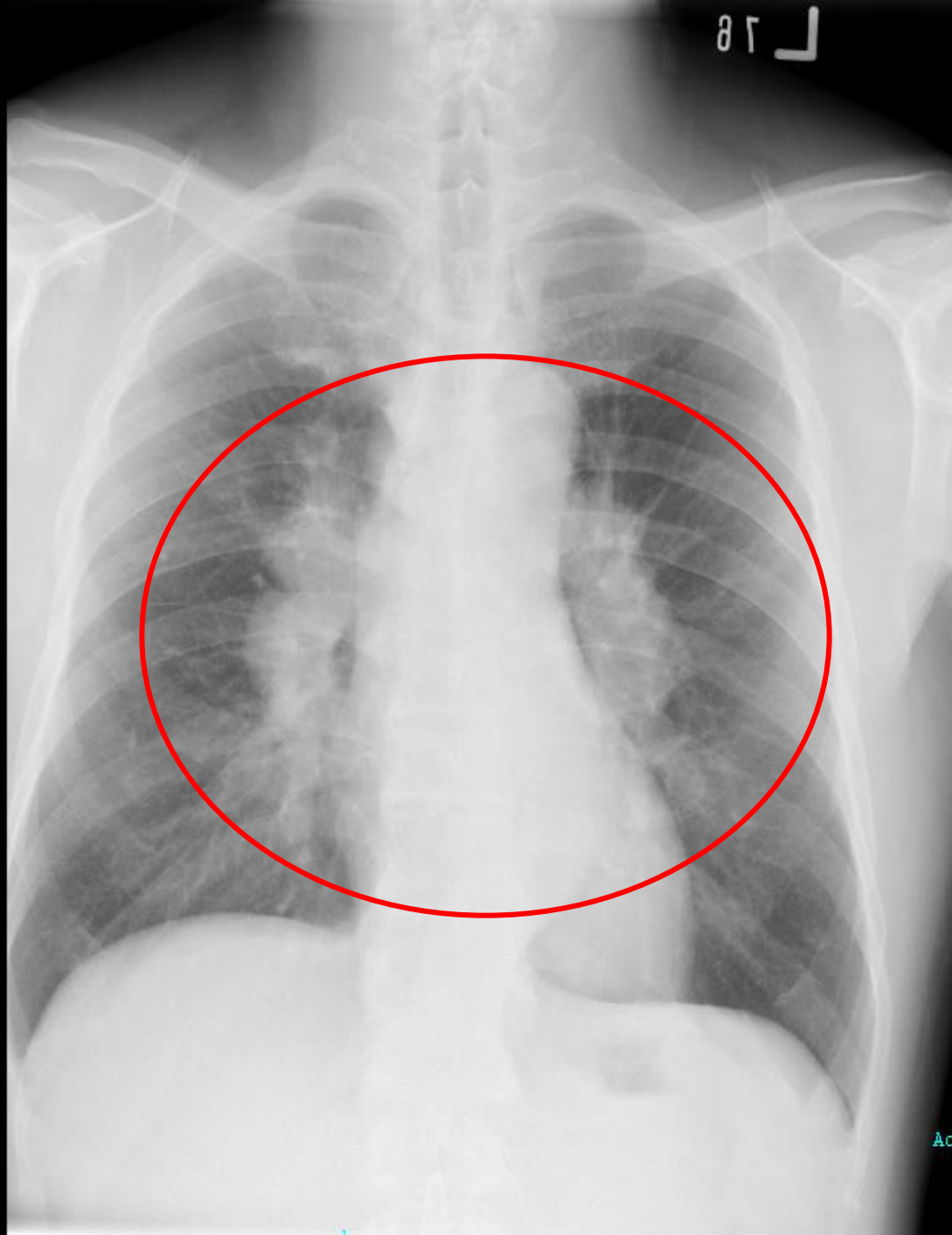
- Hilar lesion

- Vessel engorgement

- Hilar LAP

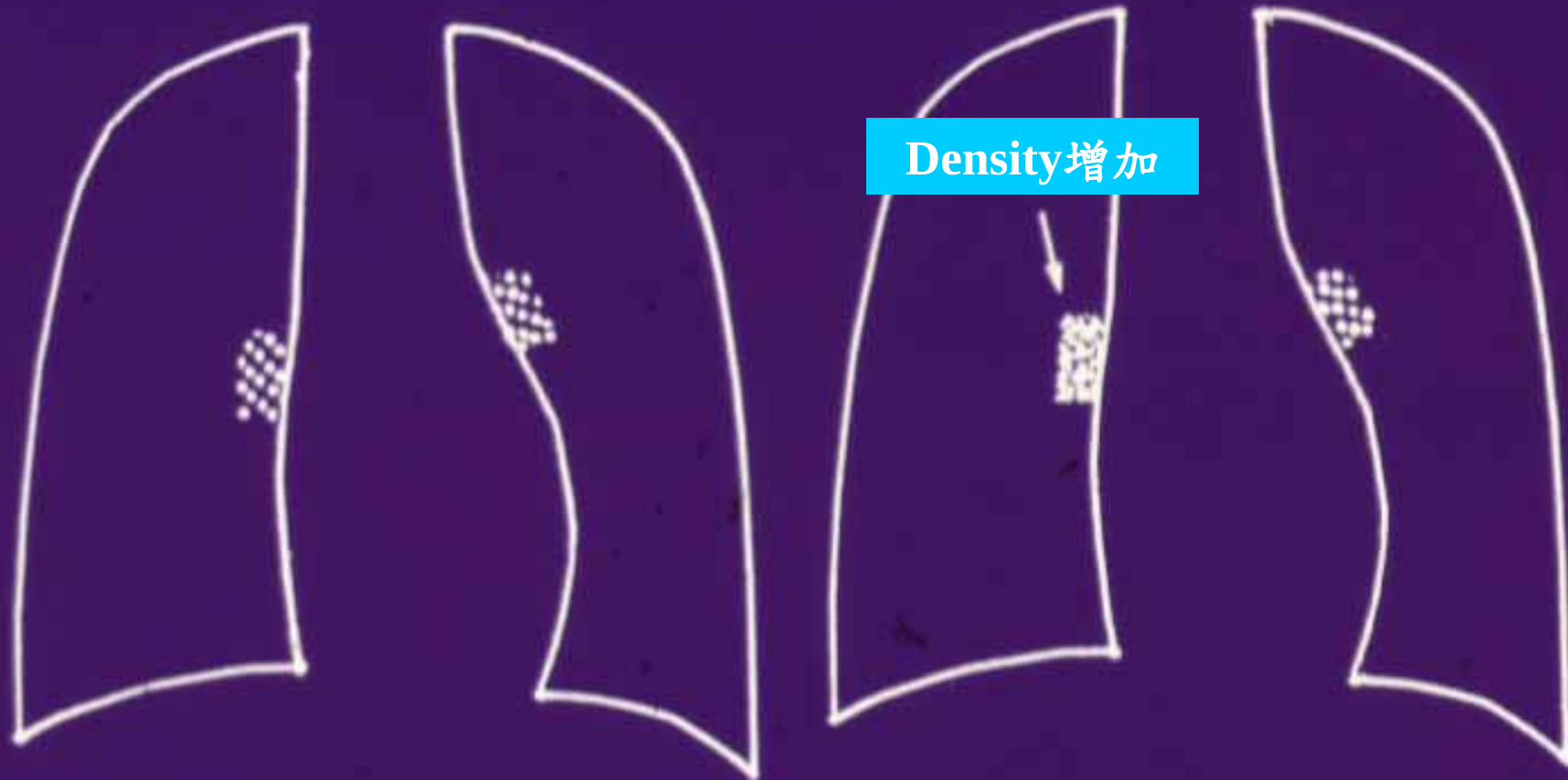
- Superimposed mass(lung, mediastinum)





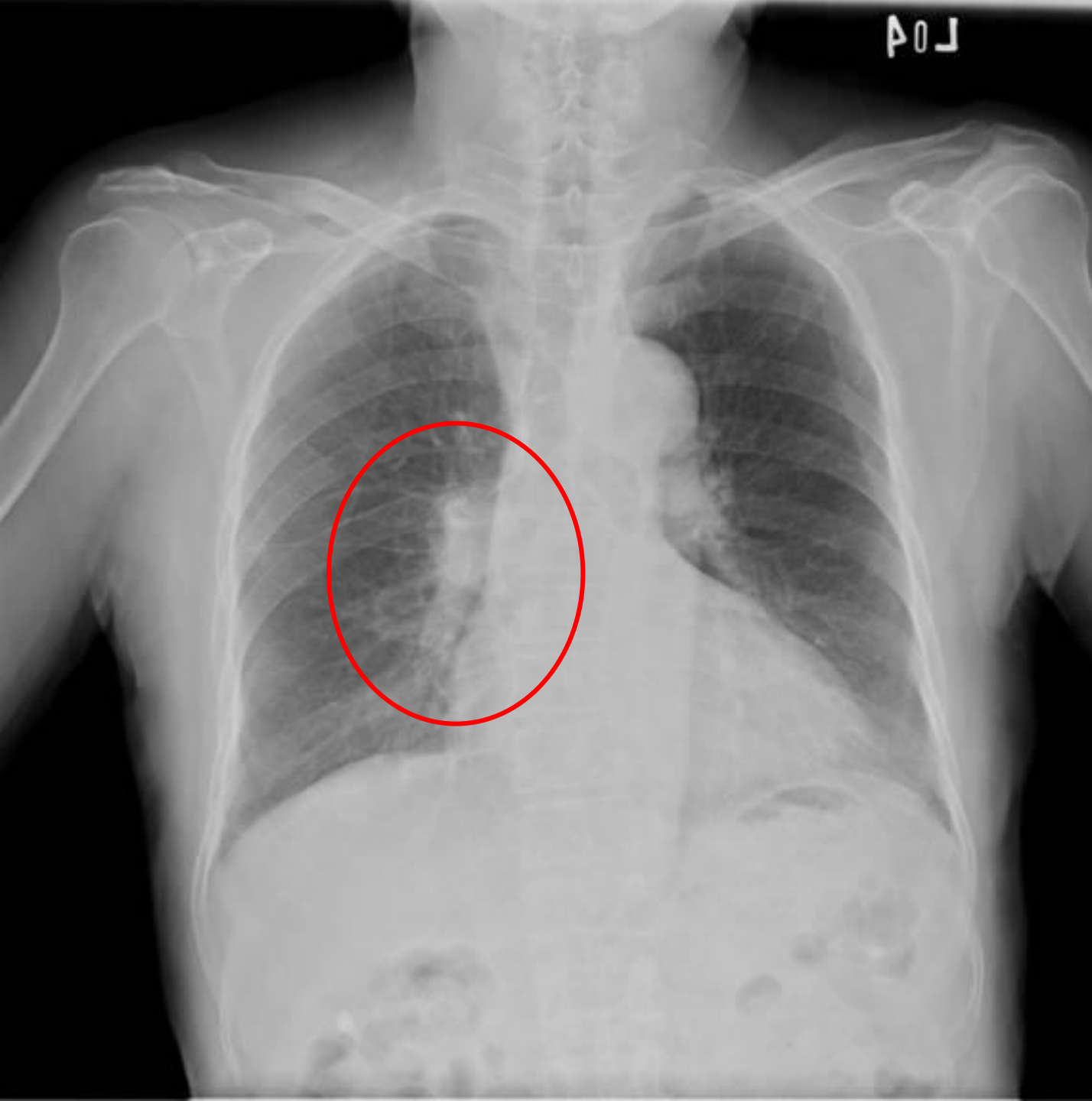
Sarcoidosis

Study
Patie
Accession N
Pati



肺門正常

右肺門病變



Lung cancer

肺實質

確認lesion所在lobe, 有時不是那麼容易(3D→2D)

右肺區

RUL

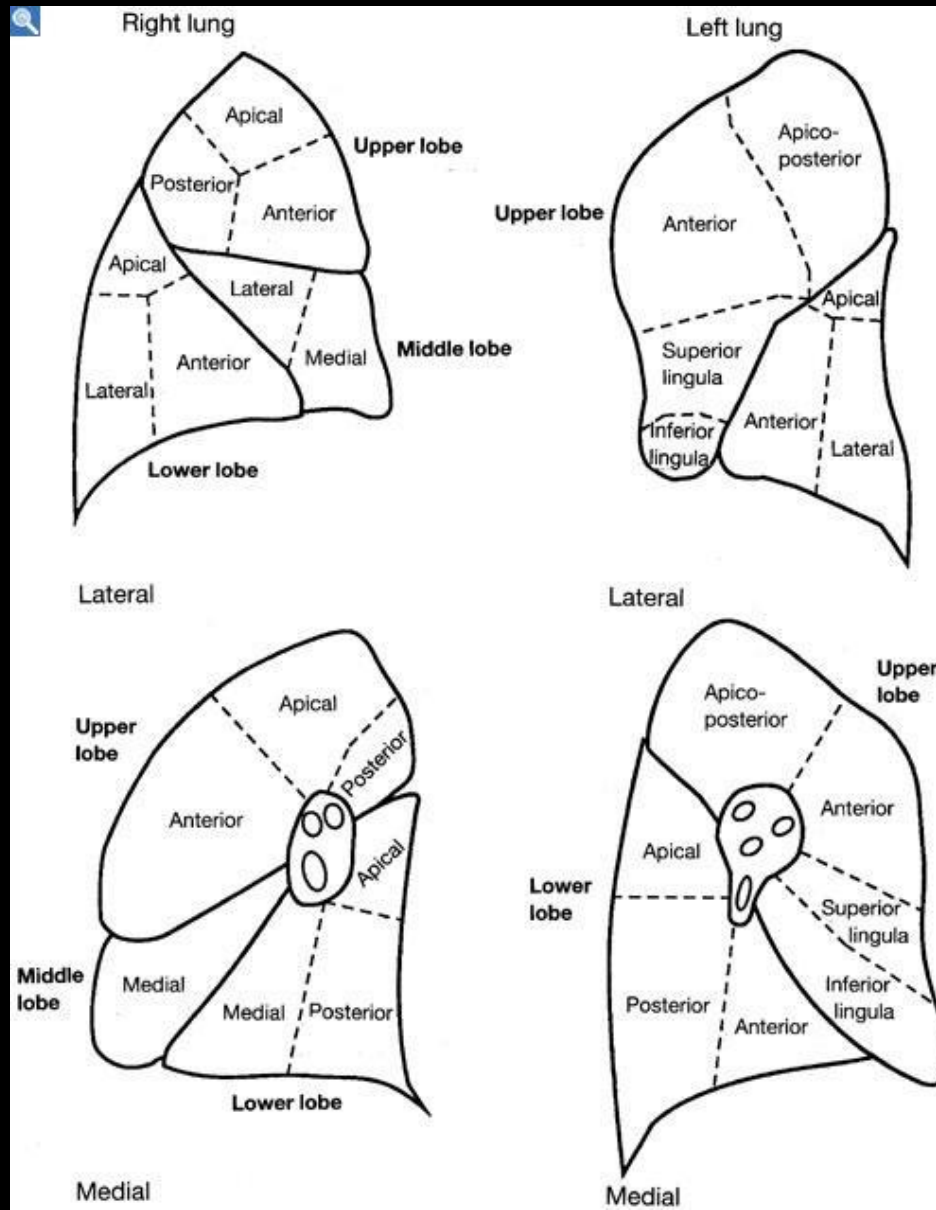
- S1 Apical
- S2 Posterior
- S3 Anterior

RML

- S4 Lateral
- S5 Medial

RLL

- S6 Superior
- S7 Medial b.s.
- S8 Anterior b.s.
- S9 Lateral b.s.
- S10 Posterior b.s.



左肺區

LUL

- Upper division
- S1+2 Apico-posterior
- S3 Anterior

Lingular division

- S4 Lateral
- S5 Medial

LLL

- S6 Superior
- S7+8 Anteromedial b.s.
- S9 Lateral b.s.
- S10 Posterior b.s.

LUNG – SEGMENTAL ANATOMY



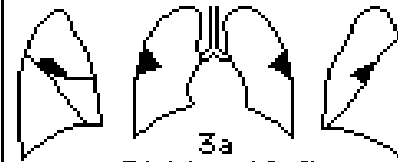
Right apical segment of upper lobe
Left apical-posterior segment of upper lobe



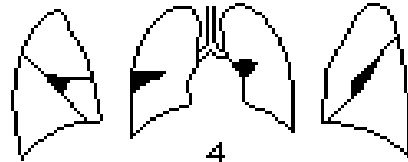
Right posterior segment of upper lobe
Left apical-posterior segment of upper lobe



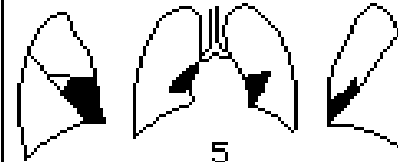
Right and left anterior
segment of upper lobe



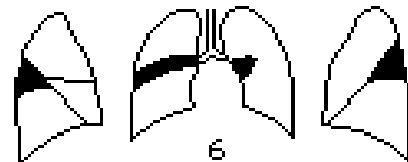
3a
Right and left
axillary subsegment



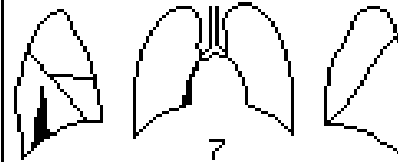
Right lateral segment of the middle lobe
Left superior lingular segment



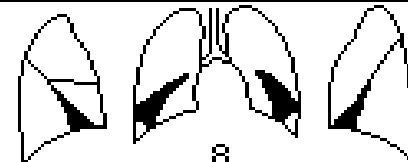
Right medial segment of the middle lobe
Left inferior lingular segment



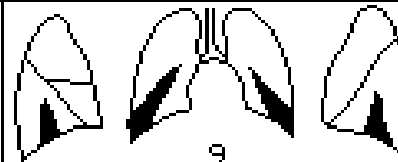
Right and left superior
segment of the lower lobe



Right medial
segment of the lower lobe



Right and left anterior
basal segment of the lower lobe



Right and left lateral basal
segment of the lower lobe



Right and left posterior
basal segment of the lower lobe

Lung Fields

- 太白太黑都要注意
- 兩側相互比較
- 單側hemithorax density異常
 - lesion site是太白處or太黑處
- Increased opacity(太白)
 - Abnormal shadows
- Increased radiolucency(太黑): 由外而內D/D
 - 胸廓外: mastectomy, Poland's syndrome(少了大胸肌)
 - 肋膜: pneumothorax
 - Decreased vessel: pulmonary embolism(a), Pul. a. agenesis(a), Scimitar syndrome(v)
 - Air collection: endobronchial obstruction, Swyer-James syndrome, emphysema, localized bullae

Lung Markings / Fissure

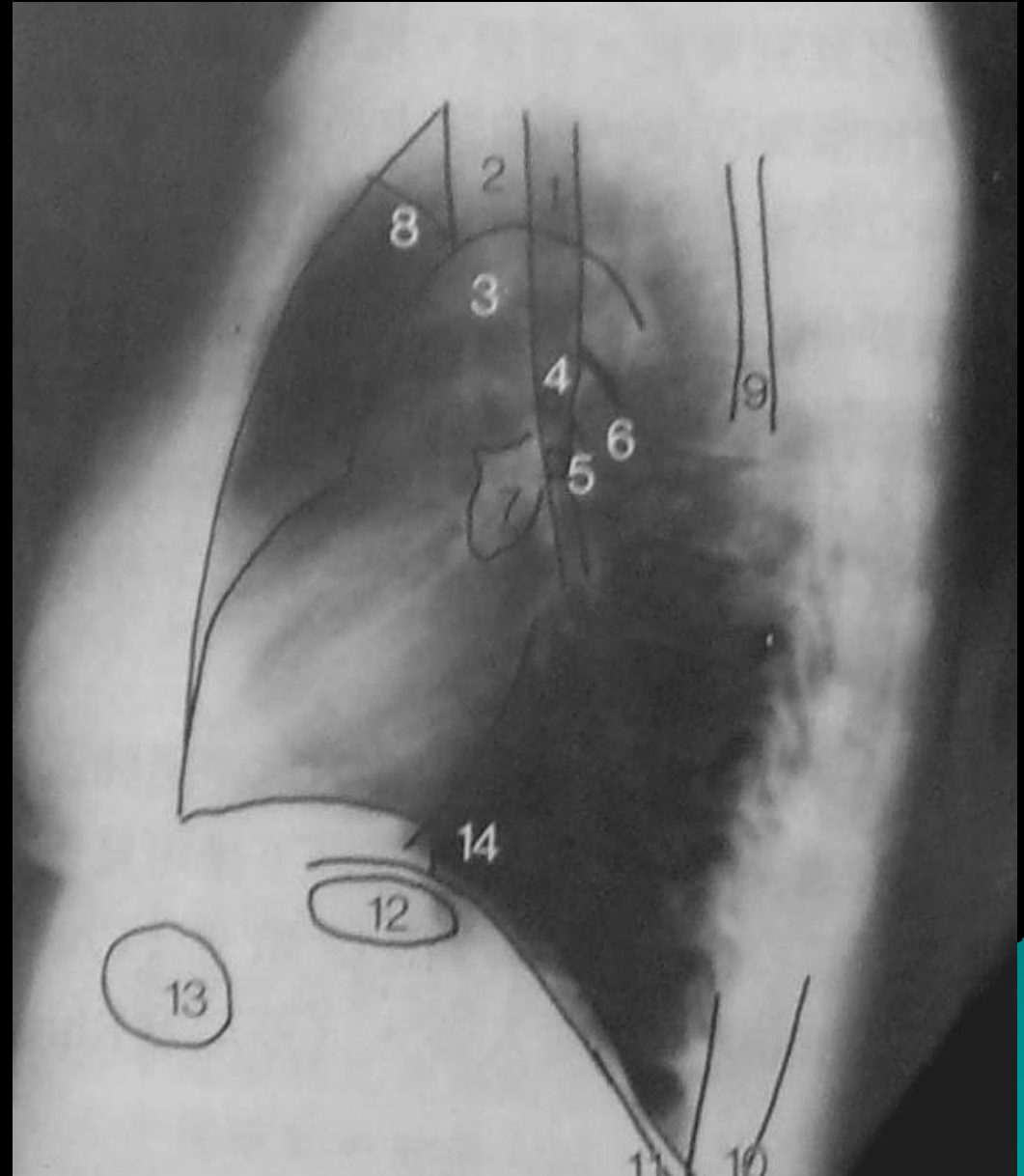
- Compare **direction** and **density** on both lungs
- Cephalization
 - Increased pulmonary venous pressure
- Congestion
 - Visible vessels in outer 1/3
- Minor fissure:
 - 1 cm below R't hilar point
 - Shift: Volume change

Lateral View

- 除非已知病灶在右側，一般routine照left lateral view - 減少heart被放大的程度
- 用來觀察在PA view不容易觀察的死角：
 - Hilum
 - Posterior C-P angle
 - Retrosternal space (anterior triangle)
 - Retrocardiac space (posterior triangle)
 - Trachea / esophagus
 - Posterior tracheal stripe < 3 mm

Lateral View

1. Trachea
2. Pretracheal vascular bundle
3. Aortic arch
4. RUL bronchus orifice
5. LUL bronchus orifice
6. Left pulmonary artery
7. Right pulmonary artery in pretracheal oval
8. Axilla
9. Scapula
10. L't C-P angle
11. R't C-P angle
12. Gastric bubble
13. Transverse colon
14. Inferior vena cava



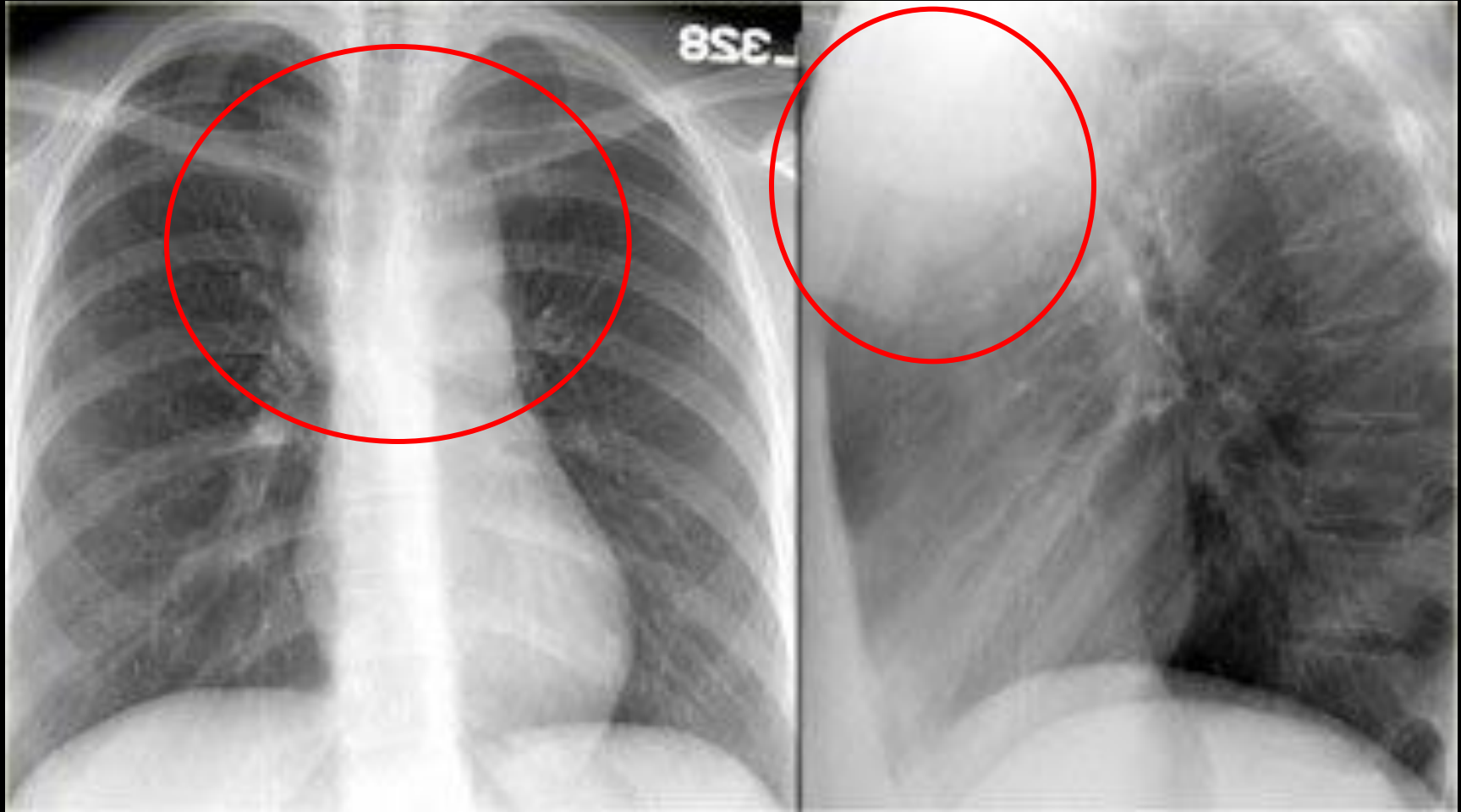
Lateral View的觀察順序

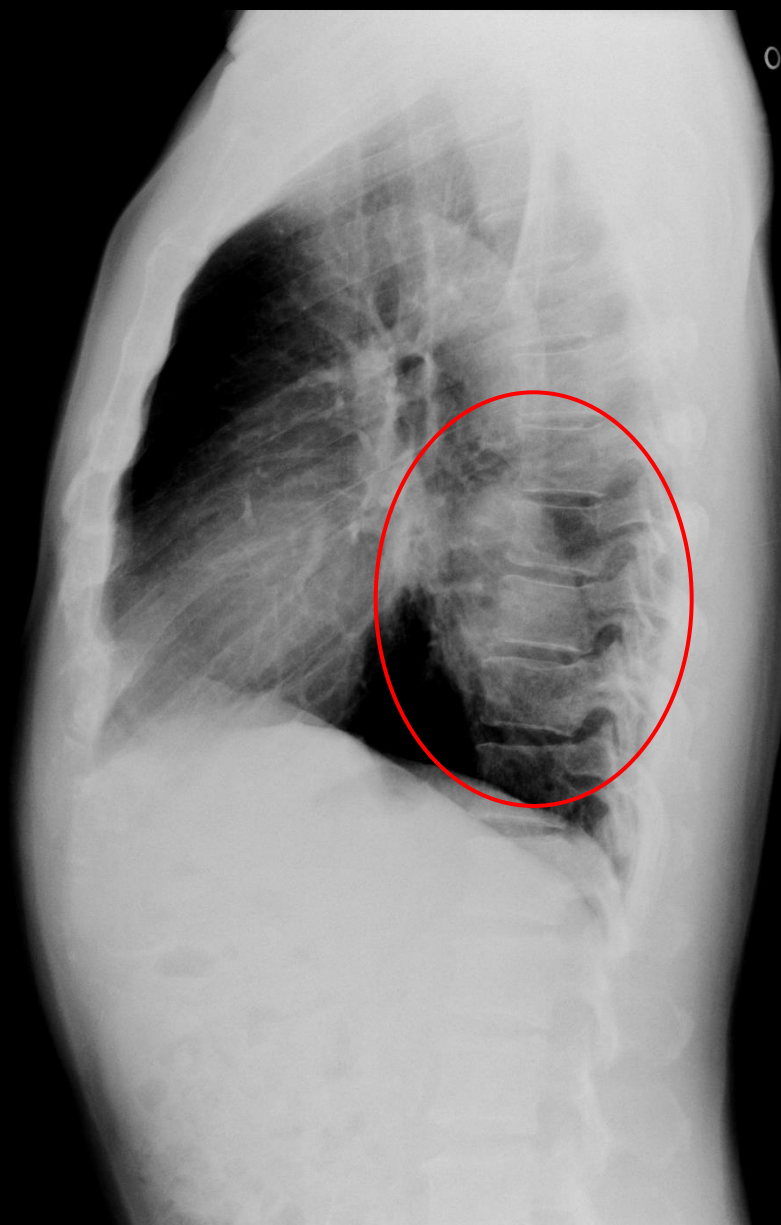
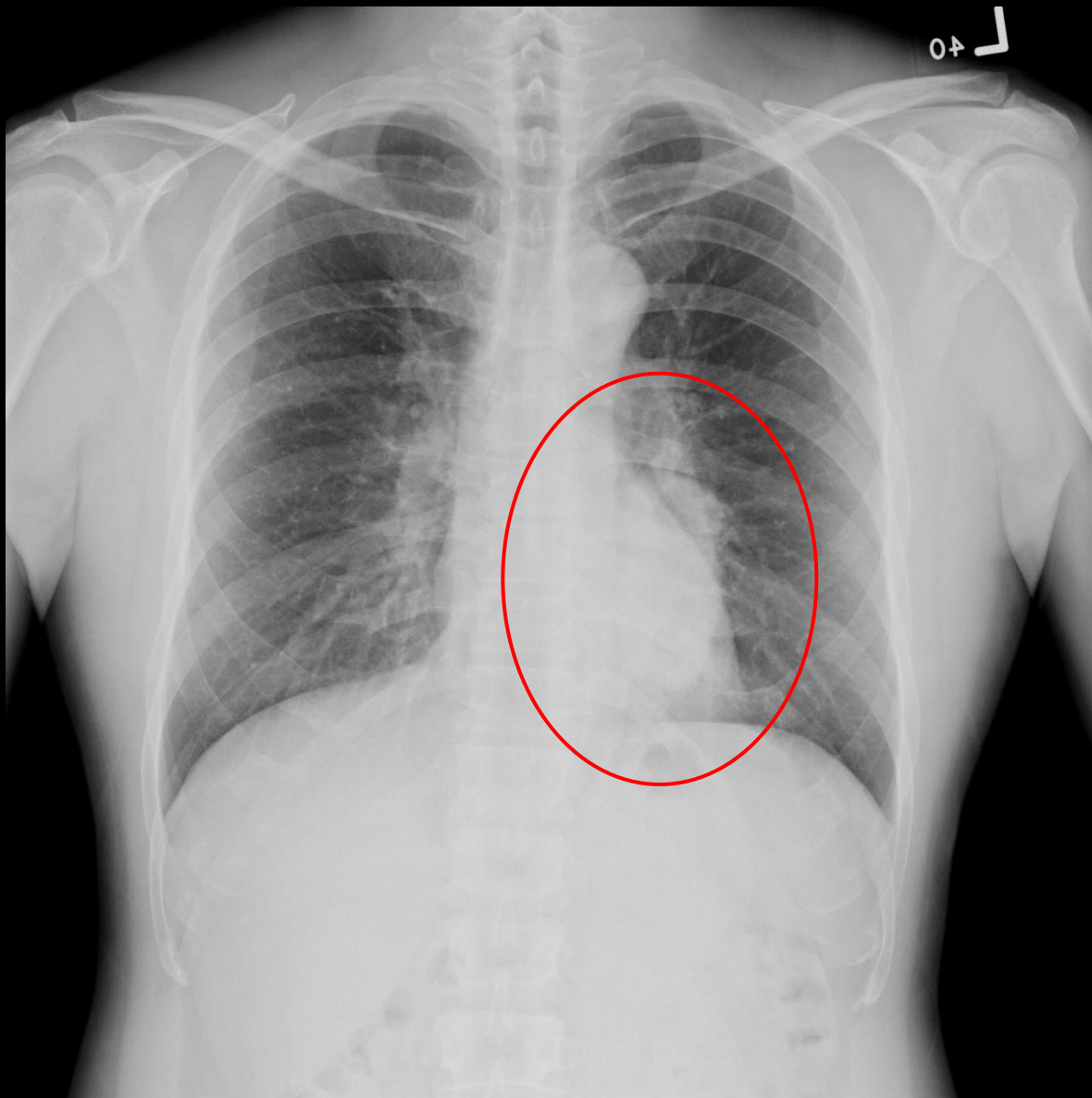
- Retrosternal space(前三角)
- Retrocardiac space(後三角)
- Bone: spine and sternum
- Diaphragm and posterior C-P angle
- Fissure
- Heart and great vessels
- Trachea and esophagus
- Hilum and associated structures: vessels, LAP

Retrosternal and retrocardiac space

- 正常這兩個地方是clear的，而兩者的透亮度大約相同。如有顯著不同，則表示可能其中之一有病變。
- Anterior mediastinal lesion時常可以在retrosternal space看見。
- Retrocardiac lesion在PA view不易identify，但是在lateral view則容易許多。
- Retrocardiac lesion在PA view中的線索是loss of normal vascular shadow over this region

Lymphoma

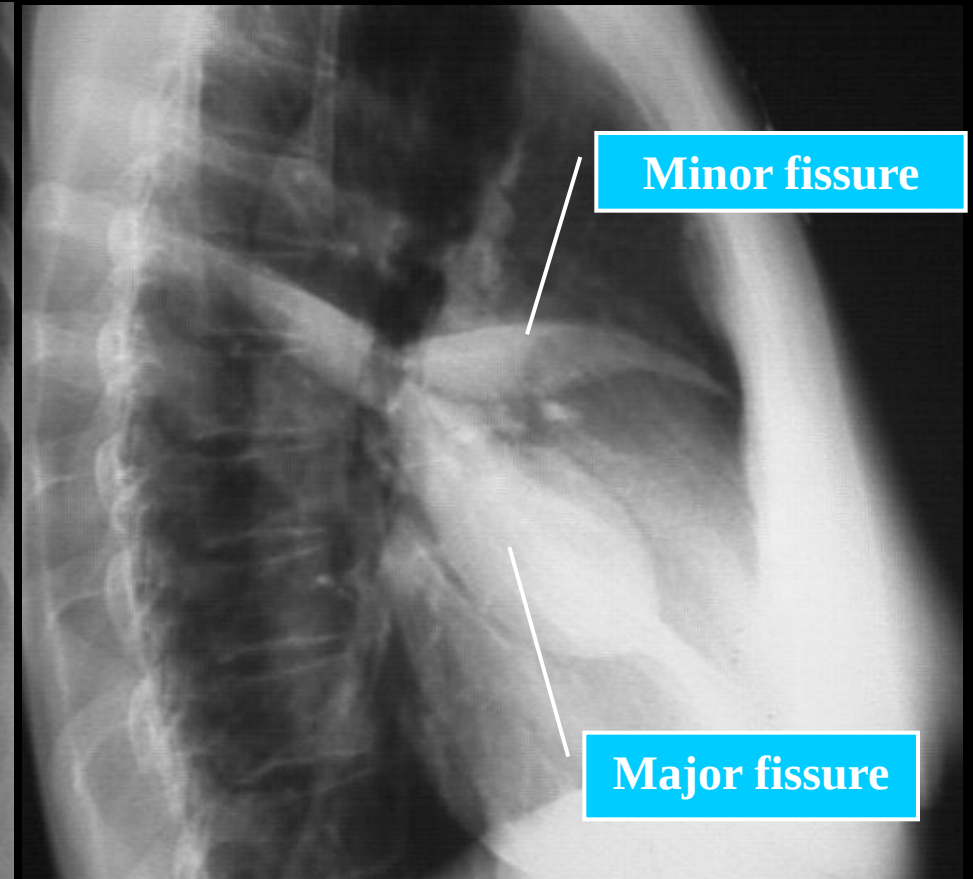
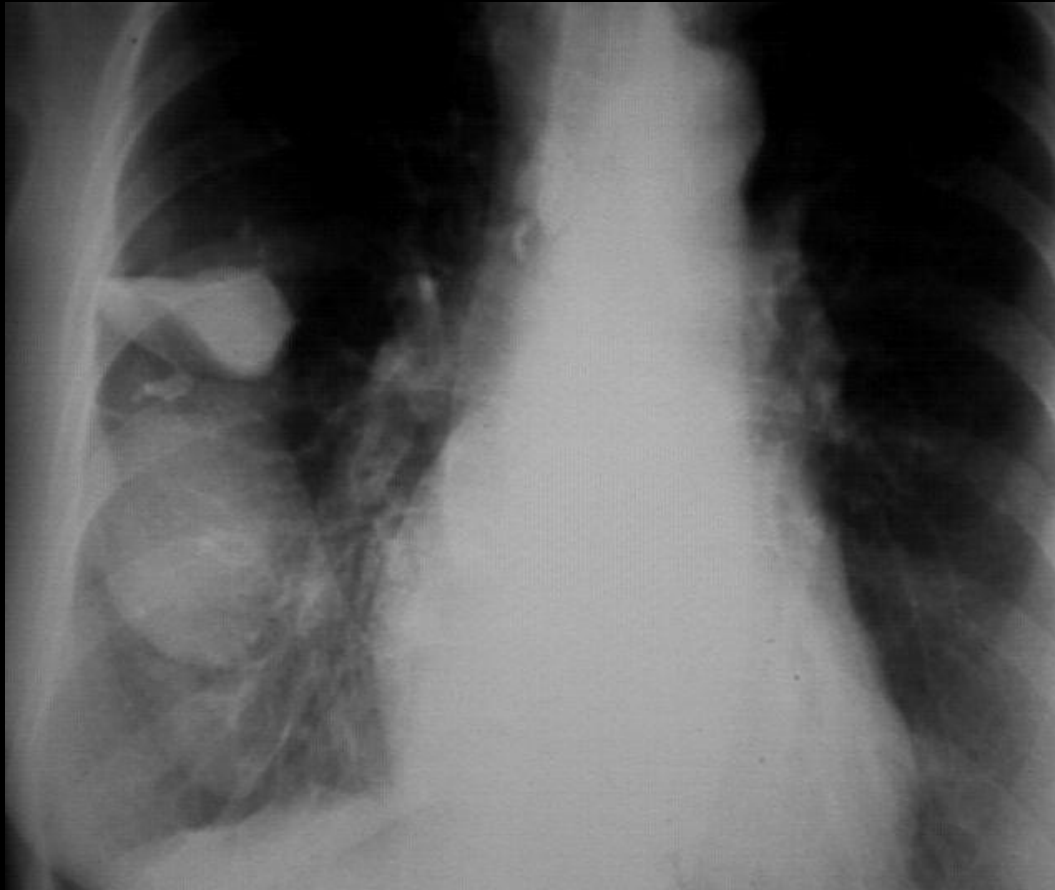




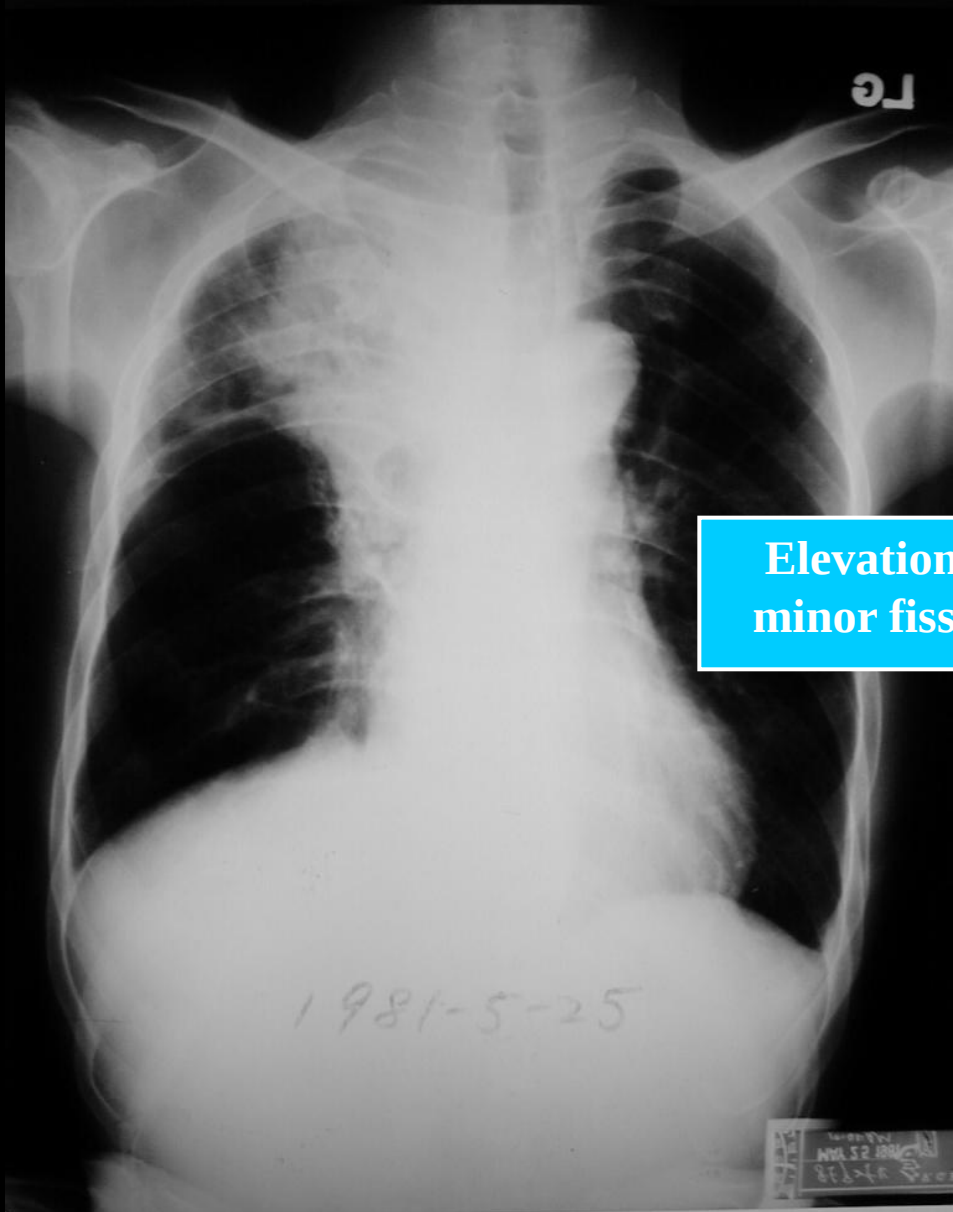
Fissure (Lateral View)

- Major fissure (Upper end: T5 vertebra)
 - Downward shift: Lower lobe collapse
 - Anterior shift: Upper or middle lobe collapse
 - Effusion: Phantom tumor
- Minor fissure
 - Shift: Collapse
 - Effusion: Phantom tumor

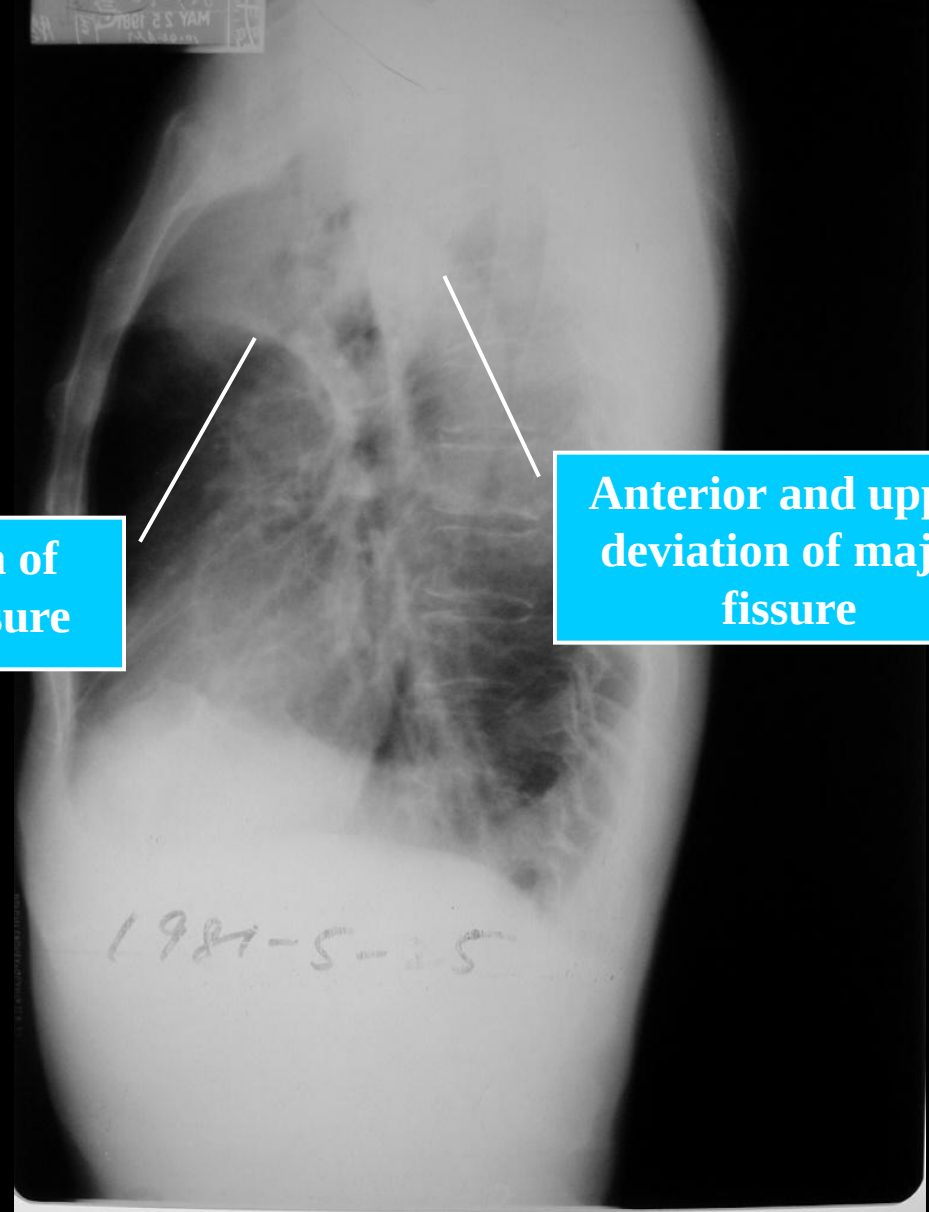
Interlobar Effusion (Phantom tumor)



RUL collapse



Elevation of
minor fissure



Anterior and upper
deviation of major
fissure

Trachea and Esophagus (Lateral View)

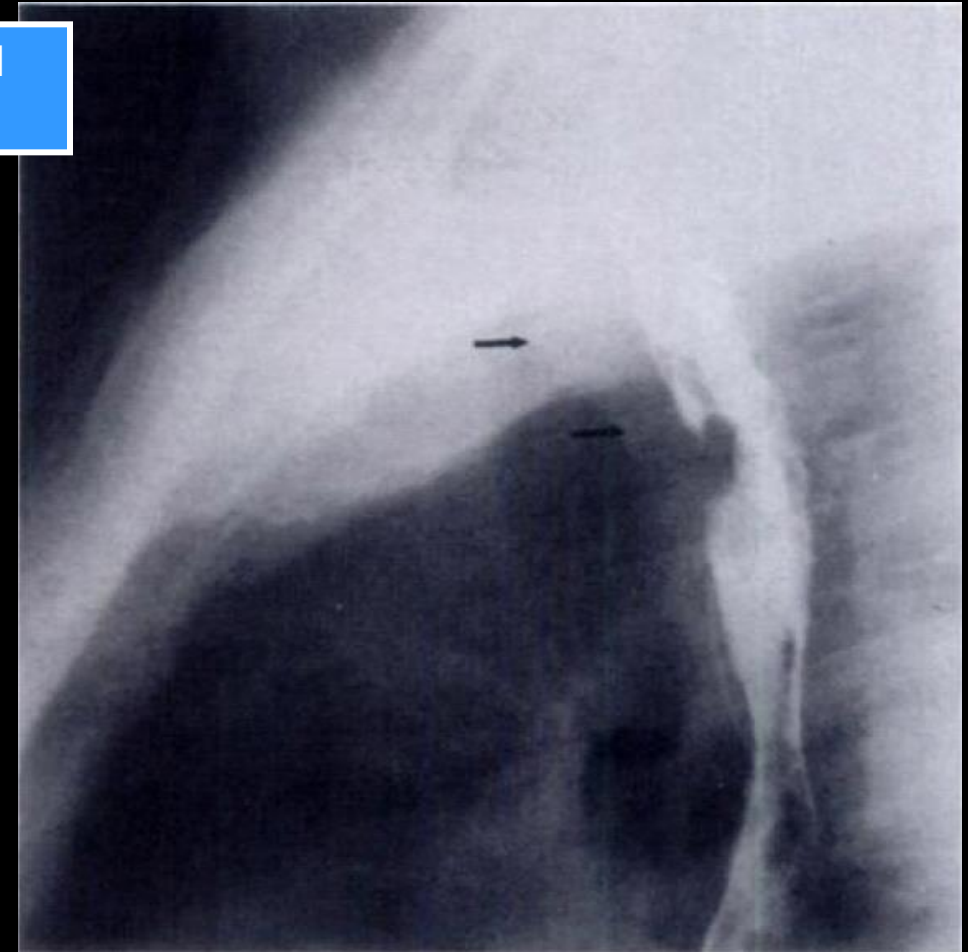
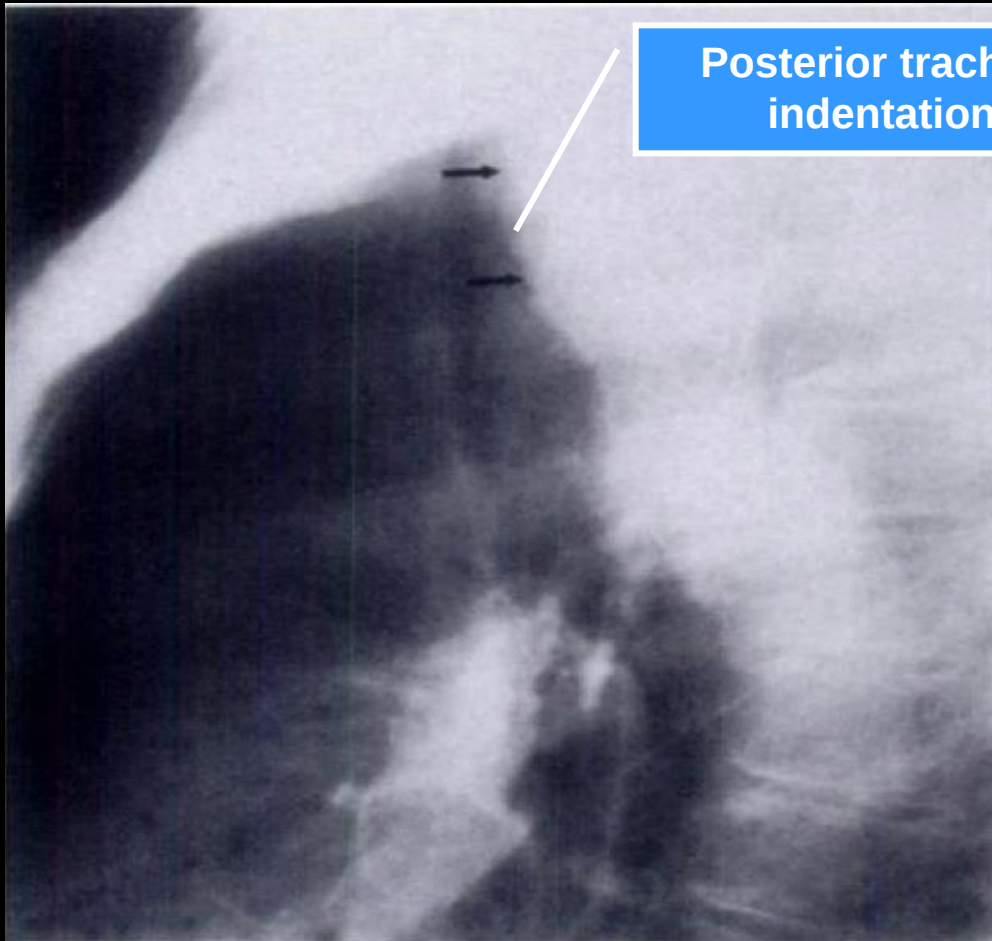
■ Trachea:

- 注意endotrachea內有無腫瘤陰影或狹窄
- 如果trachea後方有腫瘤或是LAP，會把氣管往前推擠。

■ Esophagus

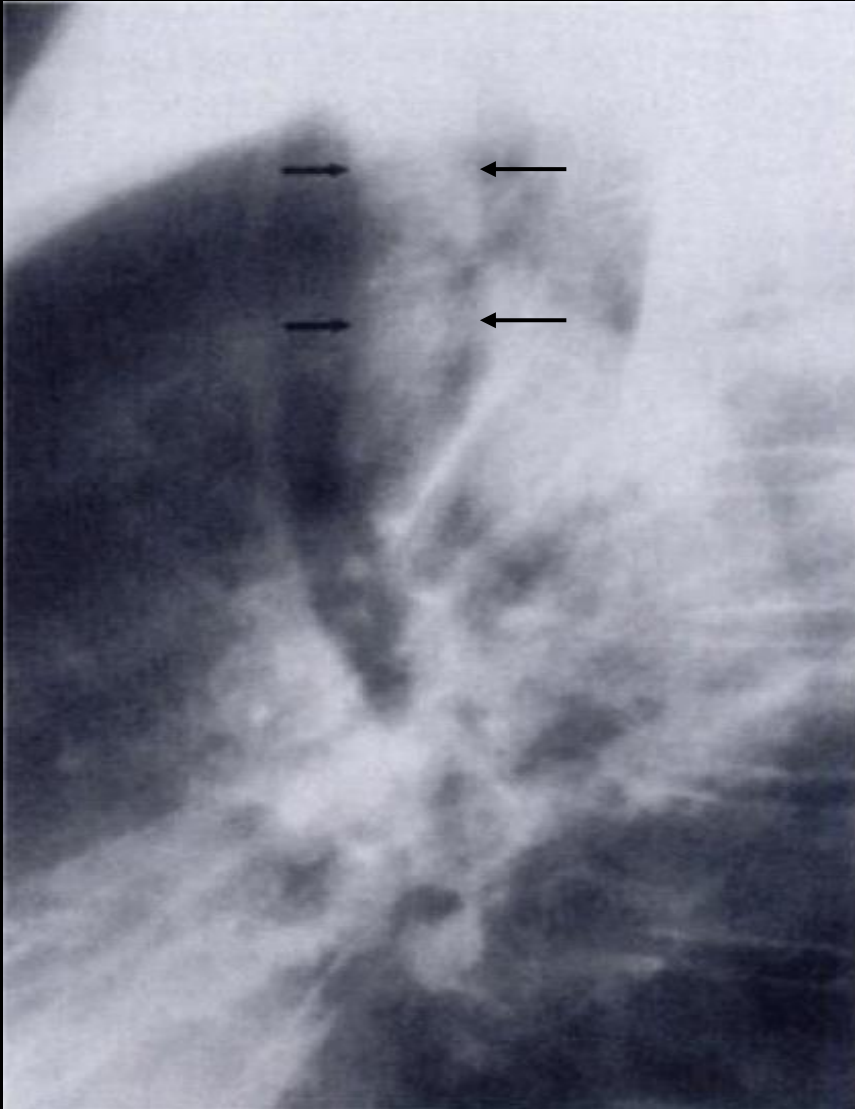
- 正常Posterior tracheal strip < 3mm，當>4mm時為異常。
應該懷疑食道疾病。
- Abnormal air-fluid level: achalasia, esophageal cancer, post-operative change with reconstruction

Esophageal cancer

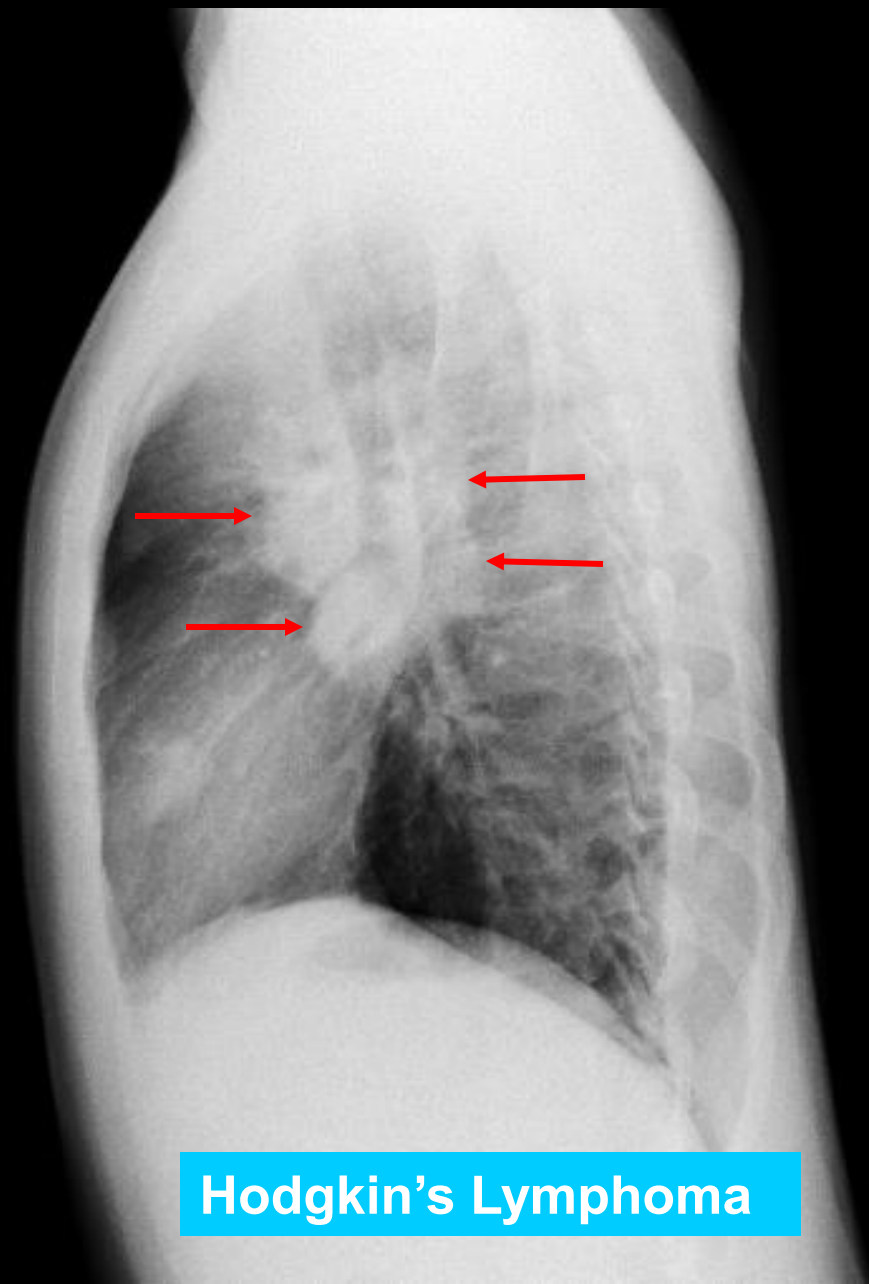
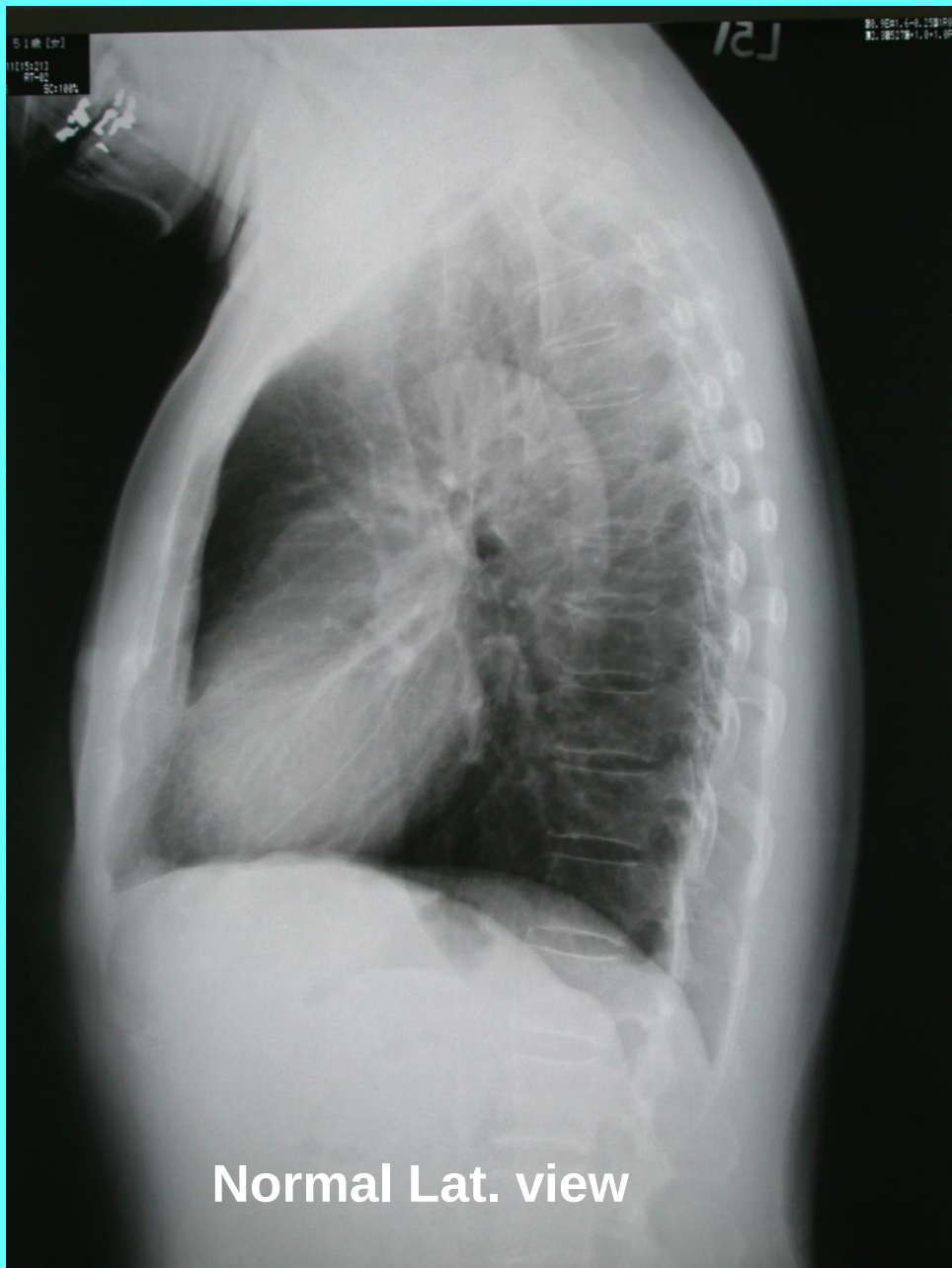


Lat. Esophagogram

Esophageal cancer



**Thickened posterior
paratracheal strip**



盲點：常見的判讀陷阱(四大死角)

- Bilateral Apex
- Large Airway
- Retrocardiac region
- Bilateral lung bases (especially sub-diaphragm)

Pitfalls in Chest X-Ray Interpretation

- 一、吸氣不良或照射條件不佳
- 二、誤認正常影像為空洞或結節
- 三、肺外假影
- 四、肺外病變誤認為肺實質病變
- 五、可消失的假影誤認為腫瘤
- 六、假性透光性增加
- 七、病灶在縱膈腔？肺實質？或血管影像？

一、吸氣不良或照射曝光條件不佳



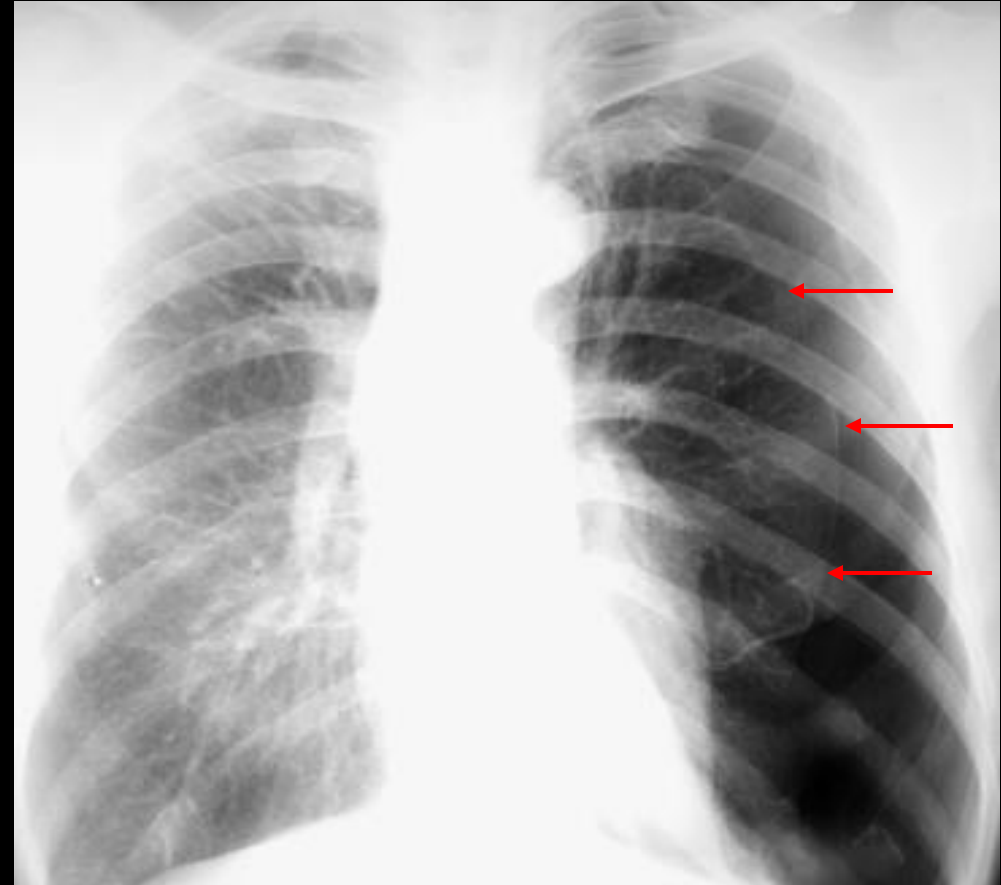
誤認為心臟肥大或congestive heart failure

一、吸氣不良或照射曝光條件不佳

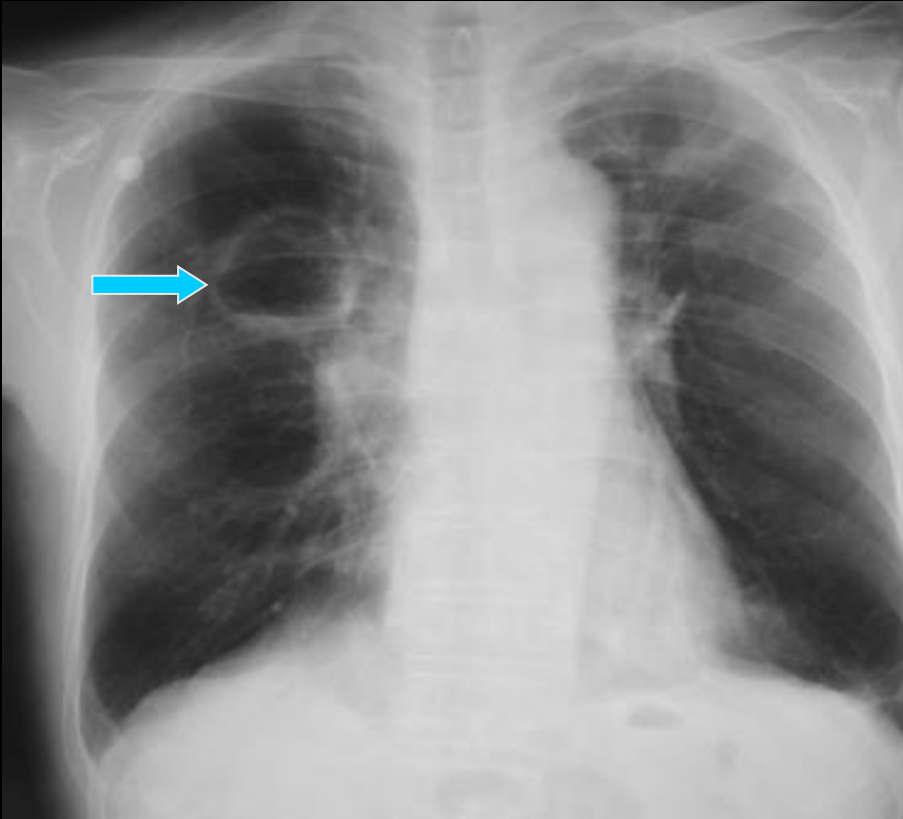
72/M, sudden onset of chest pain with dyspnea

Overexposure film

repeat CXR: left side pneumothorax



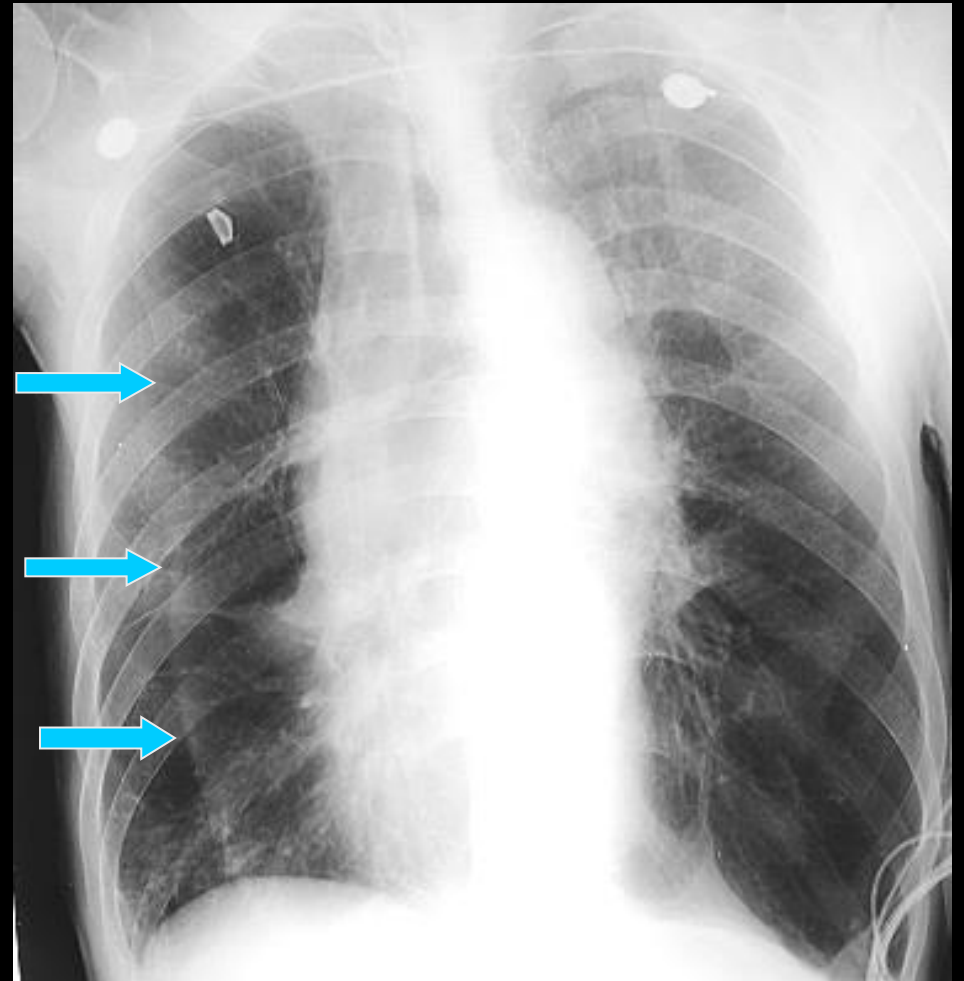
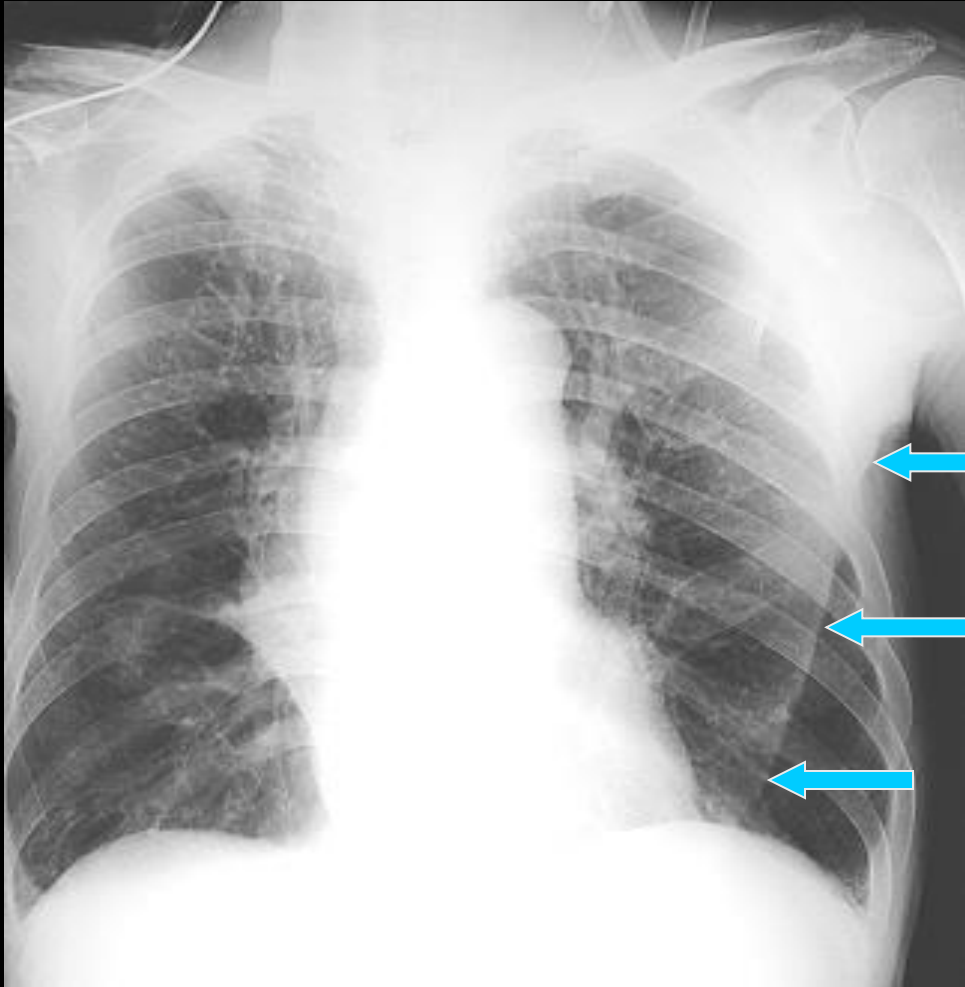
True cavity in Lung: RUL



真正的開洞：由PA and Lat. View相對應的部位均可看出空洞

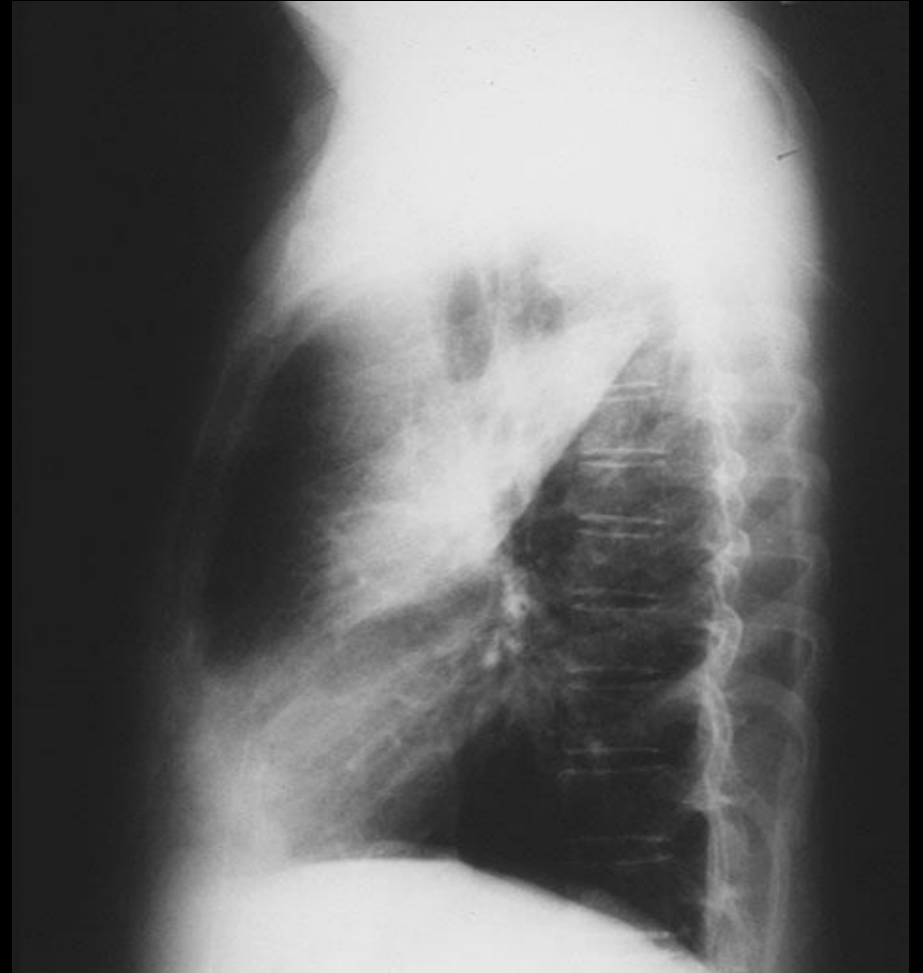
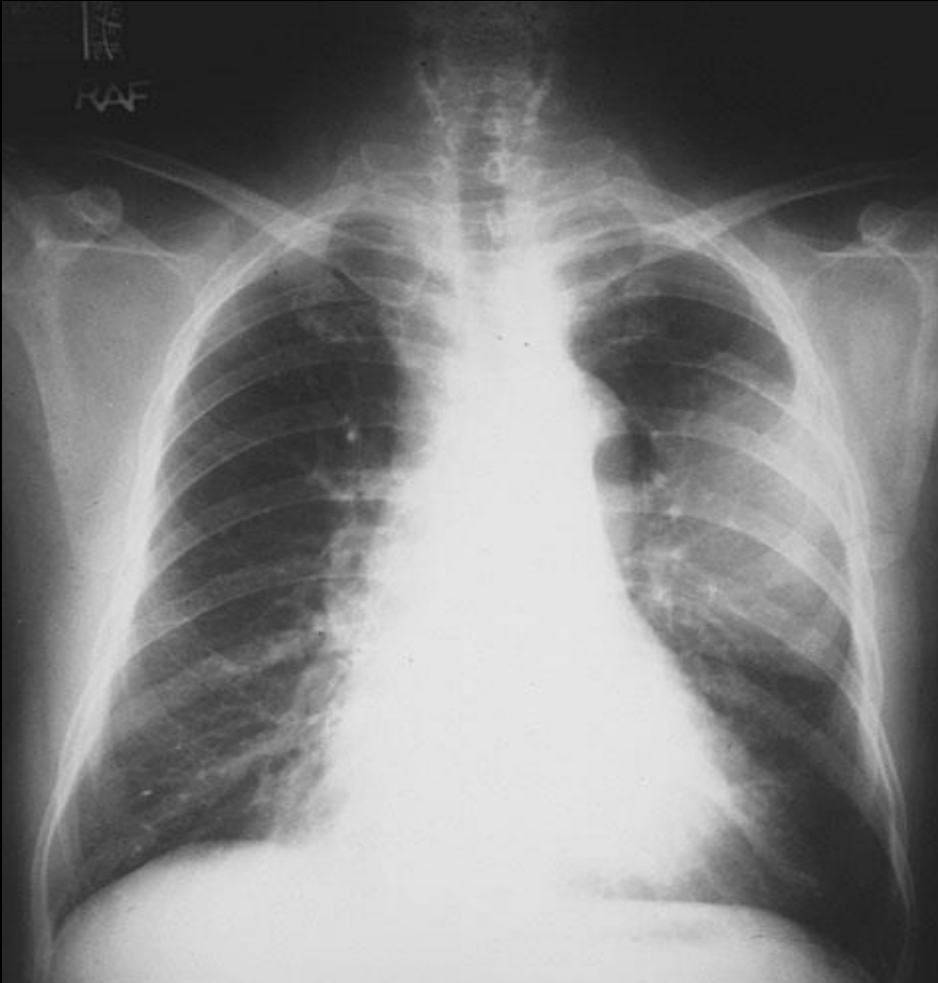
三、肺外假影

Skin fold雖然看似 pneumothorax，但是會往肺外延伸，
而且在skin fold外側的lung field可以見到lung marking

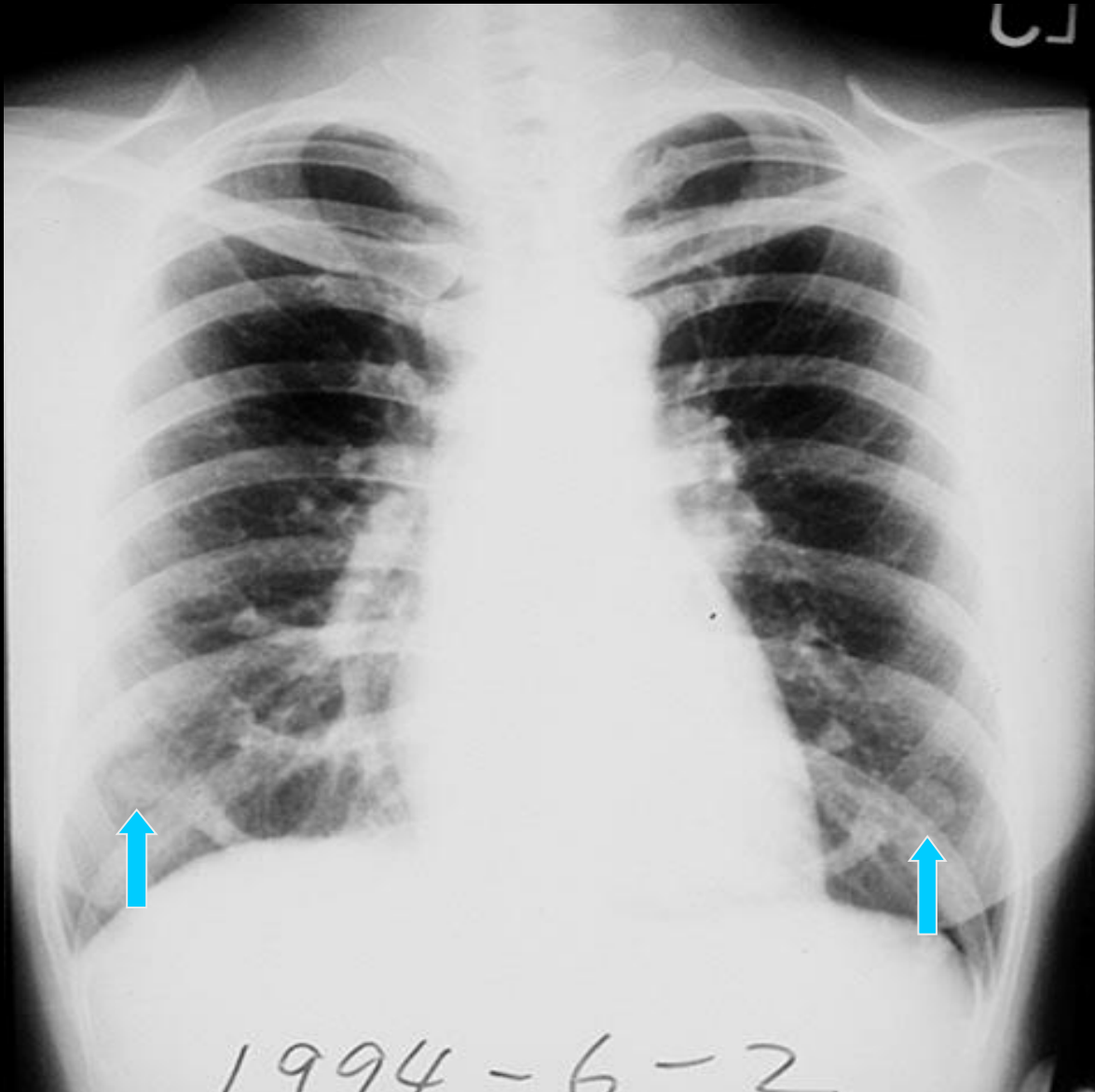


三、肺外假影

Interlobar pleural fluid accumulation in major fissure
看似肺内的GGO



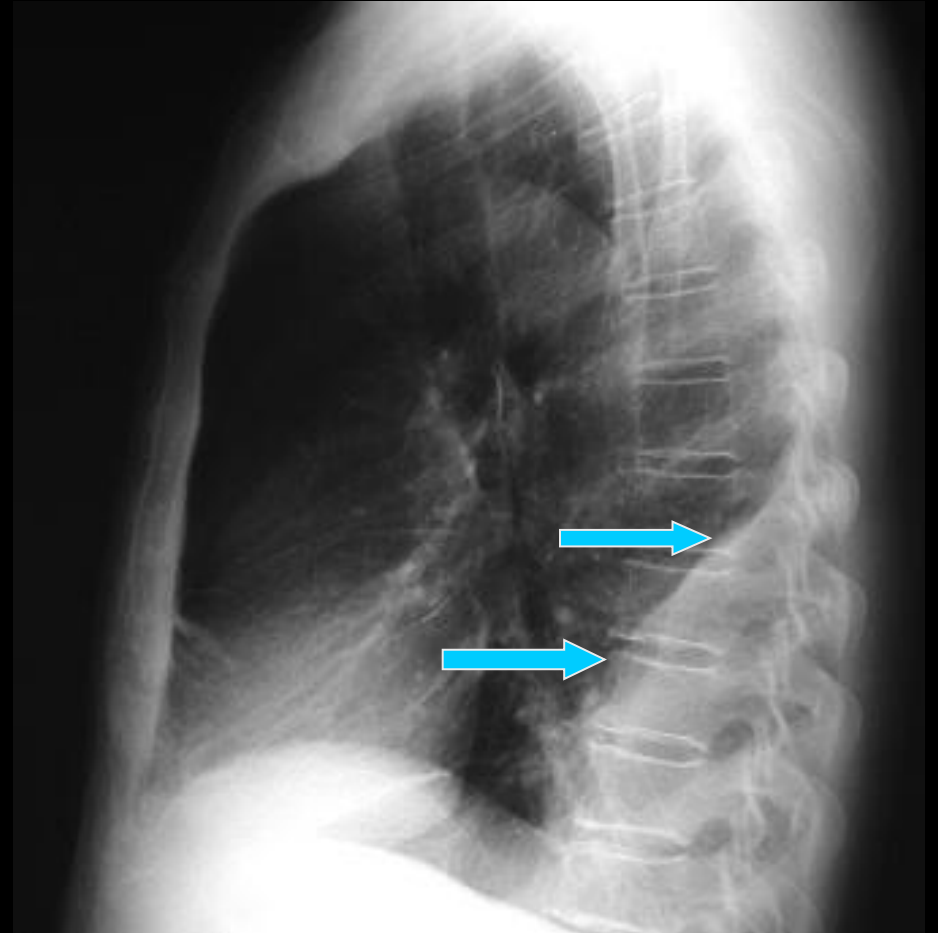
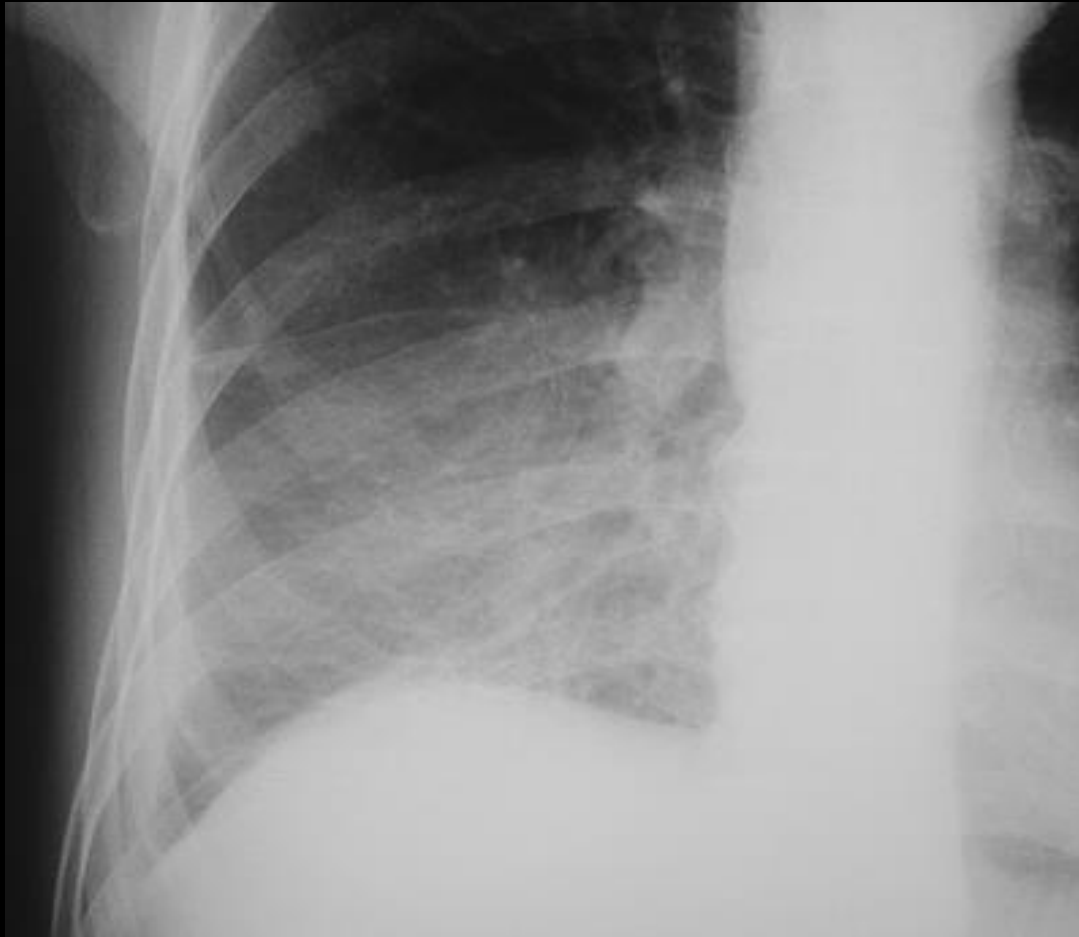
三、肺外假影



兩側下肺野對稱性
結節或腫瘤？

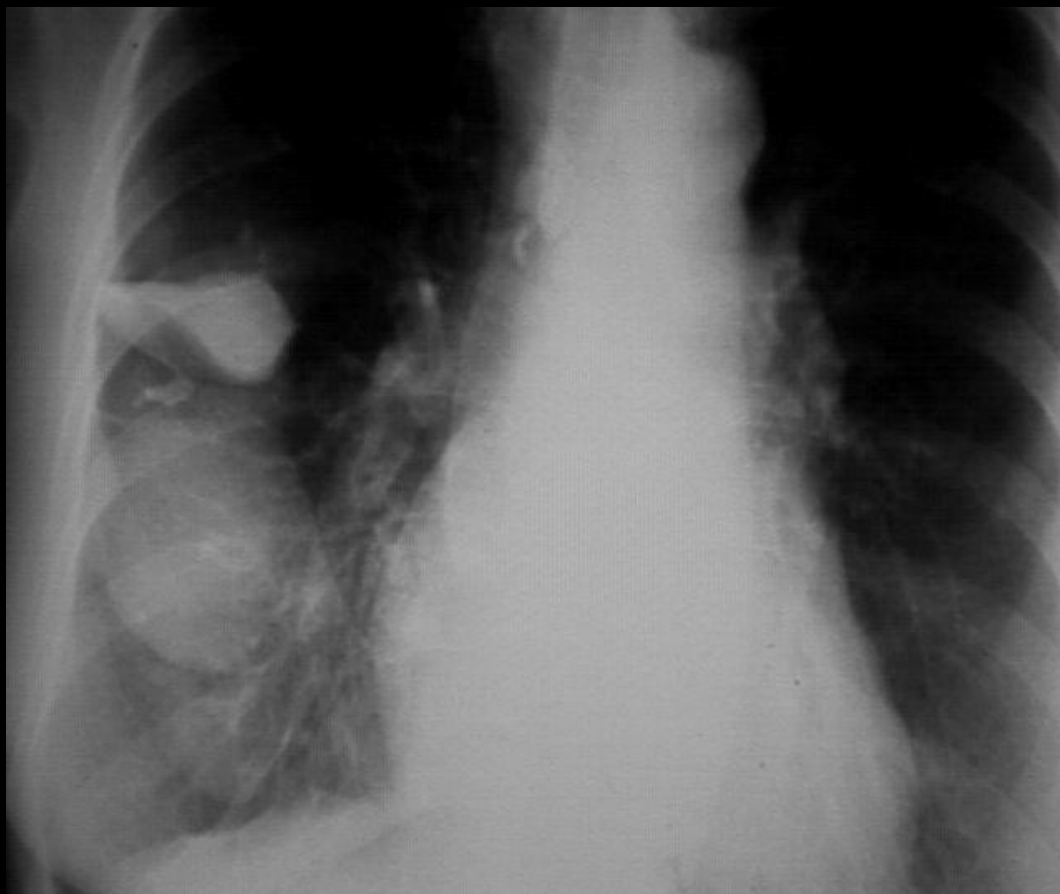
四、肺外病變誤認為肺實質病變

Extrapulmonary lesion 看似 intrapulmonary lesion
Ground-glass opacity on RLL; Pleural thickening (+)

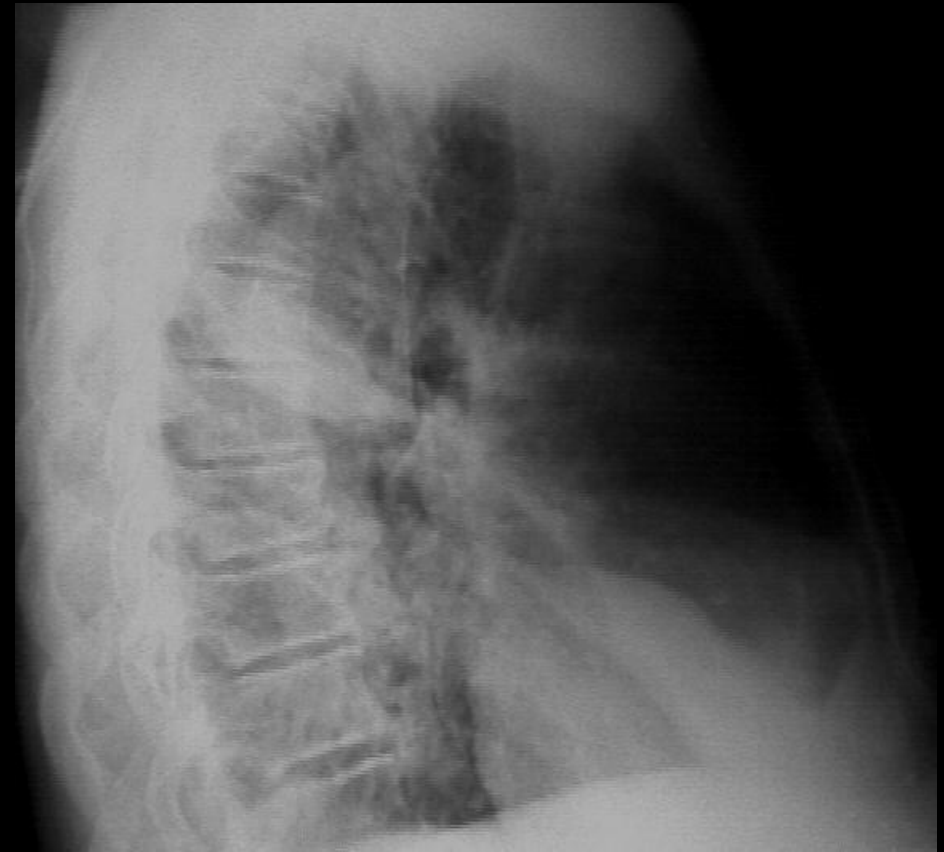
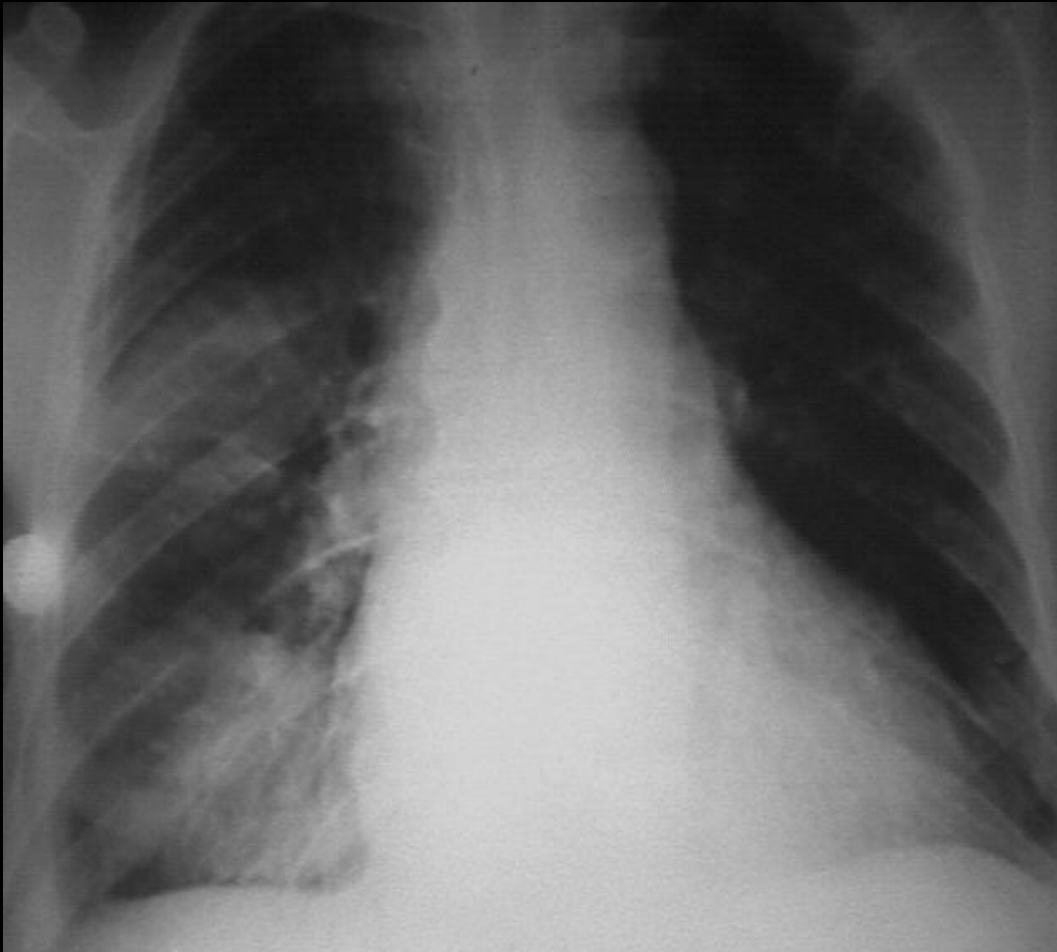


五、可消失的假影誤認為腫瘤

- 正面像看似肺部腫瘤，側面像為 interlobar effusion accumulation
- Dx: congestive heart failure



利尿劑使用後腫瘤消失：
Vanishing tumor / Phantom tumor



六、假性透光性增加

■ 假性透光性增加的原因：

■ 照相技術不良，姿勢不佳

■ 單側軟組織減少

■ 單側肋膜積液

Unilateral pleural effusion (supine position)



Right side mastectomy



應該注意的重點，以Felson建議的順序

■Thorax:

- Bone: 形狀、濃度(osteolytic, osteoblastic)、trabecula
- Soft tissue: breast完整性、皮下氣腫、mass

■Abdomen:

- 橫膈：形狀、位置、C-P angle、橫膈下(subdiaphragm)
- 肝臟：hepatomegaly, liver abscess
- 胃氣(gastric bubble): 與L't hemidiaphragm距離、intragastric mass、extragastric (splenomegaly)、loss of gastric bubble(hiatal hernia, achalasia, 躺著照)

■Mediastinum

- 寬度(變寬：食道、大血管、lipomatosis、mass)、位移、異常空氣(食道疾病、pneumomediastinum、mediastinitis)
- Airway: 位置、intraluminal、carina angle(<60 or >90異常)
- 食道：異常的air column
- 心臟：大小、形狀、後面
- 肺門：大小、形狀、位置、濃度

■Lung

- 肋膜：變厚、氣胸、長水、mass
- 肺紋
- 左右比較

■最後再檢查一次四大死角：apex、aiway裡面、心臟後面、橫膈下面

Summary

Steps of Image Interpretation

1. 確定片子的照相品質是良好的
2. 找出真正的異常病灶，並確定其位置。
3. 描述它的pattern
4. 作鑑別診斷
5. 配合臨床資訊和數據來縮小鑑別診斷的範圍
6. 安排其他檢查確定診斷

Normal CXR ??記得要先排除這些問題

1. Cervical rib, fork rib
2. 左右放反 (Dextrocardia, Situs inversus)
3. Mastectomy
4. Endotracheal or endobronchial lesion
5. Extrapulmonary soft tissue
6. 四個死角 (apex, retrocardia, subdiaphragm, retrocardiac)
7. Artifact (nipple, hair braid)
8. Pneumothorax
9. Malposition of medical device (NG, CVP, endotracheal tube..)

PATTERN

- Pulmonary / Extrapulmonary

- Multiple / Solitary

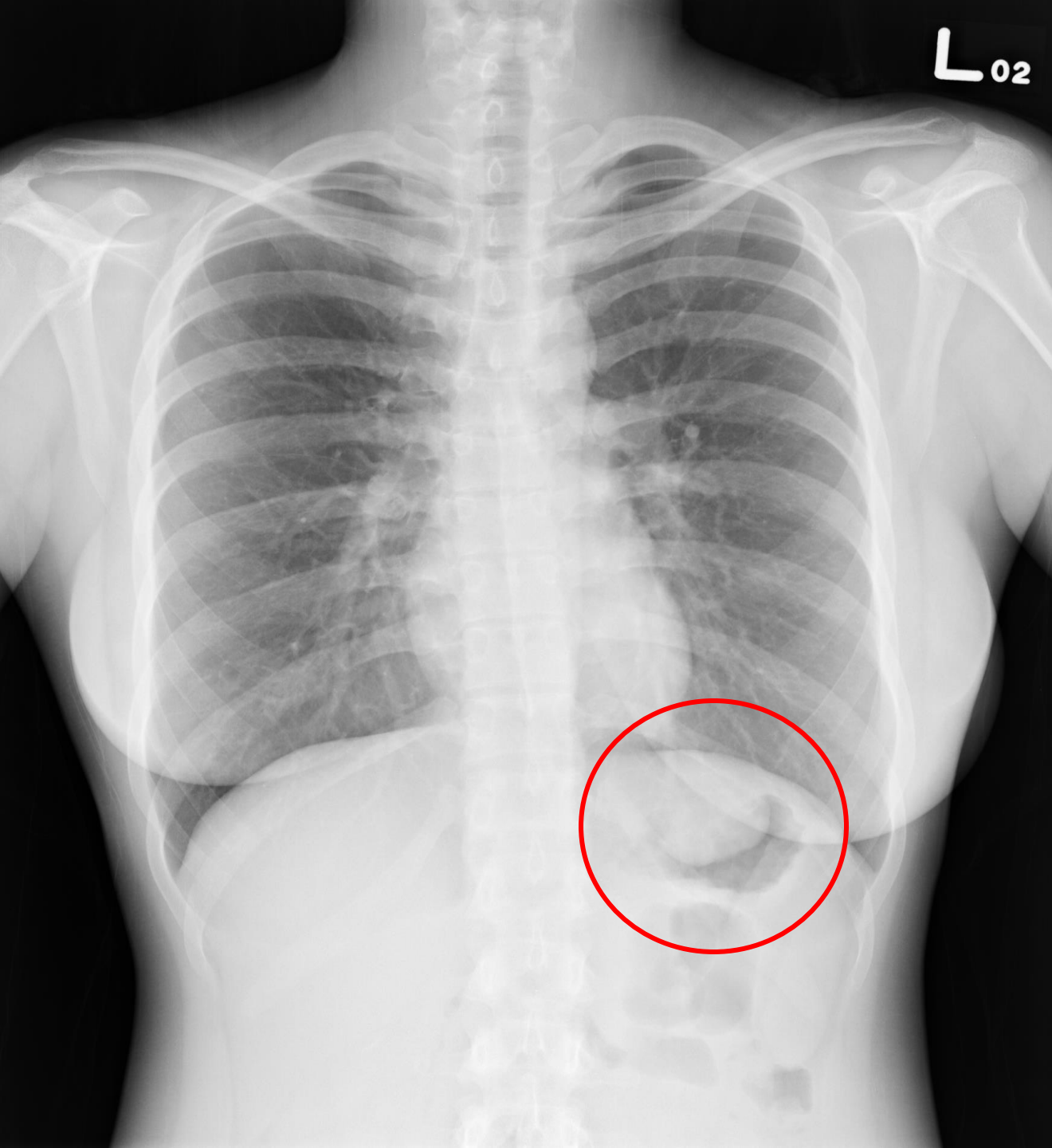
- Alveolar / Interstitial

- Diffuse / Focal

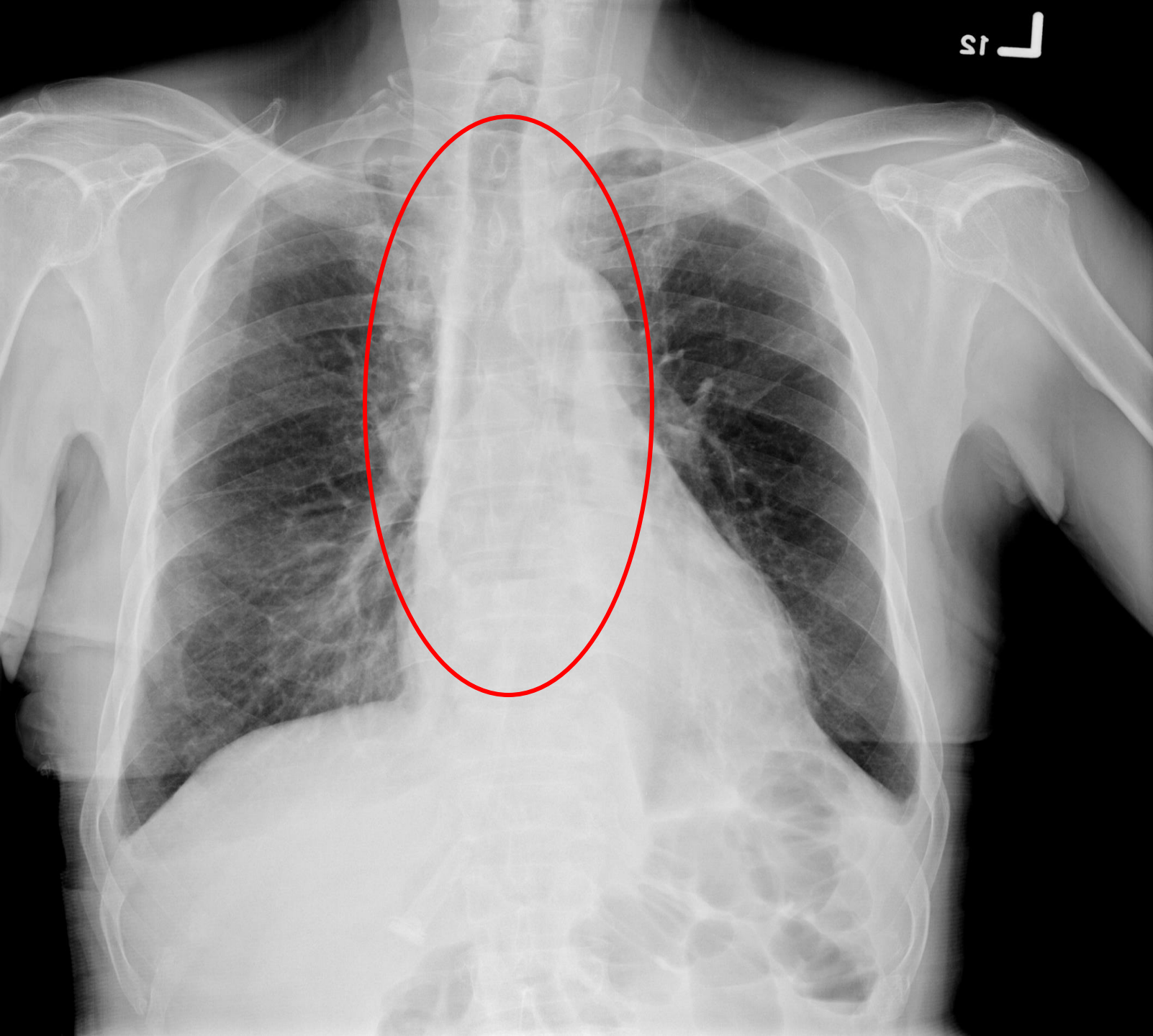
鑑別診斷

- H: hemodynamic
- I: infection
- I: inflammation
- N: neoplasm
- 遺傳: congenital
- 職業: occupation
- 暴露: exposure
- 全身: systemic disease
- 肉芽腫: granulomatous disease

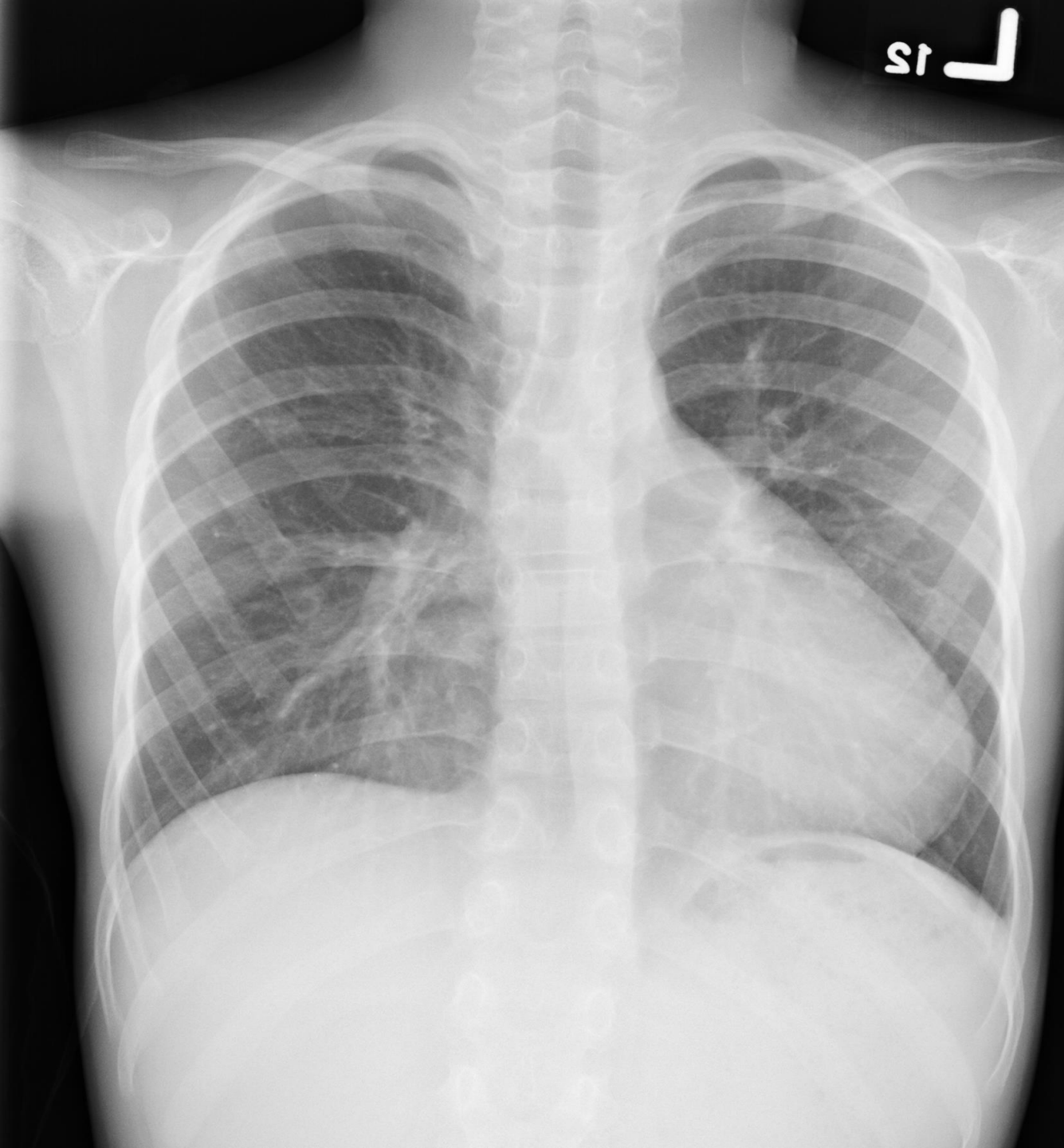
Quiz



Gastric CA.

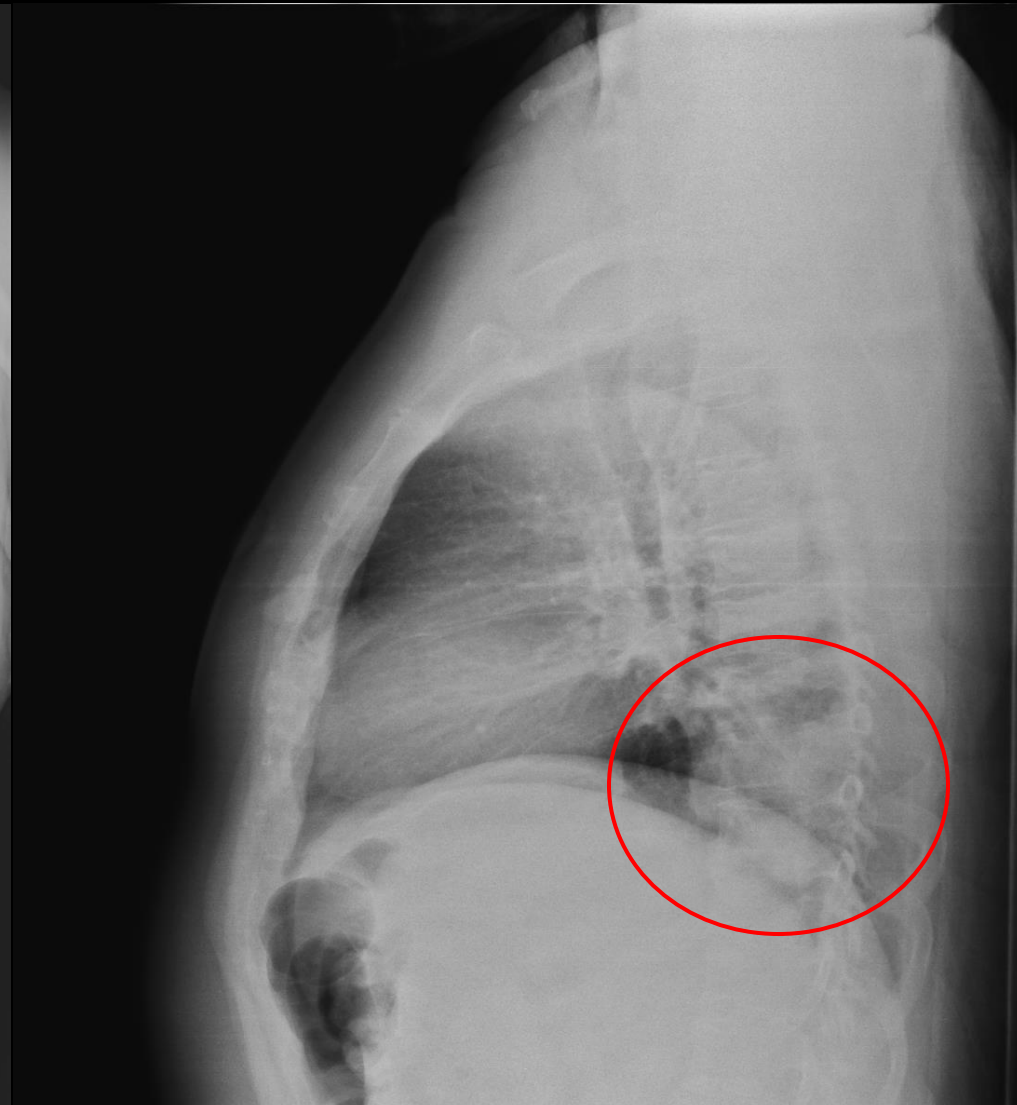
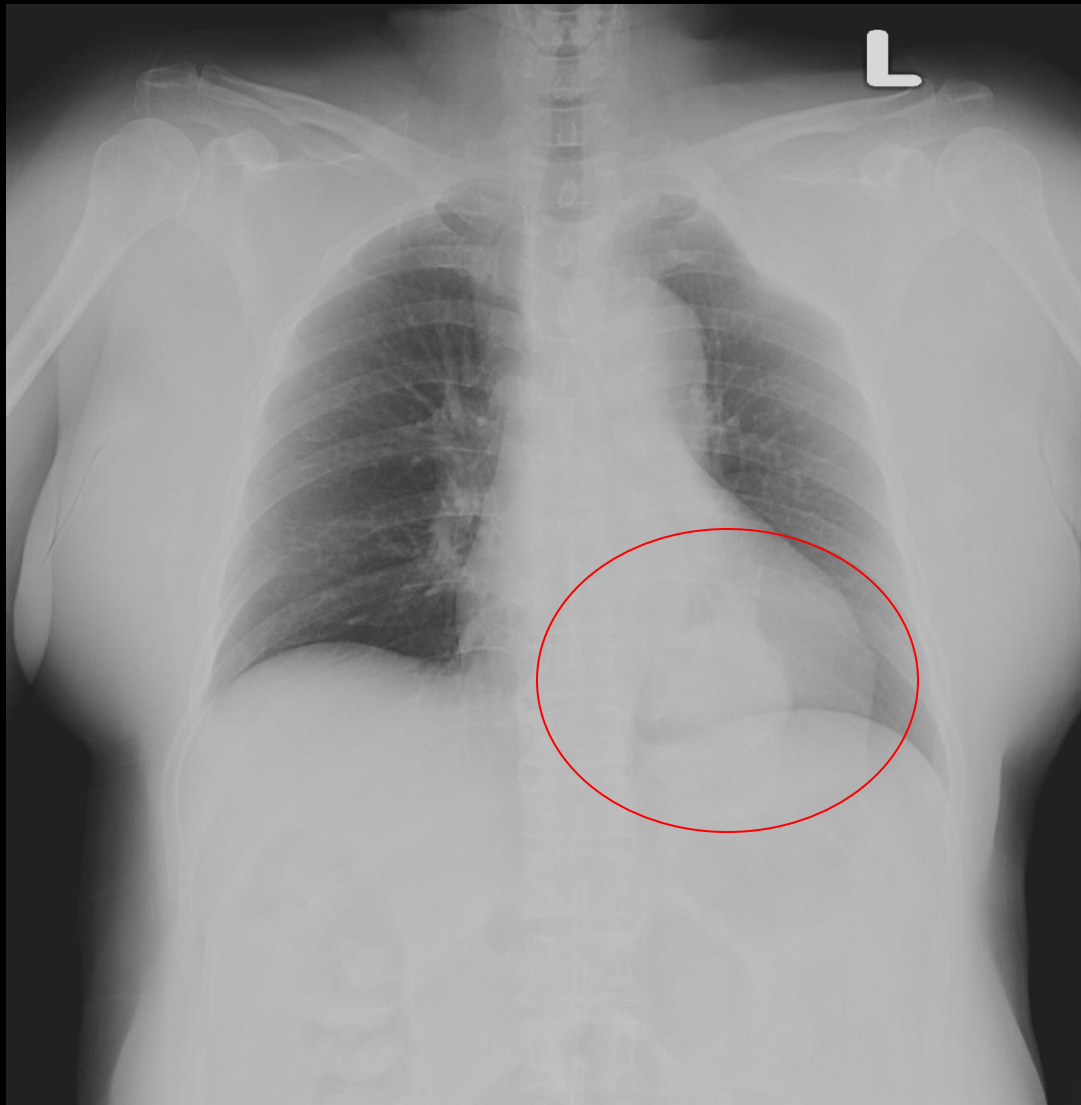


Esophagus
reconstruction

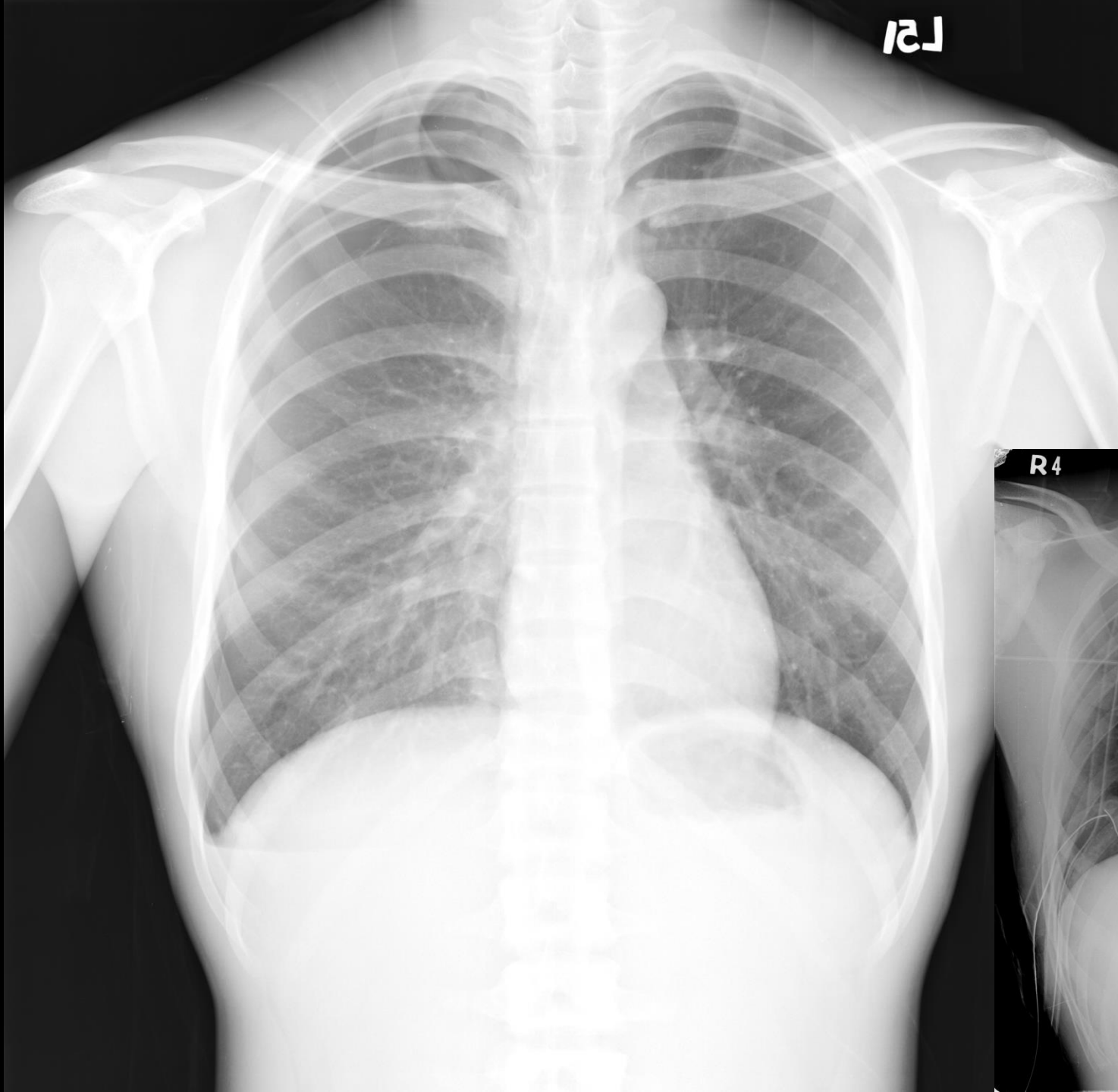


Pectus excavatum

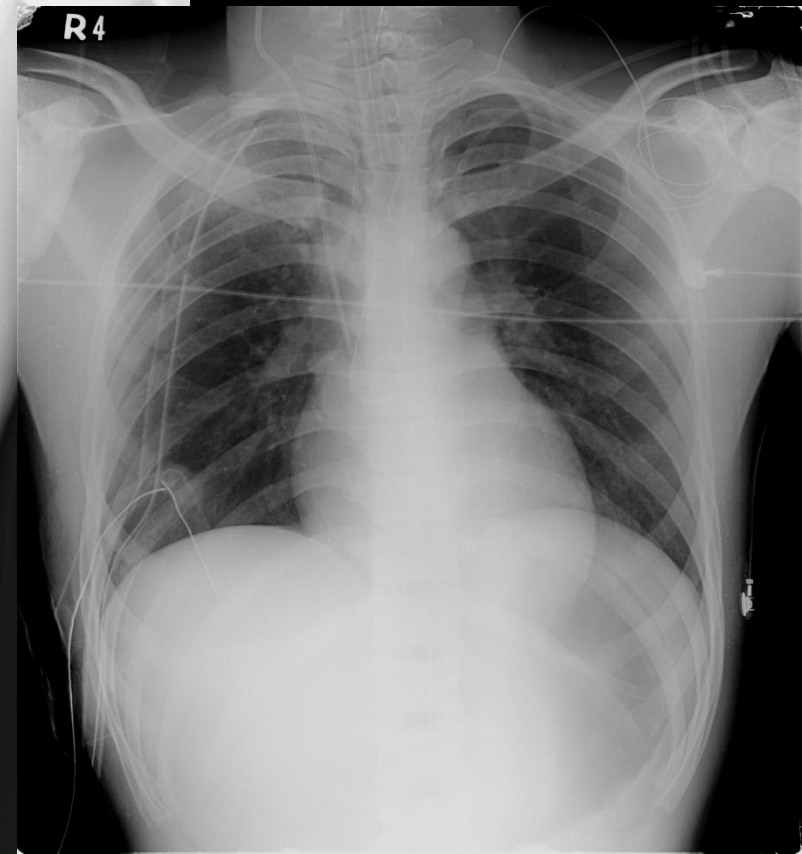


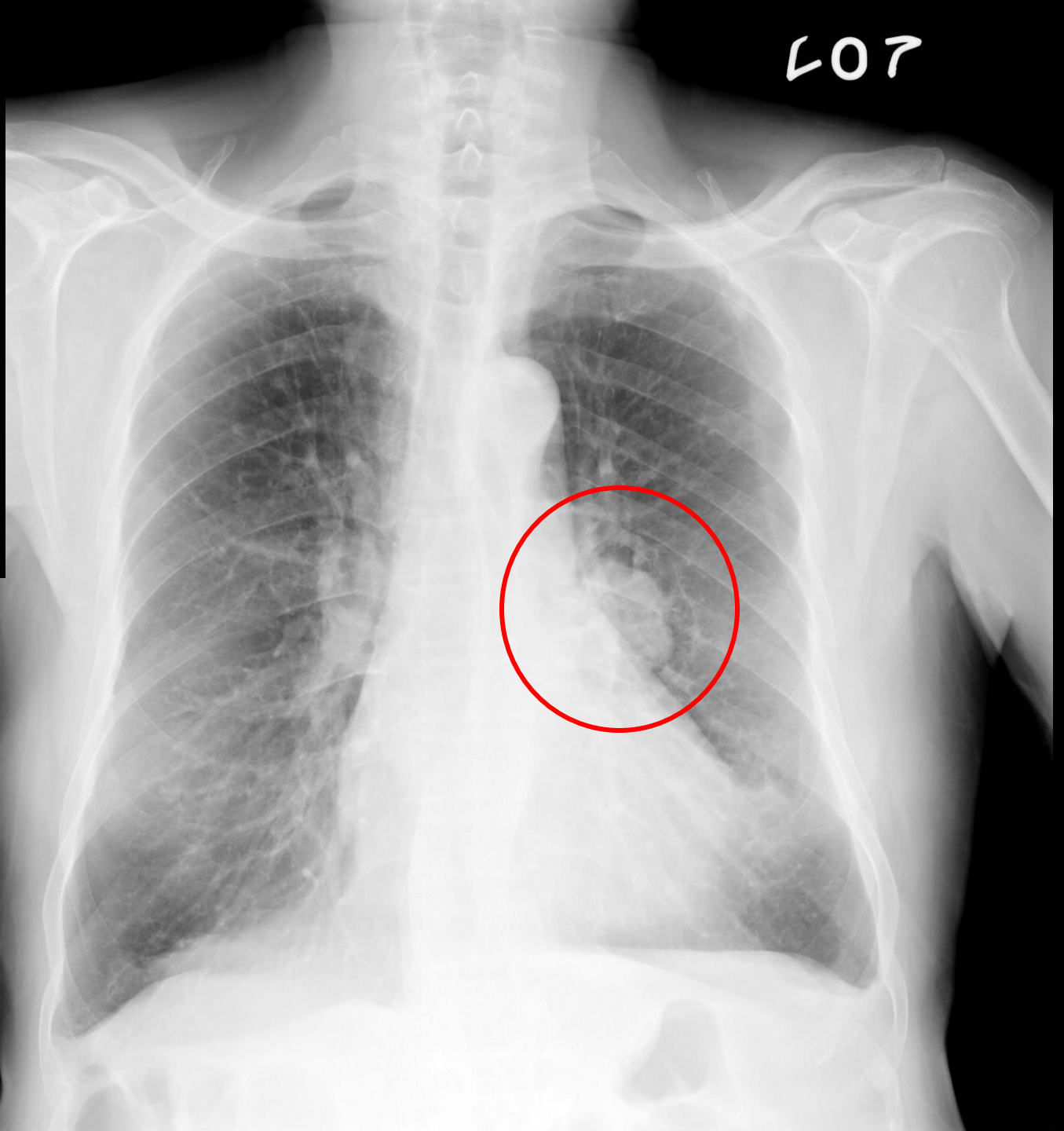
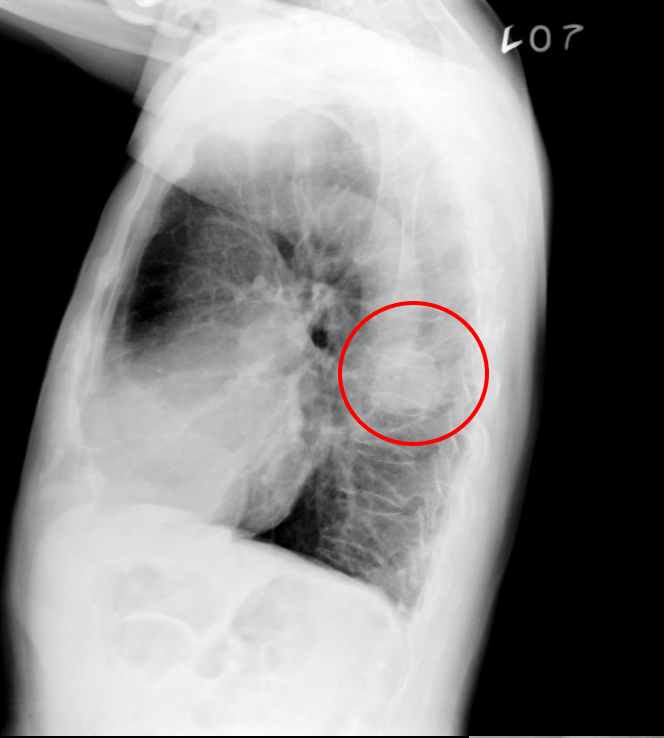


Retrocardiac mass – Lung cancer



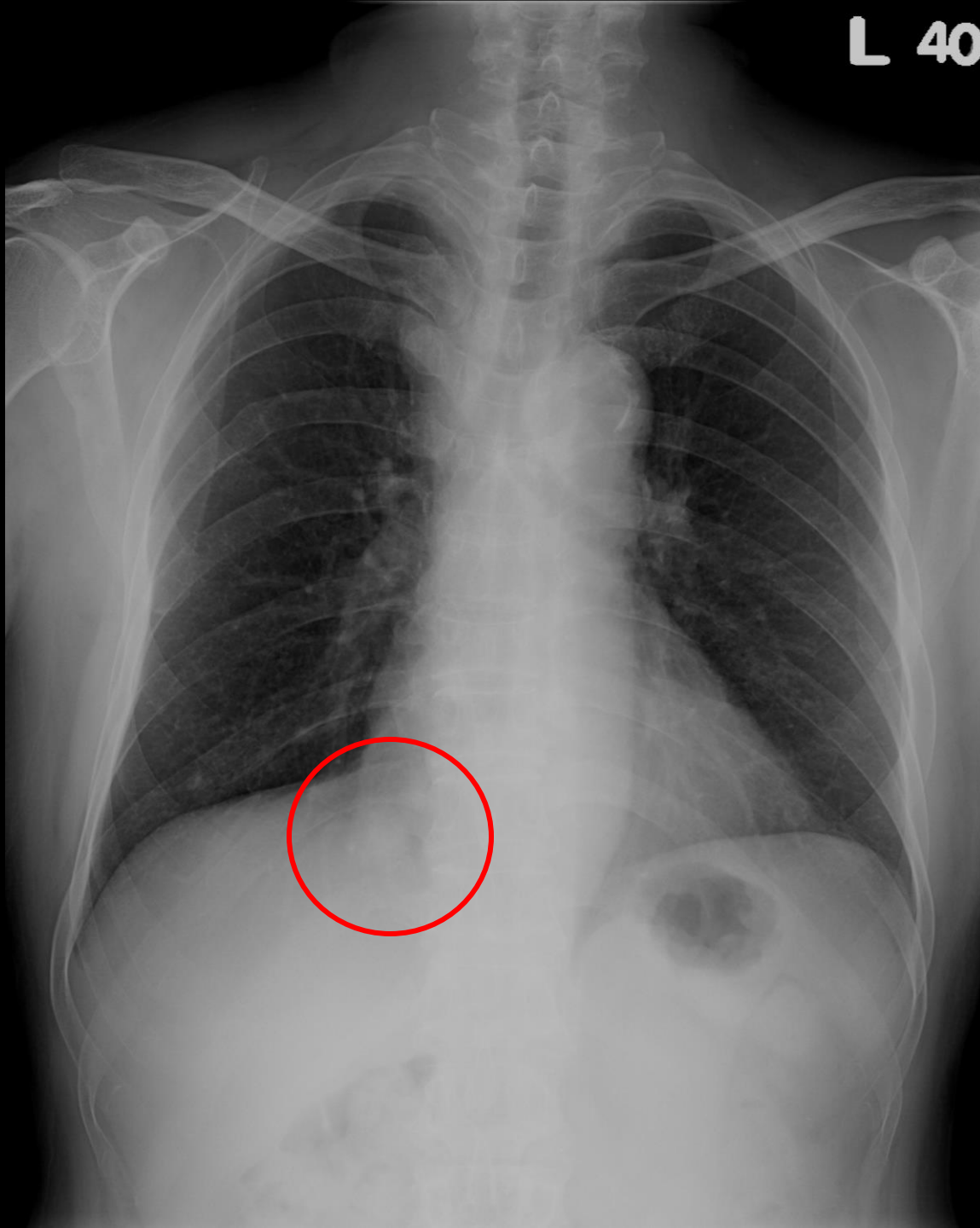
R't pneumothorax



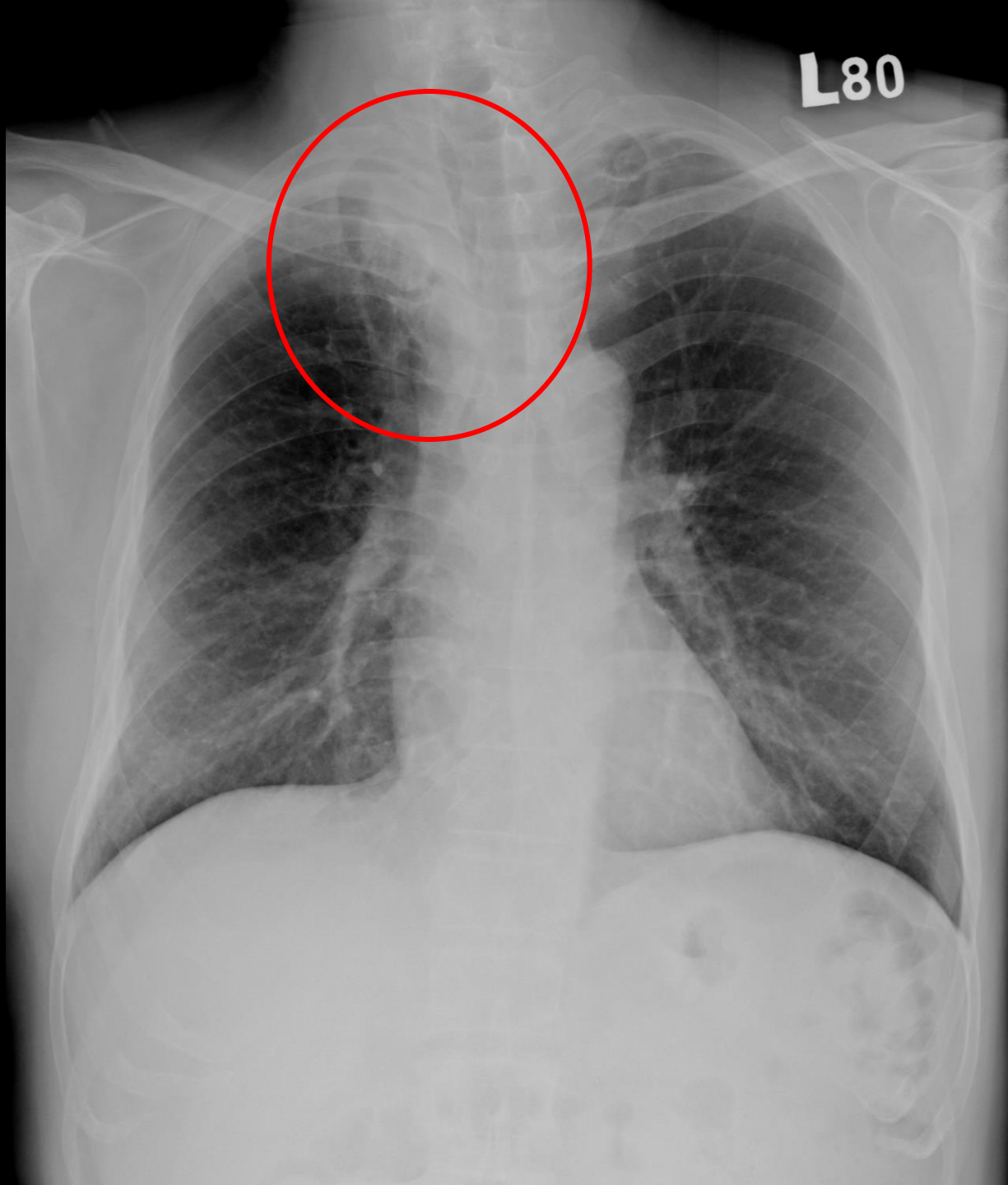


Infrahilar mass
- Lung cancer

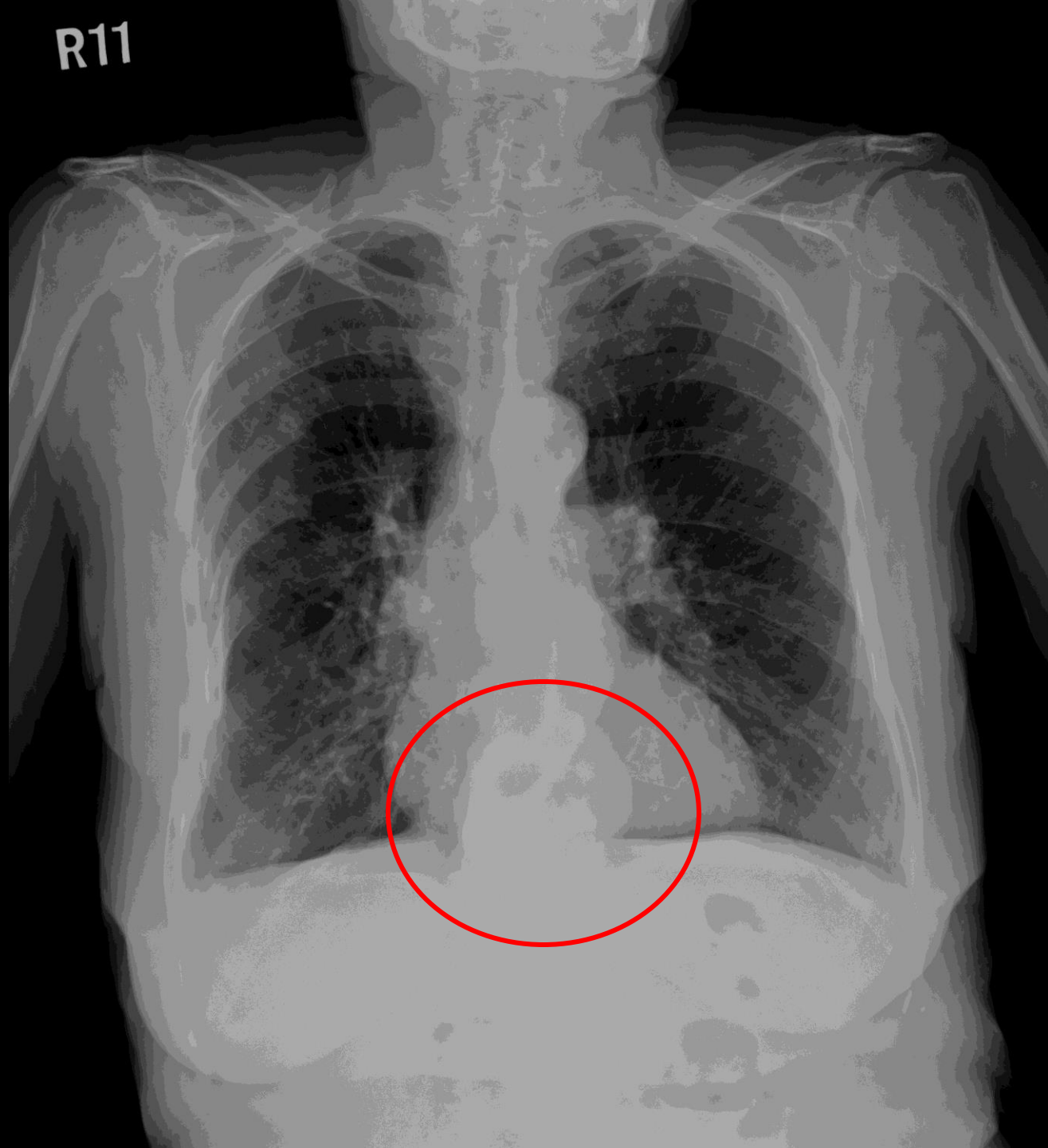
L 40

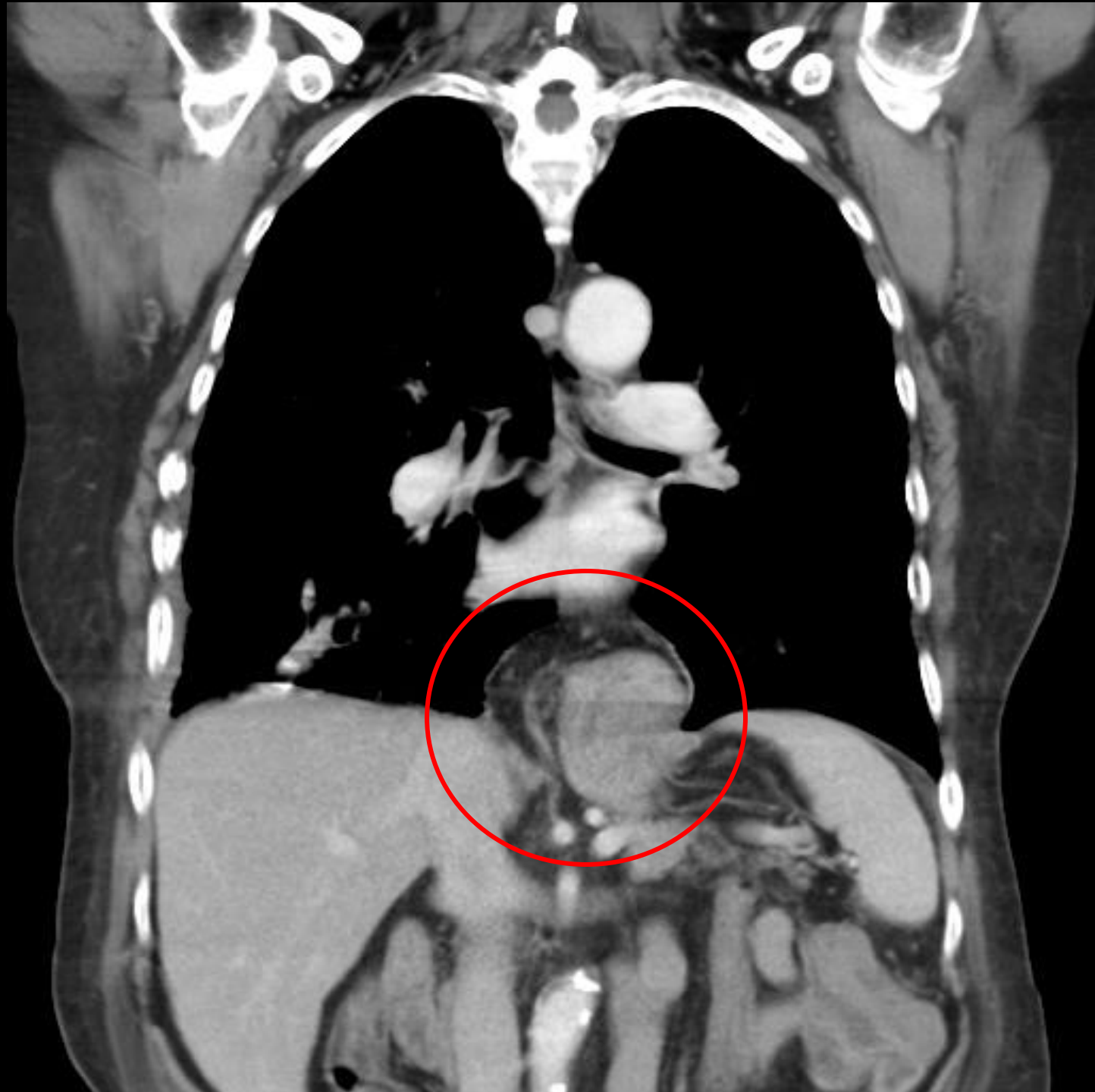


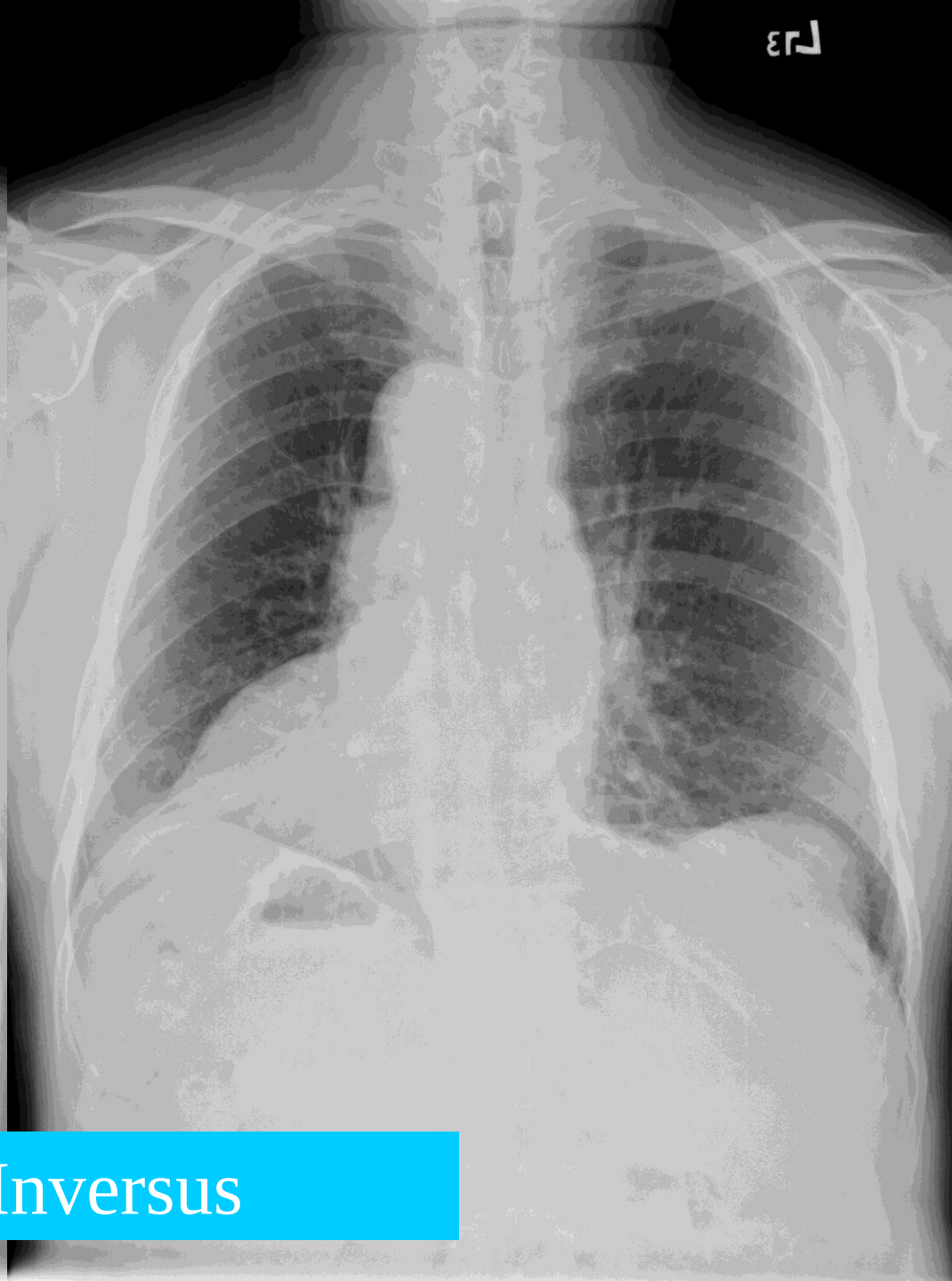
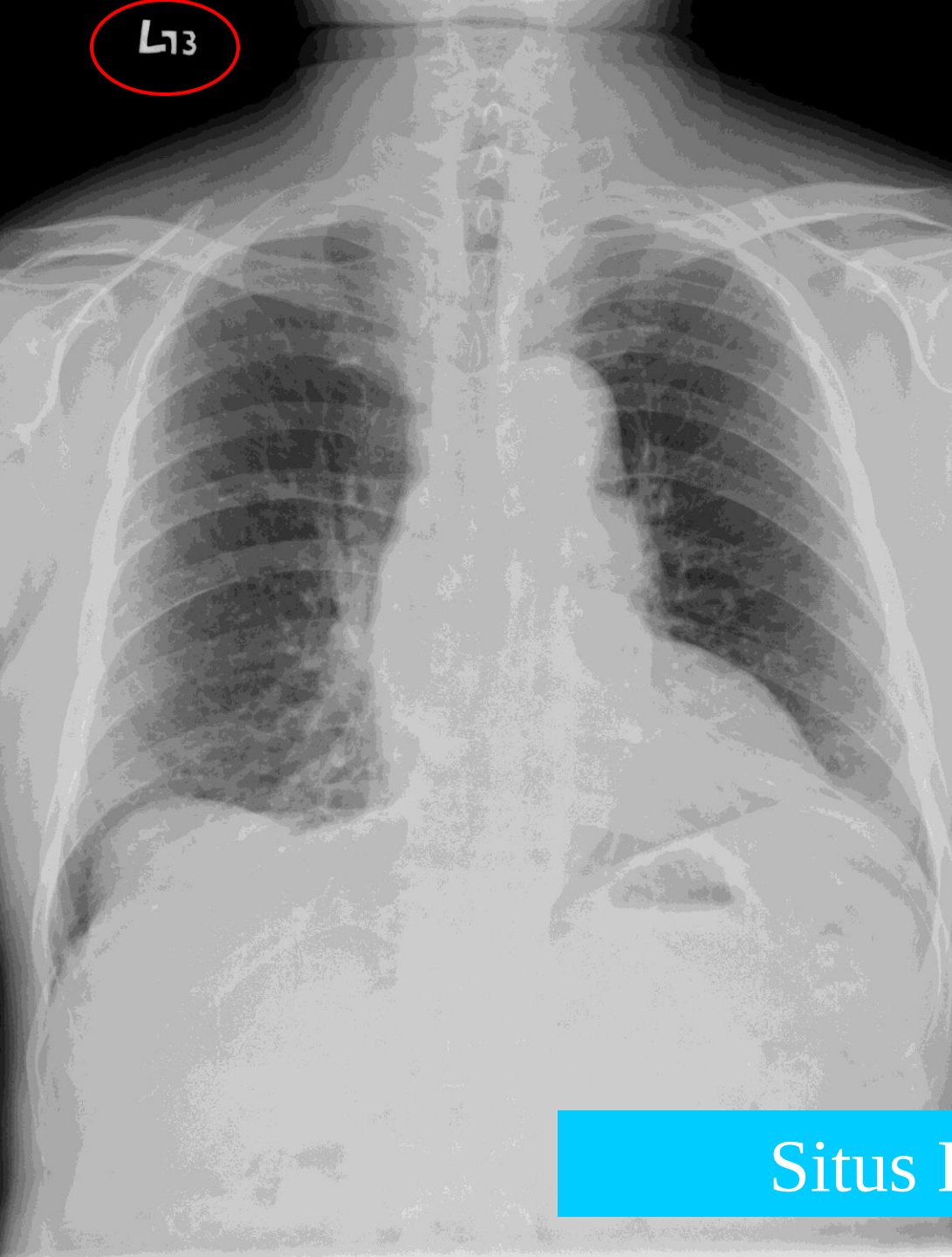
L80



R11







Situs Inversus