

# CHEST IMAGING

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أخصائي الأشعة التداخليه وقسطرة الشرايين  
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كلية الطب الجامعة الهاشمية

لا تخلي عدد إيديك  
يخونك، اسمع الريكورد  
وادرسها والحياة حلوة

اللهم لا سهل إلا ما جعلته سهلاً، وأنت تجعل الحزن إذا شئت سهلاً

# CHEST IMAGING

- Chest imaging remains major component of diagnostic radiology.
- The chest x-ray is the most commonly performed diagnostic x-ray examination.
- A chest x-ray makes images of the heart, lungs, airways, blood vessels and the bones of the spine and chest.

# Anatomy of the lungs

مراجعة اخذناه في الاناتومي  
مافي اشى جديد

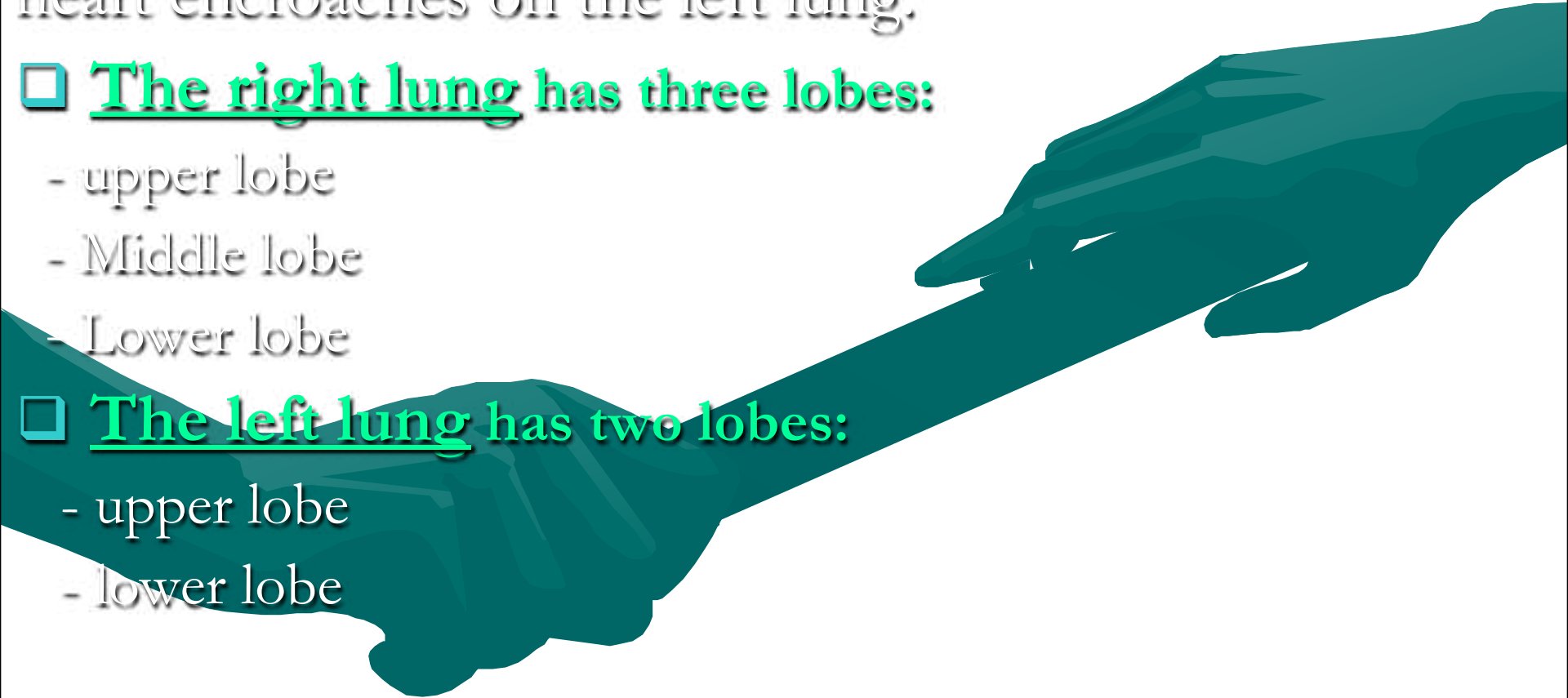
The Right lung is larger than the left, because most of the heart encroaches on the left lung.

## The right lung has three lobes:

- upper lobe
- Middle lobe
- Lower lobe

## The left lung has two lobes:

- upper lobe
- lower lobe



# Anatomy of the lungs / 2

Adjacent lobes are separated by an interlobar fissure.

## In the right lung:

- ❑ The minor (transverse) fissure separates the upper lobe from the middle lobe.
- ❑ The major (oblique) fissure separates the upper and middle lobes from the lower lobe.

## In the left lung:

- ❖ The major or oblique fissure separates the upper lobe from the lower lobe.

# Segmental anatomy

## Segments of the right lung

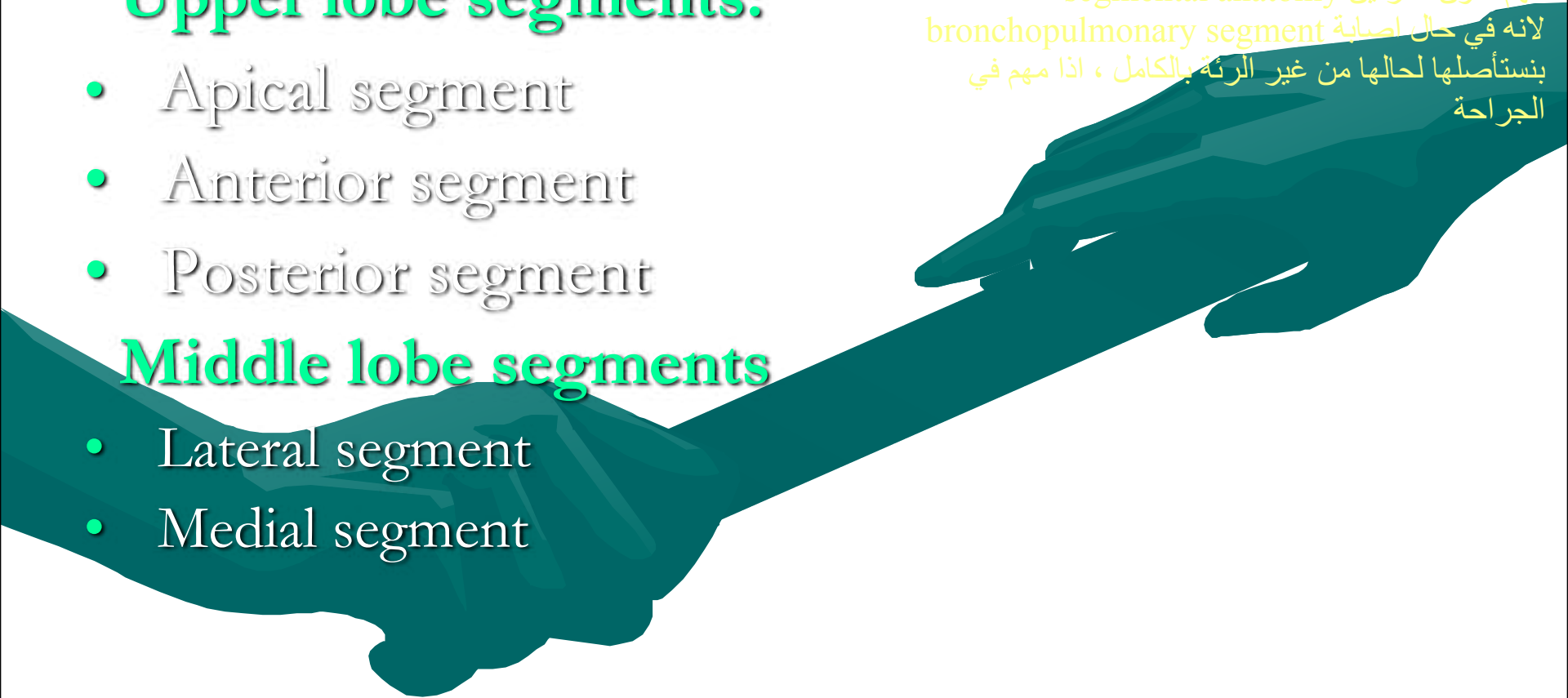
### Upper lobe segments:

- Apical segment
- Anterior segment
- Posterior segment

### Middle lobe segments

- Lateral segment
- Medial segment

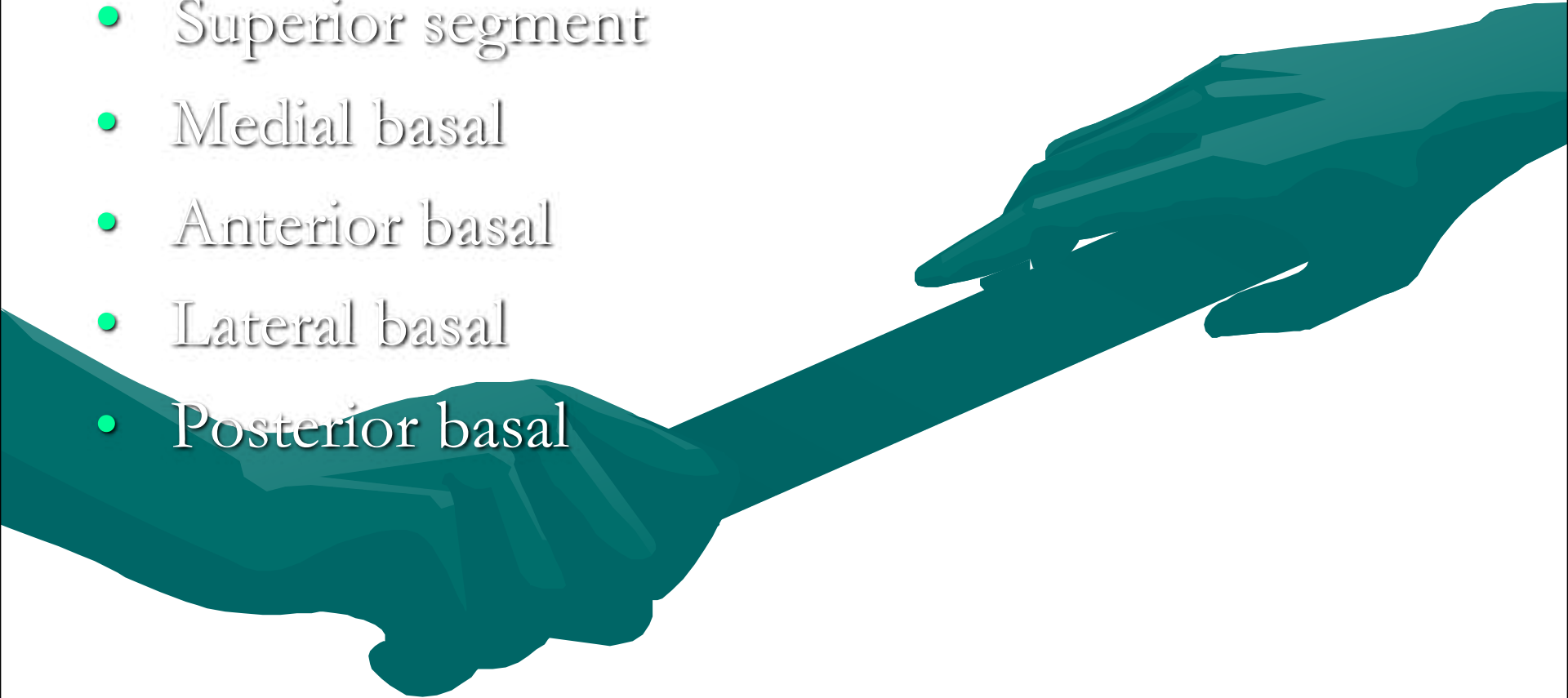
مهم نكون عارفين segmental anatomy  
لانه في حال اصابة bronchopulmonary segment  
بنستأصلها لحالها من غير الرئة بالكامل ، اذا مهم في  
الجراحة



# Segmental anatomy / 2

## Right lower lobe segments:

- Superior segment
- Medial basal
- Anterior basal
- Lateral basal
- Posterior basal



# Segmental anatomy / 3

## Left lung segments:

### Upper lobe

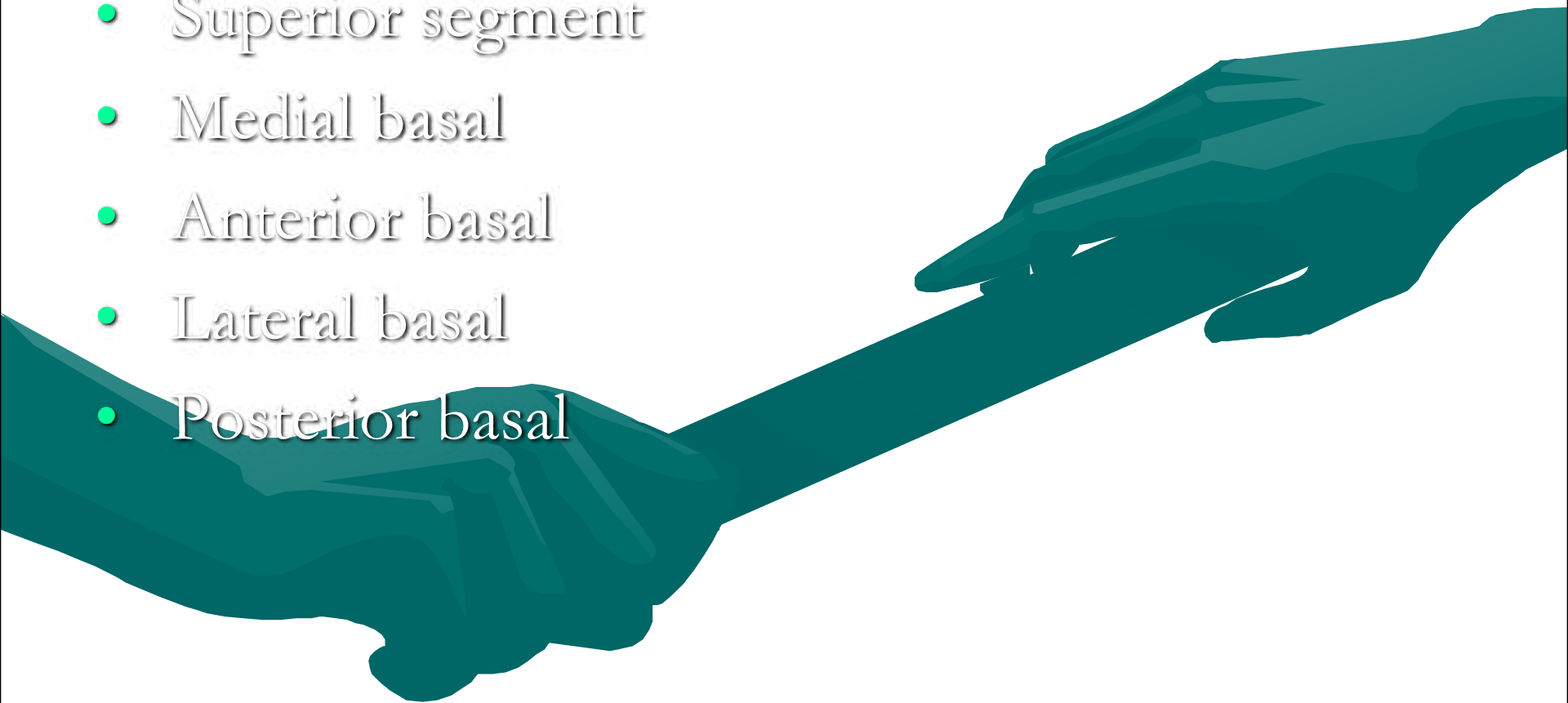
- Apical posterior segment
- Anterior segment
- Superior lingular segment
- Inferior lingular segment

The lingular segment in the left lung is similar in position to the right middle lobe.

# Segmental anatomy / 4

## Left lower lobe segments:

- Superior segment
- Medial basal
- Anterior basal
- Lateral basal
- Posterior basal





# Routine plain chest radiography:

يعني مكان اصدار الاشعة (بشكل روتيني)  
من خلف المريض و تخترقه وصولاً ل film

- ❖ Postero-anterior view (PA)
- ❖ Lateral view.

□ The term **PA** refers to the **direction** of the **x-ray beam** which traverses the patient from **posterior to anterior**.

PA

لاحظ الاشعة خلف المريض

مصدر الاشعة  
Posterior  
في ال film  
بكون anterior



ليه اخترنا  
Anterior posterior view  
Posterior anterior view

# PA chest radiography is preferred to AP, why ?

فبالتالي بعطينا وضوح أكثر لا Lung لأنه ال chest x-ray بتكون Mainly لا lung

- 1  Less magnification of the heart.
- 2  More lung fields are visualized. لاحظ الصورة فوق
- 3  The PA projects the scapula away from the lung fields.
- 4  The apices of the lungs are closer to the film مكانه بيكون ادا film قدام المريض بس زفورا

In the PA and appear more clear  
in the PA and appear more clear

في حالات بنصور فيها anterior-posterior  
مثلاً في حال كان المريض متعب جدا بحيث لا قادر يوقف ولا يقوم  
او لو اطفال ورضع

## Other plain chest radiography:

### ➤ Antero-posterior view (AP)

- ❑ very ill patients who are unable to stand.
- ❑ infants and small children.

نحط film تحت المريض و  
نصوره من فوق

### ➤ Inspiration-expiration films

- ❑ suspected bronchial foreign body aspiration.
- ❑ suspected small pneumothorax.

في حالة pneumothorax بنعملها  
expiratory لانه بدنا collapsed lung و  
عملتها inspiratory ما رح تكون واضحة

لما نصور routine chest x-ray بنصور full inspiration بحيث نطلب  
من المريض اخذ نفس عميق و نصور ، لكن في حالات بتصور  
expiration و حالات الاثنتين مع بعض inspiration-expiration

# Before reading the x-ray film, the following should be checked:

## Request form

## Technical factors:

### Position

- degree of inspiration.

- exposure (penetration)

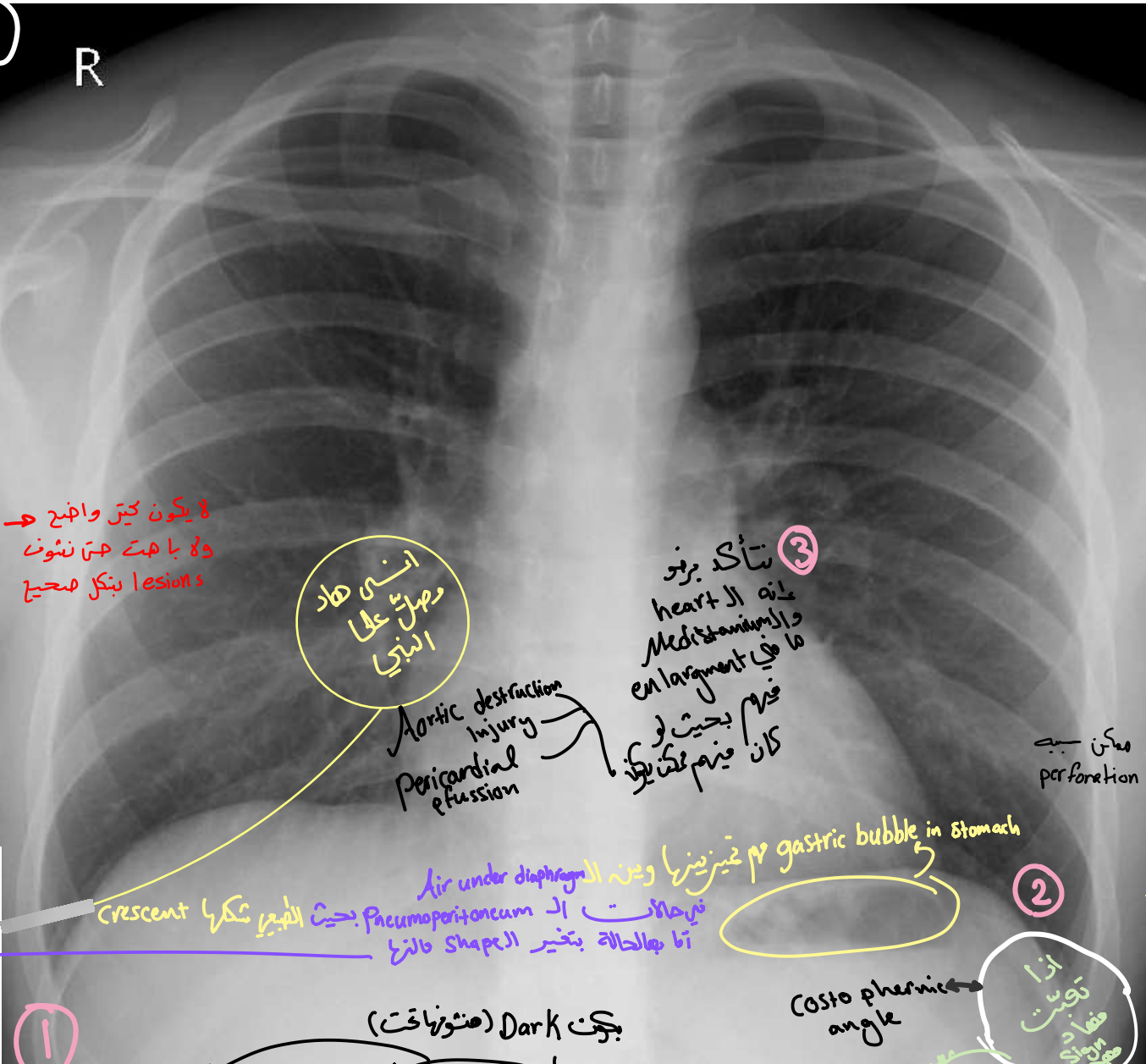
قبل ما تقرأ CXR لازم جددًا تتأكد من اسم المريض وعمره وحلوله لأنه من هيفضل التخل ويمكن تشخيص مرضه باسم مريضنا آخر لازم تكتب الحالة ولعينة الصورة والتاريخ مهم لأنه مثلا لو مريضنا تخرجنا لأطباء وعمل follow up بعد فترة وانت جيت التاريخ خطأ اح-خلف prognosis والتقارير هتأثر من ناحية تحسين المريض.

لا لازم خرد ال Right وال left لأنه مرات بجيني مريض عنده Congenital anomalies or Dextrocardia

يعني تكون كمية الأشعة مناسبة لأنه في مرضى عندهم صناد أو طويلين أو الاختلافات فليك في عيار لكمية الأشعة التي هتطبع إياها حسب وضع المريض

الصوره  
تكون عالية  
عشان تقرأ  
المهارة منيح  
بنحاول ناخذ أفضل نتيجة بأقل أشعة ممكنة  
بالزيت لأنه فوذي  
ويكسب بسبب مشاكل زي Cancer لأنه بيول Mutation & Abnormal Proliferation of cell

Normal CXR



لازم نستقي حالات  
emergency  
كيف؟ تتبع الترتيب

كيف نعرف هل هو  
centralized or not?  
لازم يكون ال Spinal process  
Medical end of clavical  
equal by the lateraly

لو كان طيل بعين أو يبار  
تختلف العمود + التشخيص

Exposure  
retrocardiac  
just visible

لا يكون كثير واضح  
وهو باهت حتى نشوف  
lesions بشكل صحيح

inspiration  
9-10 ribs posterior  
6-7 ribs anterior  
الادس بنها Diaphragm

المنى حاد  
رصاص على  
الذري

3 بتأكد برضو  
بانه ال heart  
وال Mediastinum  
enlargment  
فهم بحيث لو  
كان فيهم كذا

Aortic destruction  
injury  
Pericardial  
effusion

ممكن سببه  
perforation



يكون خط اورد قمت  
Diaphragm

بالعمود عينا  
diaphragm لونه كامل  
ايمن يعني سليم

gastric bubble in stomach  
Air under diaphragm  
Pneumoperitoneum  
Crescent shape  
بجيت الاضغير شكلها  
في حالات ال  
تا بحالطة بتغير ال Shape  
بالتالي



2

Costo phrenic  
angle

اننا  
تقبت  
مقادير  
pleural effusion

pleural effusion

1

بجيت Dark (متروناقت)

Loss of lung markings & edges → pneumothorax

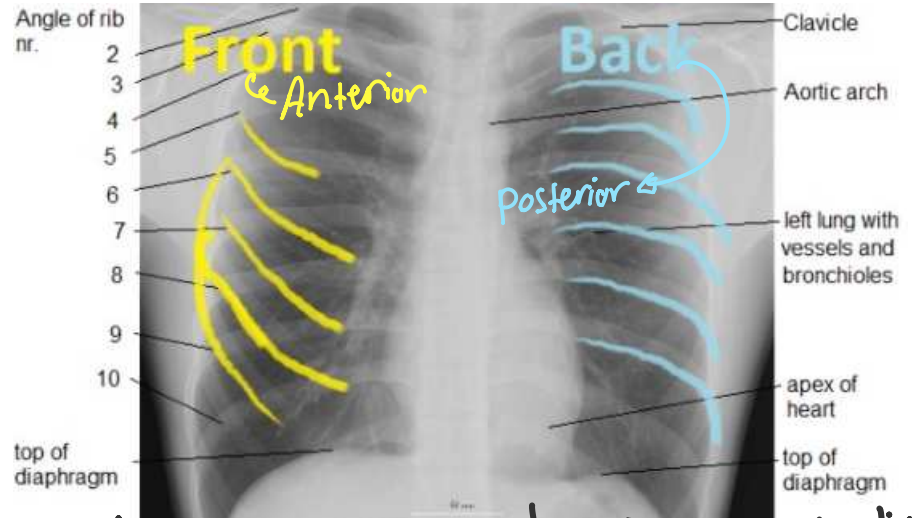
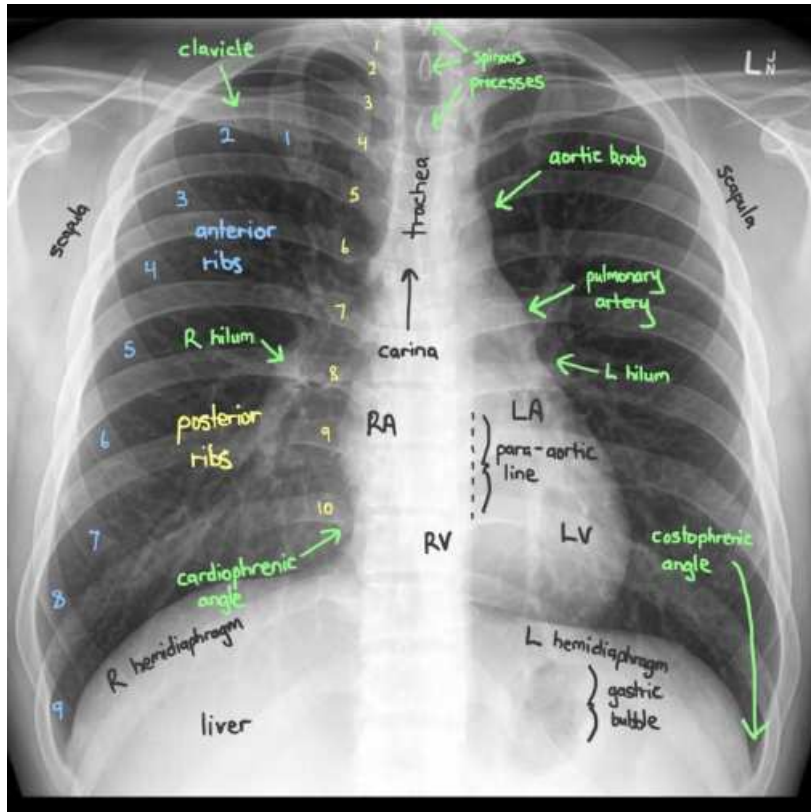
على تقبت مش تقبت  
لانه كنا تقينا واحدنا

خذلك نظرة



Pneumothorax. Upright chest radiograph shows a large pneumothorax causing the same end pleural surface of the lung.

\* هطلم صور خارجيه لتصورها الموضوع (كثير كونه الدكتور فضل بالصوره



لا حظ : ان left diaphragm اقل من الright عن ان heart

## Pneumothorax



- No vascular markings on right
- No shift of mediastinum to left
- Deep sulcus
- Atelectatic right lung
- Increased haziness on left: Diversion of entire cardiac output
- Small fluid level near costophrenic angle: Hydro pneumothorax

\* بس استثنى حالات ال EMR الي فوق وين صفيه:  
 بنفون ال lung هه شلا فيح inflated او pleural effusion  
 او Pneumonia او bronchopneumonia او tumor او  
 vascular abnormality وهاد كله بجي كاشيه بج  
 حالات ال EMR الي حكيينا عننا #

## Lateral view



بأن بخود منه خرابها لوفن أي Mass  
أو tumor أو Pneumonia أو أي شيء موجود  
هل هو Superior, Posterior, middle, anterior  
يعني دينا بالظلمة مكانه على أساس أحسن للجراح  
عنه هالكان حسب ال Segment التي هيكتنا عنها

هووا بين الرئة والقفص الصدري

pneumothorax → بكم حالات  
Trauma

ويجهد على Diaphragm ويؤدي للوفاة

gas appears black  
→ leads to death

gastric bubble

\* لازم نفوت

air under Diaphragm & pneumothorax

خط خفيف تحت  
Diaphragm

حكيئا عنه المكتوب فون يا

هنا نتأكد من الكالات الفارثة

• نتأكد لو هي pneumothorax

• air under diaphragm  
وبدها ما ننسى القلب

• enlargement

• bleeding

• Major vessel injury

مون شيئا على حالات الفارثة



# PNEUMONIA

بدرها نشوف لو في  
① infection ② tumor  
تيجي 2 line لانها لا تكدر حياة المريض

- Is an inflammation of the lung, which can be caused by a variety of micro-organisms, including bacteria, viruses, and fungi.
- Lobar pneumonia: inflammation confined to a lobe of the lung.
- Bronchopneumonia: refers to bilateral multifocal areas of consolidation. < patchy >

Pneumonia can be classified into:

- ❖ **Primary pneumonia** : arising in a normal lung.
- ❖ **Secondary pneumonia**  
result of a disease or abnormality already present in the lung.

# Pneumonia / 2

Primary ←  
Occurs in a healthy Lung  
Secondary ←  
Ptn has already lung condition

- ❖ With treatment most types of bacterial pneumonia can be resolved within 2 weeks.
- ❖ Viral pneumonia may last longer.
- ❖ Mycoplasma pneumoniae pneumonia may take 4 weeks to resolve completely.

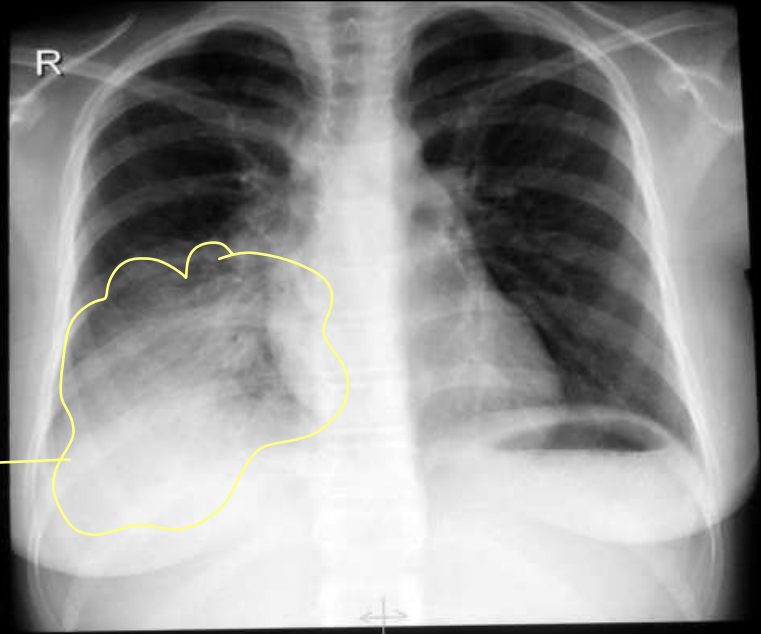
radiological changes  
← حتى يبه العلاج وتحسن  
الريئة يتصل موجودة  
بها اسبوعين إلى اثنين حتى ترجع  
طبيعية

❑ What examinations should be considered in patients with pneumonia that does not resolve as promptly as it should? *في حال ما بين على CXR؟*

✓ CT scan

✓ Bronchoscopy → تنظير  
القصبات

2 Views → يفحص في الاشعة



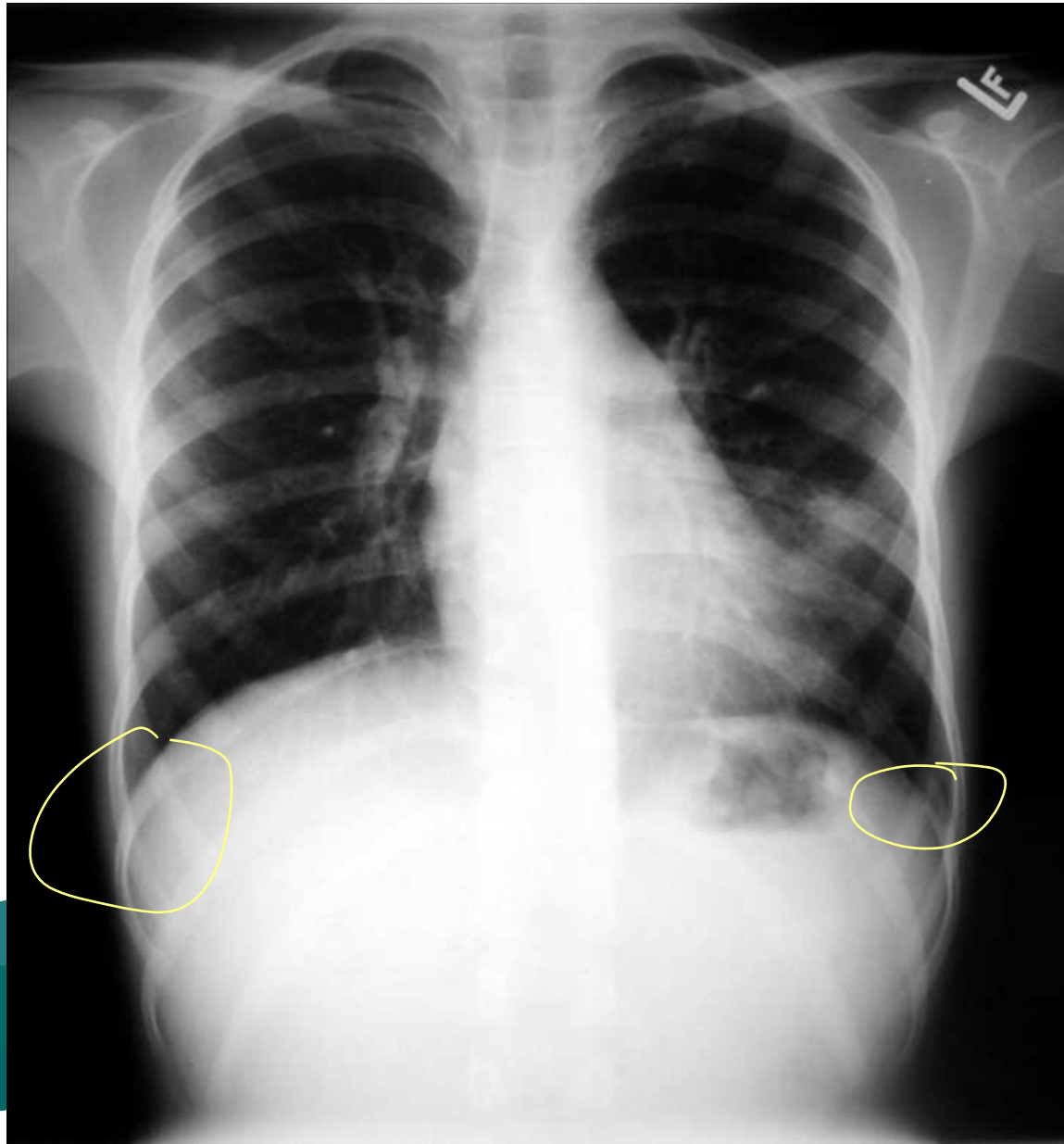
حتى تعرف وفتح tumor or mass  
if anterior, posterior, medial or lateral (حكيانا !!)

Borders of the heart اذا قدرن تشوف  
Typical pneumonia (posterior) من اللون اللبيح بنحدد  
يعني

ففي حد فاصل بين ال heart وال pneumonia  
بحيث اذا بقدر ترسم خط بين ال heart  
وبين ال infiltration صغارت هاي  
لا heart لان ال Segment ال  
ملاصقة بال heart هي ال Middle فلو كانت  
ال Middle involved ما بتبين ال heart border

ومن هون عرفنا انها  
lower lobe pneumonia  
not bronchial pneumonia  
usually patchy & multilobed





أي شيء يتوقف  
أبداً حتى  
هناك شك  
بالـ Pneumonia

Pneumonia +  
obliteration of  
costophrenic angle

المزودنا تكون sharp  
لكن هون اختفت دليل على  
انه في pleural effusion مع  
pneumonia

GHAMDI, ATHEER SULTAN  
107616  
15/07/95  
F, 12Y  
15/07/07  
01:48:30



V033 Thorax pa  
V 125.0  
mAs 1.16

GHAMDI, ATHEER SULTAN  
107616  
15/07/95  
F, 12Y  
15/07/07  
01:48:51

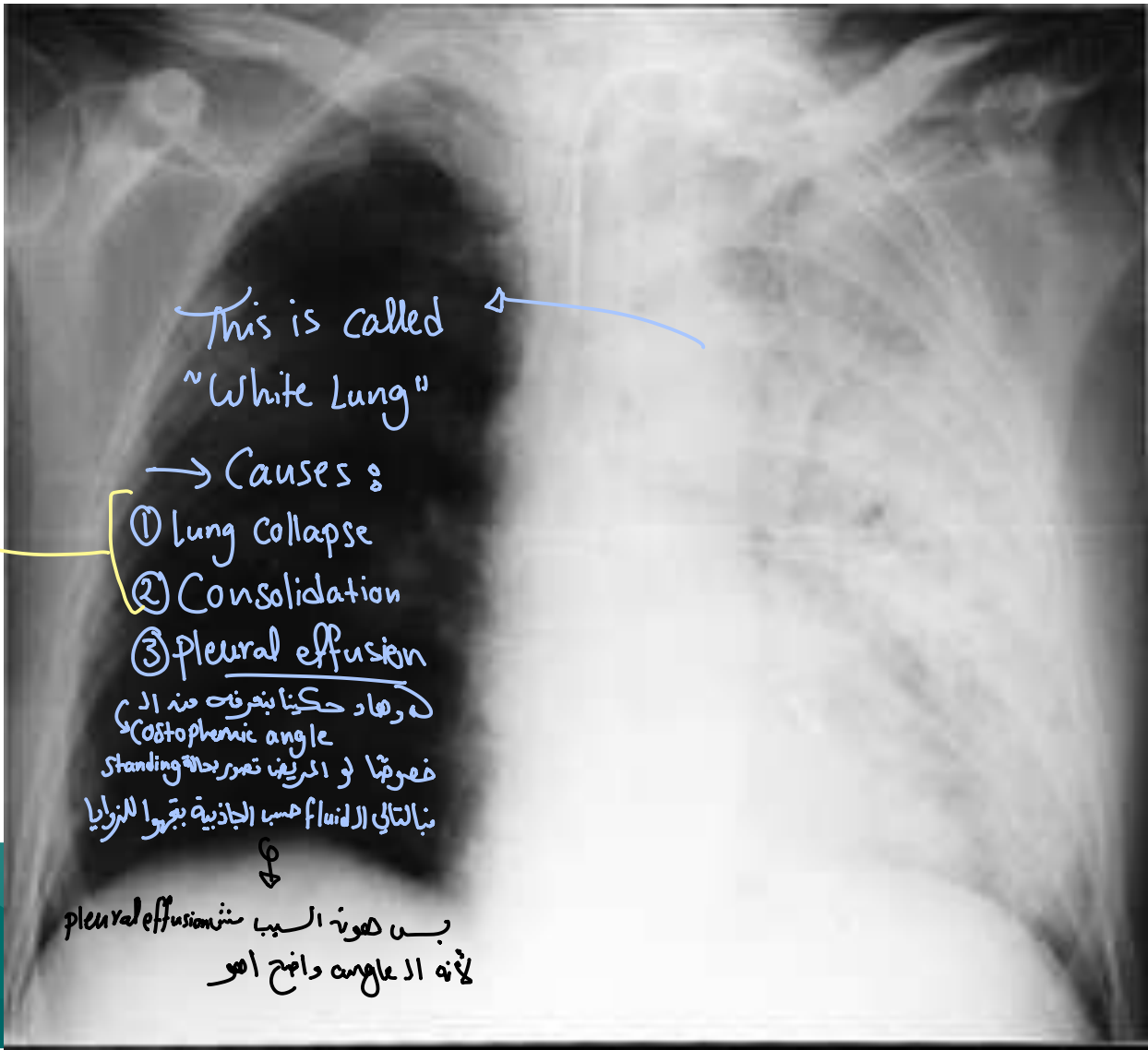


V034L Thorax lat  
V 125.0  
mAs 3.89

- bronchopneumonia ←
- it is patchy
- white lung
- air bronchogram → typical complete lung pneumonia
- Involvement of left lung







This is called  
~"White Lung"

→ Causes :

- ① Lung collapse
- ② Consolidation
- ③ pleural effusion

Costophrenic angle

فوقها لو المرئيا تصور بحالة standing  
بنالتالي ال fluid حسب الجاذبية بقروا للزوايا

pleural effusion  
بس هونة السبب شئ pleural effusion  
لأنه ال angle واضح هو

Typical  
complete  
lung process  
involvement  
of left lung

يتميزهم عنه شو ؟  
من شي اسمه  
Air bronchogram  
والتي هي نفس ال  
التي موجودة جوا بتكون  
infiltration وال spare  
بال Lung parenchyma  
وهالعادة بتكون  
pleural effusion كلها  
بتكون أبيض زي  
المصورة التي بالأسفل  
التي تحت

An air bronchogram is a pattern of air-filled (low-attenuation) bronchi on a background of opaque (high-attenuation) airless lung.

خفوف جواء تتخل البيضاء :  
pneumonia  
bronchi





Right

Pleural  
effusion ←

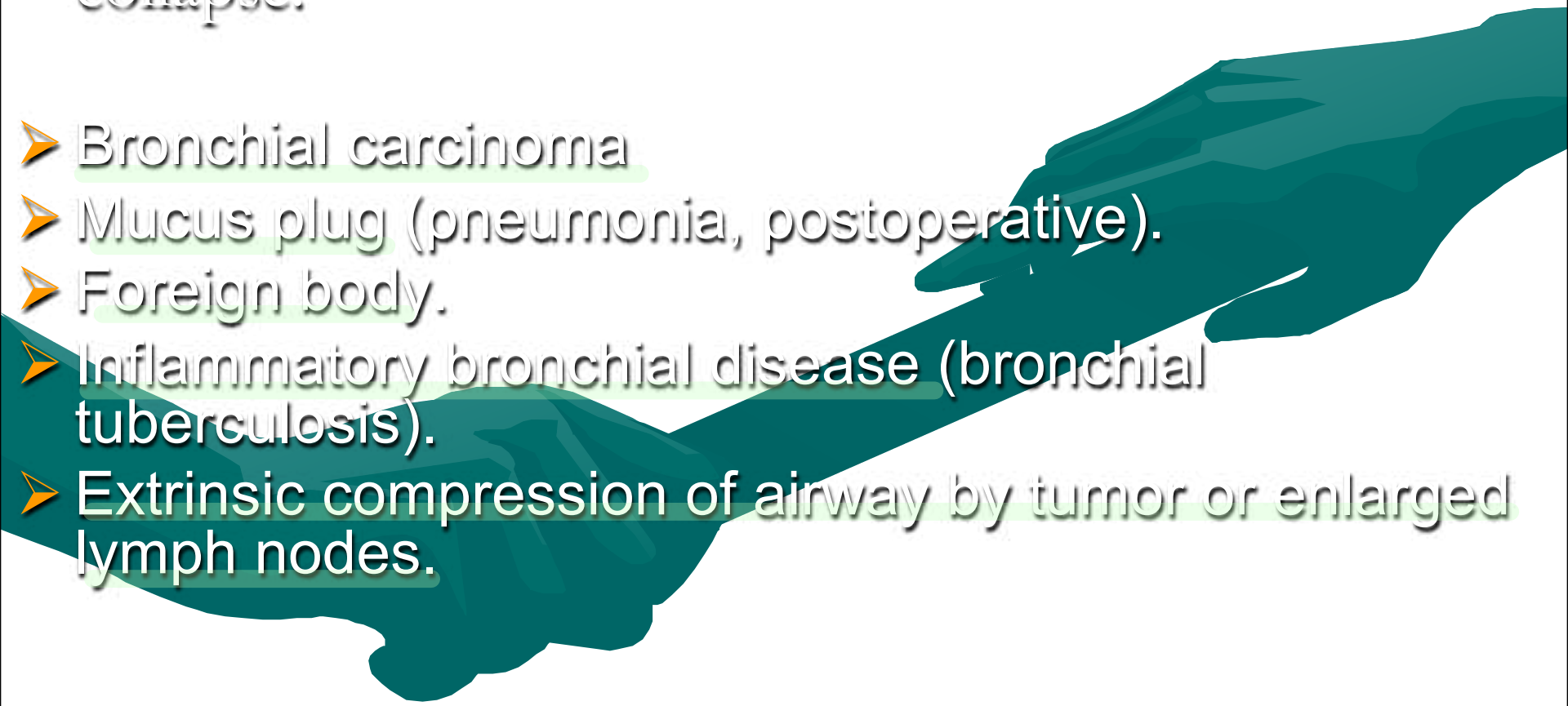
# Pulmonary collapse

→ لونه ابيض +  
shifting جمل

هيك تنقل الرئة وتسحب القلب  
باجامها + طافي broncogram

- ❖ Pulmonary collapse or atelectasis refers to a decrease in volume of a lung, lobe or segment.
- ❖ Obstruction to flow of air is the most common cause of collapse.
- ❖ Air in the alveoli is absorbed and because no further air enters the alveoli distal to the obstruction, the lung tissue collapses and becomes more opaque

# Pulmonary collapse / 2

- ❑ Common causes of bronchial obstruction causing collapse:
    - Bronchial carcinoma
    - Mucus plug (pneumonia, postoperative).
    - Foreign body.
    - Inflammatory bronchial disease (bronchial tuberculosis).
    - Extrinsic compression of airway by tumor or enlarged lymph nodes.
- 
- A large, stylized teal graphic of a hand reaching from the right side of the slide towards the center, partially overlapping the list items.

• غالباً تحدث في الأطفال لا دائماً بحسب  
عندهم foreign body aspiration

• حش سمل التمييز بينه وبين pneumonia  
حتى احياناً على الأطباء

Typical apical lobe  
right collapse



collapse

لما يصير collapse يتسحب الlung الي جنبنا لانه الspace يتوسع  
⊕ الlung يتعزز بالحجم لانه هو كبيره بسبب الgases فإذا لم يتعزز

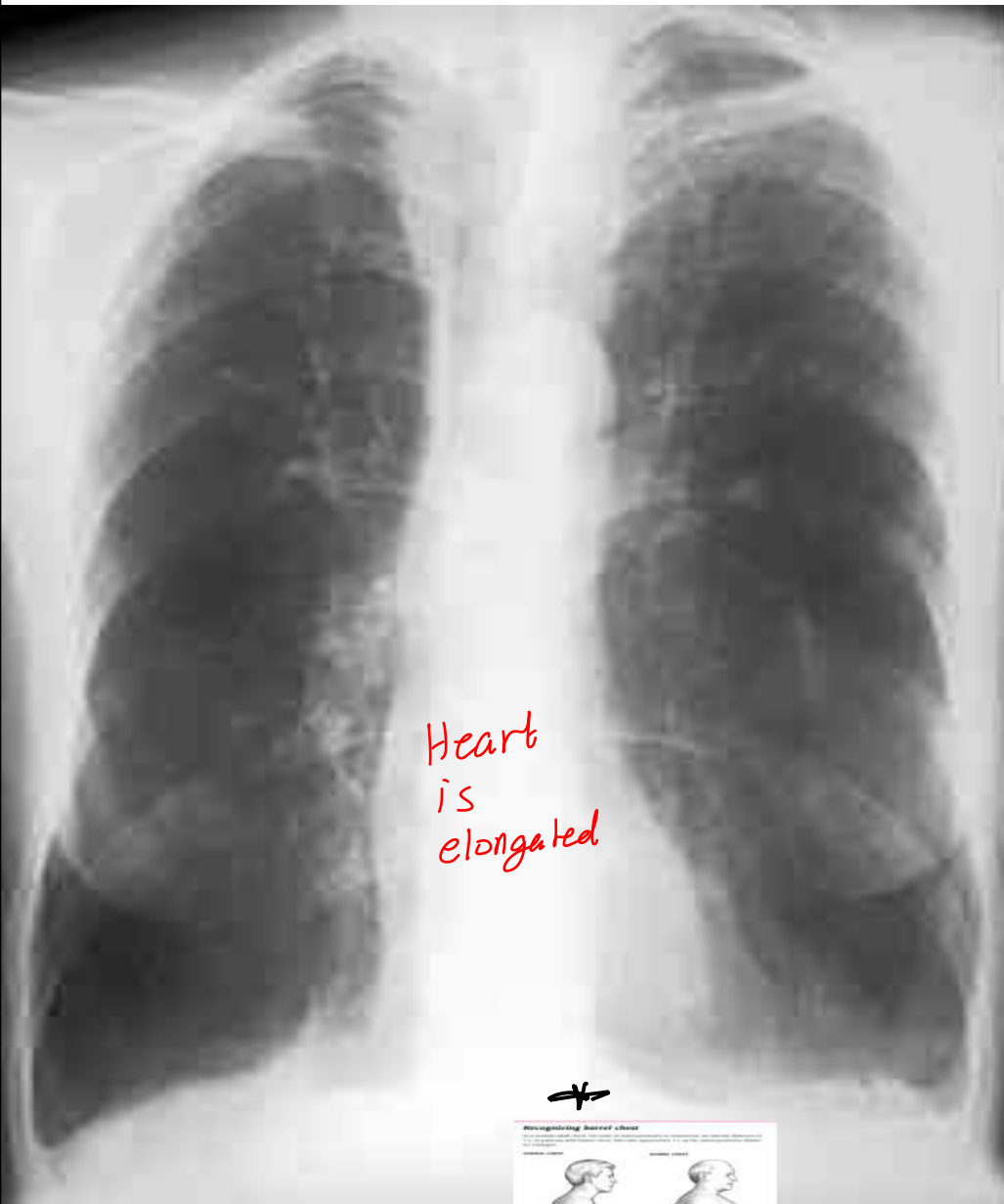
# Emphysema

- Is an increase in the size of the air spaces distal to the terminal bronchioles, with dilatation or destruction of their walls.
- The lung appear more translucent with reduction in size and number of the small vascular markings.
- The diaphragms are low and flat.
- The heart shadow is long and narrow.
- The postero-anterior diameter of the chest is increased in the lateral view resulting in barrel chest.

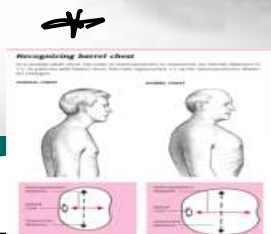
لو لونه ال (lung) بتكون متوهجة كبيرة  
بس مغلما بتكون Non-function  
فبالاقي المريف مع SOB

# Emphysema bullae in COPD

# Barrel chest



Heart is elongated



← العرجا زاد عمار كانه بلون anterior posterior diameter (AP Diameter) in Barrel chest it is increased.


# ***Pleural effusion***

Is fluid collection in the space between the parietal and visceral layers of the pleura, usually contains serous fluid, but may have differing contents.

- **Haemothorax**: blood, usually following trauma. -
- **Empyema**: purulent fluid (pus). -
- **Hydropneumothorax**: fluid and air. -

# Pleural effusion / 2

## Radiological features of pleural effusion on a chest x-ray:

- Homogeneous opacification.
- Loss of the diaphragm outline. 
- No visible pulmonary or bronchial markings.
- Concave upper border which appear higher laterally.
- blunting or obliteration of the costophrenic angle.



Right side  
Plural effusion

\* meniscus sign

C-shaped

كأنه يتكسب من

C-shaped surface

لأنه الي بقفل خارجية  
"التلاصق والتماسك"

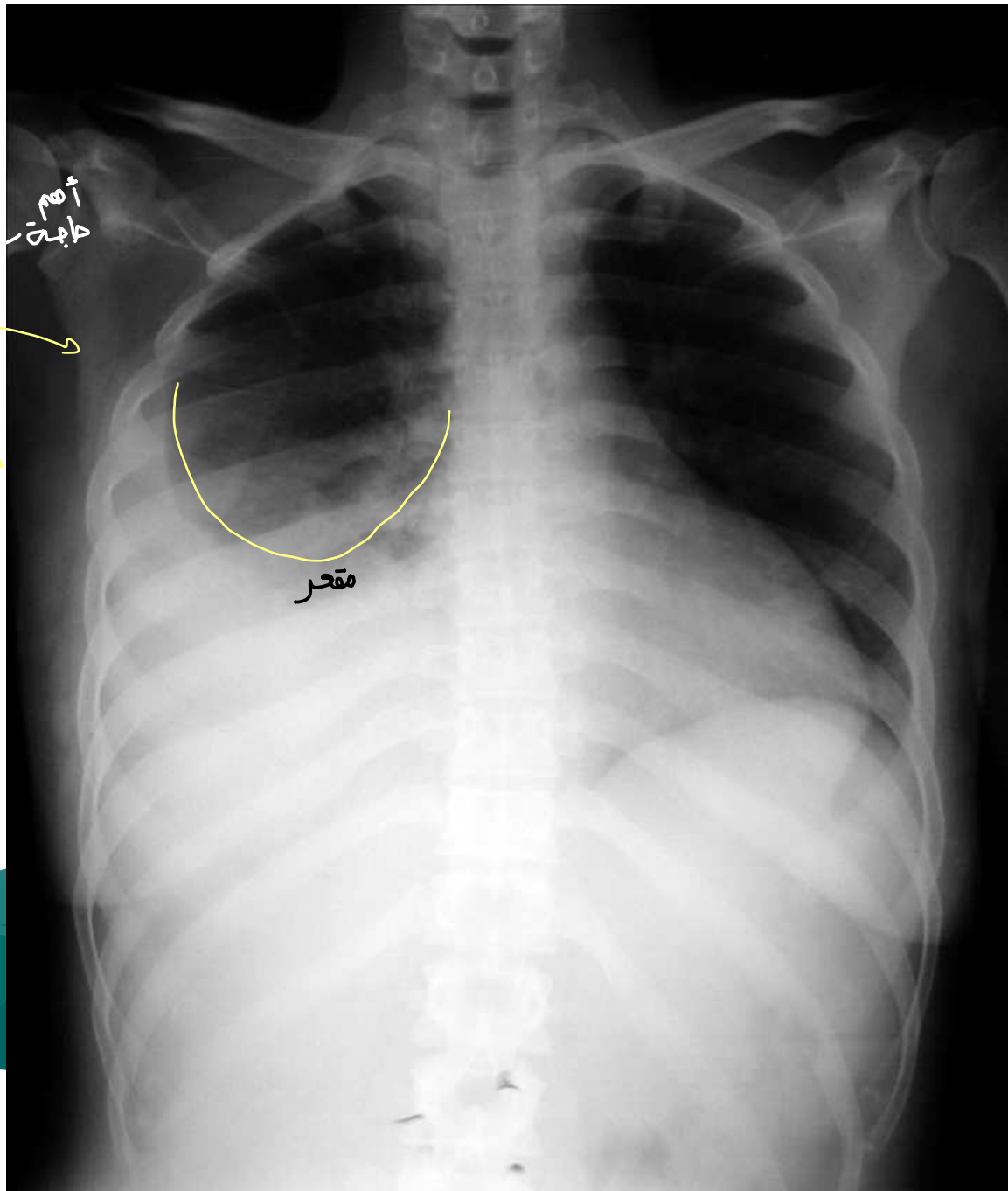
يتكسب بكل  
الجزء الموجوده فيه

\* C-shaped  
periphery

الجزء من center



هاي من عندي بي اوضح



R.T effusion



# Pneumothorax

- Is the presence of free air in the pleural space, by a tear in either the parietal or visceral pleura.
- The most common cause of pneumothorax is chest injury, but the most common cause of spontaneous pneumothorax is rupture of sub-pleural emphysematous bullae (bleb).

Visceral

# Radiological features of pneumothorax

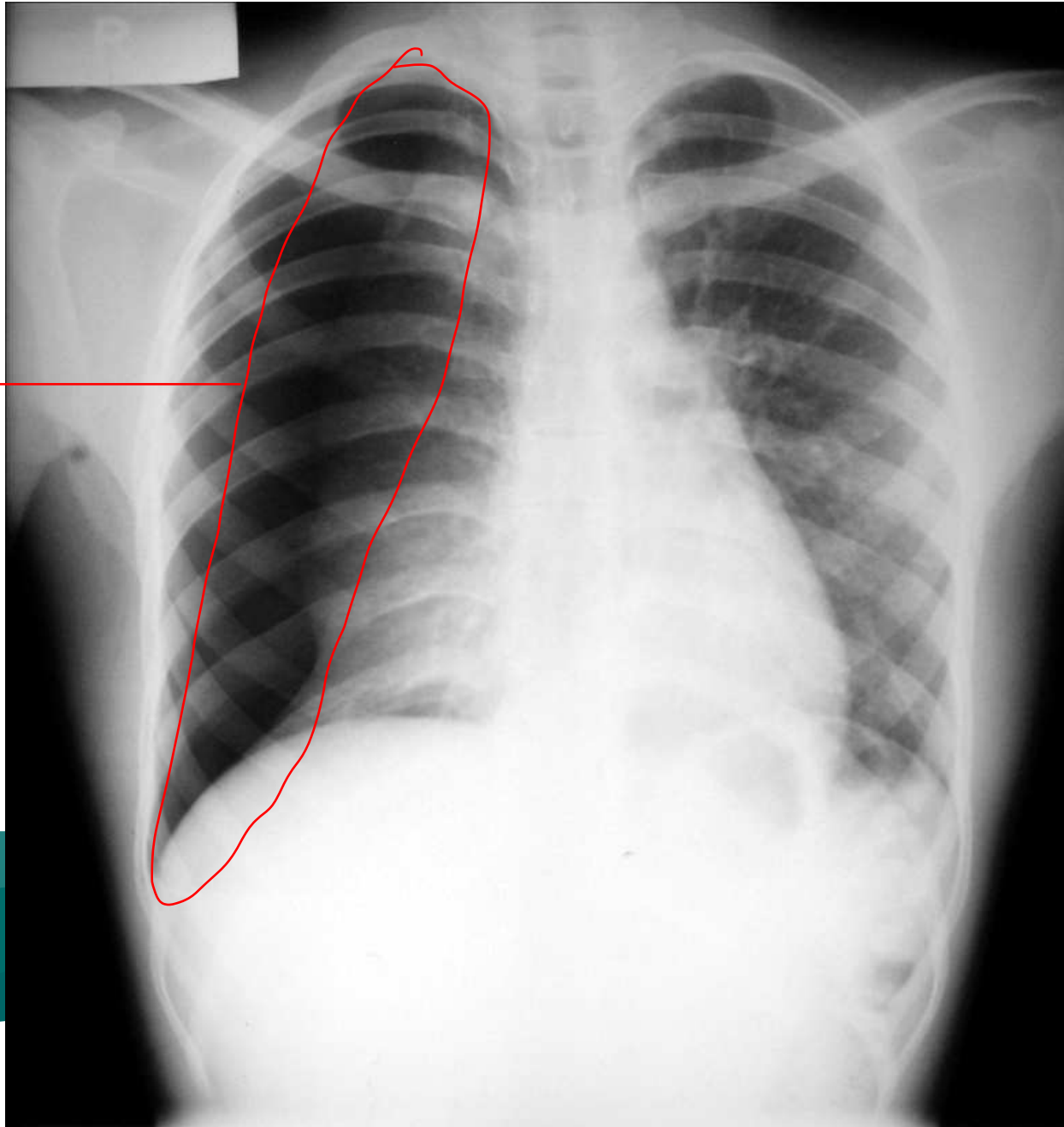
١٢ نقطة

visceral pleura

- **Lung edge**: a thin white line at the lung margin, represent the visceral pleura.
- **Absent lung markings** between the lung edge and chest wall.
- **Mediastinal shift**: occur when a tension pneumothorax develops.

الحل لا Pneumothorax ؟  
حسبنا من قبل  $\frac{1}{2}$  ← تركيب Chest tube  
لتفريخ الهواء

هوا داخل  
سینه چپ  
Pneumothorax



E55020  
17/04/2017 12:21:44  
117 4 2017 0014 23  
01 21

### tension pneumothorax

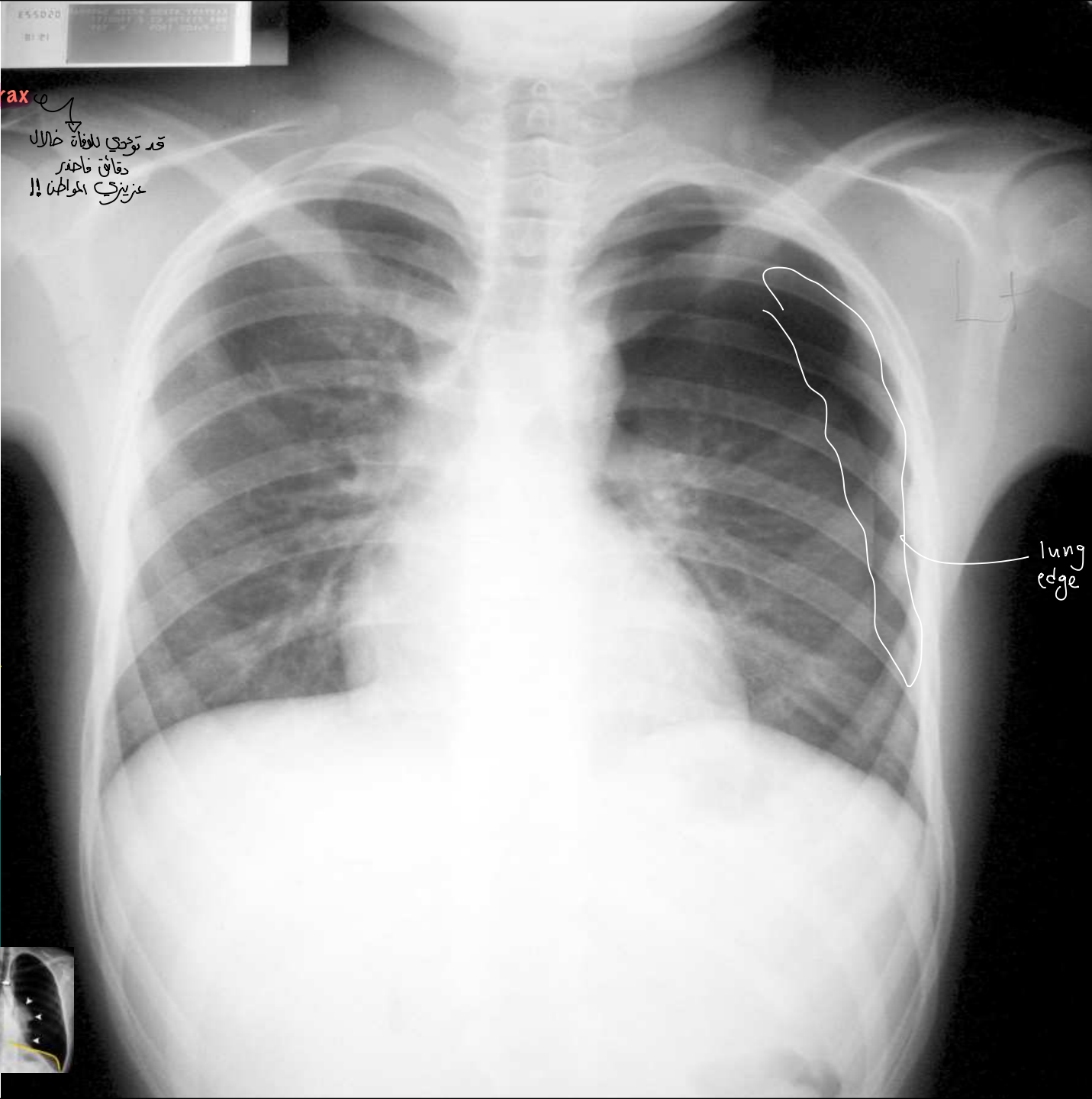
severe condition that results when air is trapped in the pleural space under positive pressure, displacing mediastinal structures and compromising cardiopulmonary function.

قد تؤدي لوفاة خلال دقائق فاحذر عزيزي المواطن!

المواء بهض حا  
بطلع بهض حا  
على القلب وممكن  
تخترقه وتقتل

Clinical  
Emergency

\* lung edge goes down



lung edge



# WHAT IS SOLITARY PULMONARY NODULE ?

- It must be nodular or roughly spherical.
- Not larger than 3cm in diameter.
- About 40% of solitary pulmonary nodules are malignant.
- A nodule is assessed for its:

\* يجب بالاقبال استخدام مصطلح Most likely يعني Tumor لأنه مرادف  
بكون شكرا شكل benign بما يكشف نظريا Malignant والعكس صحيح

## - size →

The larger the nodule, the greater the likelihood of malignancy.

greater

## - Margins

Irregular contour or spiculated margins increase the probability of malignancy

بكون كل ما كانت الحواف  
كل ما كان احسن

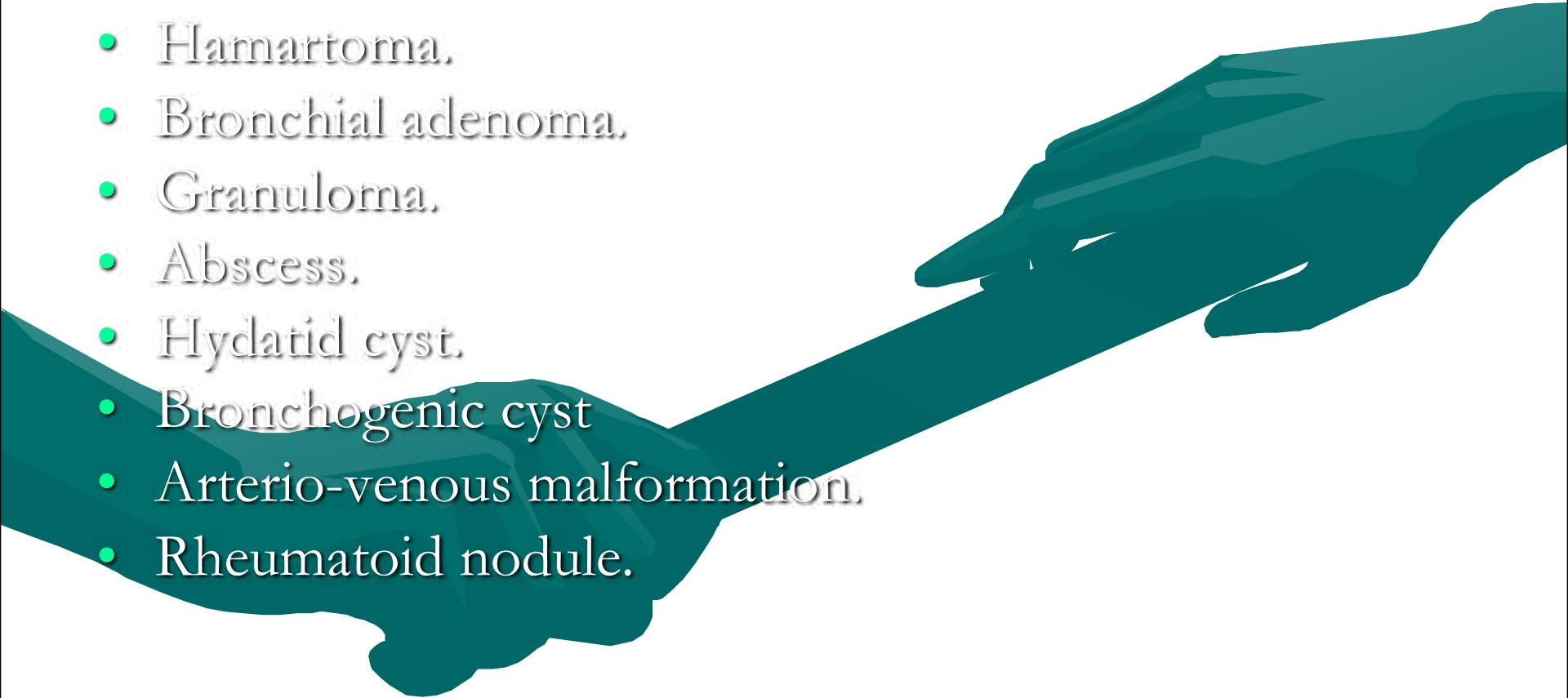
## - Calcification

The presence of calcification within a nodule are in favor of benign lesion.

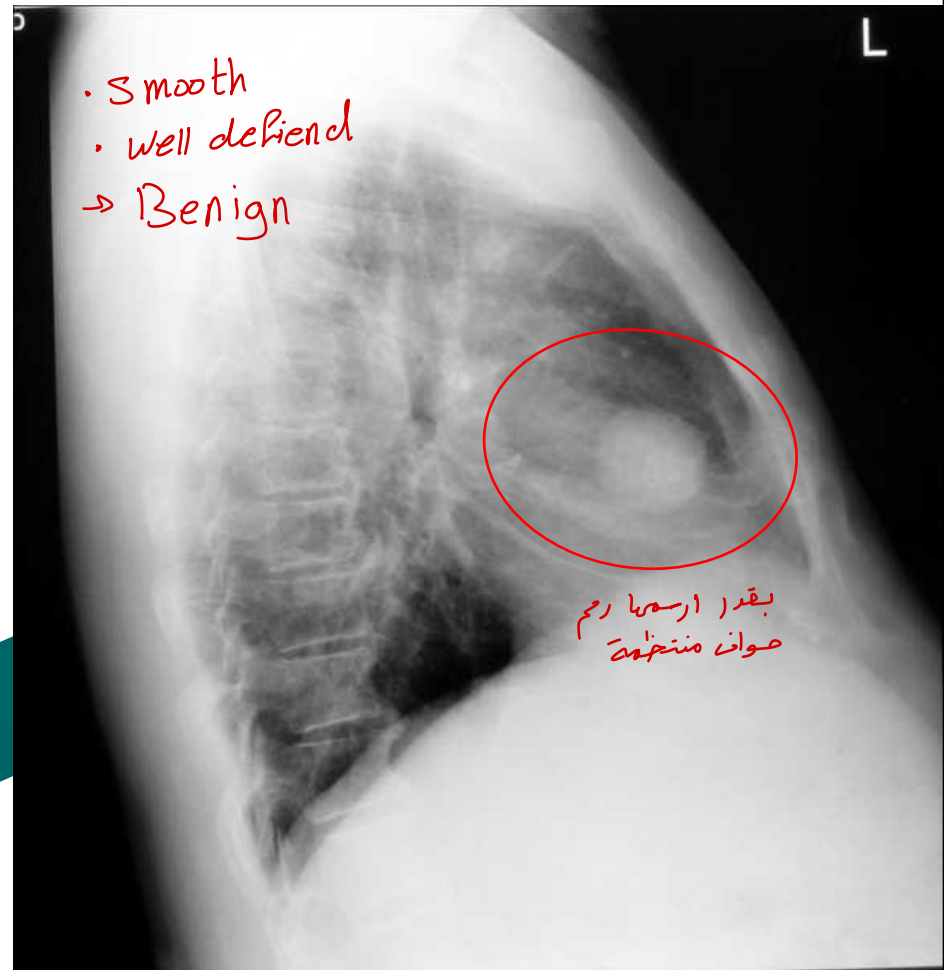
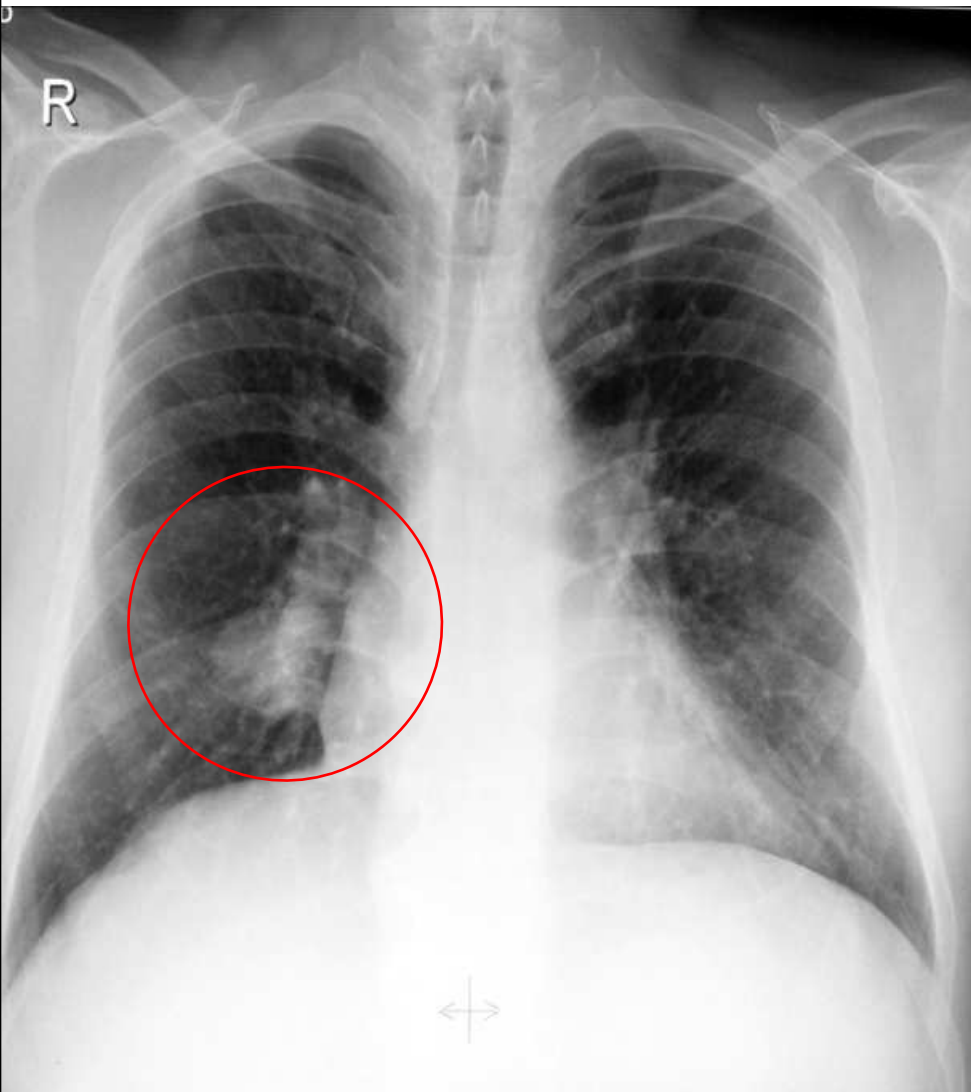
↓  
المز

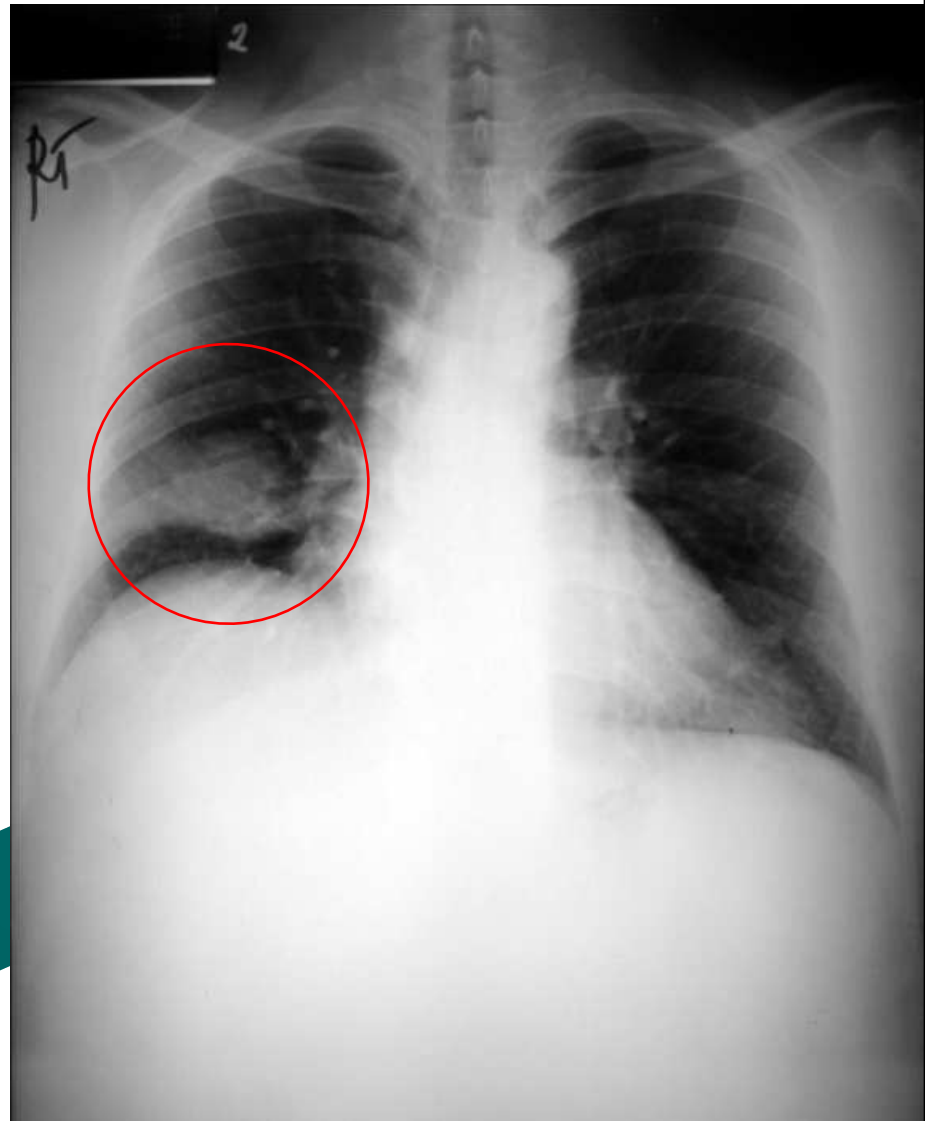
# CAUSES OF SOLITARY PULMONARY NODULE

- Bronchial carcinoma.
- Metastasis.
- Hamartoma.
- Bronchial adenoma.
- Granuloma.
- Abscess.
- Hydatid cyst.
- Bronchogenic cyst
- Arterio-venous malformation.
- Rheumatoid nodule.









# THE MEDIASTINUM

The mediastinum is situated between the lungs and extends from the thoracic inlet superiorly to the diaphragm inferiorly.

The mediastinum is divided into three parts:

## 1- Anterior mediastinum

Is the space in front of the anterior pericardium and trachea.

## 2- Middle mediastinum

Lies within the pericardial cavity.

## 3- Posterior mediastinum

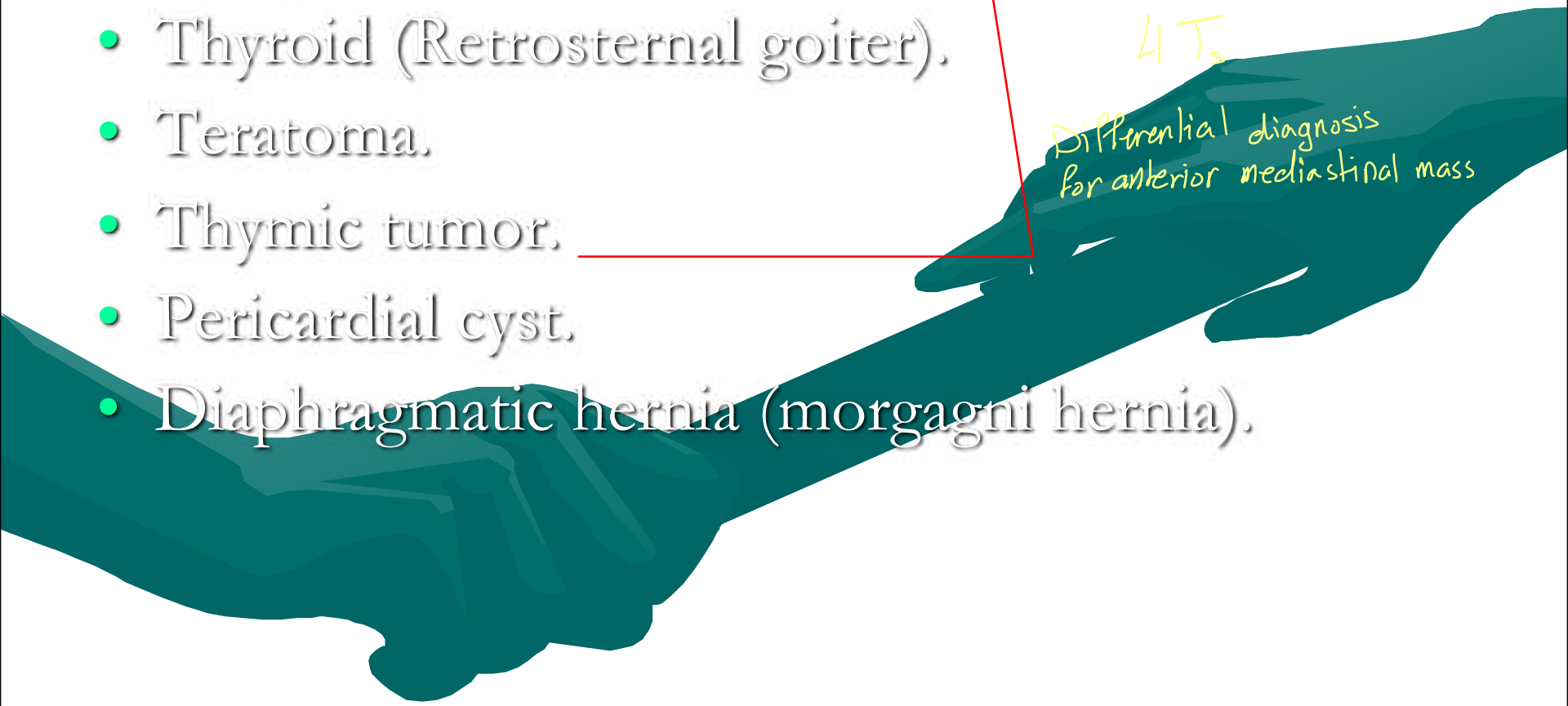
Lies behind the posterior pericardium.

# ANTERIOR MEDIASTINAL MASSES

- Lymphoma.
- Thyroid (Retrosternal goiter).
- Teratoma.
- Thymic tumor.
- Pericardial cyst.
- Diaphragmatic hernia (morgagni hernia).

4Ts

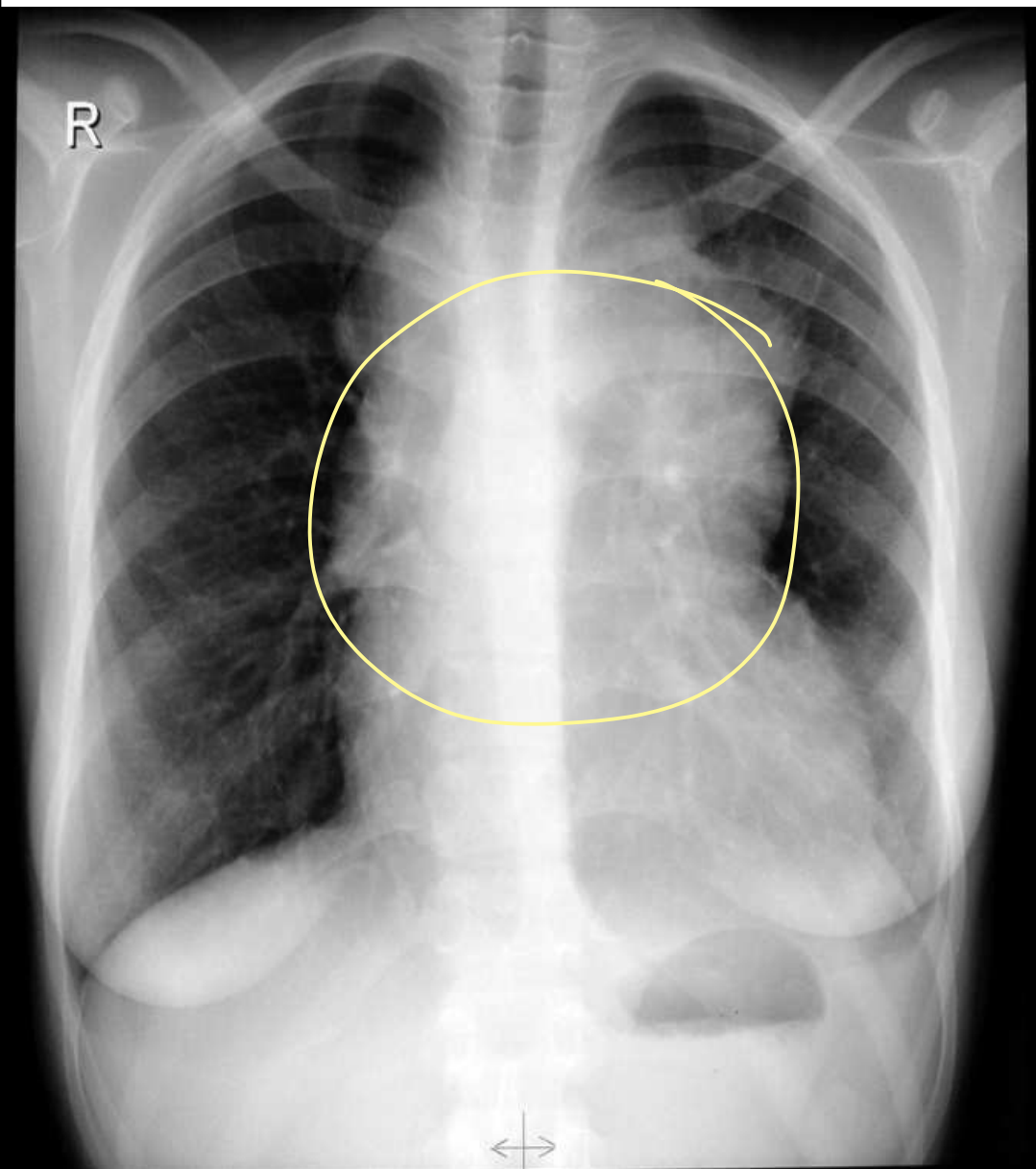
Differential diagnosis  
for anterior mediastinal mass



# MIDDLE MEDIASTINAL MASSES

- Lymph node enlargement:
  - lymphoma
  - primary tuberculosis
  - sarcoidosis
- Bronchogenic cyst.
- Aneurysm of aortic arch.

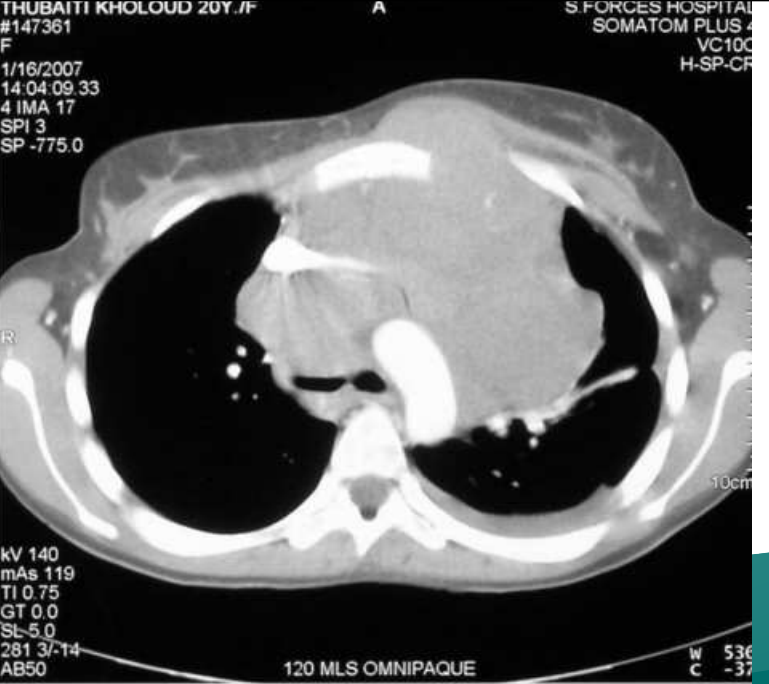
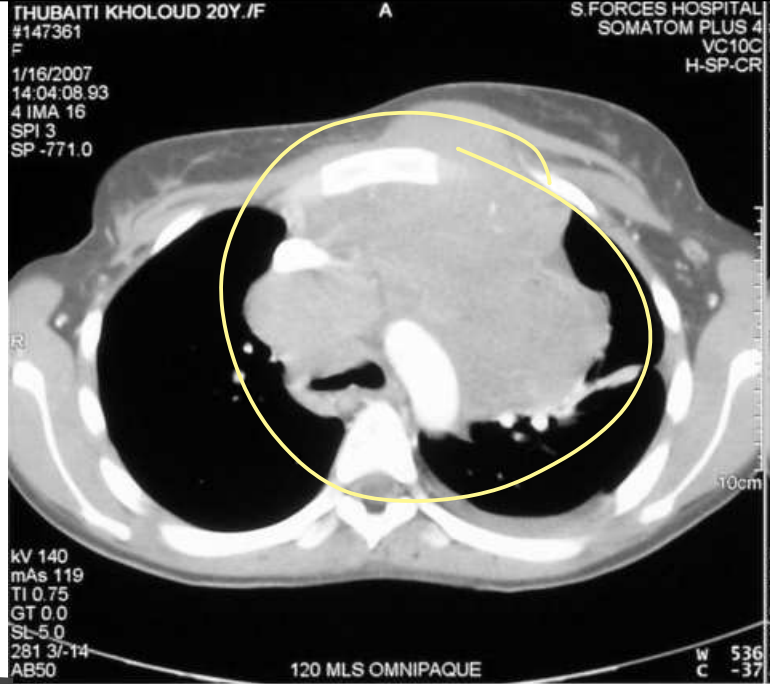




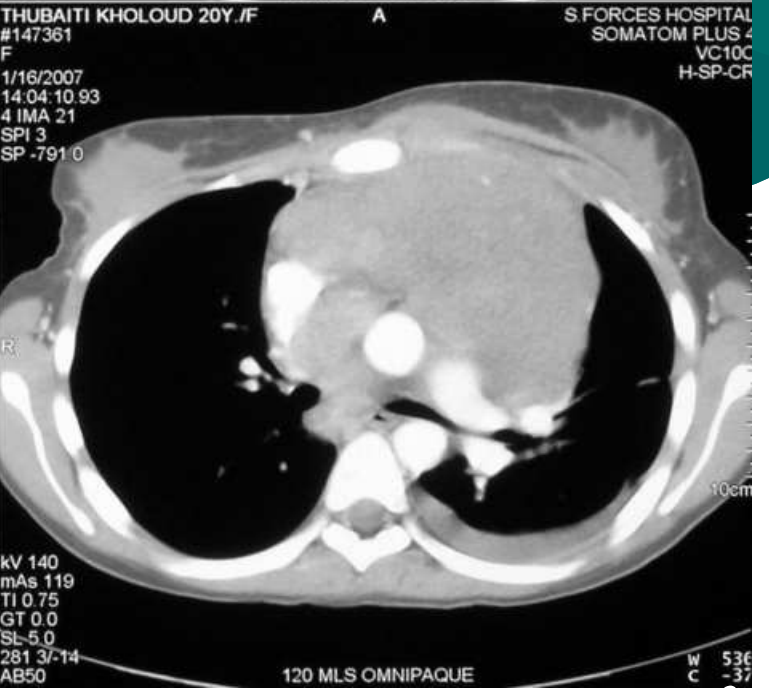
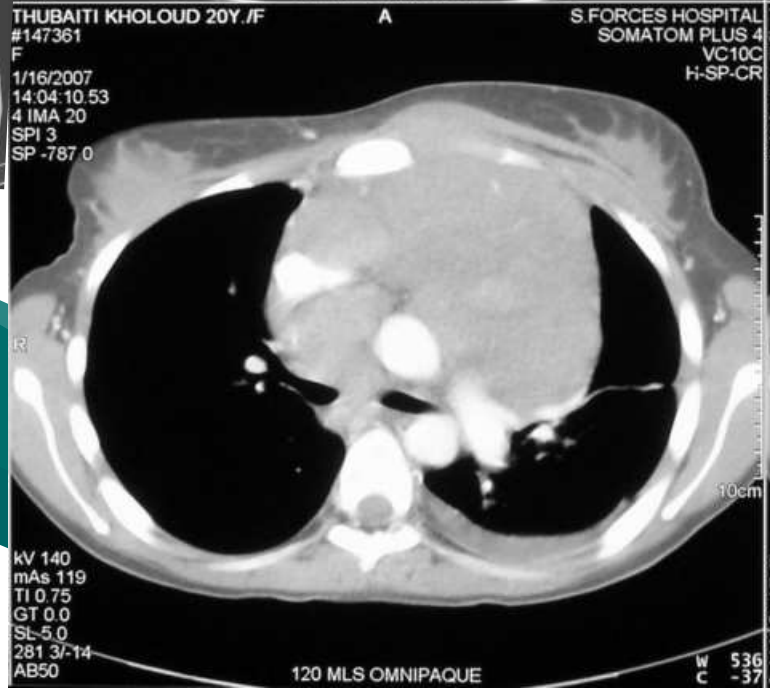
*Anterior mediastinal mass*



اولين  
on CT  
scan

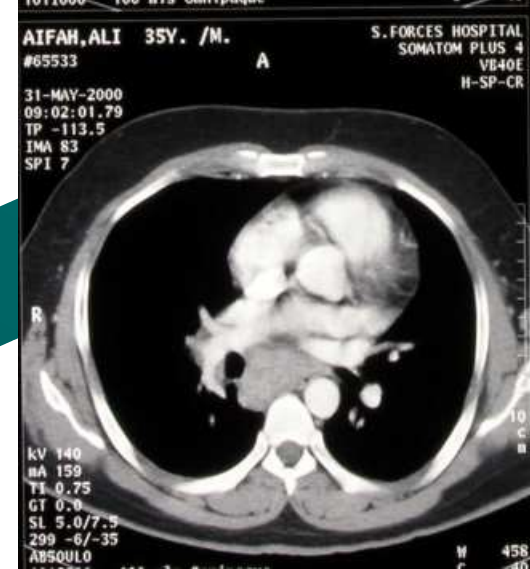
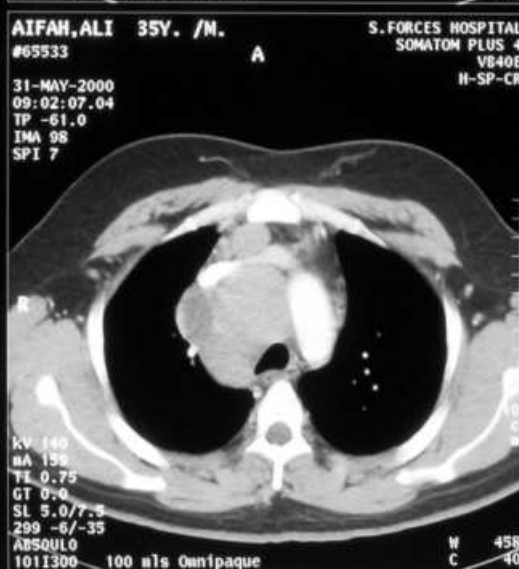
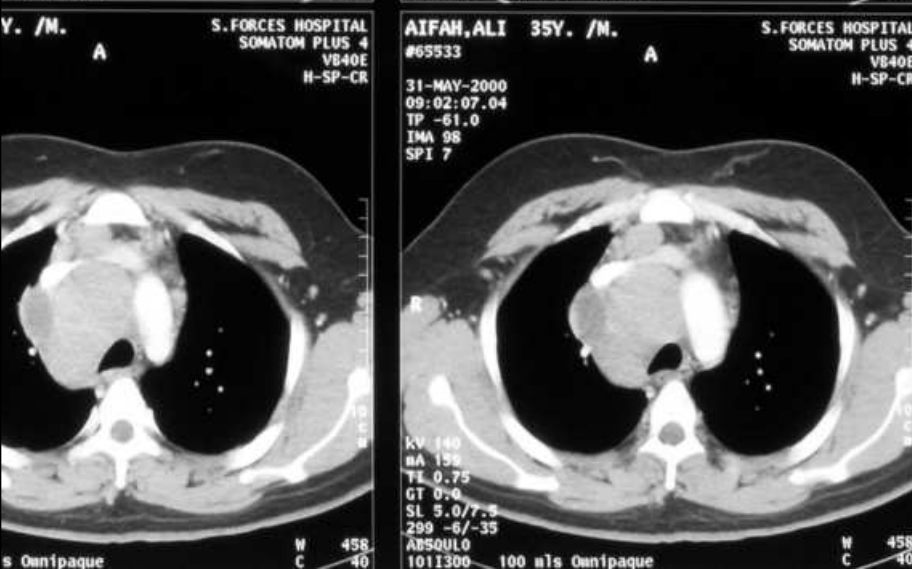
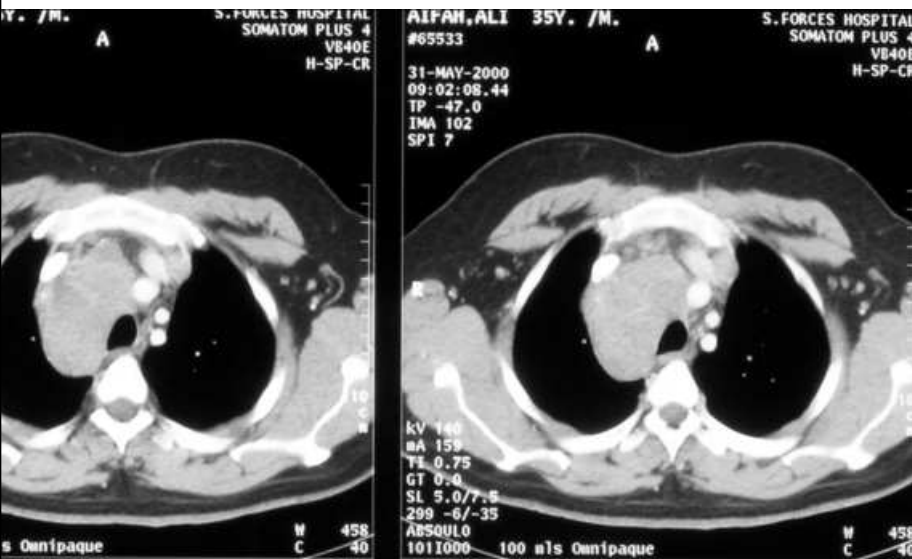


Normal  
لا اذيفتها  
حتى نقرر نقارن



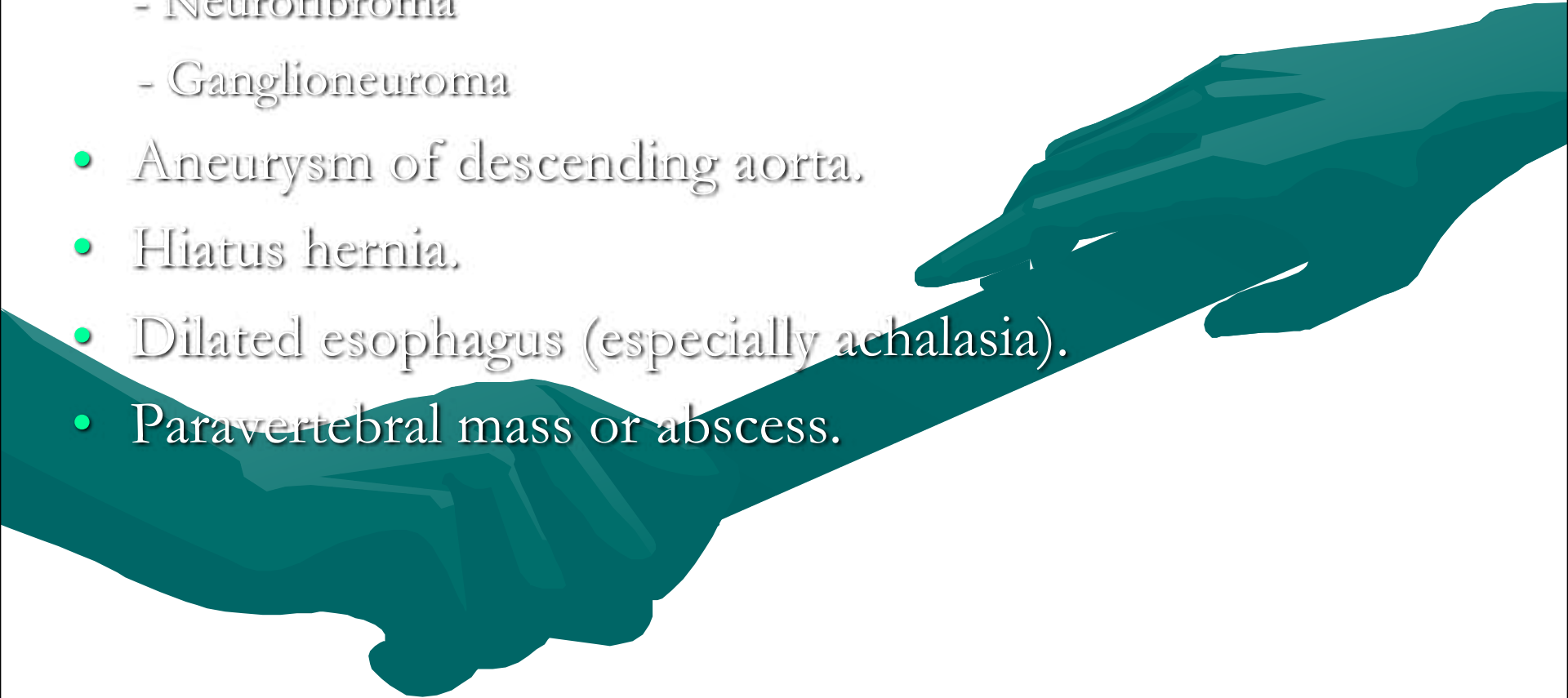


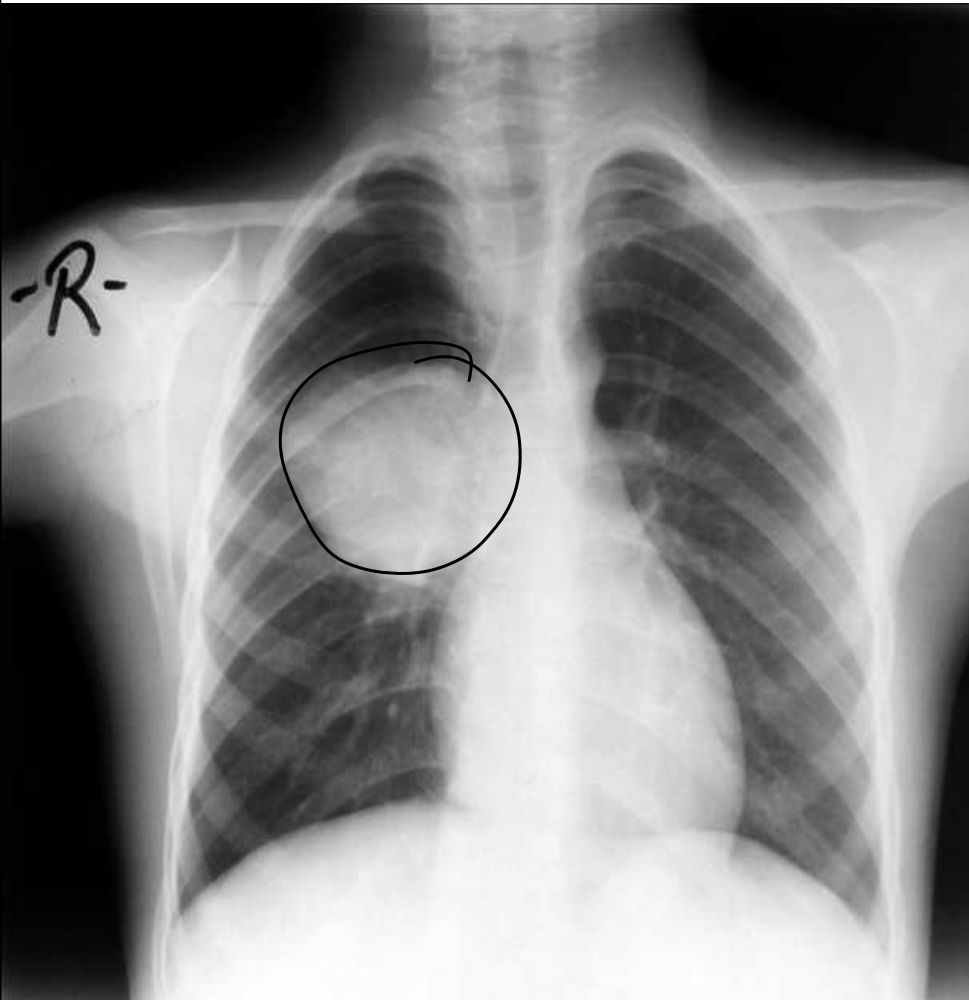




# POSTERIOR MEDIASTINAL MASSES

- Neurogenic tumors
  - Neurofibroma
  - Ganglioneuroma
- Aneurysm of descending aorta.
- Hiatus hernia.
- Dilated esophagus (especially achalasia).
- Paravertebral mass or abscess.

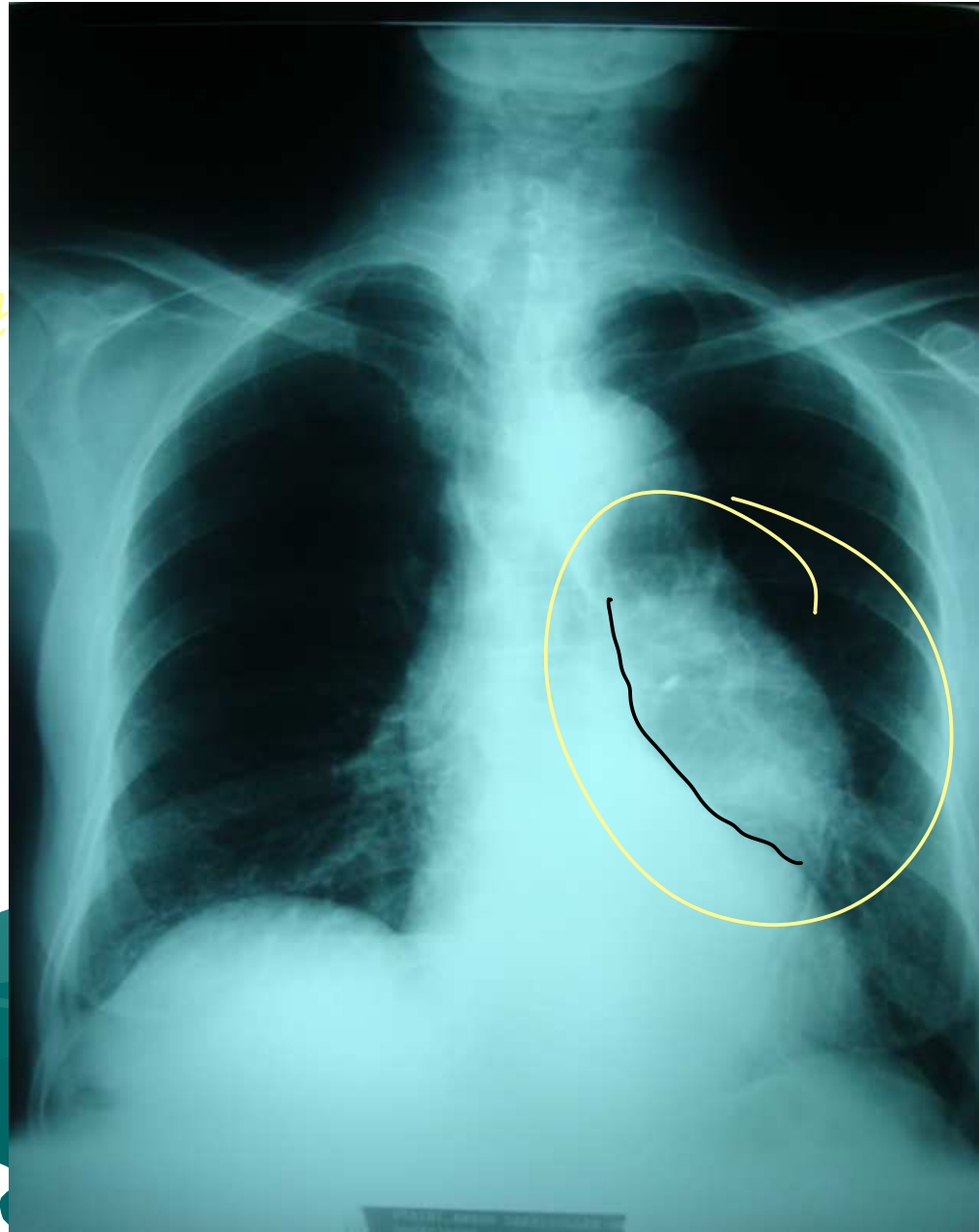




+ aortic aneurysm  
▷ posterior to heart



ایک گھورا علی جنب  
ہی لٹو کھینچ



SOMATOM DR H SFH RIYADH  
OTAIBI AWEDH DAKHILULLAH 97Y.&403008 HC3  
17-AUG-97 FRONT 1 27  
08:33:04 H/SP  
DA0:039  
SCAN 61  
CAL.REQ.

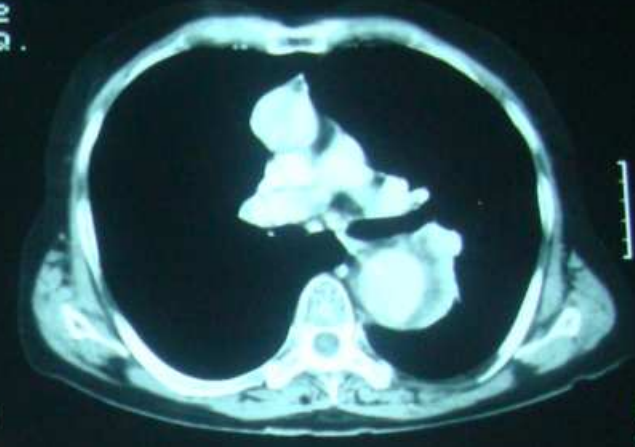


LEFT  
5 CM

TI 4  
KV 125  
AS .21  
SL 8  
GT 0  
TP 105  
W 400  
C 40  
100MLS/OMNIPAQUE/BOLUS  
INFUSION GASTROGRAFIN

SOMATOM DR H SFH RIYADH  
OTAIBI AWEDH DAKHILULLAH 97Y.&403008 HC3  
17-AUG-97 FRONT 1 27  
08:33:12 H/SP  
DA0:040  
SCAN 62  
CAL.REQ.

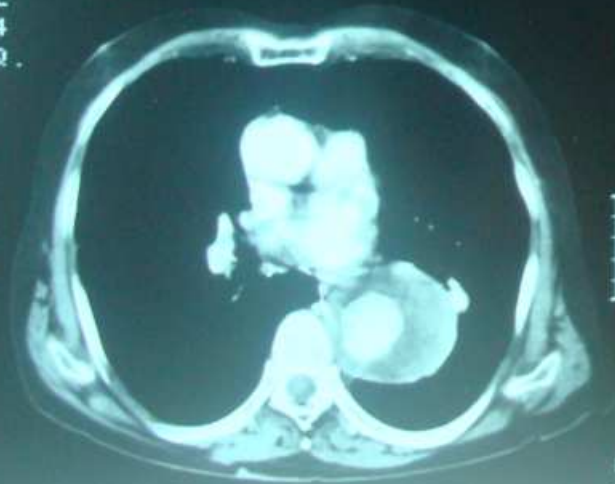
السيد، افاضة



LEFT  
5 CM

TI 4  
KV 125  
AS .21  
SL 8  
GT 0  
TP 113  
W 400  
C 40  
100MLS/OMNIPAQUE/BOLUS  
INFUSION GASTROGRAFIN

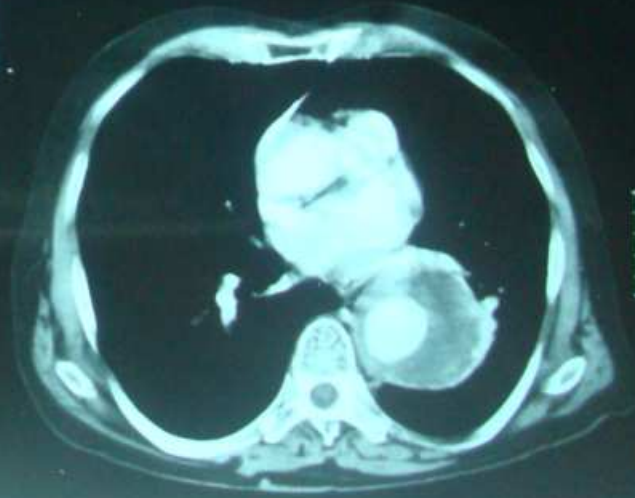
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17-AUG-97 FRONT 1 27  
08:33:29 H/SP  
DA0:042  
SCAN 64  
CAL.REQ.



LEFT  
5 CM

TI 4  
KV 125  
AS .21  
SL 8  
GT 0  
TP 129  
W 400  
C 40  
100MLS/OMNIPAQUE/BOLUS  
INFUSION GASTROGRAFIN

SOMATOM DR H SFH RIYADH  
OTAIBI AWEDH DAKHILULLAH 97Y.&403008 HC3  
17-AUG-97 FRONT 1 27  
08:33:37 H/SP  
DA0:043  
SCAN 65  
CAL.REQ.



LEFT  
5 CM

TI 4  
KV 125  
AS .21  
SL 8  
GT 0  
TP 129  
W 400  
C 40  
100MLS/OMNIPAQUE/BOLUS  
INFUSION GASTROGRAFIN

Mass posterior  
to the heart



عقب القلب

Hiatus hernia



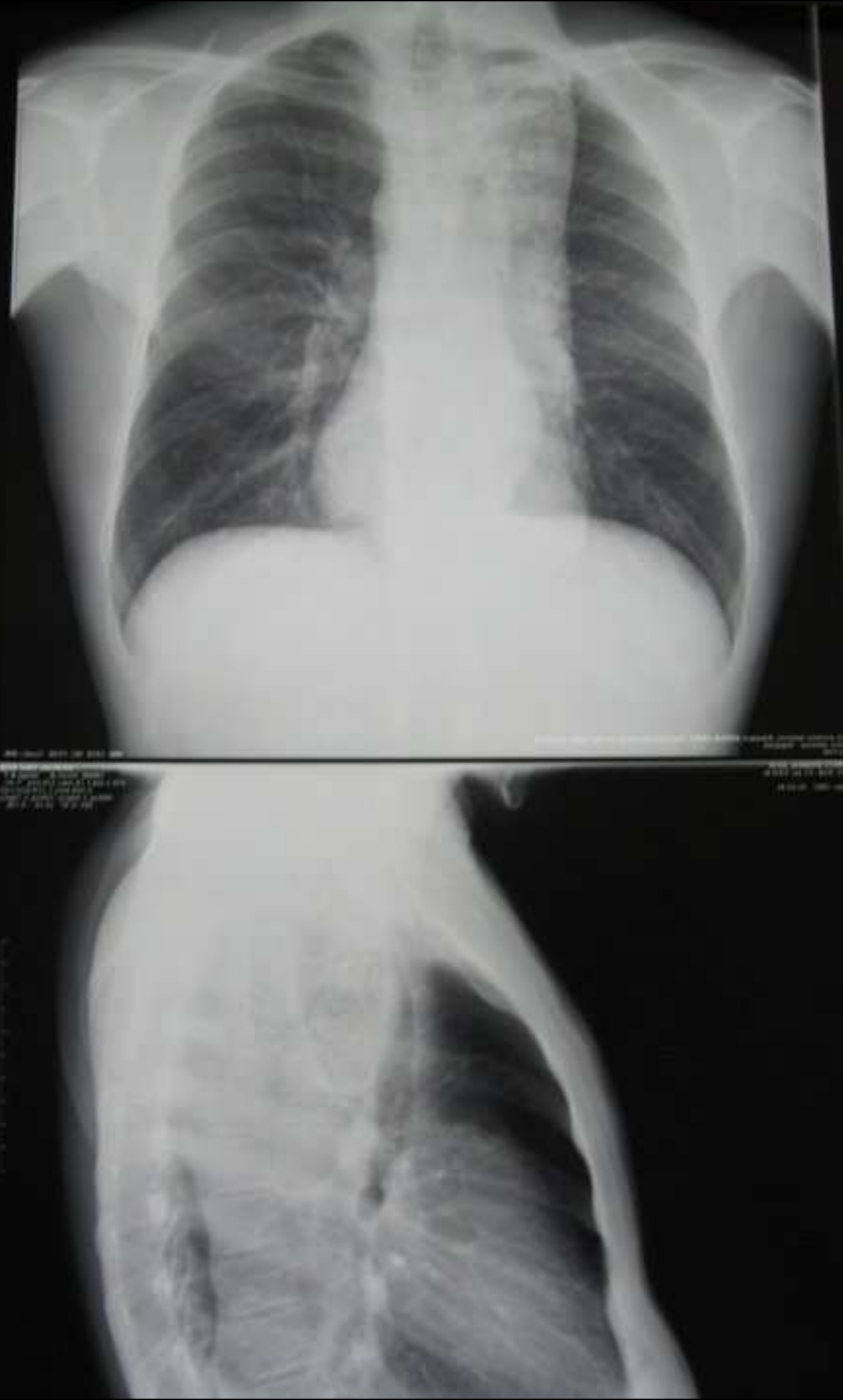
عالی حسب الریکورد

لبفرو ٲا Hiatus hernia

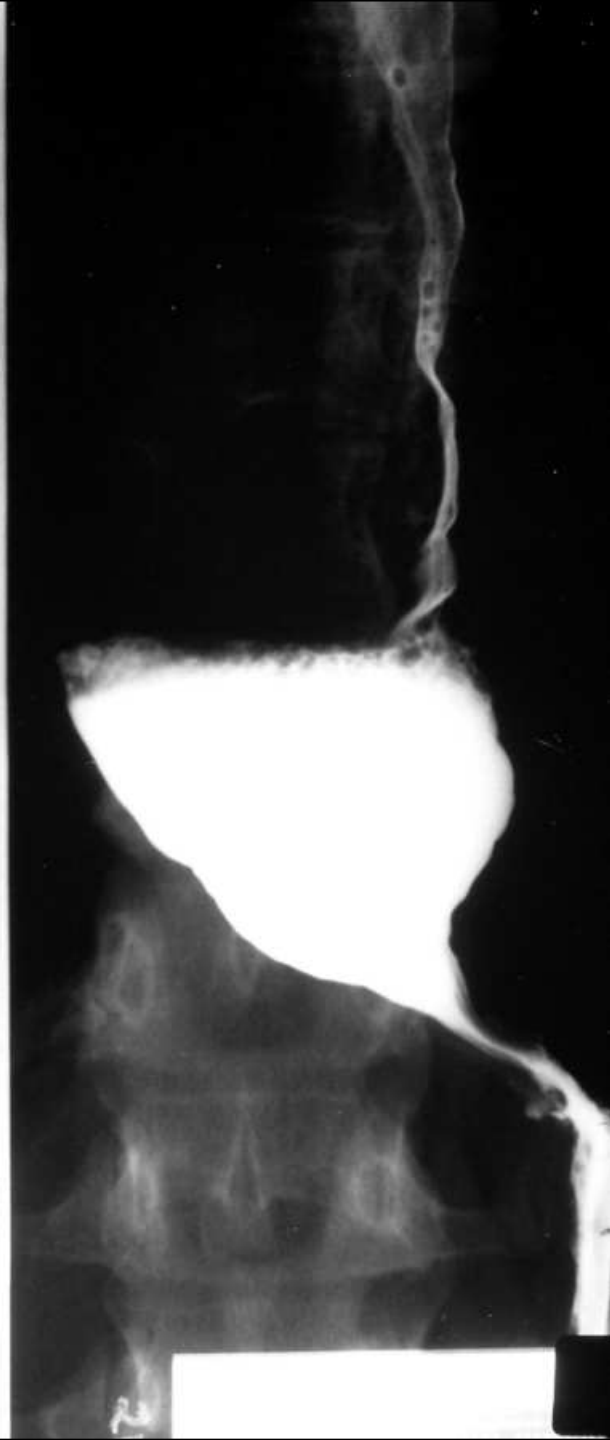
when part of the stomach  
squeezes up into the chest  
through an opening  
("hiatus") in the diaphragm.



longitudinal mass هون  
achalasia (أكلوية)  
Failure of lower esophageal  
sphincter to relax



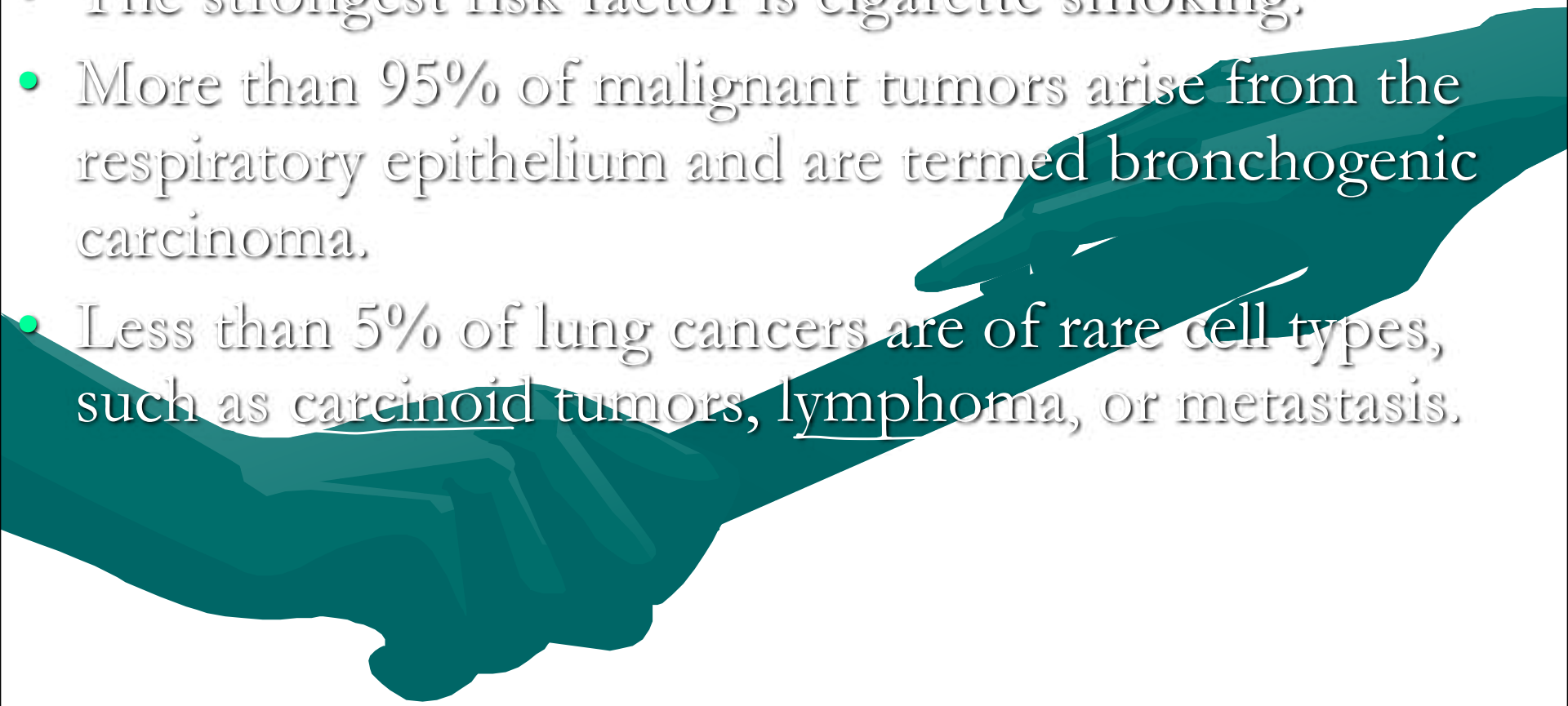




يعني يكون له collapse  
وسكر مش راضي يفتح  
نبيس holding up مدبسر  
Dilatation in esoph



# TUMORS OF THE LUNG

- Lung cancer is the commonest fatal malignancy.
  - The strongest risk factor is cigarette smoking.
  - More than 95% of malignant tumors arise from the respiratory epithelium and are termed bronchogenic carcinoma.
  - Less than 5% of lung cancers are of rare cell types, such as carcinoid tumors, lymphoma, or metastasis.
- 
- A stylized teal graphic of two hands shaking, positioned diagonally across the lower half of the slide. The hands are rendered in a flat, solid teal color with no shading or texture.

# Types of lung cancers

## 1- Adenocarcinoma

- ❖ Is the most common type of lung cancer, making up 30-40% of all cases.
- ❖ Usually arise peripherally as solitary pulmonary nodule.

The alveolar cell carcinoma is a subtype of adenocarcinoma and arise within the alveoli producing areas of consolidation and the appearance resemble bronchopneumonia.

# Types of lung cancers / 2

## 2- Squamous cell carcinoma

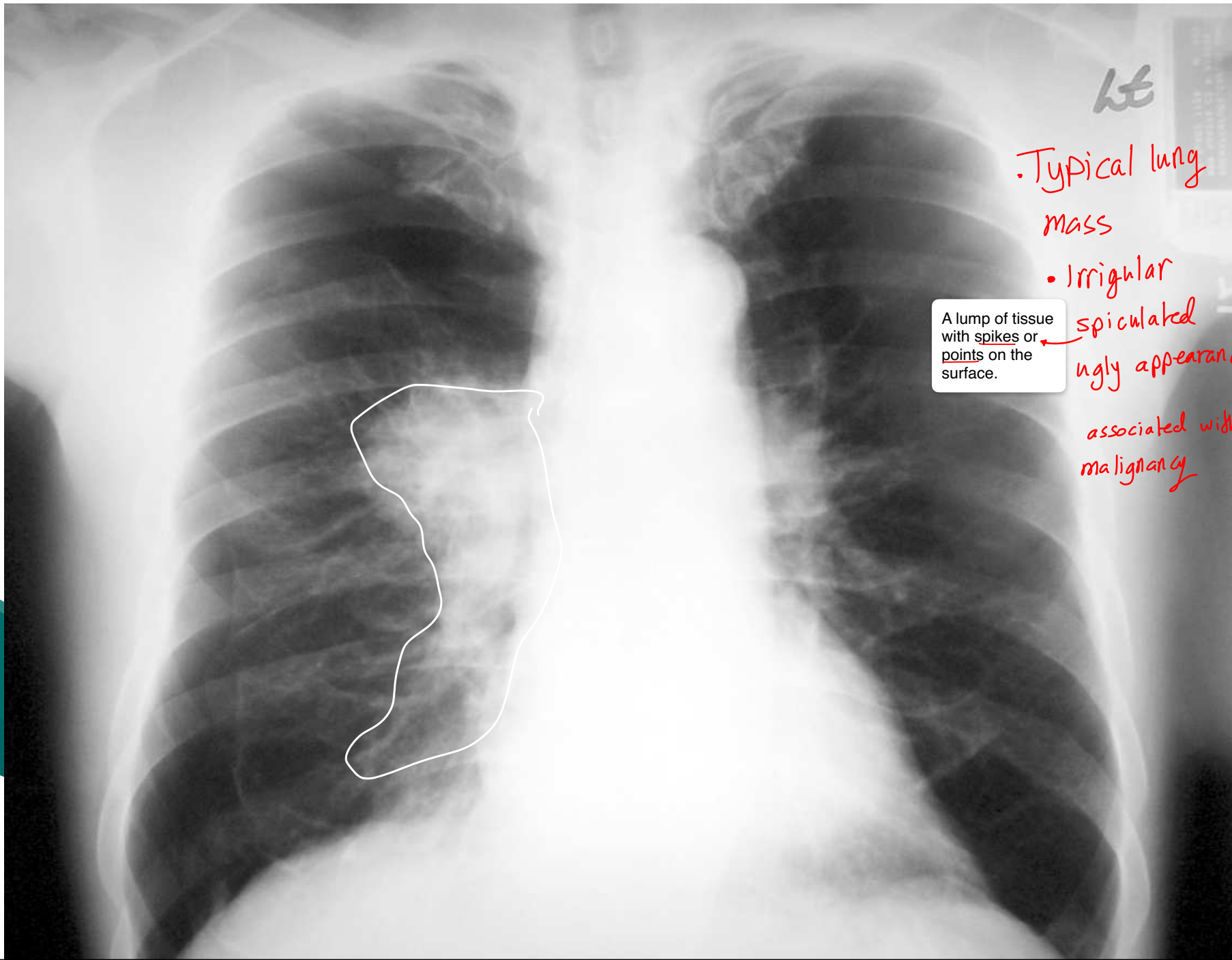
- They typically occur in central bronchi.
- Grow slowly and cavitate more often than other cell types.

## 3- Small (oat) cell carcinoma.

- Are usually central in location.
- Have the fastest rate of growth.
- Typically associated with mediastinal adenopathy.

## 4- Large cell carcinoma.

- Usually arise at the periphery of the lung.
- The growth is relatively rapid.



LT

• Typical lung mass

• Irregular spiculated ugly appearance

A lump of tissue with spikes or points on the surface.

associated with malignancy

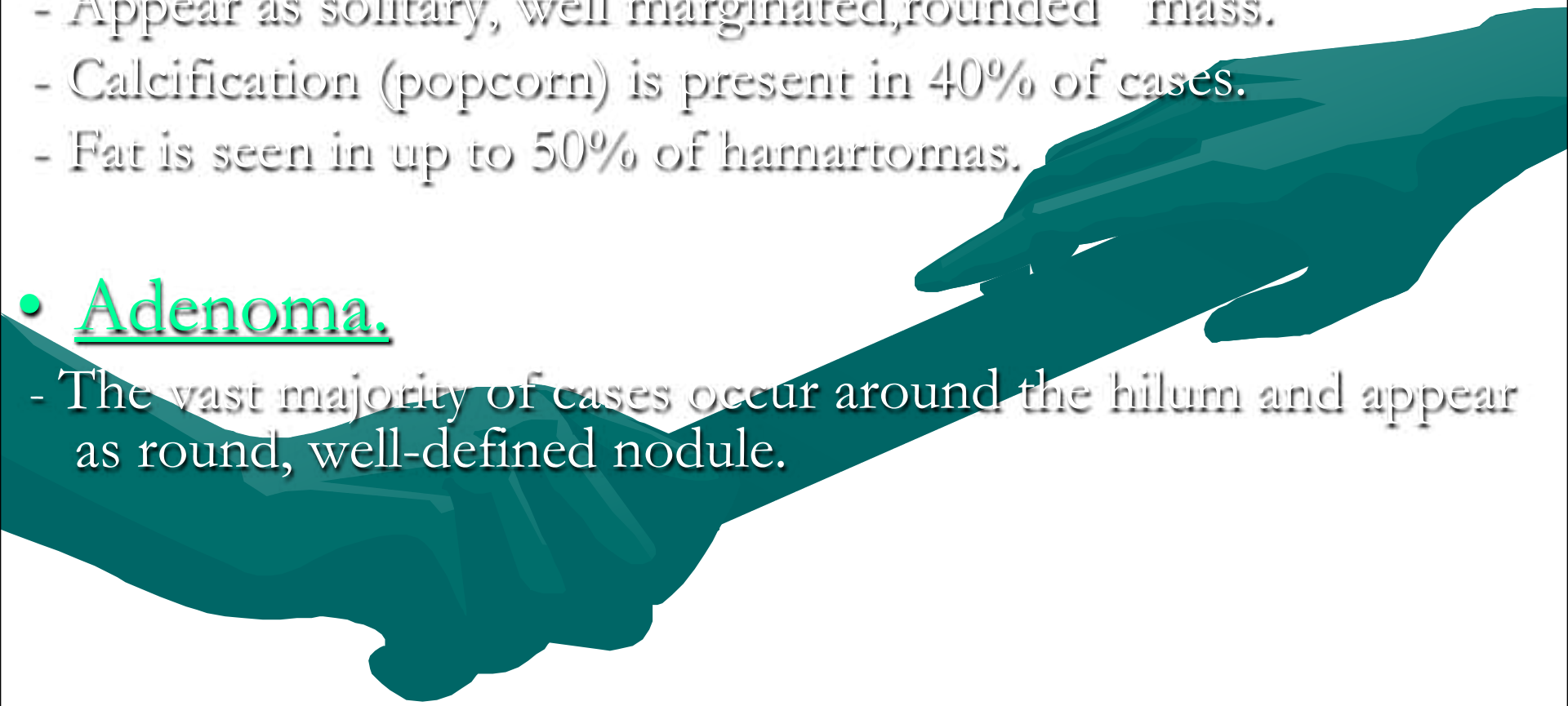
# BENIGN TUMORS OF THE LUNG

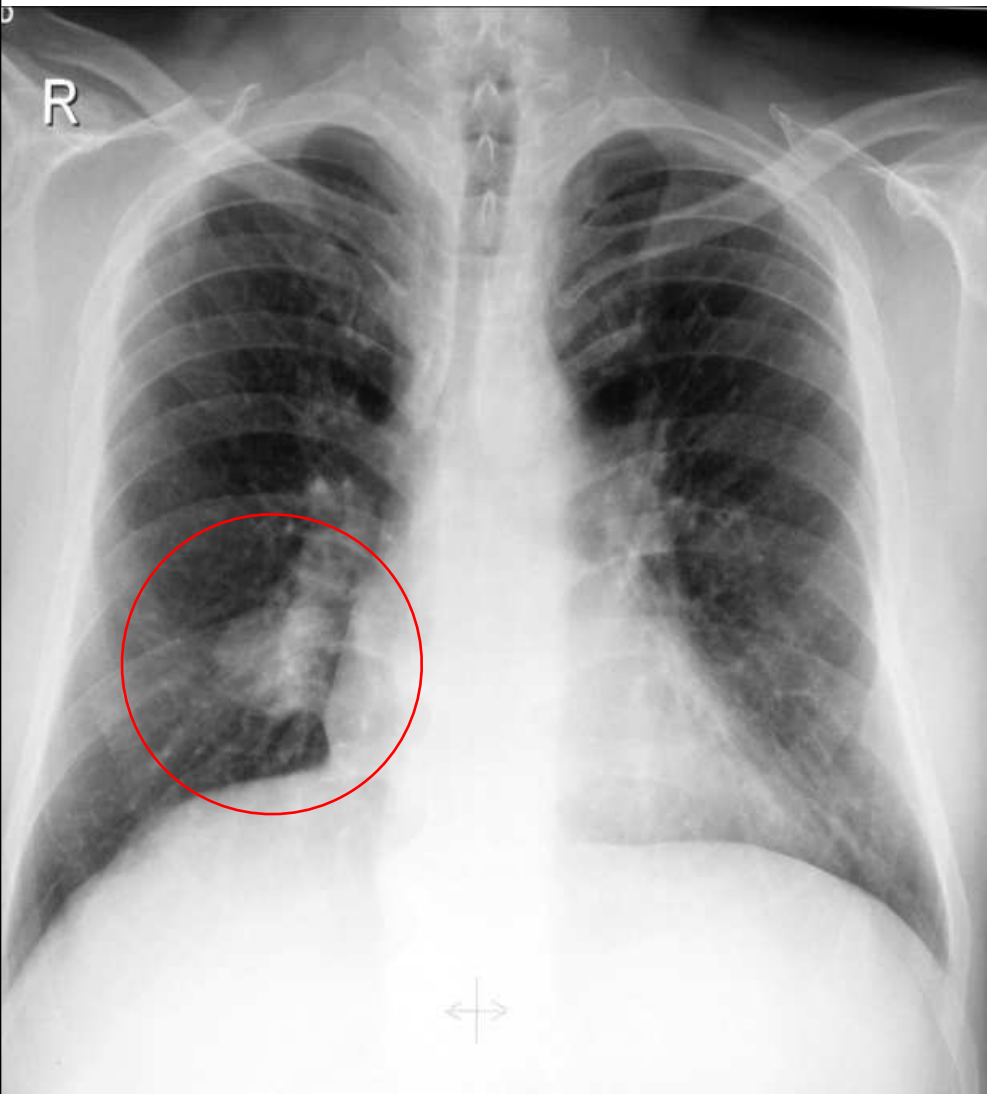
- Hamartoma.

- Is the most common benign tumor of the lung.
- Appear as solitary, well marginated, rounded mass.
- Calcification (popcorn) is present in 40% of cases.
- Fat is seen in up to 50% of hamartomas.

- Adenoma.

- The vast majority of cases occur around the hilum and appear as round, well-defined nodule.





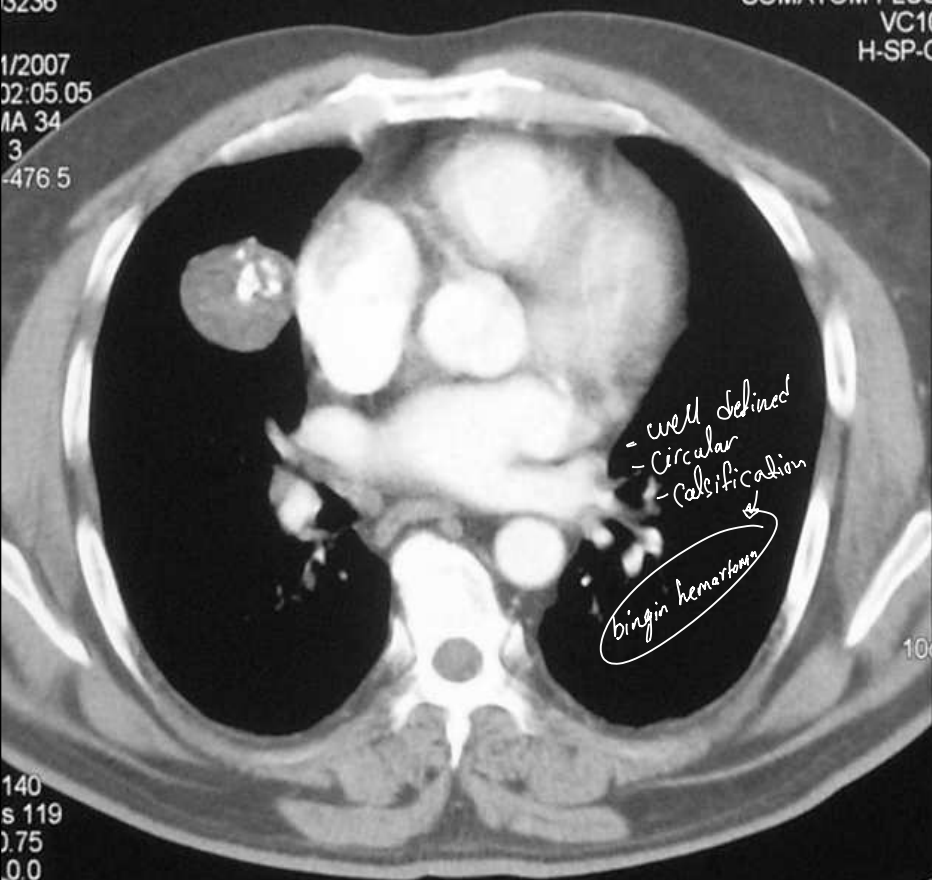


MARI, ABDULRAHMAN 67Y/M  
3236

A

S. FORCES HOSPITAL  
SOMATOM PLUS 4  
VC10C  
H-SP-CR

1/2007  
02:05:05  
MA 34  
3  
476.5



140  
s 119  
.75  
0.0  
5.0  
-8/-35  
50

100 MLS OMNIPAQUE

W 458  
C 20

ASMARI, ABDULRAHMAN 67Y/M  
#593236

A

M  
3/31/2007  
10:02:05.45  
3 IMA 35  
SPI 3  
SP -480.5

S. FORCES HOSPITAL  
SOMATOM PLUS 4  
VC10C  
H-SP-CR



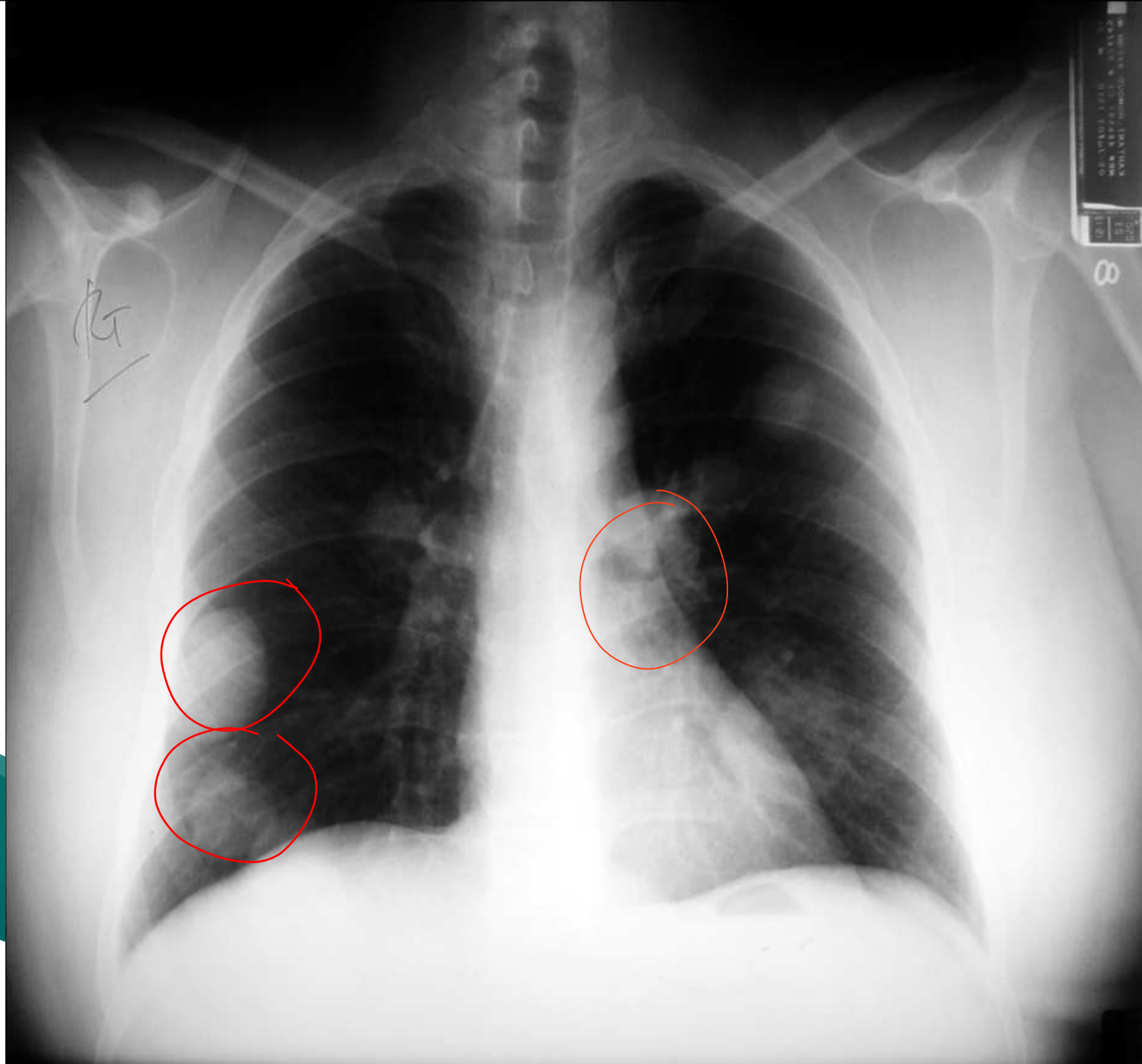
kV 140  
mAs 119  
TI 0.75  
GT 0.0  
SL 5.0  
320 -8/-35  
AB50

100 MLS OMNIPAQUE

W  
C

# Lung metastasis

- The commonest primary tumors producing lung metastasis are breast, renal tract, thyroid, bone, and testicular tumors.
- Metastasis to the lung are usually bilateral and tend to be peripheral and more numerous at the lung bases.
- Lung metastasis are spherical in shape with a well-defined margin.





SAQER, ABDULLAH 40Y/M  
#286830

S. FORCES HOSPITAL  
SOMATOM PLUS 4  
VC10C  
H-SP-CR

SAQER, ABDULLAH 40Y/M  
#286830

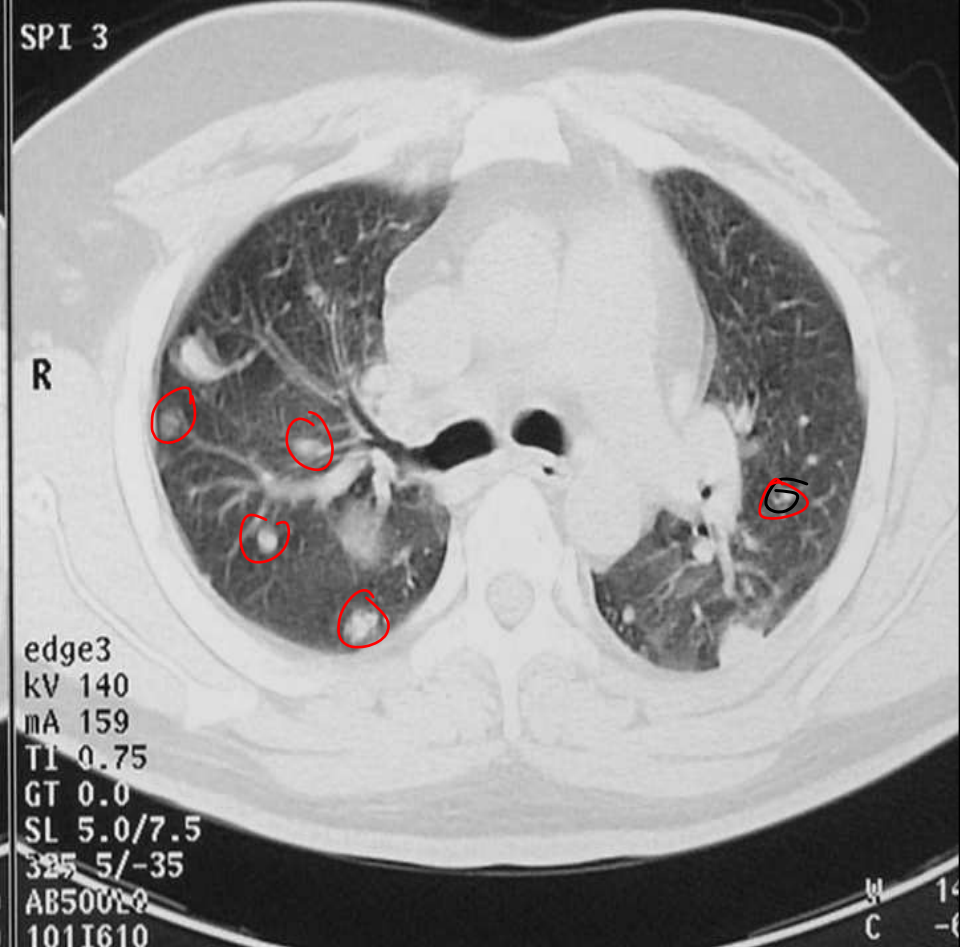
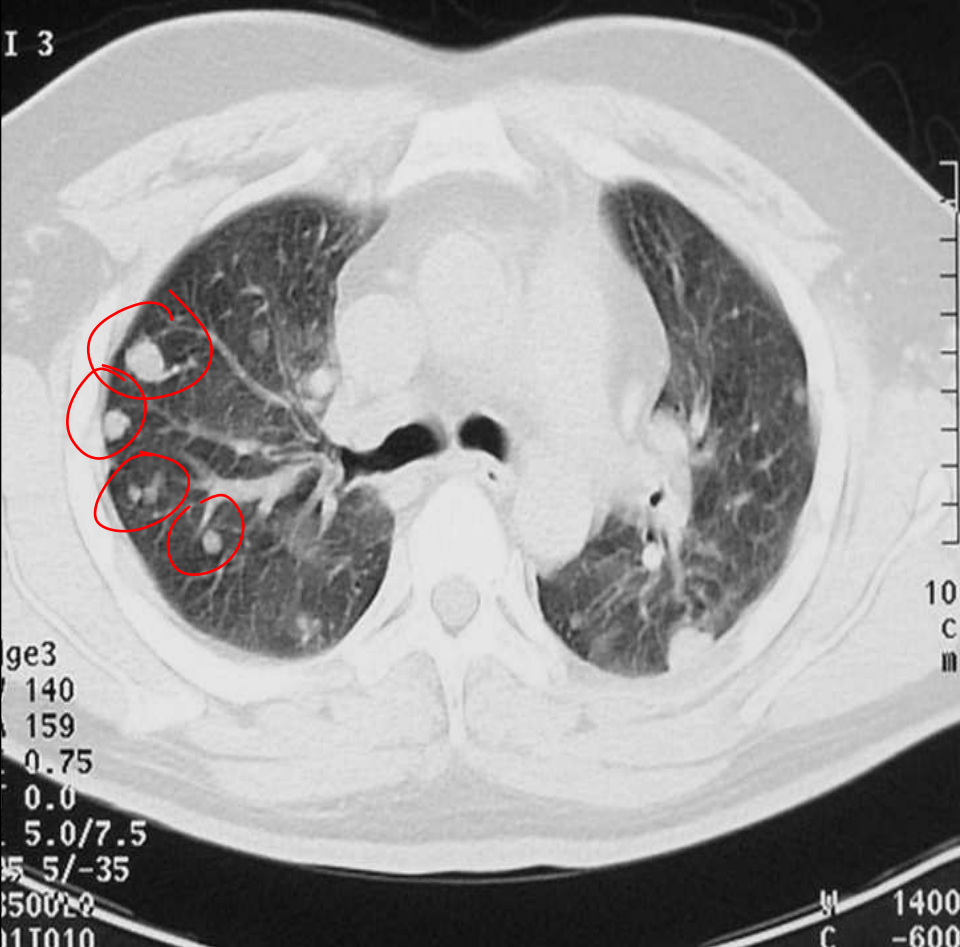
S. FORCES HOSPIT  
SOMATOM PLUS  
VC1  
H-SP-

-MAR-2006  
11:40:52.19  
-268.5

28-MAR-2006  
11:40:52.59  
TP -272.5

I 3

SPI 3



# Chest trauma

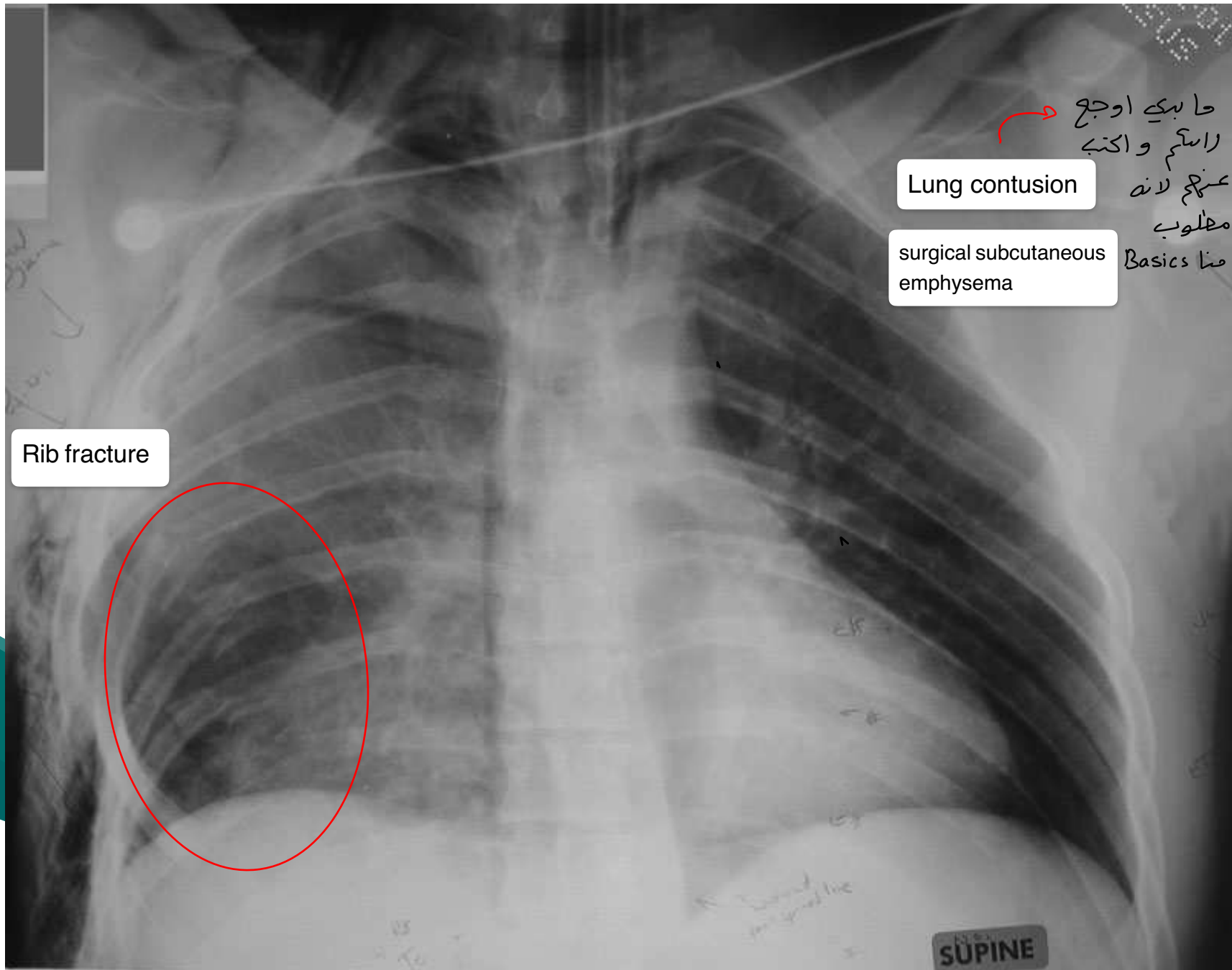
أكبر خطر في حال لم يتم  
تشخيصه بشكل سريع  
للازم نتأكد من سلامة  
القلب والاضلاع (rib fracture) ،  
pneumothorax, pleural , diaphragm  
effusion  
وكل الية ذات نواه ضووف بين انه صا  
تروح تدور اذا في cancer ، بنحكي  
حالات طارئة .

- ❑ Chest trauma can be as blunt or penetrating.
- ❑ Penetrating chest trauma can injure vital organs such as the heart and lungs.
- ❑ The common clinical problems associated with chest injury include pulmonary contusion, pneumothorax and hemothorax.
- ❑ Fractures of the lower ribs may be associated with diaphragmatic tears and spleen or liver injuries
- ❑ Fractures of the upper ribs can be associated with injuries to adjacent great vessels.

# Chest trauma / 2

What is the ABCDE approach to guide the radiographic search for thoracic injury ?

- Air : extra pulmonary ( pneumothorax, subcutaneous emphysema, pneumomediastinum).
- Bones – rib fracture, thoracic spine, scapula and sternum fractures.
- Contusions and lacerations in the lung.
- Diaphragm - rupture.
- Effusions – hemothorax.



Rib fracture

Lung contusion

surgical subcutaneous  
emphysema

حائبی اوجھ  
لاستک و اکتب  
عسلی لانه  
مطلوب  
Basics منا

SUPINE



الهجرة مش واضحة  
لانه حالة طارئة  
المريض في ام شديد  
وتحرك غير انه  
ممكن يكون نزيف  
و شاش وغيره

Fracture ←  
Pneumothorax → (tension  
Pneumothorax)

rib fracture  
can lead to  
pneumothorax





Thank You