



Sağlık Bilimleri Üniversitesi ve ASYOD



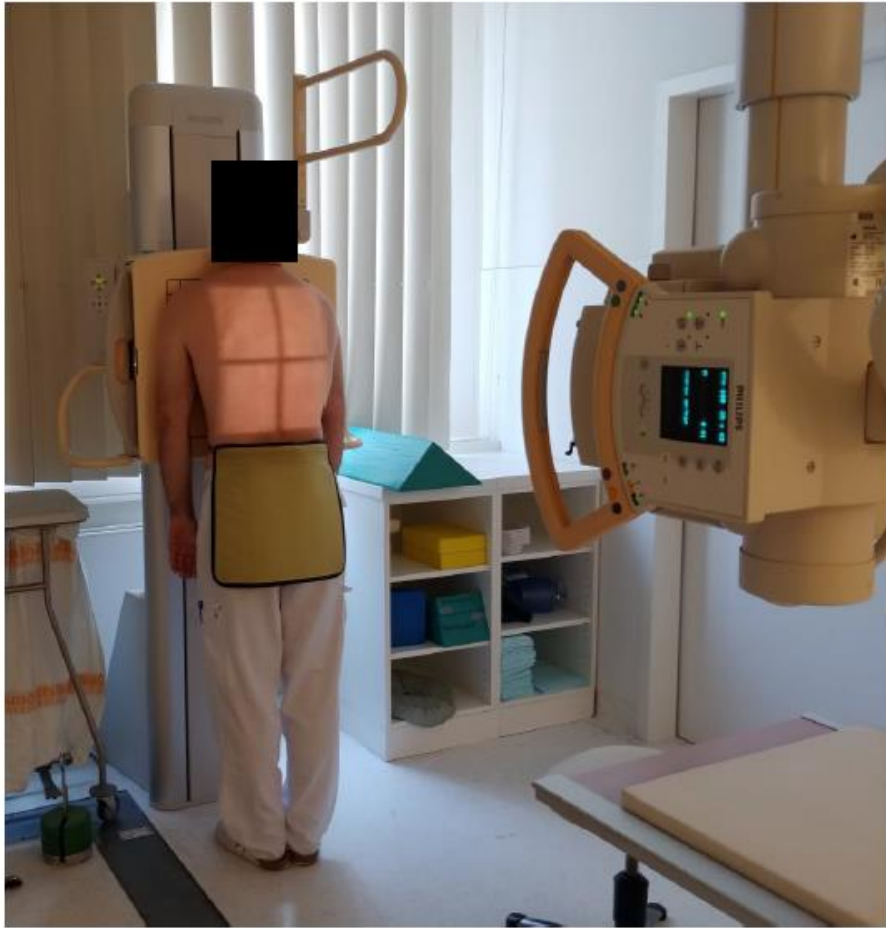
İSTANBUL 6

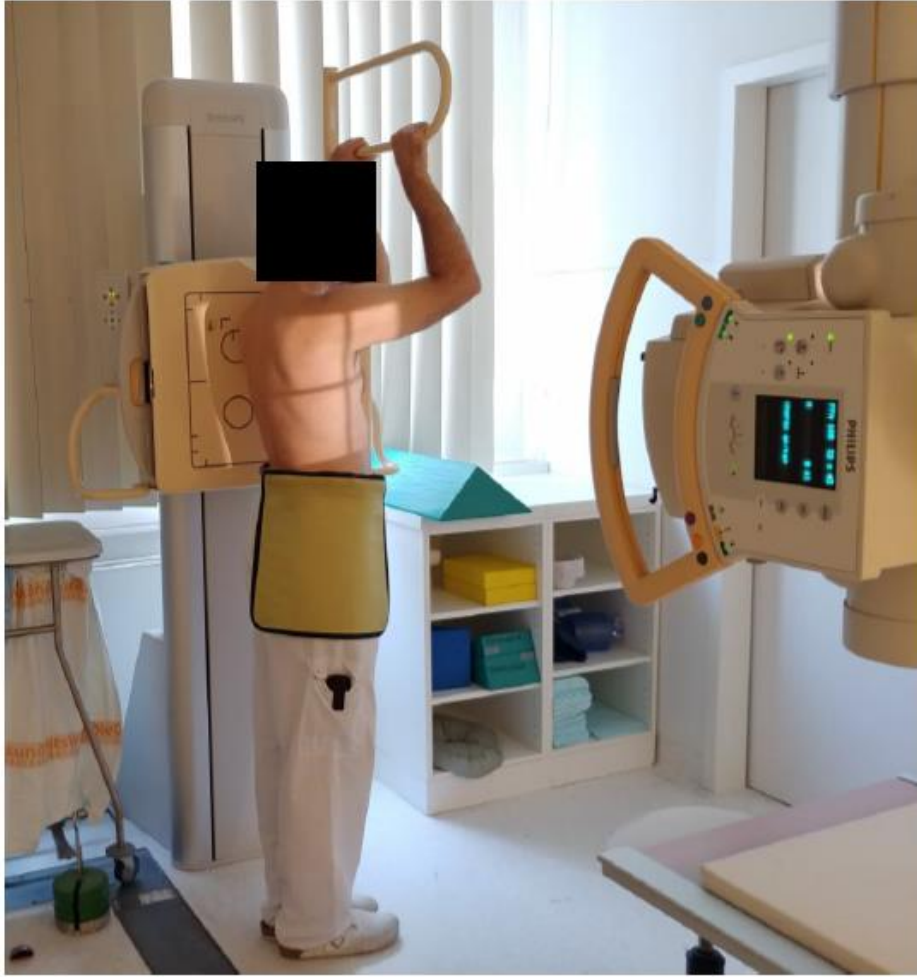
Hibrit Okul

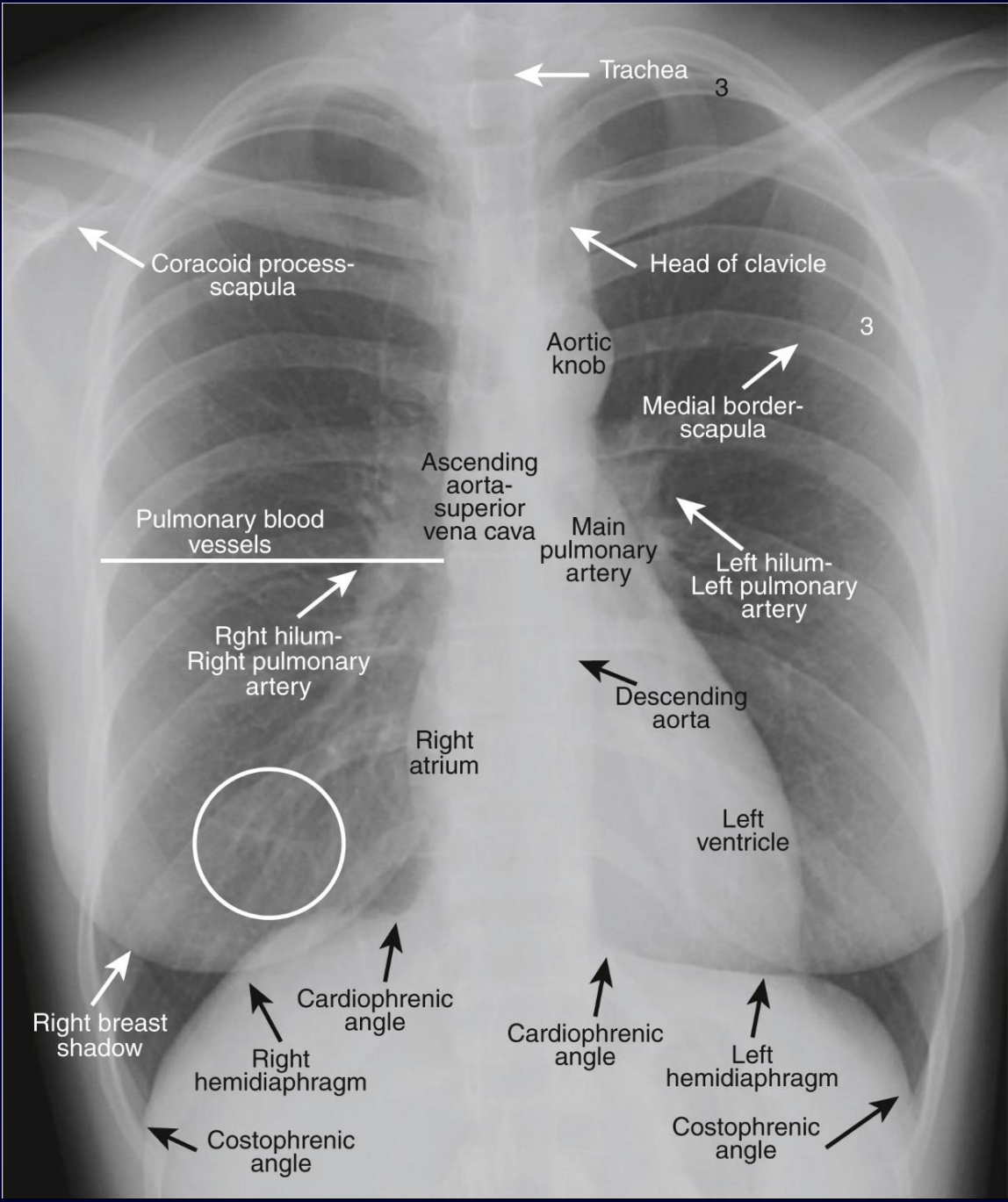
8-9 Temmuz 2023
Radisson Blu Şişli Hotel, İstanbul



09.30-10.15	Toraks Radyolojisi: Akciğer Grafisi: Nasıl Okurum? Olgu Örnekleri ve Temel Paternler	Prof. Dr. Akın KAYA
10.15-11.00	Toraks Radyolojisi: Toraks BT: Nasıl Okurum? Örnekleri ile Temel Paternler	Prof. Dr. Selen BAYRAKTAROĞLU







Trachea 3

Coracoid process-
scapula

Head of clavicle

Aortic knob

3

Medial border-
scapula

Pulmonary blood
vessels

Ascending
aorta-
superior
vena cava

Main
pulmonary
artery

Left hilum-
Left pulmonary
artery

Right hilum-
Right pulmonary
artery

Descending
aorta

Right
atrium

Left
ventricle

Right breast
shadow

Cardiophrenic
angle

Right
hemidiaphragm

Cardiophrenic
angle

Left
hemidiaphragm

Costophrenic
angle

Costophrenic
angle

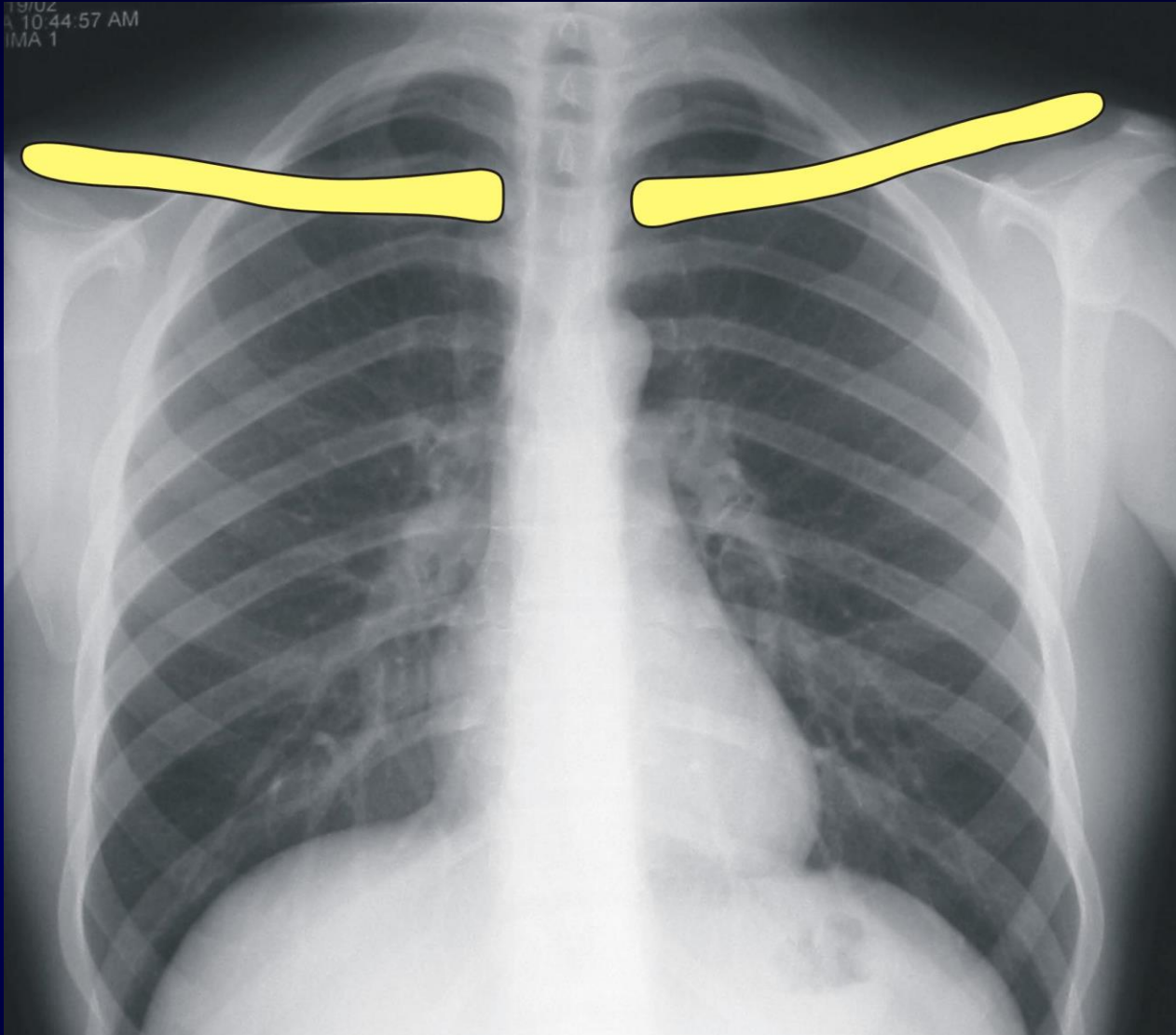
Akciğer grafilerinin değerlendirilmesi

1. Akciğer grafileri değerlendirilirken ilk olarak hastanın adı, soyadı kontrol edilmelidir.
2. Filmler çekim tarihlerine göre sıralanmalıdır.
3. Filmlerin uygun teknik ile çekilmiş olmaları gerekmektedir. Uygun teknik ile çekilmemiş olan grafiler yanıltıcı olabilir.
4. Hastaların yaşı, cinsiyeti ve hikayesinin bilinmesi filmlerin doğru olarak değerlendirilmesine yardımcı olur.

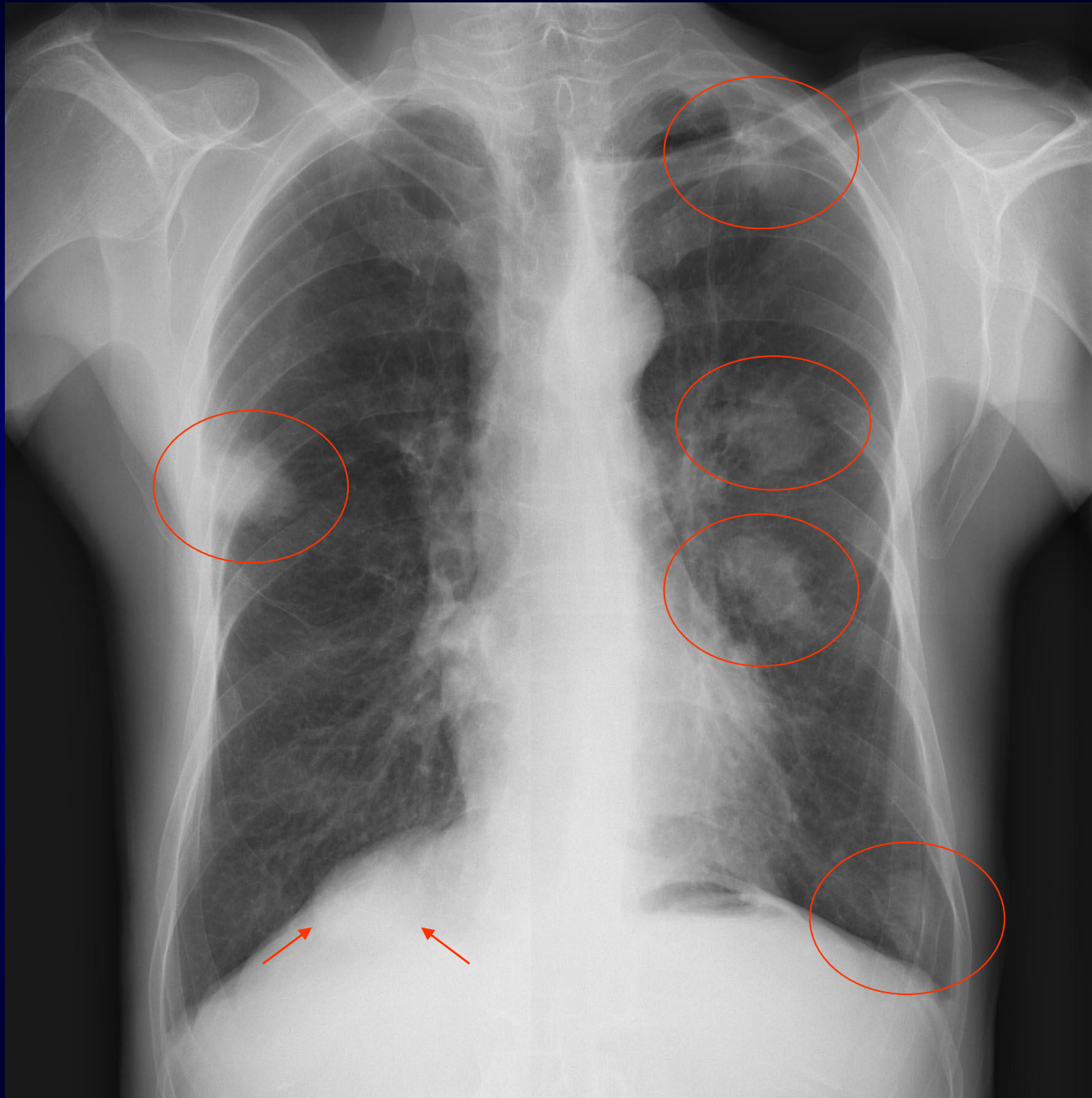
Teknik olarak kabul edilebilir PA akciğer grafisi

1. Simetri: T3 ün spinöz çıkıntısı sternoklaviküler eklemlere eşit mesafede olmalı
2. Skapulalar akciğer alanlarını örtmemeli
3. İnspiryum sonu çekim: 9-10. kostaların arka kısmını diafragma kubbesi üzerinde kalmalı)
4. Damar gölgeleri akciğerlerin periferinde görülmeli (x-ışın dozunun fazla olmadığının göstergesi)
5. Alt lobların büyük damarları damarları ve torakal vertebralar kalp arkasında görülebilmeli (x-ışın dozunun az olmadığının göstergesi)

Teknik olarak kabul edilebilir PA akciğer grafisi

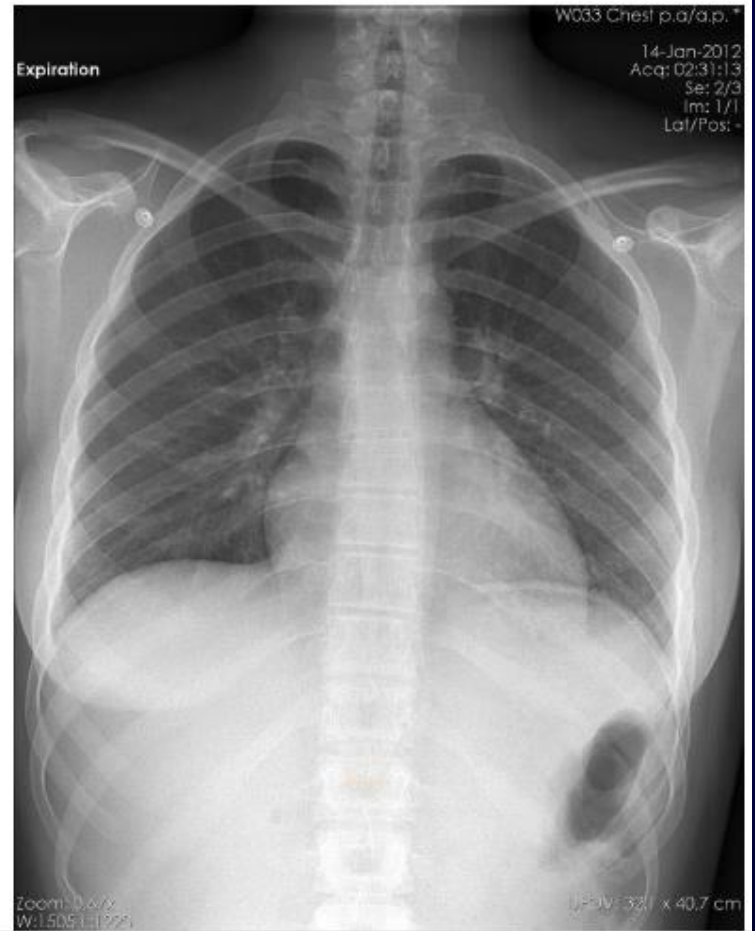


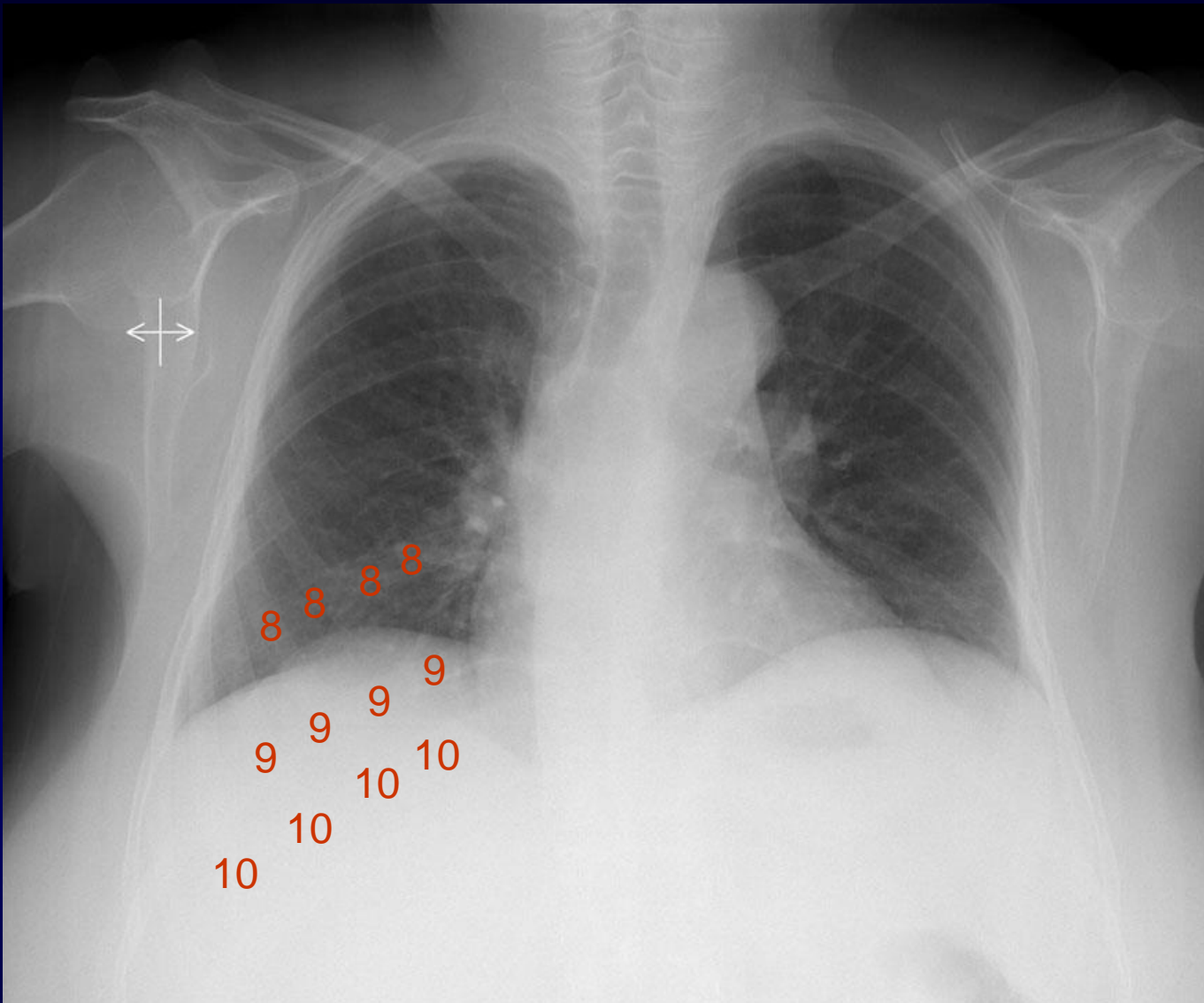
Simetri: T3'ün spinöz çıkıntısı sternoklaviküler eklemlere eşit mesafede olmalı



Her iki akciğerde yaygın metastazlar. Sağ diafragma kubbesi arkasında gizlenen metastaz (kırmızı oklar)

Inspiration / Expiration





Yetersiz inspiriyum:

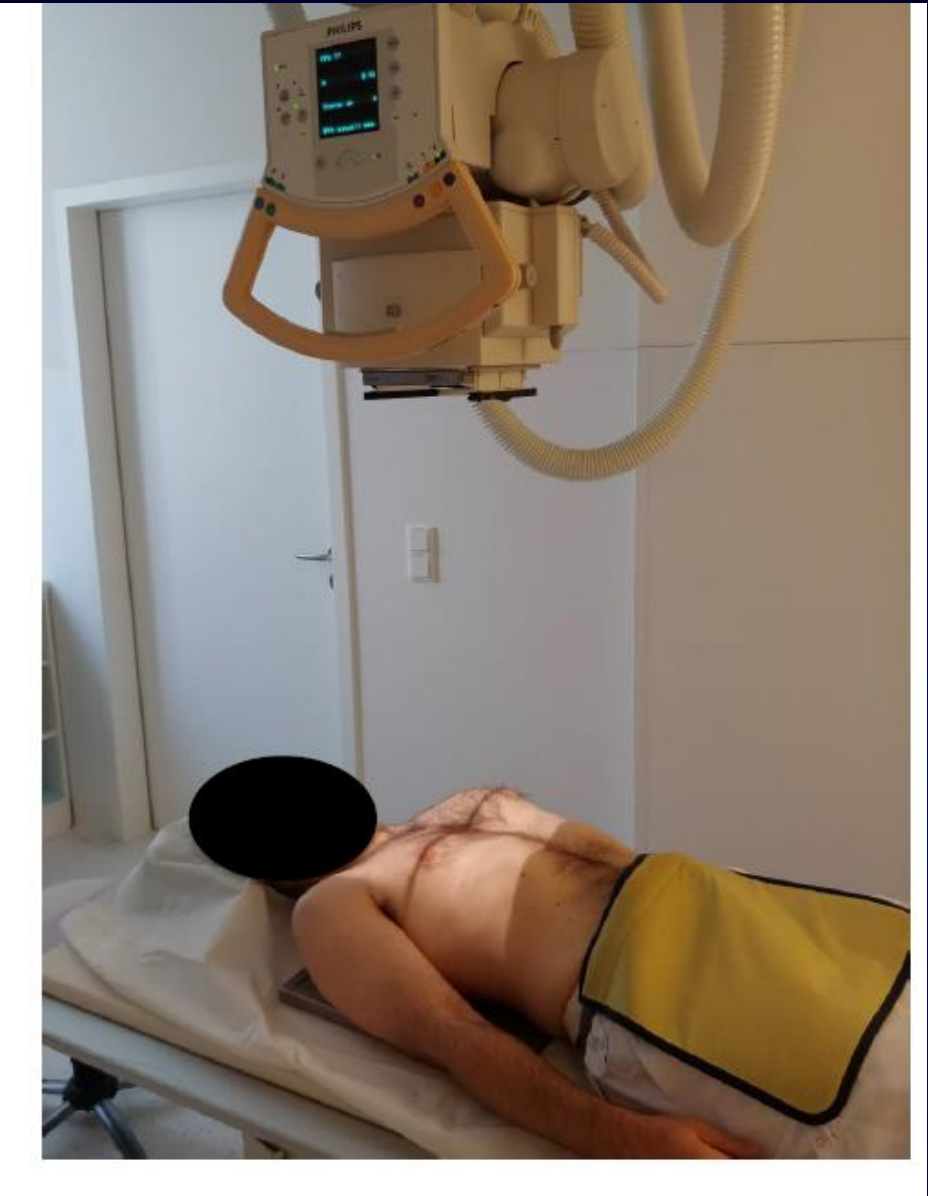
Diafragma üzerinde 8. kostanın arka kısmını görüyoruz. 9. ve 10. kosta arka kenarları diafragma kubbesi altında kalıyor

Uygun teknikle olmayan çekimler
(*Acil servislerde veya devamlı bakım
ünitelerinde yapılan çekimler*)

1. Yakın mesafe
2. Ön-arka pozisyon
3. Ekspiryum
4. Yatar pozisyon

*Kardiomegali gibi
görünümüne neden
olabilir

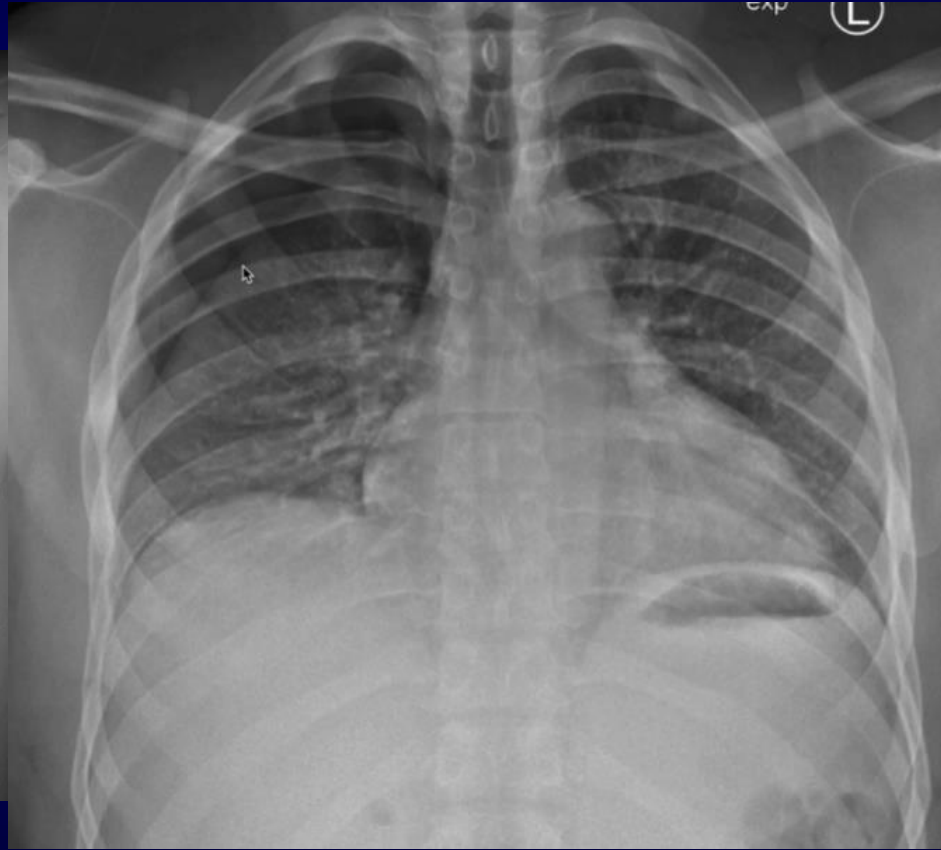
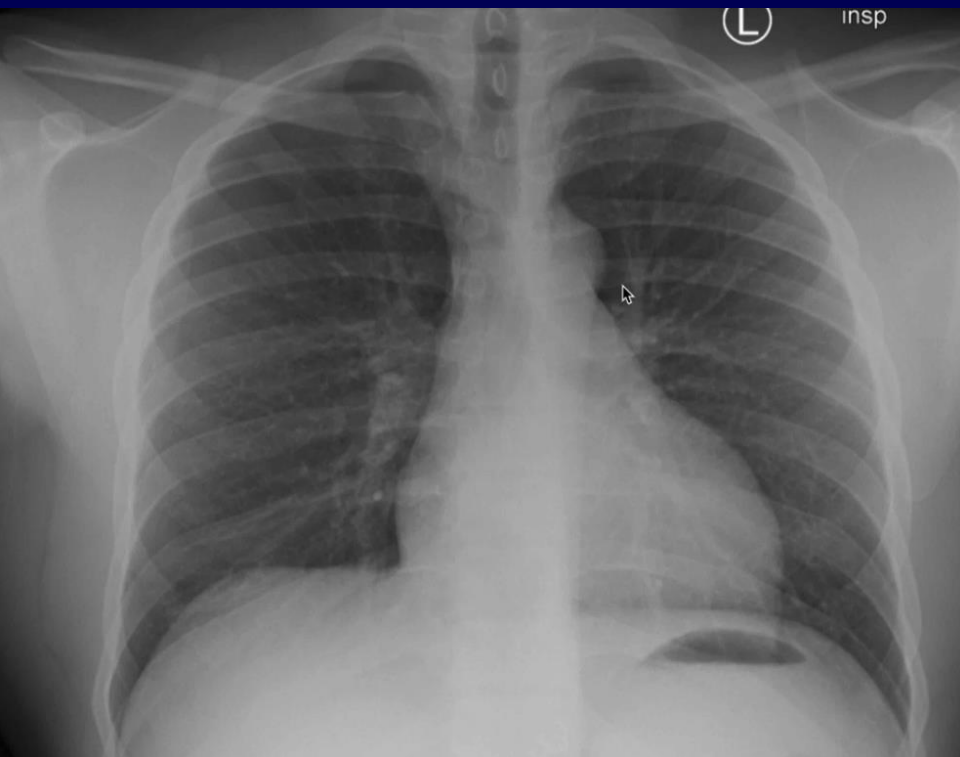
*Mediasten ve hilus
değerlendirmeleri
hatalı olabilir

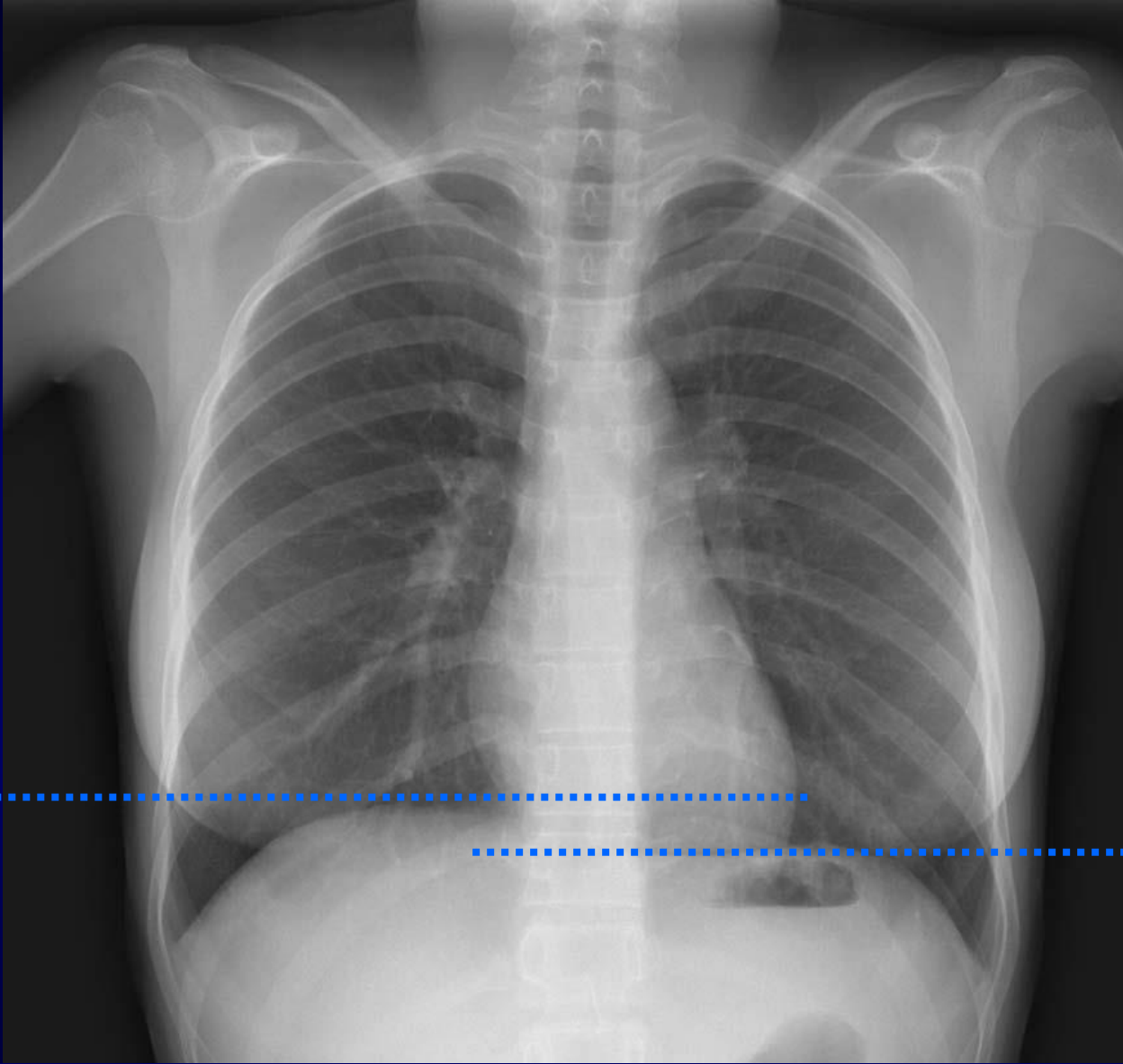


- Bazı durumlarda inspiriyum grafisine ilave olarak ekspiriyum sonu grafi de çekilebilir

İnspiryum grafisi sonrası ekspiryum fazında da grafi çekilmesi gereken durumlar:

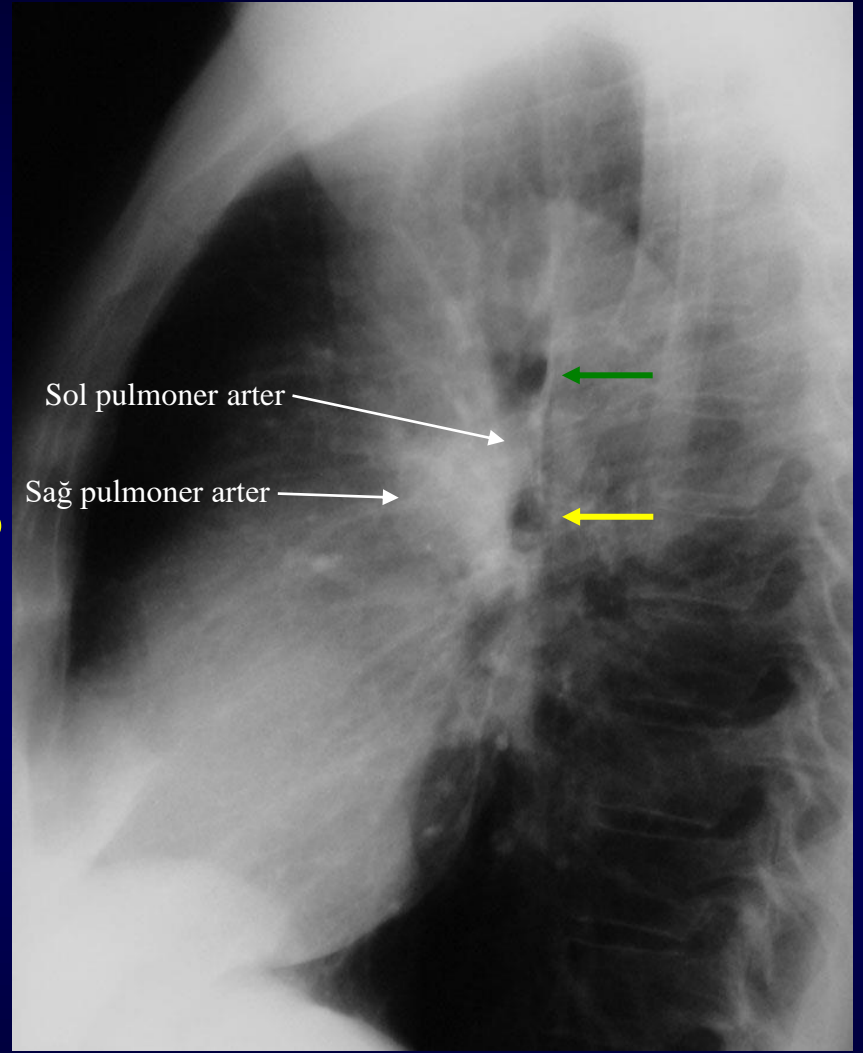
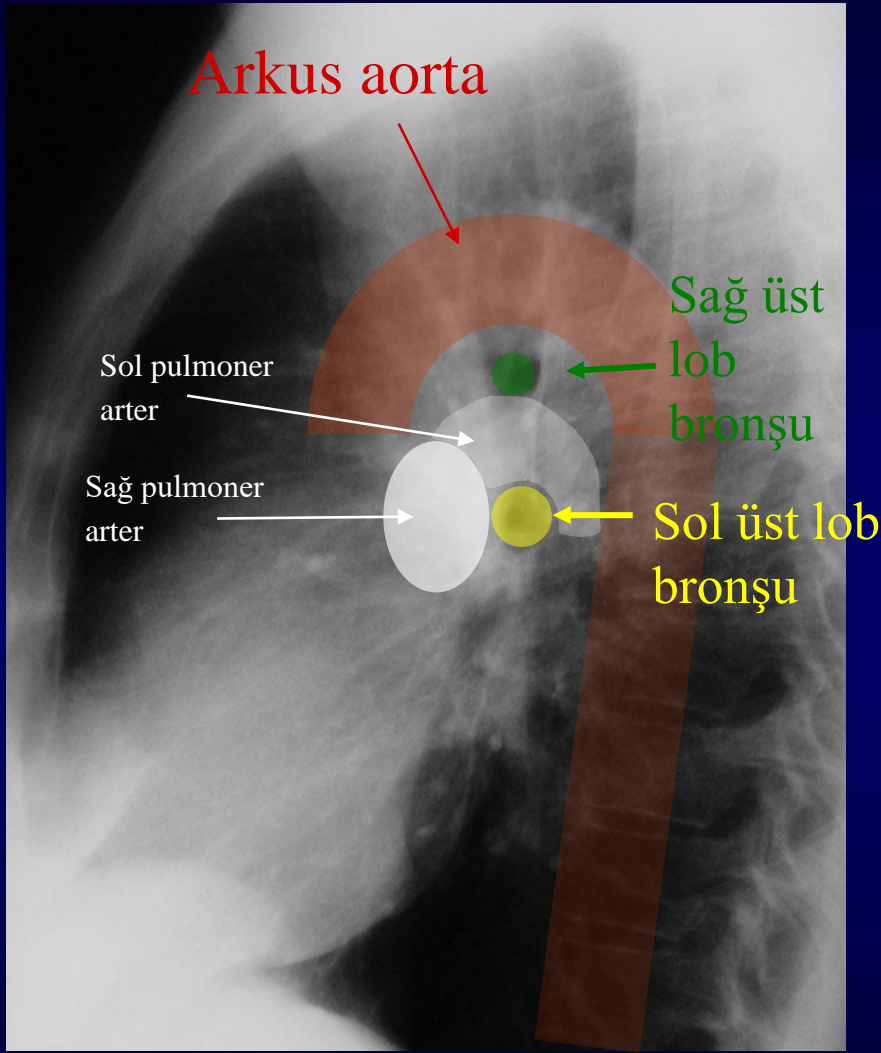
- Hava hapsi
- Pnömotoraks (az miktarda olan pnömotoraksı göstermek için)

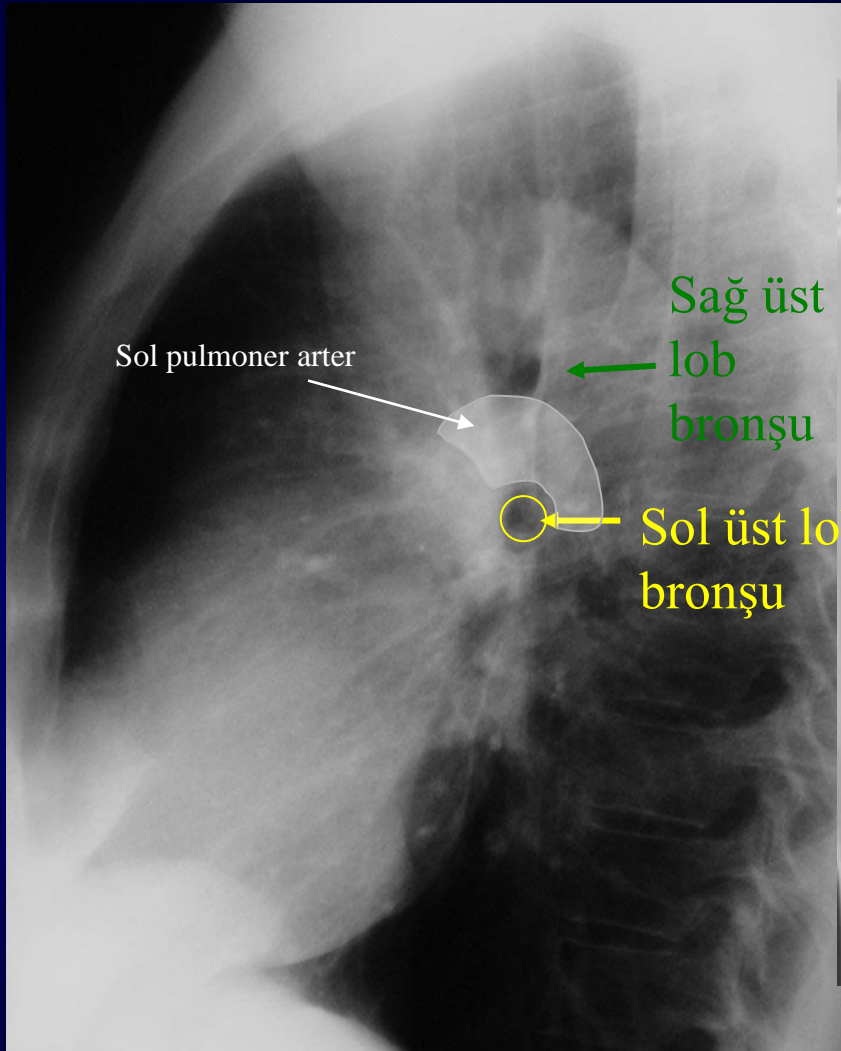




Kalbin ağırlığı nedeniyle sol diafragma sağ diafragmadan daha aşağıda yer alır

Yan akciğer grafisinde normal anatomi





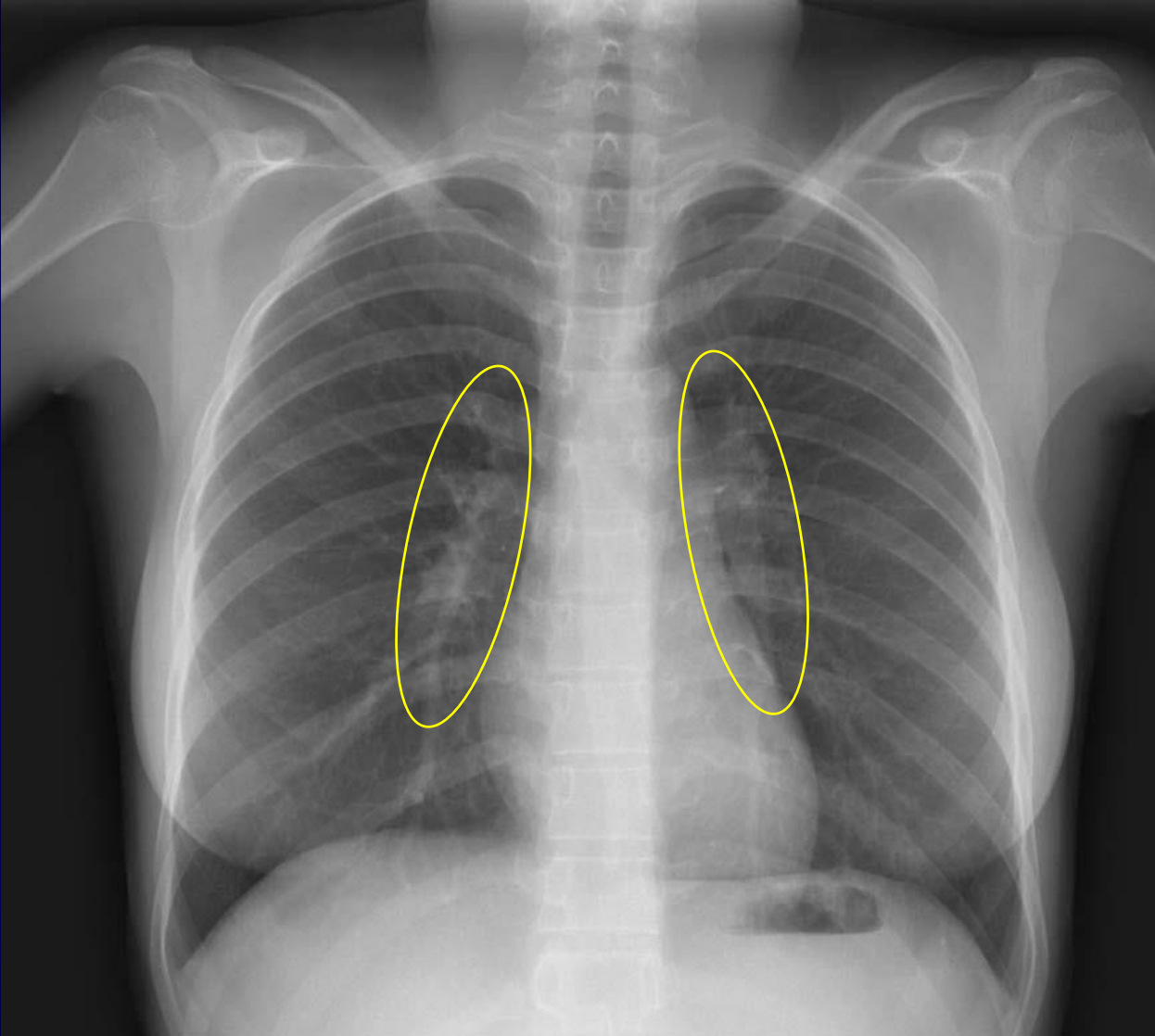
Sol üst lob bronşu sol pulmoner arter gölgesi altında yer alır



Yan akciğer grafisi: trakea lümeni

Hiluslar

- Radyolojik olarak hilusları esas olarak pulmoner arterler oluşturur ve süperiyor pulmoner venlerde bu opasitelere katkıda bulunur

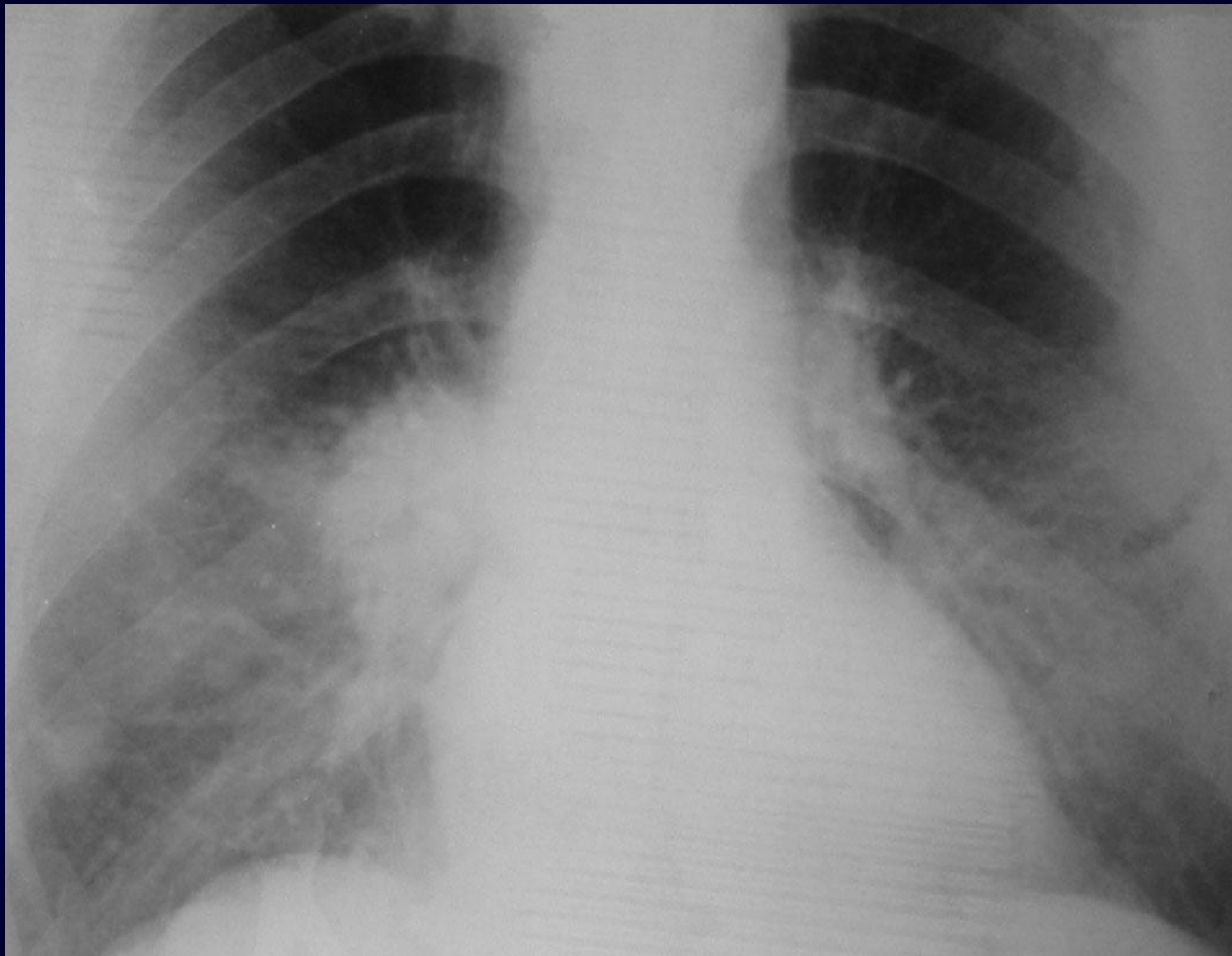


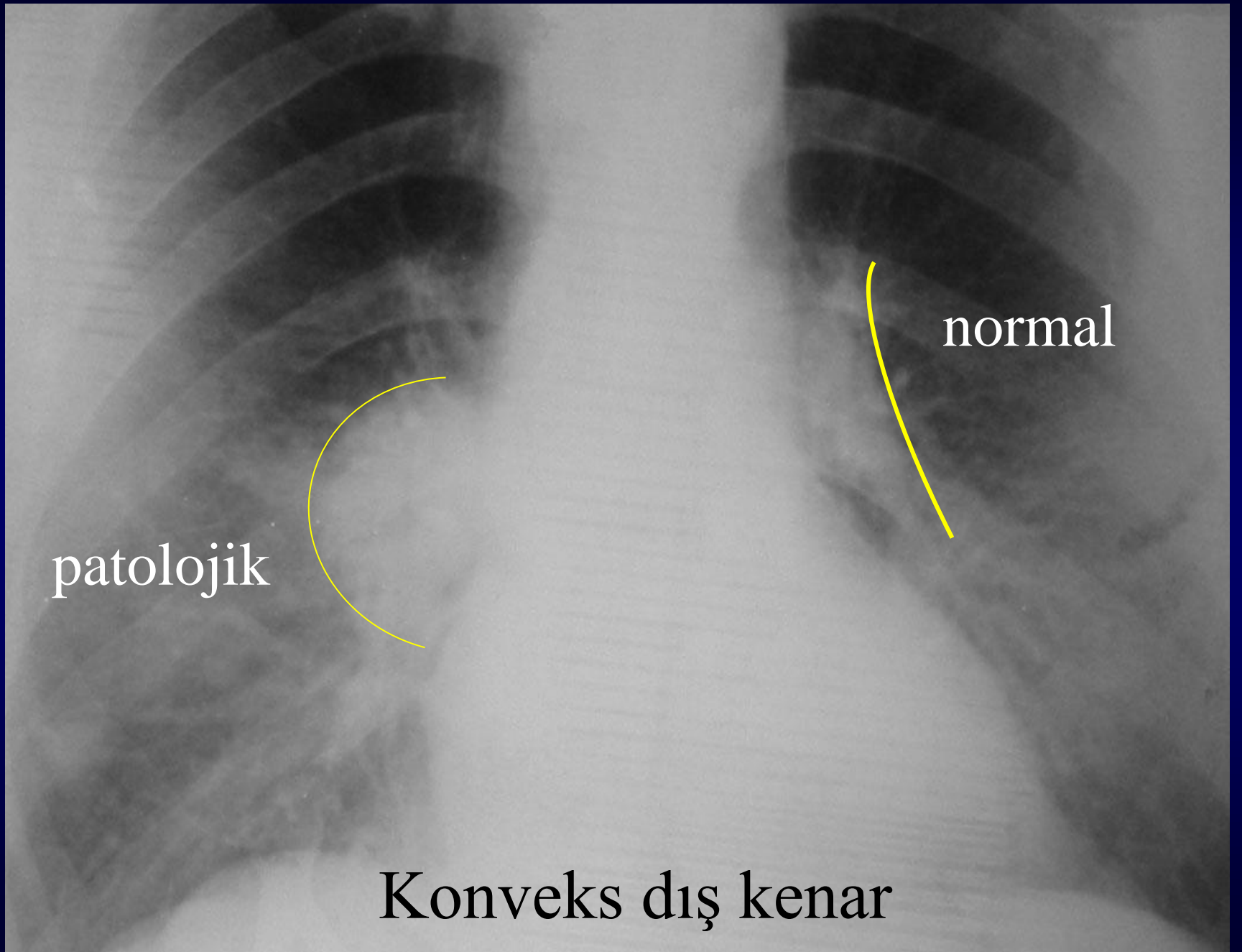
Sol pulmoner arter daha yukarıda olduğundan sol hilus daha yukarıda yer alır. Sağ hilusun sol hilusdan daha yukarıda oluşu patolojiktir

Hiluslar

Normal Anatomi

- Sol hilus yaklaşık olarak sağ hilustan 25 mm daha yukarda yer alır
- Hilusların dansitesi aynı olmalı
- Hilusların dış konturu konkav veya düz olmalıdır

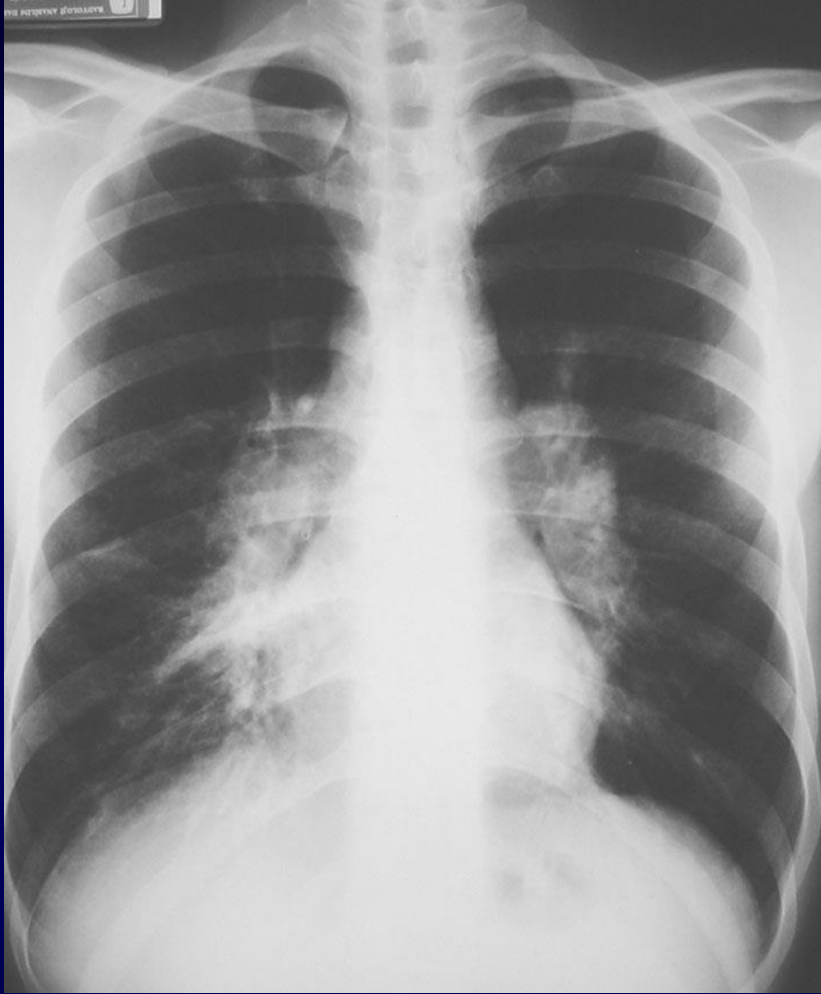




patolojik

normal

Konveks dış kenar



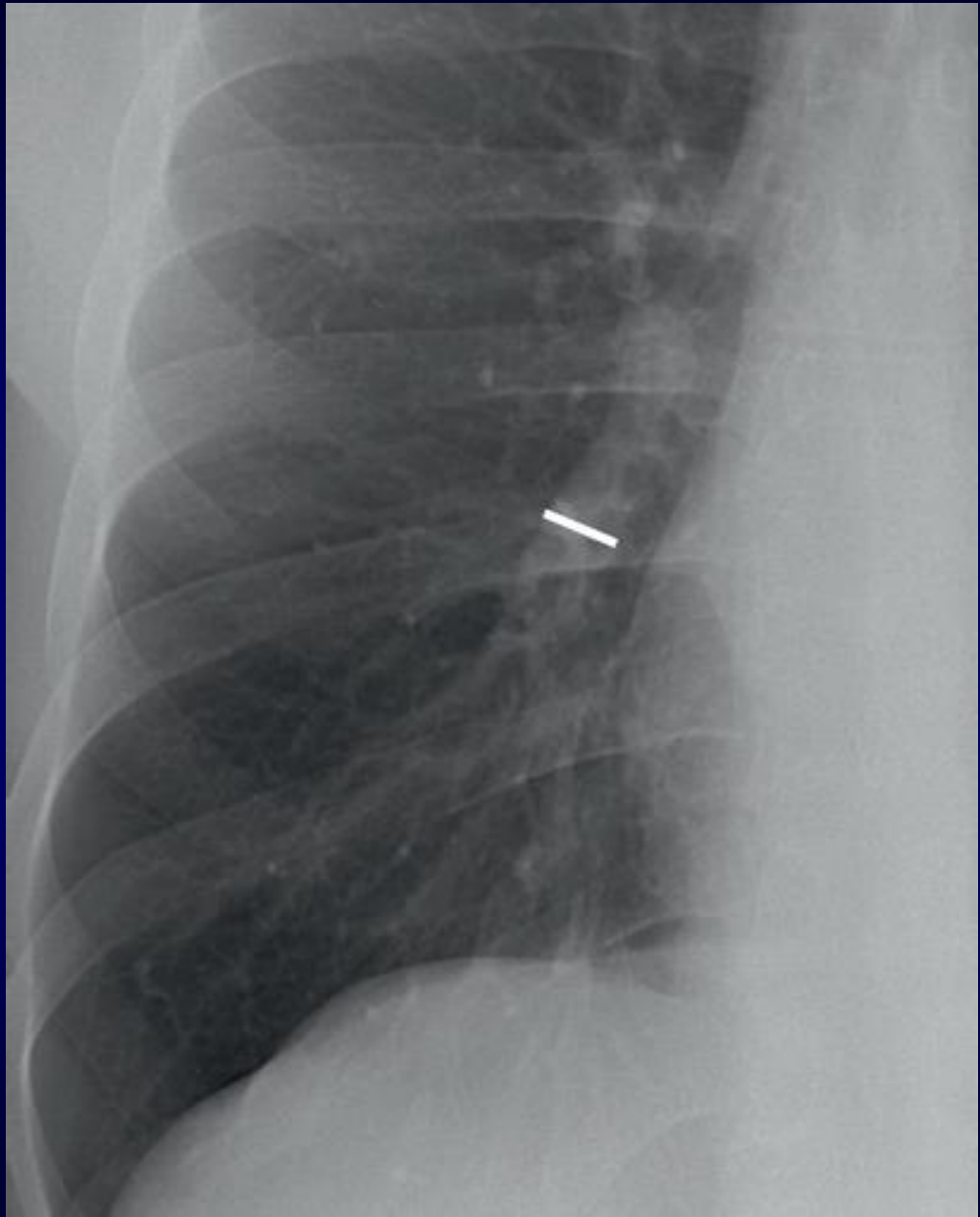
Dansiteleri aynı ancak konveks dış kenar



Sarkoidoz: Hiler lenfadenopatiler.
Dansiteleri aynı ancak konveks dış kenar



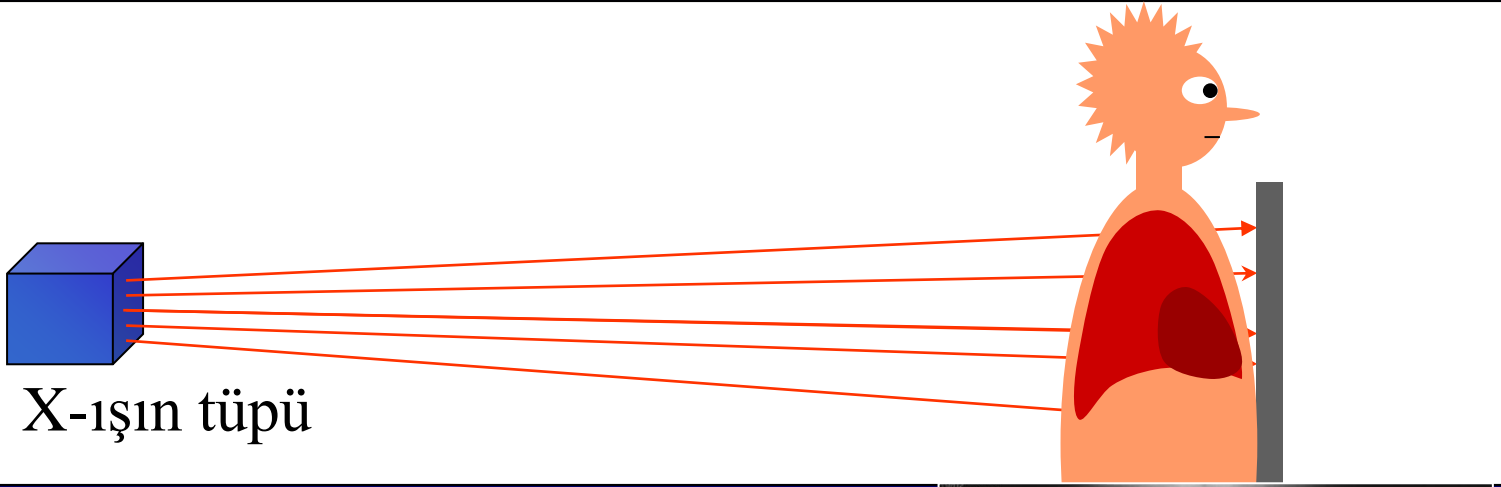
Normal grafi



Apikolordotik akciğer grafisi

- Arka ön grafilerde klavikülalar arkasında gizlenen lezyonları görmek için istenebilir.
- Bilgisayarlı tomografi de bu amaçla kullanılabilir ancak düz grafiler daha ucuz ve kolay yöntemlerdir.

Posteroanterior (PA) akciğer grafisi



Apikolordotik akciğer grafisinin çekim tekniği arka ön akciğer grafisinin çekim tekniğinden farklıdır.

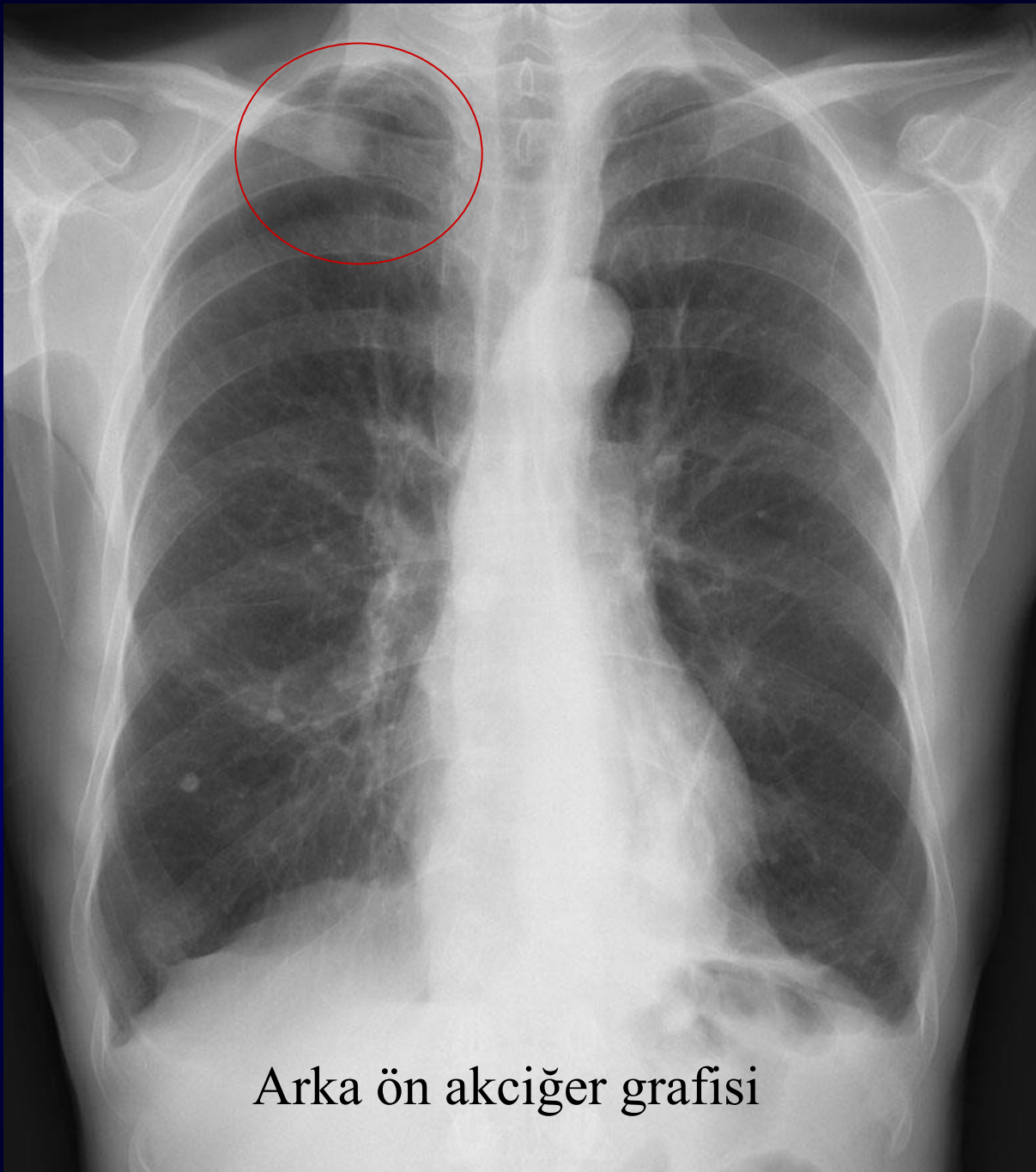


Apikolordotik grafi çekim tekniđi

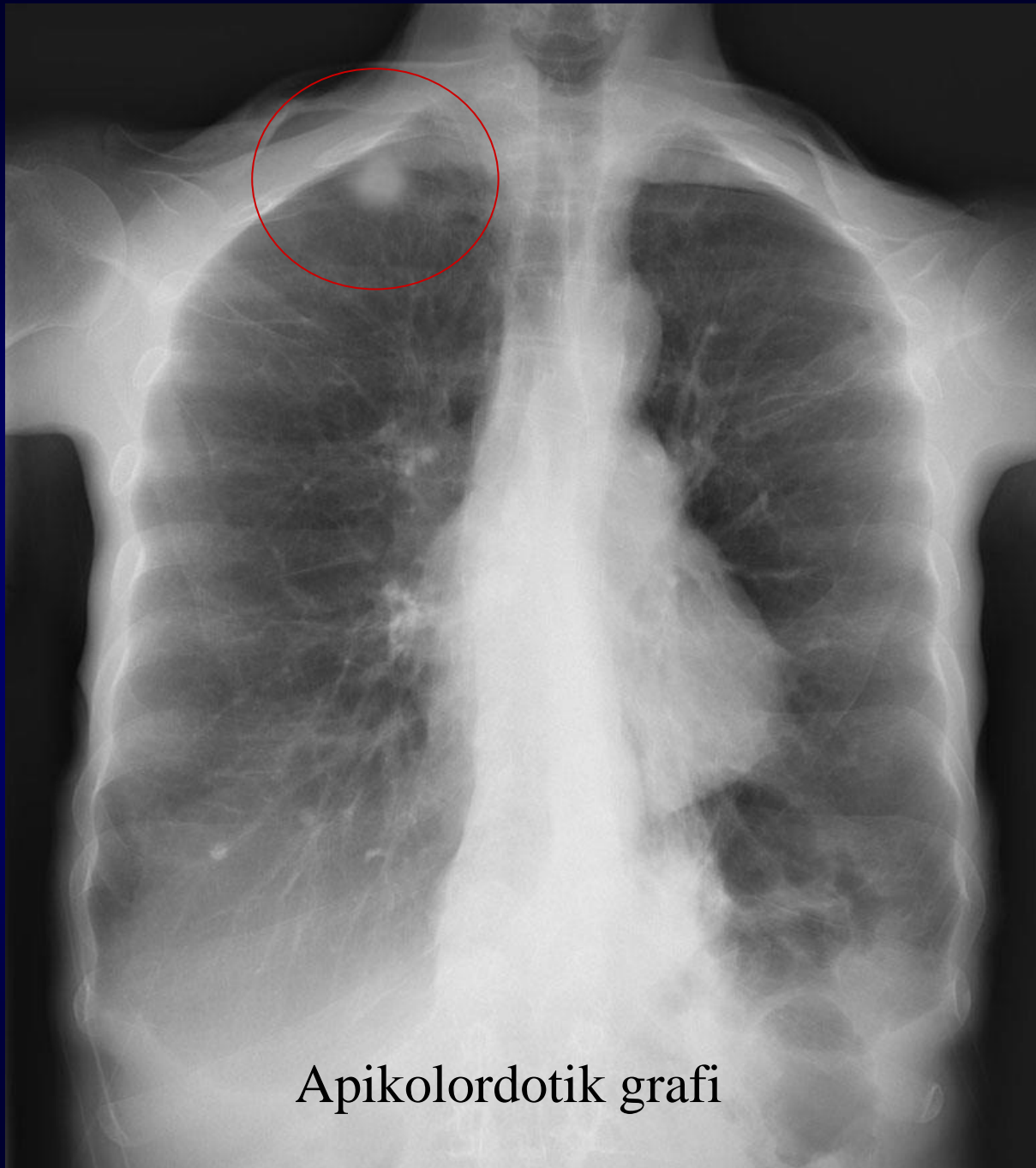


- Ön-arka projeksiyon
- Tüpe açı verilir
- Vücut açılı durur (omuzlar geri doğru)

Bu klasik pozisyon olup, apikolordotik grafinin çekiminde başka pozisyonlar da kullanılmaktadır.



Arka ön akciğer grafisi



Apikolordotik grafi

• BOX 3.1 How to Look at a Chest X-Ray

Determine the age, sex, and history of the patient

Identify the projection and technique used:

AP, PA, lateral, portable, or standard distance

Identify the position of the patient:

Upright, supine, decubitus, lordotic

Look at the inspiratory effort:

Adequate, hypoinflated, hyperinflated

Identify the obvious and common abnormalities:

Heart size, large or normal

Heart shape, specific chamber enlargement

Upper mediastinal contours

Examine airway, tracheal deviation

Lung symmetry

Any mediastinal shift?

Hilar position

Lung infiltrates, masses, or nodules

Pulmonary vascularity

Increased, decreased, or normal

Lower greater than upper

Pleural effusions, blunting of costophrenic angles

Rib, clavicle, or spine fractures or other lesions

Check tube placement

Recheck what you thought was normal anatomy, and look at

typical blind spots:

Behind the heart

Behind the hemidiaphragms

In the lung apices

Pneumothorax present?

Costophrenic angles

Chest wall

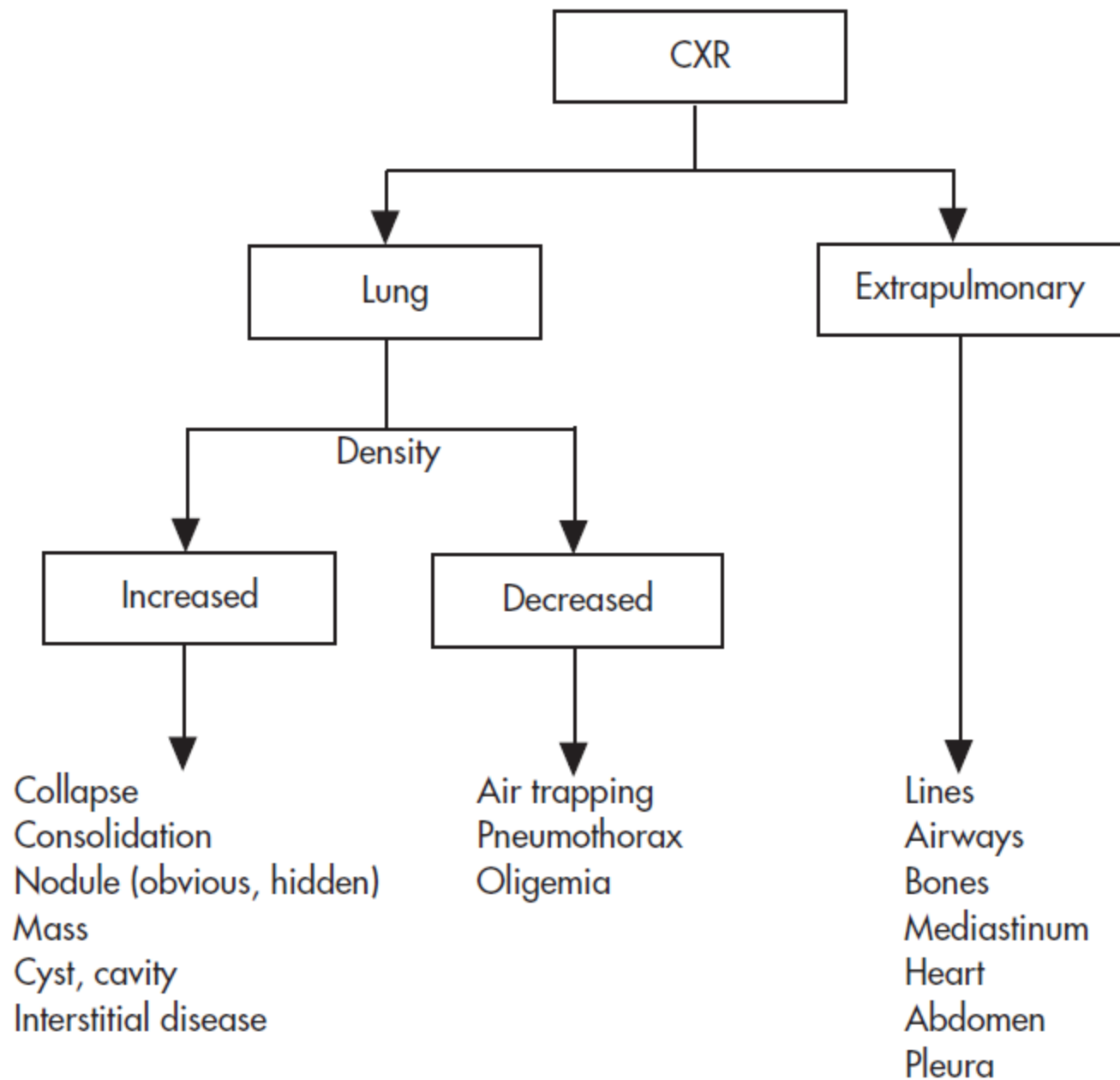
Lytic rib lesions

Shoulders

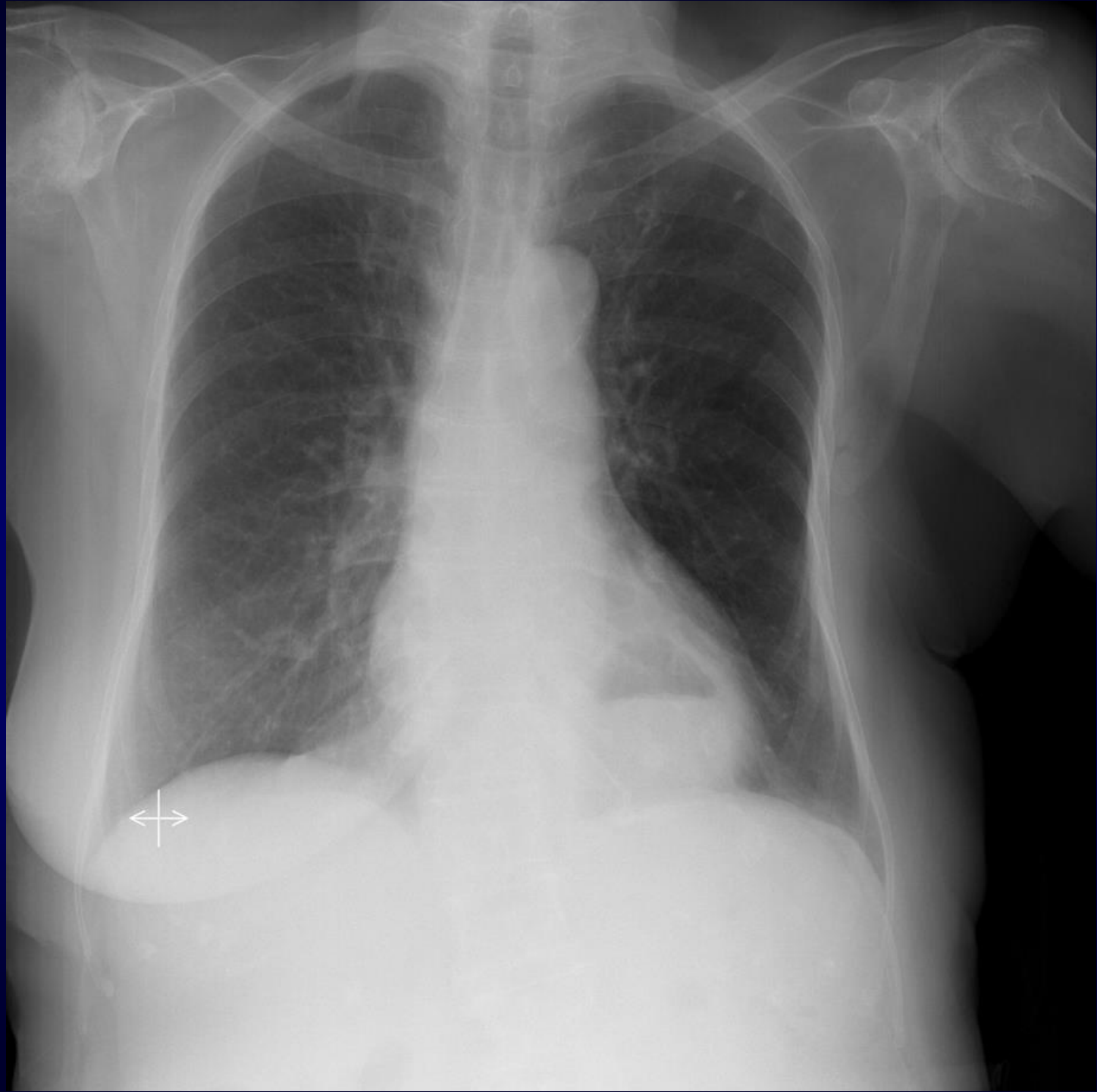
Look for old images, not just the last one

Decide what the findings are and their location

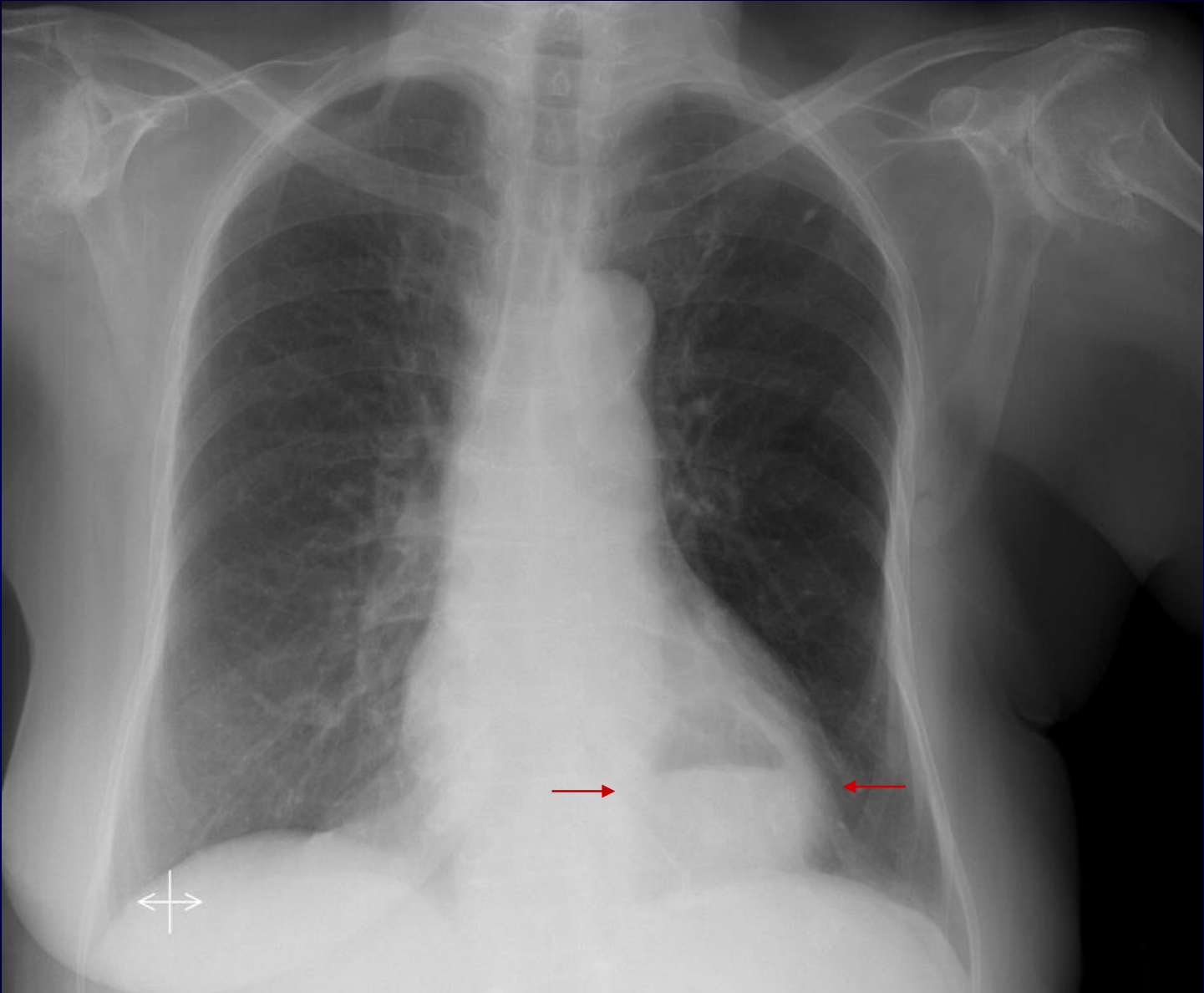
Give a common differential diagnosis correlated with the clinical history



1

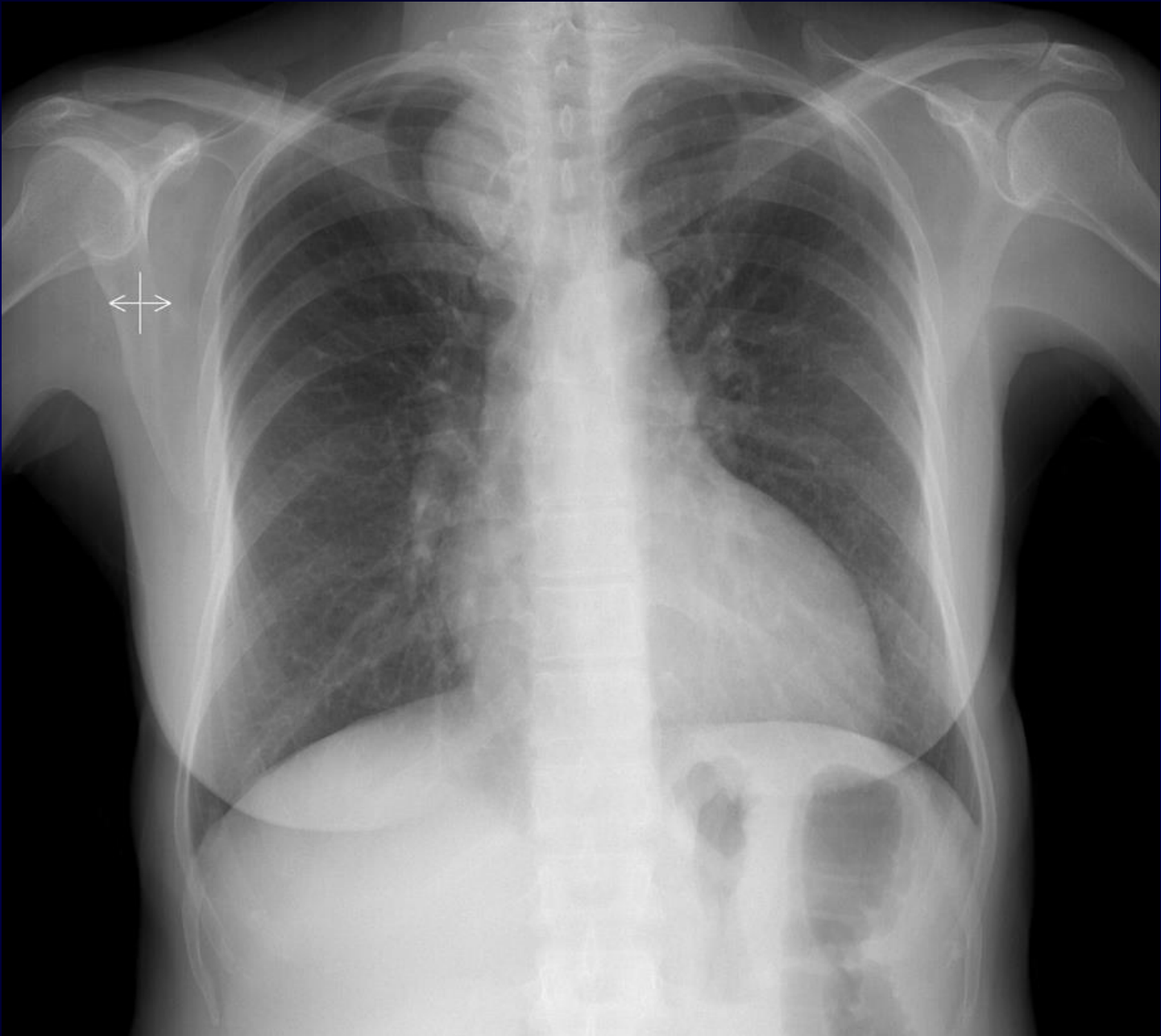


1

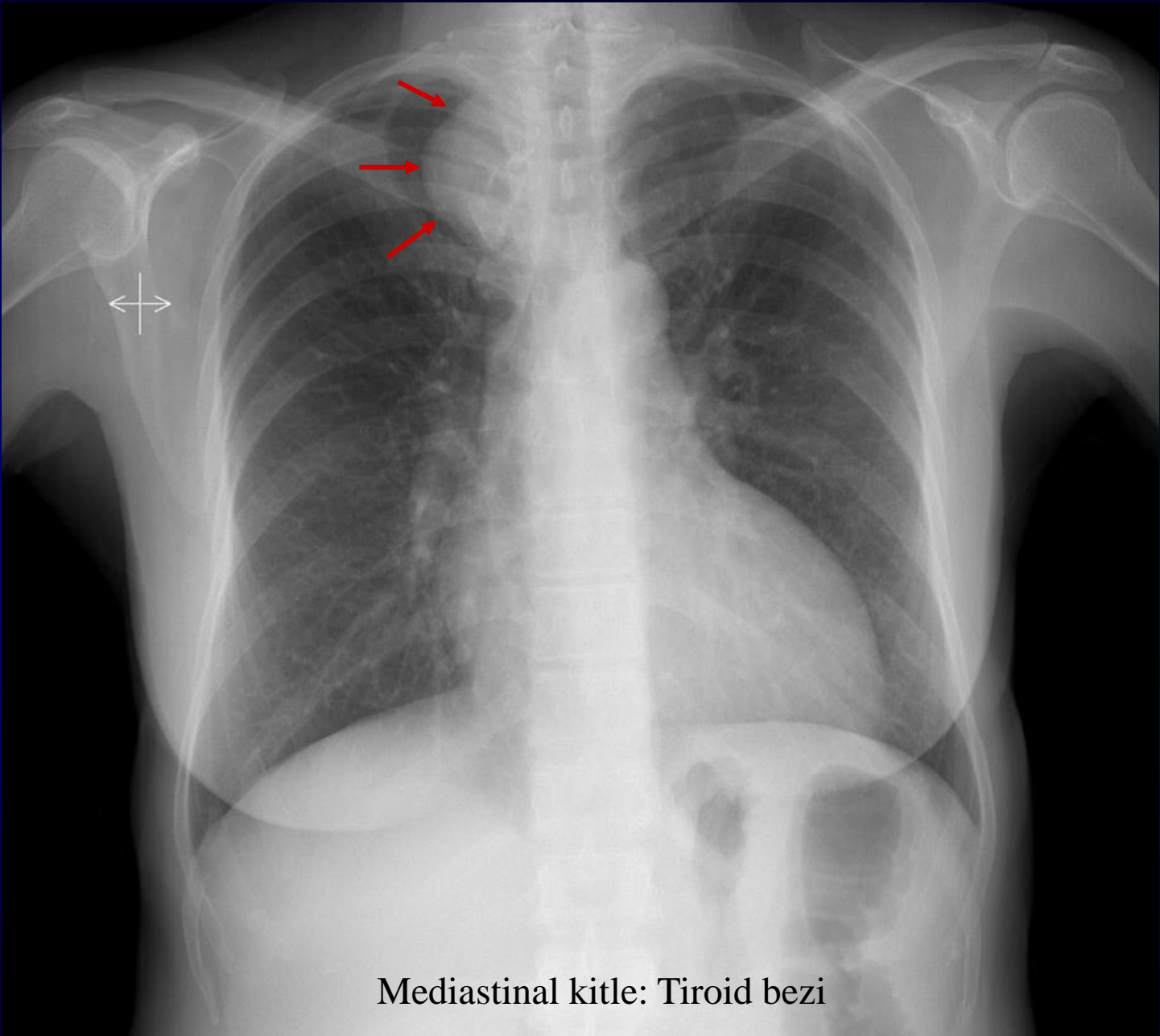


Tek taraflı hiperlüsent akciğer (opere meme ca), hiatal herni (kalb arkasında herniye mideye ait hava sıvı seviyesi, kırmızı oklar), her iki omuz ekleminde dejeneratif değişiklikler ve sol humerusta eski kırık

2



2



Mediastinal kitle: Tiroid bezi

3



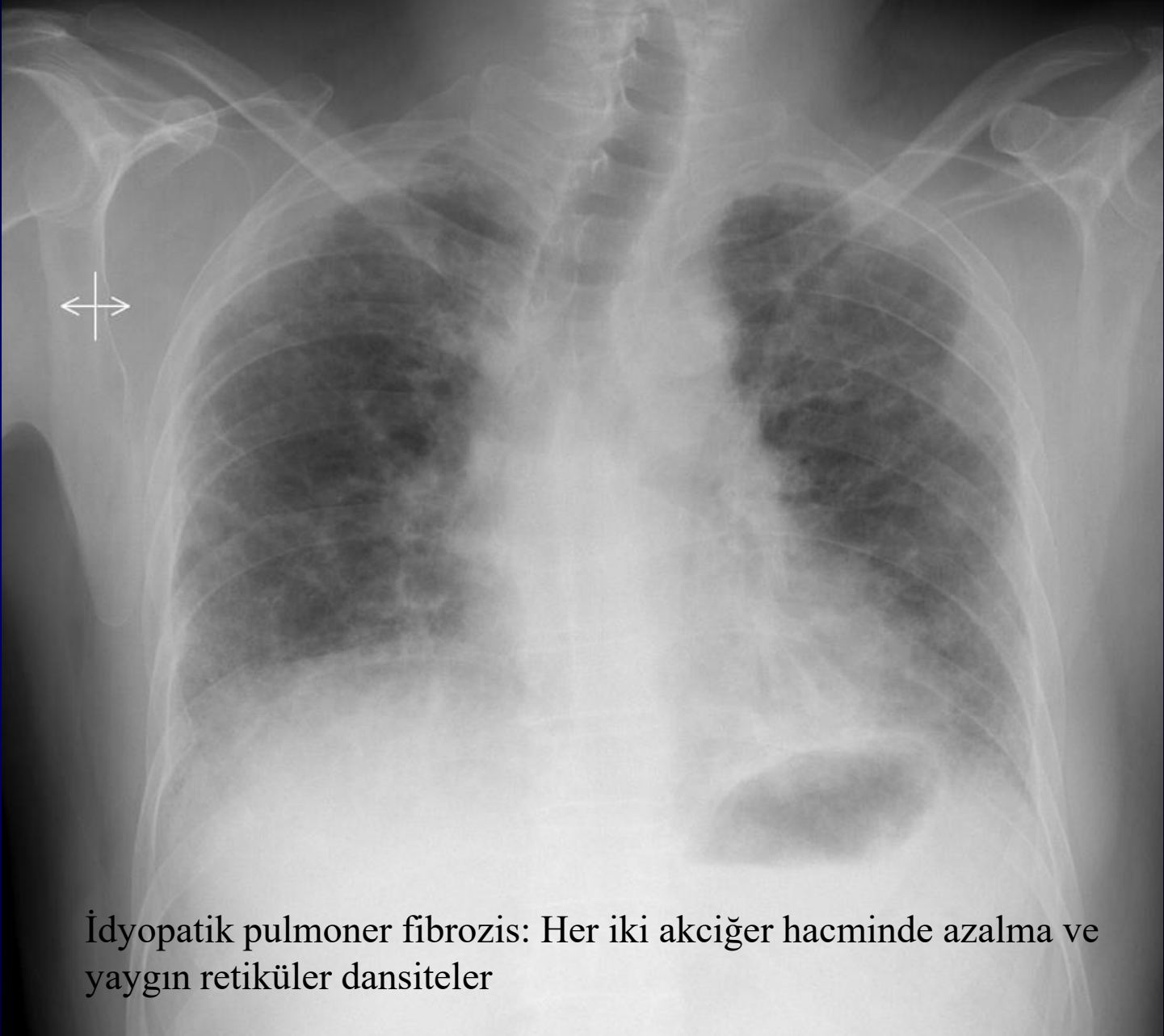


Milier patern.

Milier patern yapan hastalıklardan bazıları: miler TB, sarkoidoz, metastazlar, viral pnömoniler, silikozis...

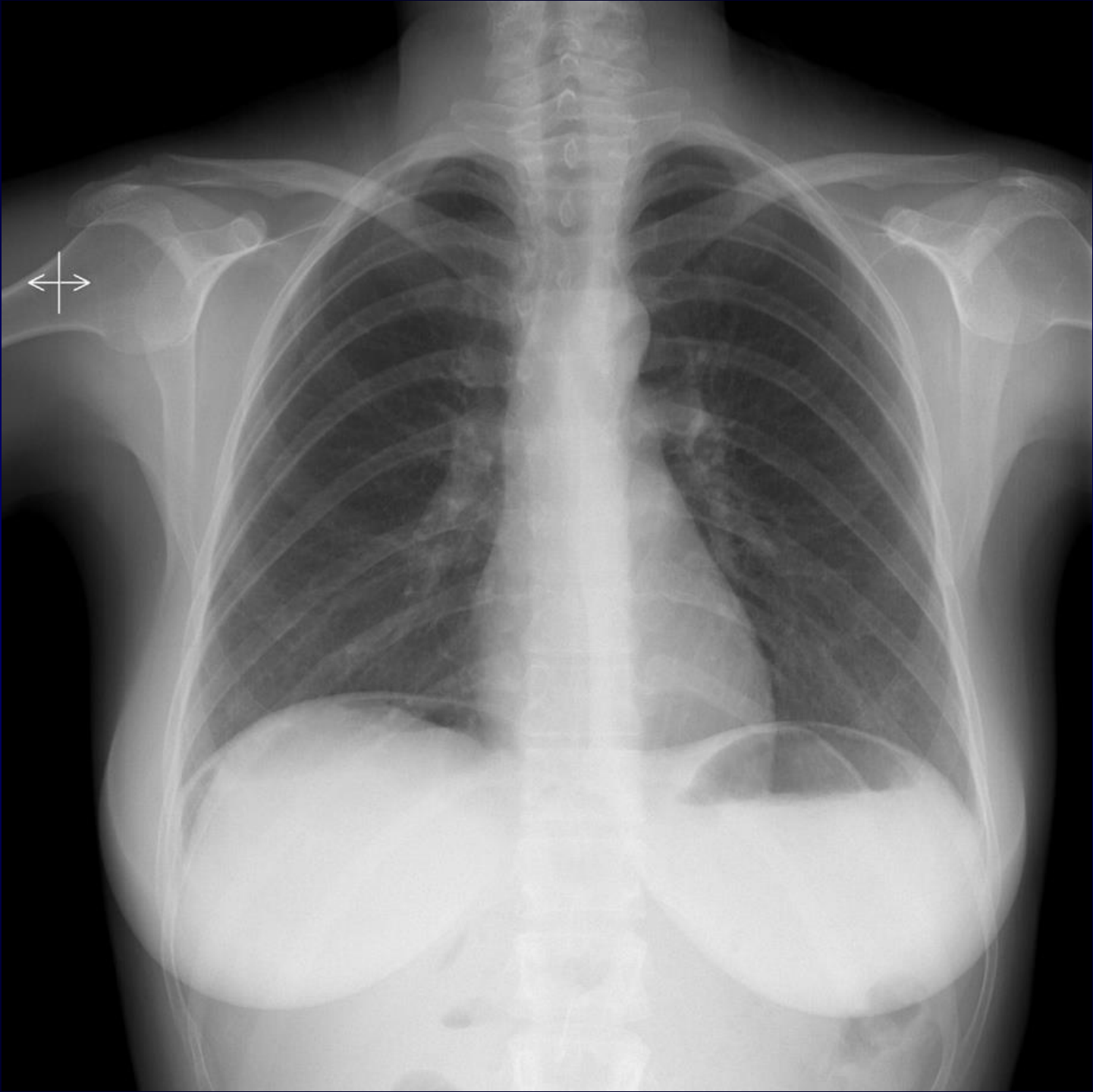
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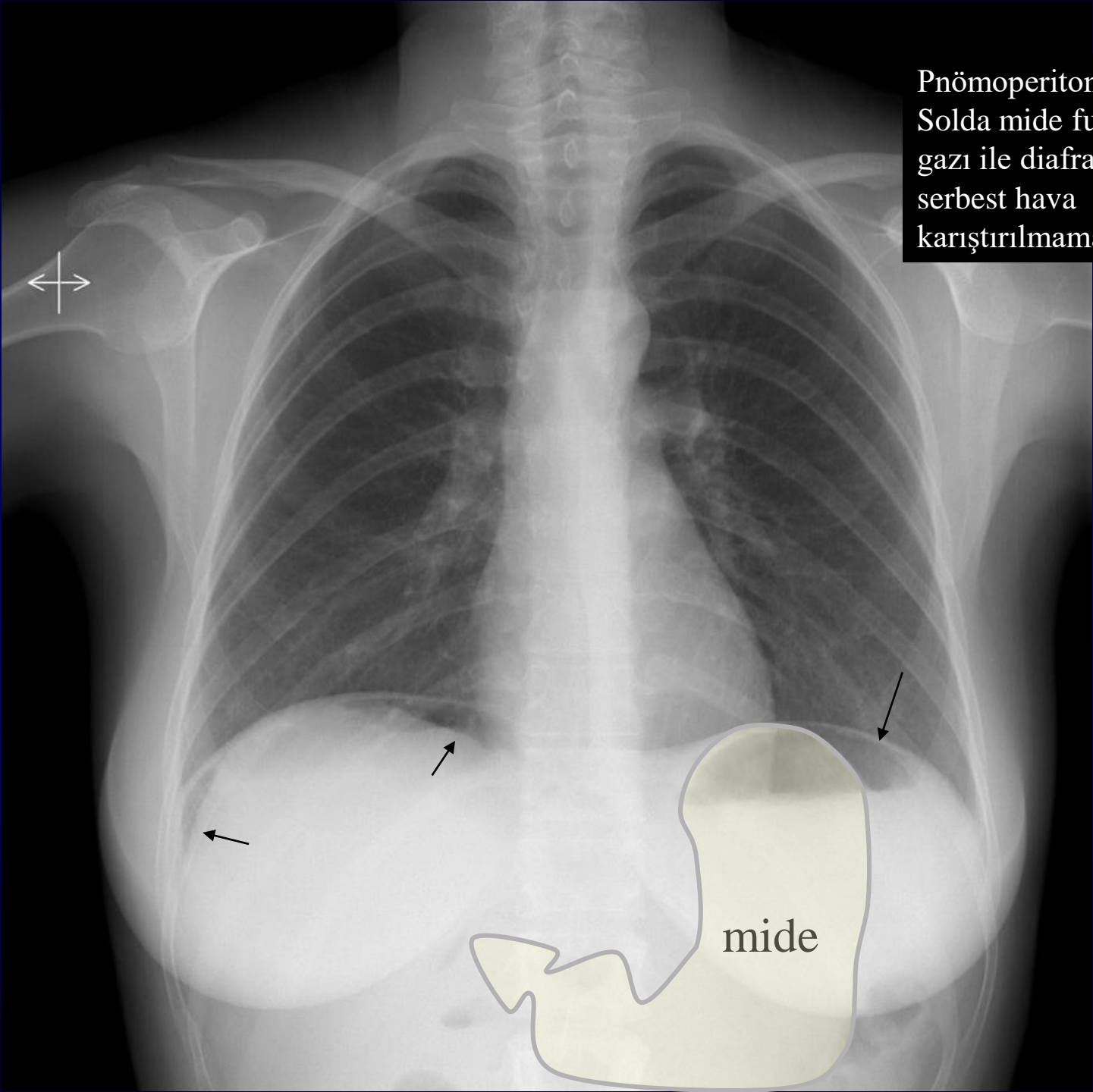


İdyopatik pulmoner fibrozis: Her iki akciğer hacminde azalma ve yaygın retiküler dansiteler

5



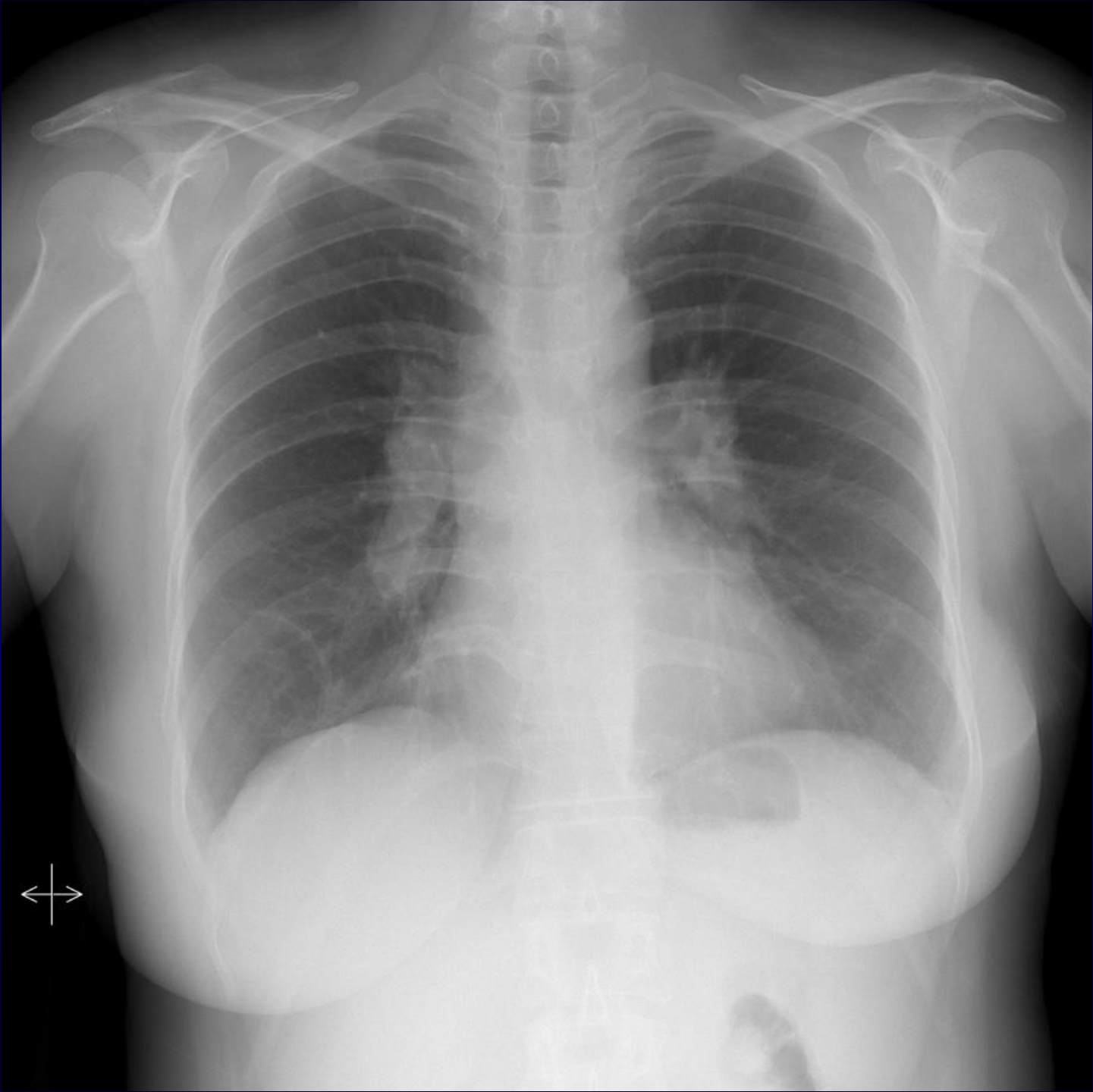
5



Pnömoperitonyum.
Solda mide fundus
gazı ile diafragma altı
serbest hava
karıştırılmamalıdır.

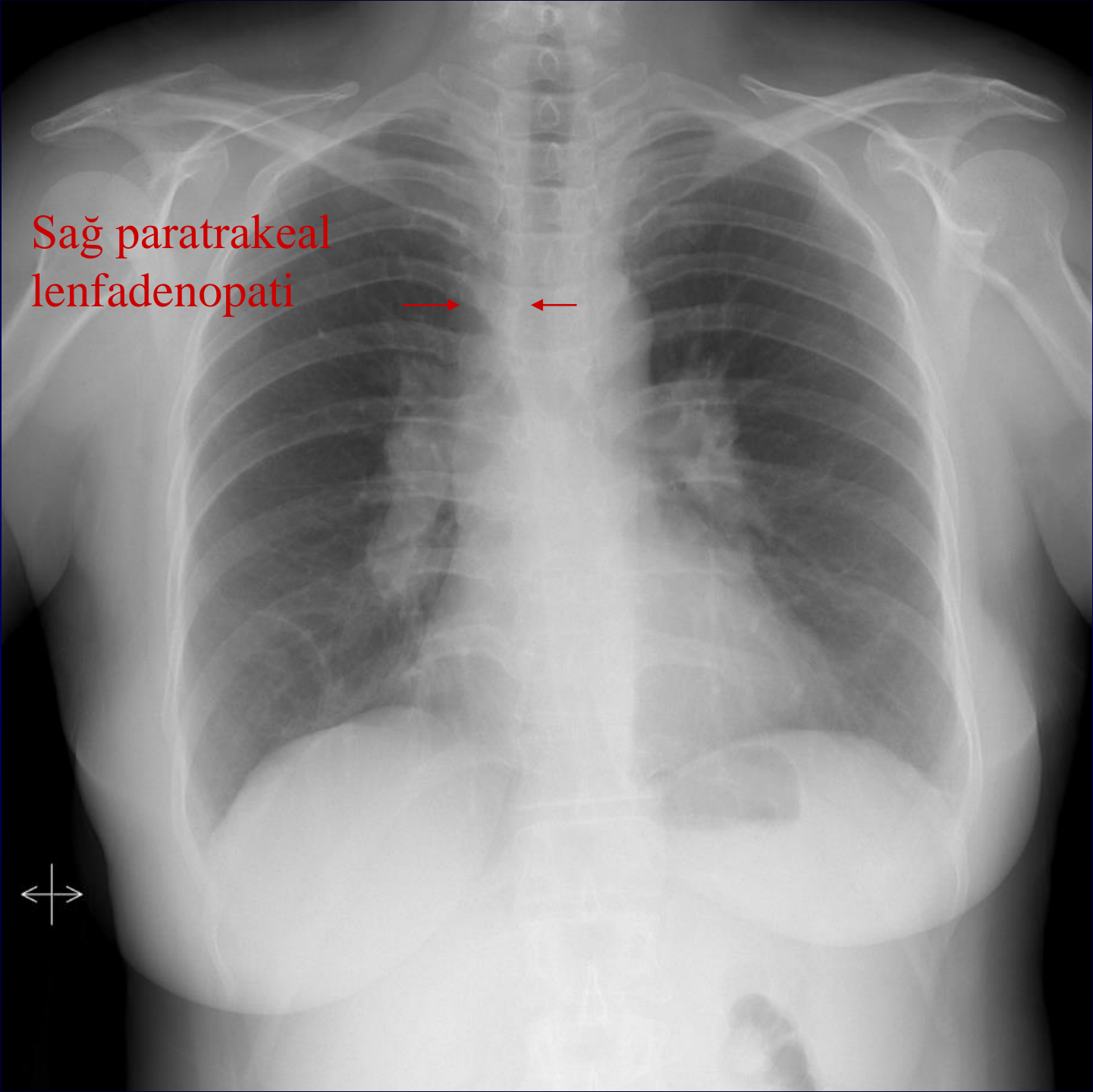
mide

6



6

Sağ paratrakeal
lenfadenopati



6

Sağ paratrakeal
lenfadenopati

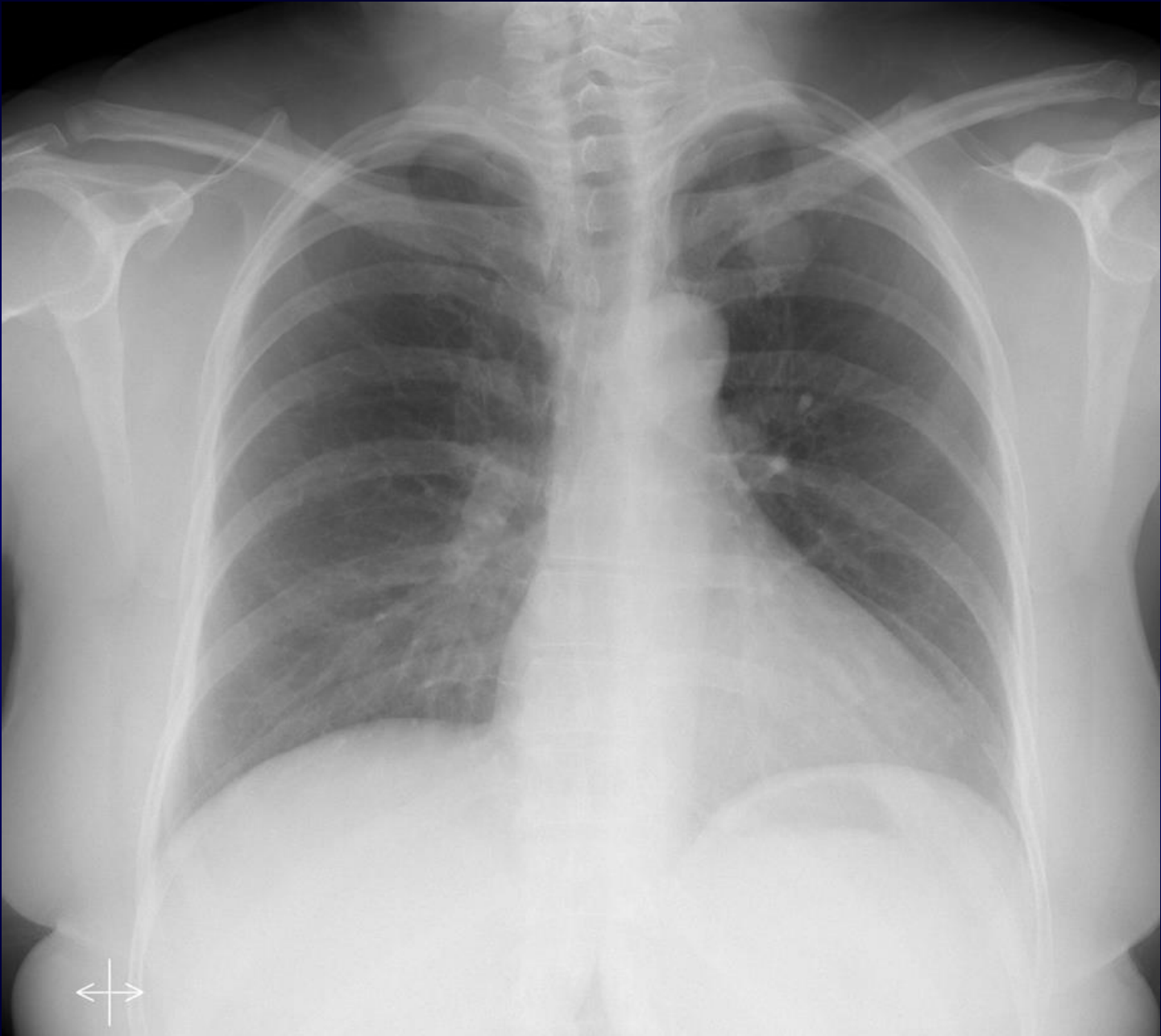


Hiler lenfadenopatiler

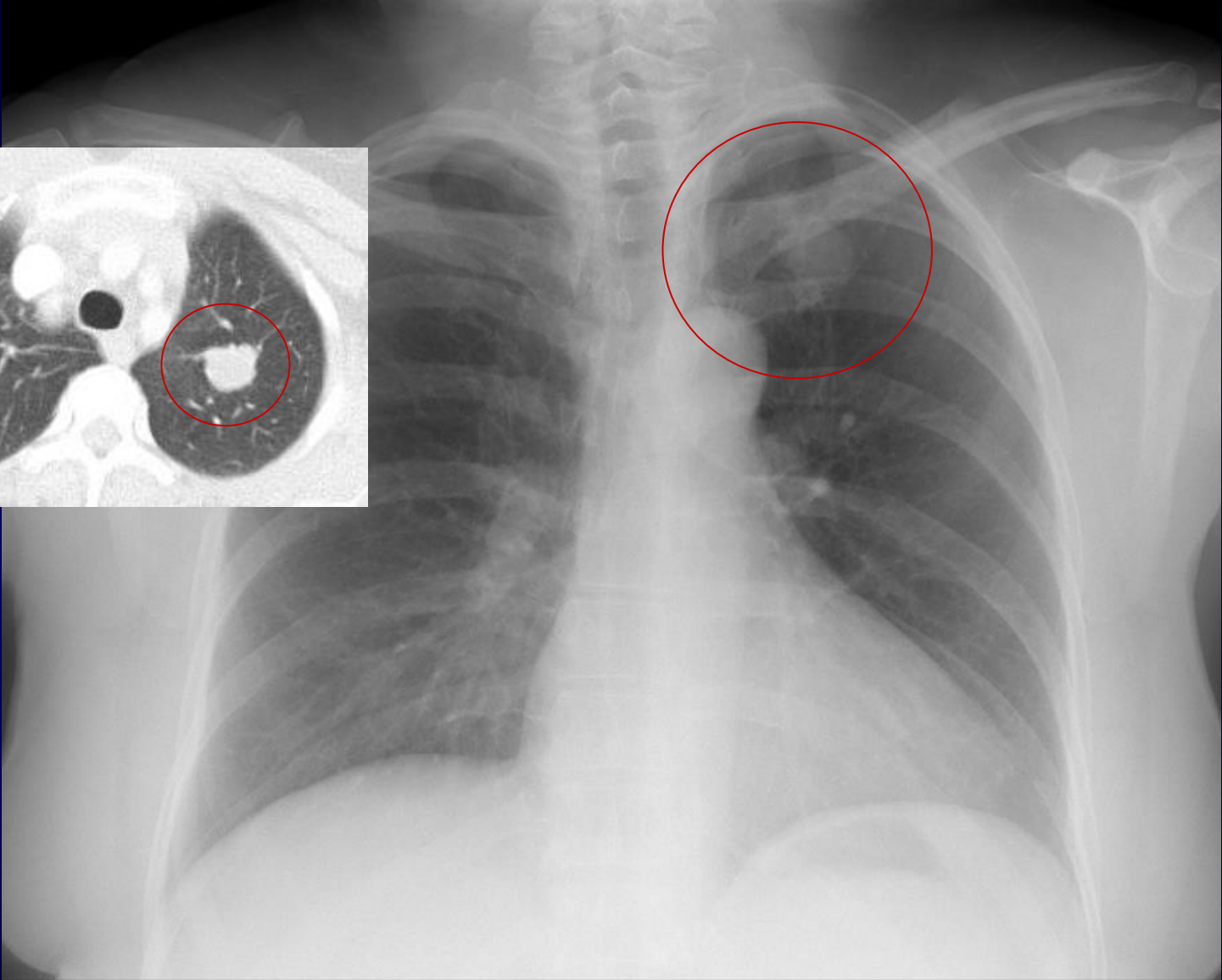


Tanı: sarkoidoz

7



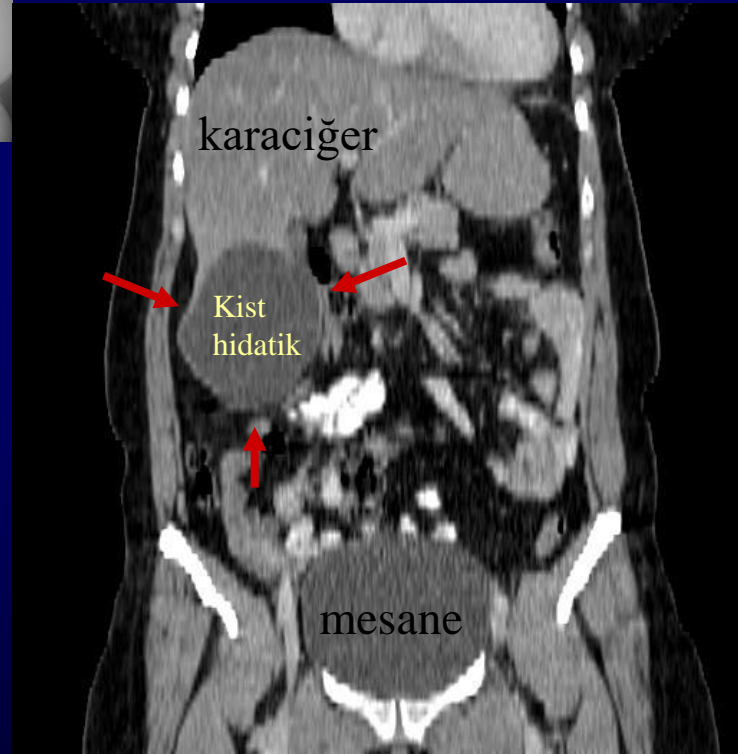
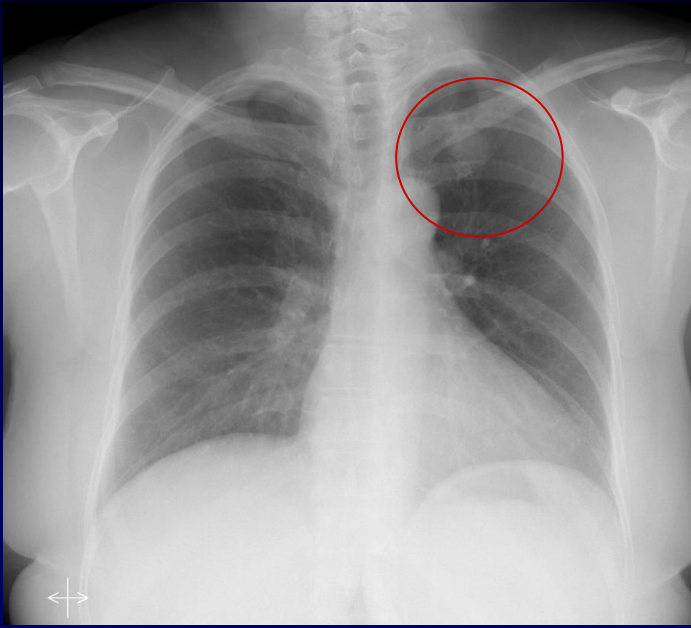
7



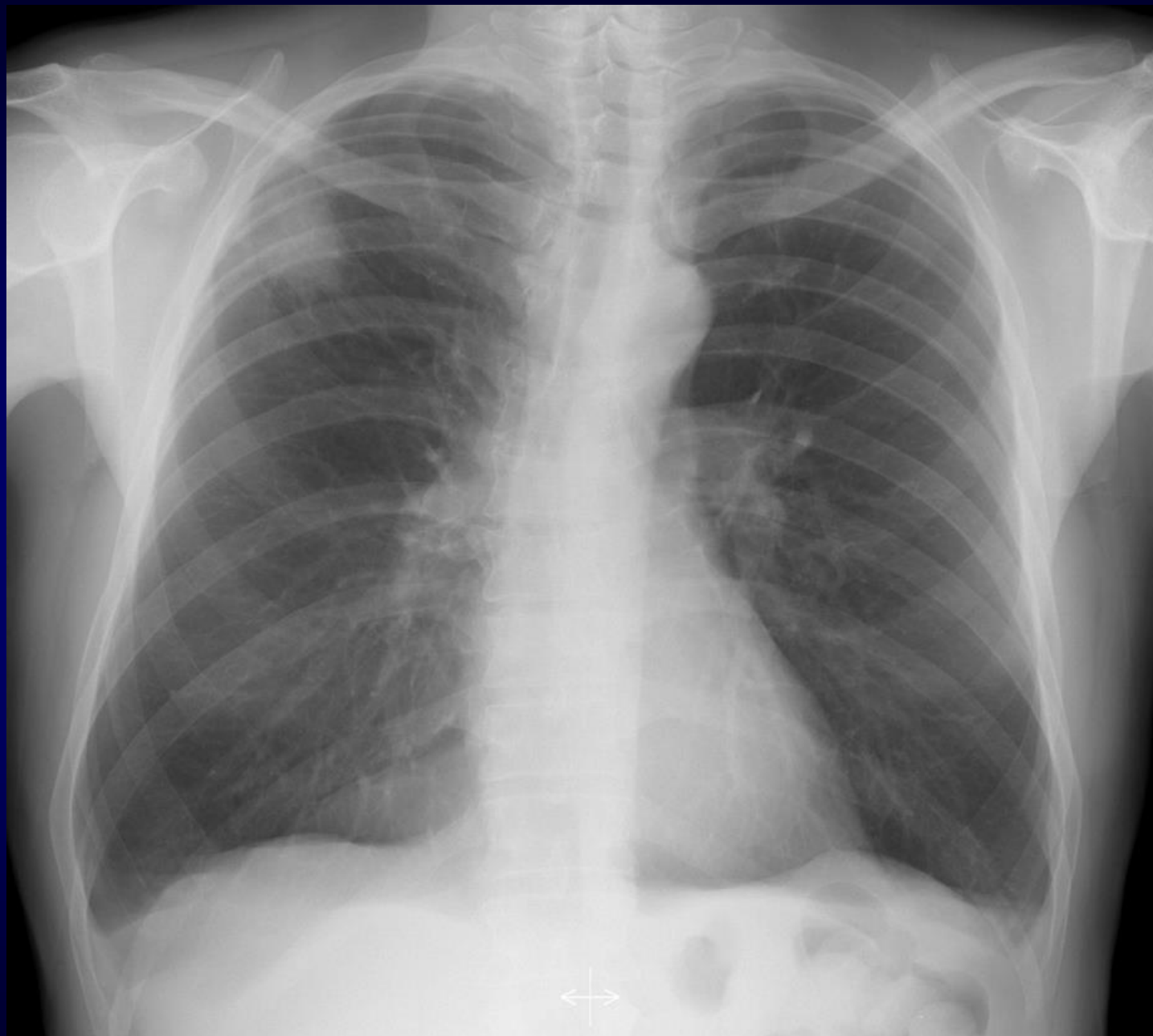
Sol apikal nodül: Kist hidatik

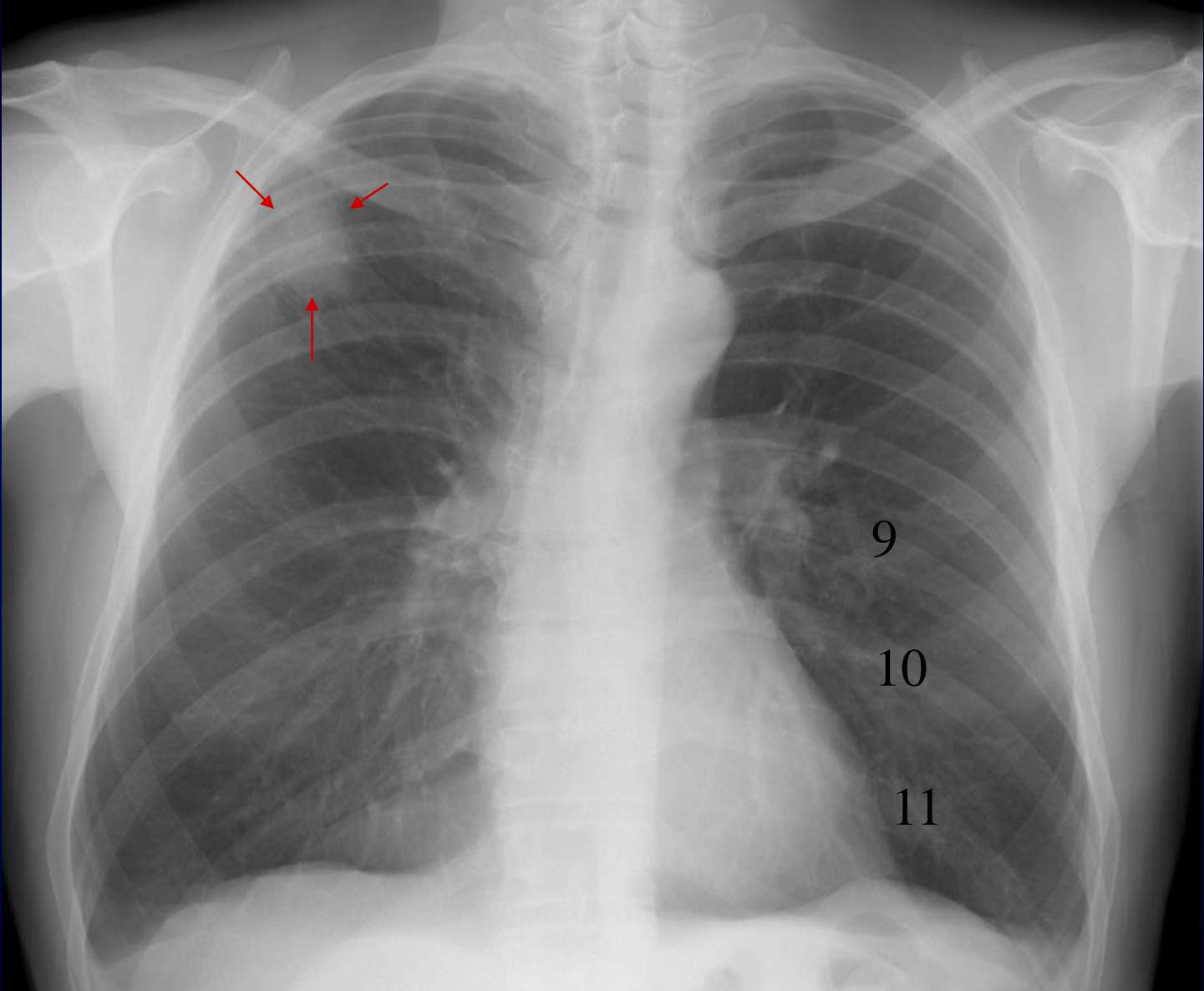
Birçok benign ve malign hastalık nodül görünümü oluşturabilir

7

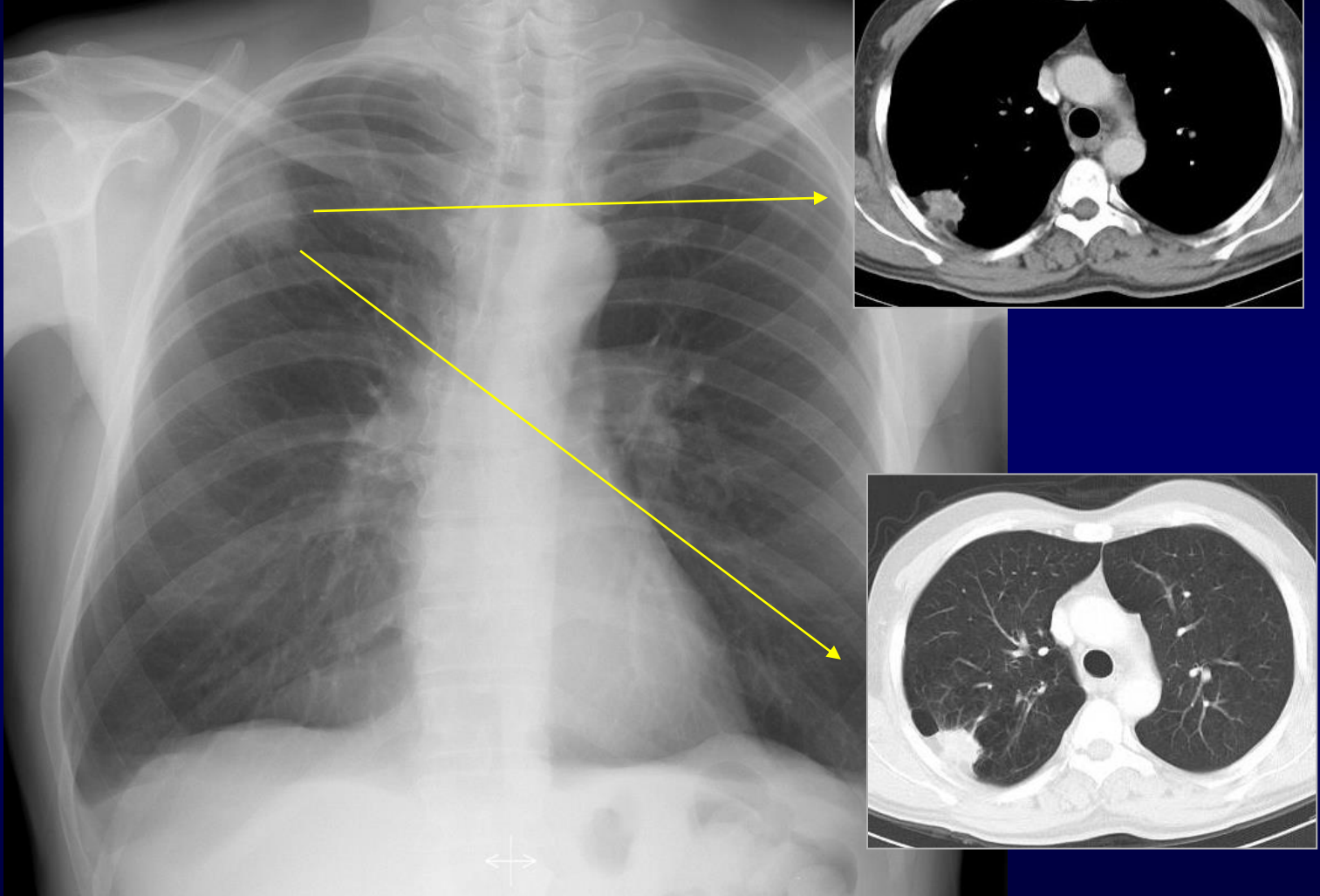


Aynı hastanın abdomen BT tetkikinden oluşturulan koronal plandaki görüntüde karaciğerde de kist hidatik görülüyor



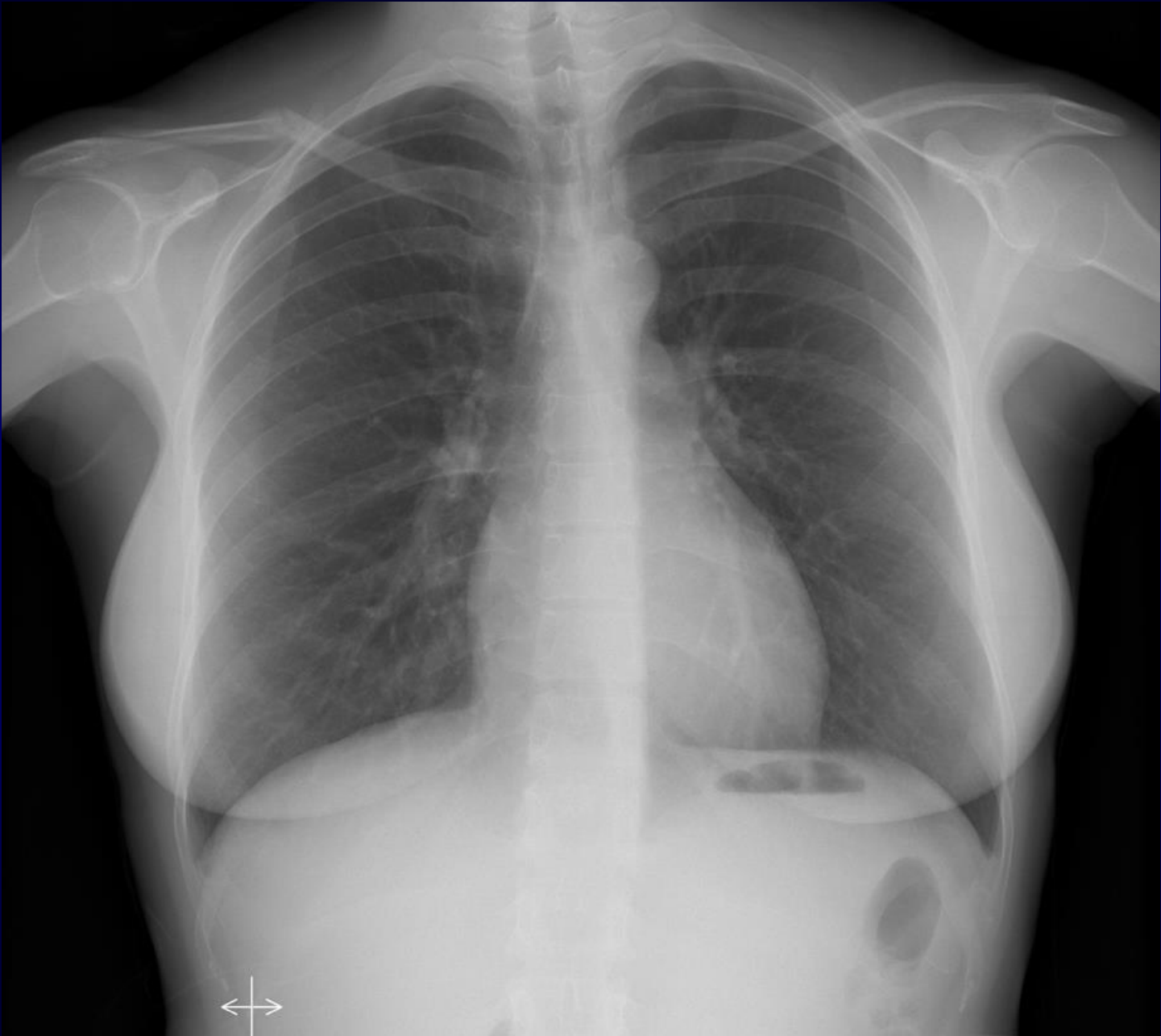


Sağ akciğerde düzensiz konturlu nodül: patoloji akciğer kanseri.
Amfizem: 11. arka kosta izleniyor. Normalde 9-10 kosta görülmeli



Mediasten ve parankim penceresinde 5mm kalınlığında BT kesitleri

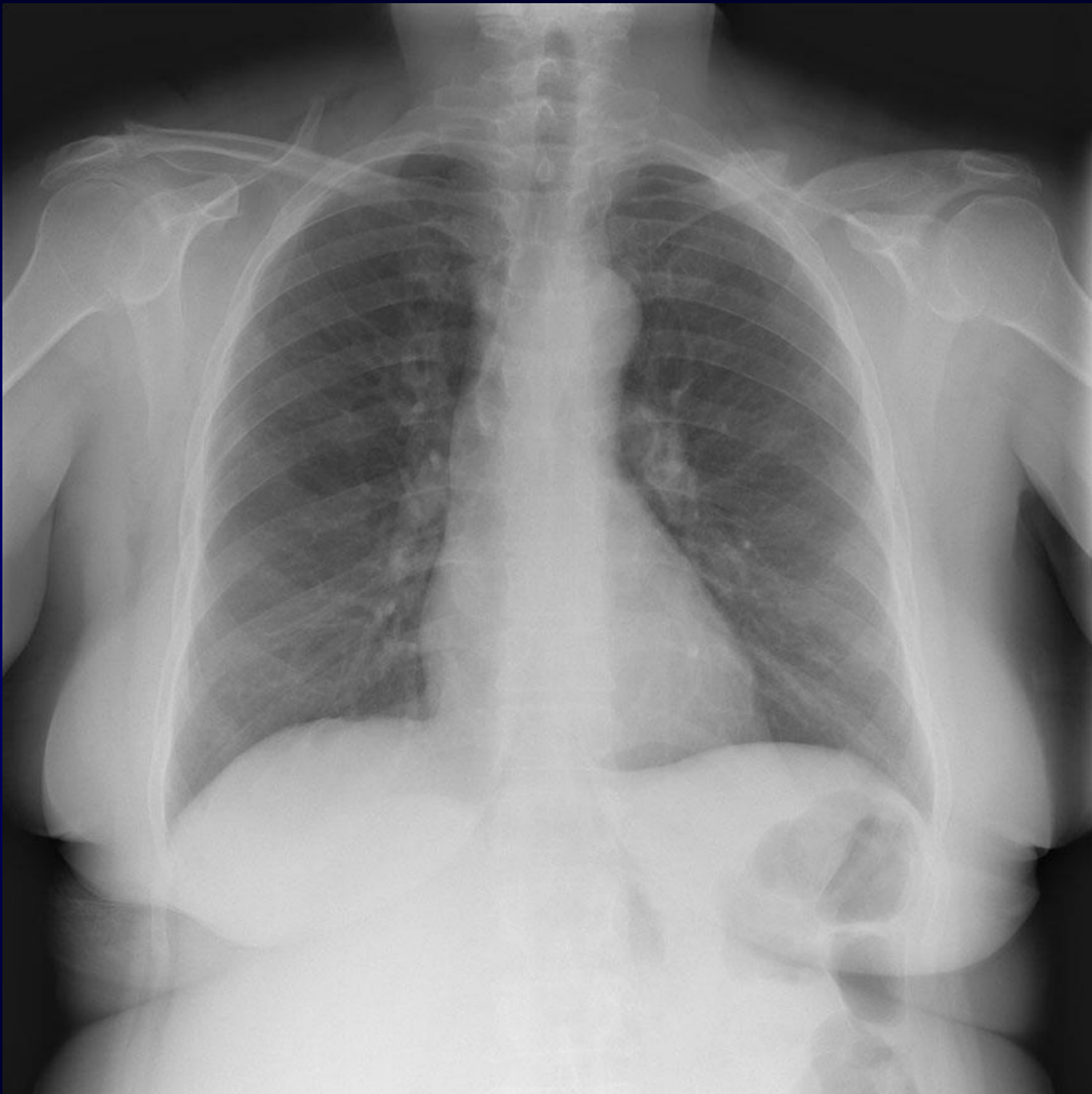
9



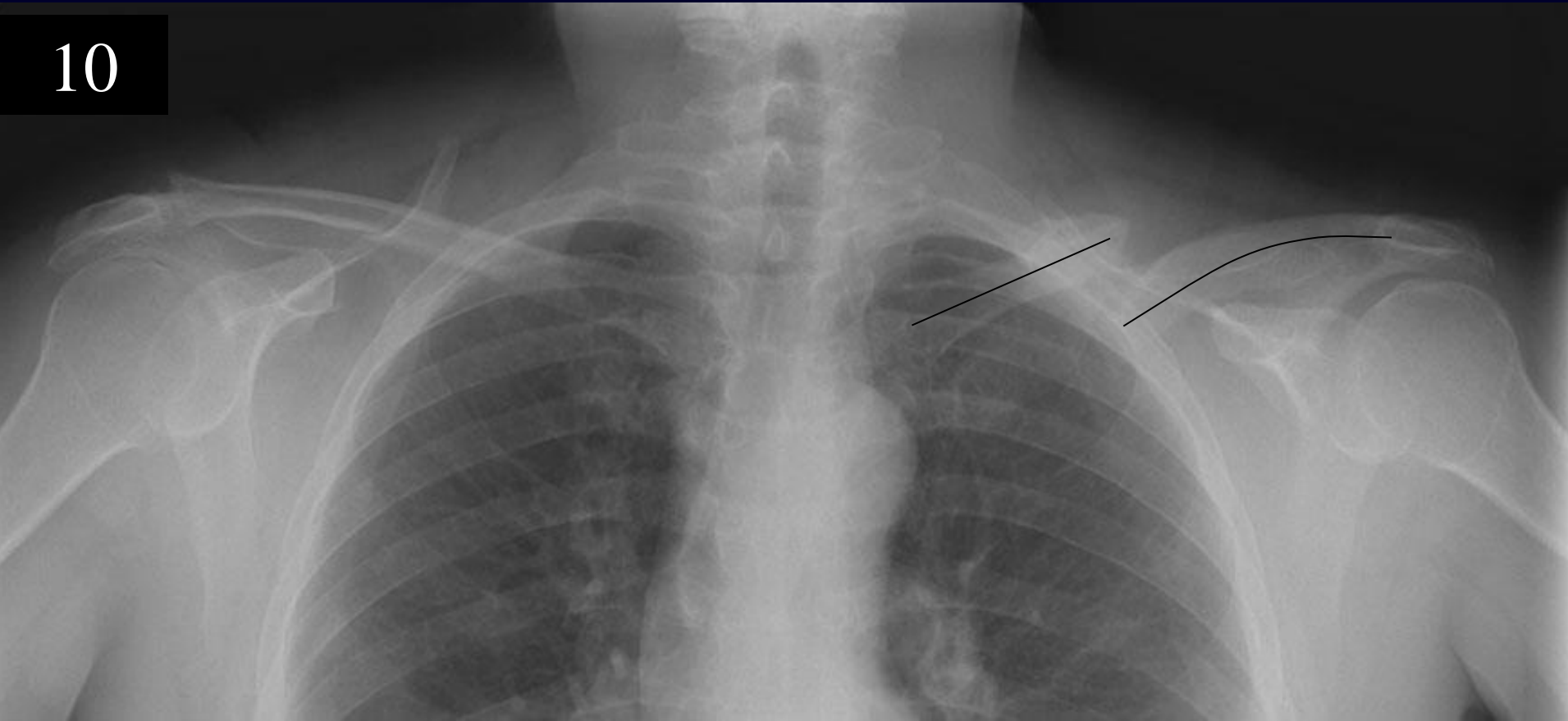


İyileşmekte olan sağ klaviküla kırığı. Açıklı olarak kaynamakta (kötü kaynama).

10

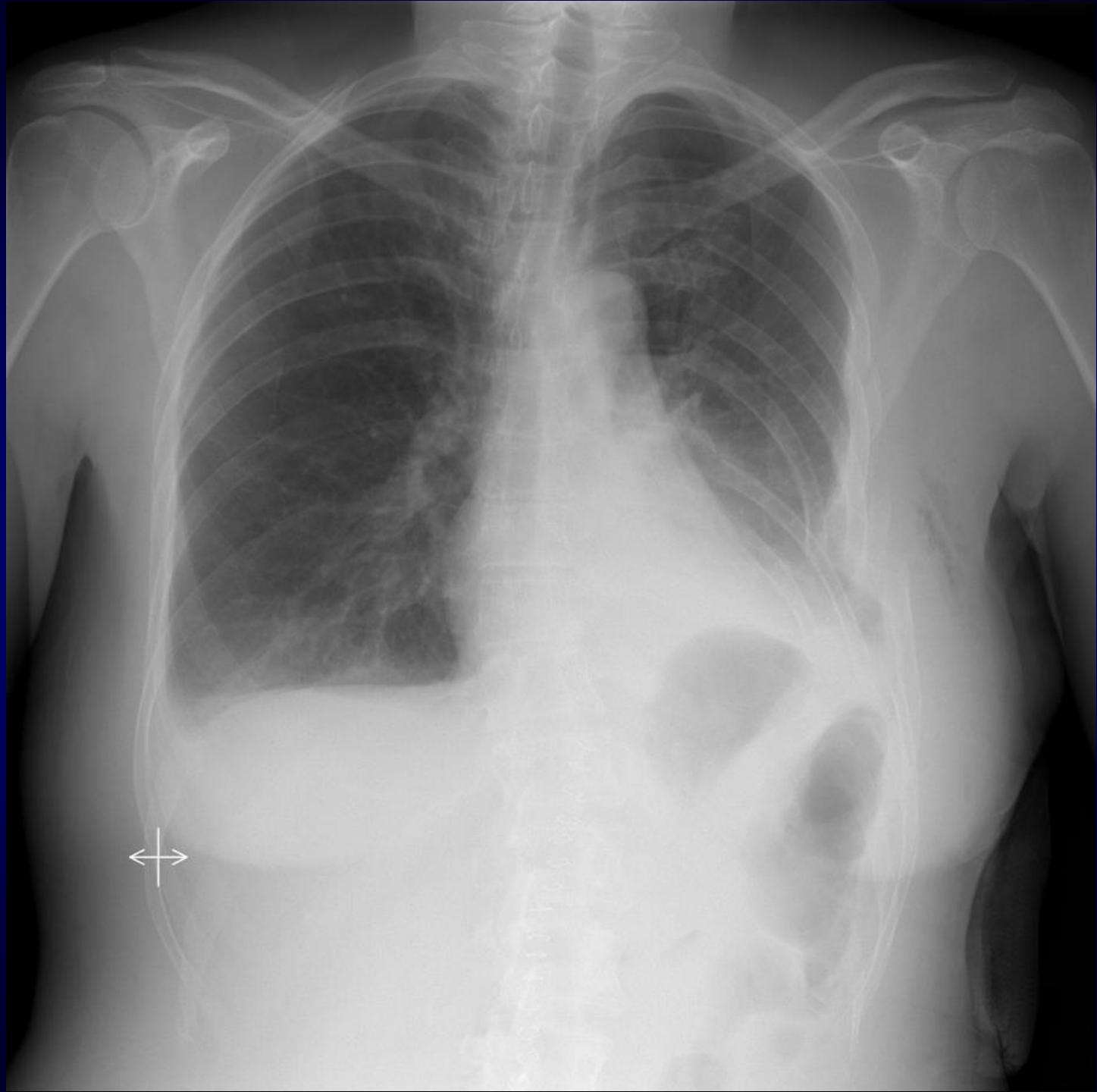


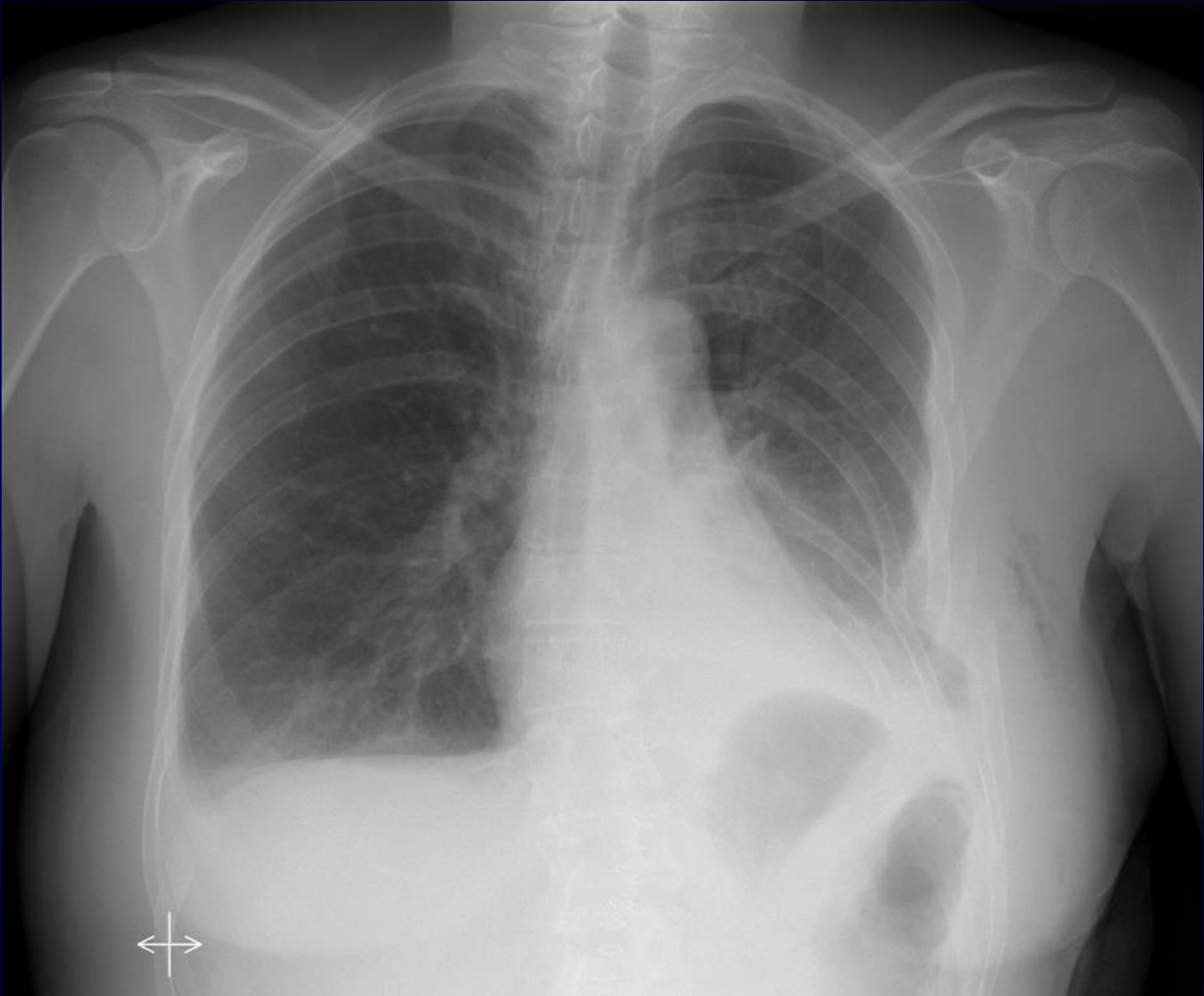
10



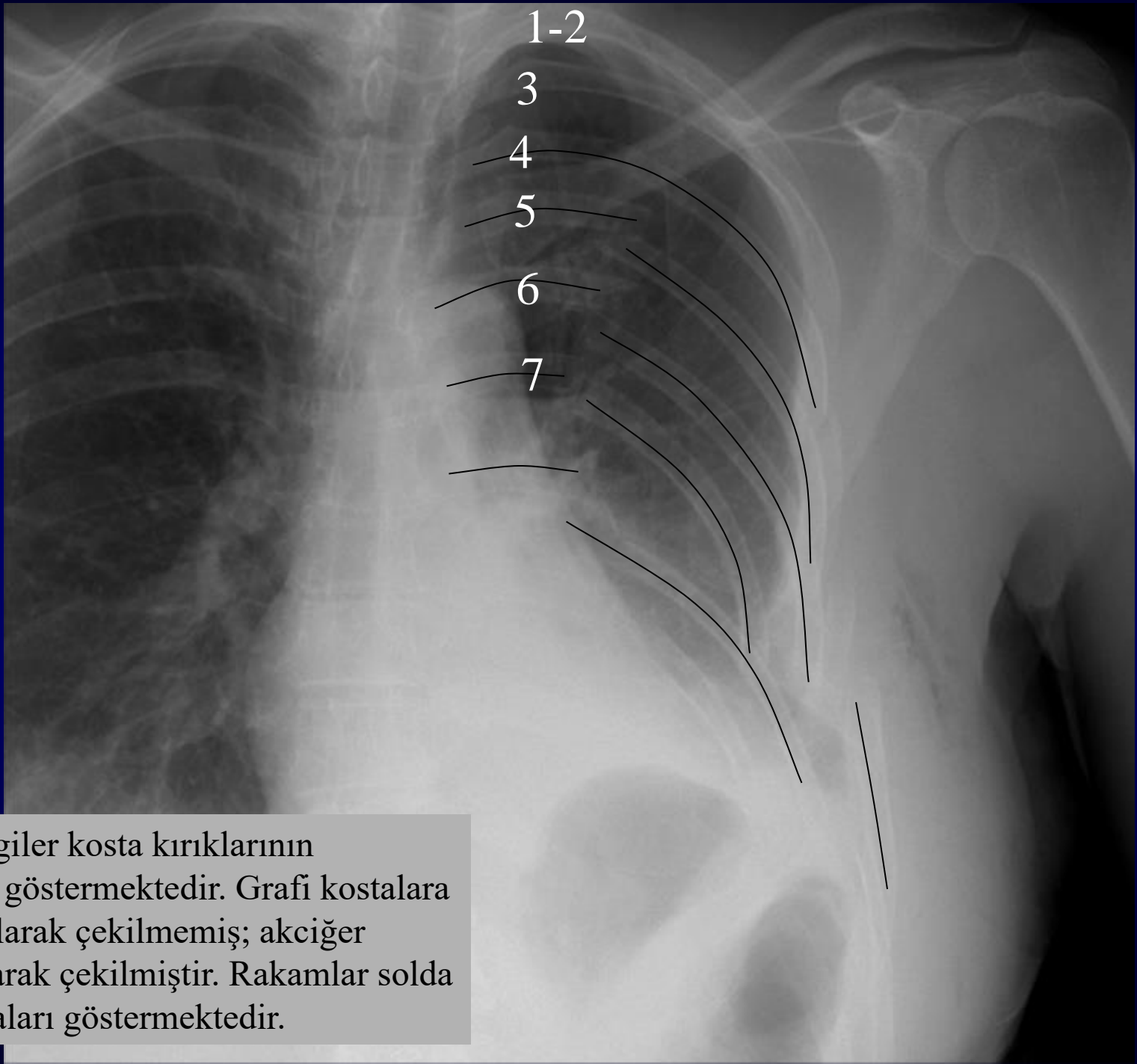
Solda (kaynamamış) eski klaviküla kırığı
Siyah çizgiler sol klaviküla parçalarını göstermektedir

11





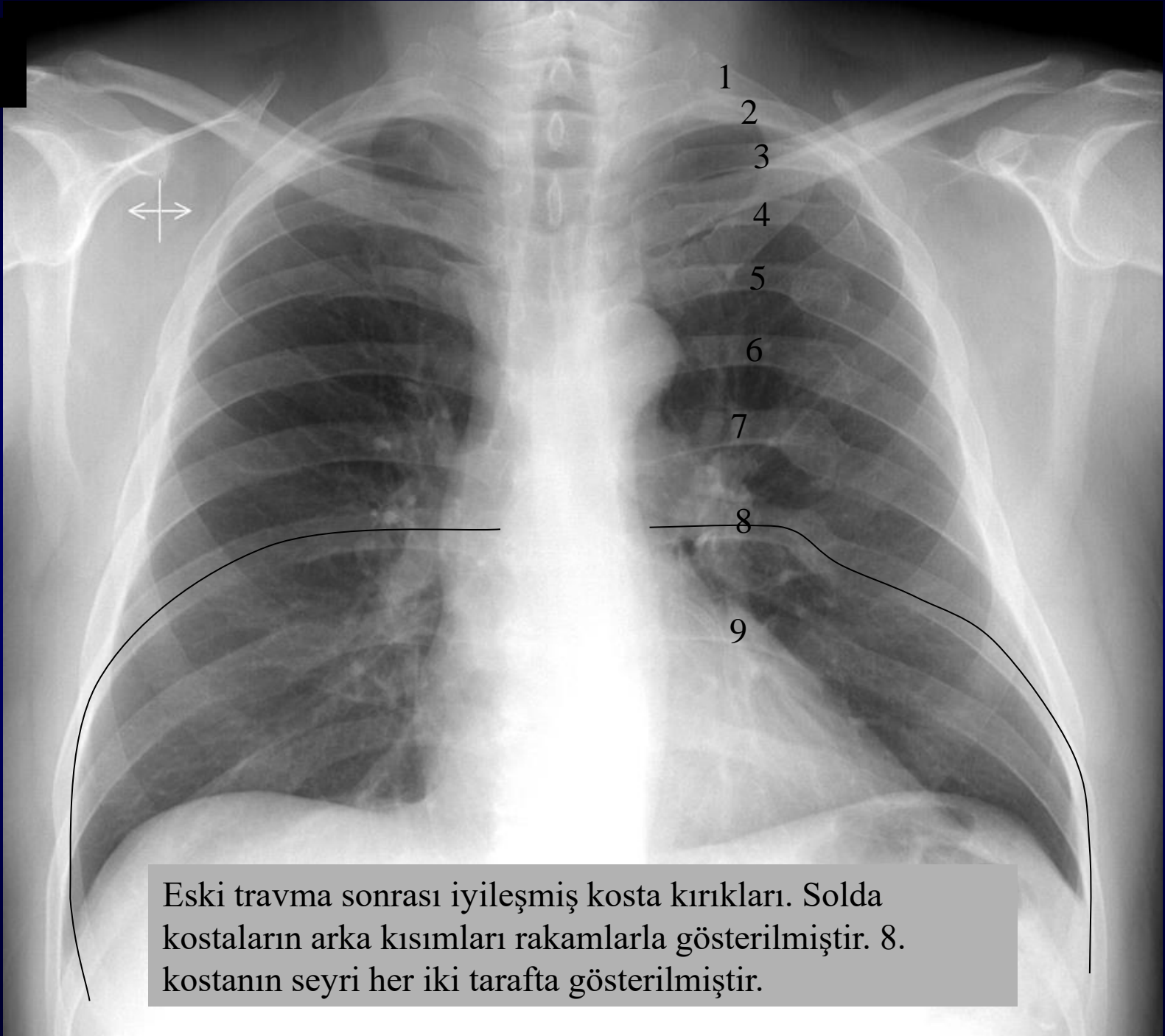
Yeni travma sonrası solda yaygın kosta kırıkları, iki taraflı plevral sıvı (muhtemel hemotoraks), solda cilt altı amfizemi. Yaygın kosta kırıkları yelken göğüse neden olabilir.



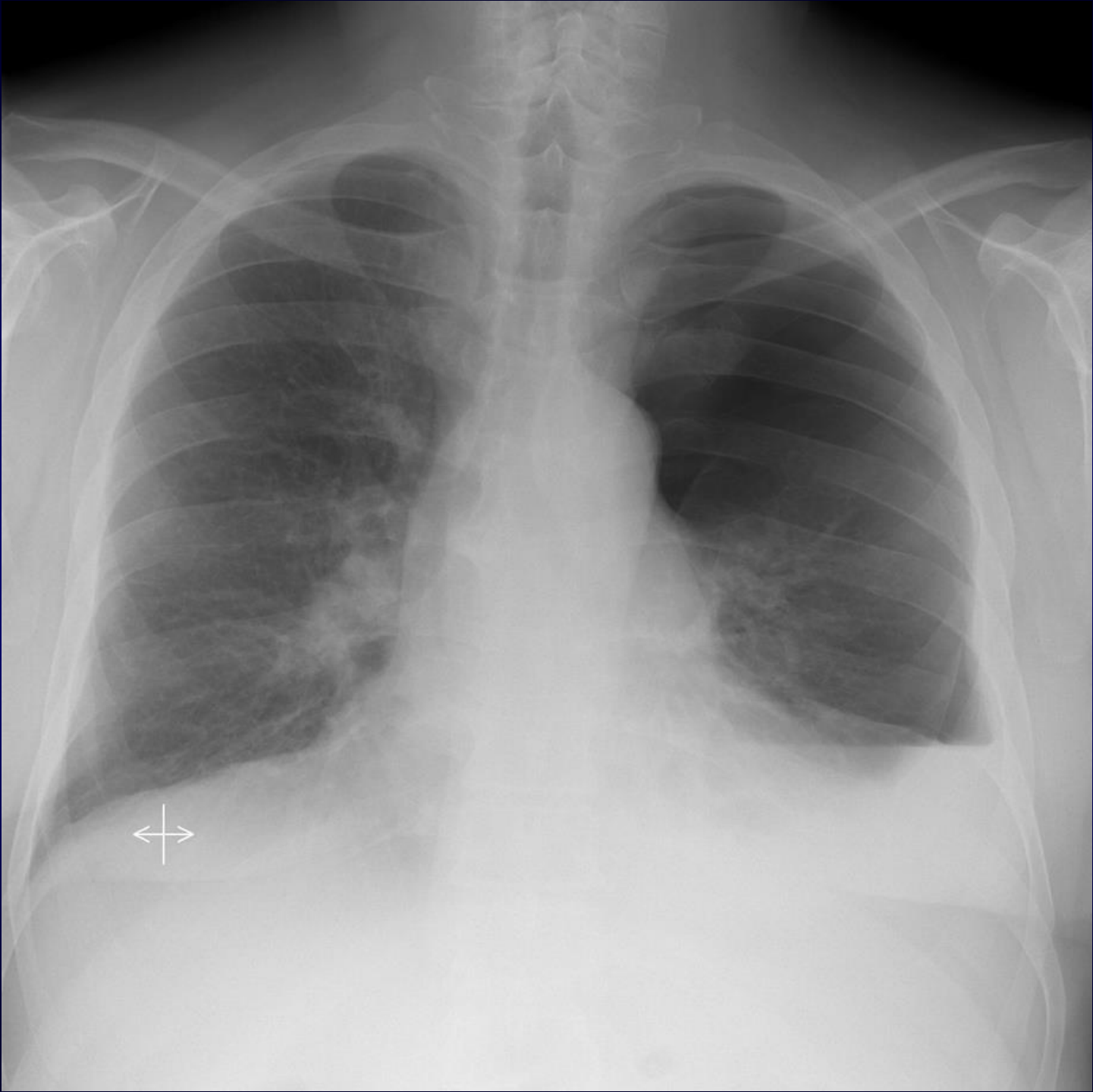
Siyah çizgiler kosta kırıklarının bazılarını göstermektedir. Grafi kostalara yönelik olarak çekilmemiş; akciğer grafisi olarak çekilmiştir. Rakamlar solda arka kostaları göstermektedir.

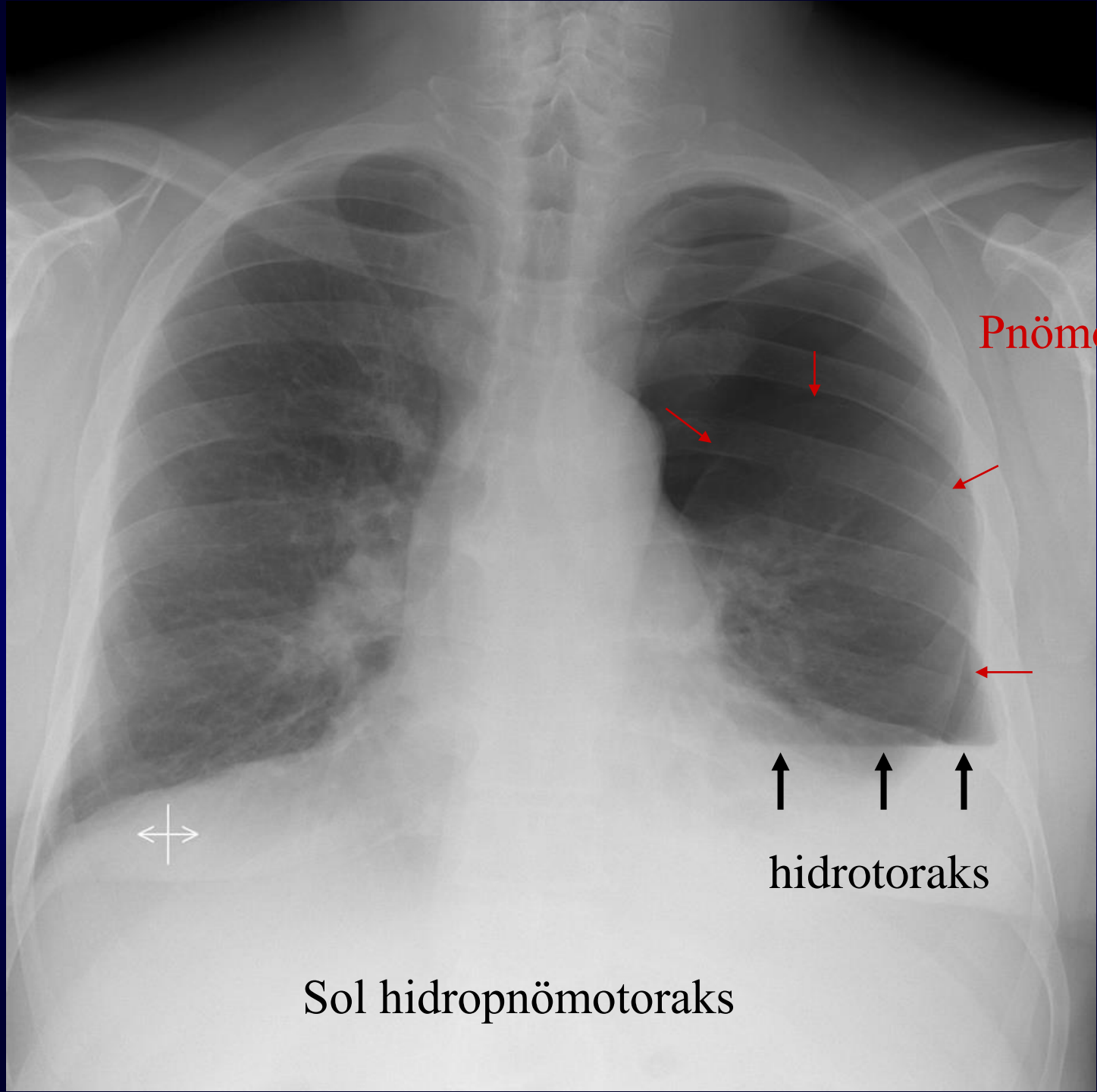
12





13



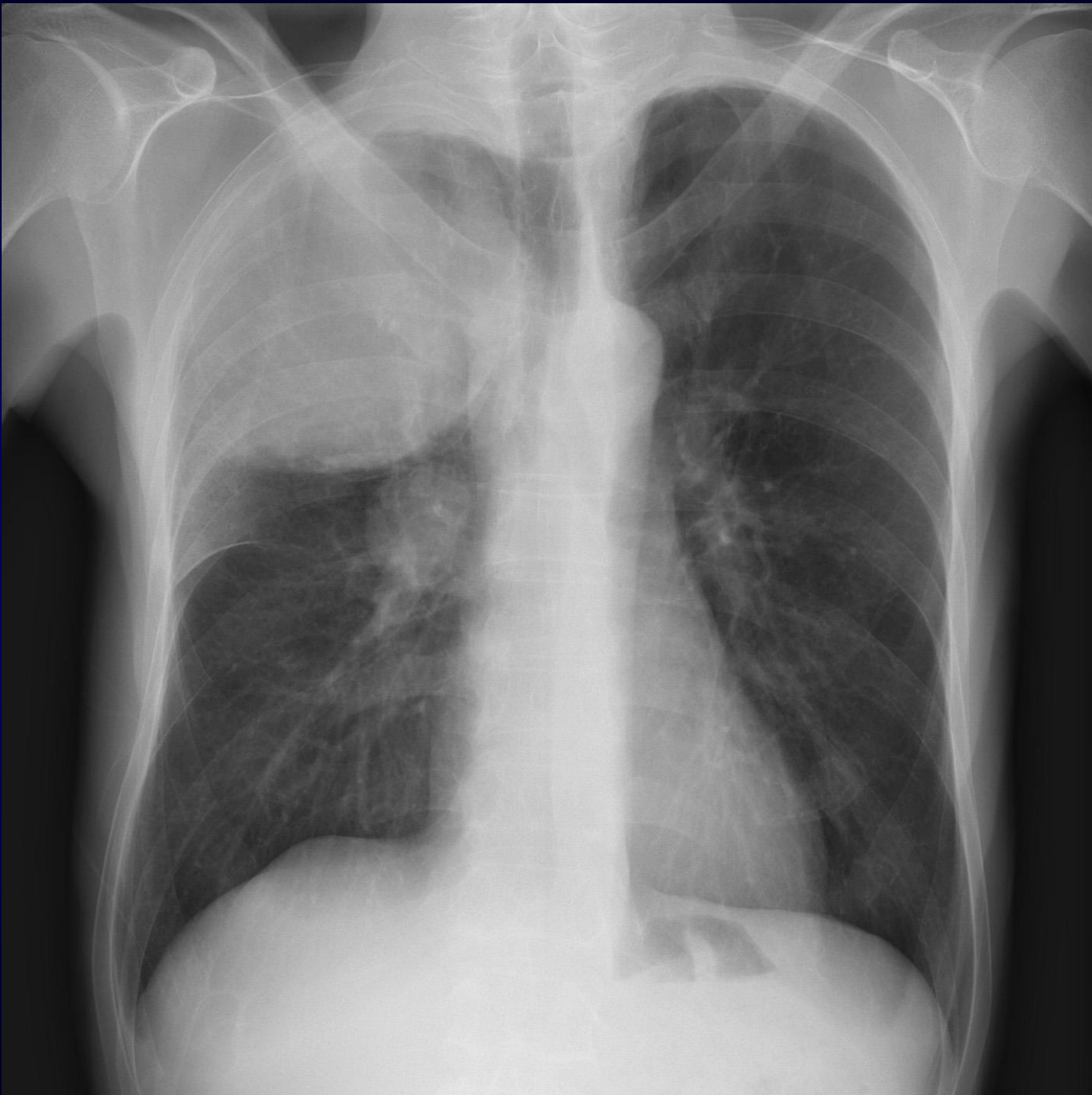


Pnömotoraks

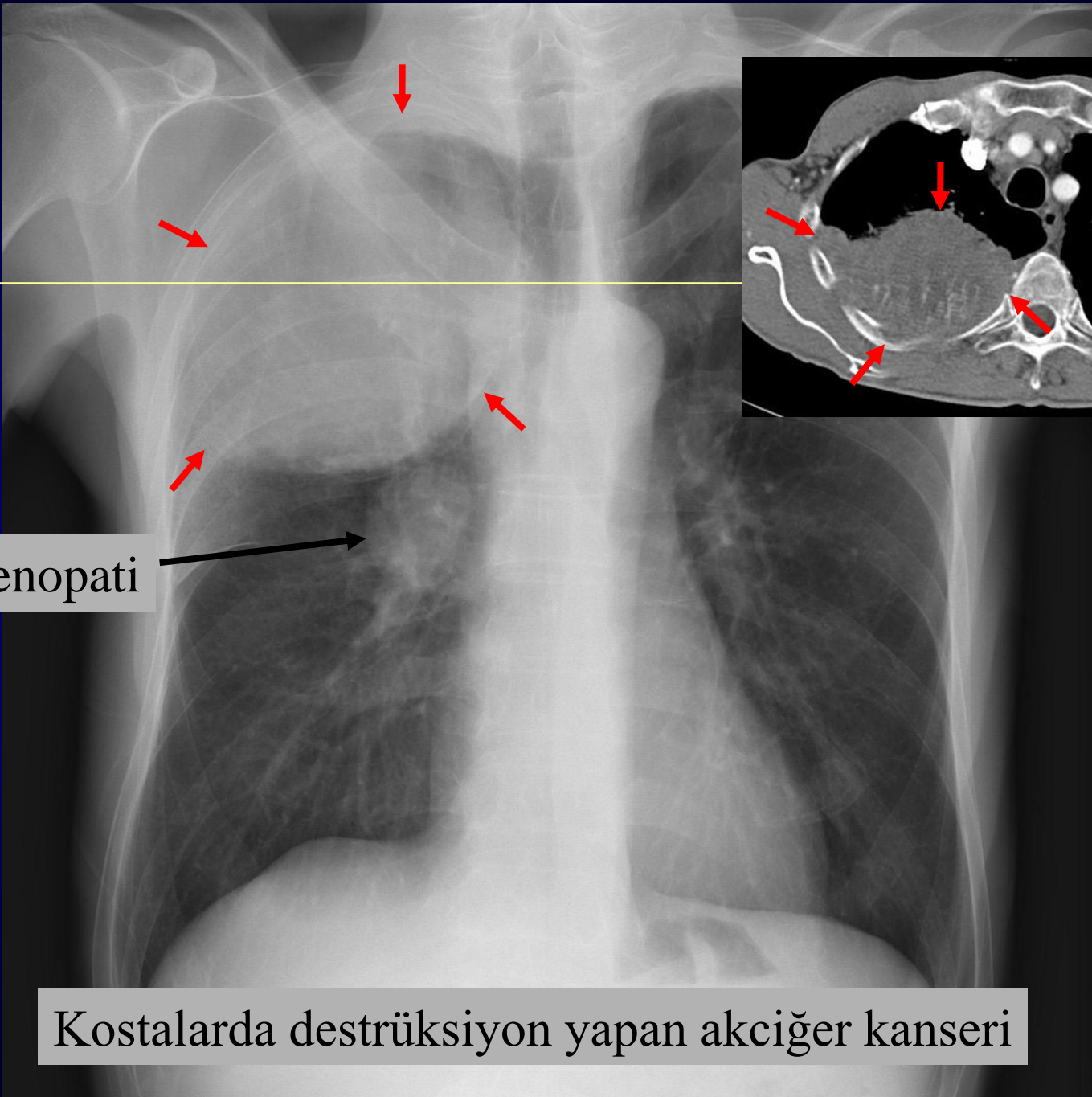
↑ ↑ ↑
hidrotoraks

Sol hidropnömotoraks

14



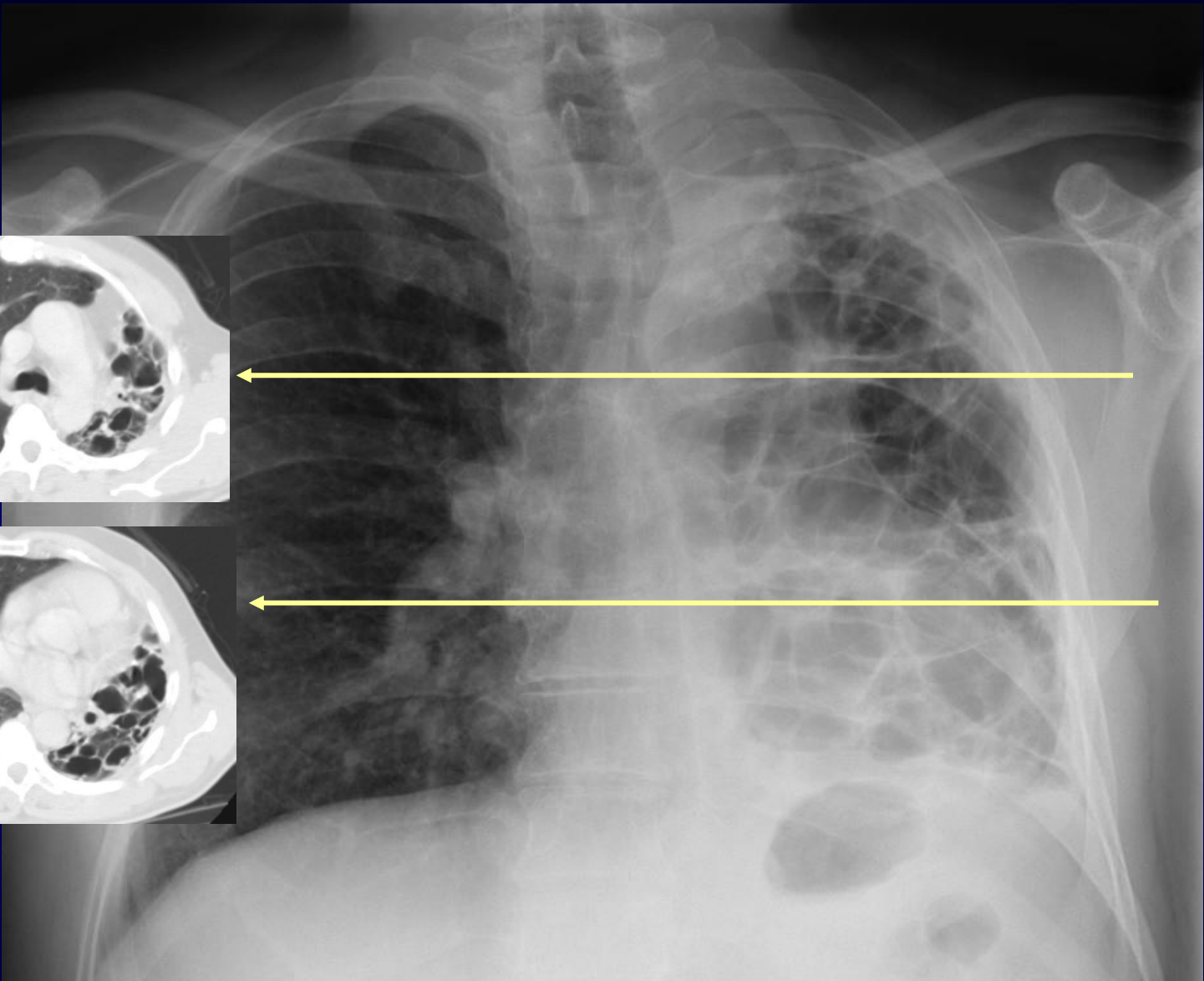
14



Lenfadenopati

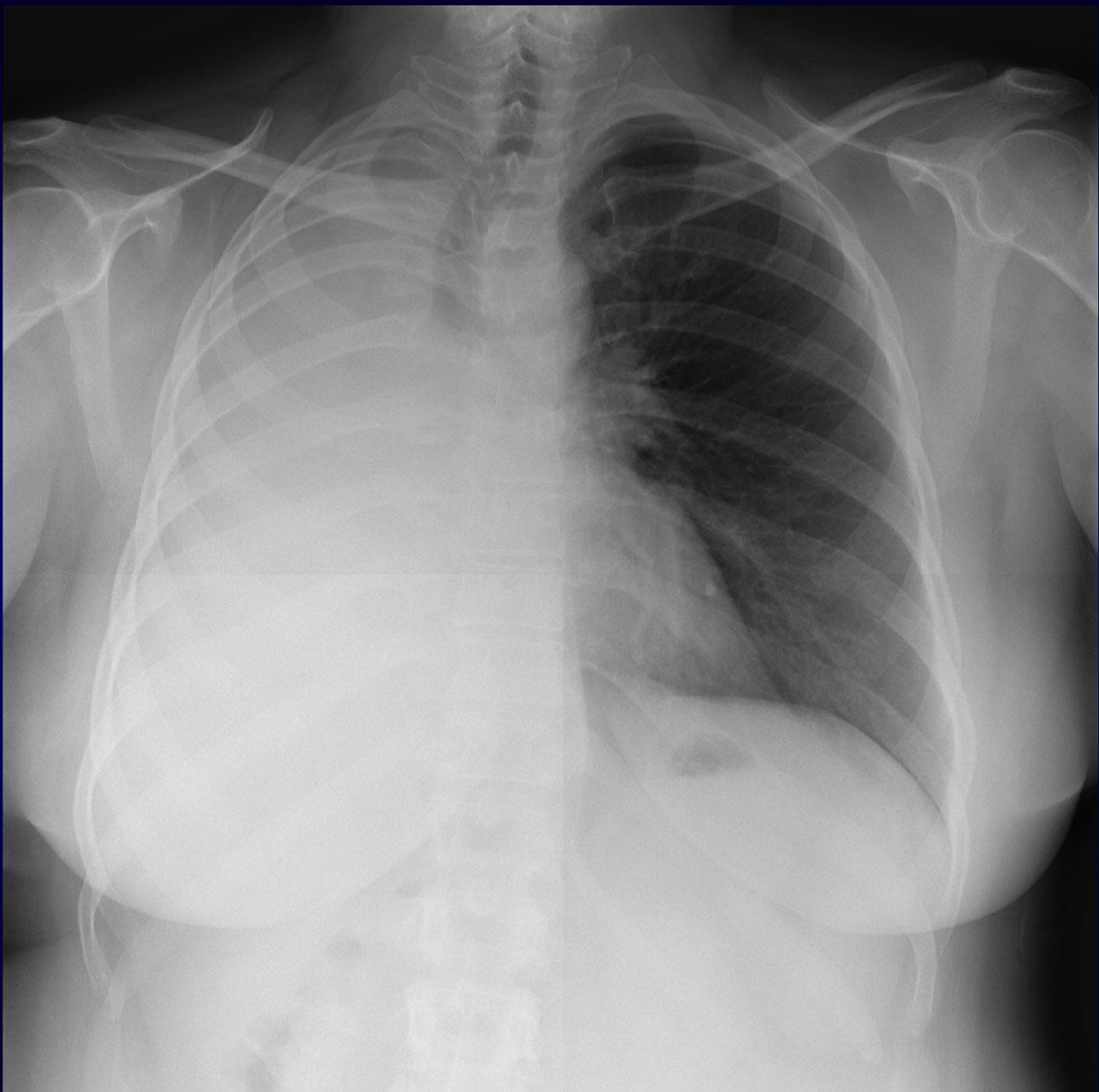
Kostalarda destrüksiyon yapan akciğer kanseri

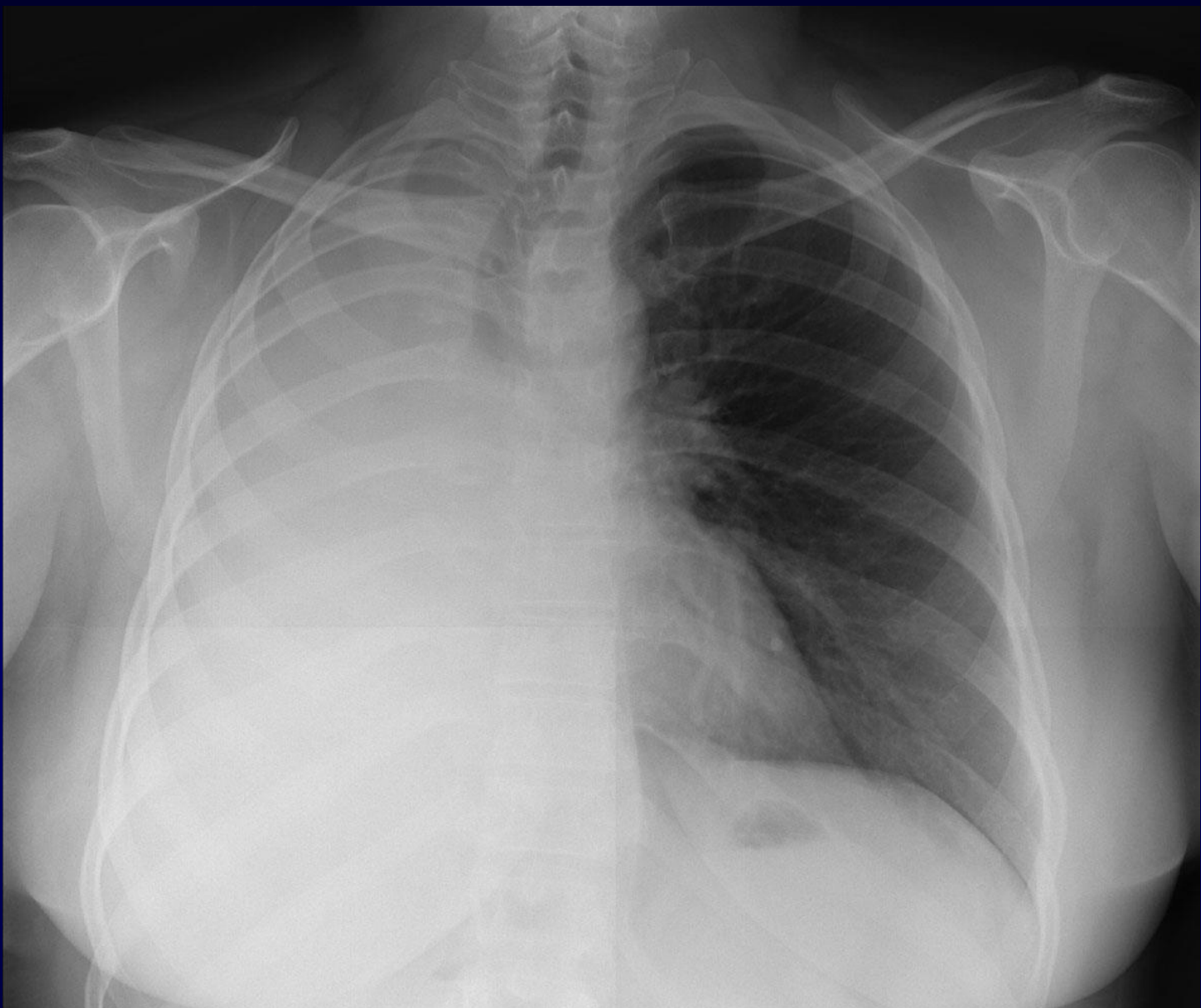




Sol akciğerde hacim kaybı ve yaygın kistik bronşektazi.
Çizgiler kesitlerin geçtiği düzeyi göstermektedir

16

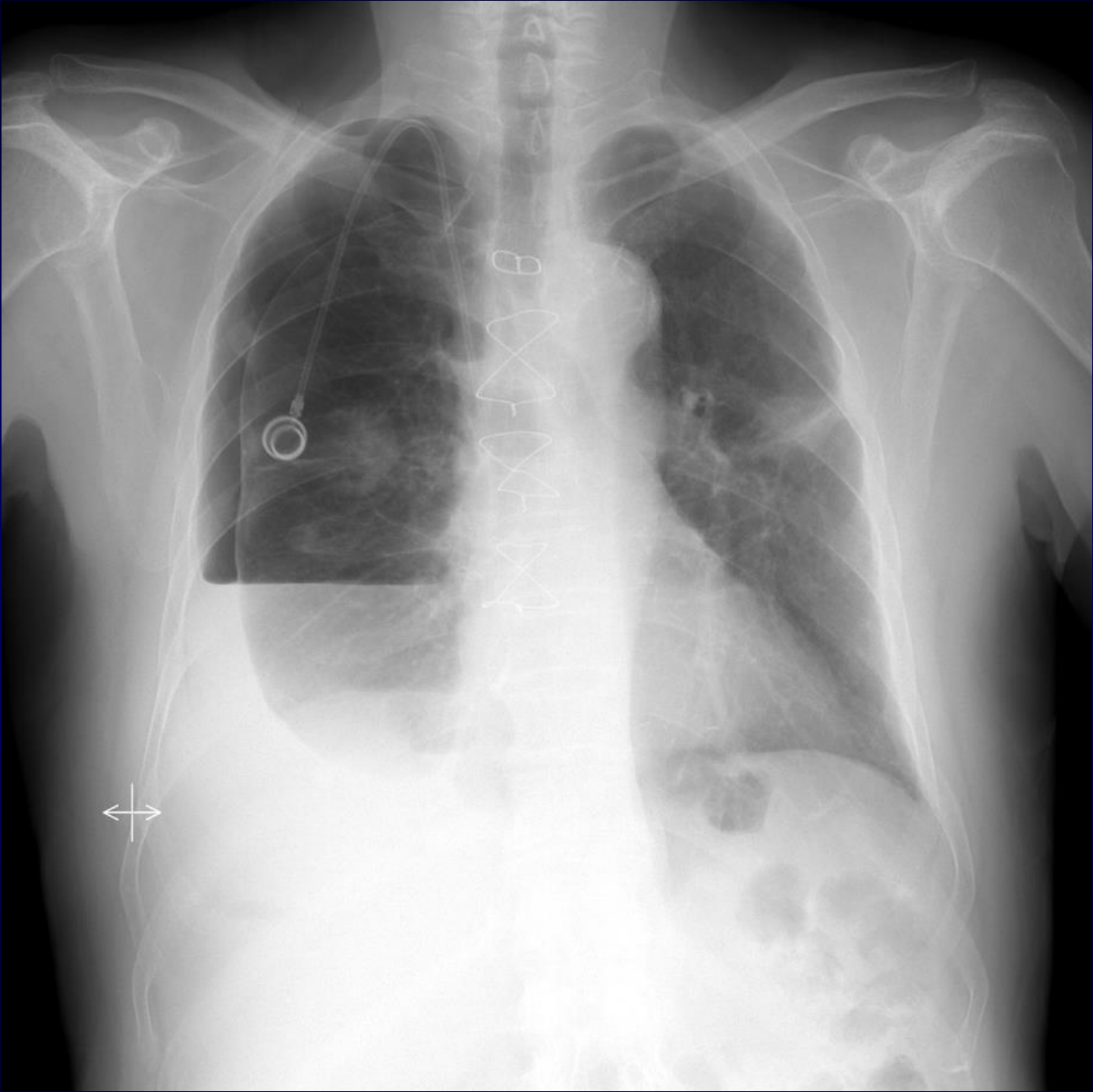


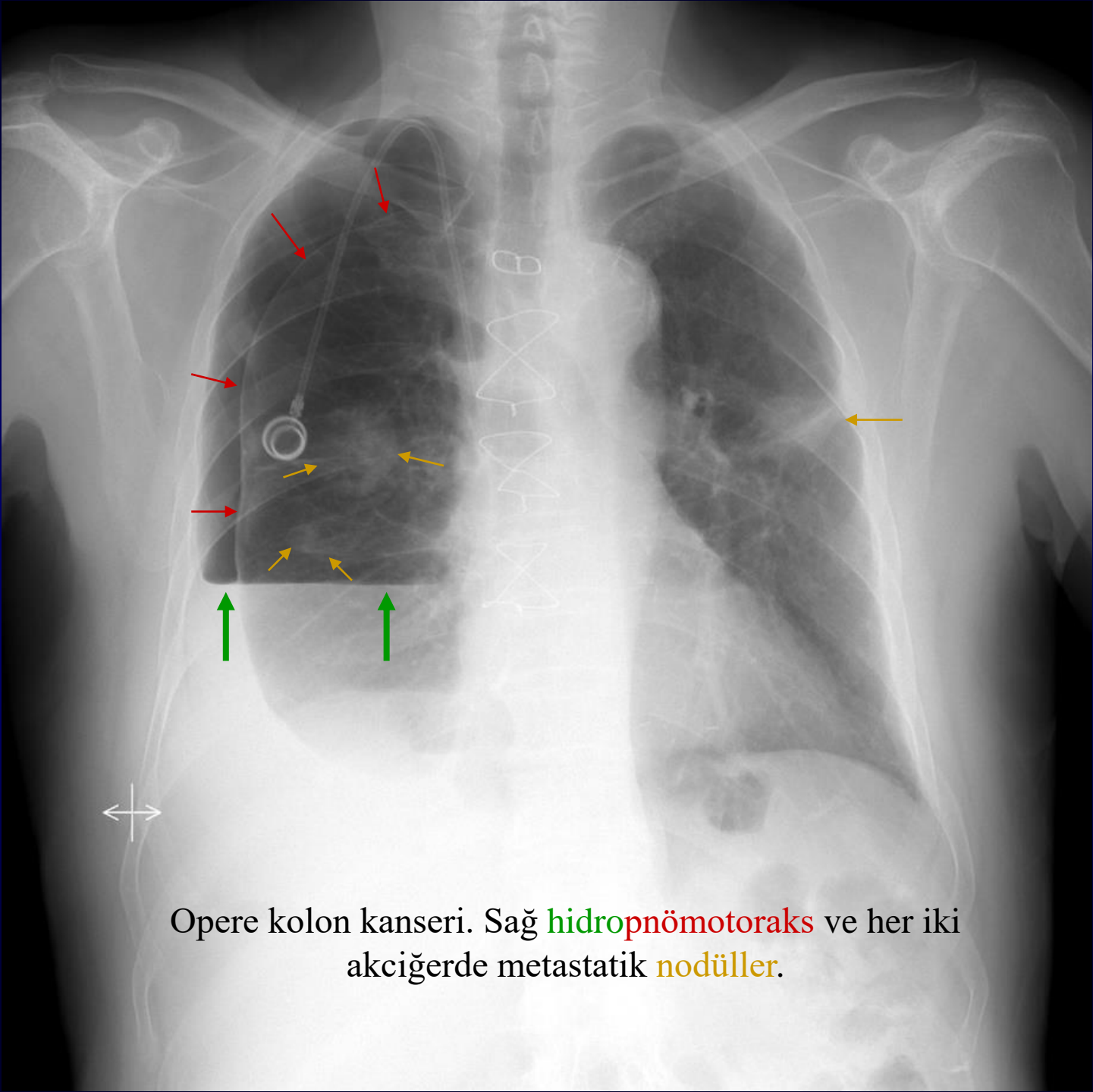


Opere akciğer kanseri. Sağ pnömonektomi.

Bu görünüm sağ akciğer atelektazisi ile de karışabilir.

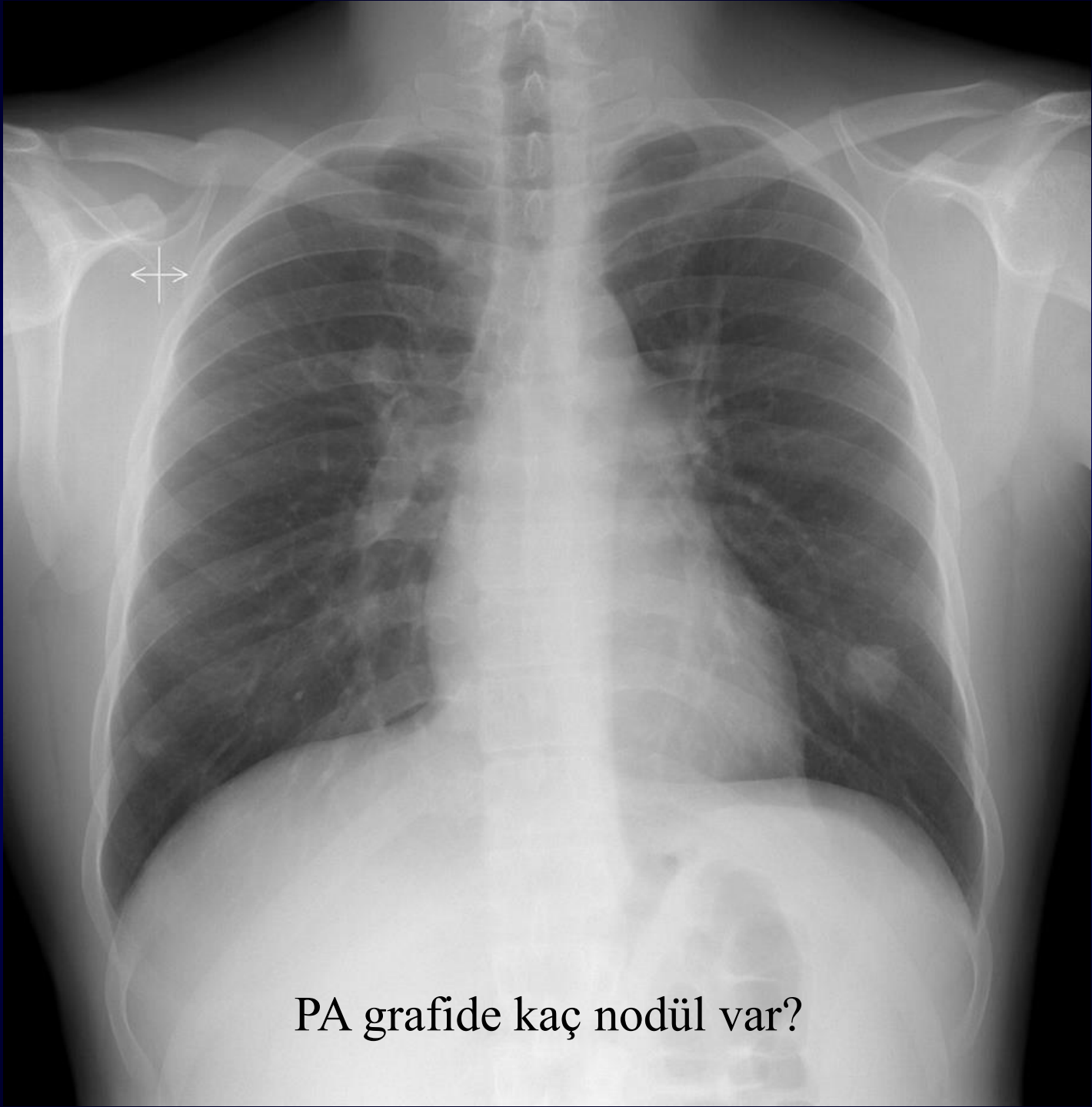
Hikaye ayırıcı tanıda yardımcıdır.





Opere kolon kanseri. Sağ **hidropnömotoraks** ve her iki akciğerde metastatik **nodüller**.

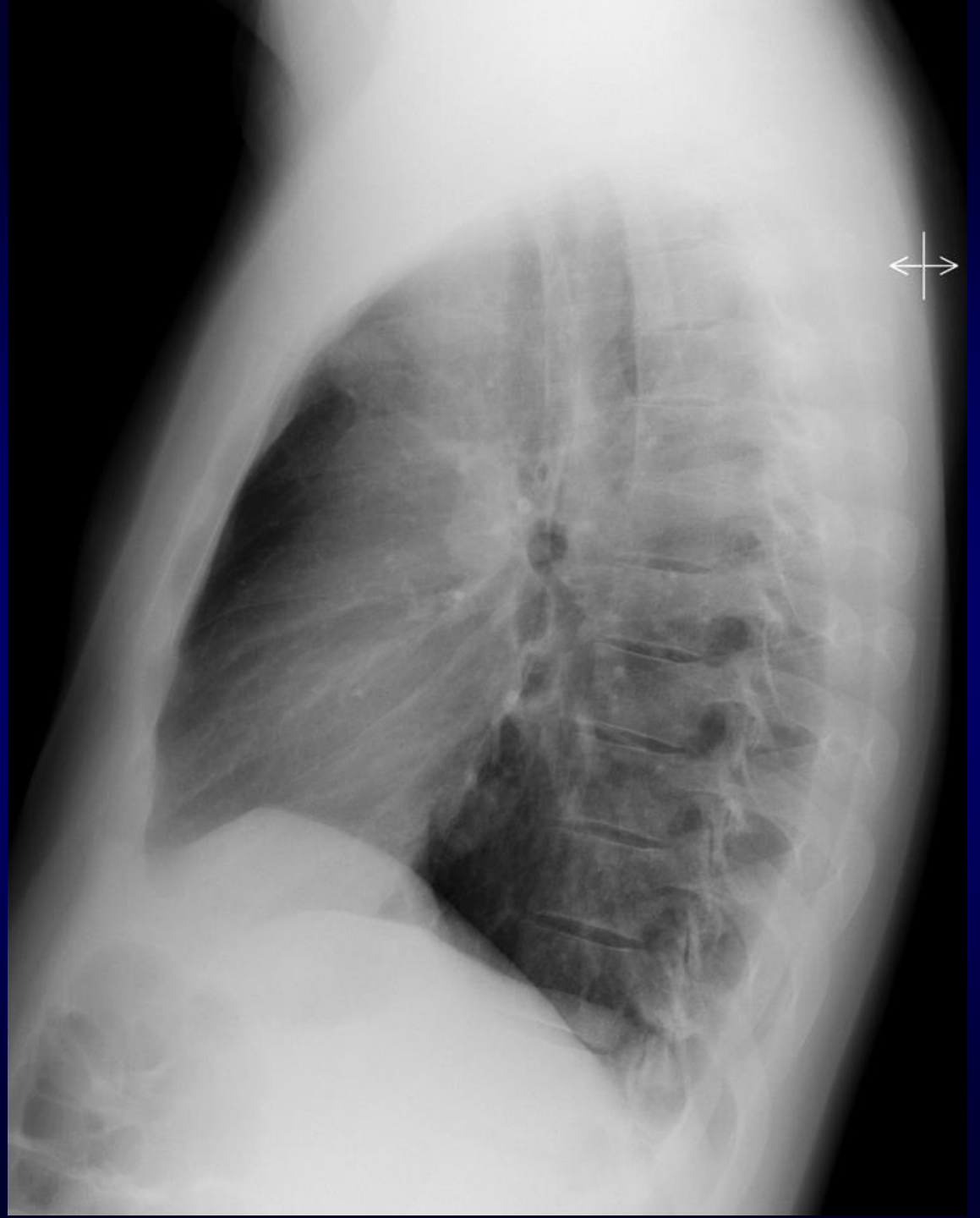
18

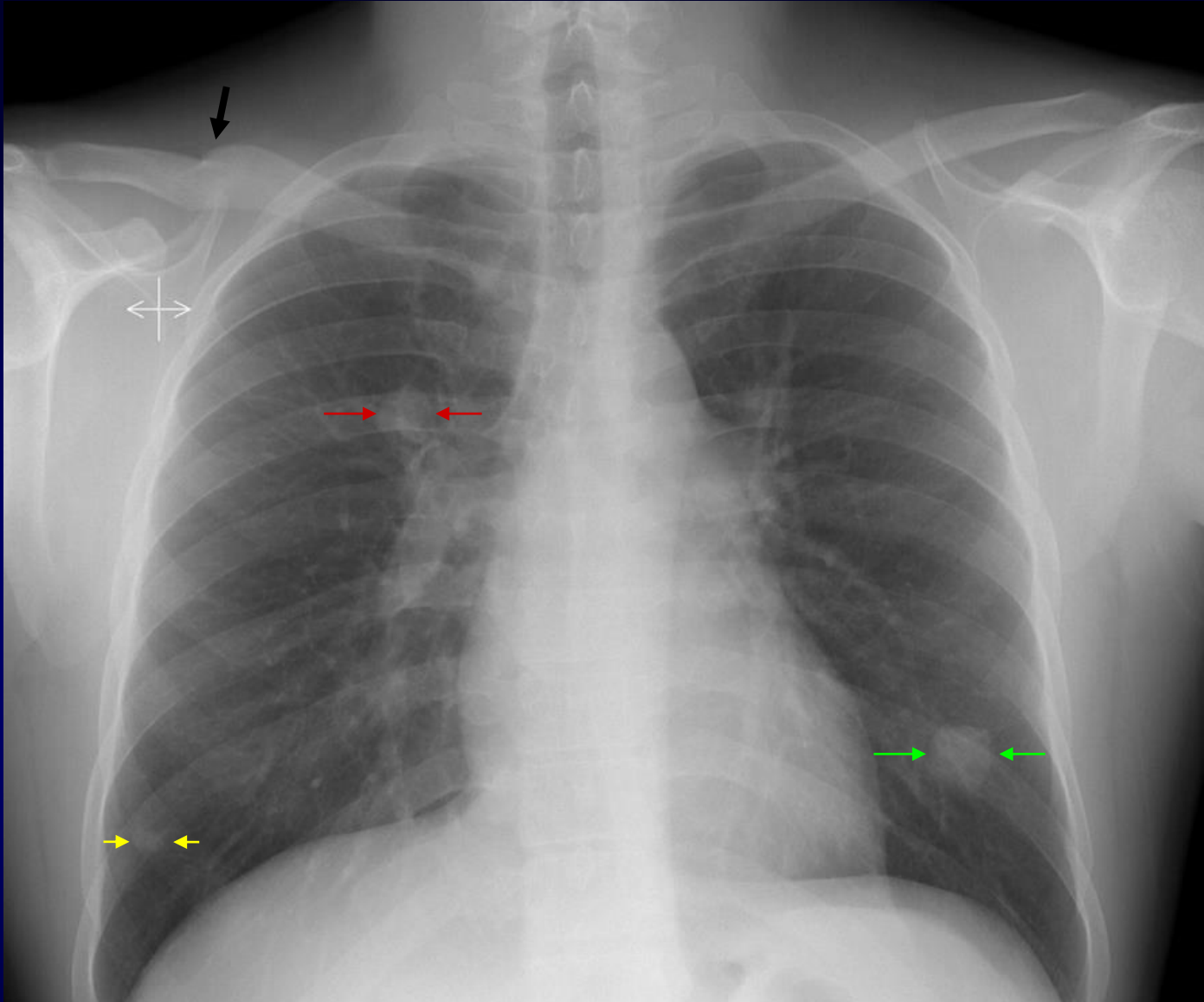


PA grafide kaç nodül var?

18

PA akciğer grafisinde
görülen nodüllerin kaç
tanesi yan grafide
görülebilir?
Nodüller nerede?

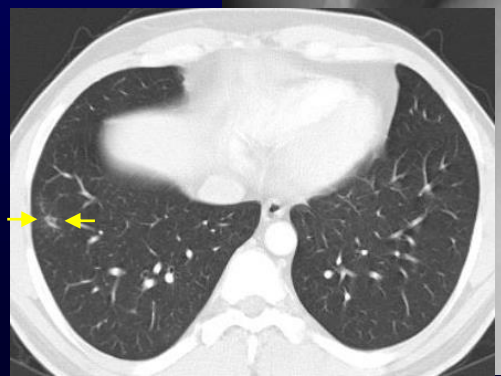
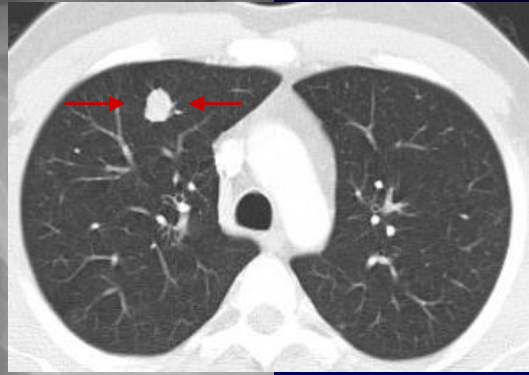
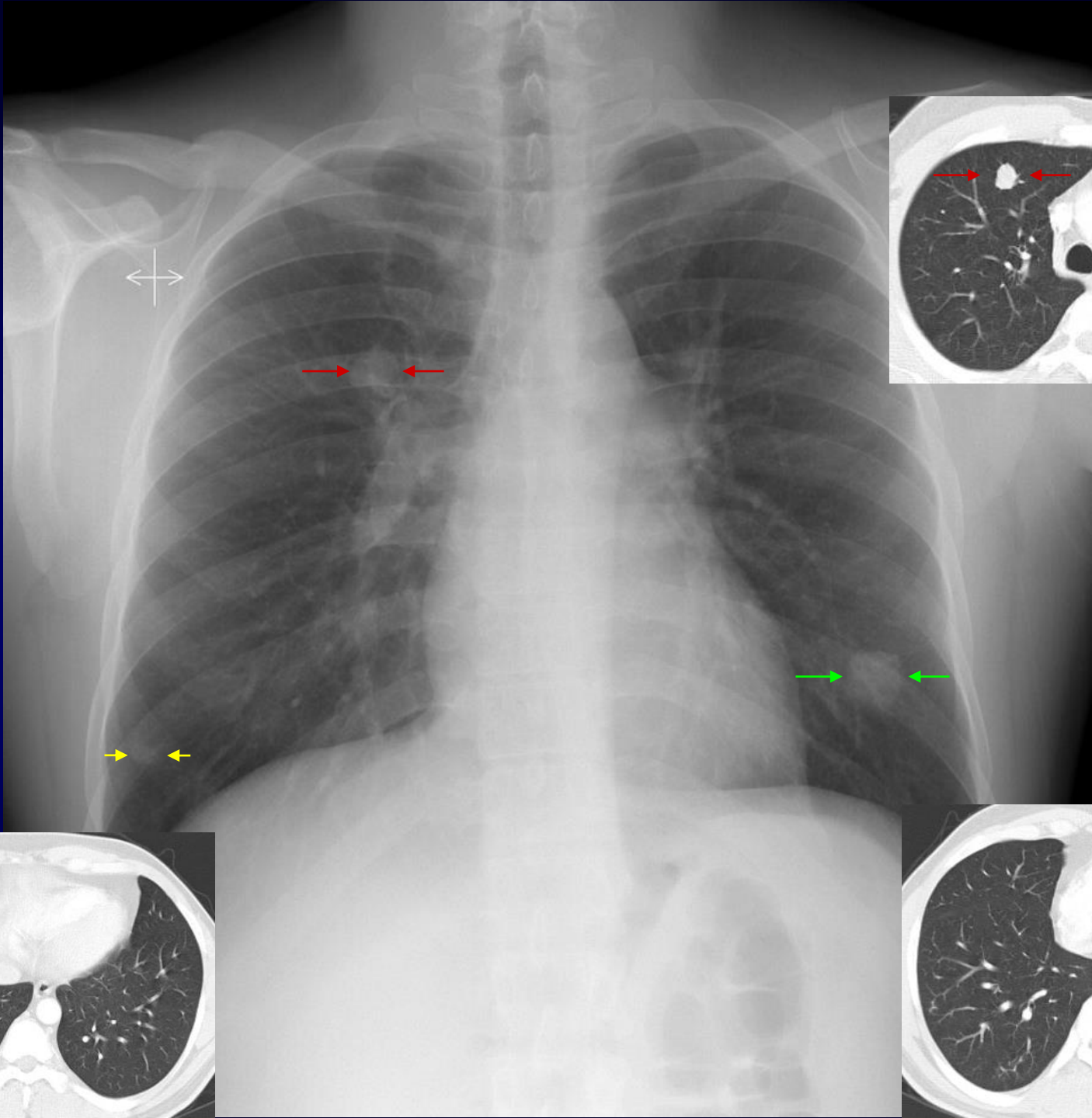




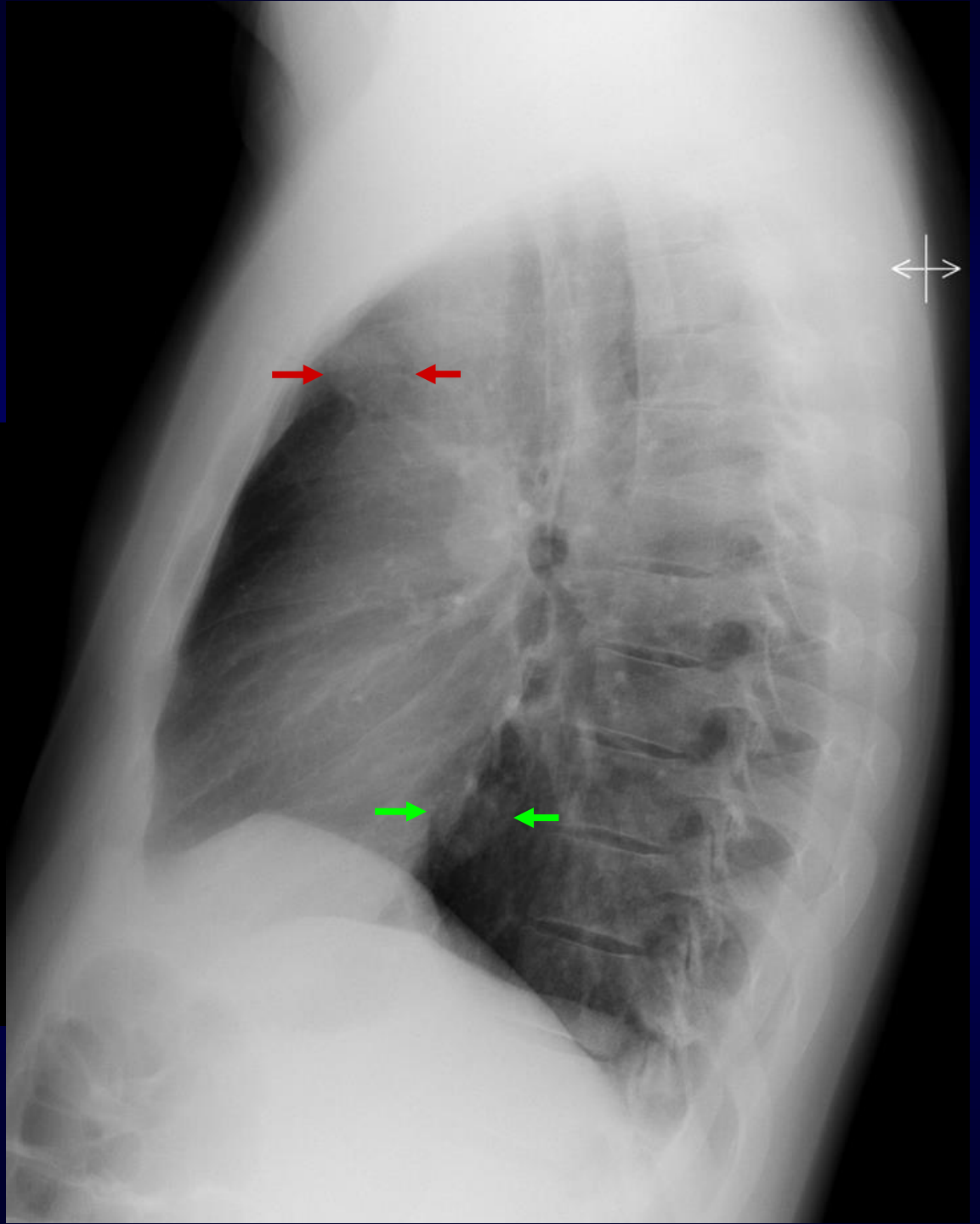
PA grafide 3 nodül görülüyor. Sağda eski klaviküla kırığı var.

BT tetkiki akciğer grafisinden iki ay sonra elde olmuştur. Kemoterapi sonrası nodüllerin boyutlarında küçülme olduğundan BT kesitlerinde görülen nodüllerin boyutları akciğer grafisinde görülenlere göre daha küçüktür.

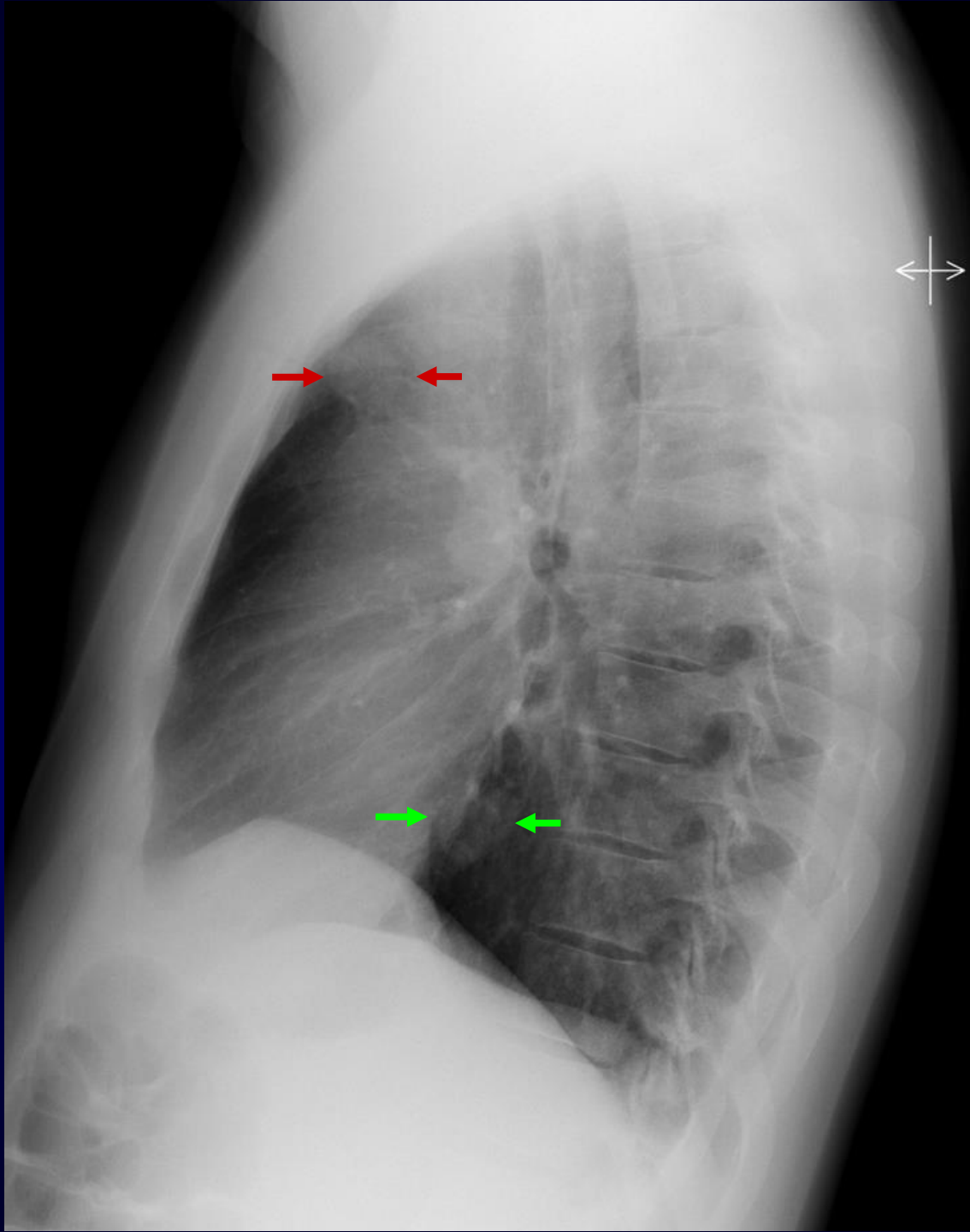
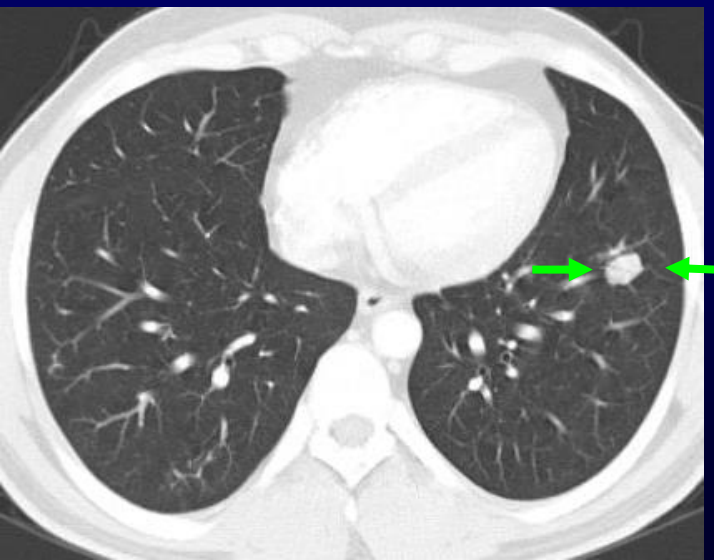
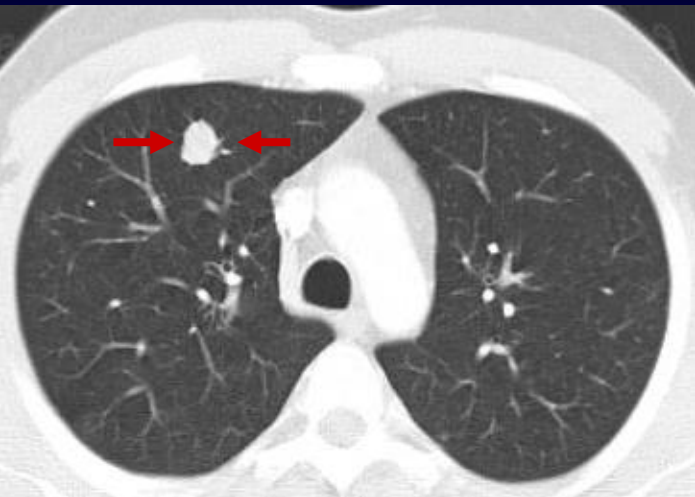
18



Nodüllerin iki tanesi yan grafide görülebiliyor. Arka ön grafide sağ altta yer alan küçük nodül yan grafide izlenmiyor. *Bazen PA grafide görülmeyen nodüller yan grafide görülebilir*



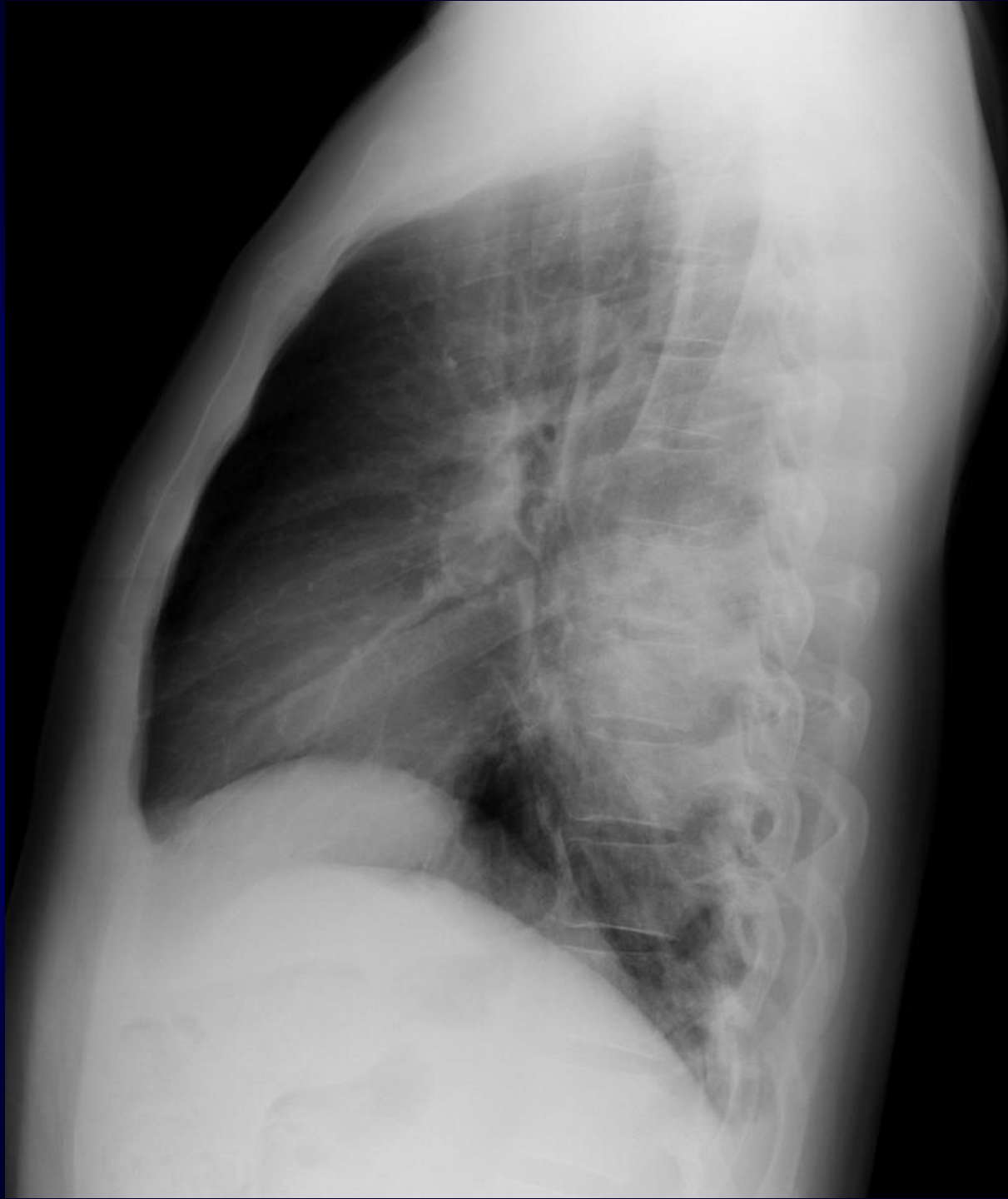
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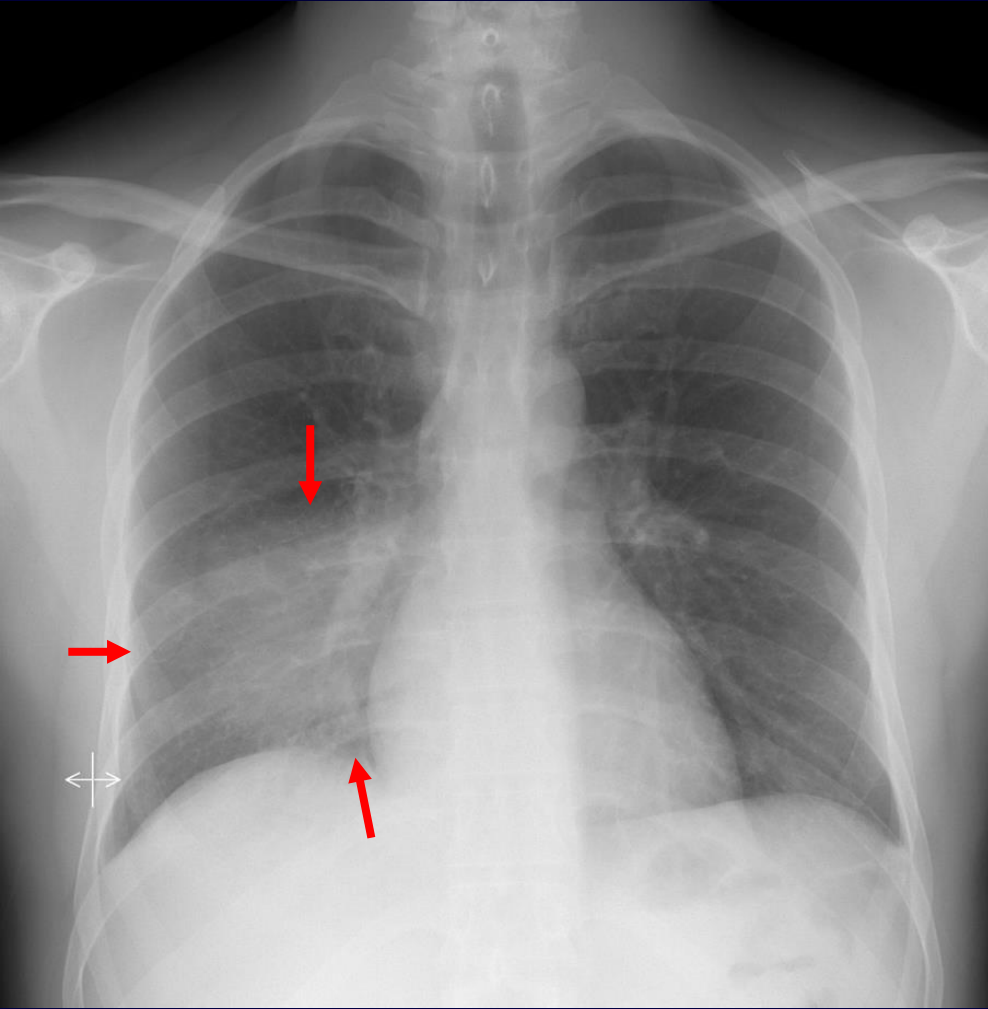


20



20

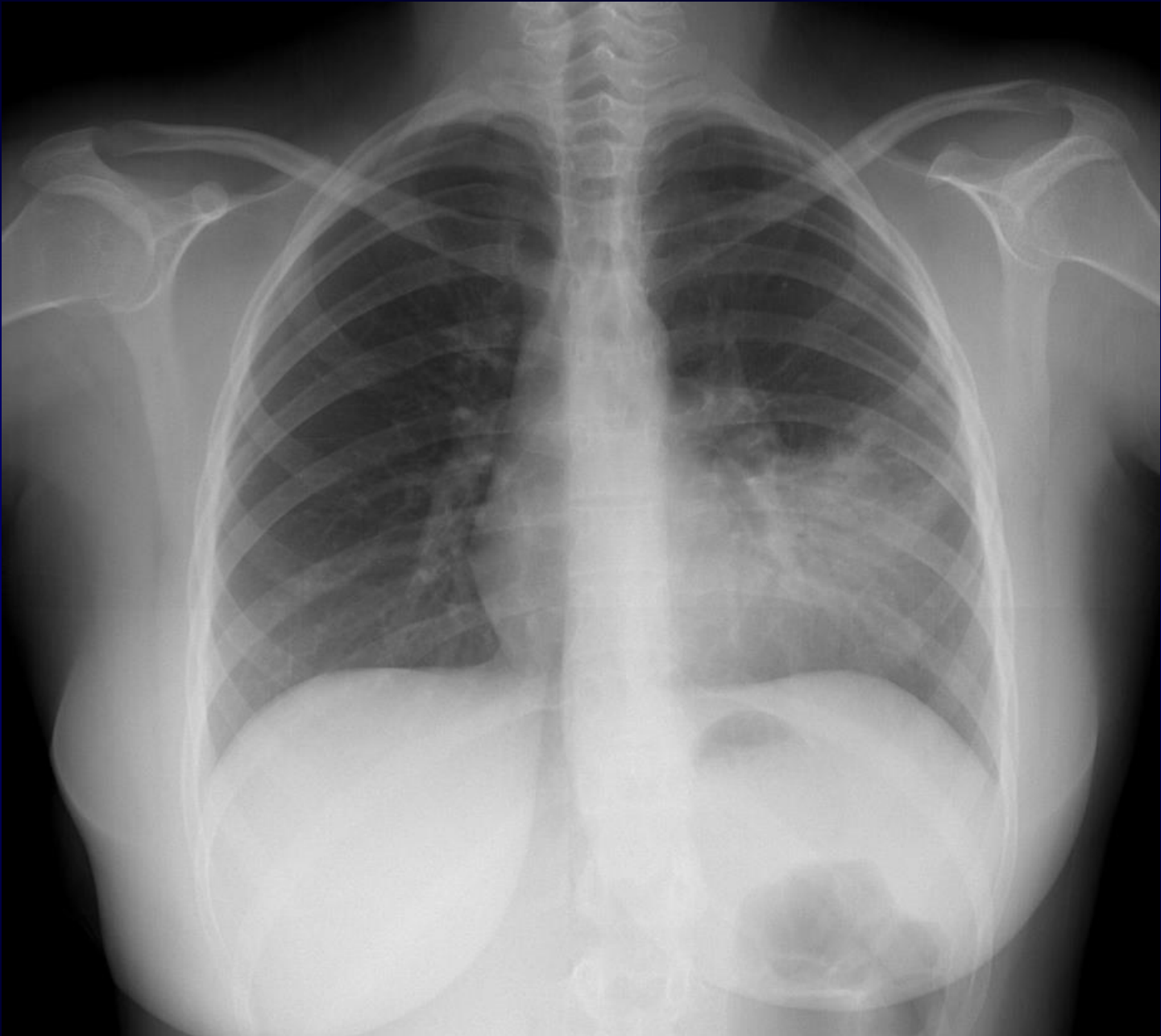




Sağ akciğer alt lobda konsolidasyon. Klinik tanı pnömoni

Konsolidasyon malignasiler de dahil olmak üzere birçok durumda görülebilir.

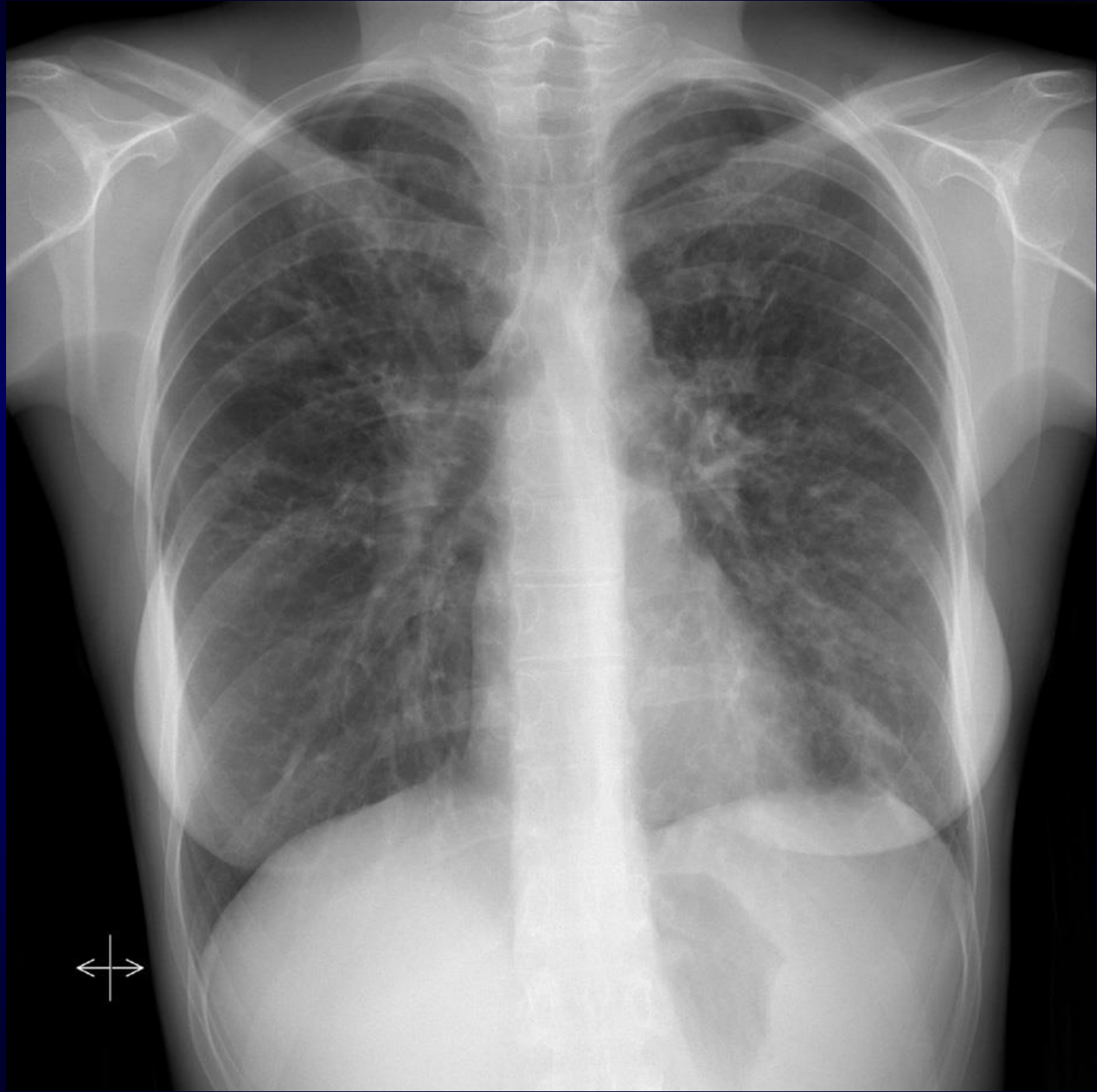
21

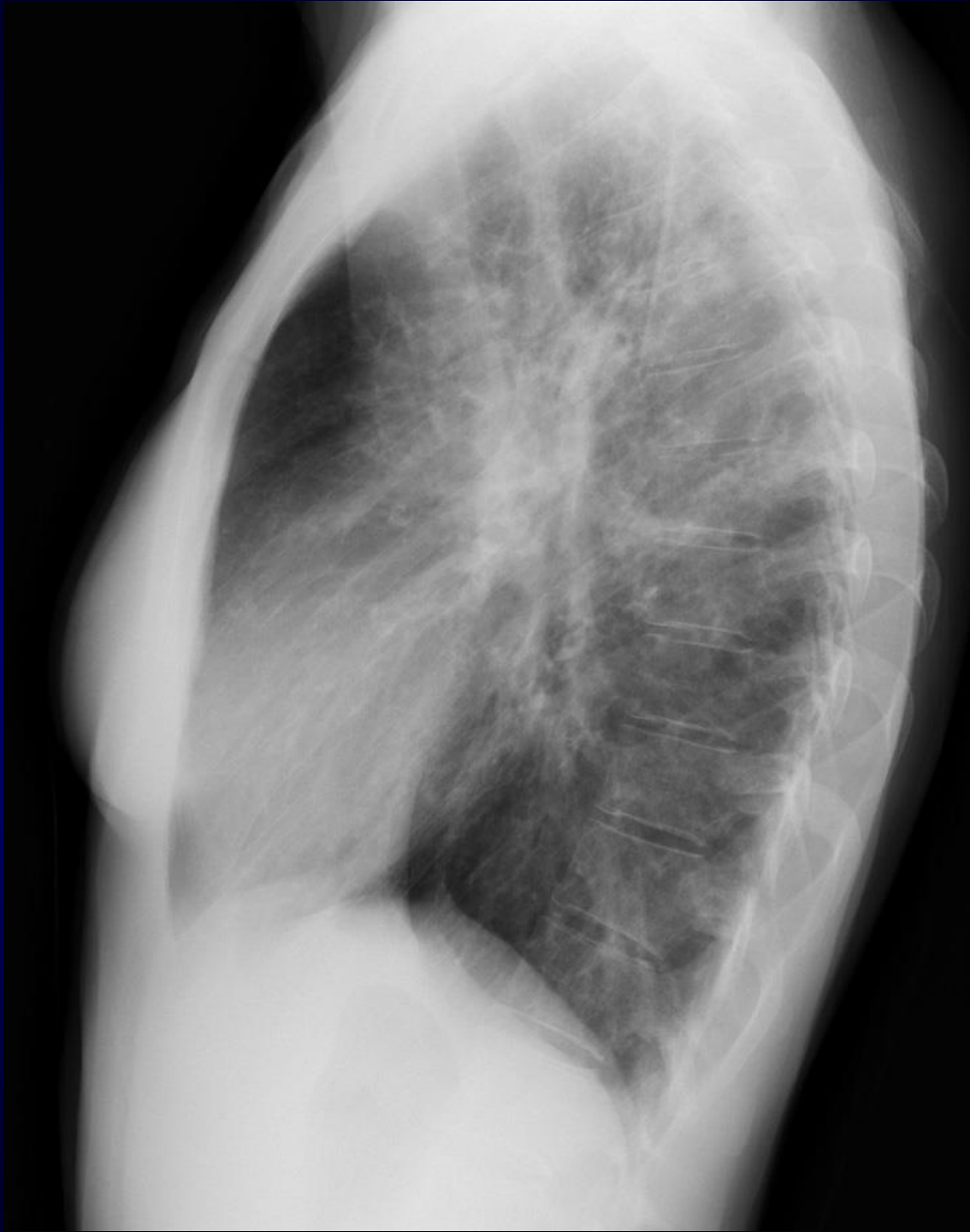


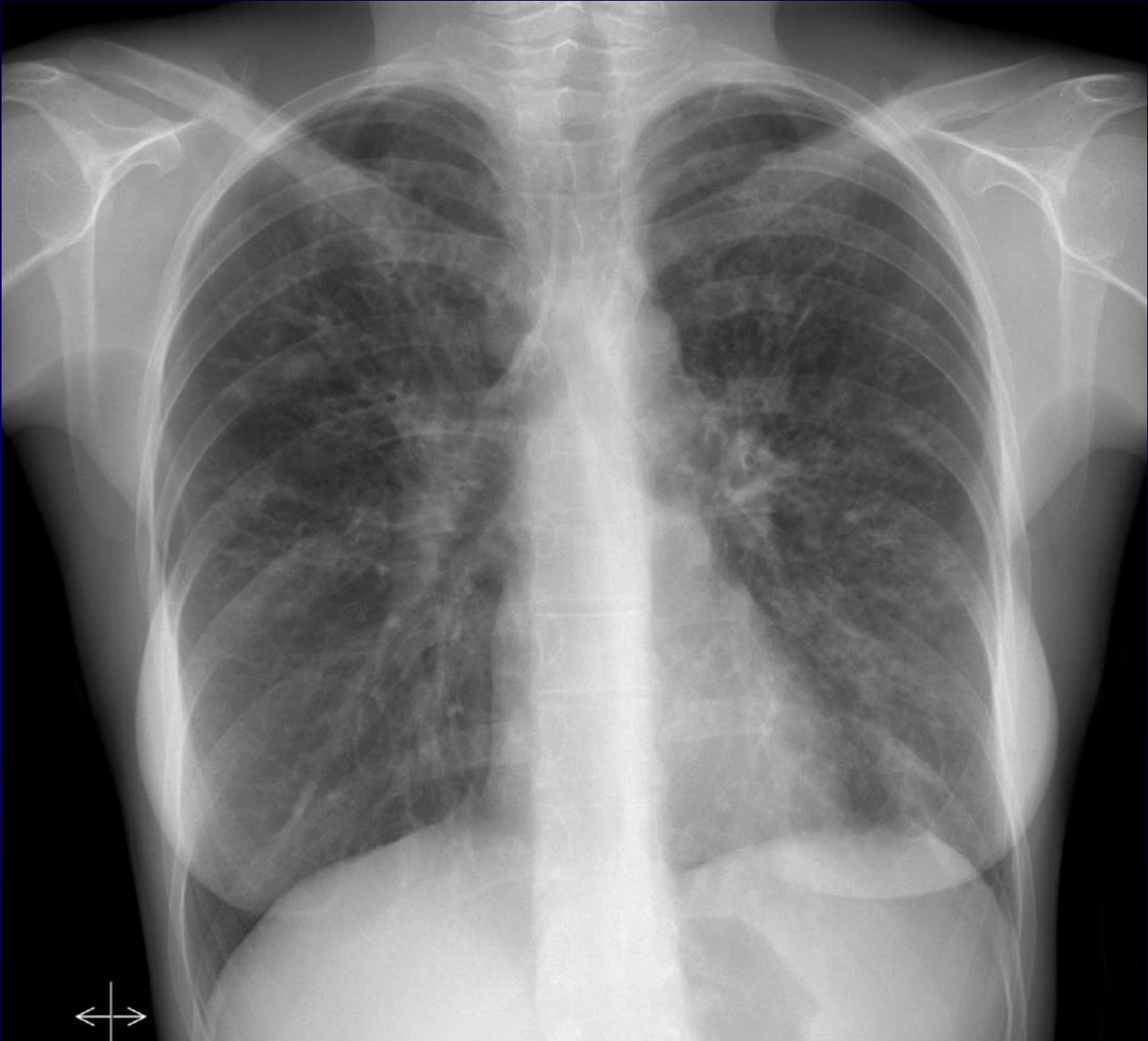


Konsolidasyon: Sol akciğer üst lob pnömonisi. Siluet işareti vardır (sol kalb kenarı silinmiş).

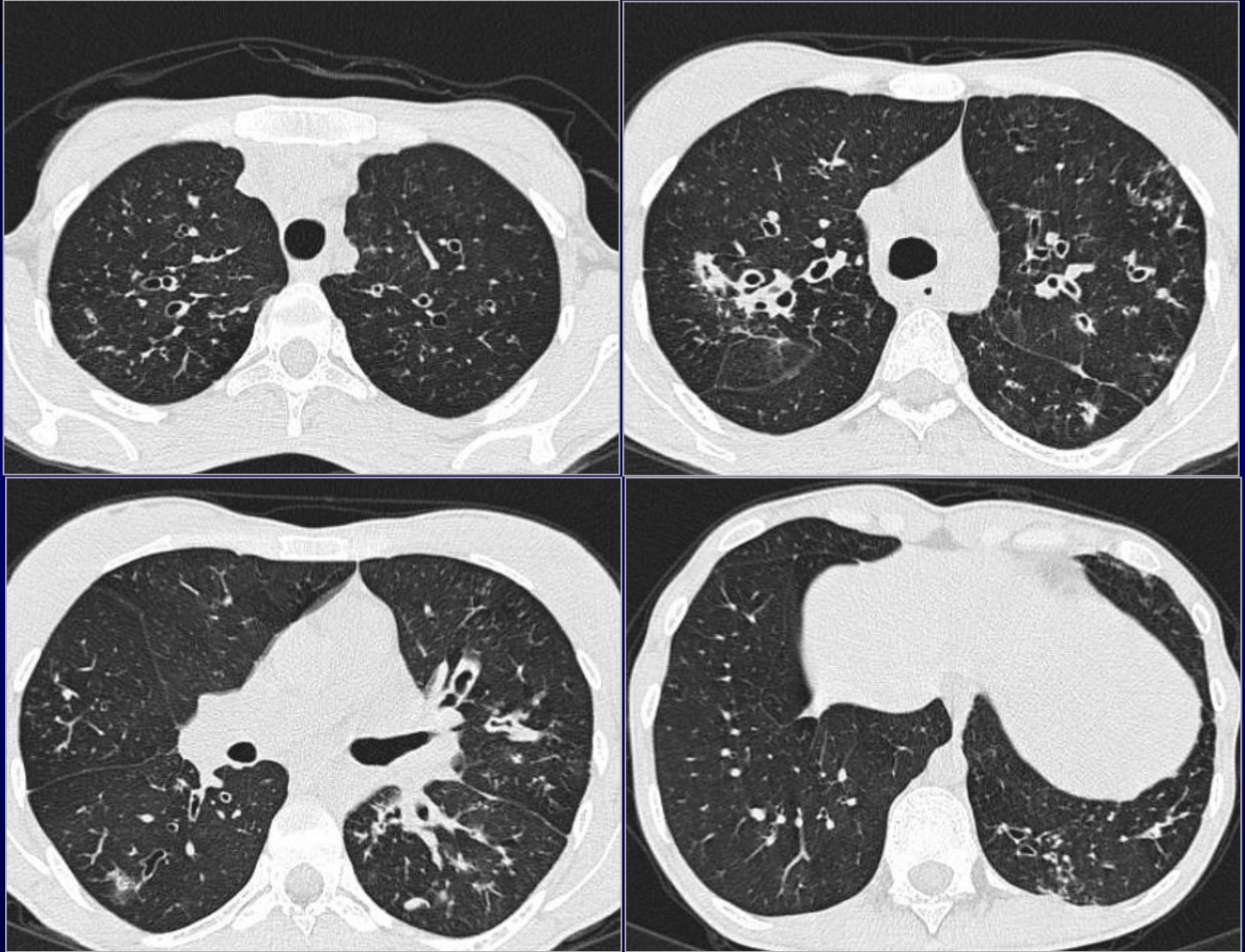
23





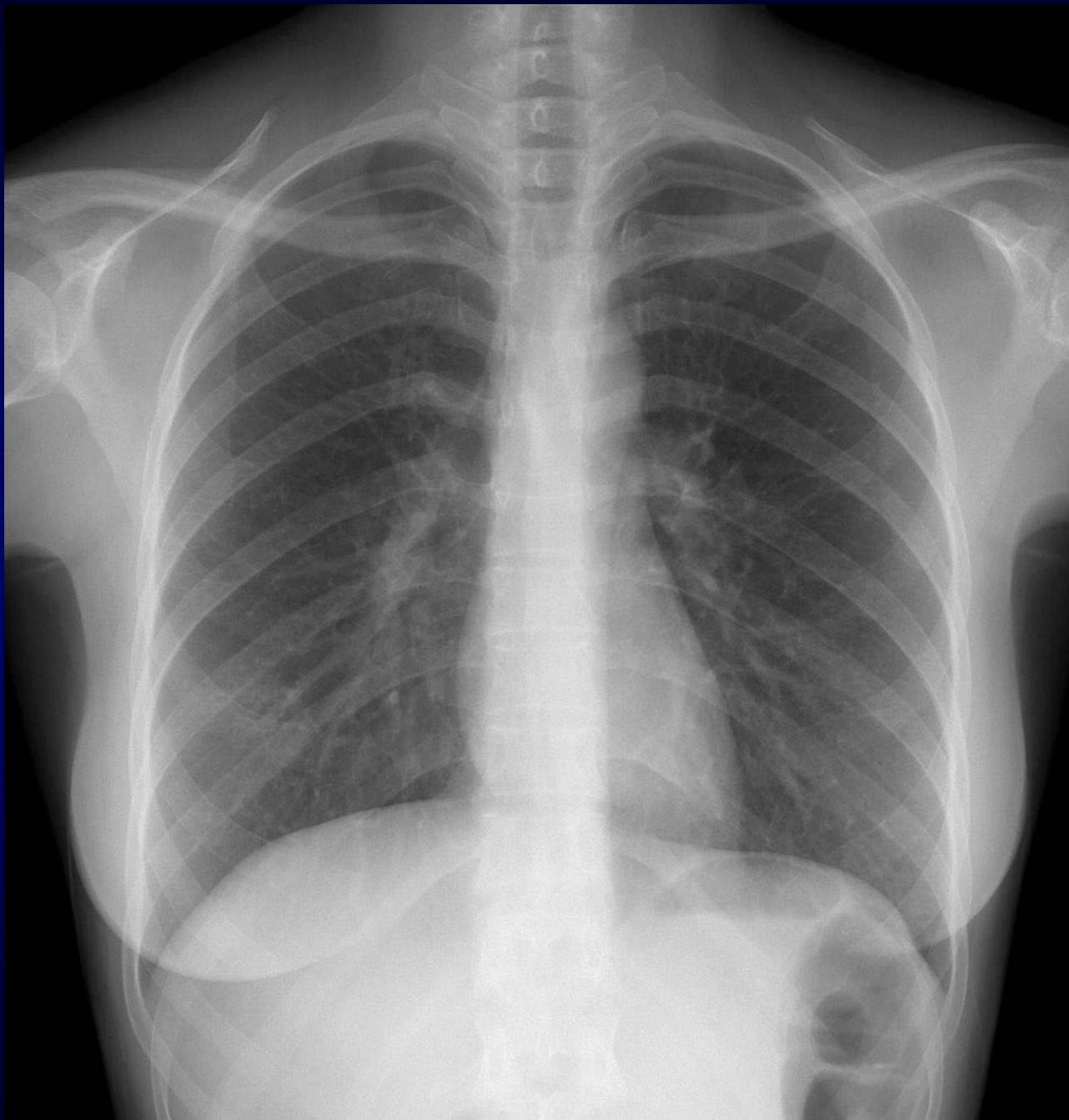


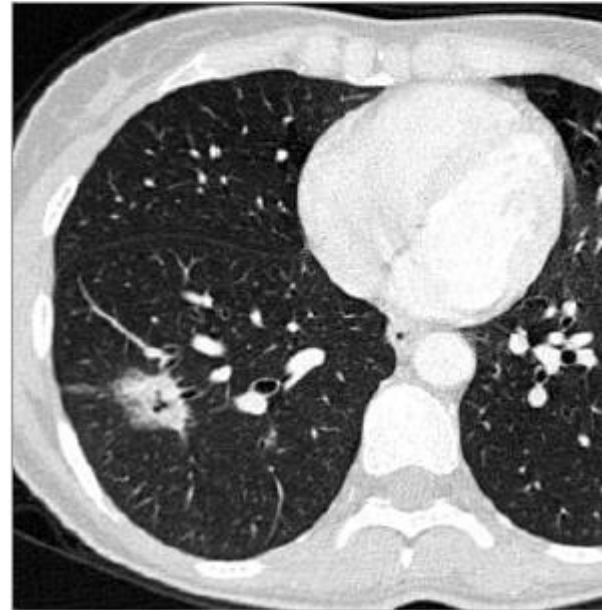
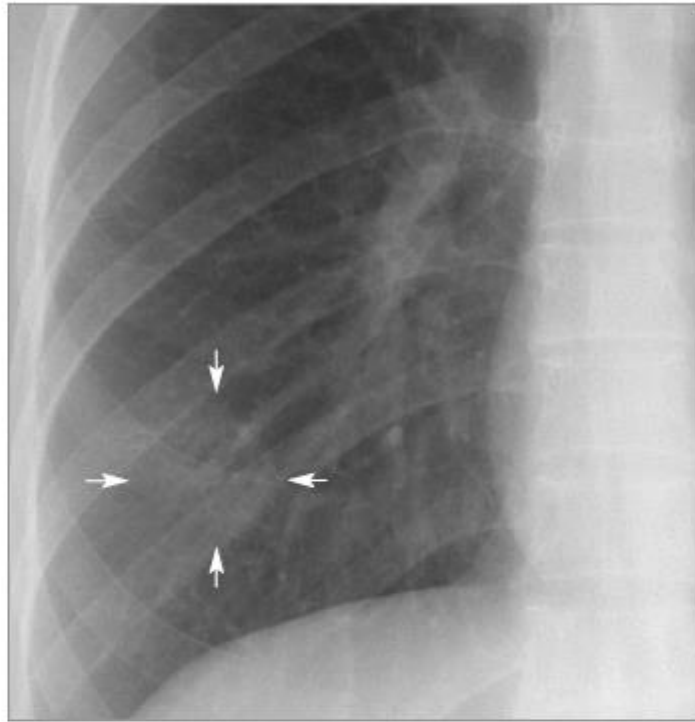
↔
Kistik fibrozis: Üst kısımlarda daha belirgin olan bronşektazi



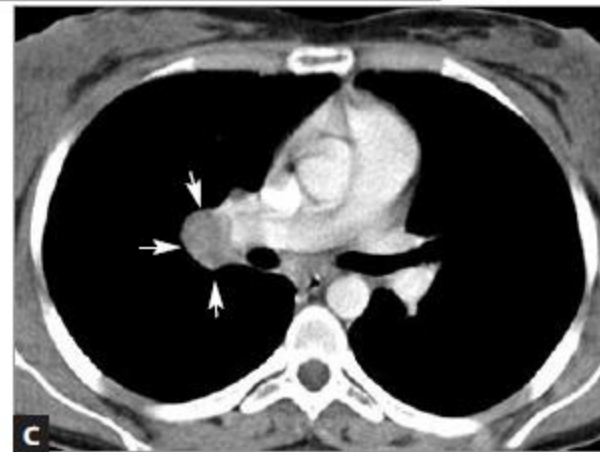
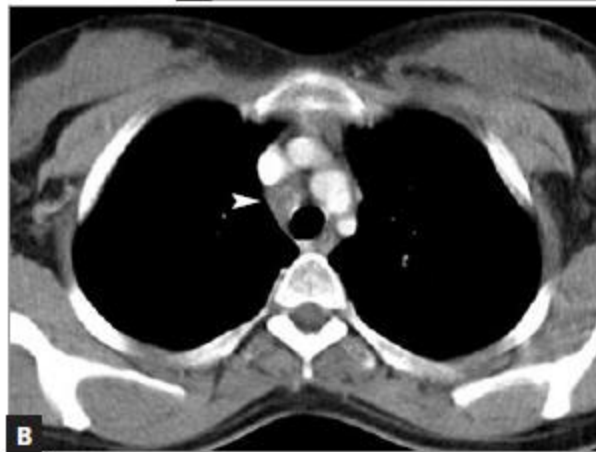
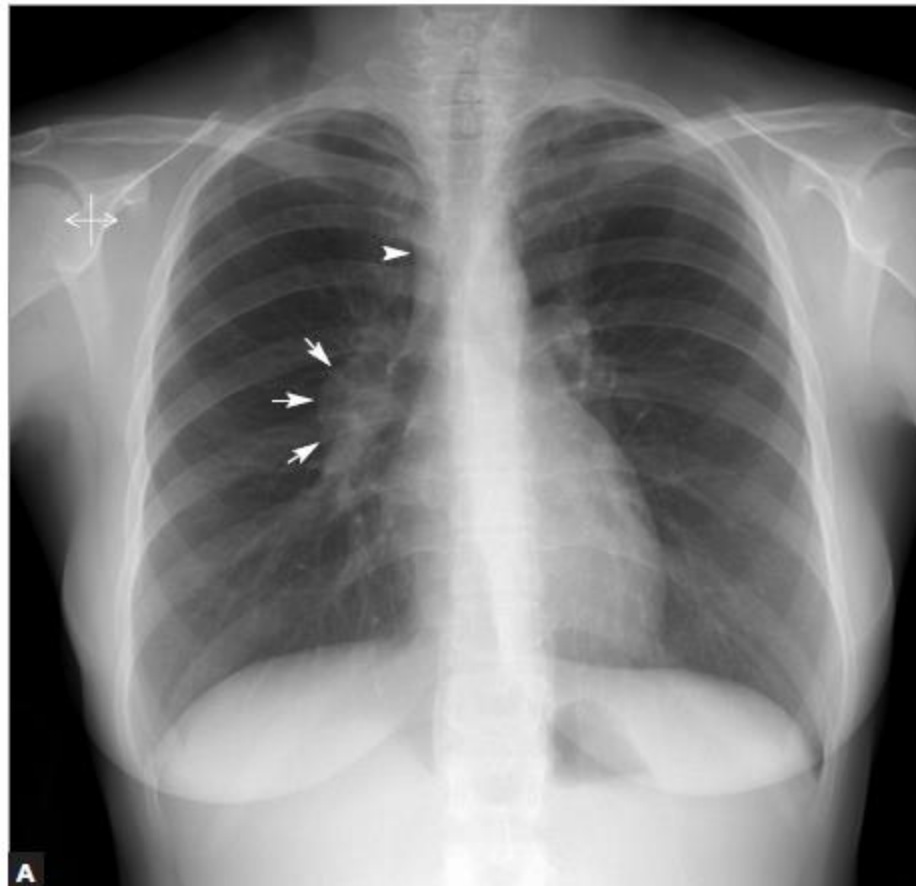
Aynı hastanın 2 sene öncesine ait yüksek rezolüsyonlu akciğer BT incelemesinde üst kısımlarda daha yaygın olan bronşiektazi görülüyor





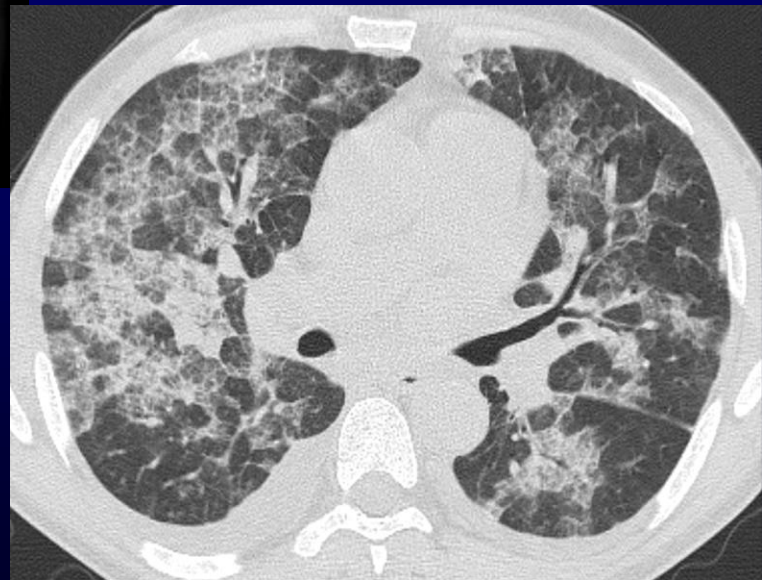
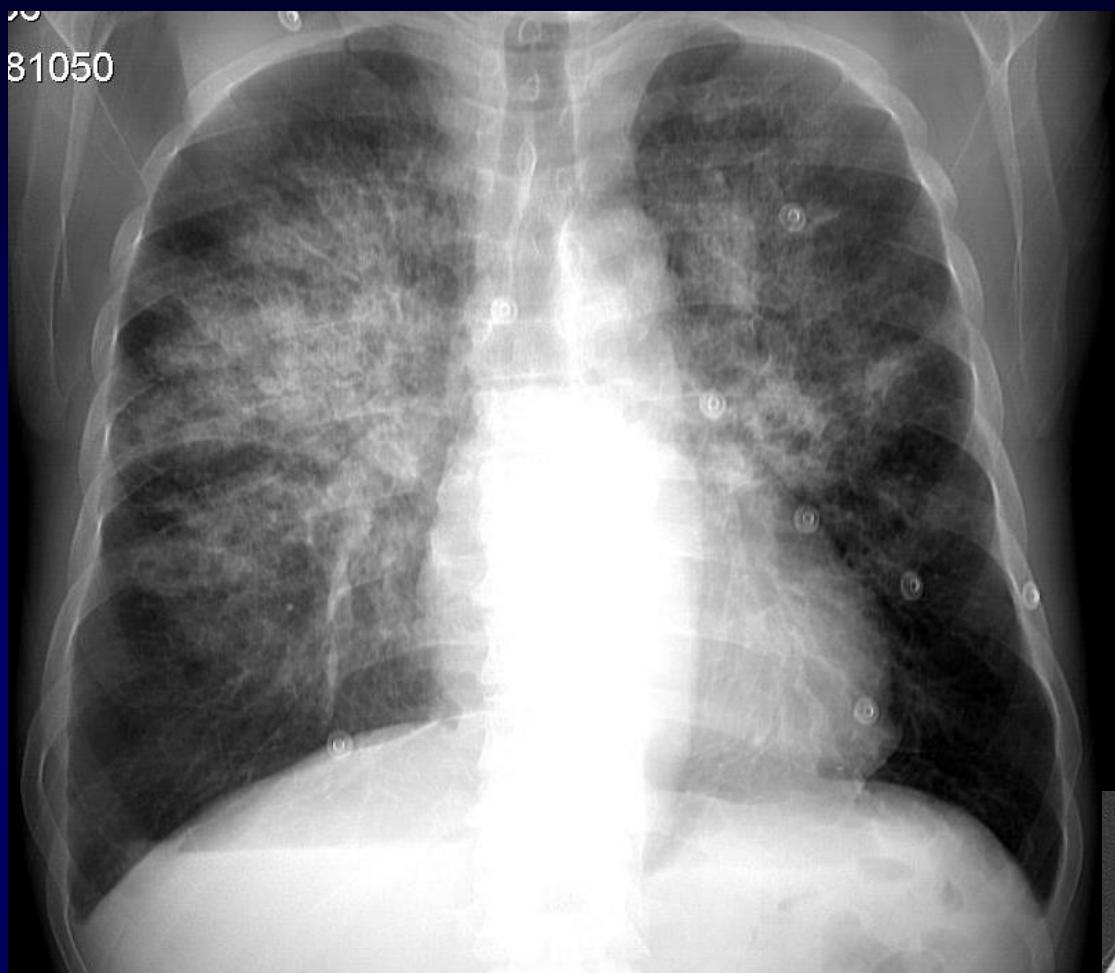


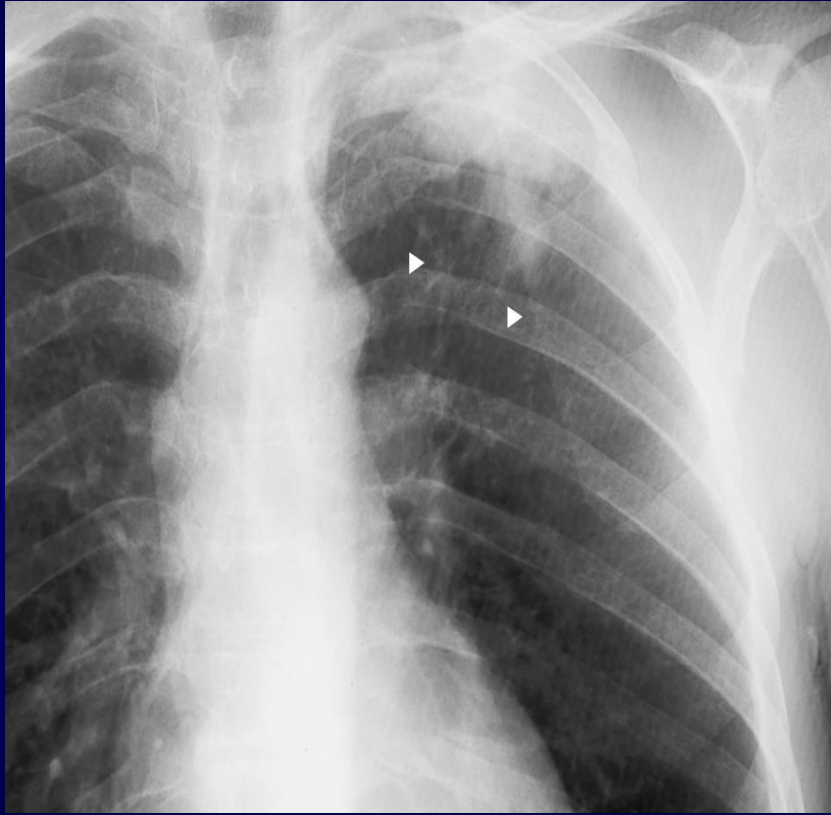


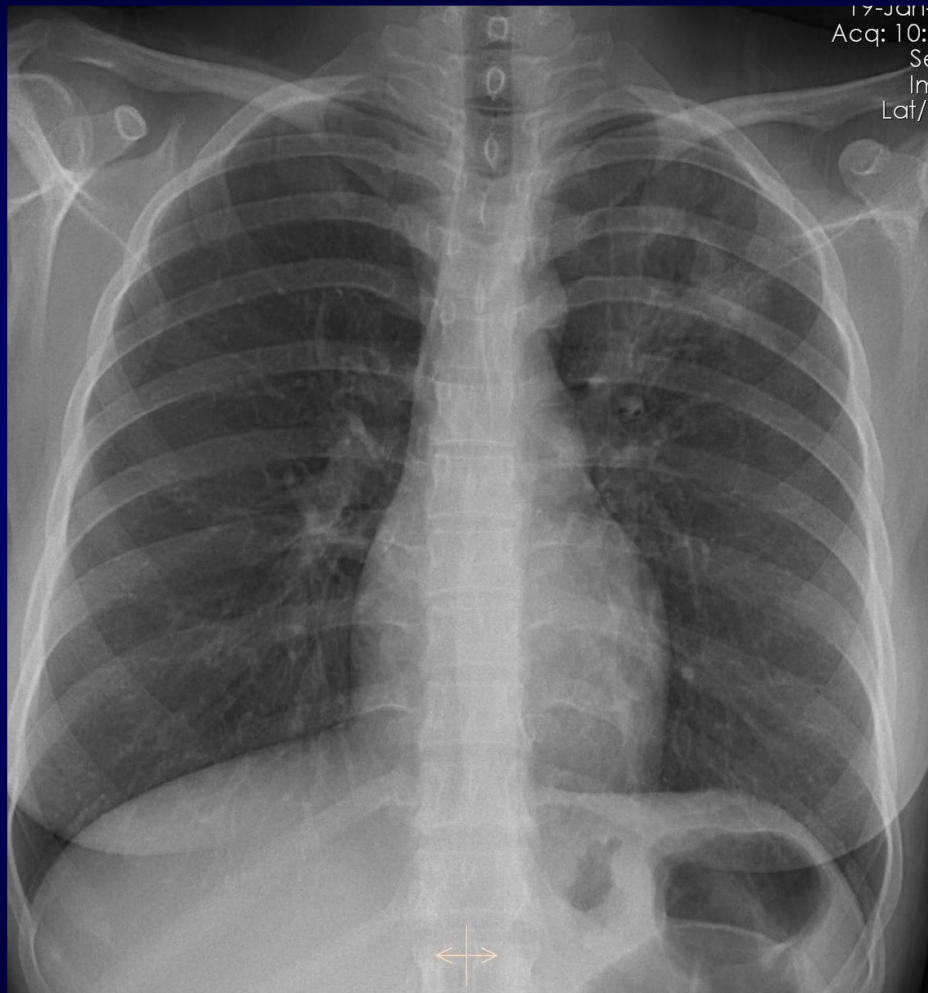


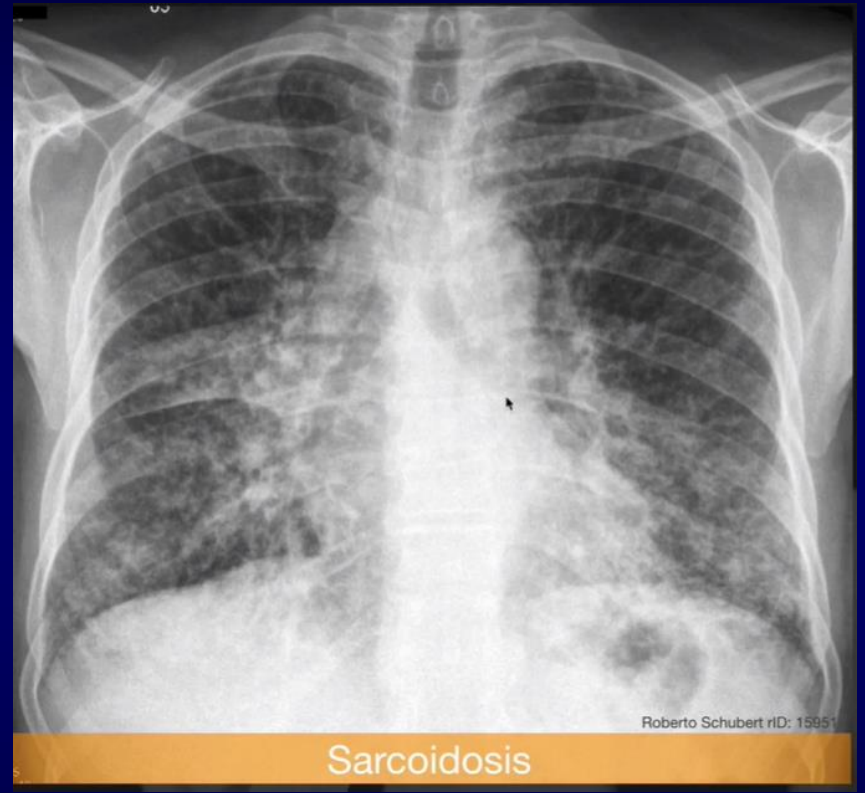


**Stafilokok pnömonisi
(bronkopnömoni)**

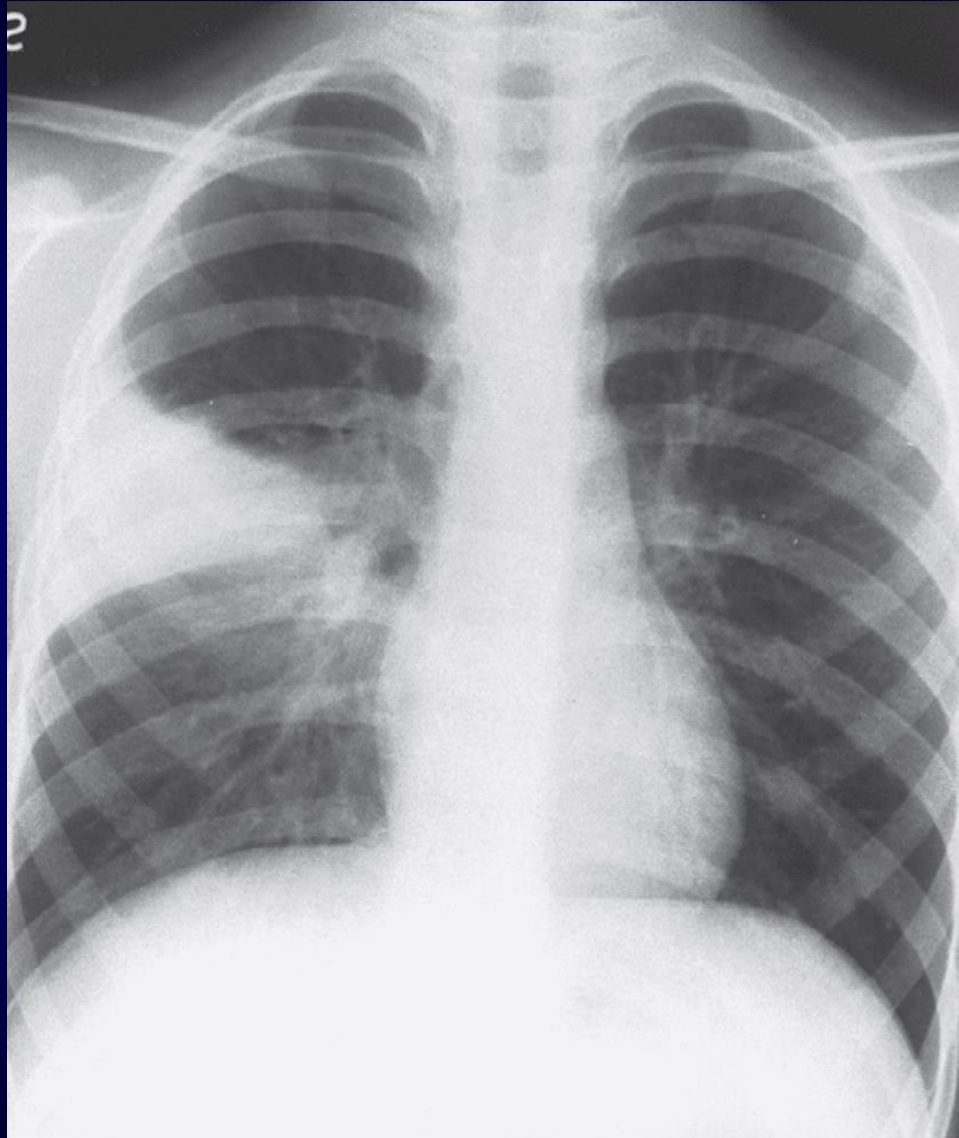


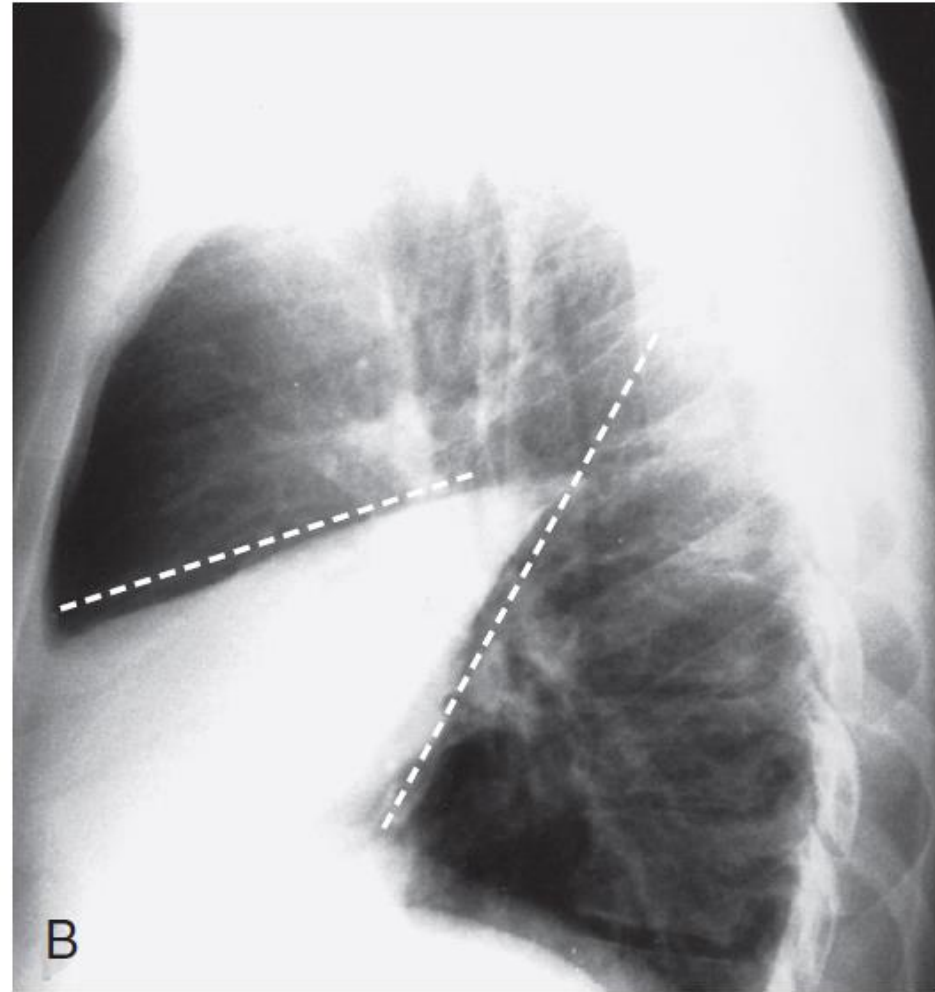
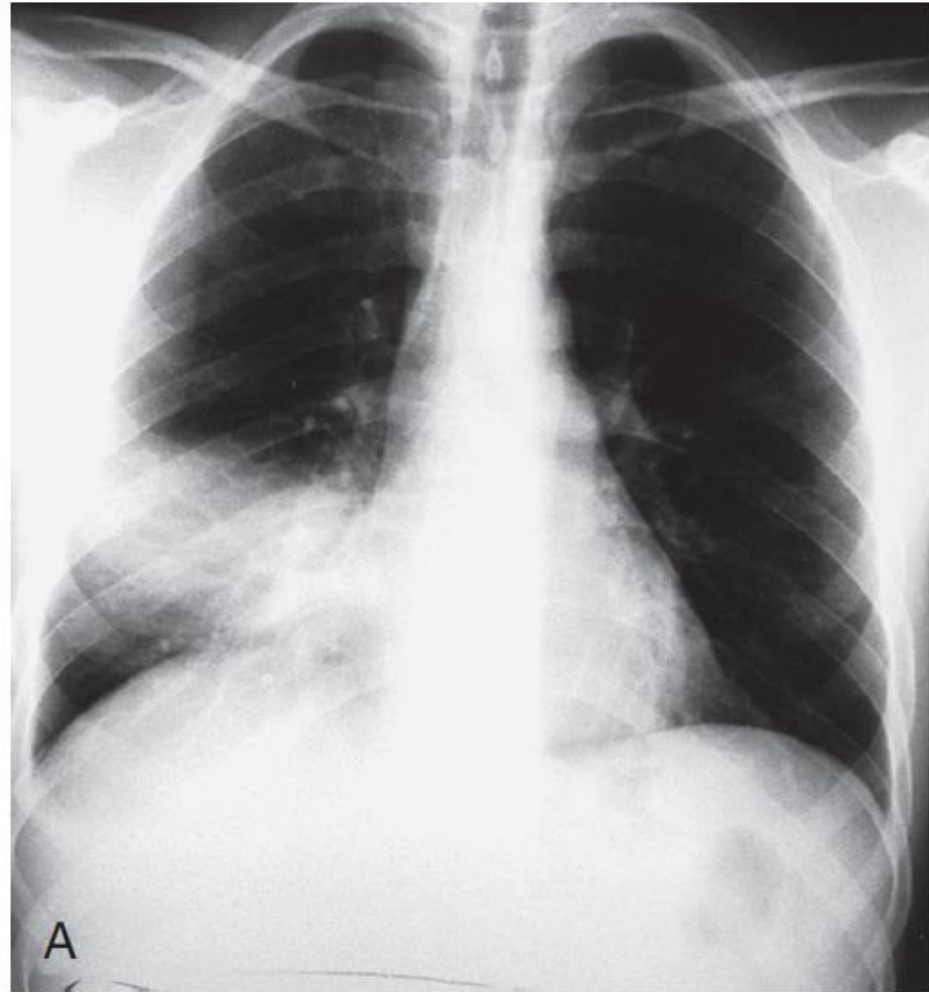


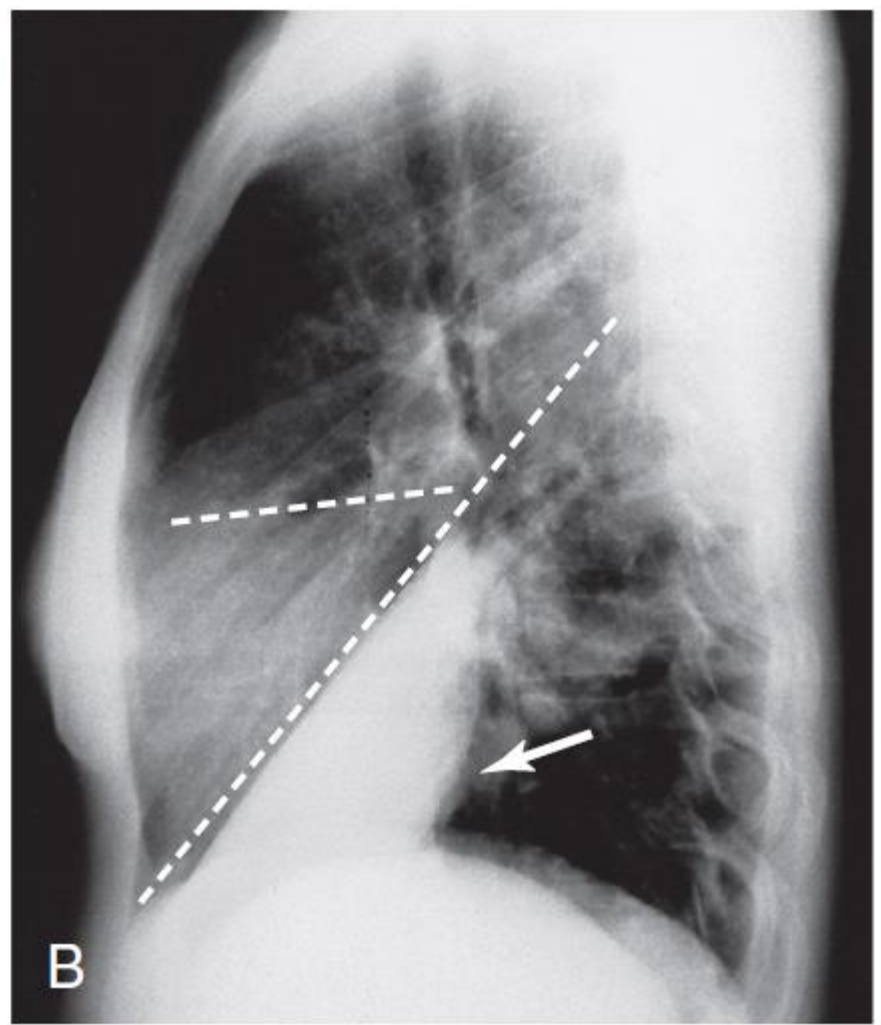
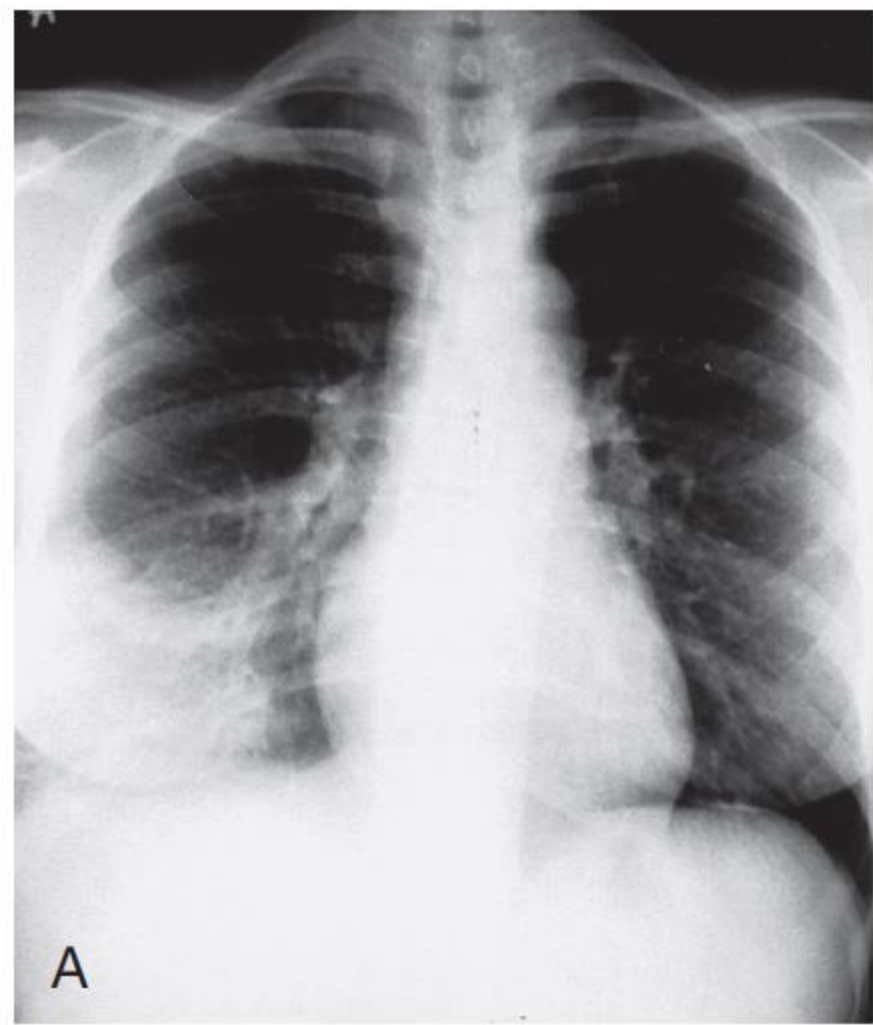


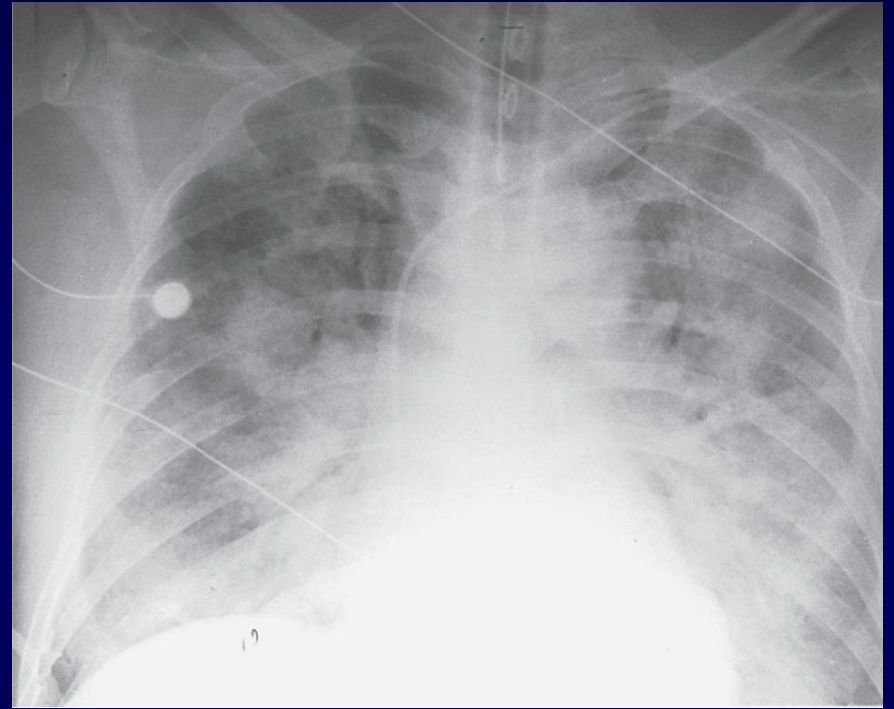
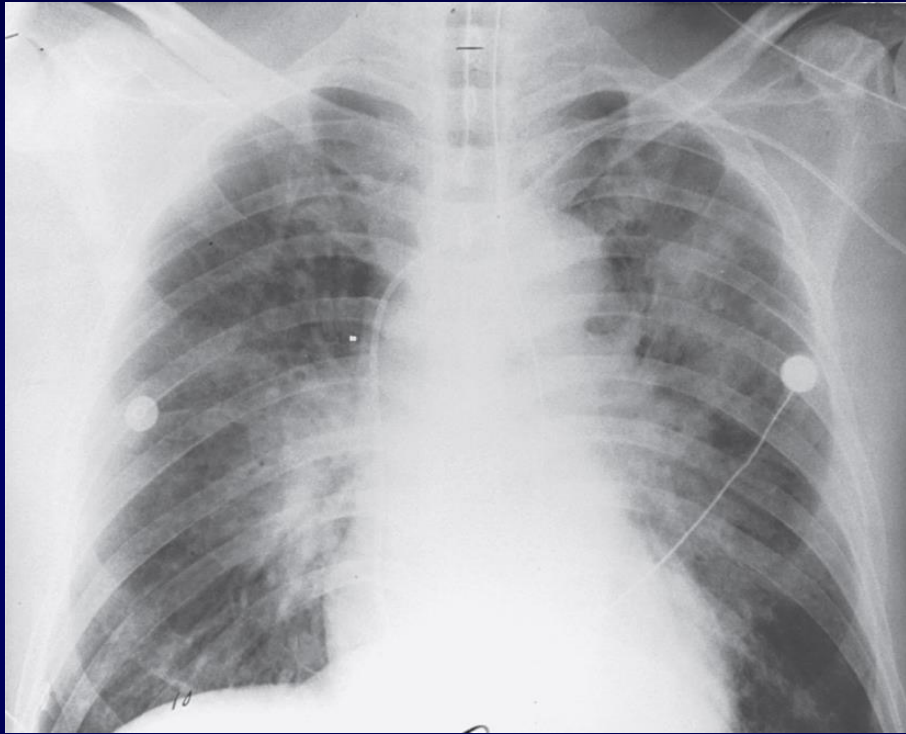


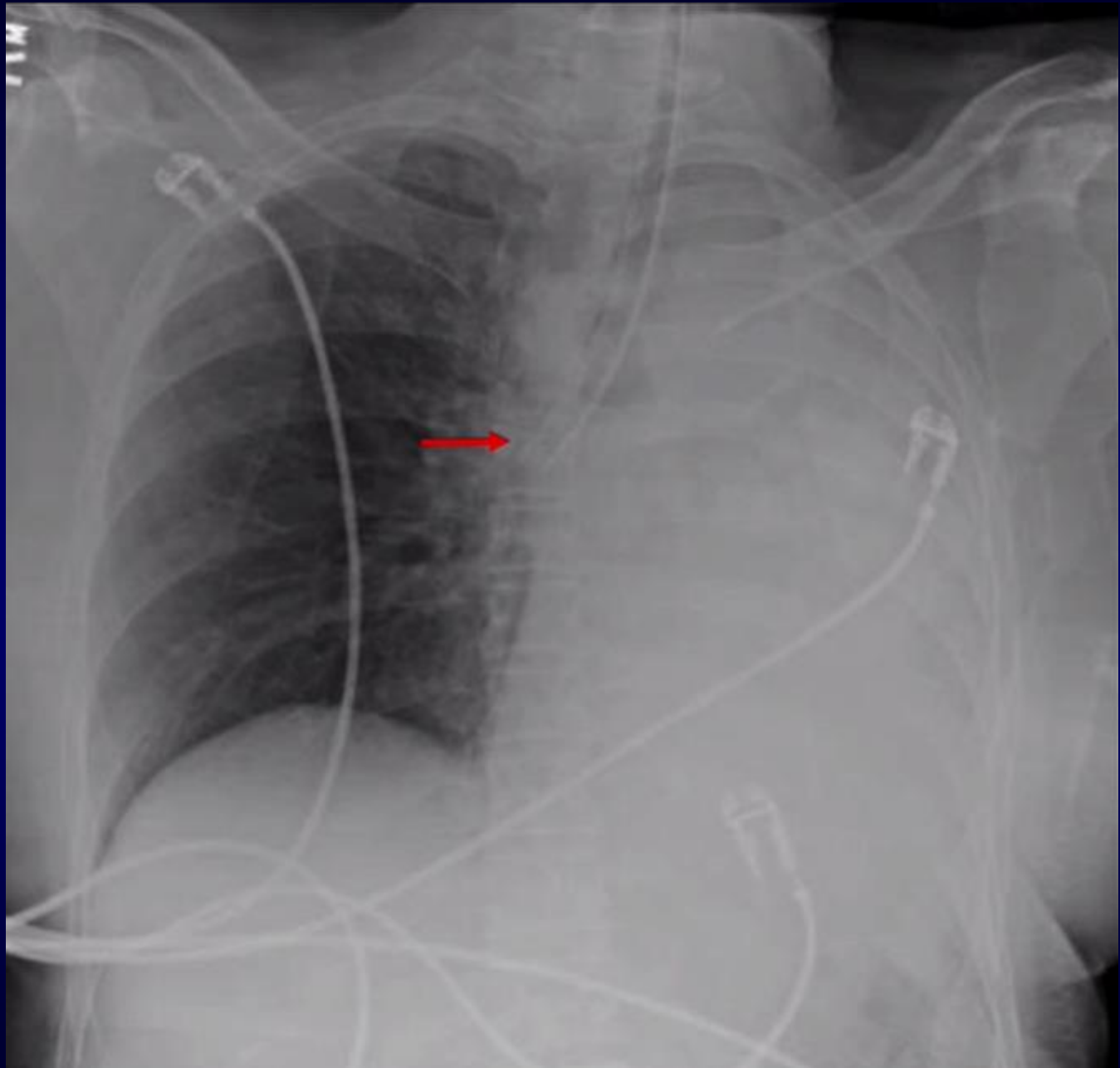
Sarcoidosis





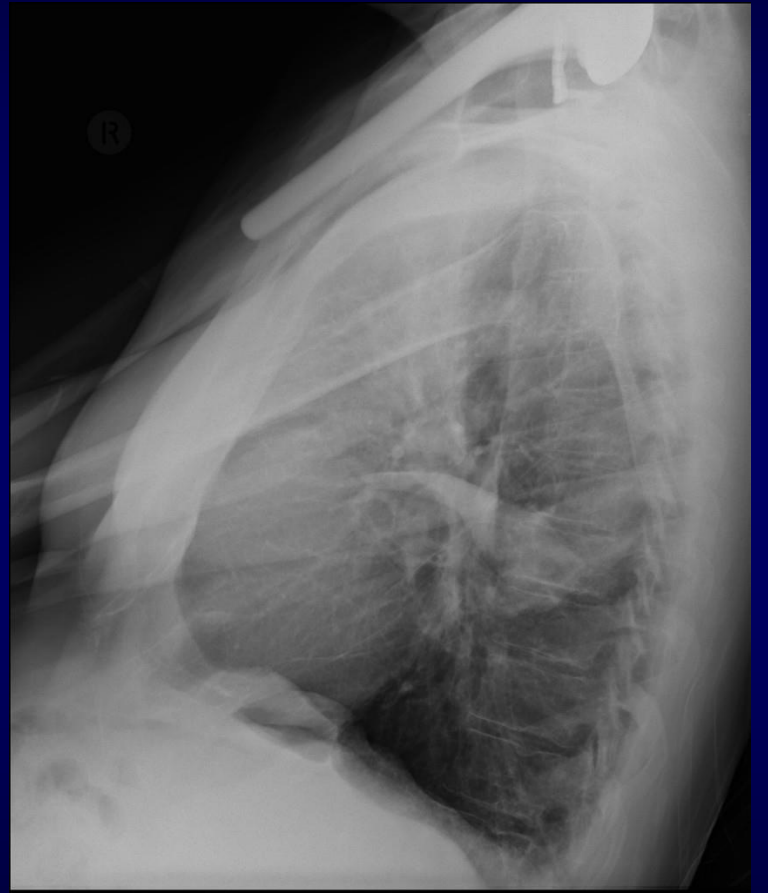
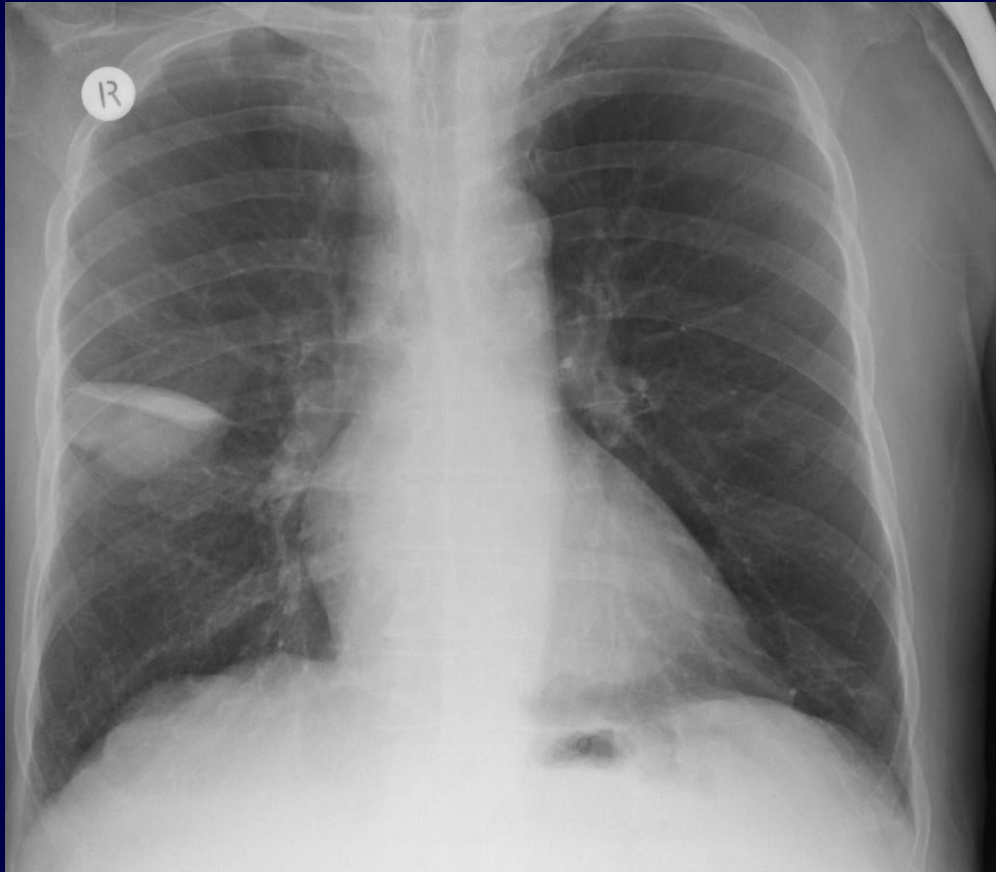


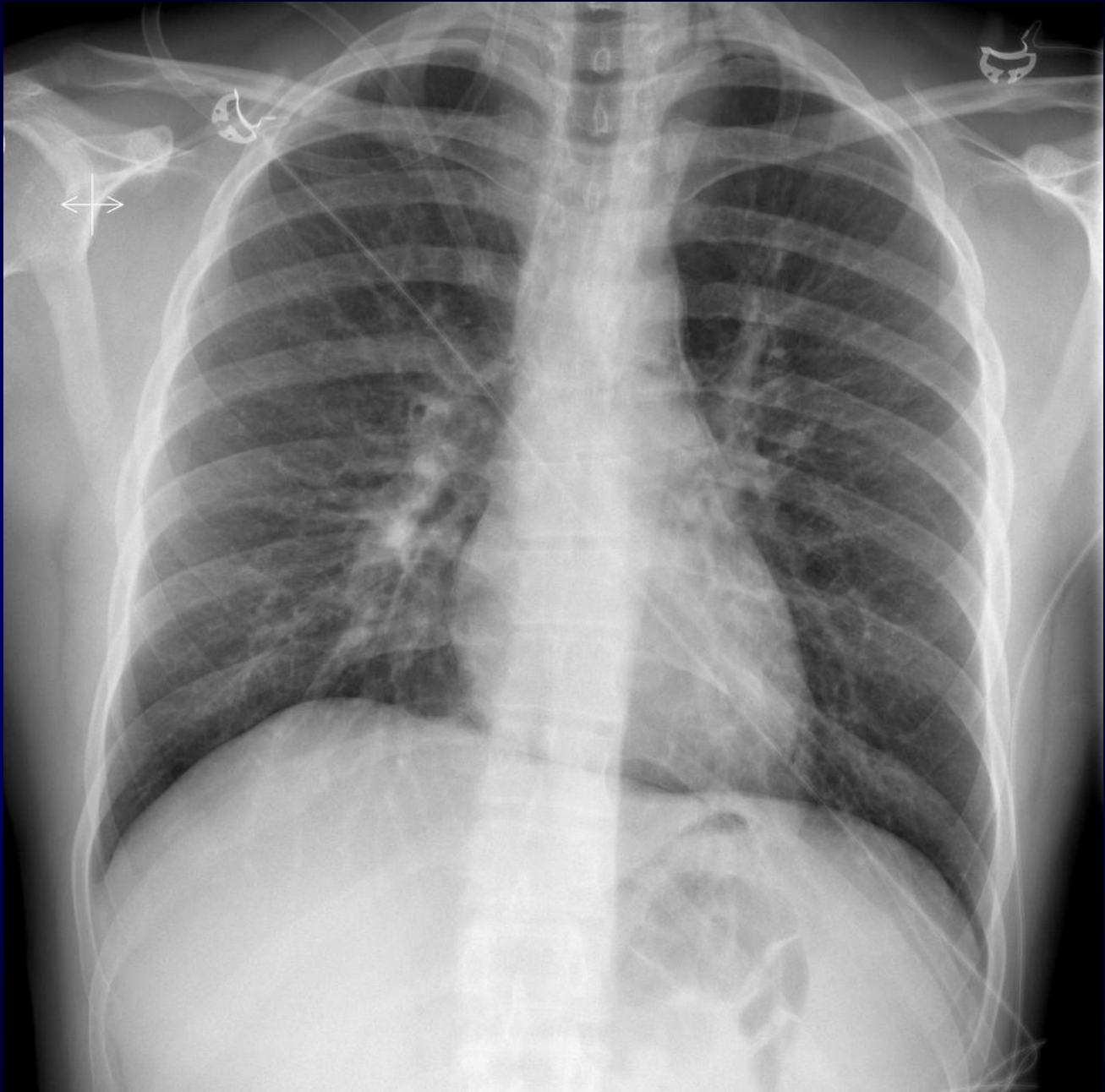


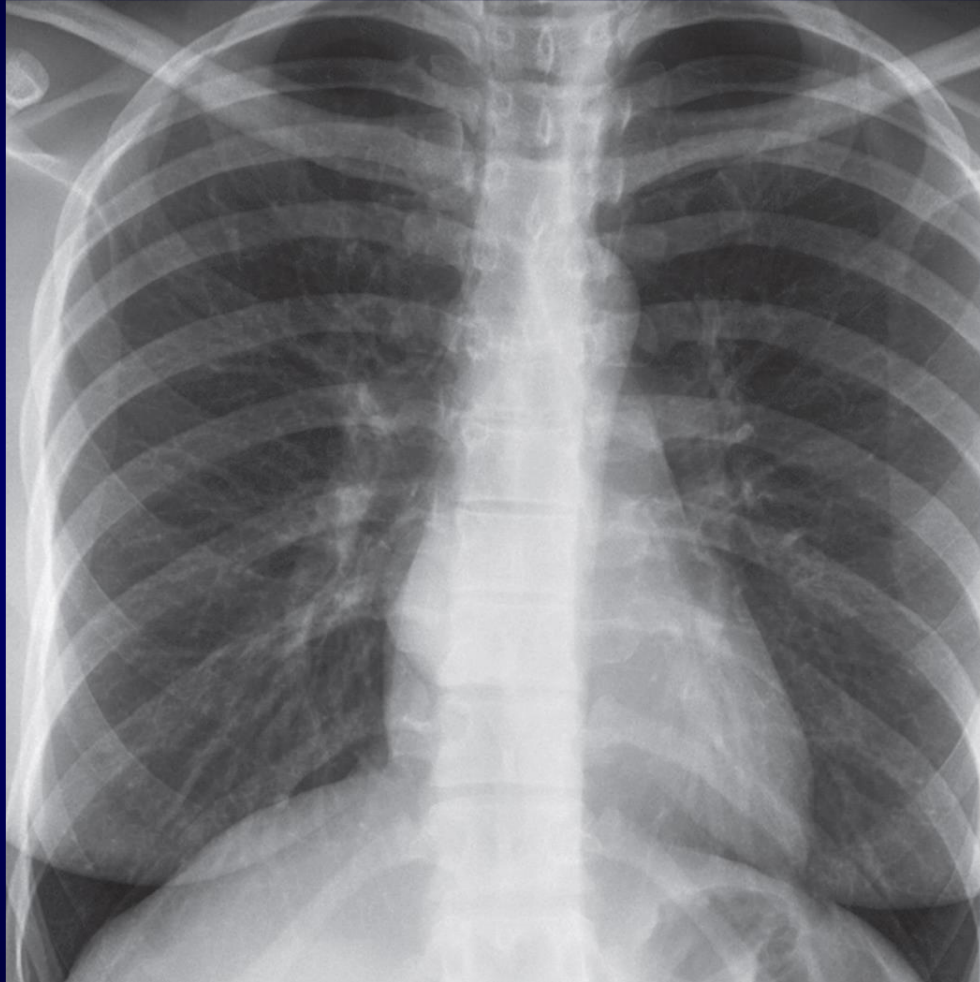




2:36:58







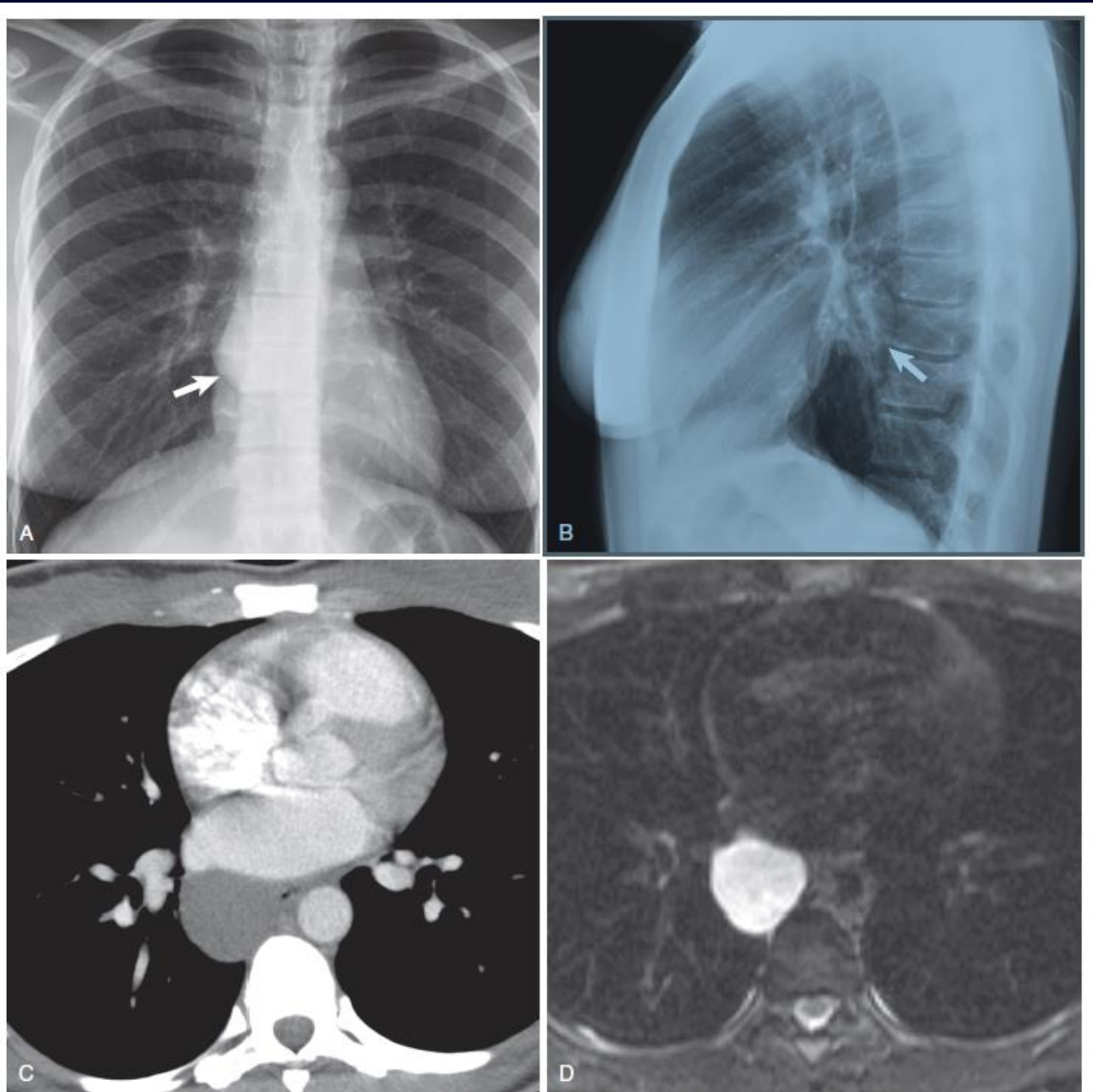
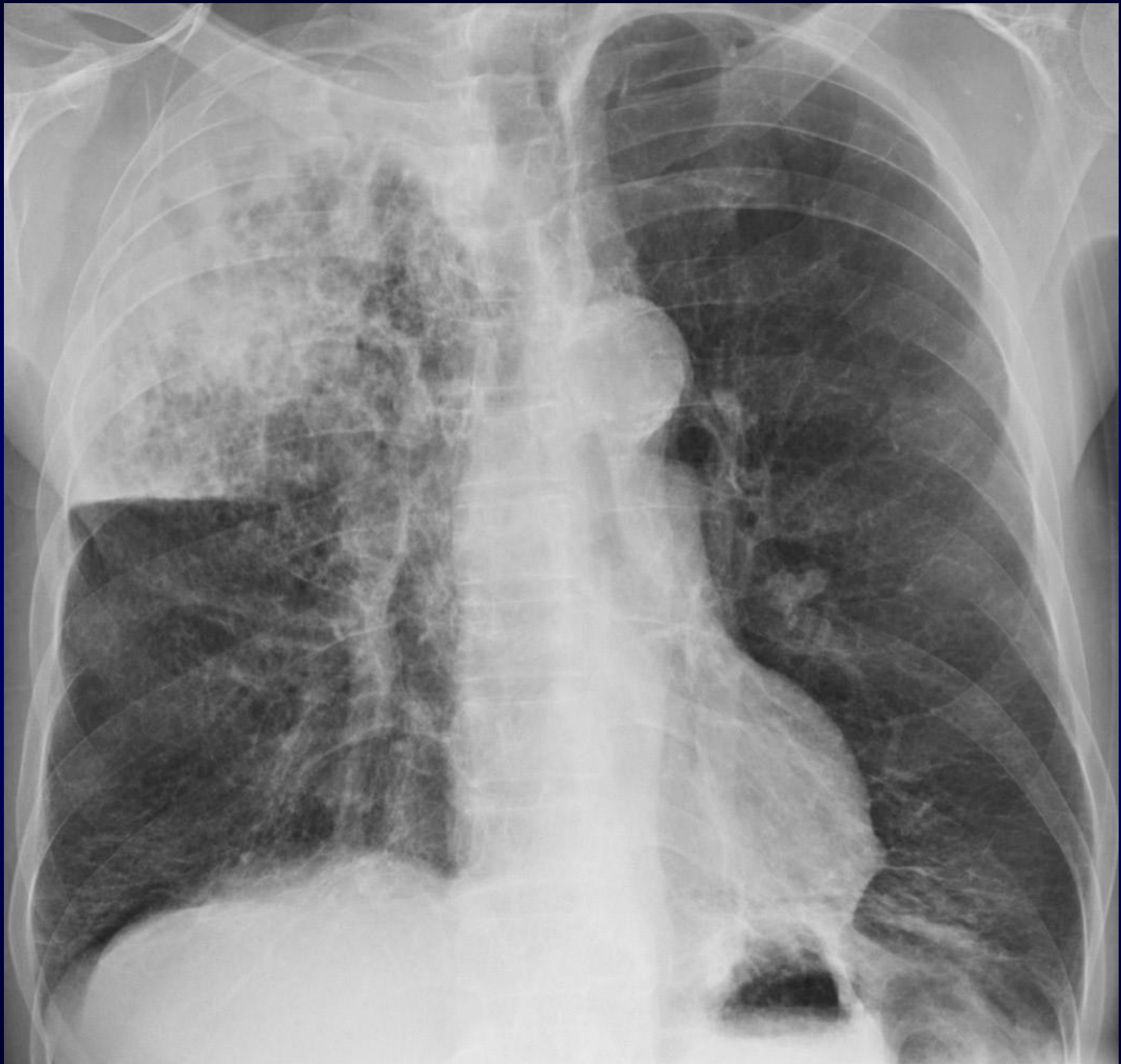
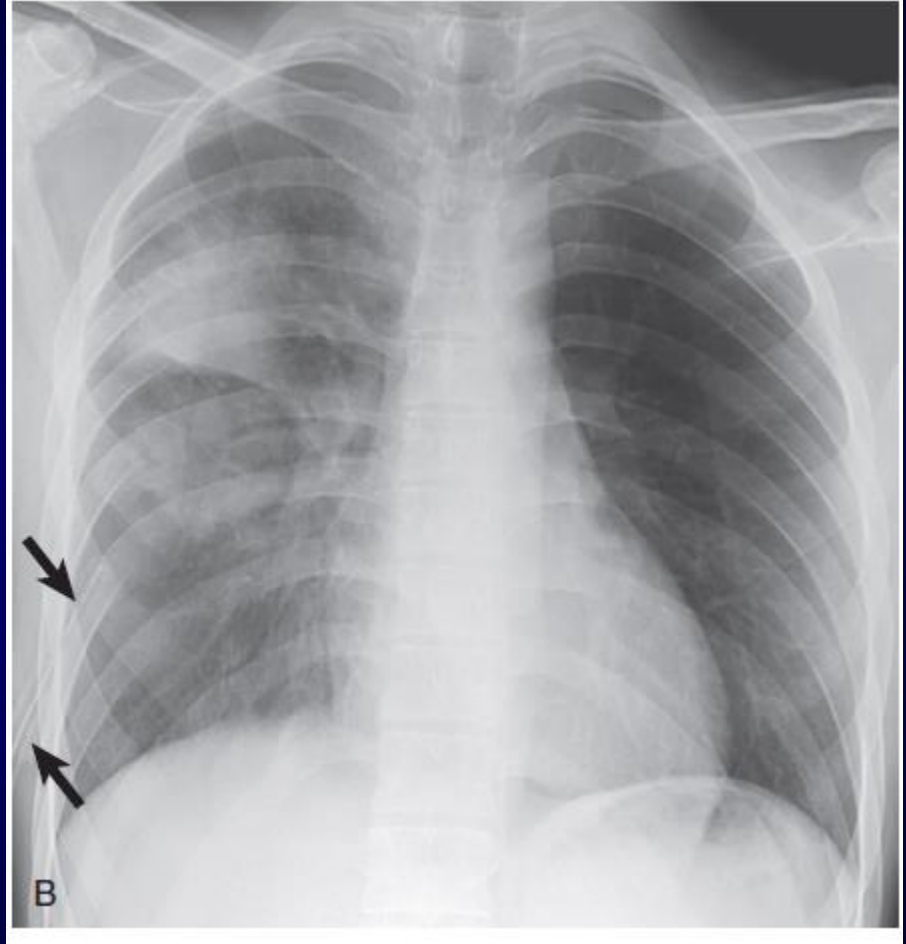
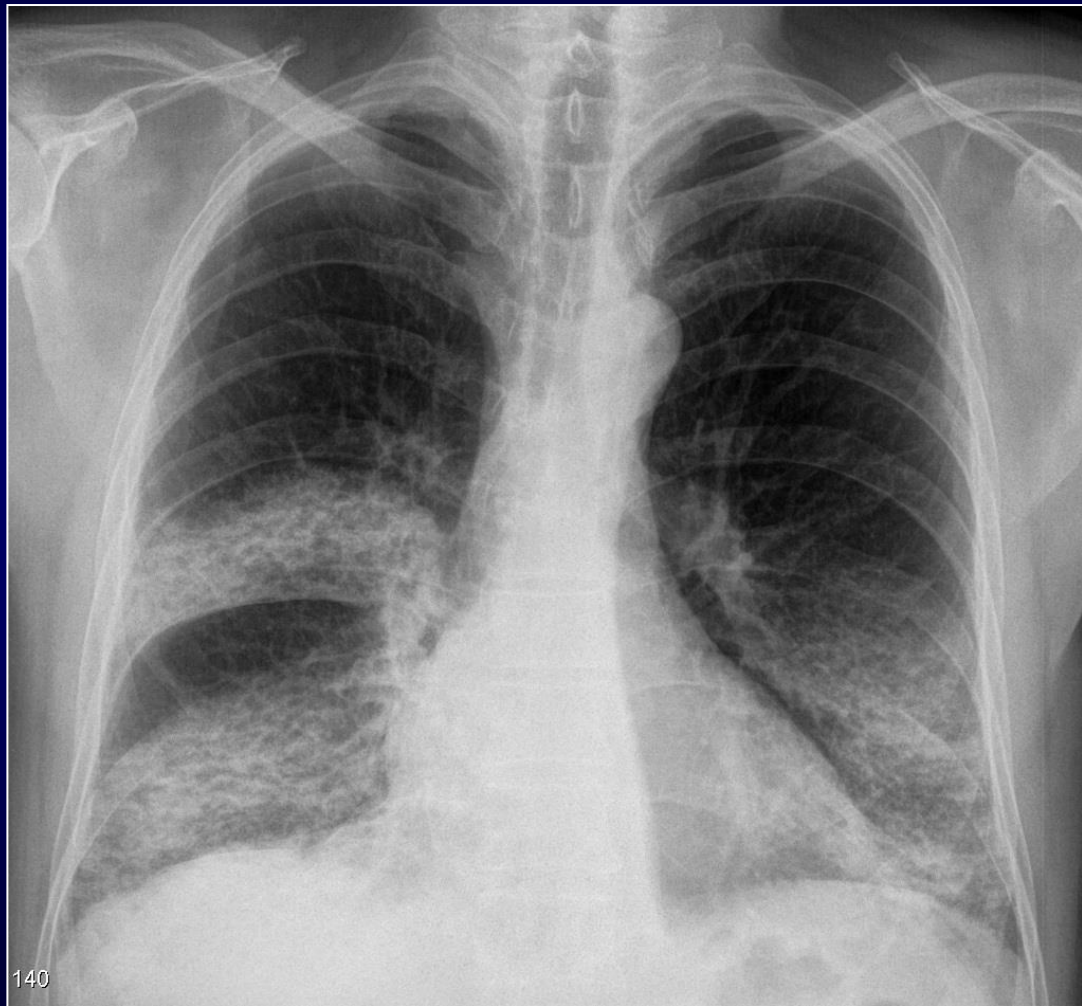


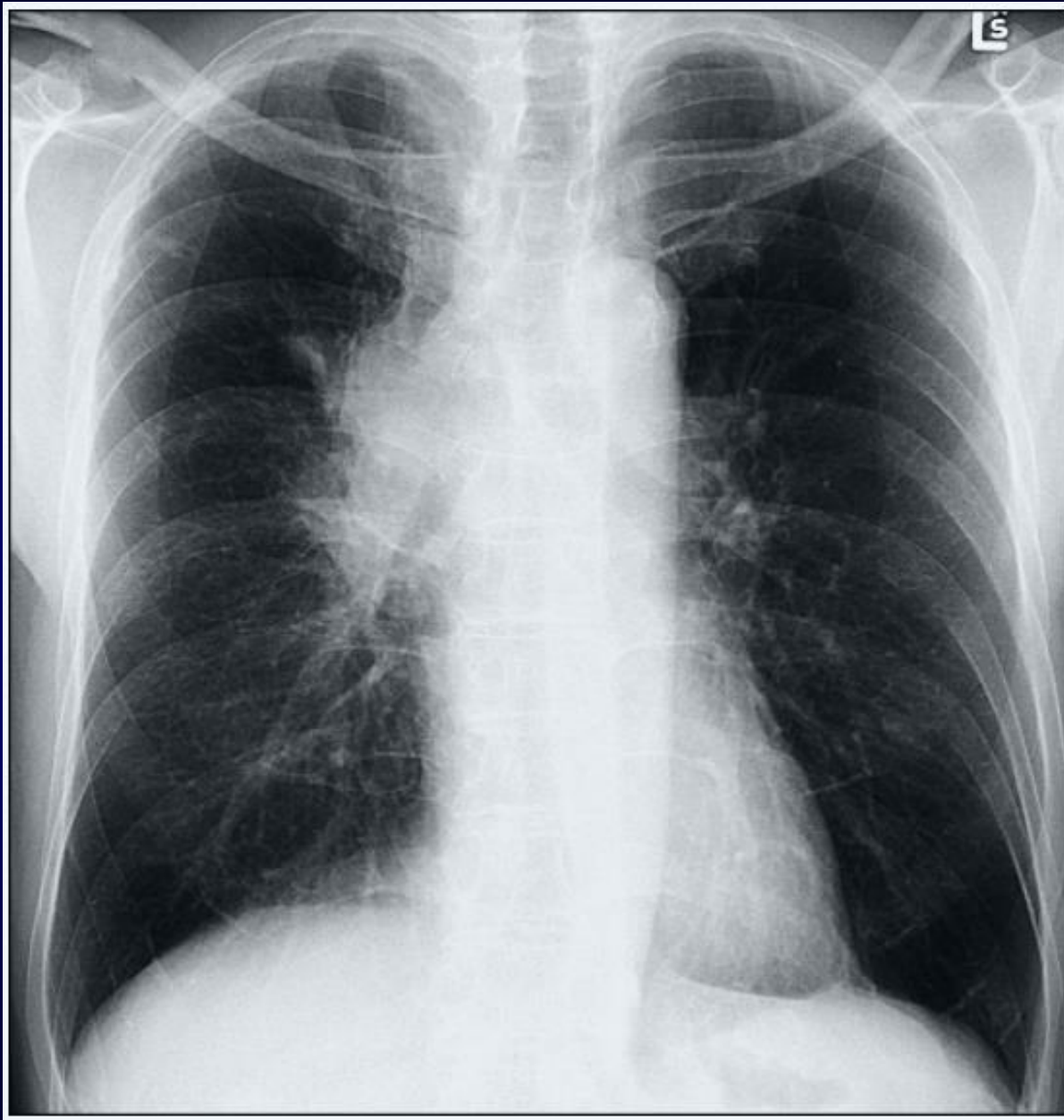
Fig. 7.6 Bronchogenic cyst. Posteroanterior (A) and lateral (B) chest radiographs show a well-circumscribed

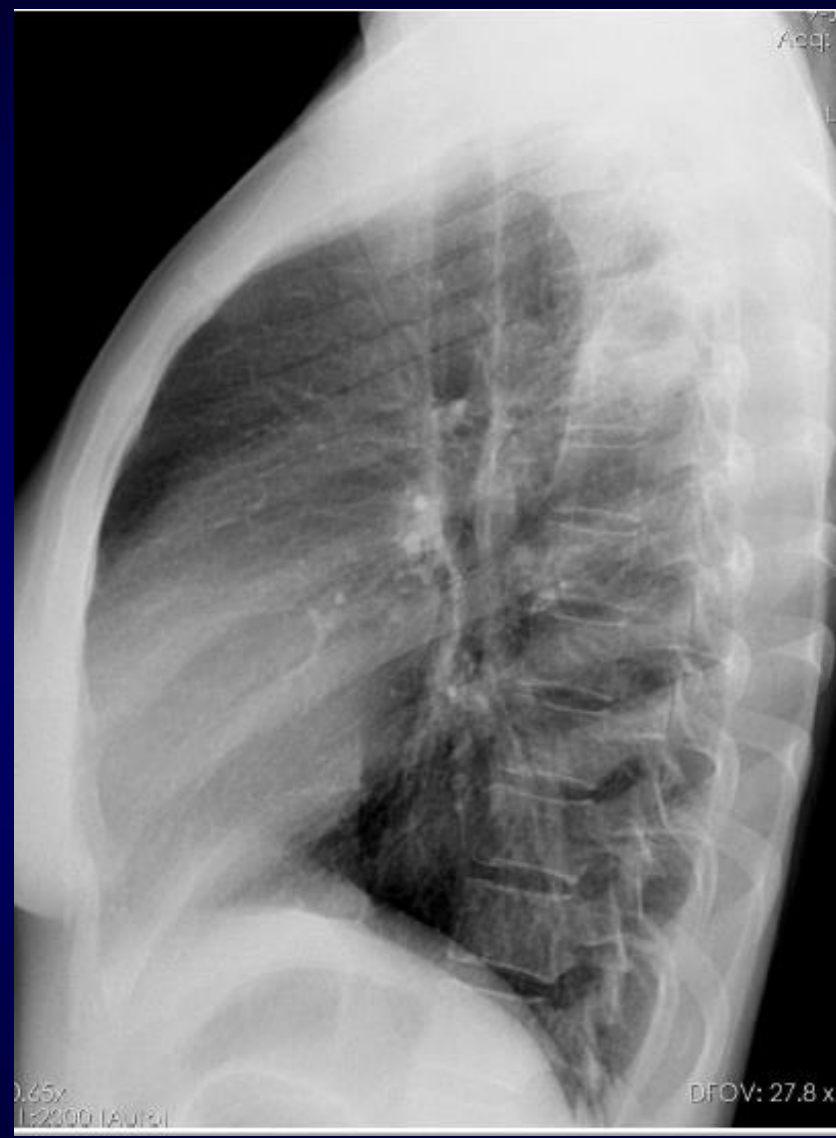




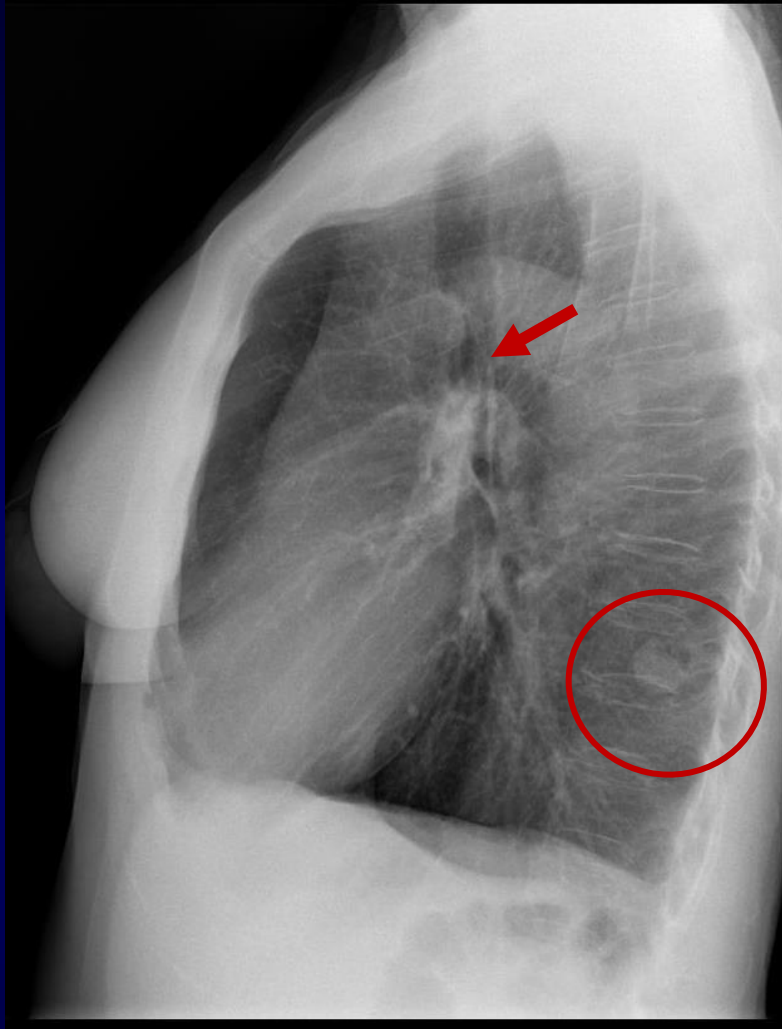












Tracheal squamous c.c and solitary metastases

