Απλή ακτινογραφία Θώρακα

η πιο συχνή εξέταση σε νοσοκομεία και ιδιωτικά κέντρα

Πολλοί πιστεύουν κάπως αφελώς...

- αν μία βλάβη υπάρχει στον πνεύμονα θα φανεί στην α/α θώρακα…
- εάν μία βλάβη φαίνεται στην α/α θώρακα θα την αντιληφθεί ο ιατρός…
- εάν ο ιατρός αντιληφθεί τη βλάβη θα την ερμηνεύσει σωστά…
- εάν η βλάβη ερμηνευθεί σωστά θα επιλεγεί η σωστή διάγνωση…

Μεγάλες στατιστικές μελέτες έδειξαν ότι…

- **20–30%** των α/α θώρακα που αρχικά θεωρούνται φυσιολογικές, είναι *παθολογικές (ψευδώς αρνητικές)*

- **1–20%** των α/α θώρακα που αρχικά θεωρούνται παθολογικές, είναι *φυσιολογικές (ψευδώς θετικές)*

Το να βλέπεις ισοδυναμεί με το να *κοιτάς* και να *μαθαίνεις…*

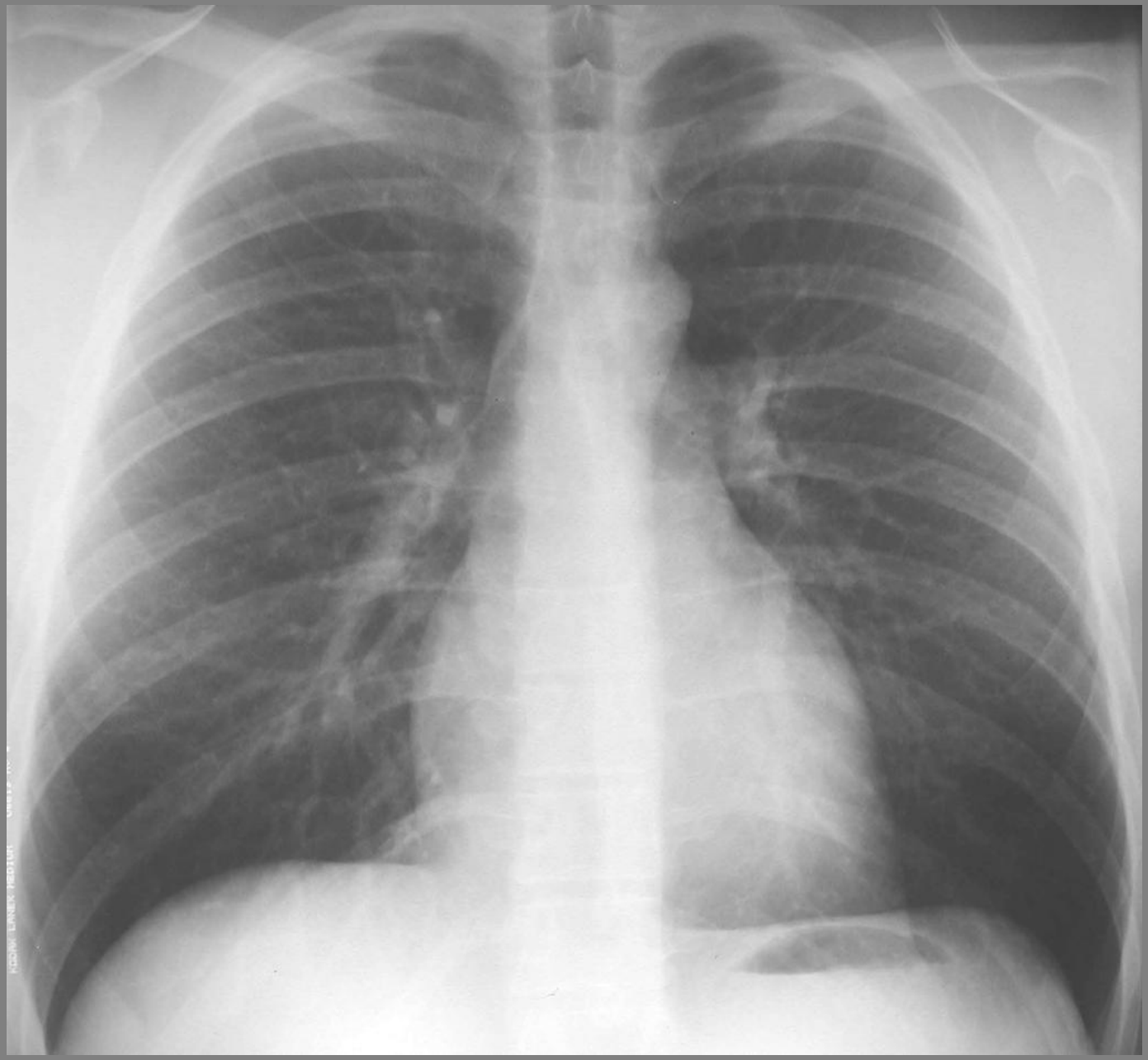
Το να *κοιτάς* είναι κυρίως ζήτημα προσοχής…

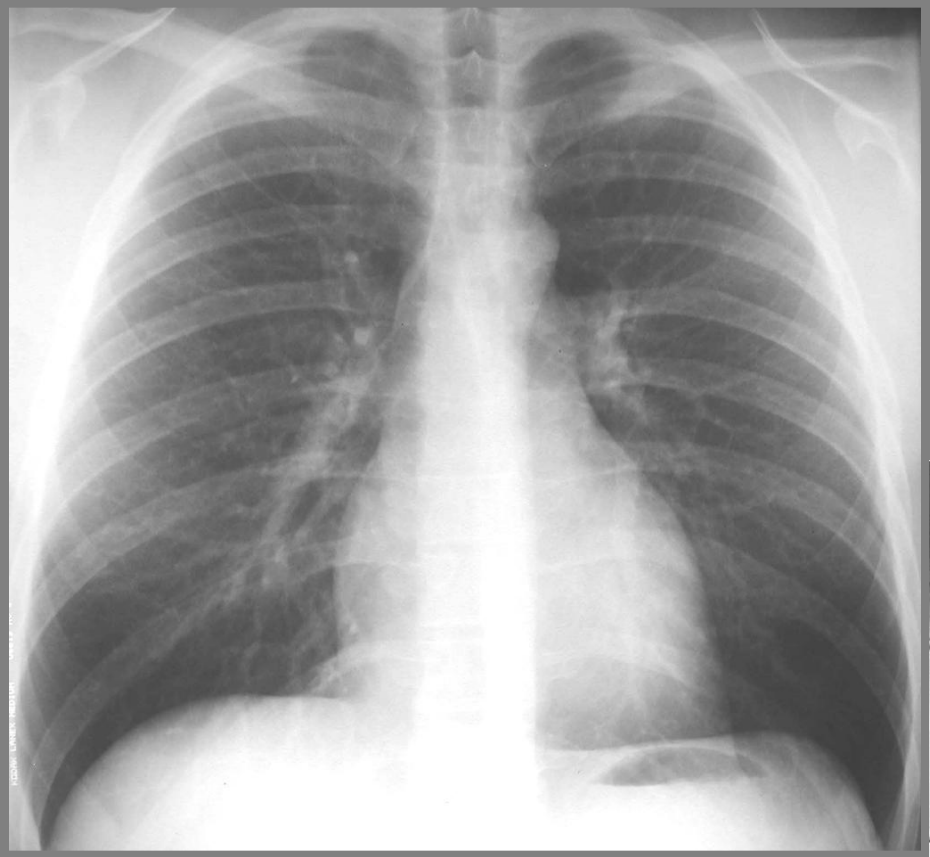
τεχνικά χαρακτηριστικά

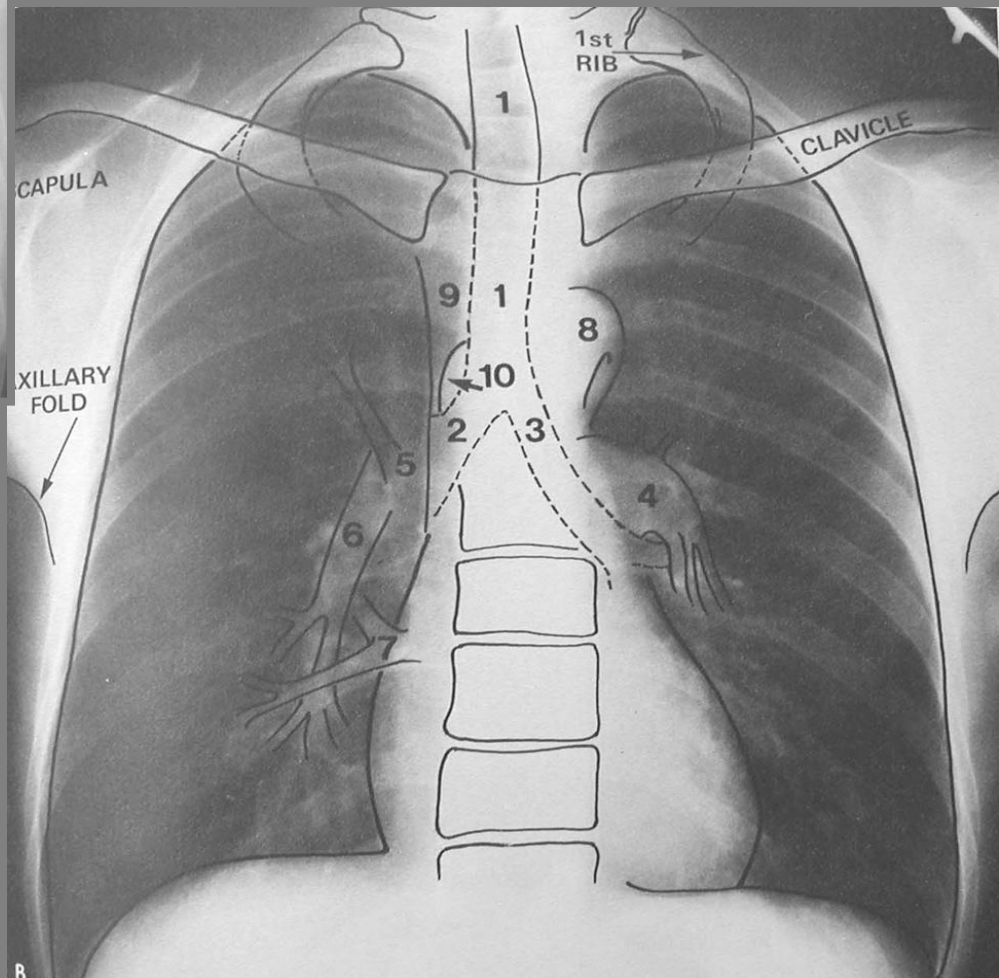
- Οπισθοπροσθια
  απόσταση από τη λυχνία : 1.80 μ
  Kv: 60 - 120, mAs: 1- 3

- Τ*ηλεκαρδιας*
  απόσταση από τη λυχνία : 2.10 μ

Καλή εισπνοή: 7 πρόσθια *η*
10 οπίσθια πλευρικά τόξα



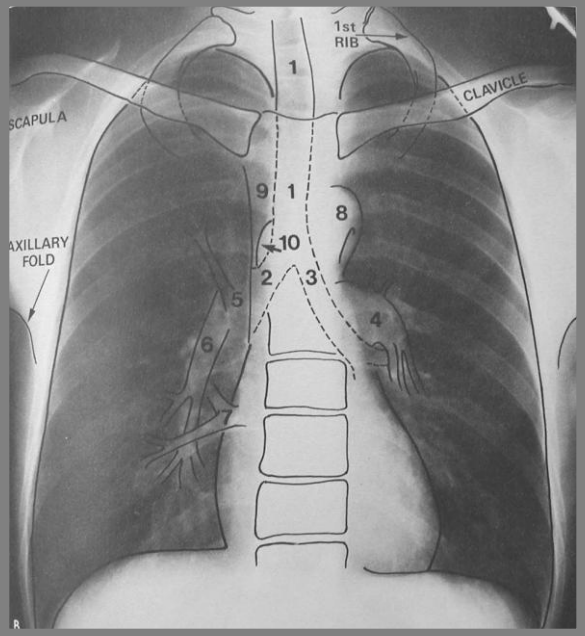



1st
RIB
1
CLAVICLE
CAPULA
9
1
8
XILLARY
FOLD
10
2
3
5
4
6
7

Οπισθοπροσθια α/α θώρακα

- Ονομα και ημερομηνία λήψης
- Όρθια ή ύπτια θέση
- Καλή εισπνοή
- Σωστή επικέντρωση
- Σωστά τεχνικά χαρακτηριστικά

…ελέγχουμε από την *περιφέρεια* προς το *κέντρο*…



…ελέγχουμε από την *περιφέρεια* προς το *κέντρο*…

1ος κύκλος: εκτός θωρακικού κλωβού = δέρμα, μαλακά μόρια, μαστοί, υποδιαφραγματική χώρα

2ος κύκλος: θωρακικός κλωβός και διαφράγματα

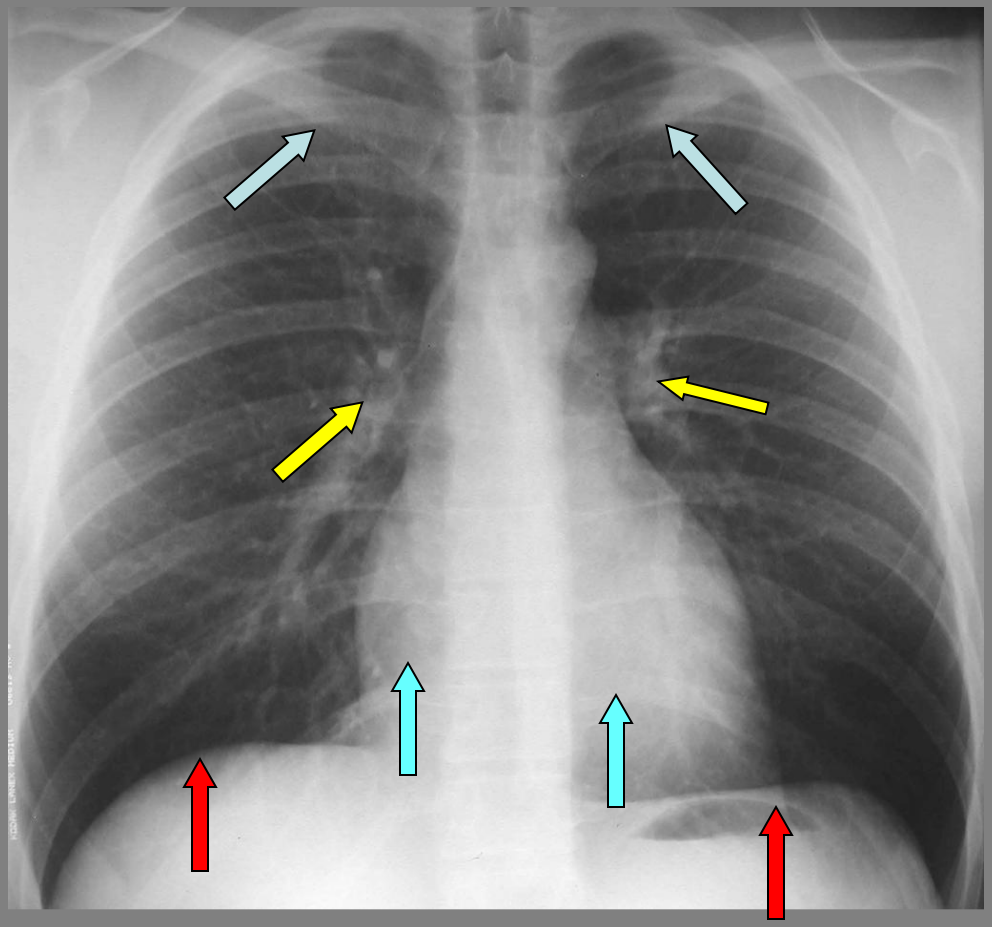
3ος κύκλος: πνευμονικό παρέγχυμα (όγκος, ακτινοσκιερότητα, αγγείωση)

4ος κύκλος: μεσοθωράκιο (γραμμές μεσοθωρακίου)

4 σημαντικότεροι λεμφαδενικοί σταθμοί

Κρυφές περιοχές…

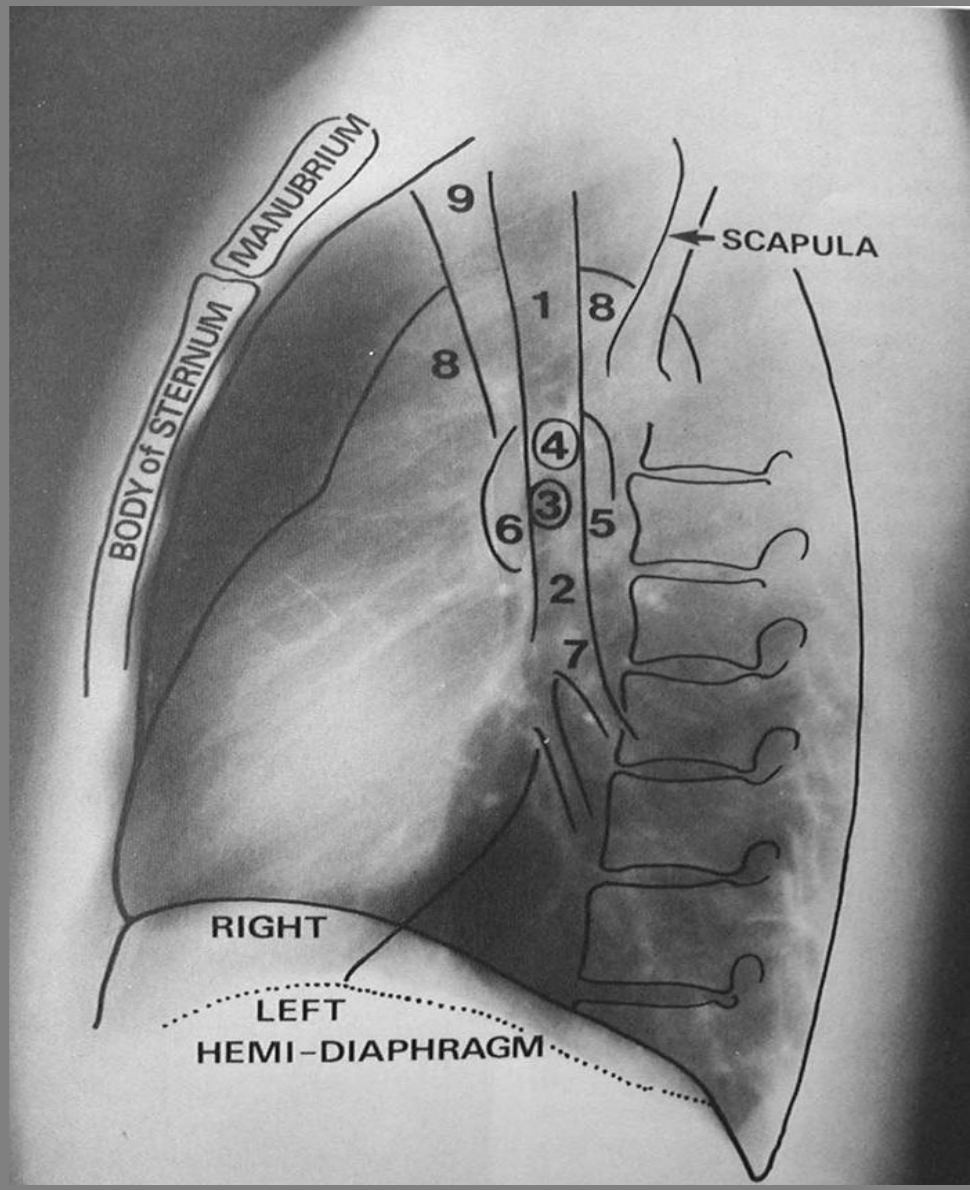
- Οπισθοκλειδικά – κορυφές πνευμόνων
- Πύλες
- Οπισθοκαρδιακά
- Υποδιαφραγματικά

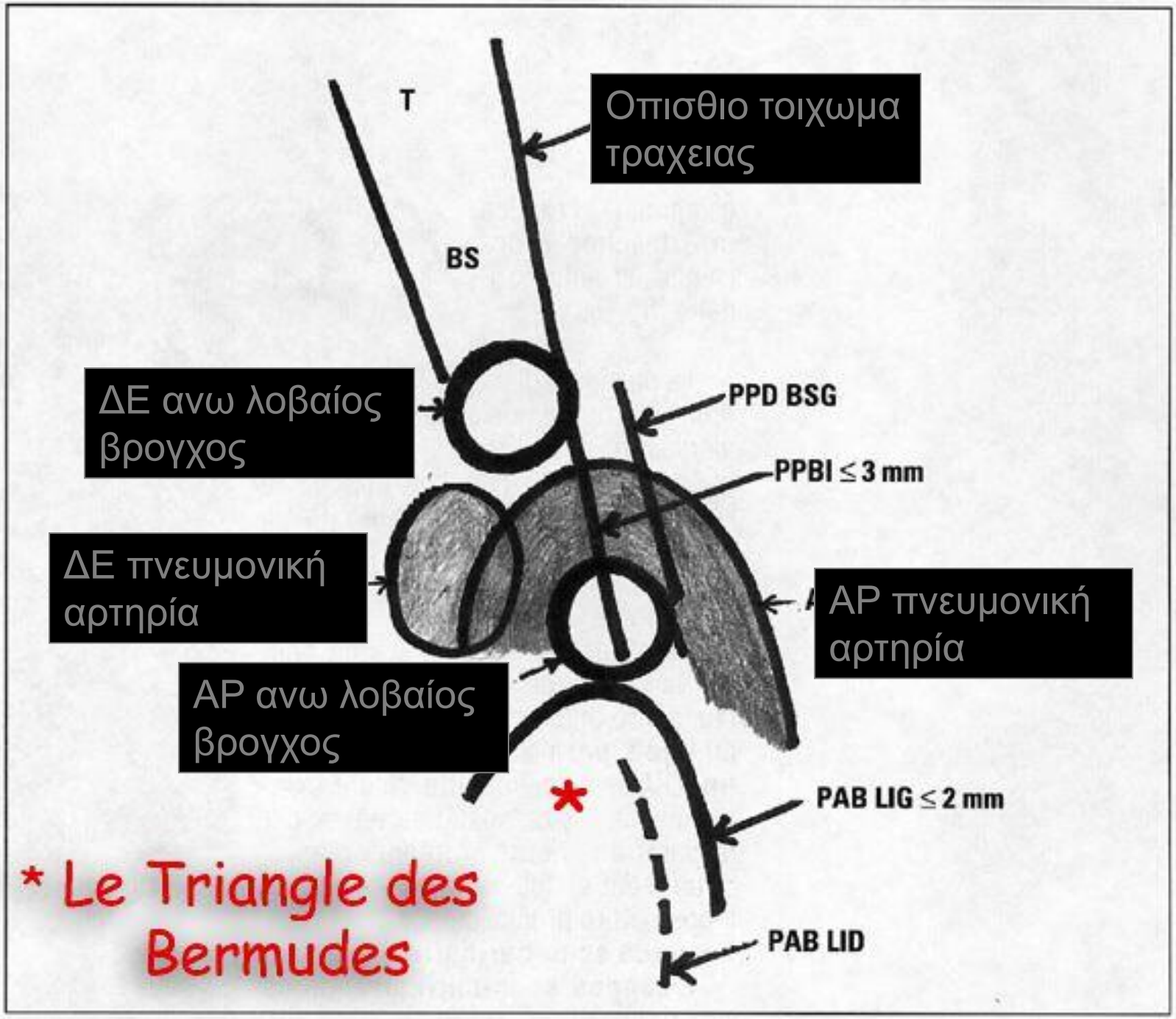


Πλάγια α/α θώρακα:

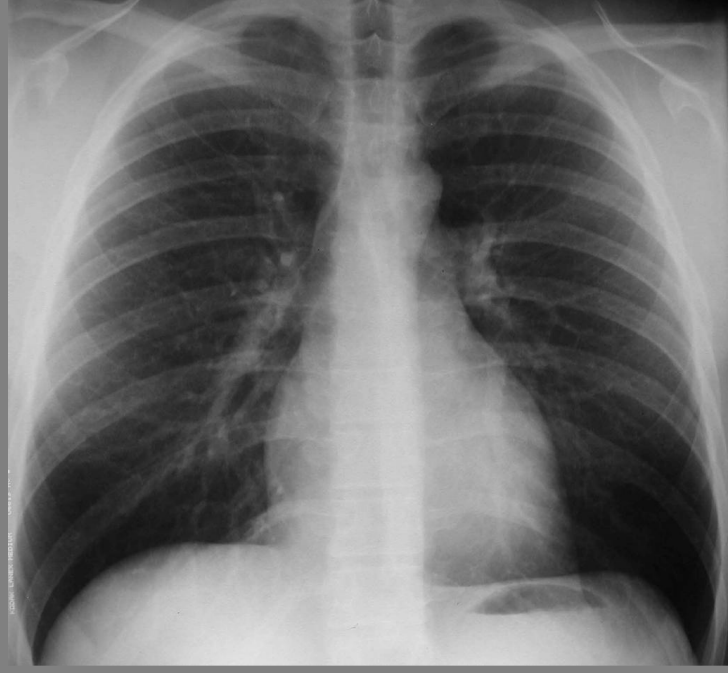
30% επιπλέον πληροφορία συγκριτικά μόνο με οπισθοπρόσθια α/α

- *οπισθοστερνική*
- *οπισθοτραχειακή*
- *οπισθοκαρδιακή*

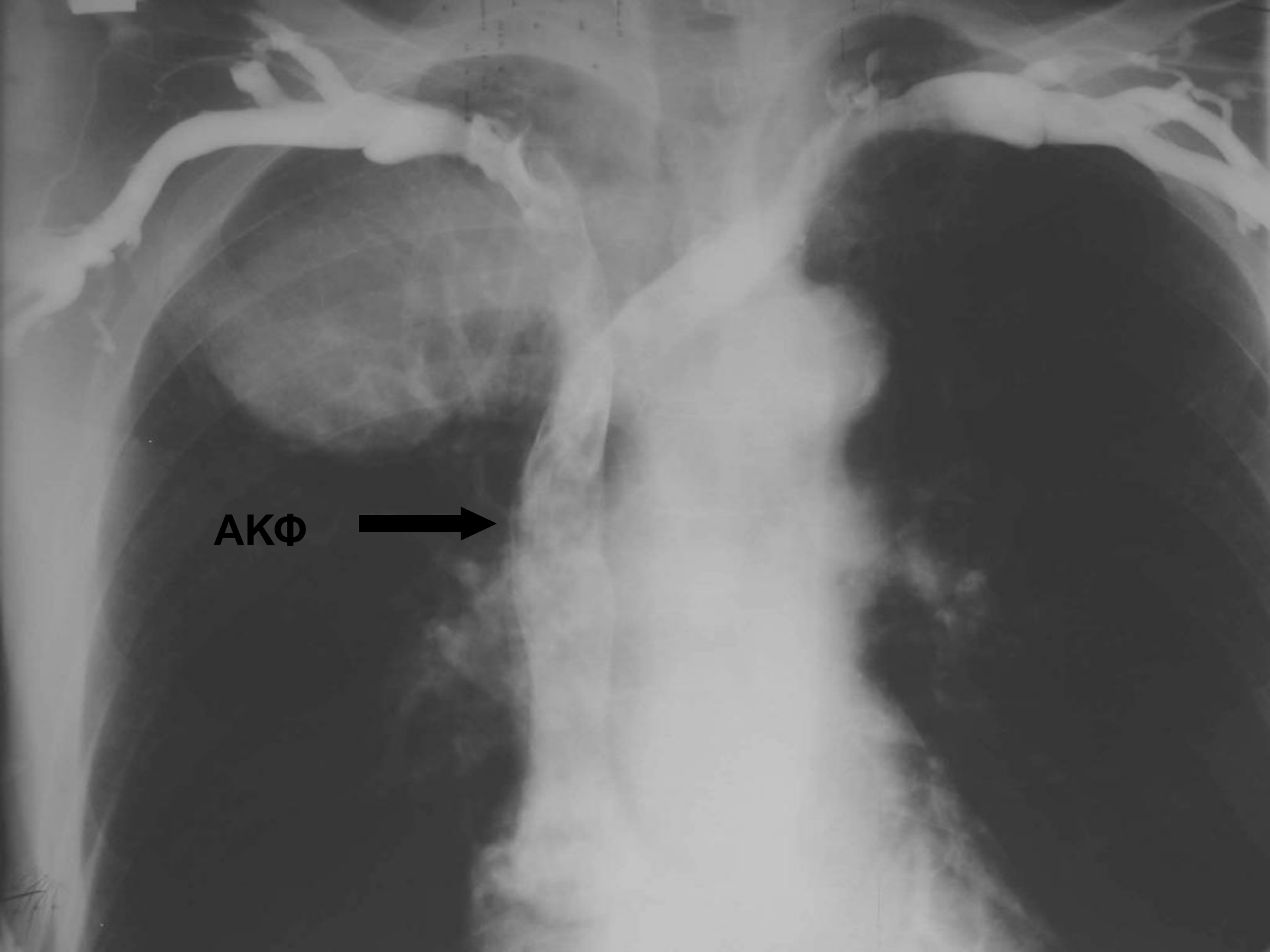

MANUBRIUM
BODY of STERNUM
SCAPULA
9
1
8
8
4
3
6
5
2
7
RIGHT
LEFT
HEMI-DIAPHRAGM


T
BS
Οπισθιο τοιχωμα τραχειας
ΔΕ ανω λοβαίος βρογχος
PPD BSG
PPBI ≤ 3 mm
ΔΕ πνευμονική αρτηρία
ΑΡ πνευμονική αρτηρία
ΑΡ ανω λοβαίος βρογχος
*
PAB LIG ≤ 2 mm
PAB LID
* Le Triangle des Bermudes

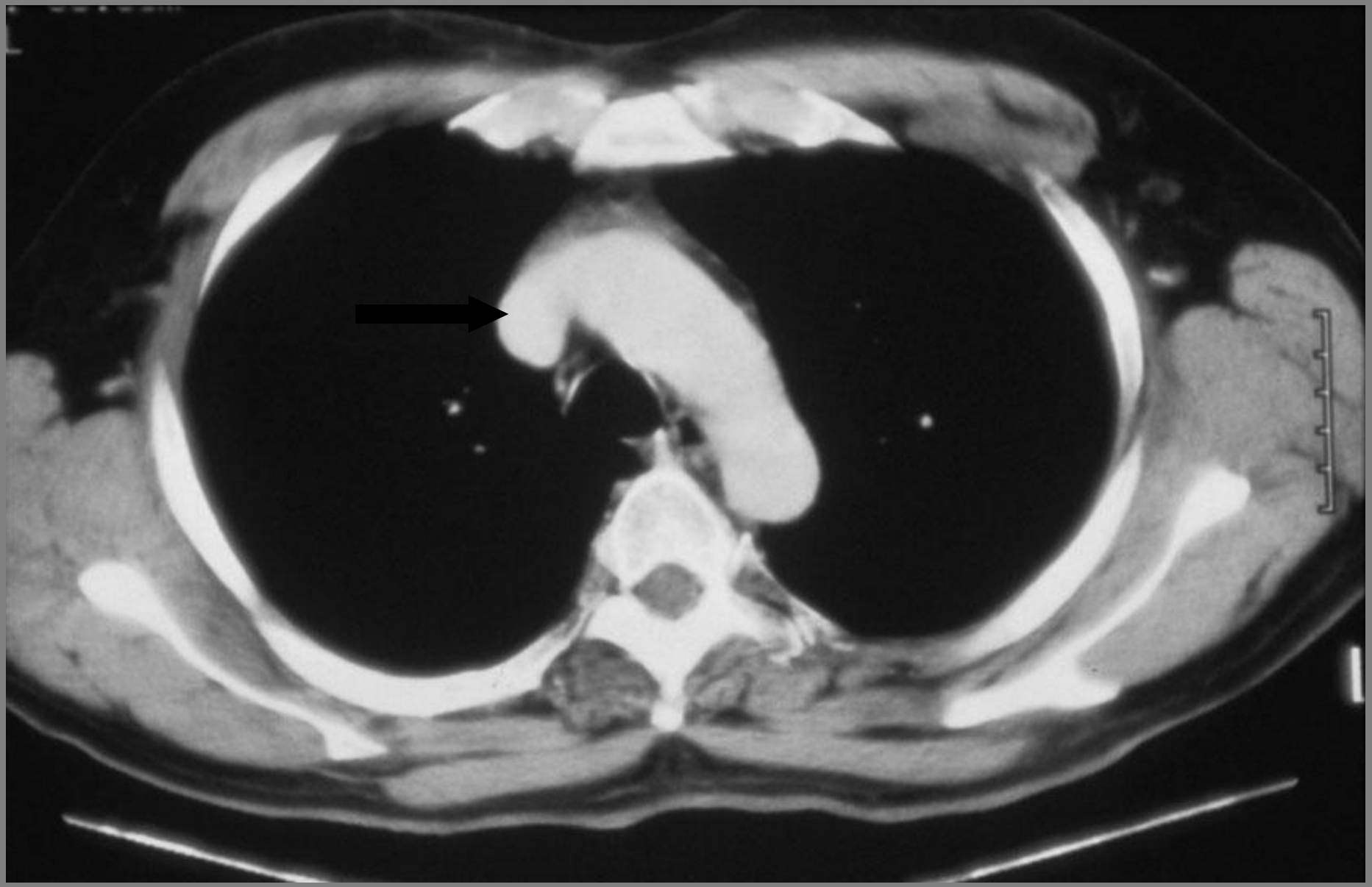
Γραμμές μεσοθωρακίου



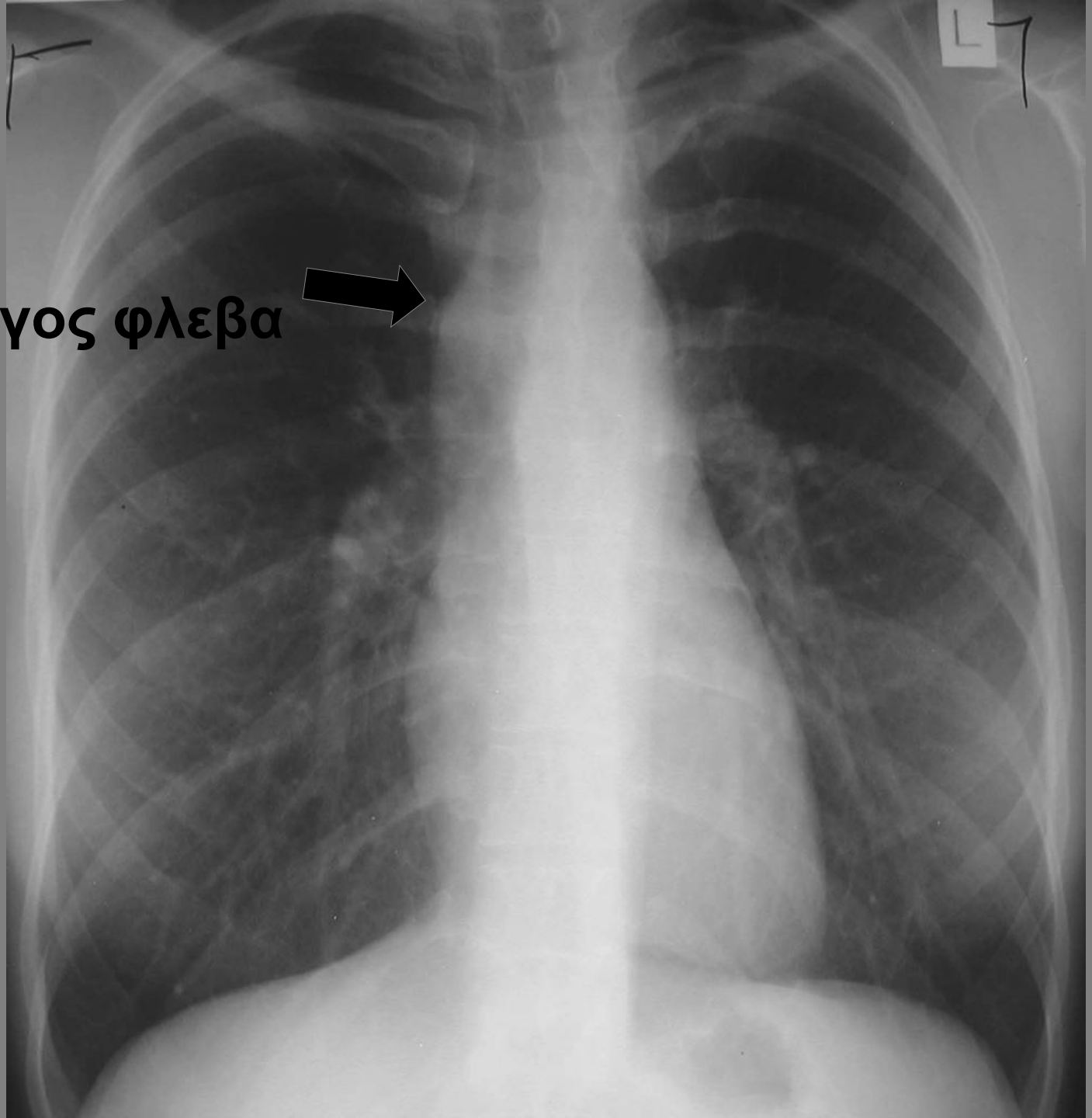
- Ανω παραφλεβική γραμμή(ΑΚΦ-ΔΒ)
- ΔΕ παρατραχειακή γραμμή (< 5 χιλ) – 60%
- Άζυγος φλέβα (< 10 χιλ)
- Πρόσθια γραμμή μεσοθωρακίου (<1χιλ)
- Οπίσθια γραμμή μεσοθωρακίου (<2χιλ)
- ΔΕ παρασπονδυλική γραμμή (2-4 χιλ)
- ΑΡ παρασπονδυλική γραμμή (6-15χιλ)
- ΑΡ παραορτική γραμμή
- Παραζυγοοισοφαγική γραμμή
- Αορτοπνευμονικό παράθυρο


АКФ

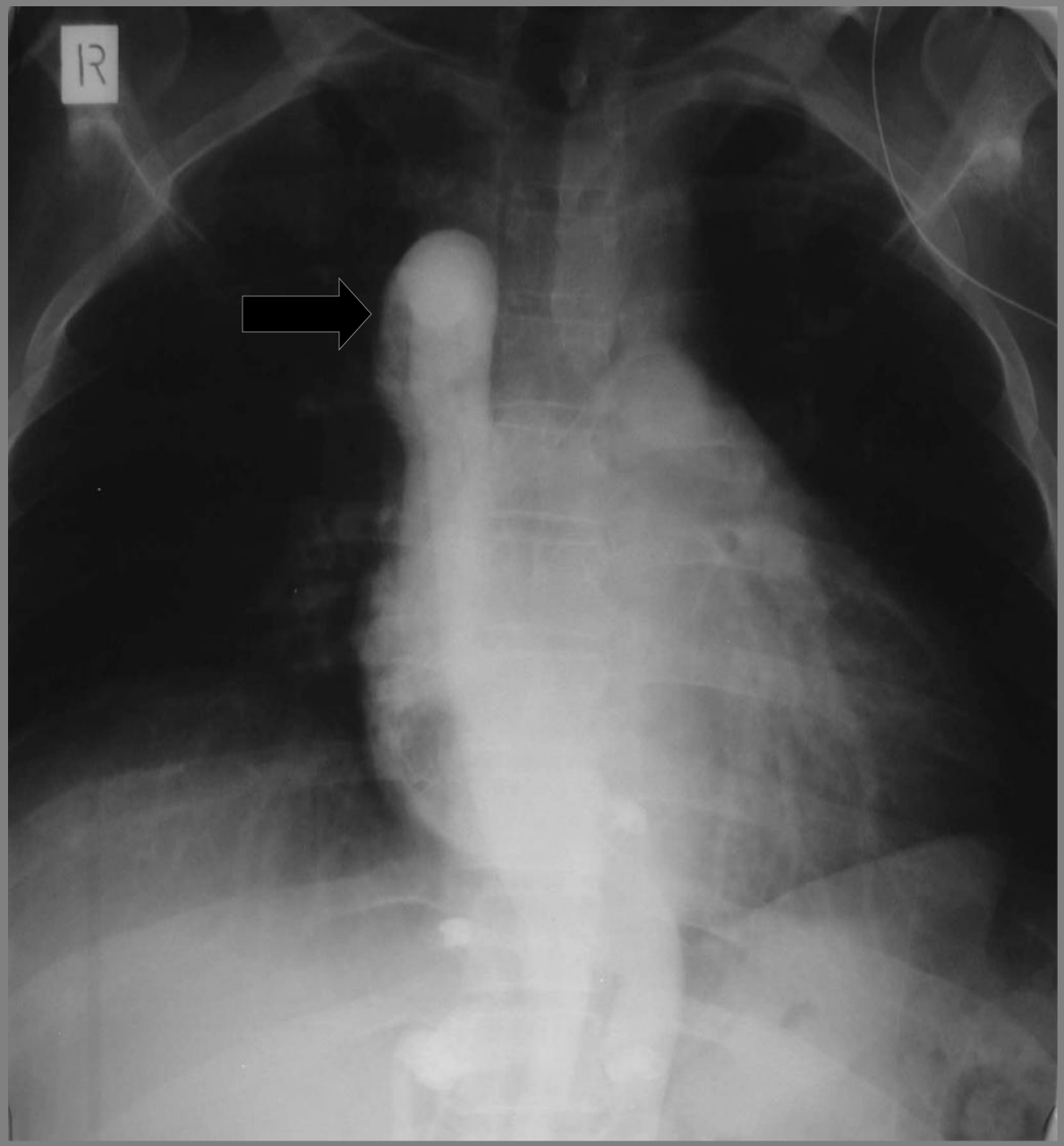
ανω κοιλη φλεβα



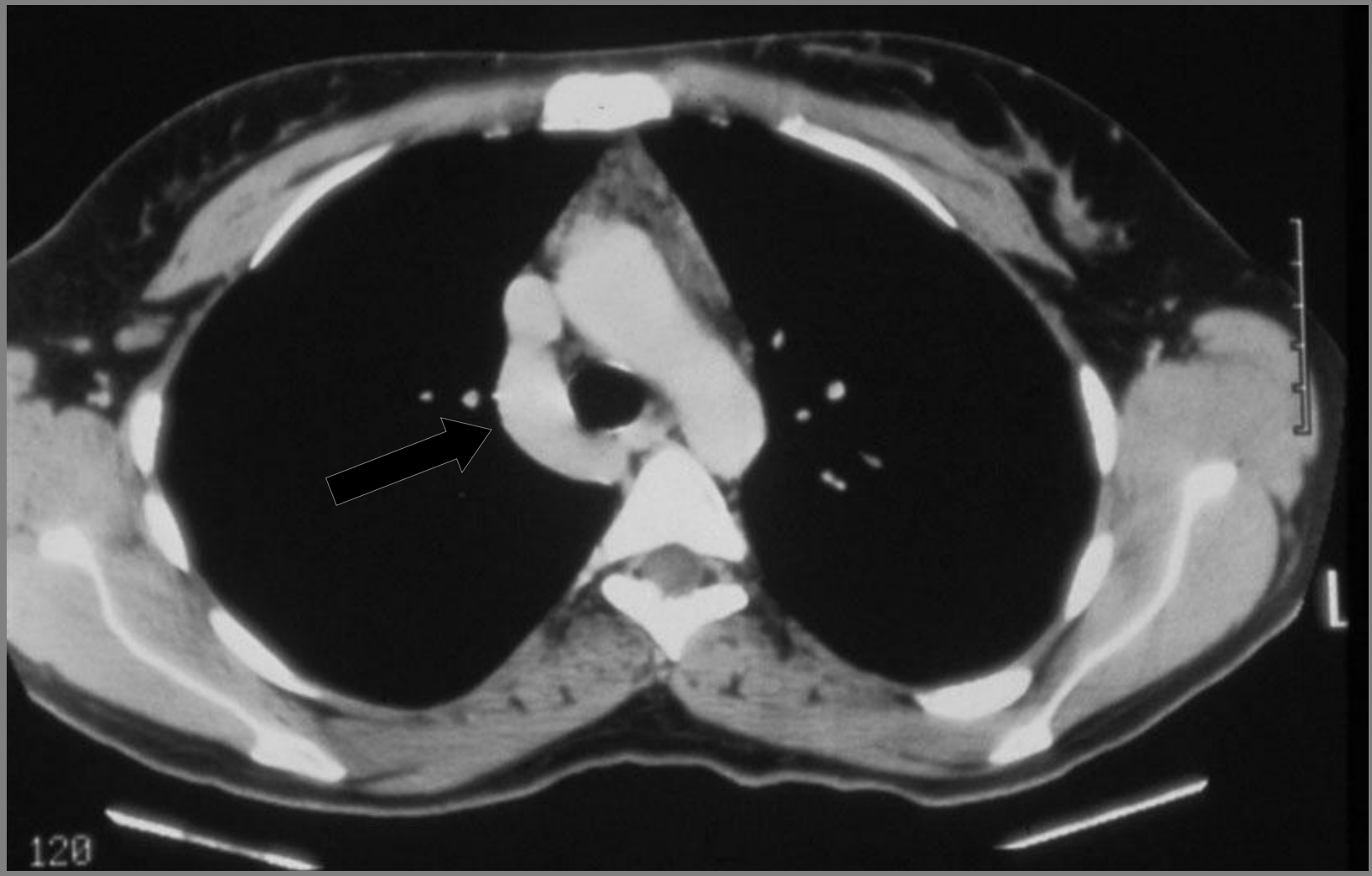
Αζυγος φλεβα



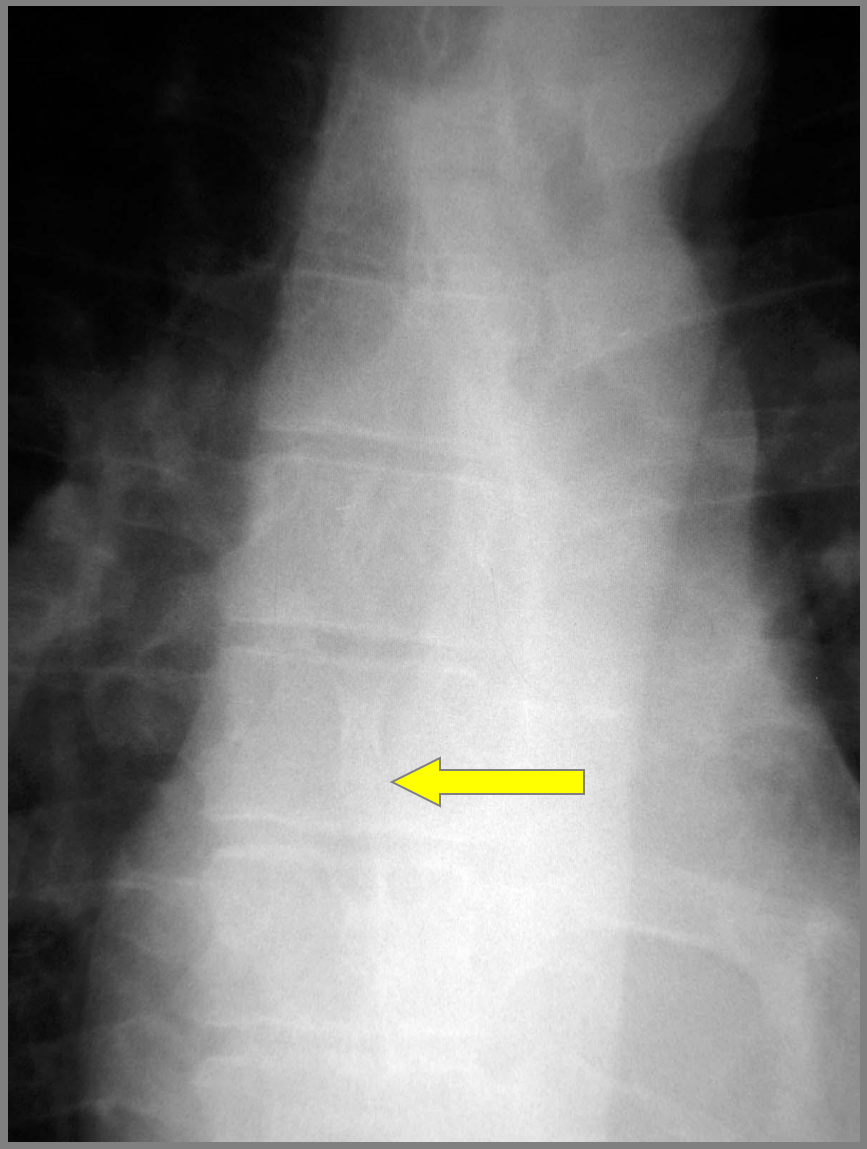
αζυγος φλεβα

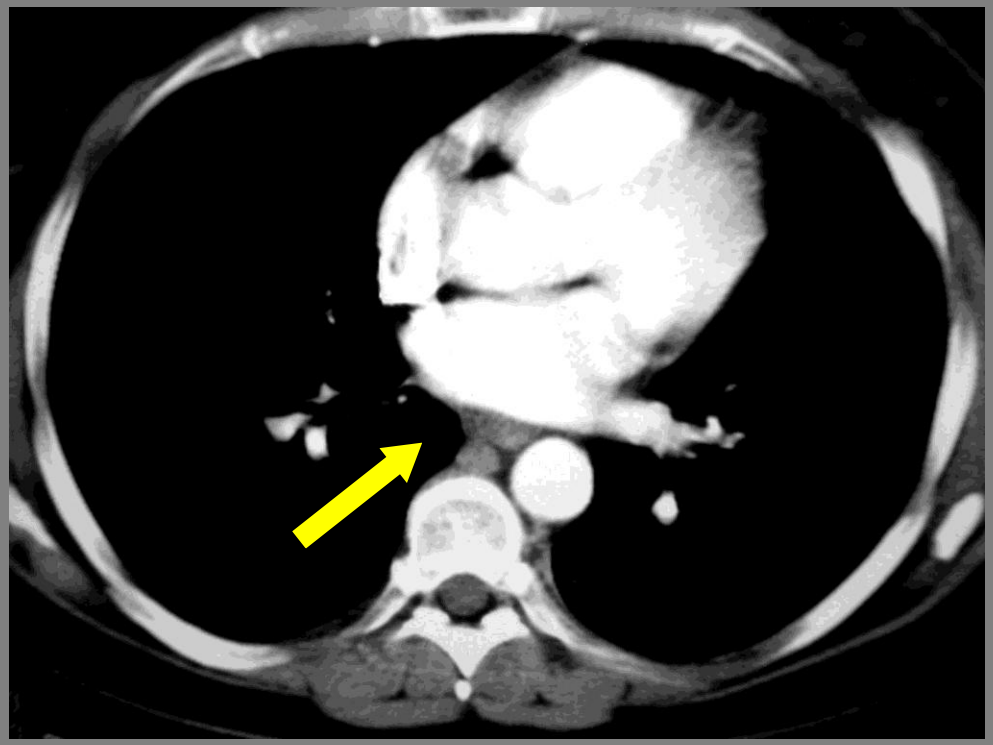


αζυγος φλεβα

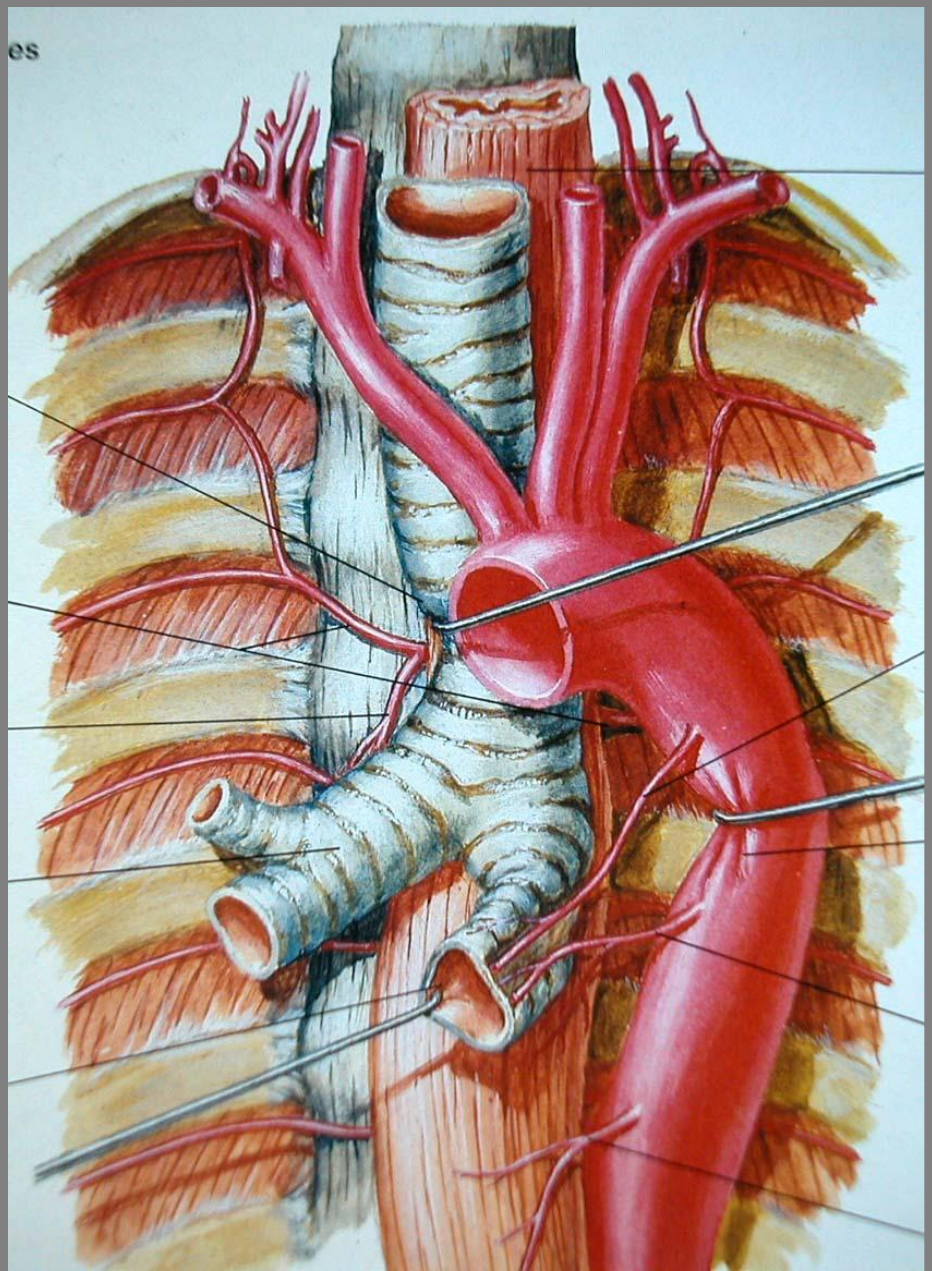


Αζυγο-οισοφαγικη γραμμη

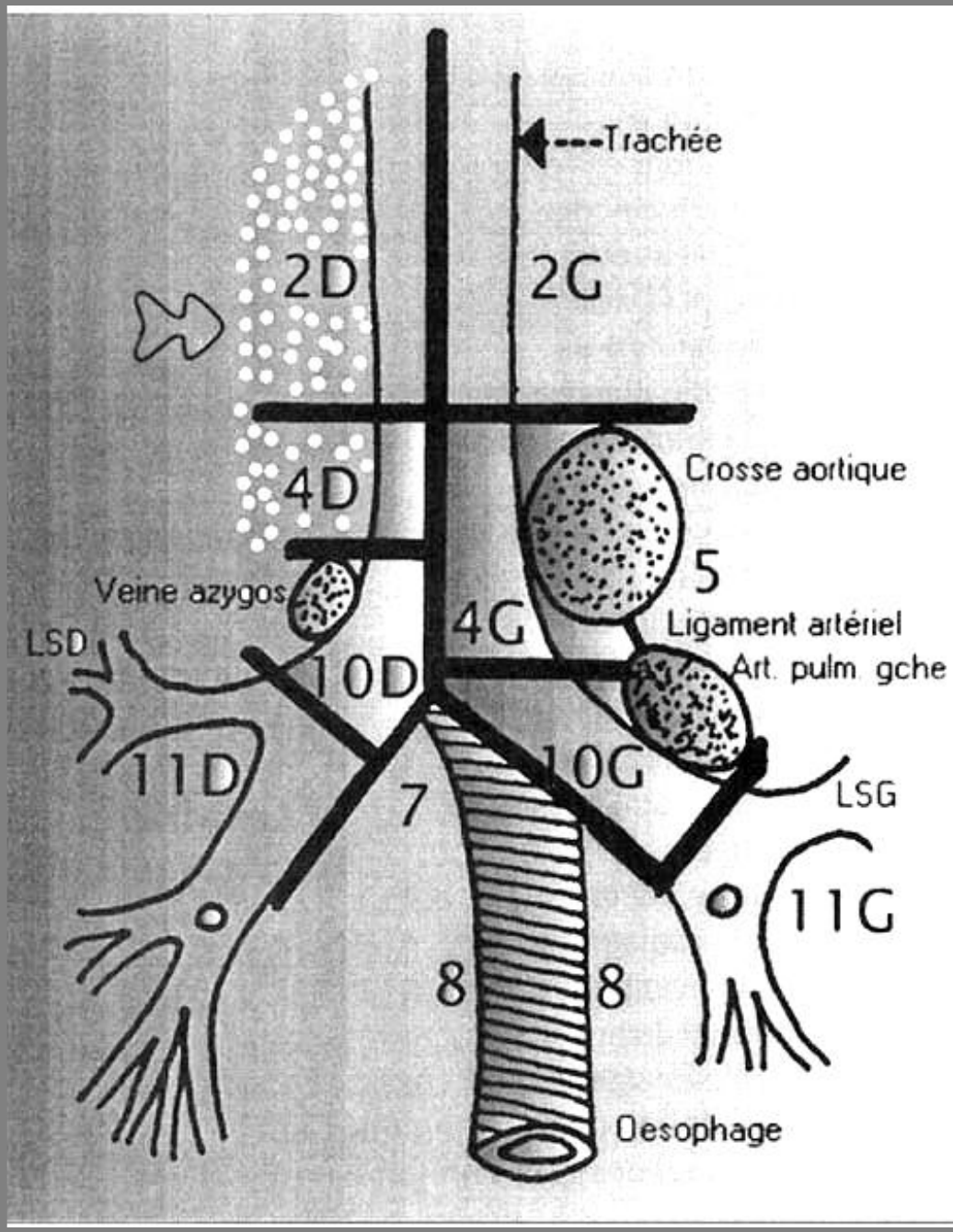




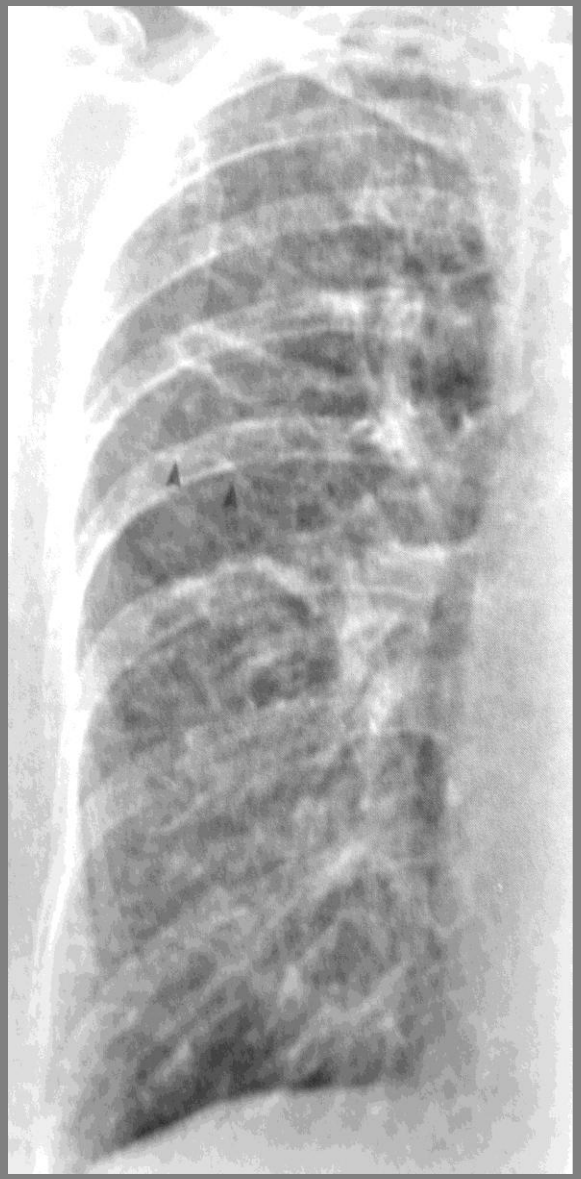
αορτοπνευμονικο παραθυρο



Λεμφαδενικές ομάδες



ελάσσονα και μείζονες μεσολόβιες σχισμές



ΔΕ πνεύμονας:

3 λοβοί - *10 βπ τμήματα*

Άνω: κορυφαιο

οπισθιο

προσθιο

Μέσος: εξω

εσω

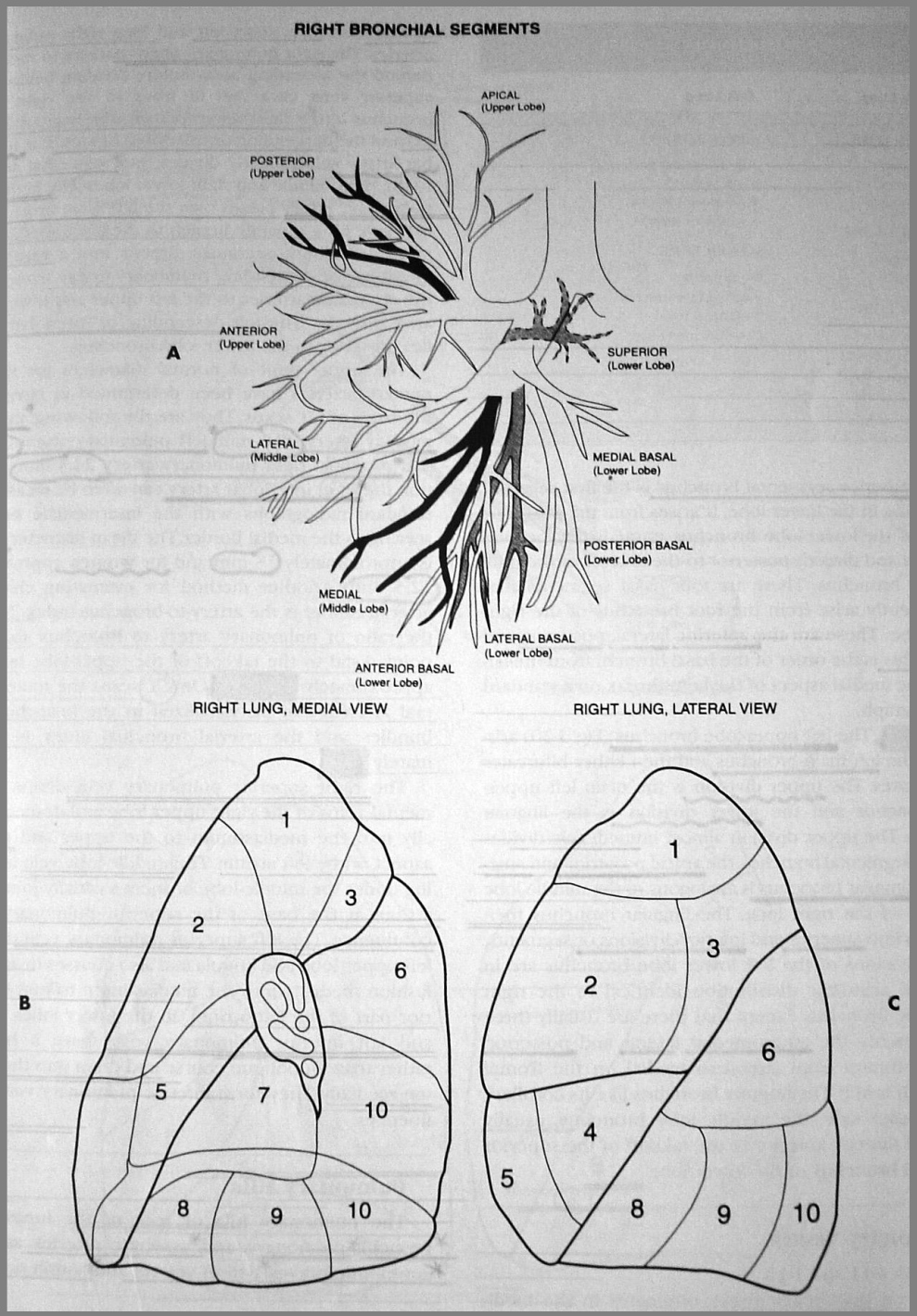
Κάτω: κορυφαιο

προσθιο βασικο

οπισθιο βασικο

εξω βασικο

εσω βασικο



ΑΡ πνευμονας :

2 λοβοι - *8 βπ τμηματα*

Ανω: κορυφοπισθιο

προσθιο

- γλωσσιδα: ανω

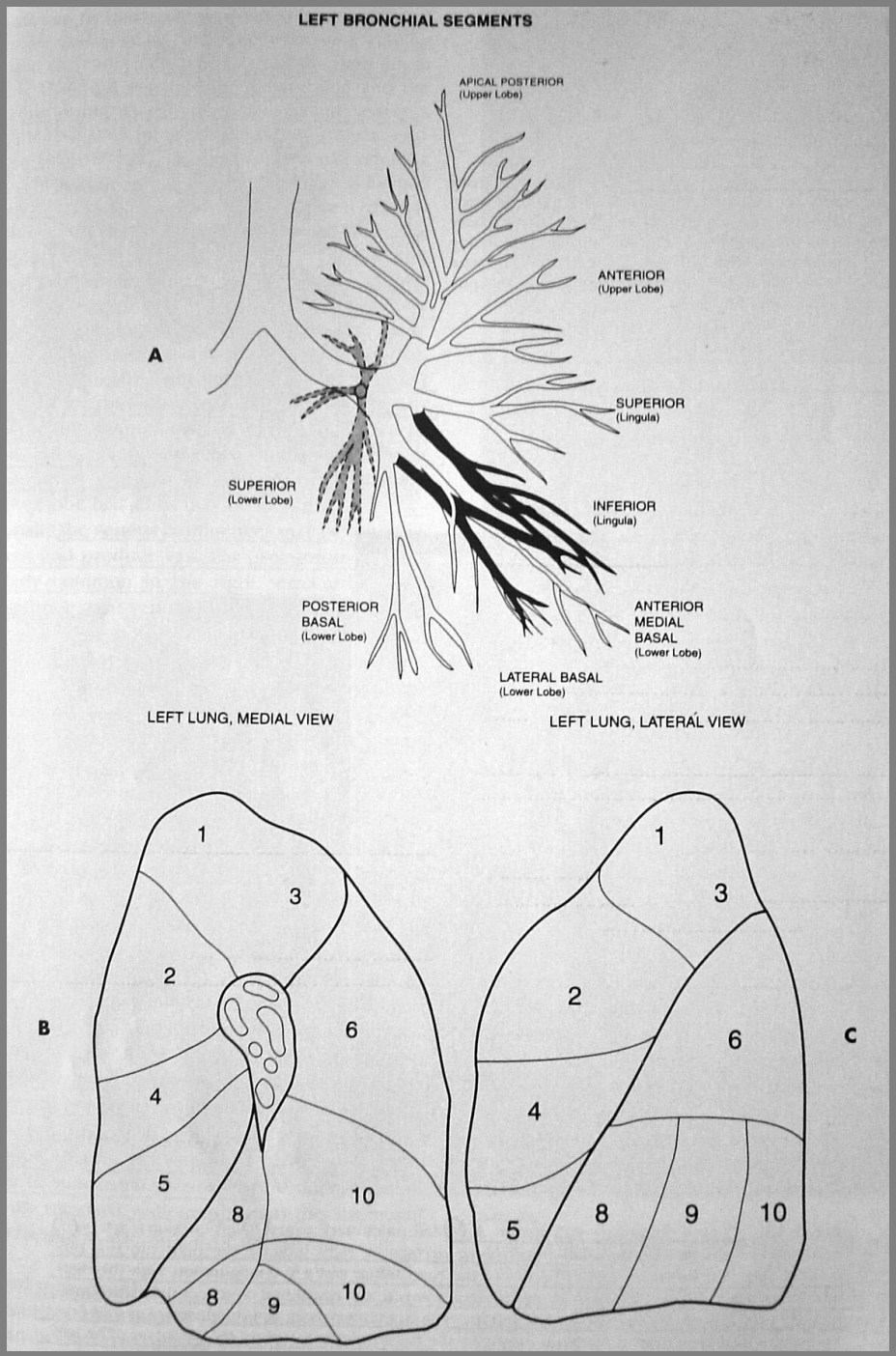
κατω

Κατω: κορυφαιο

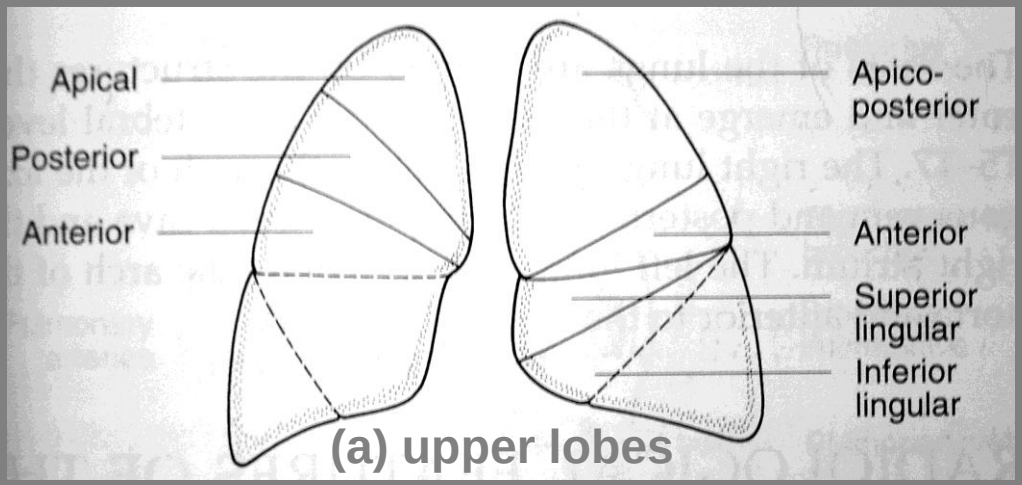
προσθιο-εσω βασικο

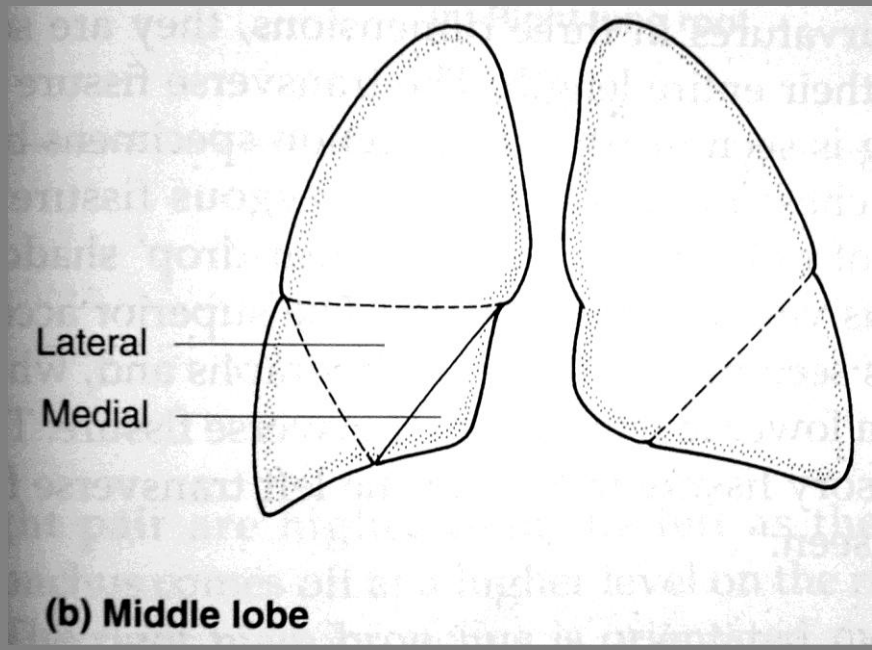
οπισθιο βασικο

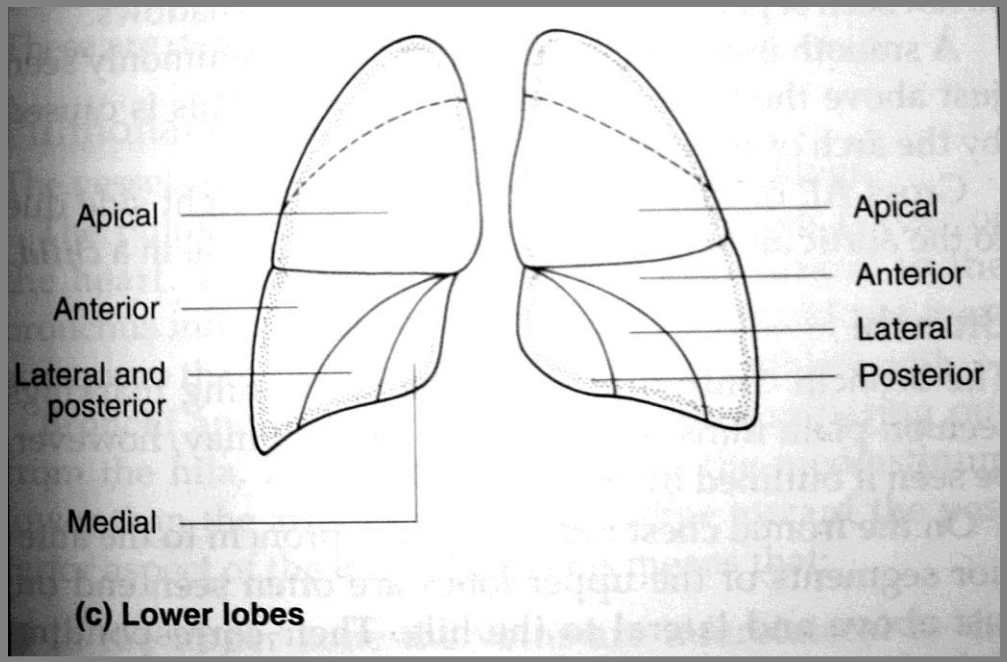
εξω βασικο



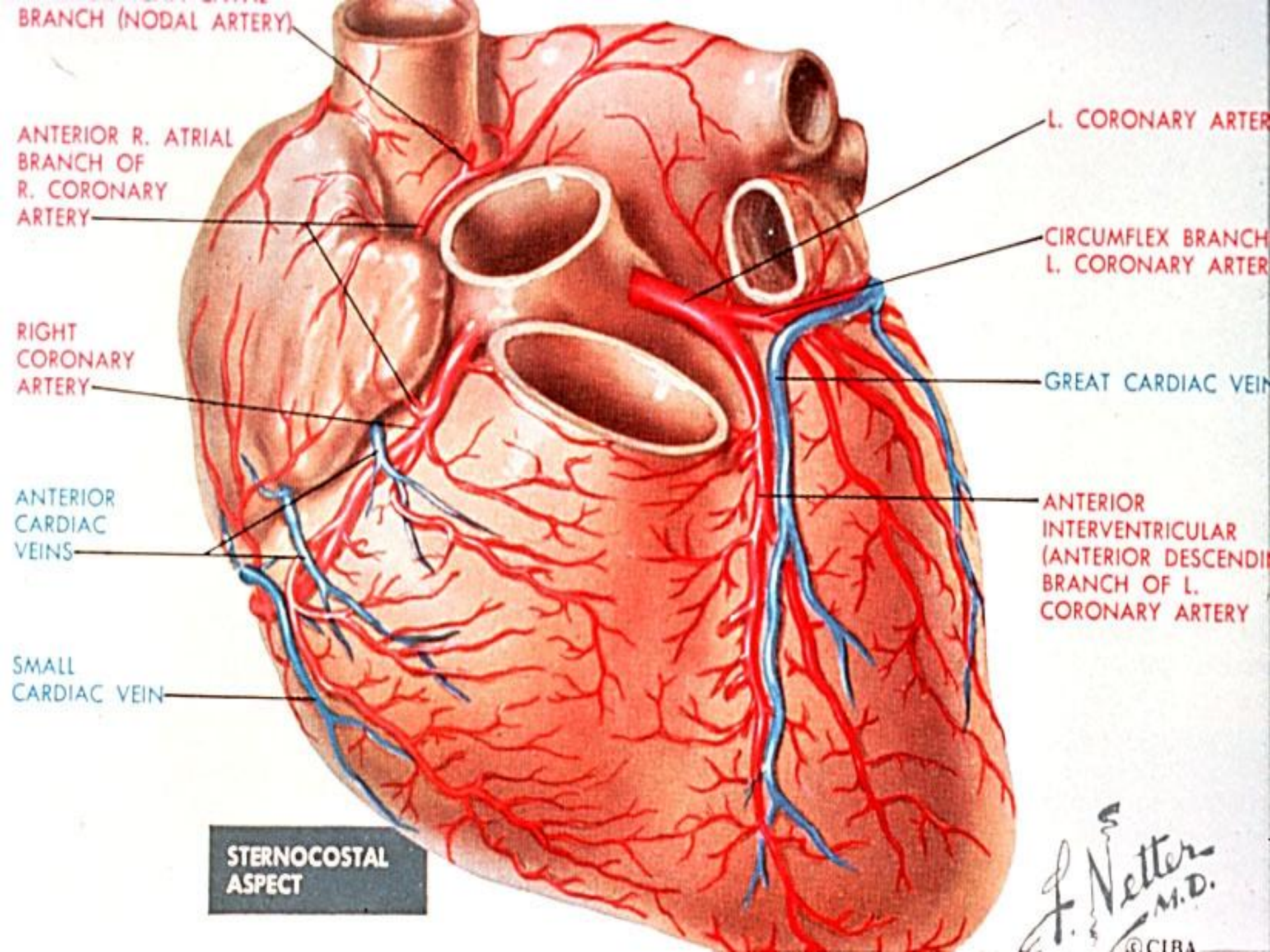
Βρογοπνευμονικα τμηματα – α/α θωρακα







δεξιος κολπος


BRANCH (NODAL ARTERY)
ANTERIOR R. ATRIAL BRANCH OF R. CORONARY ARTERY
RIGHT CORONARY ARTERY
ANTERIOR CARDIAC VEINS
SMALL CARDIAC VEIN
L. CORONARY ARTER
CIRCUMFLEX BRANCH L. CORONARY ARTER
GREAT CARDIAC VEIN
ANTERIOR INTERVENTRICULAR (ANTERIOR DESCENDI BRANCH OF L. CORONARY ARTERY
STERNOCOSTAL ASPECT
F. Netter M.D.
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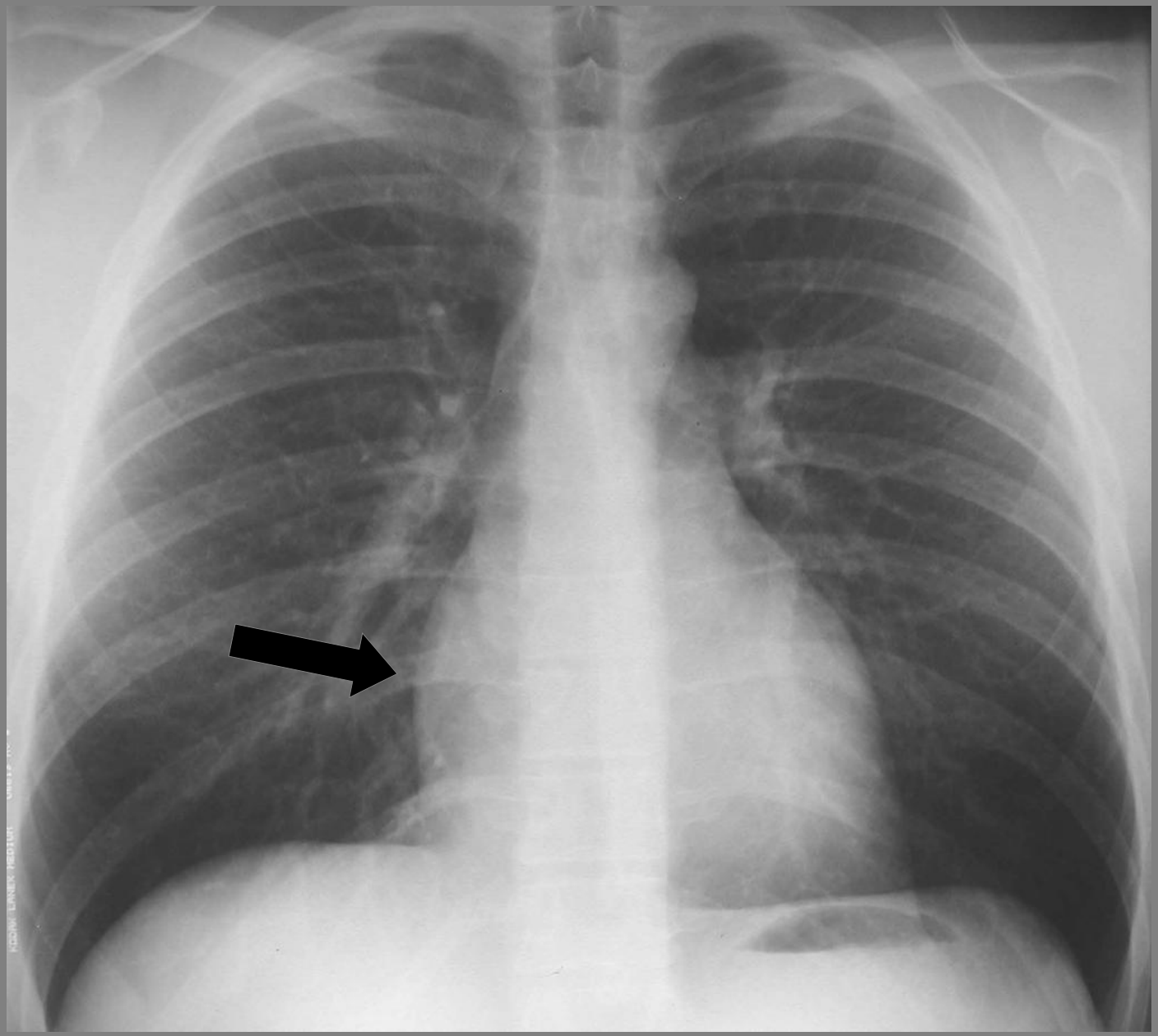
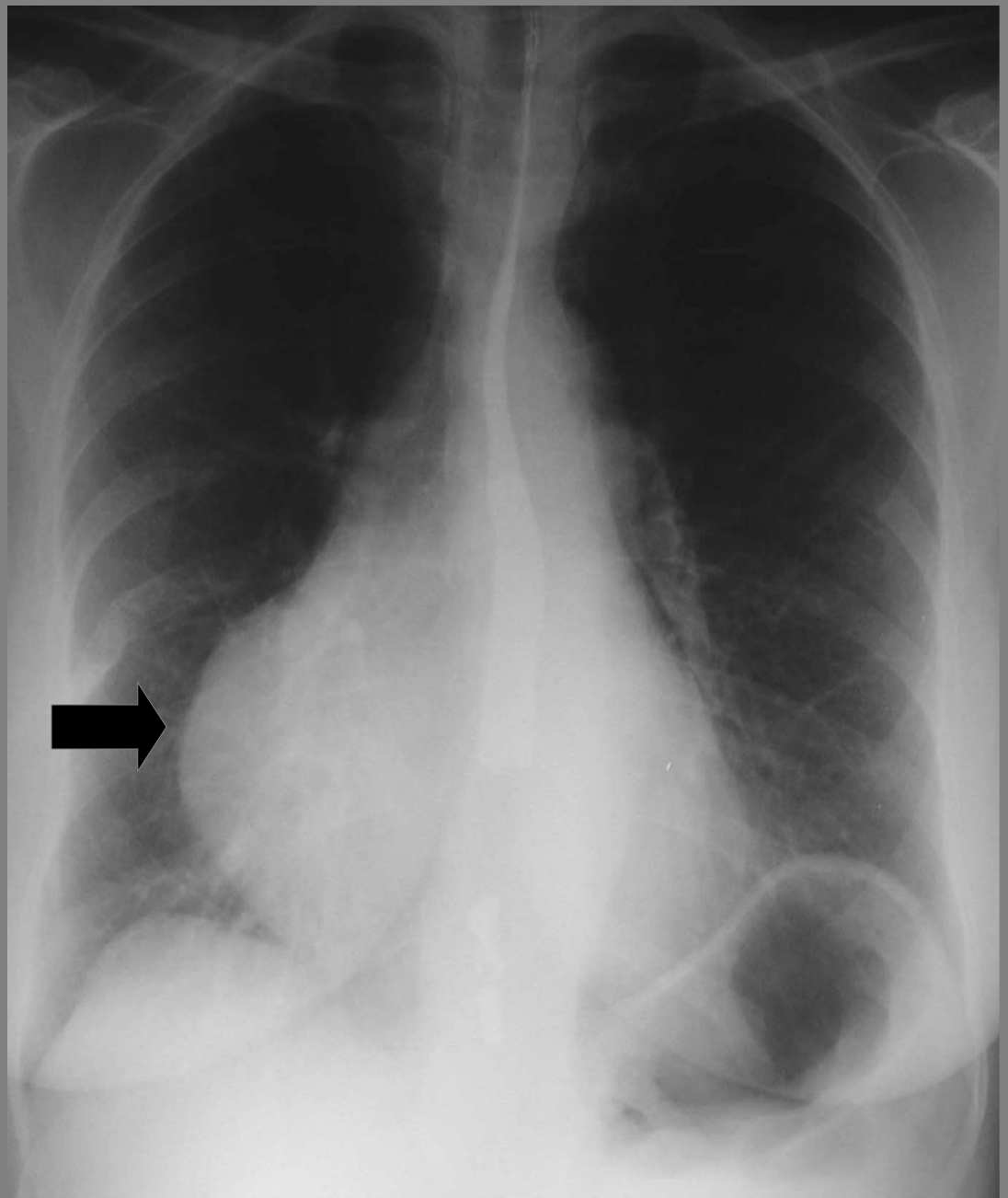
δεξιος κολπος

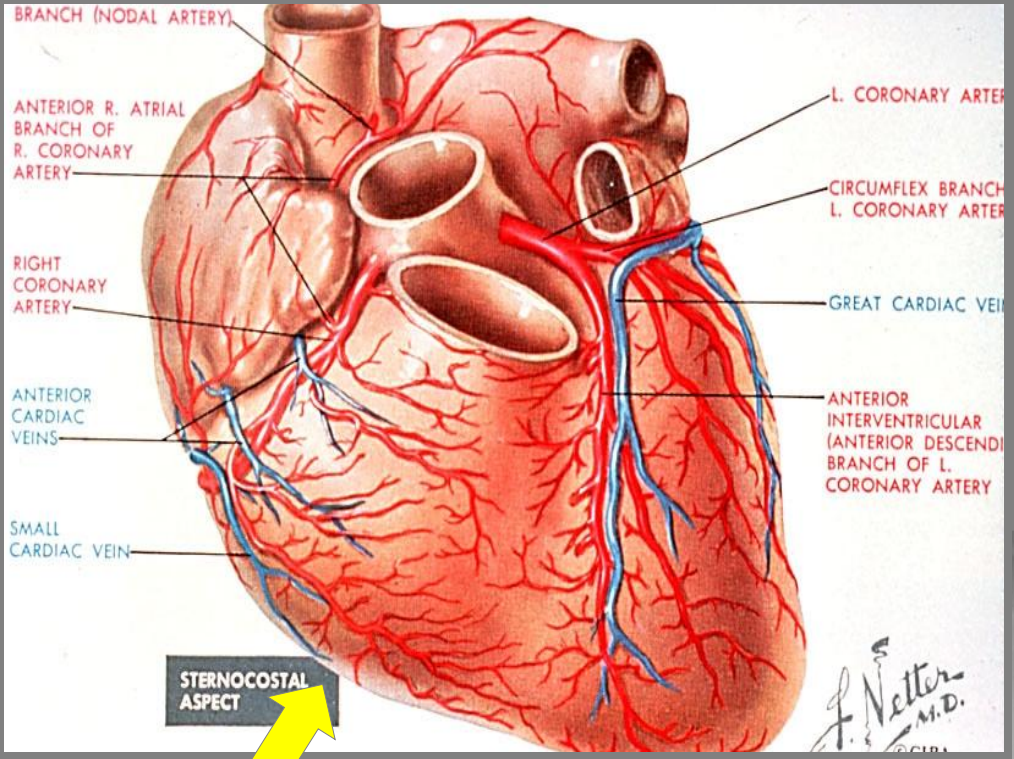


δεξιος κολπος ΑΤ

διογκωση δεξιου κολπου



δεξια κοιλια και πνευμονικες αρτηριες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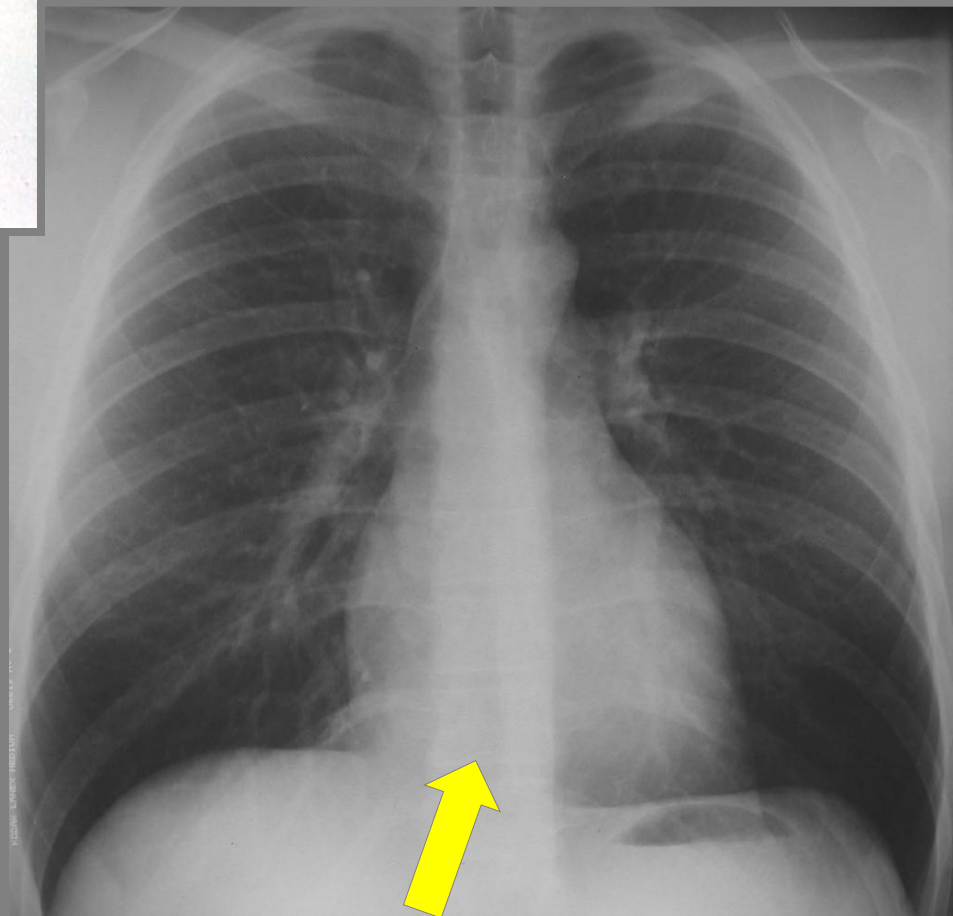
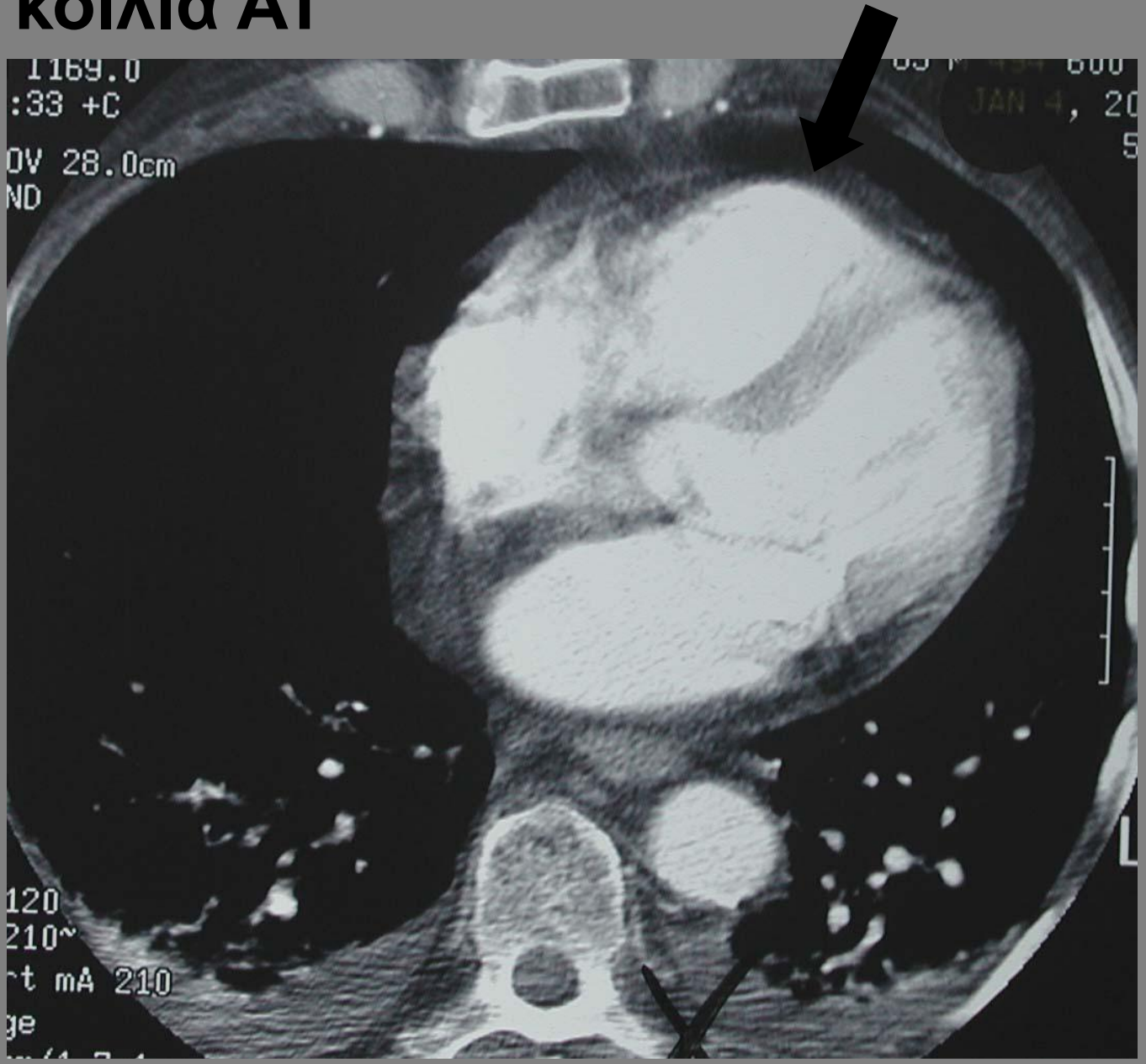
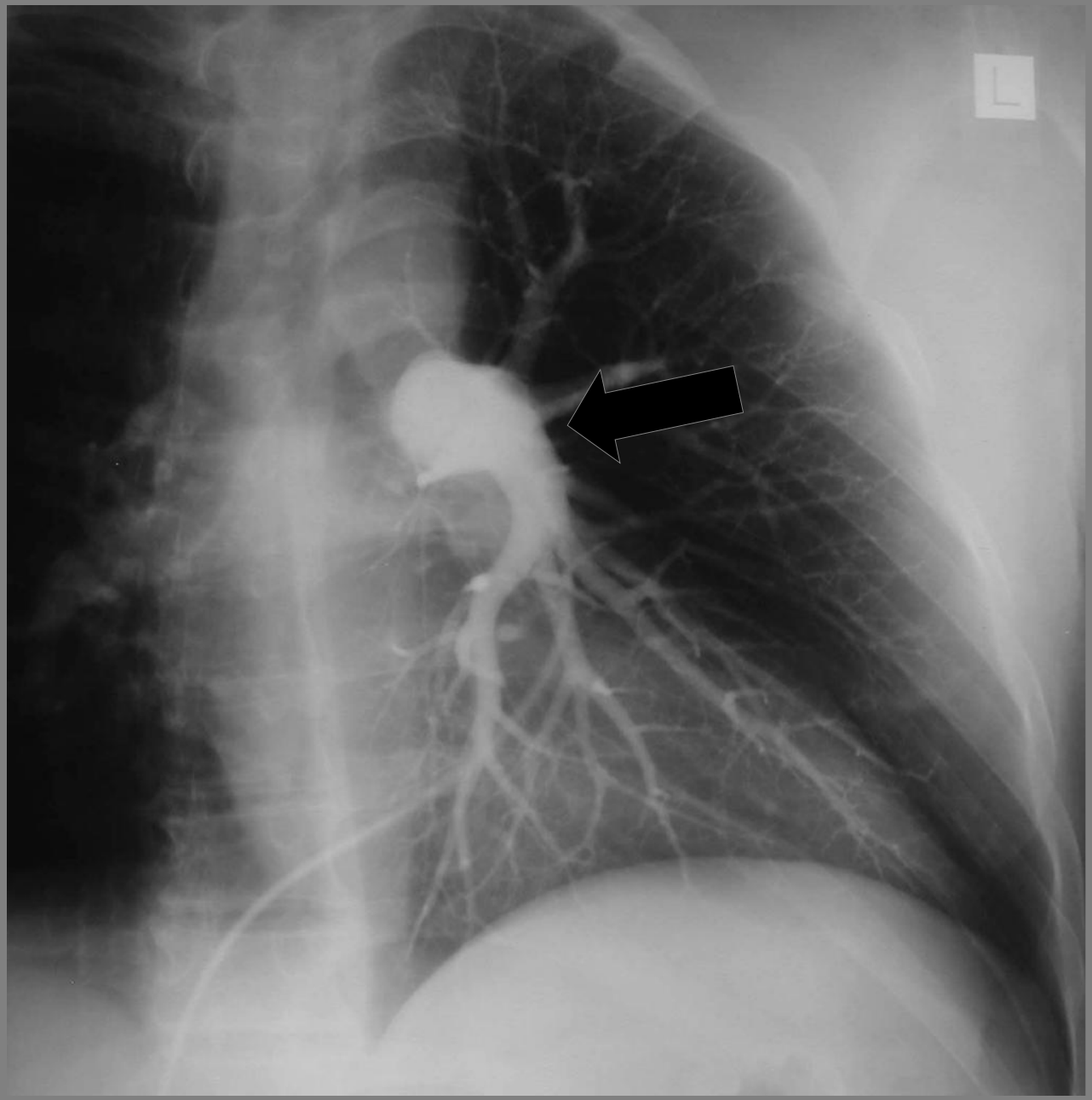


δεξια κοιλια ΑΤ

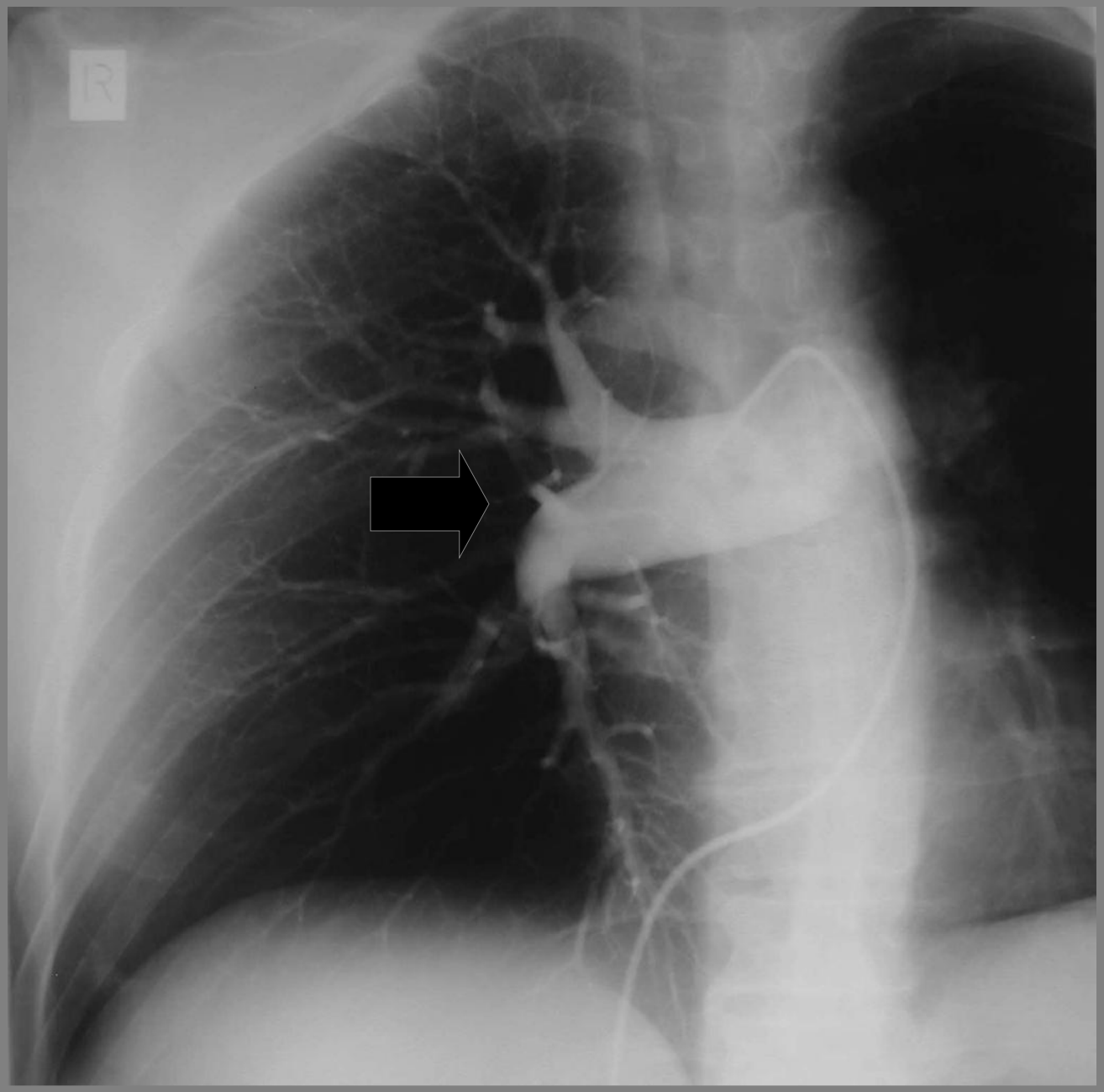


αριστερη πνευμονικη αρτηρια



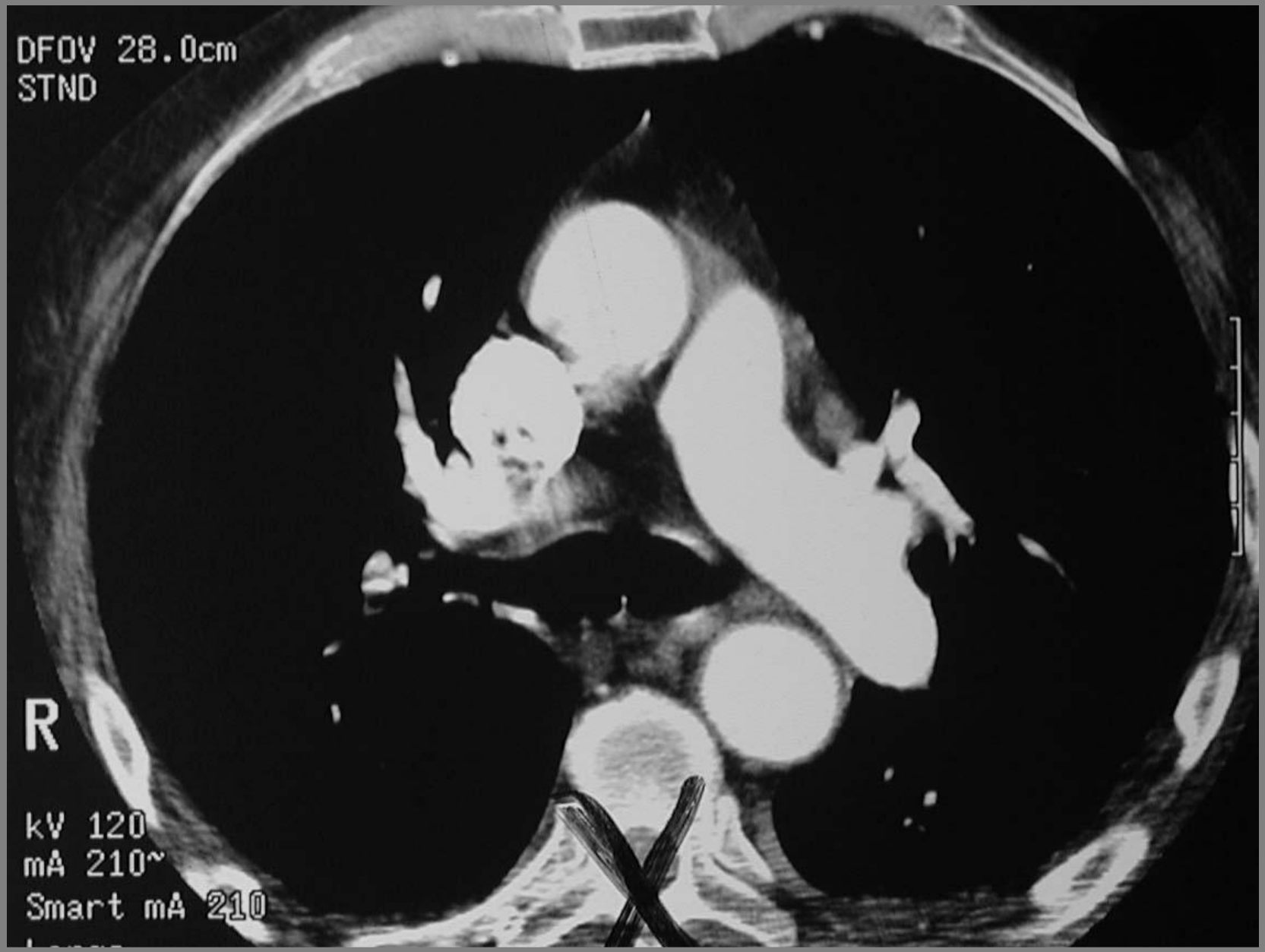
Πνευμονικη αγγειογραφια

δεξια πνευμονικη αρτηρια

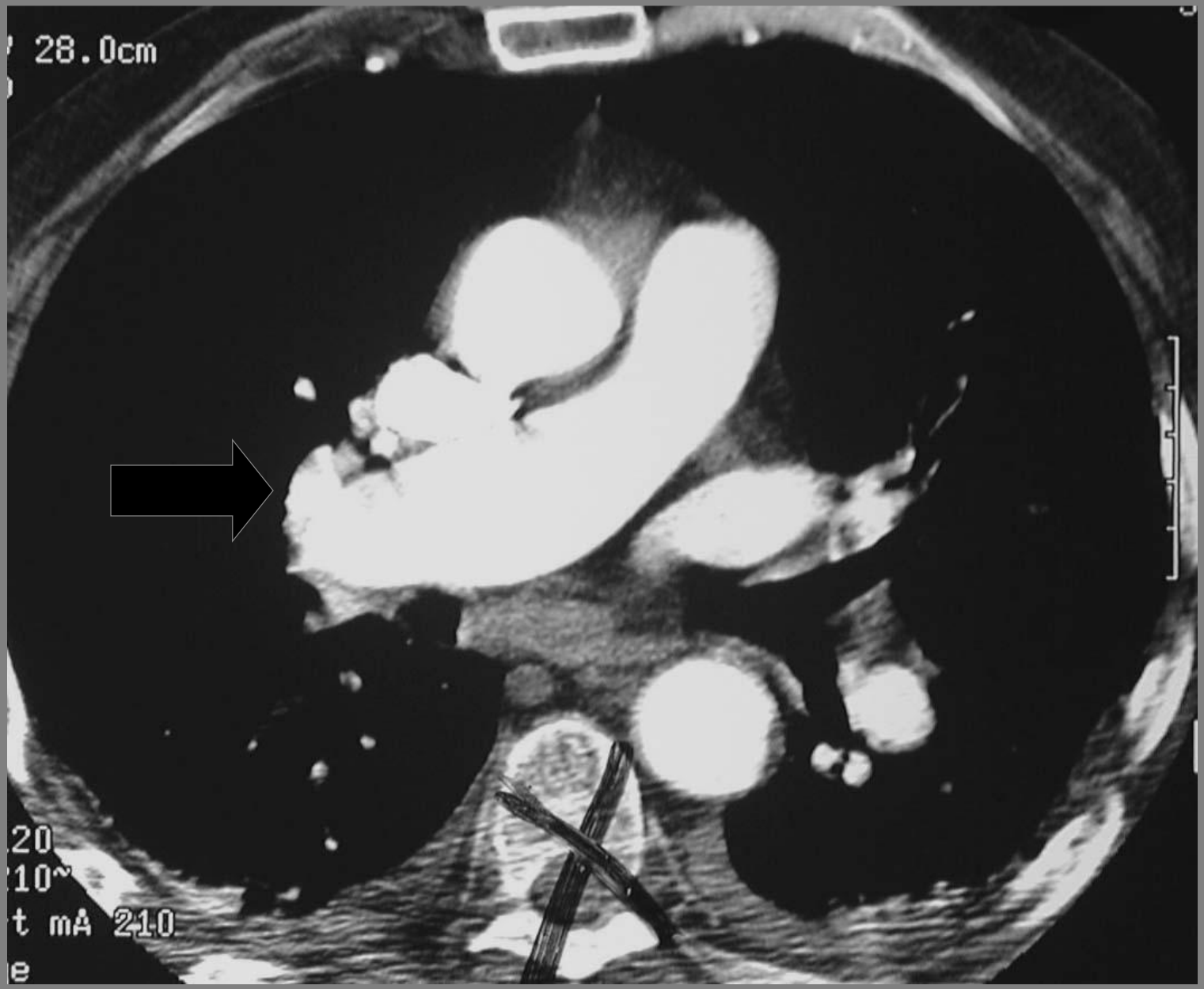


Πνευμονικη αγγειογραφια

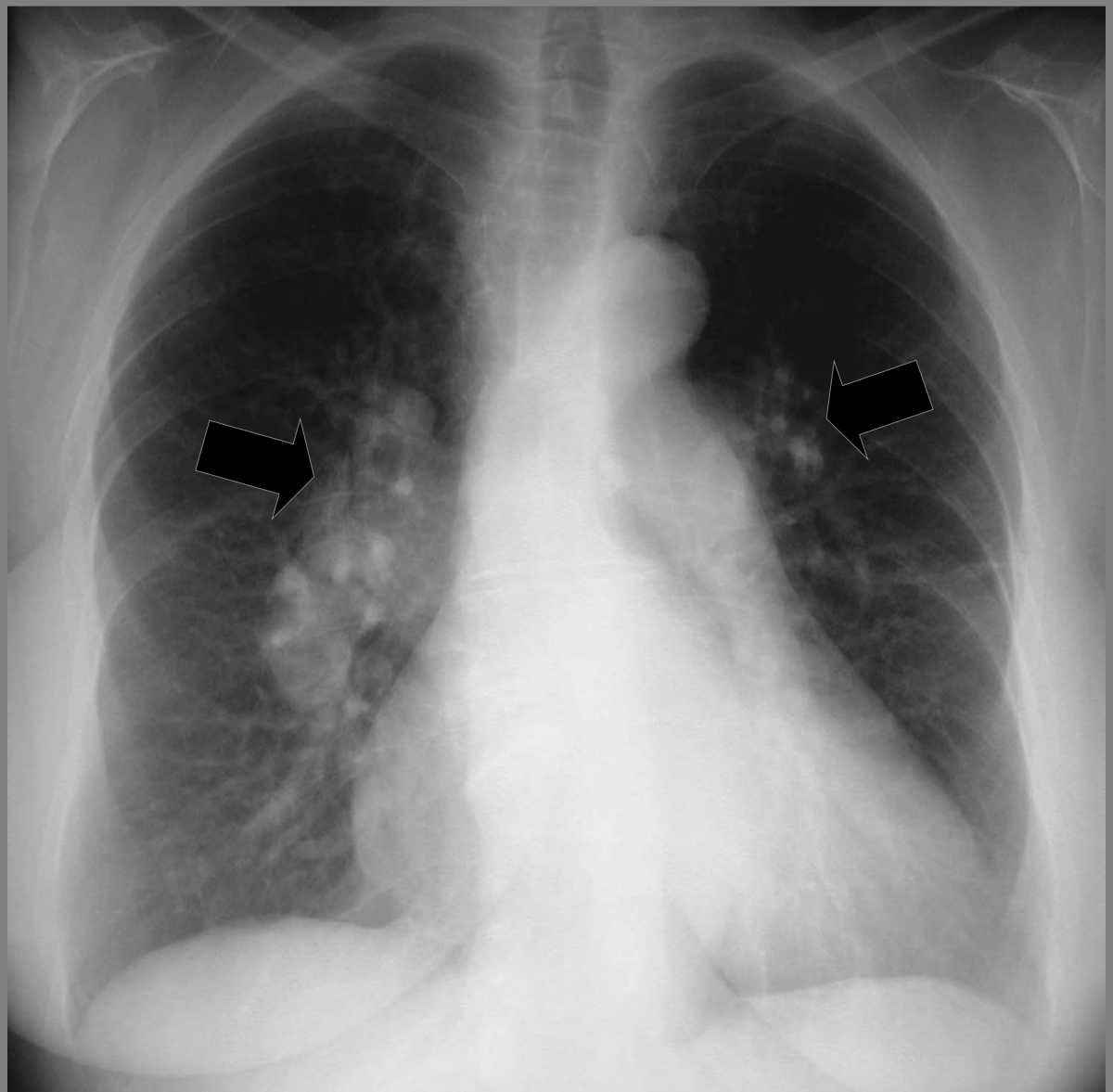
αριστερη πνευμονικη αρτηρια



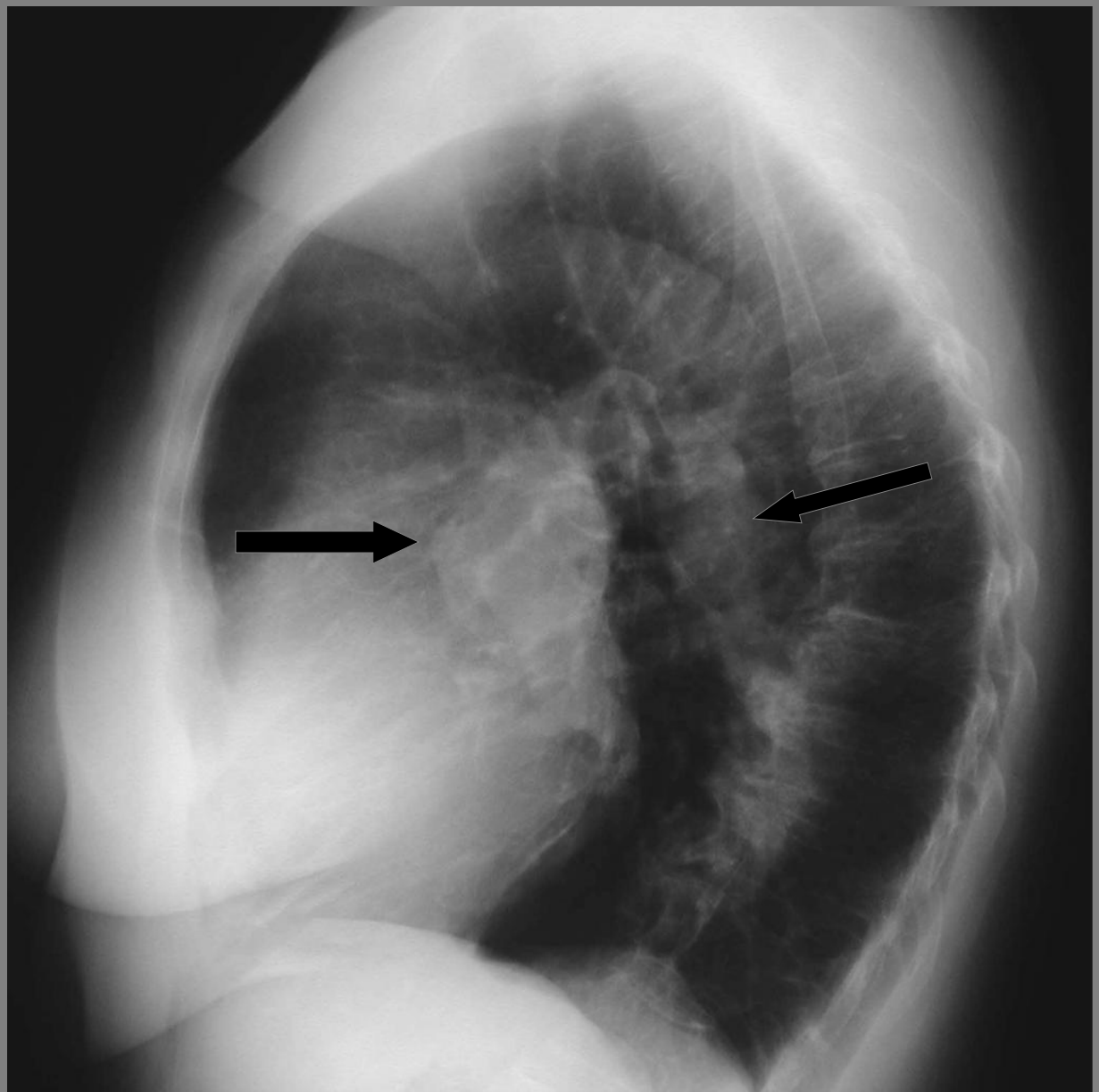
δεξια πνευμονικη αρτηρια



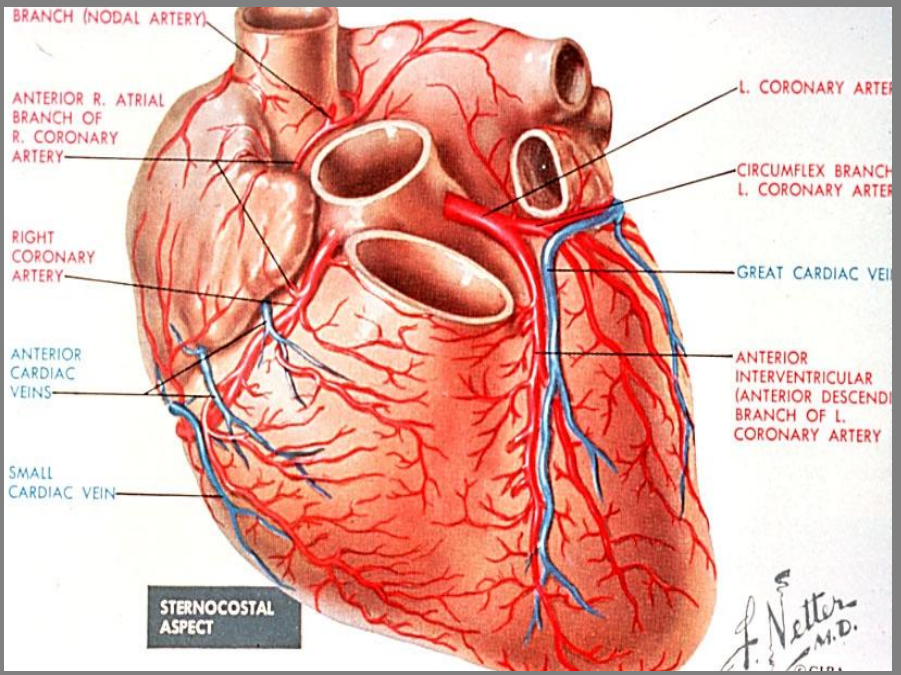
διογκωση πνευμονικων αρτηριων – πνευμ. αρτηριακη υπερταση



διογκωση πνευμονικων αρτηριων – πνευμονικη αρτηριακη υπερταση



αριστερος κολπος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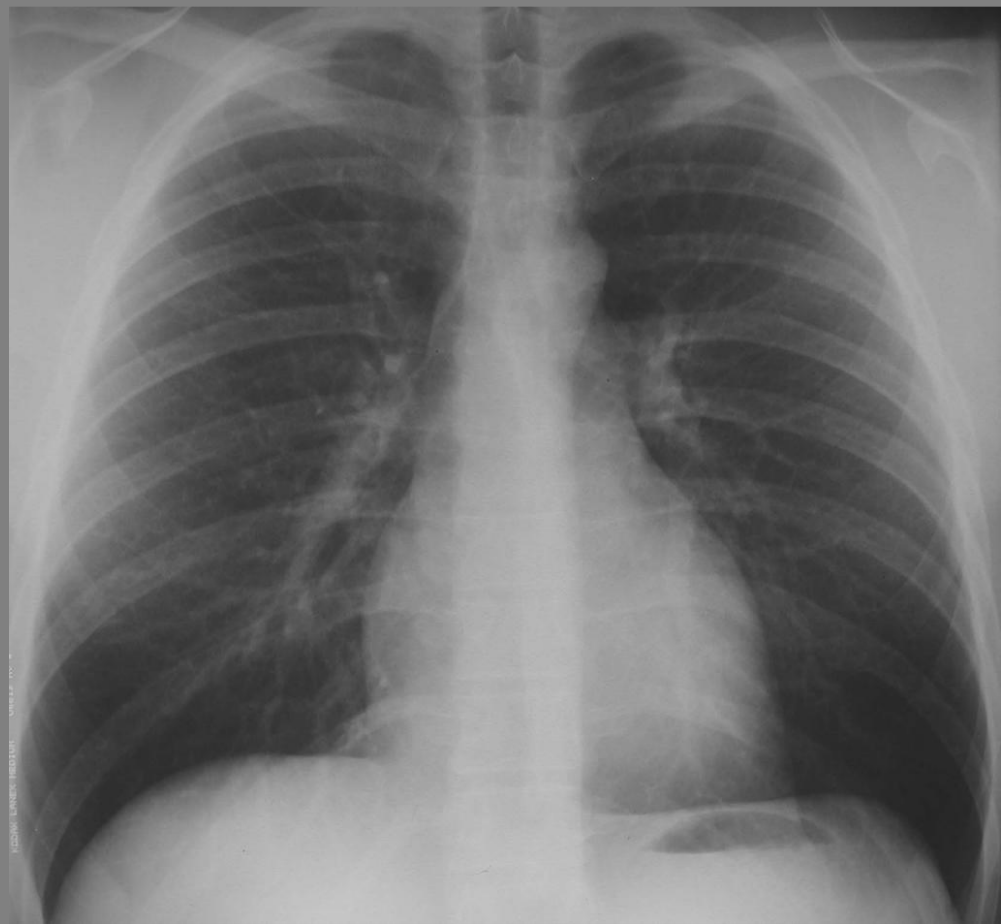
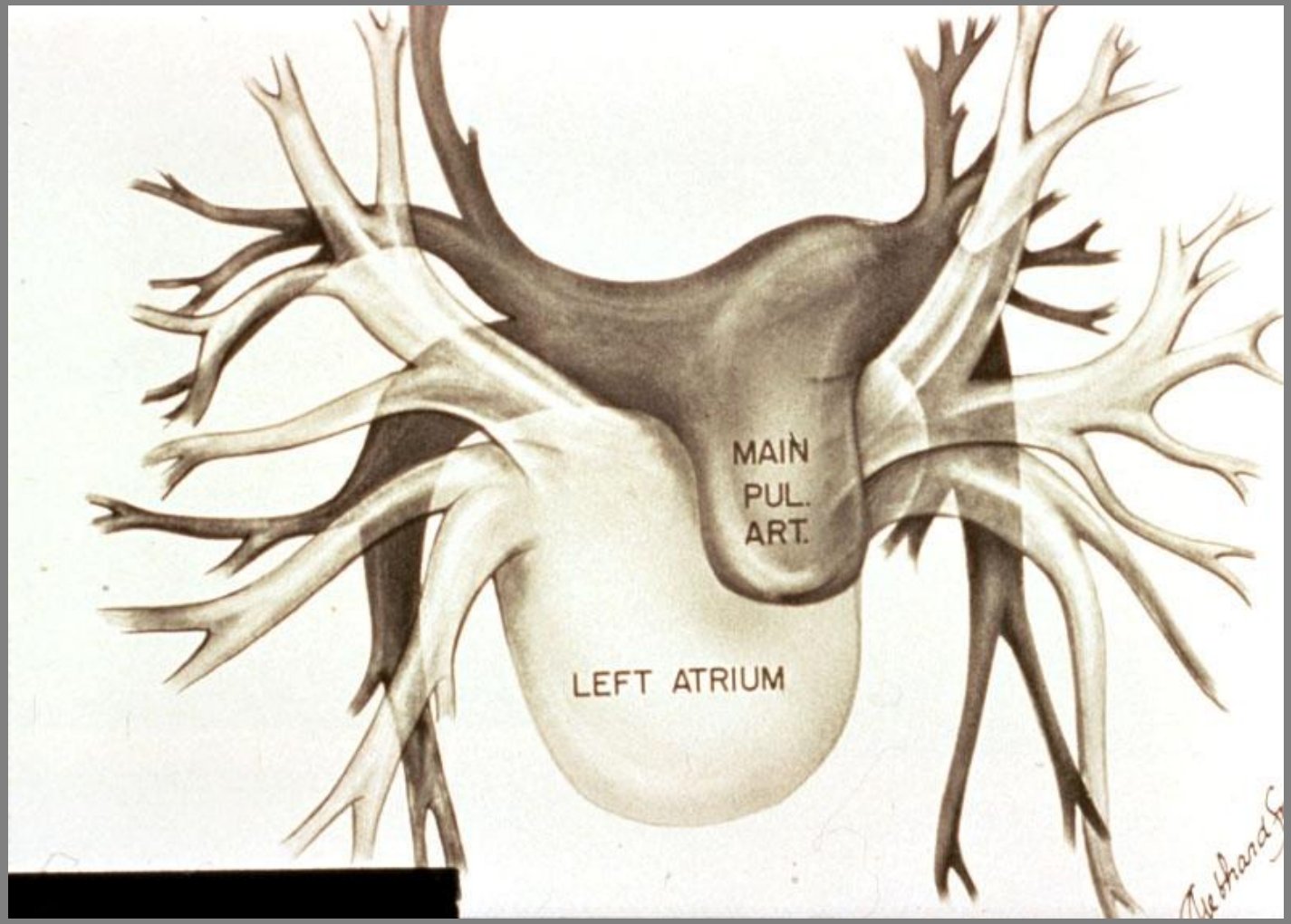
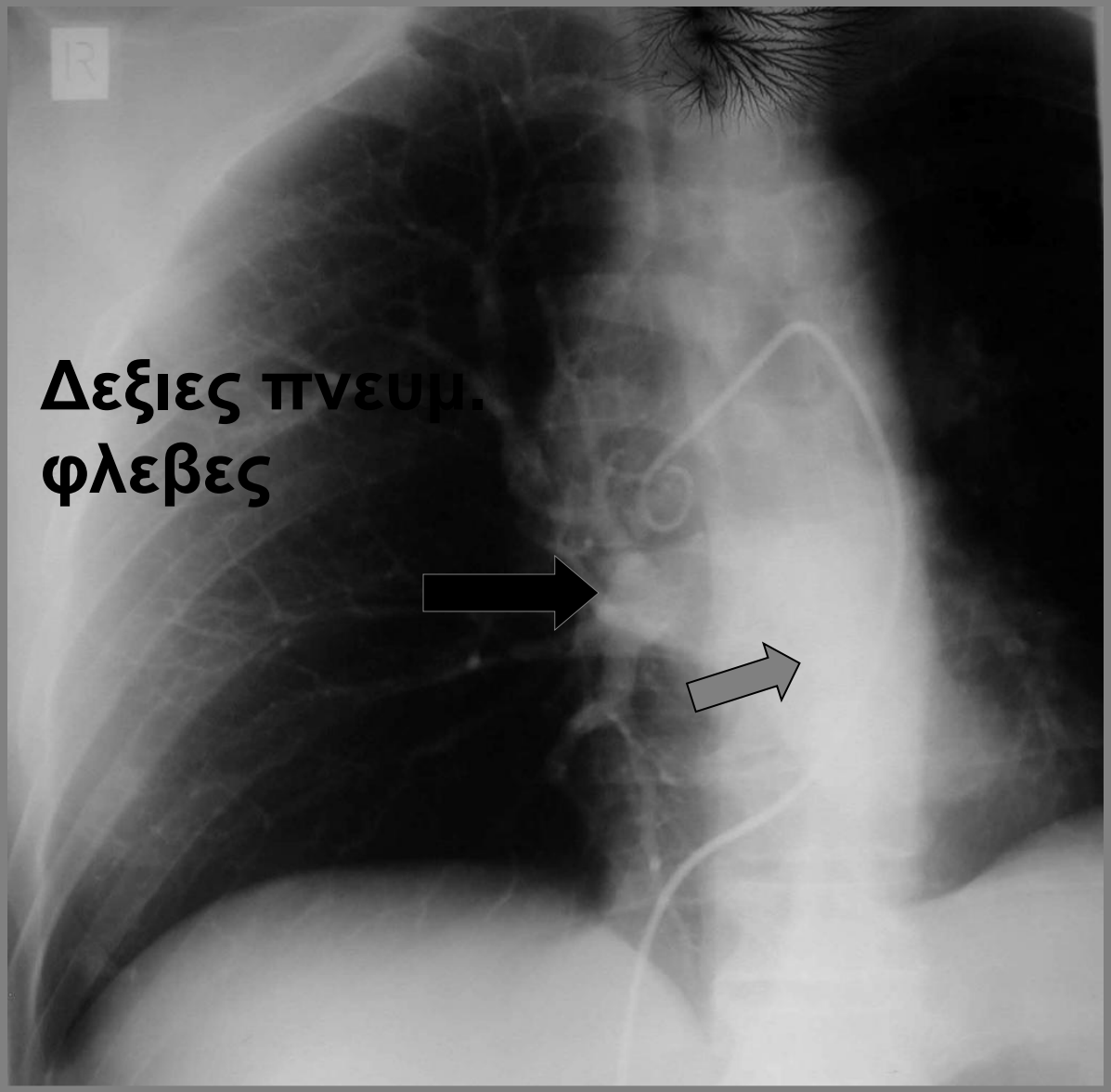


σχεση πνευμονικων αρτηριων - φλεβων

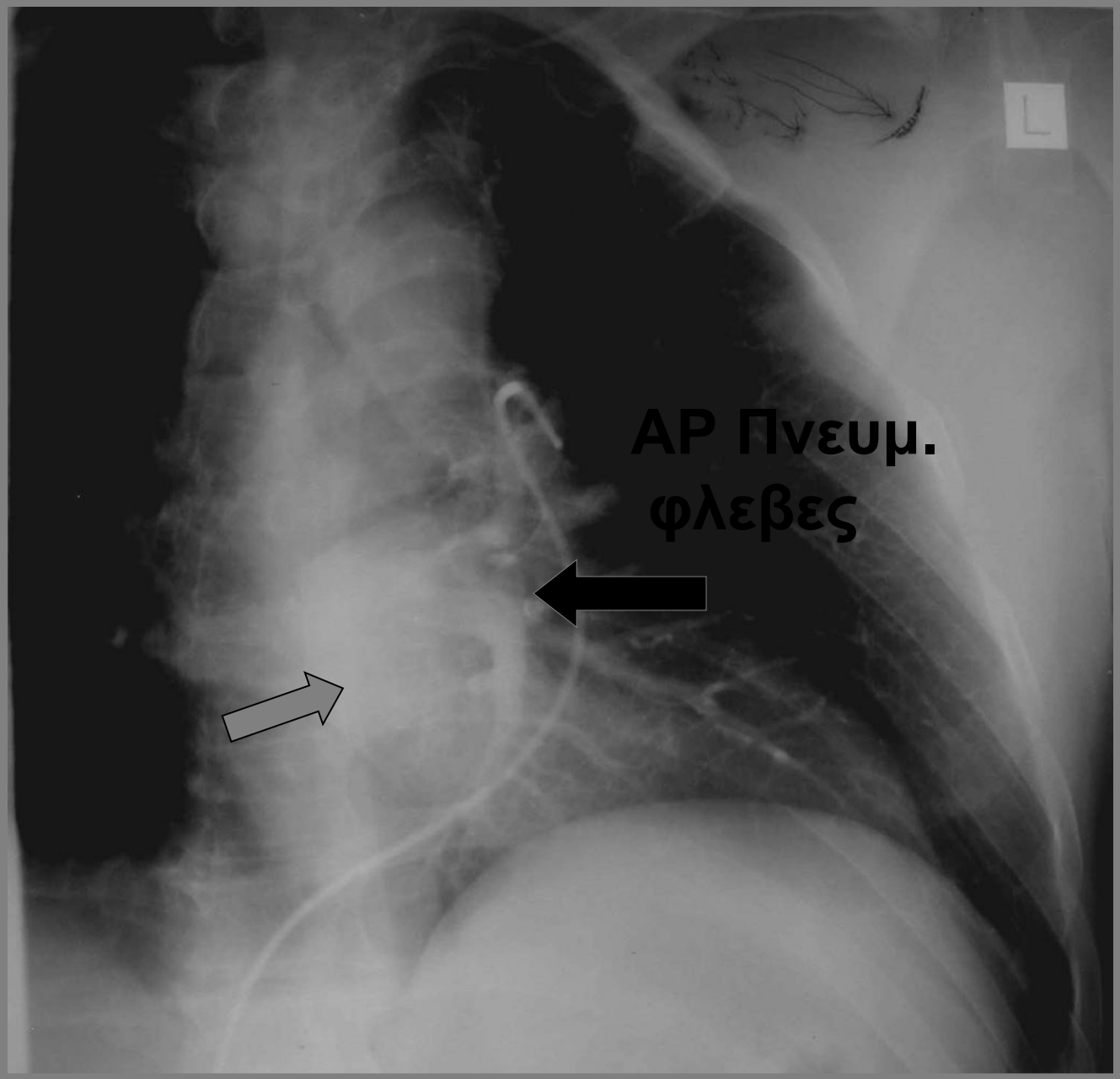


αριστερος κολπος



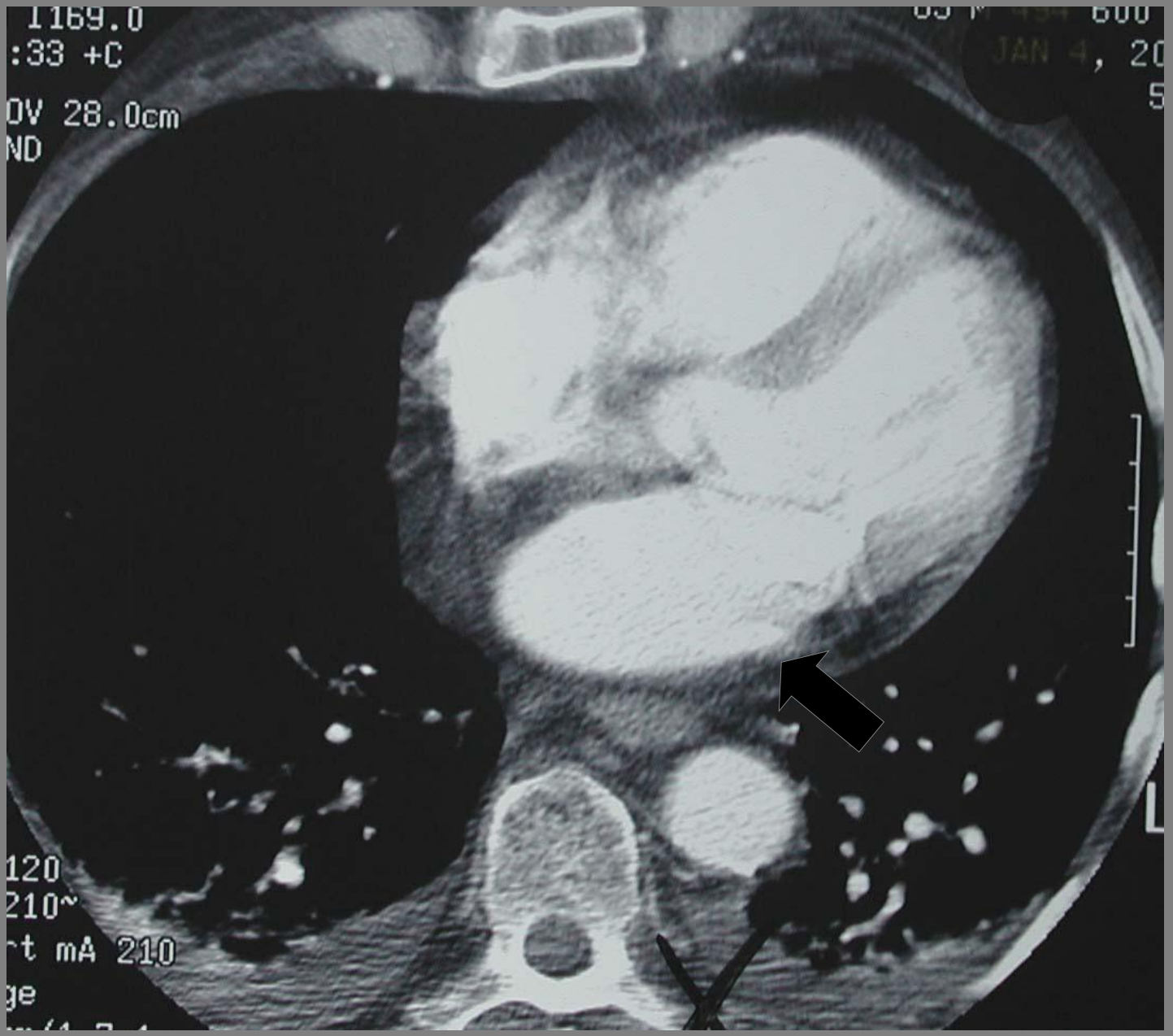
πνευμονικη
αγγειογραφια

αριστερος κολπος

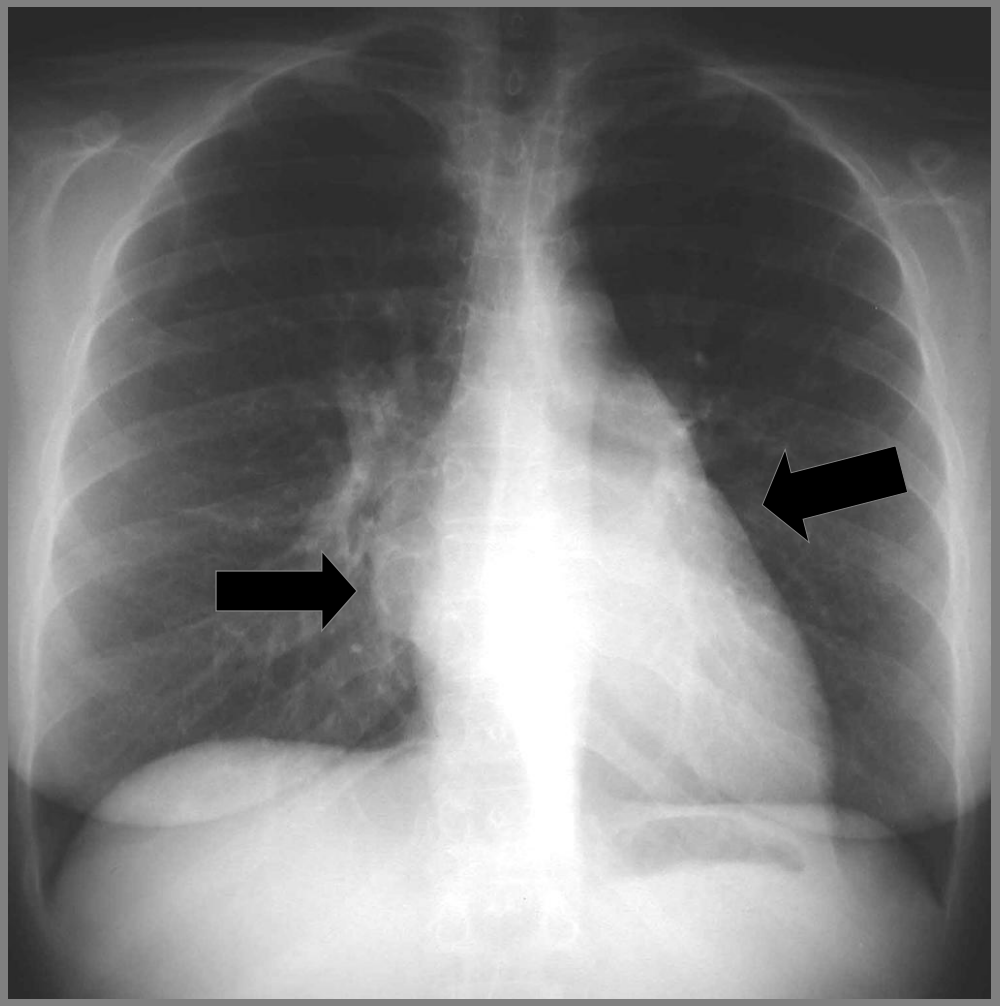


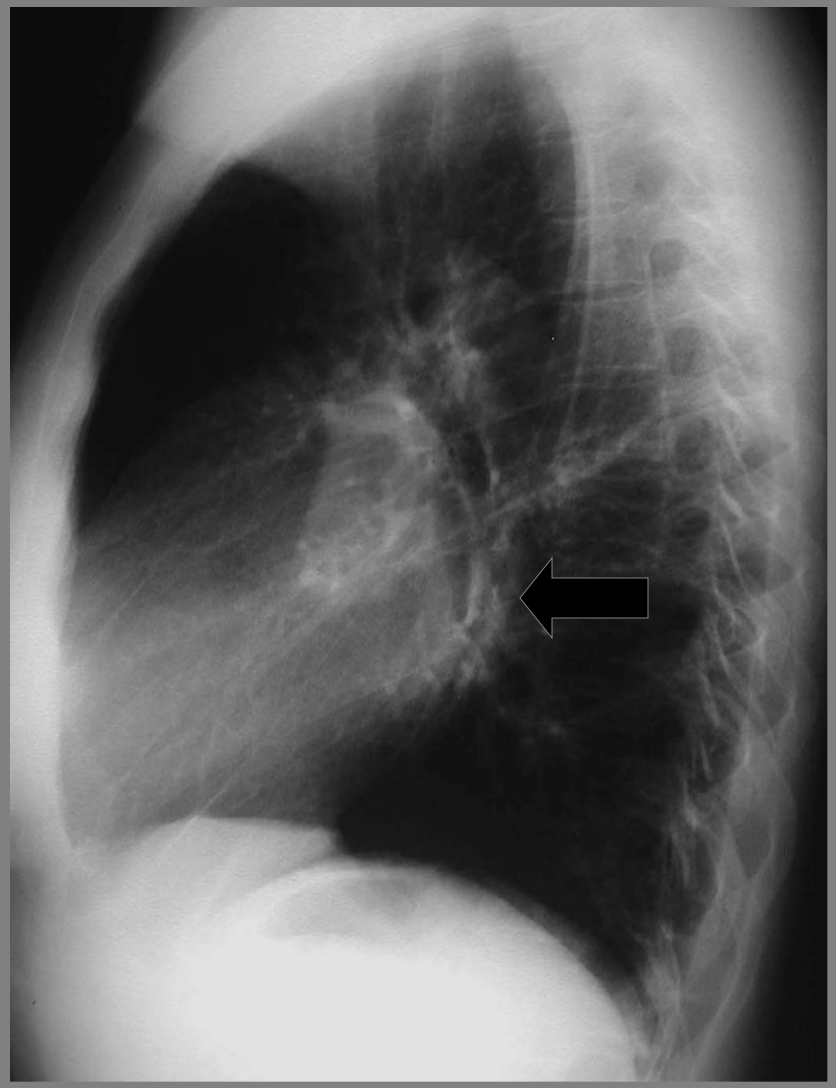
πνευμονικη
αγγειογραφια

αριστερος κολπος ΑΤ

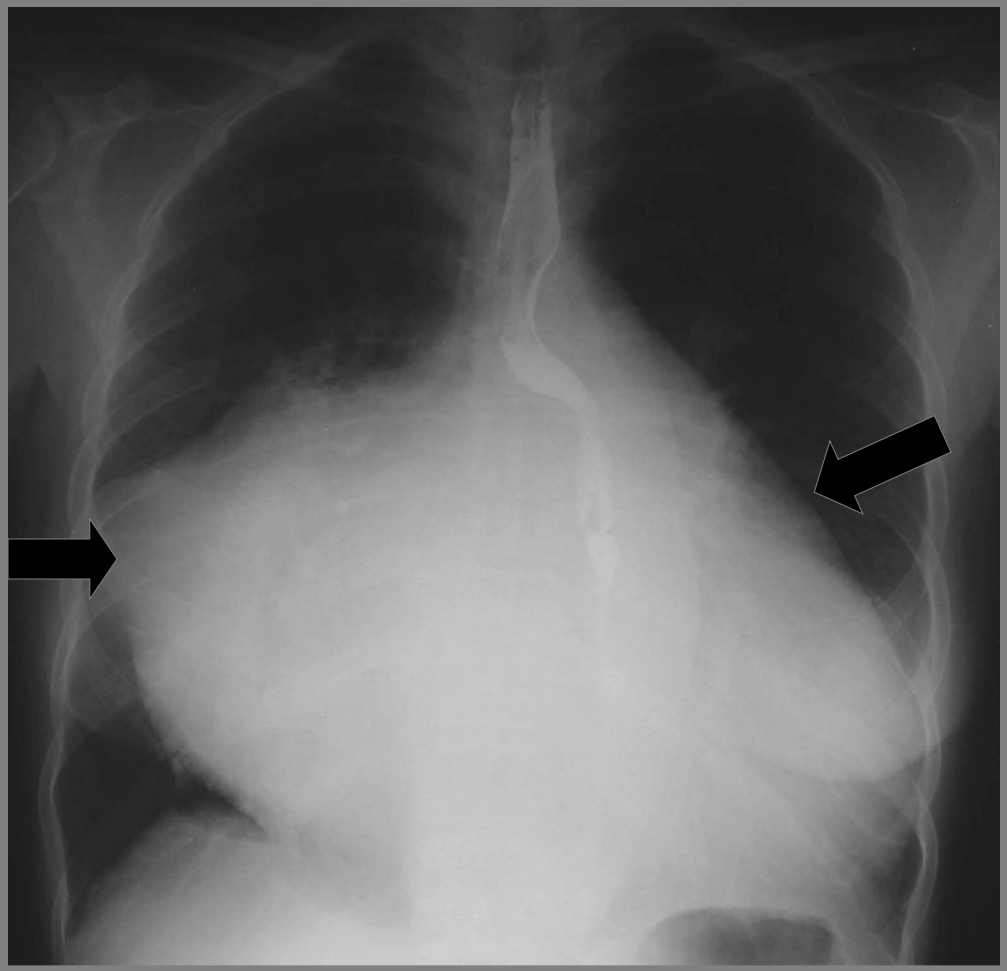


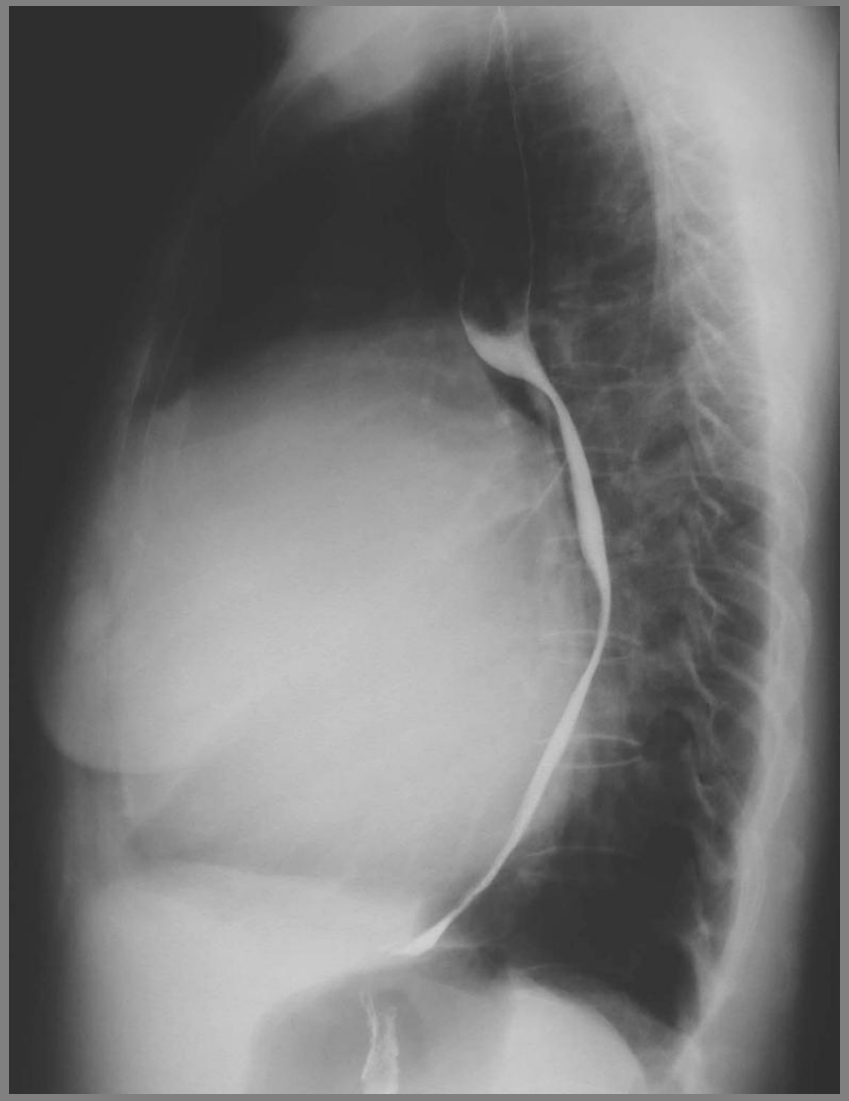
διογκωση αριστερου κολπου





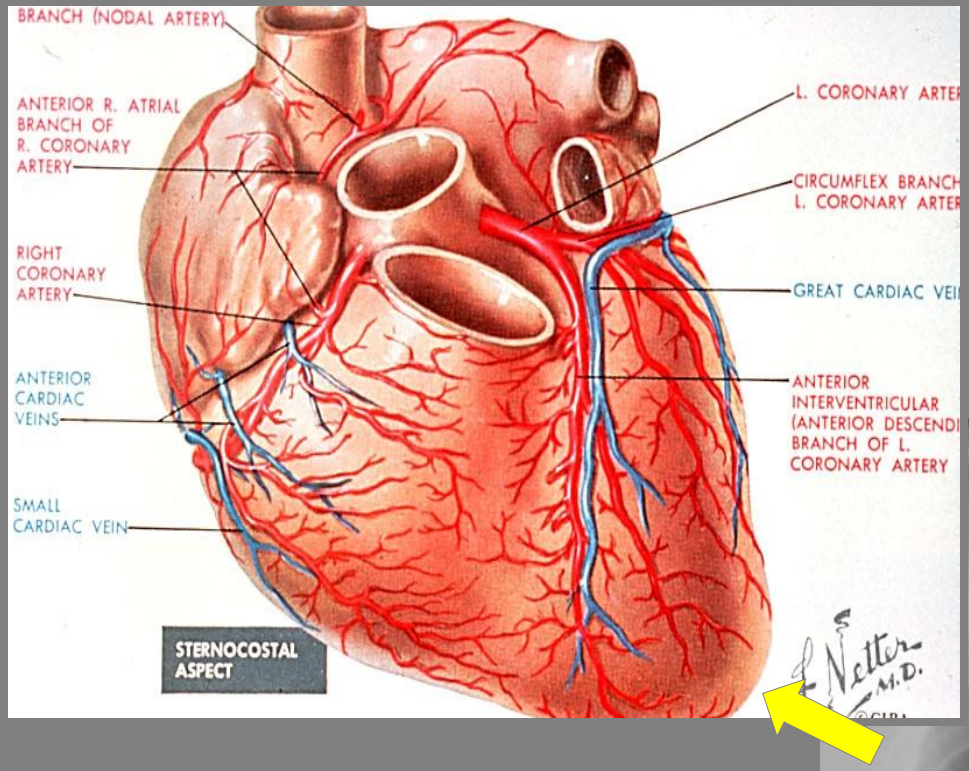
γιγαντιαιος αριστερος κολπος

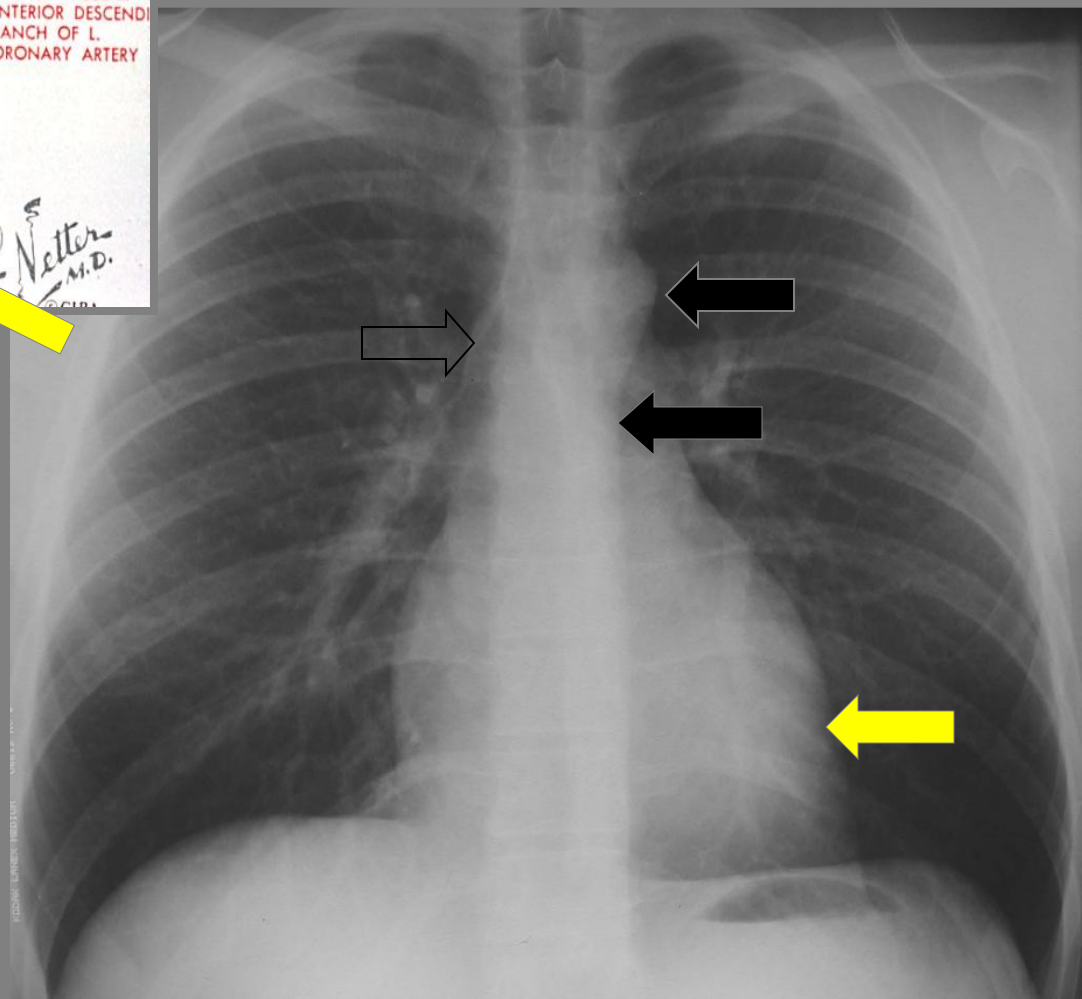


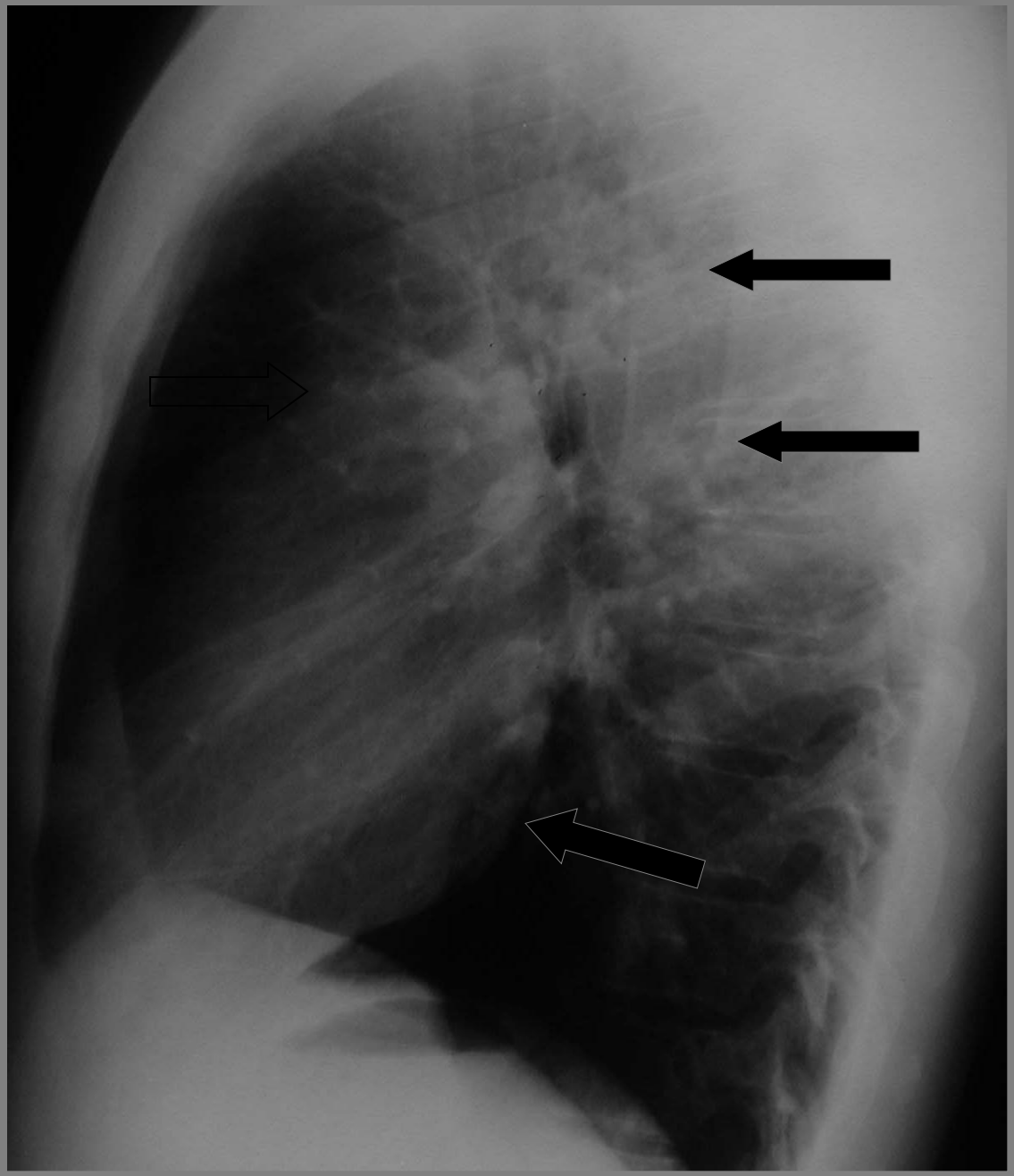


πνευμονικο οιδημα

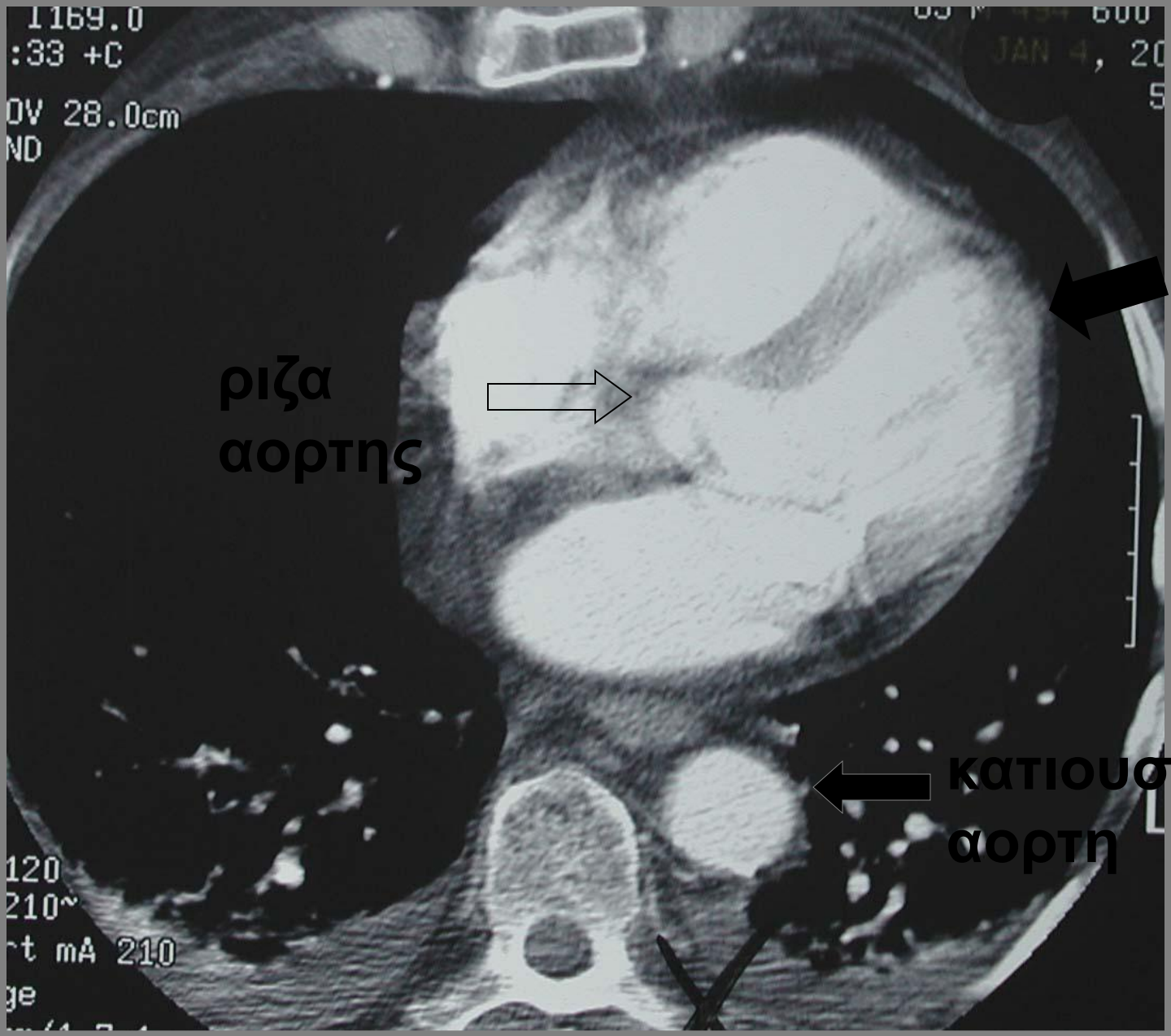
αριστερη κοιλια – αορτη


BRANCH (NODAL ARTERY)
ANTERIOR R. ATRIAL BRANCH OF R. CORONARY ARTERY
RIGHT CORONARY ARTERY
ANTERIOR CARDIAC VEINS
SMALL CARDIAC VEIN
L. CORONARY ARTER
CIRCUMFLEX BRANCH L. CORONARY ARTER
GREAT CARDIAC VEI
ANTERIOR INTERVENTRICULAR (ANTERIOR DESCENDI BRANCH OF L. CORONARY ARTERY
STERNOCOSTAL ASPECT
Netter M.D.

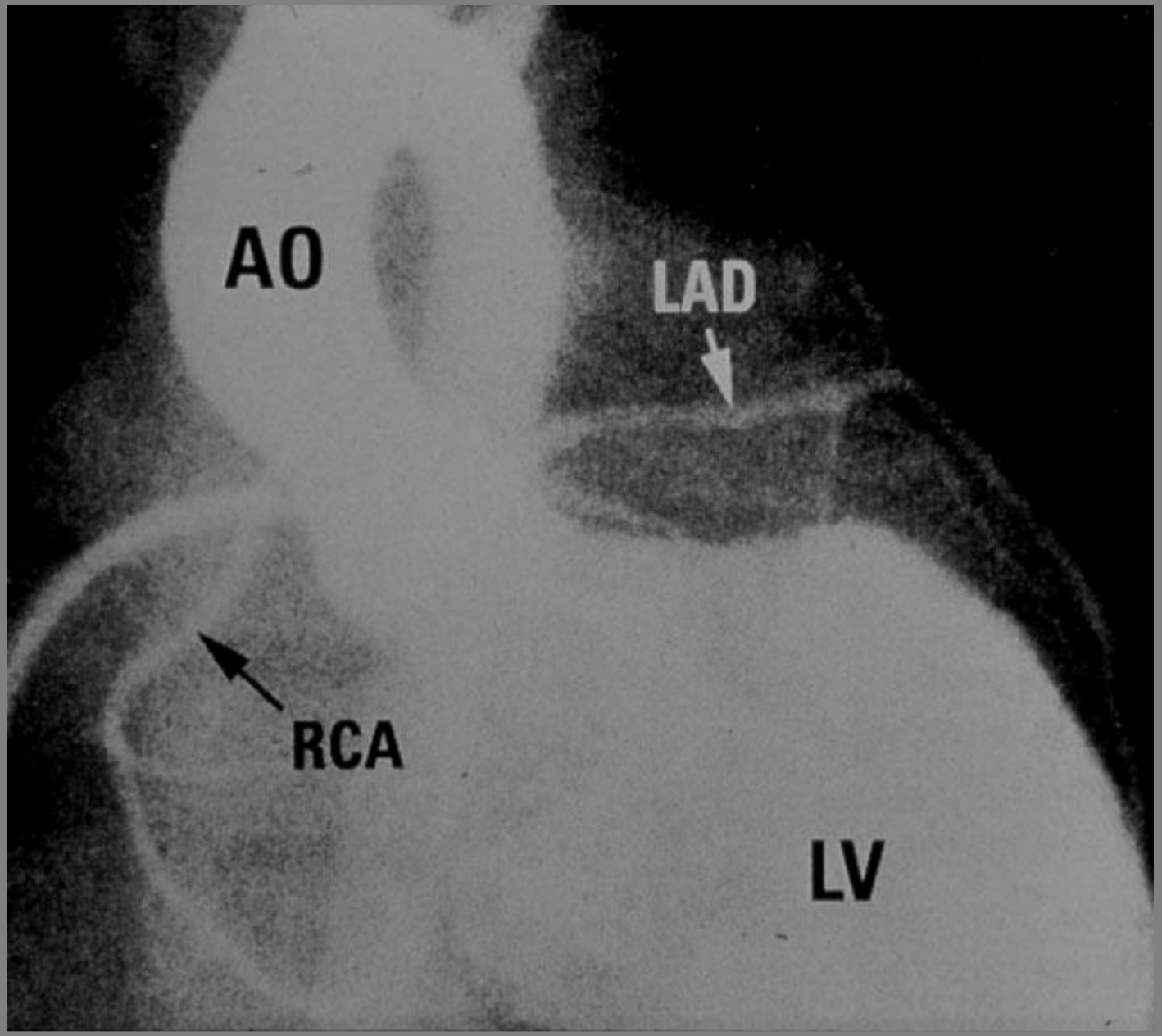




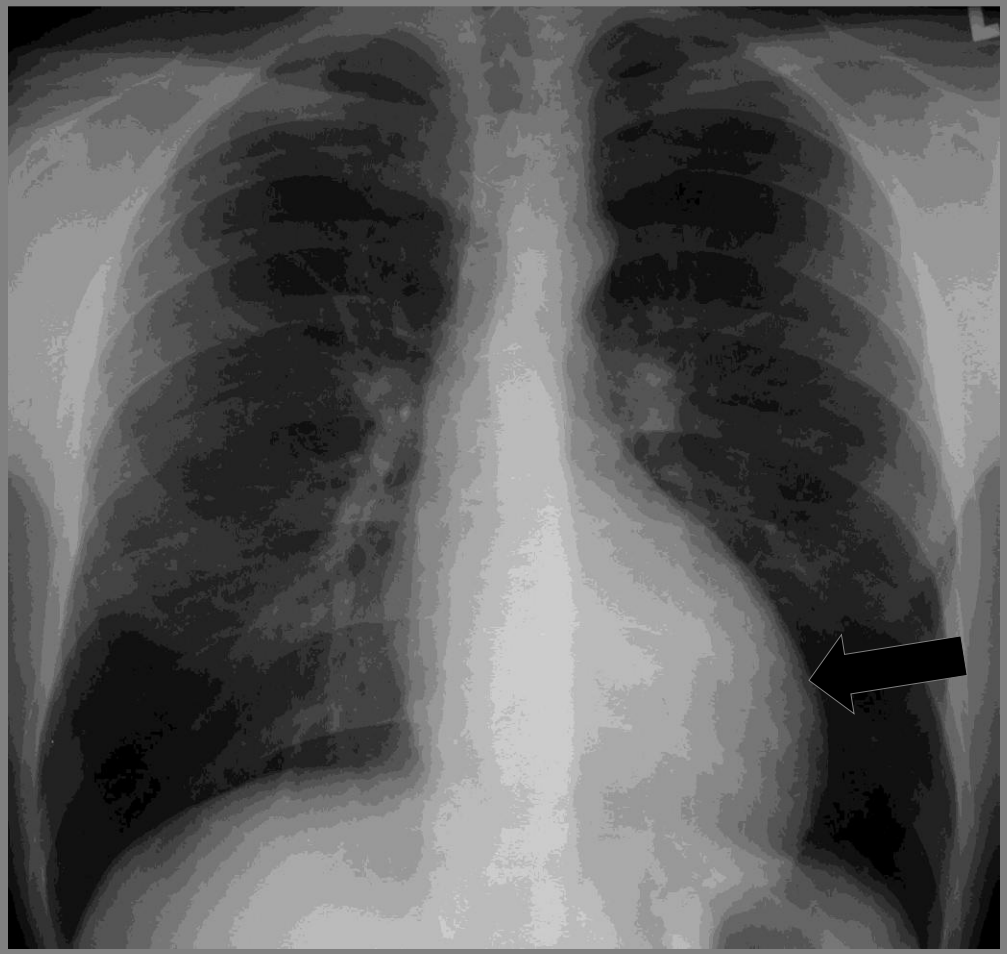
αριστερη κοιλια ΑΤ



αριστερη κοιλια- αορτικο τοξο

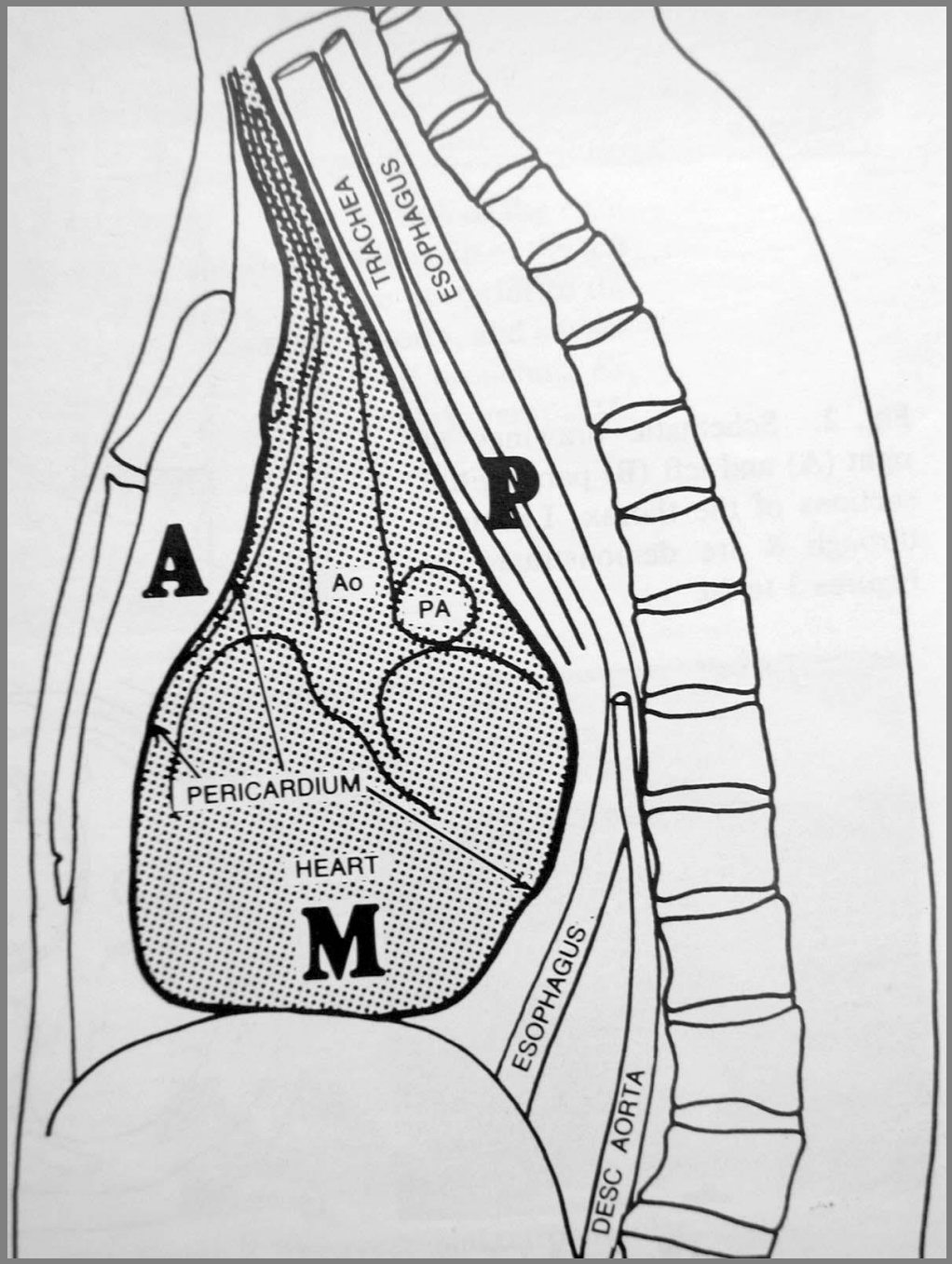


διογκωση αριστερης κοιλιας



μεσοθωρακιο

- Προσθιο, μεσο *και* οπισθιο
- Προαγγειακο αγγειακο *και* οπισθοαγγειακο



σημείο σιλουέτας

4 βασικές ακτινολογικές πυκνότητες:

- ΑΕΡΑΣ: ελαττωμένη πυκνότητα=ακτινοδιαύγαση=μαύρο (πνευμ. παρέγχυμα)
- ΛΙΠΟΣ: μαλακά μόρια θωρ. τοιχώμ.+μεσοθωρακίου
- ΝΕΡΟ: αίμα = μύες
- ΜΕΤΑΛΟ: ασβέστιο=οστά (αυξημένη πυκνότητα=άσπρο

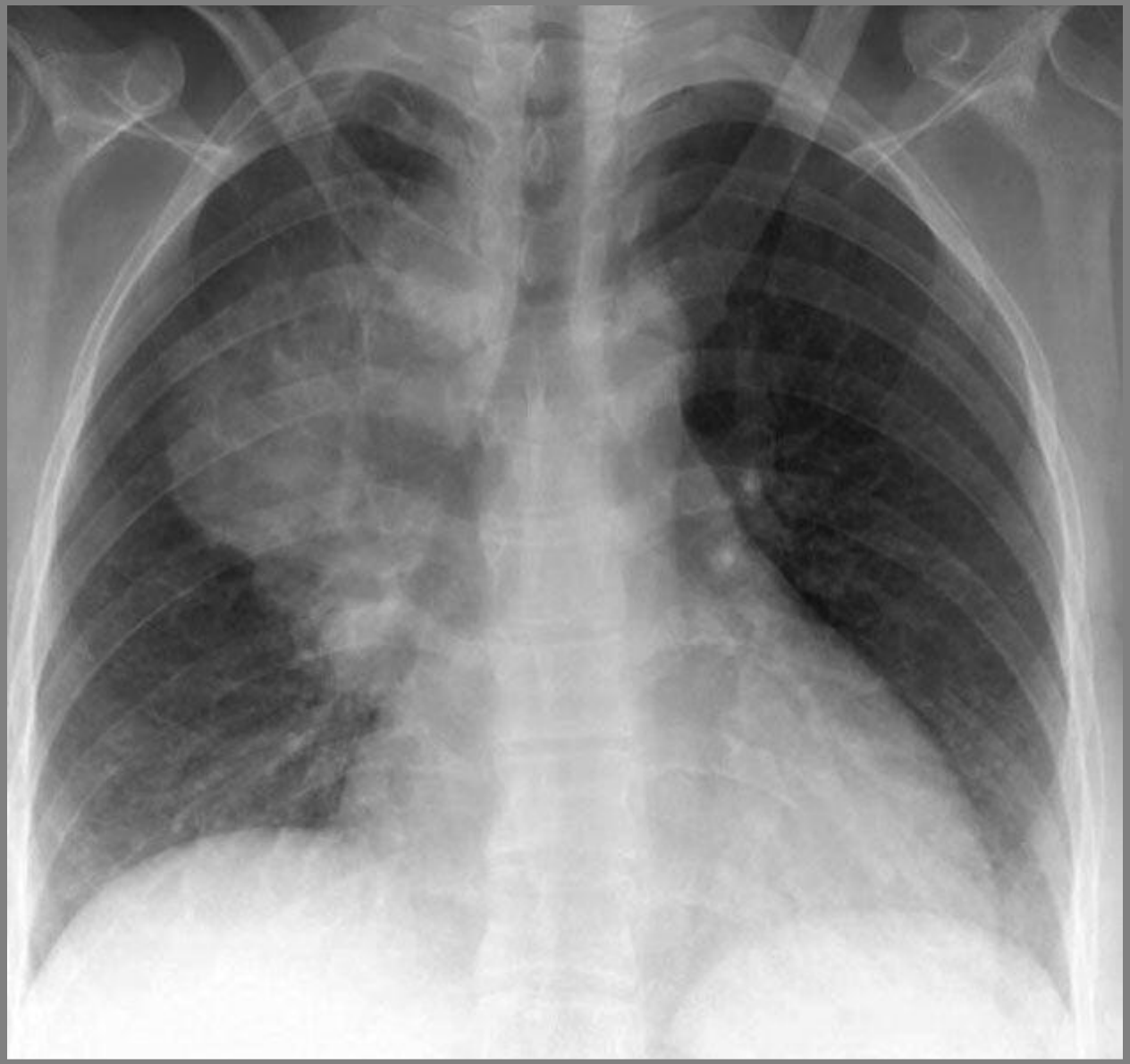
σημείο σιλουέτας

- 2 ενδοπνευμονικές δομές που συνορεύουν και έχουν ίδια πυκνότητα δεν μπορούν να διακριθούν μεταξύ τους

- Καρδιά, μύες, αορτή, αίμα, ήπαρ=πυκνότητα ίδια με νερό = παθολογικό (μη αεριζόμενο πνεύμονα (πνευμονία, ατελεκτασία, νεοπλασμα)

- …κατάργηση μέρους της φυσιολογικής σιλουέτας της καρδιάς (δεν γειτονεύει πια με αεριζόμενο πνεύμονα)

σημείο σιλουέτας



Πνευμονία ΔΑΛ– κρυπτοκόκκωση

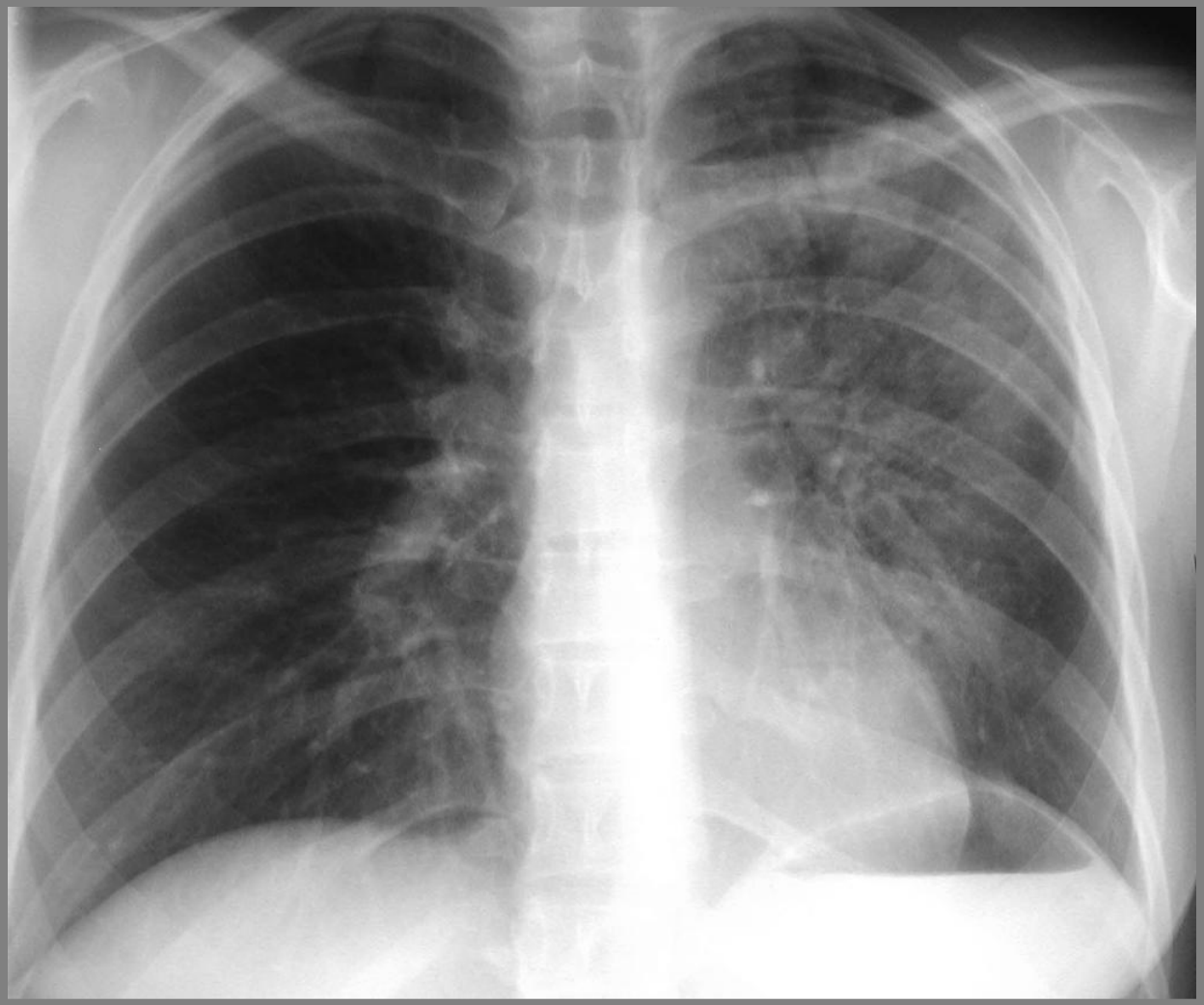
αρνητικό σημείο σιλουέτας

Εχινόκοκκος κύστη

το σημείο του αεροβρογχογράμματος

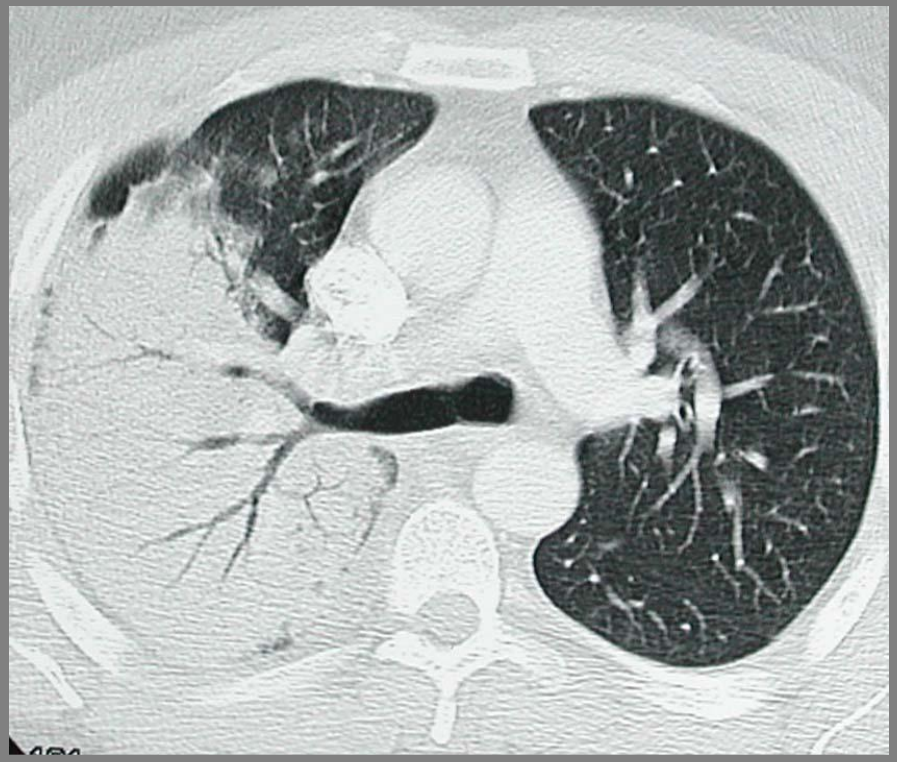
- Η διαγραφή του βρόγχου όταν είναι γεμάτος με αέρα και περιβάλλεται από παθολογικό μη αεριζόμενο πνευμονικό παρέγχυμα (πνευμονία, πνευμ. οίδημα, ARDS, βρογχοκυψελιδικό Ca)

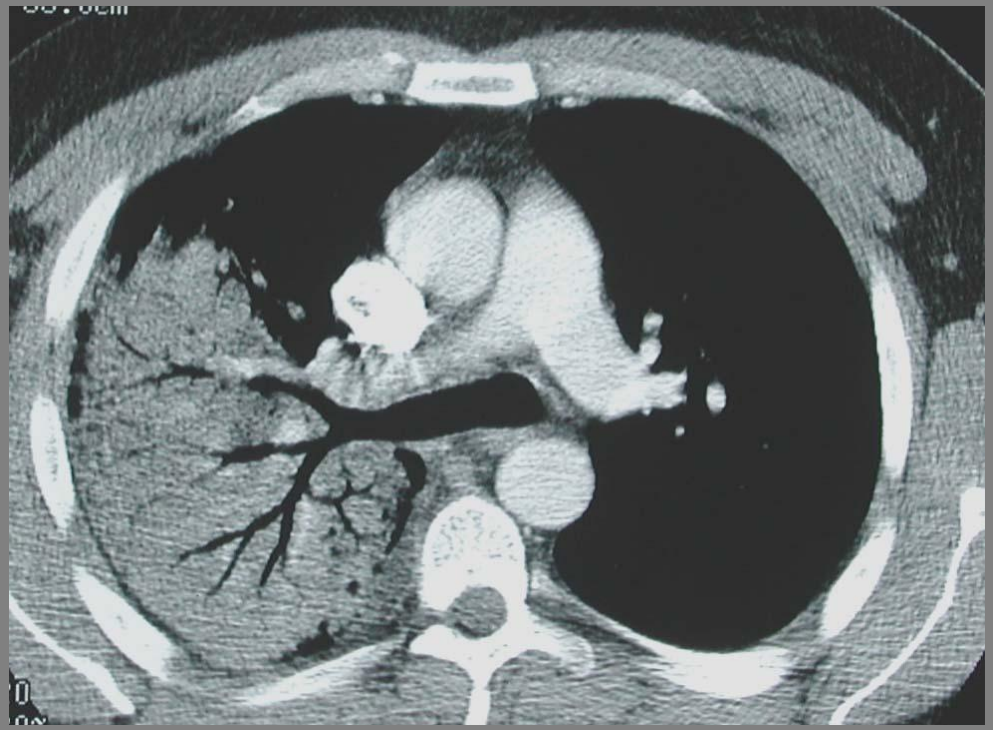
το σημείο του αεροβρογχογράμματος



Πνευμονία ΑΑΛ

το σημείο του αεροβρογχογράμματος



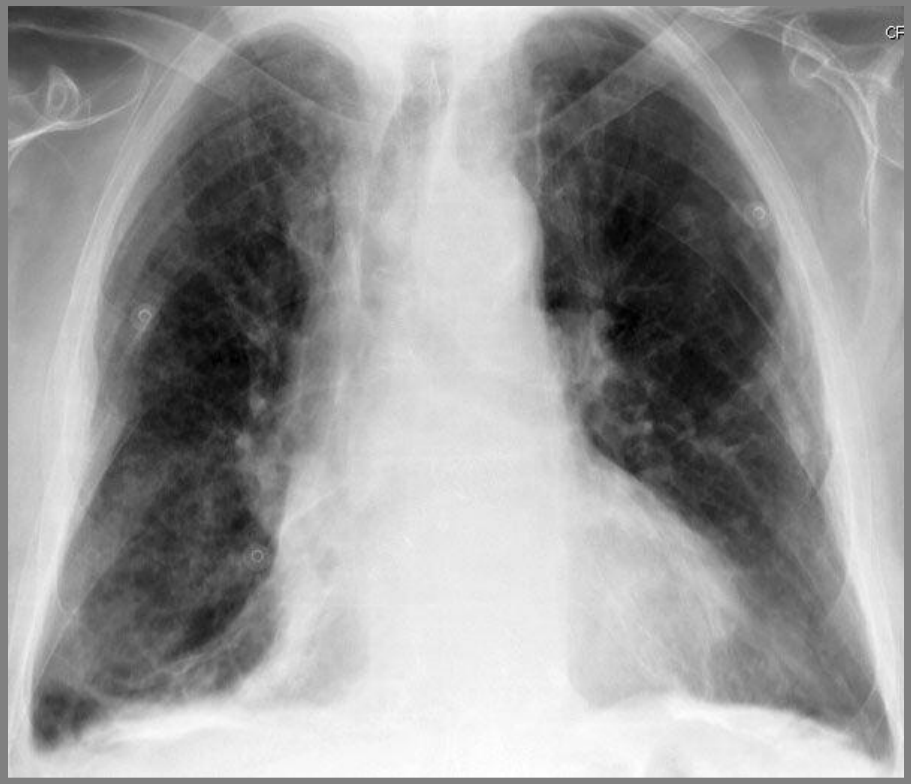


Κυψελιδικό πρότυπο

Πνευμονικό οίδημα

Κυψελιδική πρωτείνωση

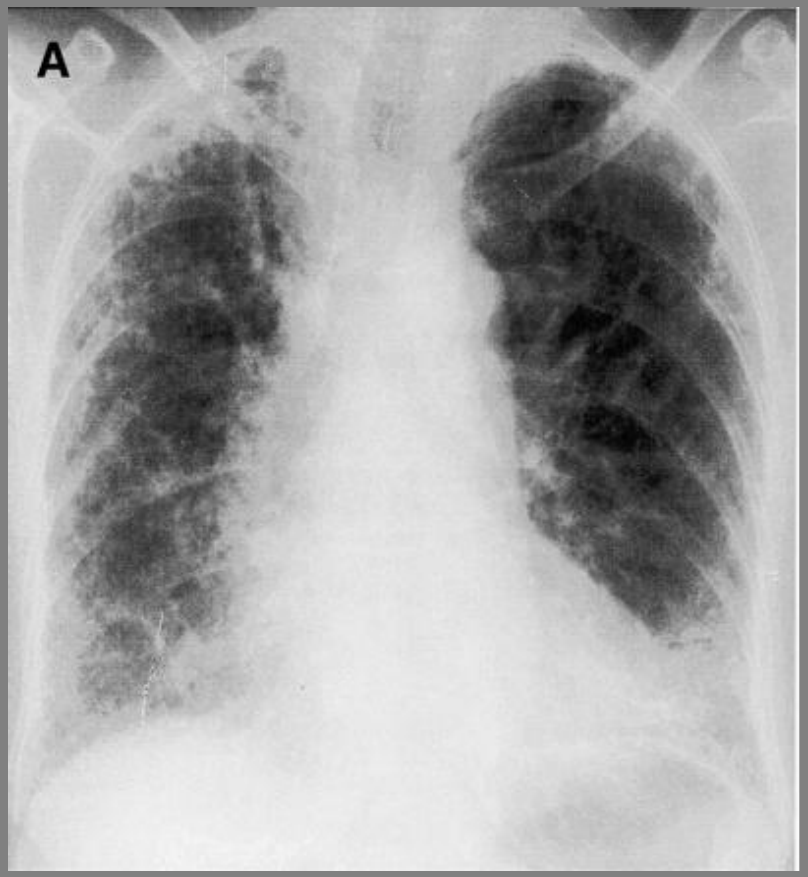
Δικτυοζώδες πρότυπο

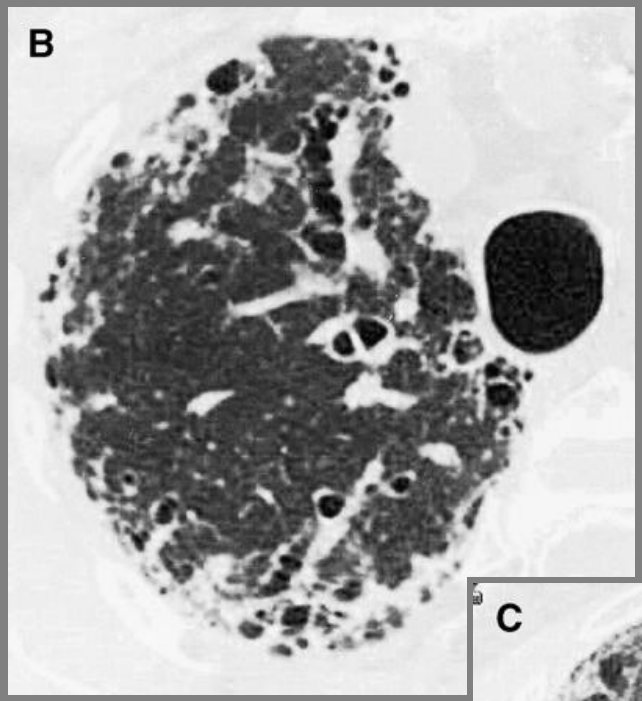


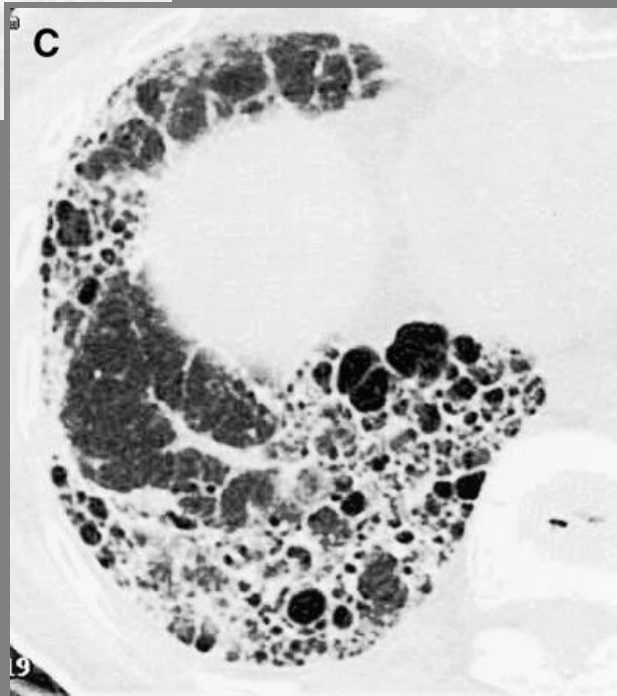
αμιάντωση

πνευμονική ίνωση

Εικόνα μελικυρήθρας



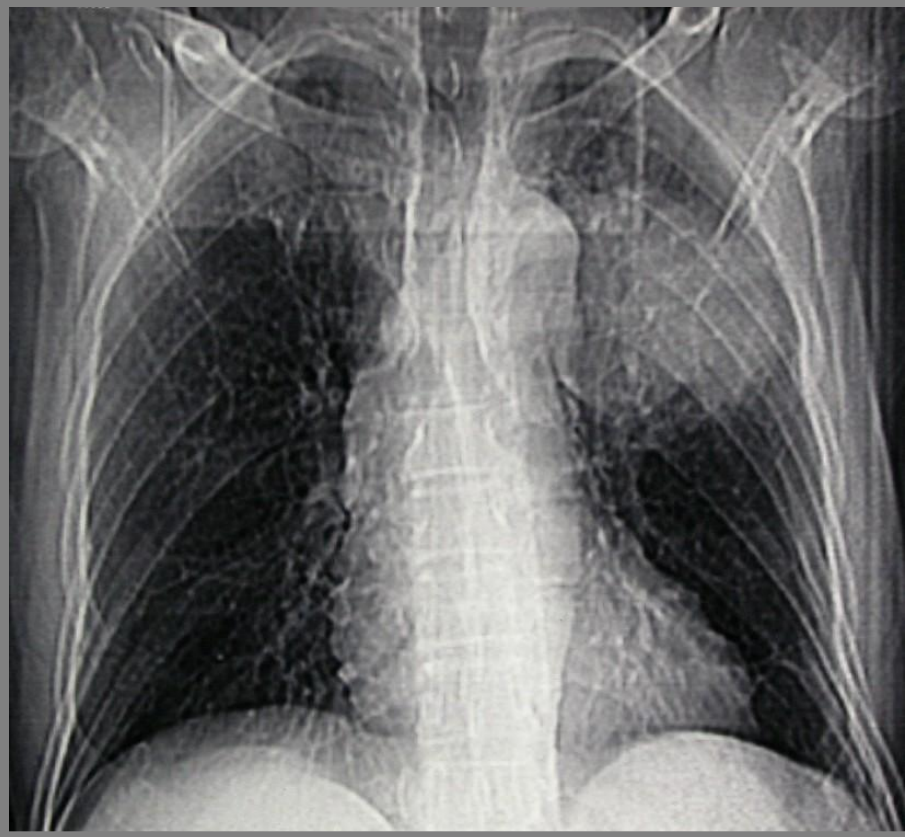




Ιδιοπαθής πνευμονική ίνωση

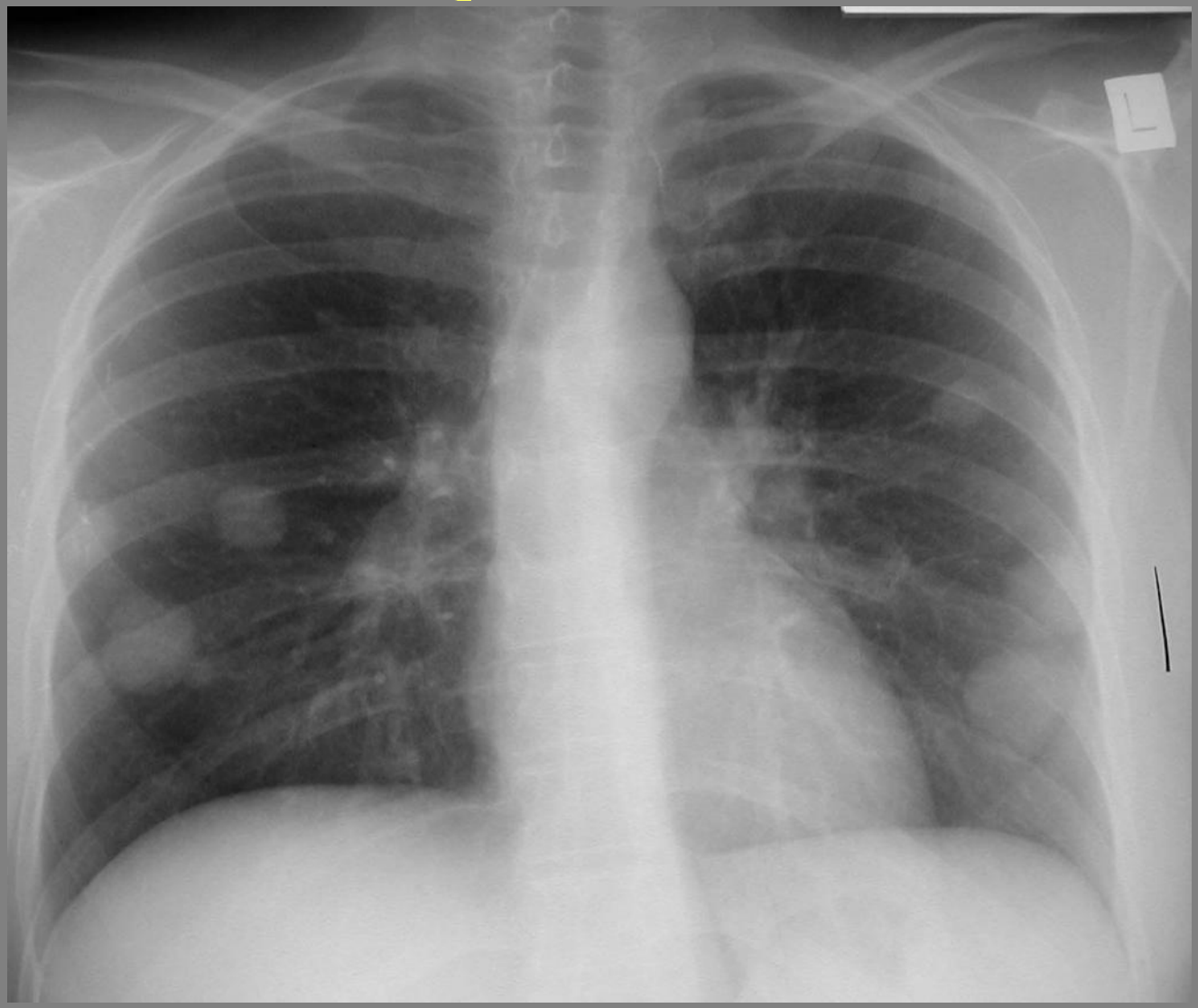
Μονήρης όζος

αμάρτωμα



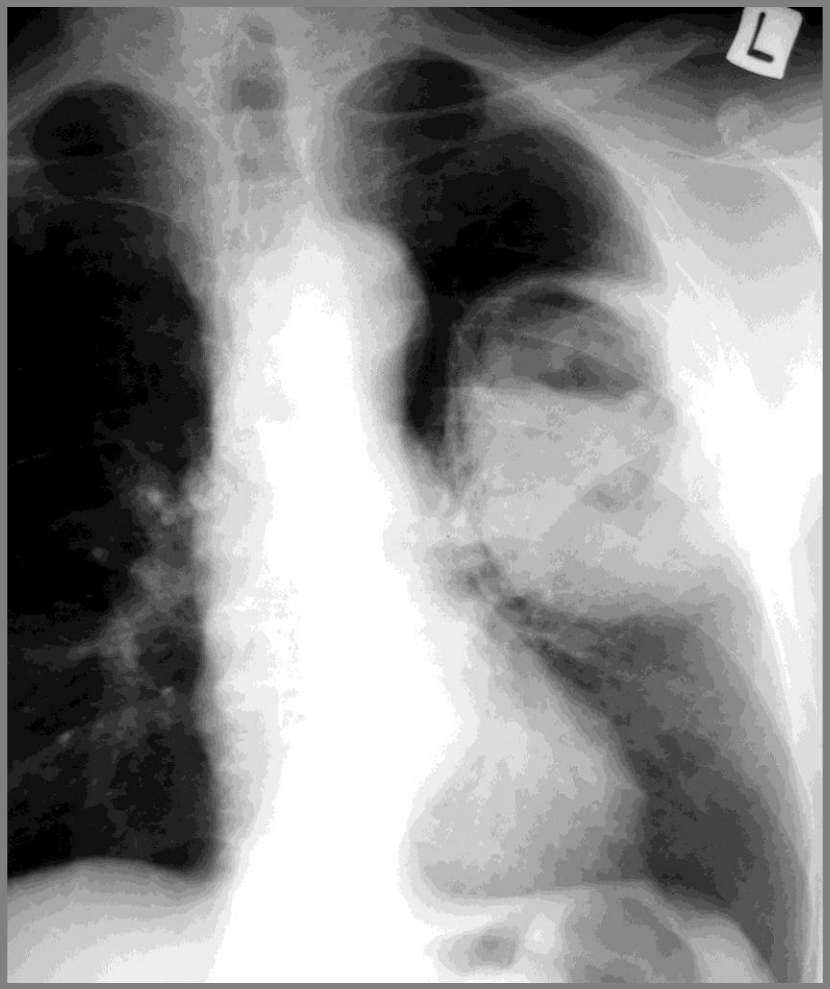
μονήρης μετάσταση

Πολλαπλοί όζοι

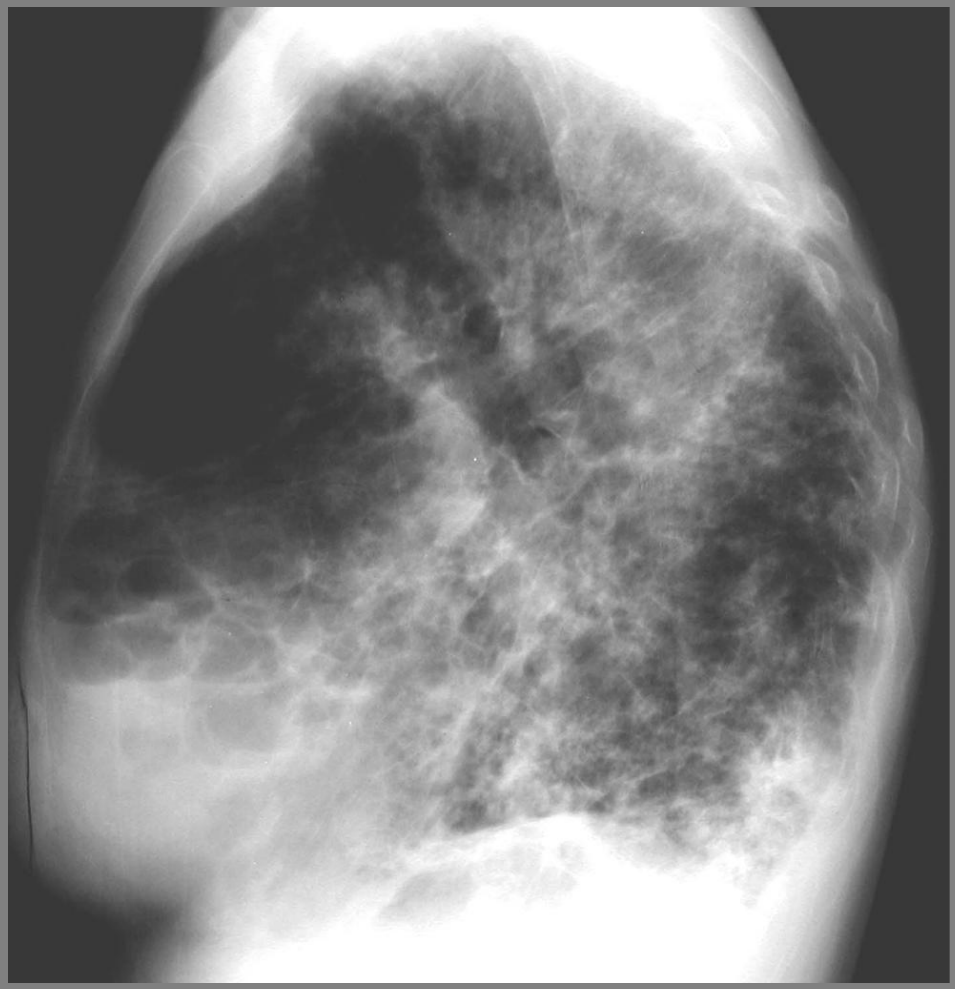


μεταστάσεις

Κοιλότητες και κύστεις

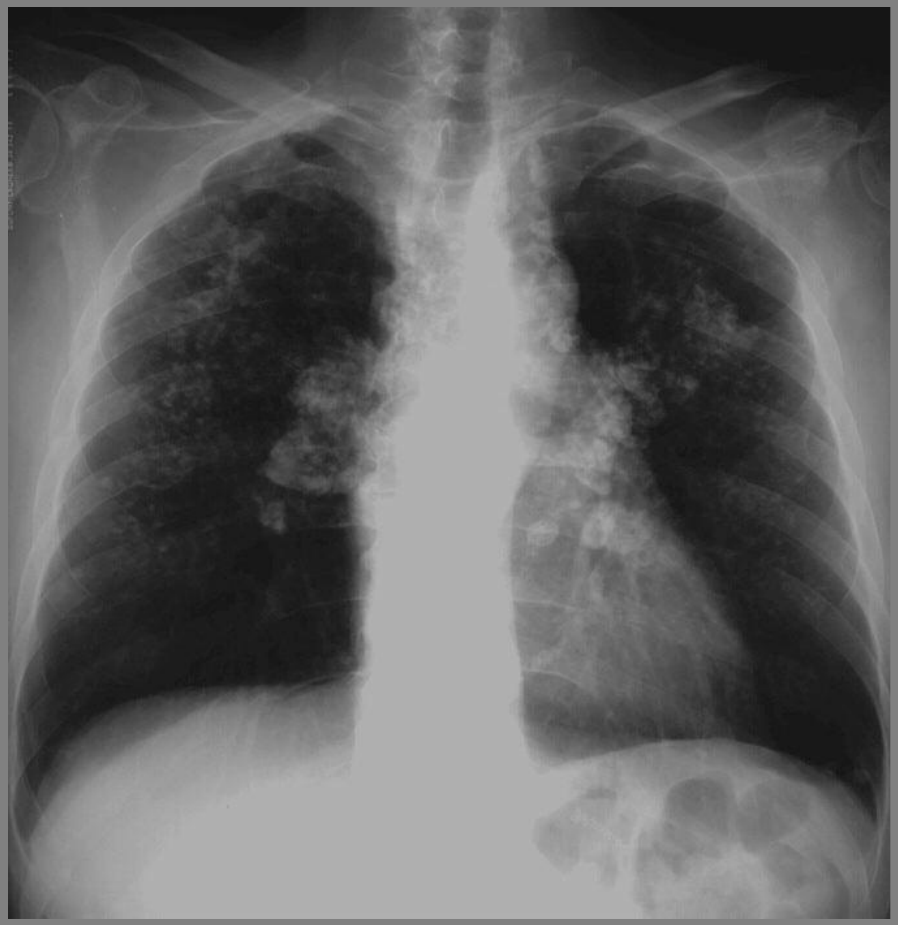


Σπηλαιοποιημένος καρκίνος



Κυστικές βρογχεκτασίες

επασβεστώσεις



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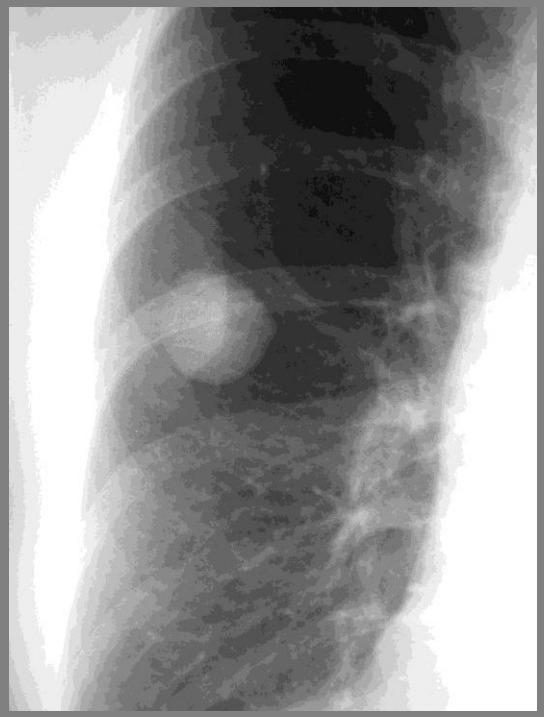
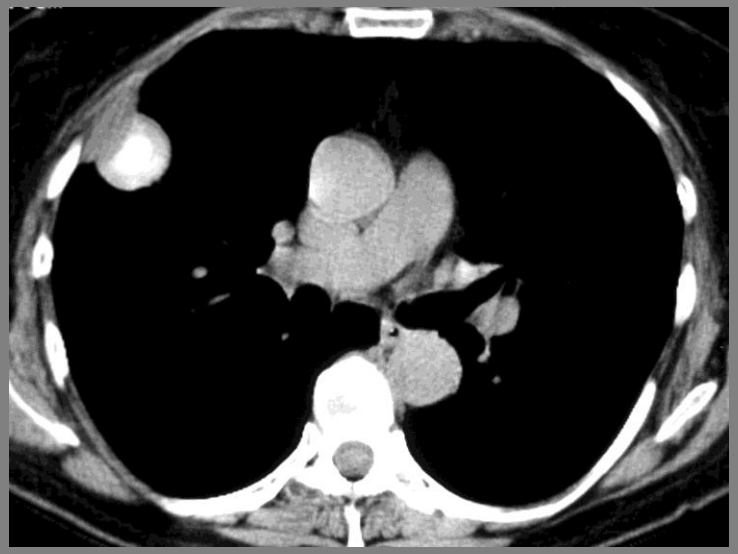
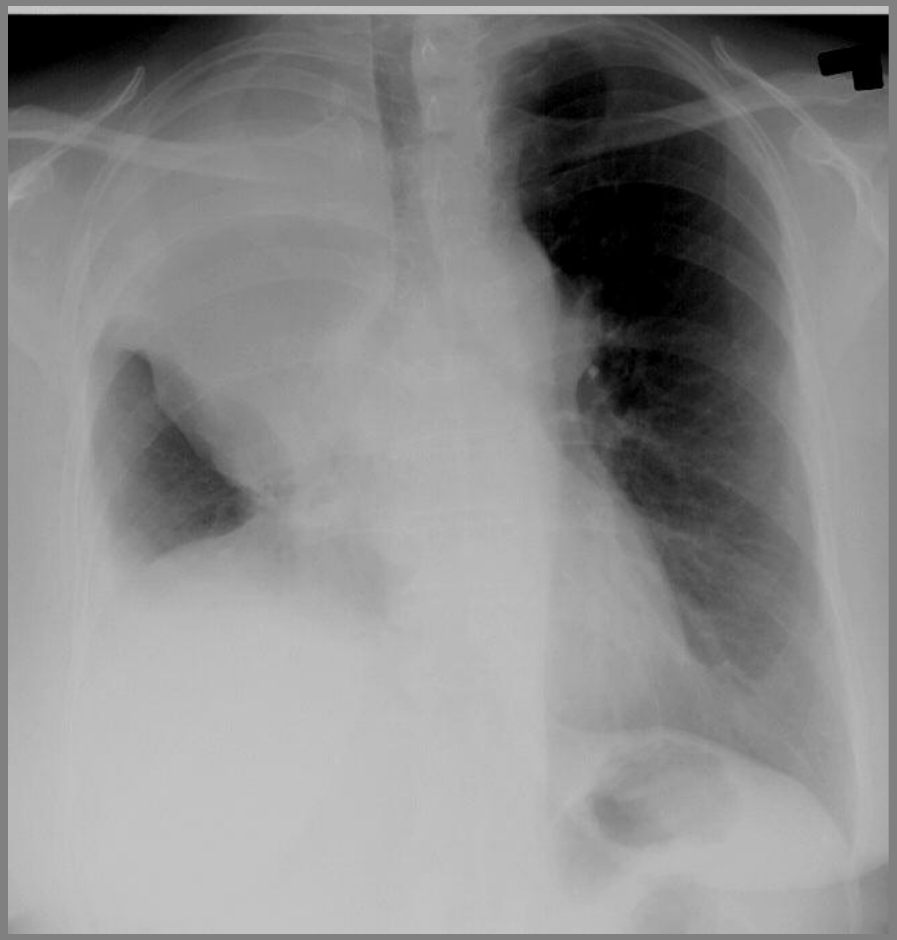




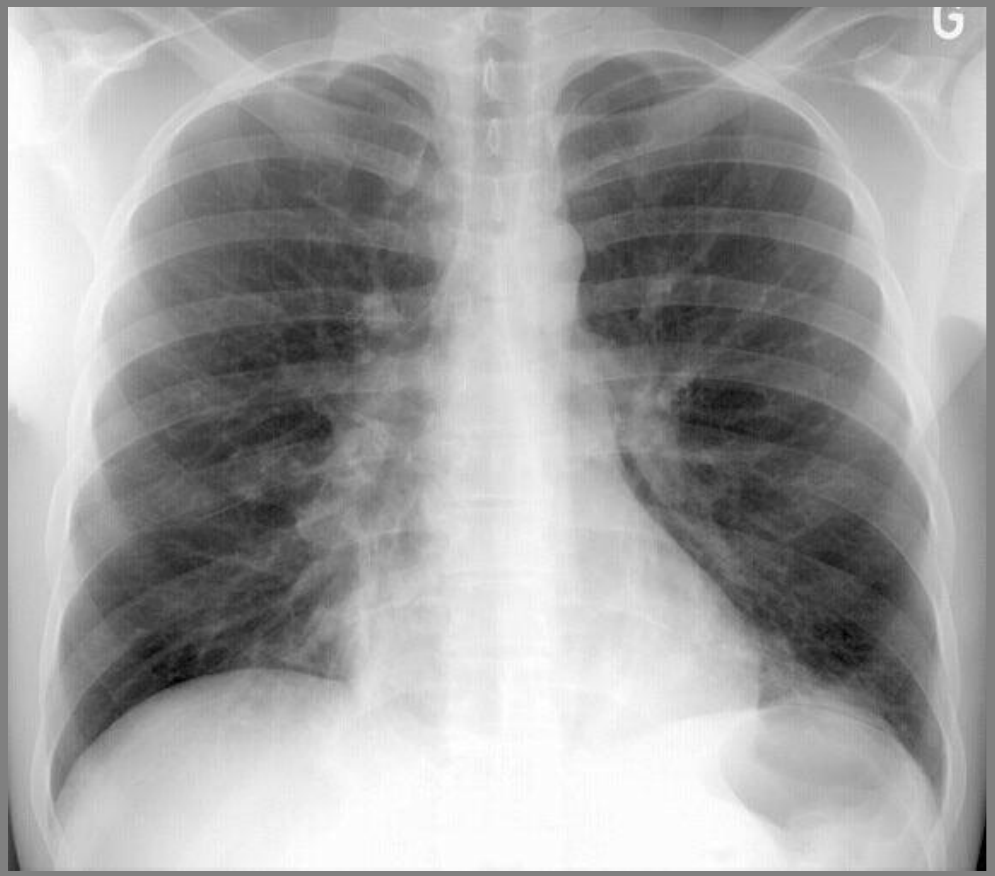
ιστοπλάσμωμα

Ελάττωση πνευμονικού όγκου-



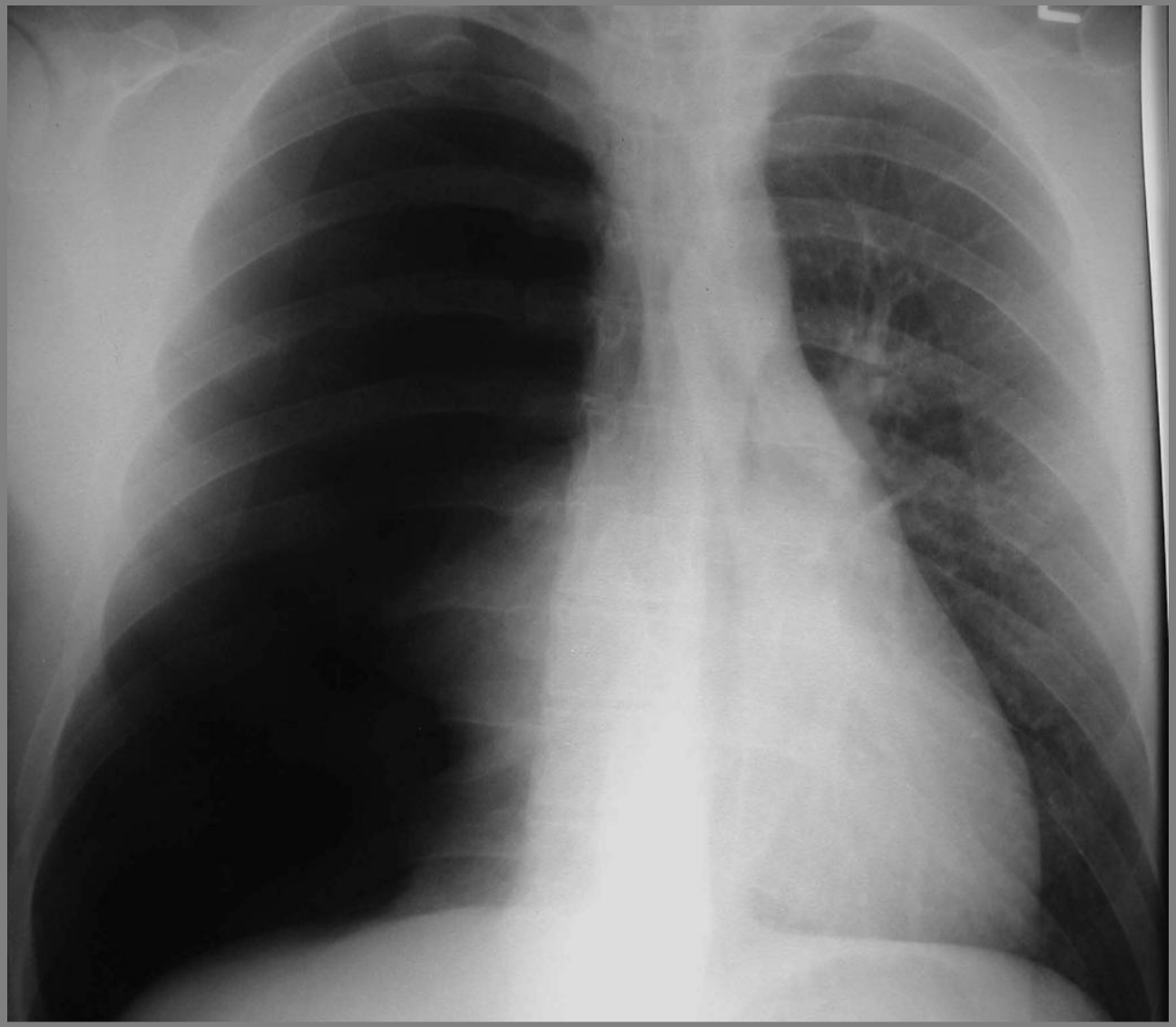
μάζα ΔΕ πύλης – ατελεκτασία ΔΑΛ

Διόγκωση πυλών



σαρκοείδωση

Ετερόπλευρη ακτινοδιαφάνεια –



πνευμοθώρακας ΔΕ

Fig. 1.1

Case 1. A 35-year-old male presented with fever, cough, and purulent sputum for one week. This was his CXR (Fig. 1.1). What is the diagnosis?

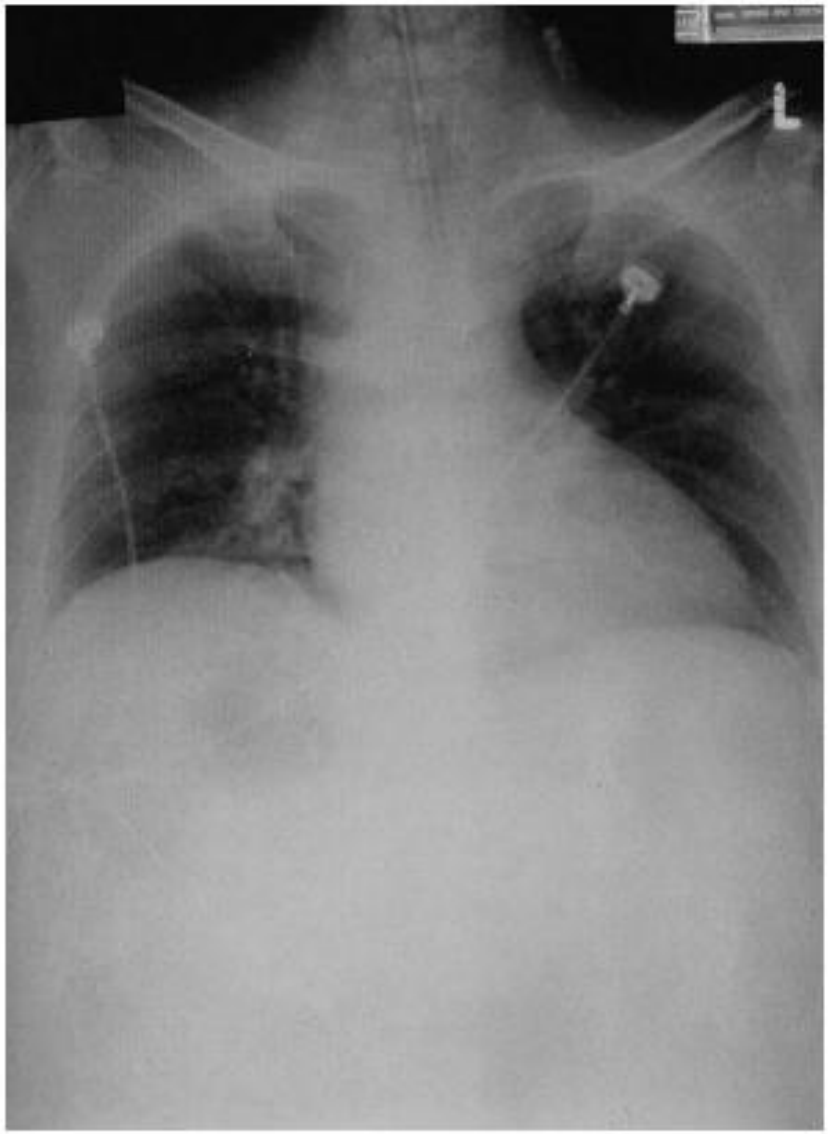


Fig. 3.1

Case 3. 50-year-old male presented to the Emergency Room with shock and a four-day history of a febrile illness. He required intubation and was started on inotropes. This was his CXR (Fig. 3.1).

Fig. 4.1

Case 4. This elderly male has exertional dyspnea, orthopnea, and paroxysmal nocturnal dyspnea. His CXR is shown (Fig. 4.1).

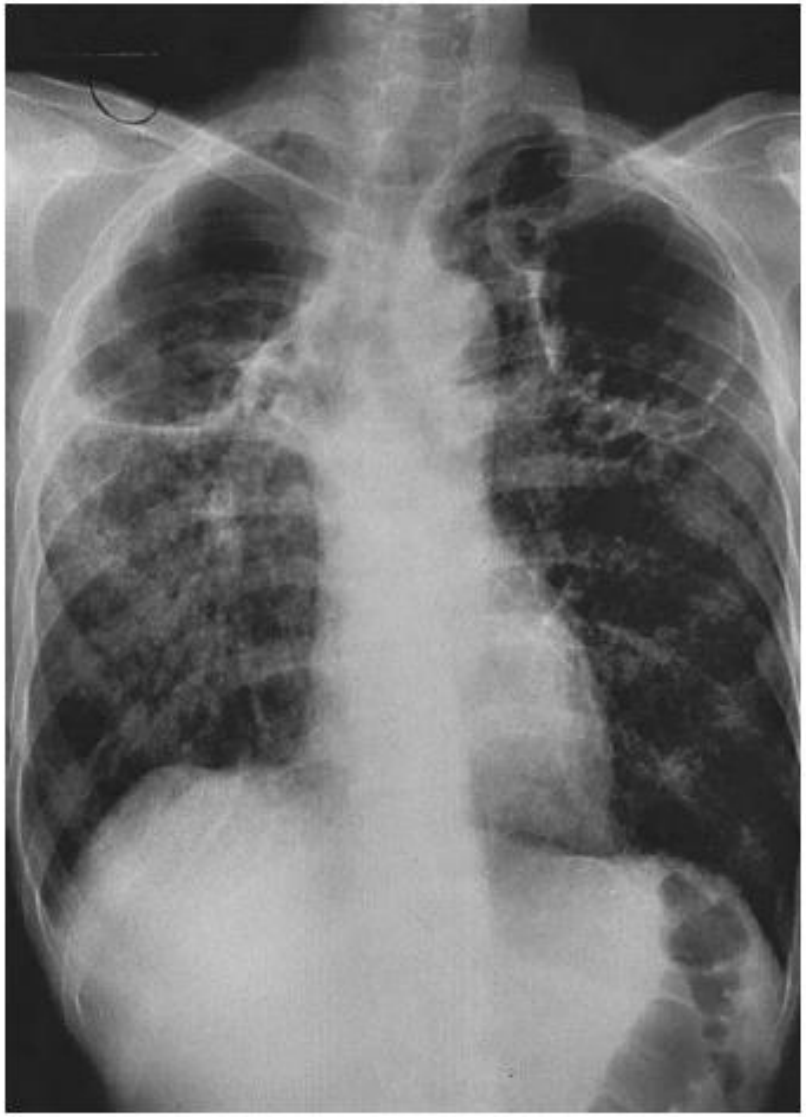


Fig. 8.1

Case 8. This was an 80-year-old male with fever, productive cough, hemoptysis, and loss of weight. This was his CXR (Fig. 8.1). What is the diagnosis?

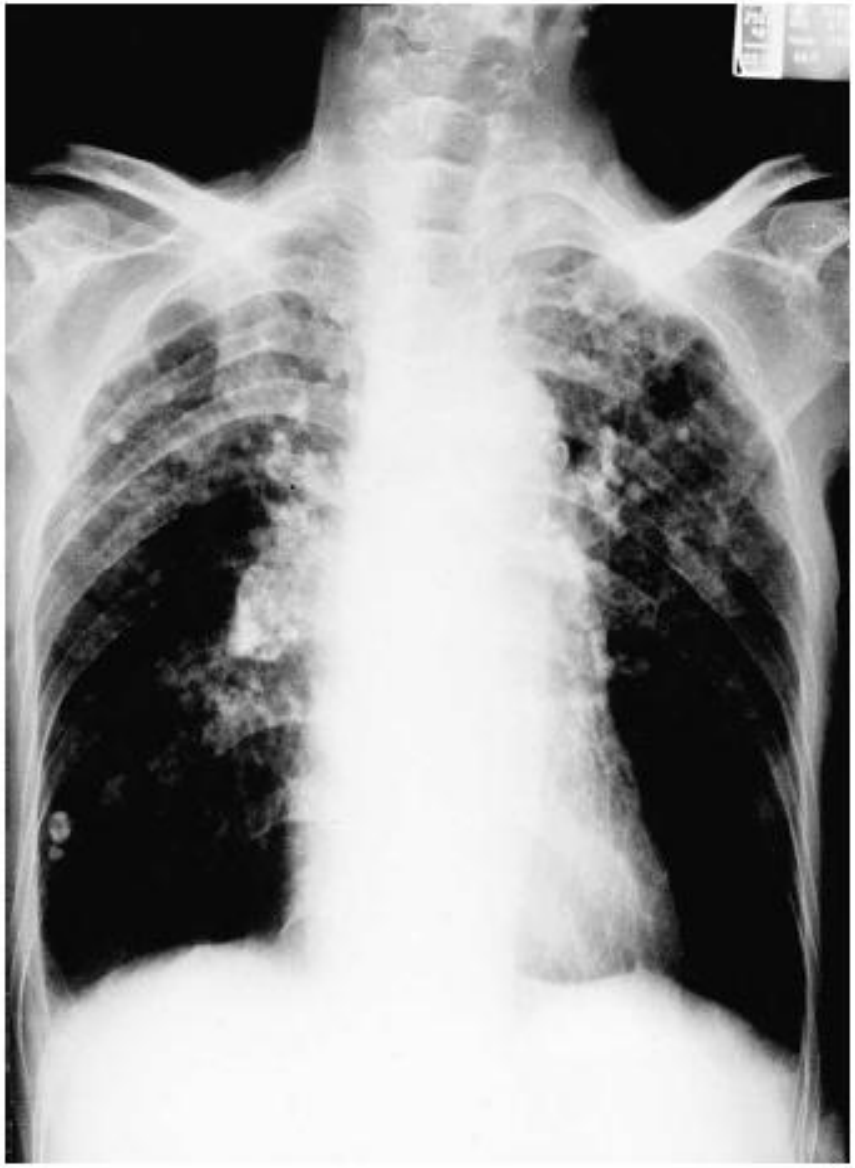


Fig. 9.1

Case 9. This 80-year-old male used to work in a sand quarry. He was asymptomatic. His CXR is shown (Fig. 9.1). What is the diagnosis?

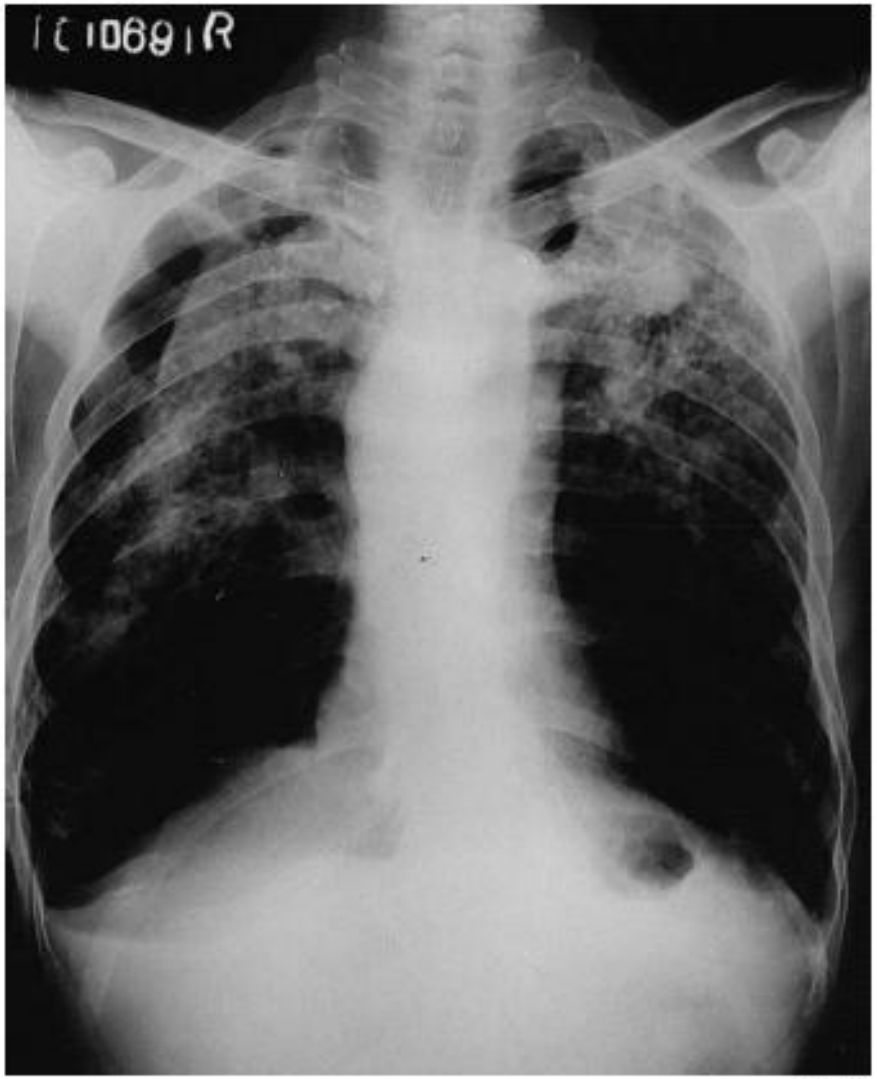


Fig. 10.1

Case 10. This 80-year-old male presented with right-sided chest pain and breathlessness. He gave a long history of exertional dyspnea. The CXR is shown (Fig. 10.1).

Fig. 12.1

Case 12. A 60-year-old male presented at the Emergency Room with severe chest pain of sudden onset. This was his CXR (Fig. 12.1). What is the diagnosis?

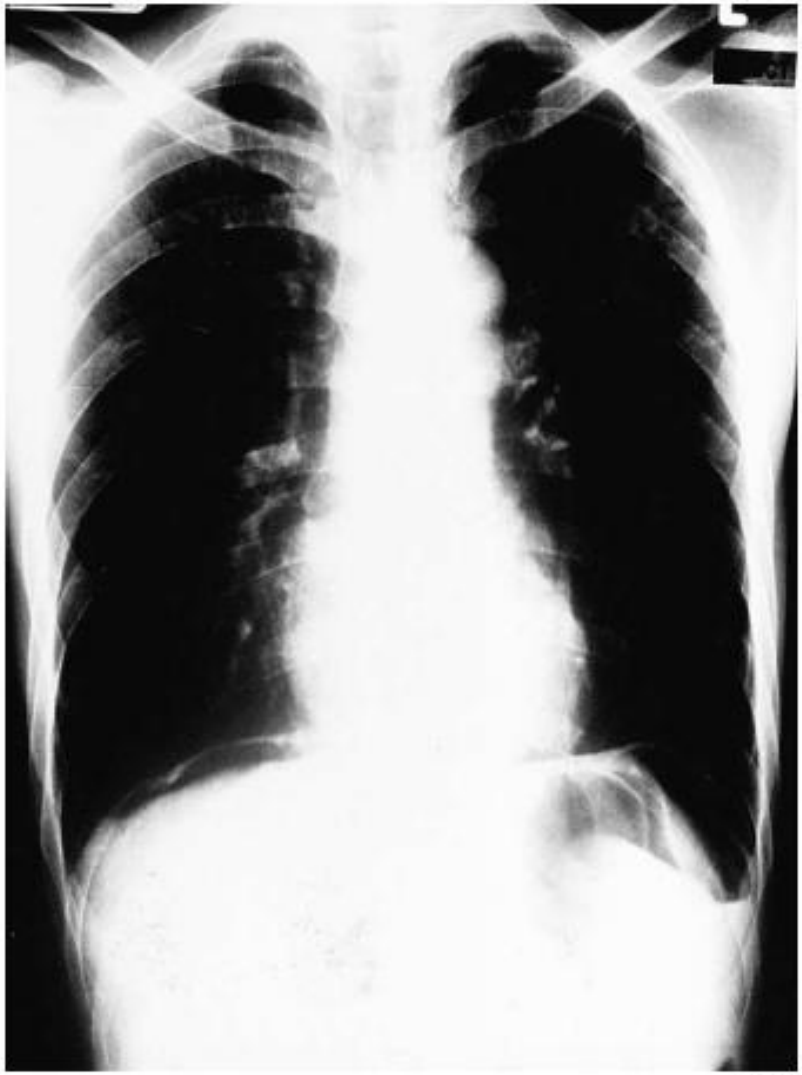


Fig. 13.1

Case 13. This 80-year-old male smoker is a known case of COPD. He presented with epigastric pain and worsening of shortness of breath. Arterial blood gas showed acute metabolic acidosis. This was his CXR (Fig. 13.1). What is the most obvious abnormality?

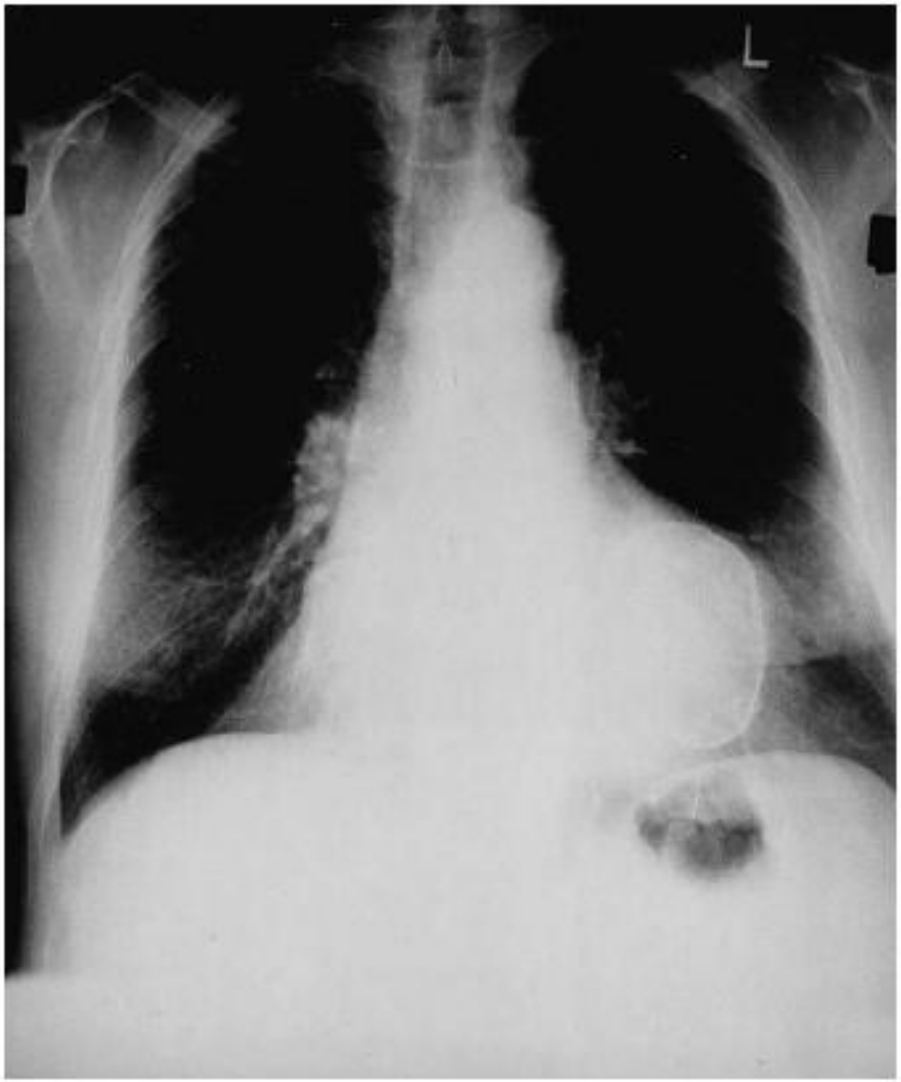


Fig. 14.1

Case 14. This 75-year-old male had a history of myocardial infarction and now presented with recurrent Ventricular Tachycardia. These were his CXR, PA and lateral (Figs. 14.1 and 14.2).

Fig. 15.1

Case 15. A 60-year-old male presented with exertional dyspnea, orthopnea, paroxysmal nocturnal dyspnea, and bilateral painless ankle swelling. This was his CXR (Fig. 15.1). What is the abnormality and subsequent management?

Fig. 15.2

CASE 15 PSEUDOTUMOR DUE TO LOCULATED RIGHT PLEURAL EFFUSION

The CXR shows classic evidence of congestive heart failure with cardiomegaly, upper lobe venous diversion, and bilateral pleural effusions. In addition, there is an ovoid mass in the right middle zone which seems to be related to the transverse fissure. This is typical of a pseudotumor due to a loculated pleural effusion distending the transverse fissure. Appropriate management would include diuretics and treatment of the cardiac failure. Repeat CXR a week later showed the disappearance of the pseudotumor (Fig. 15.2).

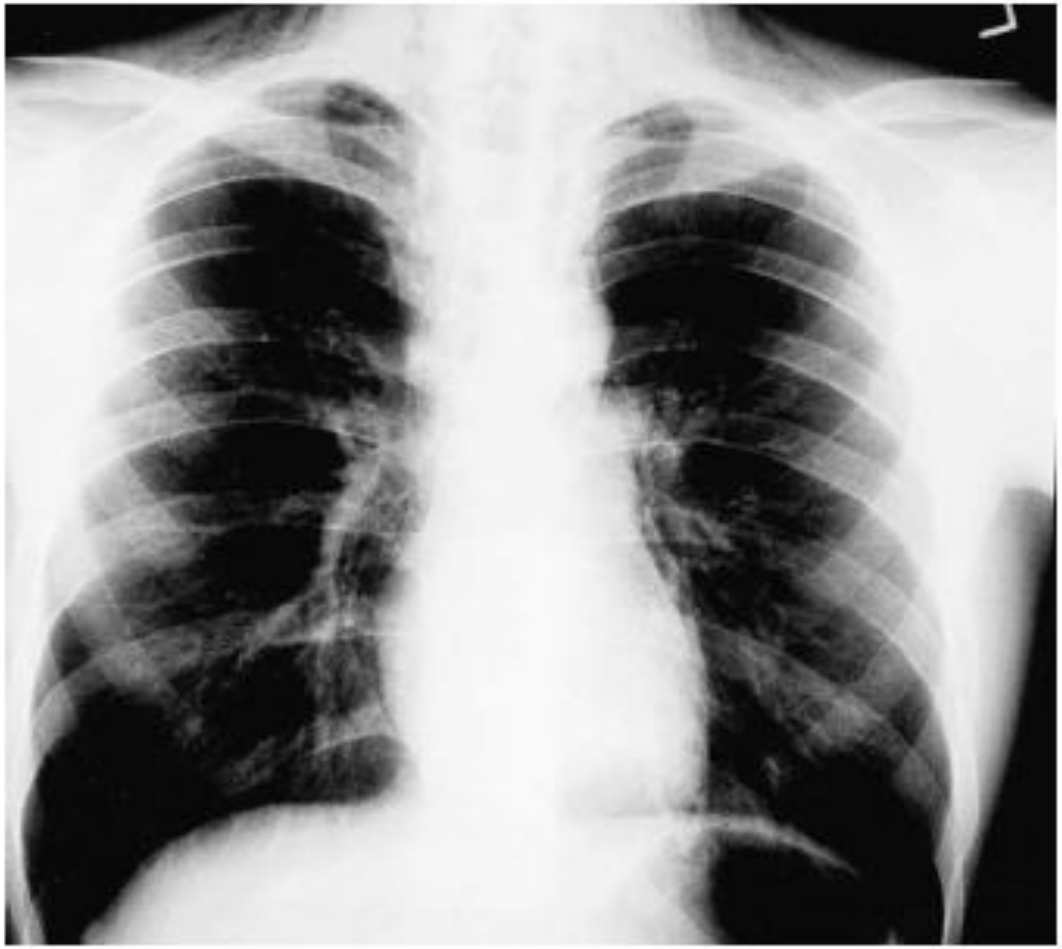


Fig. 16.1

Case 16. A 30-year-old male was seen in the Emergency Room for acute onset chest pain. This was his CXR (Fig. 16.1). Name the most obvious abnormality.

Fig. 17.1

Case 17. An 80-year-old male presented with massive hemoptysis and was intubated. This was his CXR (Fig. 17.1). He gave a past history of being treated for tuberculosis many years ago.

Fig. 19.1

Case 19. An 80-year-old female, 100-pack-a-year smoker with 5-year history of dyspnea on exertion. Describe her CXR (Fig. 19.1). What is the diagnosis?

Fig 20.1

Case 20. This 55-year-old male was admitted in shock. He was recently diagnosed with inoperable lung cancer. Clinical exam also showed distended neck veins and muffled heart sounds. This was his CXR (Fig. 20.1). What is the diagnosis?

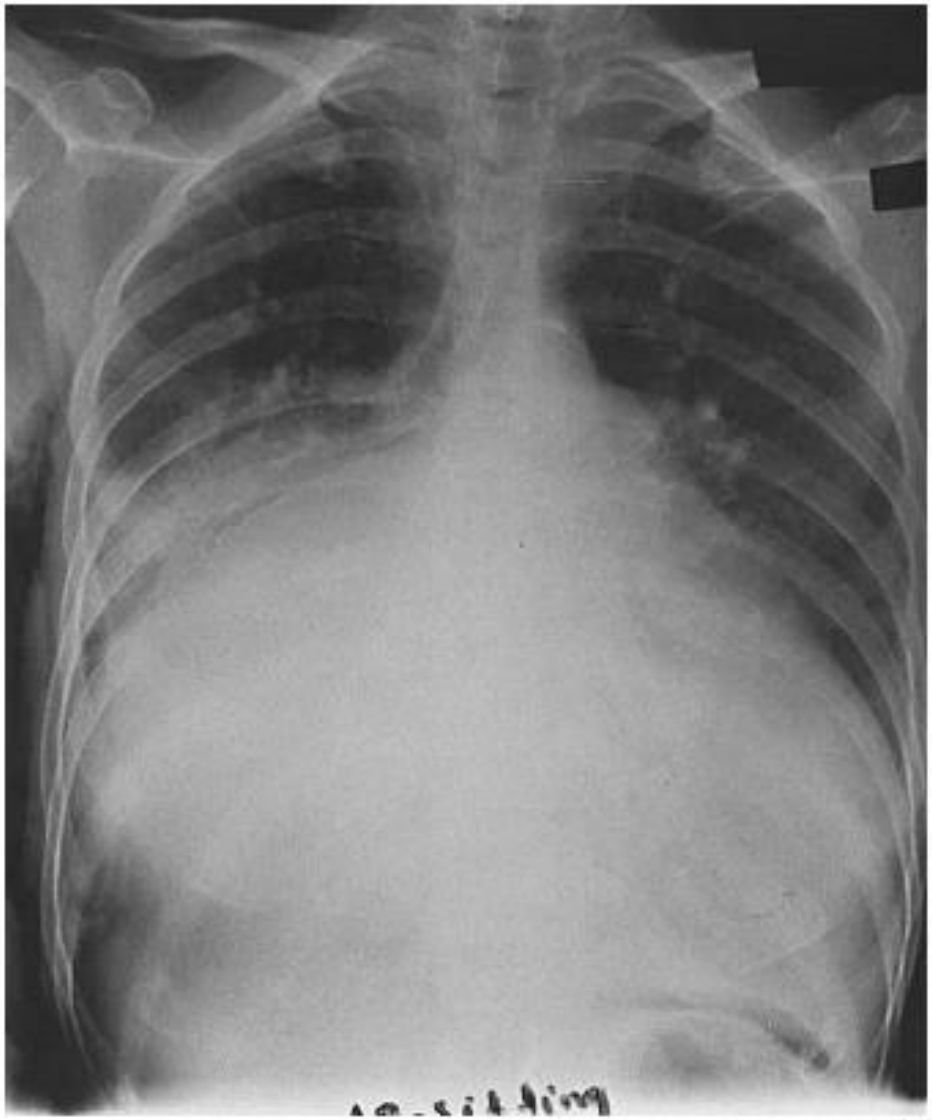


Fig 21.1

Case 21. This 65-year-old male had a long history of dyspnea on exertion, orthopnea, and bilateral ankle edema. This was his CXR (Fig. 21.1). Should a thoracocentesis be done?

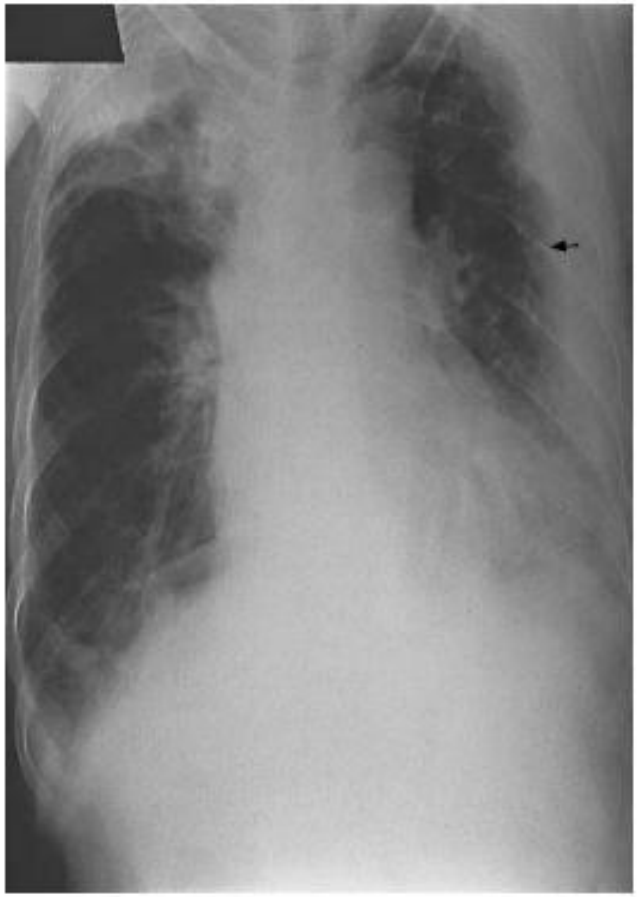


Fig. 21.2

CASE 21 SEVERE CARDIOMEGALY DUE TO END STAGE VALVULAR HEART DISEASE

The CXR shows very severe cardiomegaly (the normal cardiothoracic ratio is defined as less than 0.5). Both costophrenic angles show lucency due to aerated lung, making it unlikely that the patient has massive pleural effusions. The carina is also splayed indicating an enlarged left atrium due to severe mitral valve disease. Hence, in this patient, thoracocentesis should not be done. A simple way to confirm the presence of a pleural effusion is to take a lateral decubitus CXR. A free-flowing effusion will layer out (Fig. 21.2). However, the absence of layering on a lateral decubitus CXR does not preclude the presence of a significant pleural effusion as it may be loculated due to an empyema.

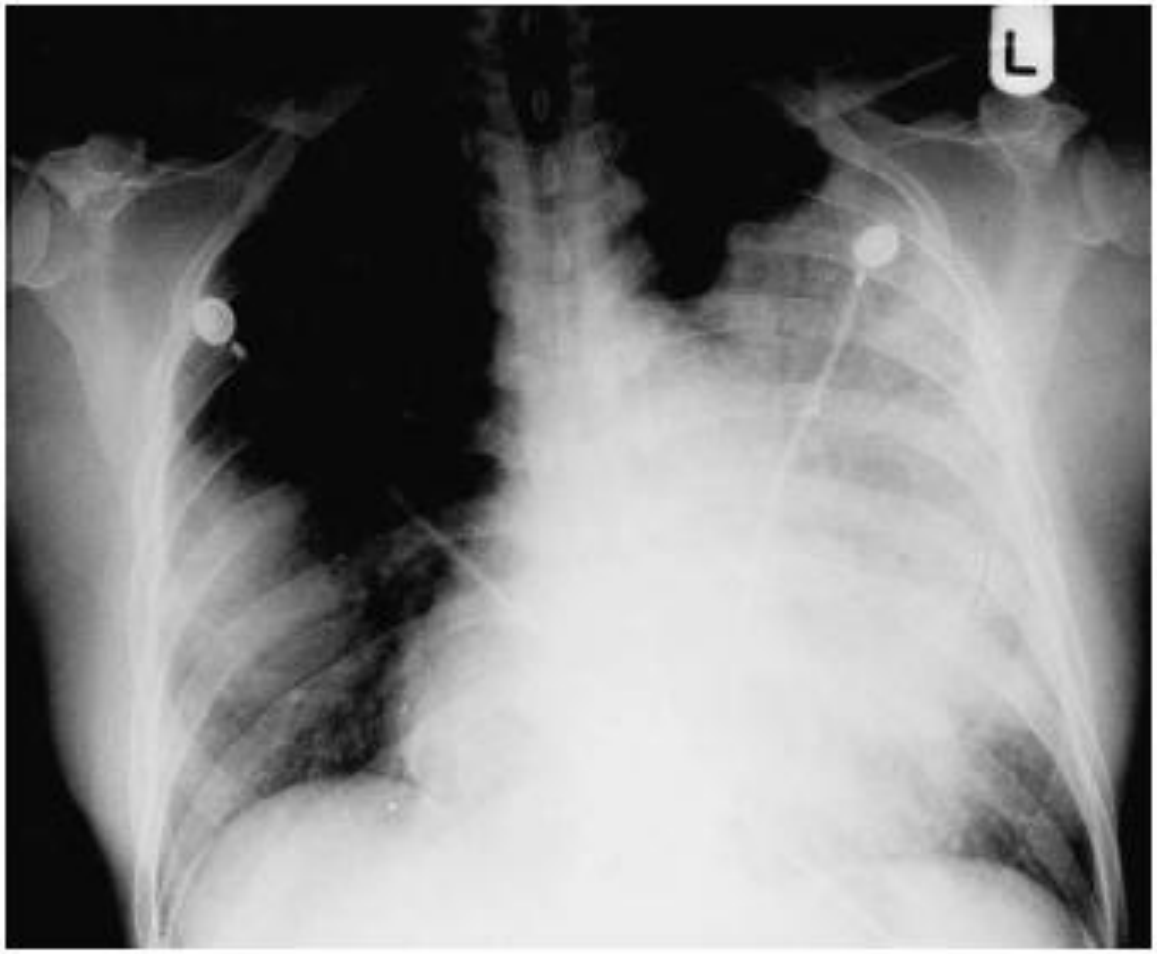


Fig. 22.1

Case 22. This 75-year-old female presented with acute respiratory failure. She had been sick for two weeks with fever, cough, and purulent sputum. This was her CXR (Fig. 22.1). What is the diagnosis?

Fig. 23.1

Case 23. A 30-year-old male presented with cough, shortness of breath and loss of weight over four months. This was his CXR (Fig. 23.1). What is the most likely diagnosis? What physical sign would be useful?

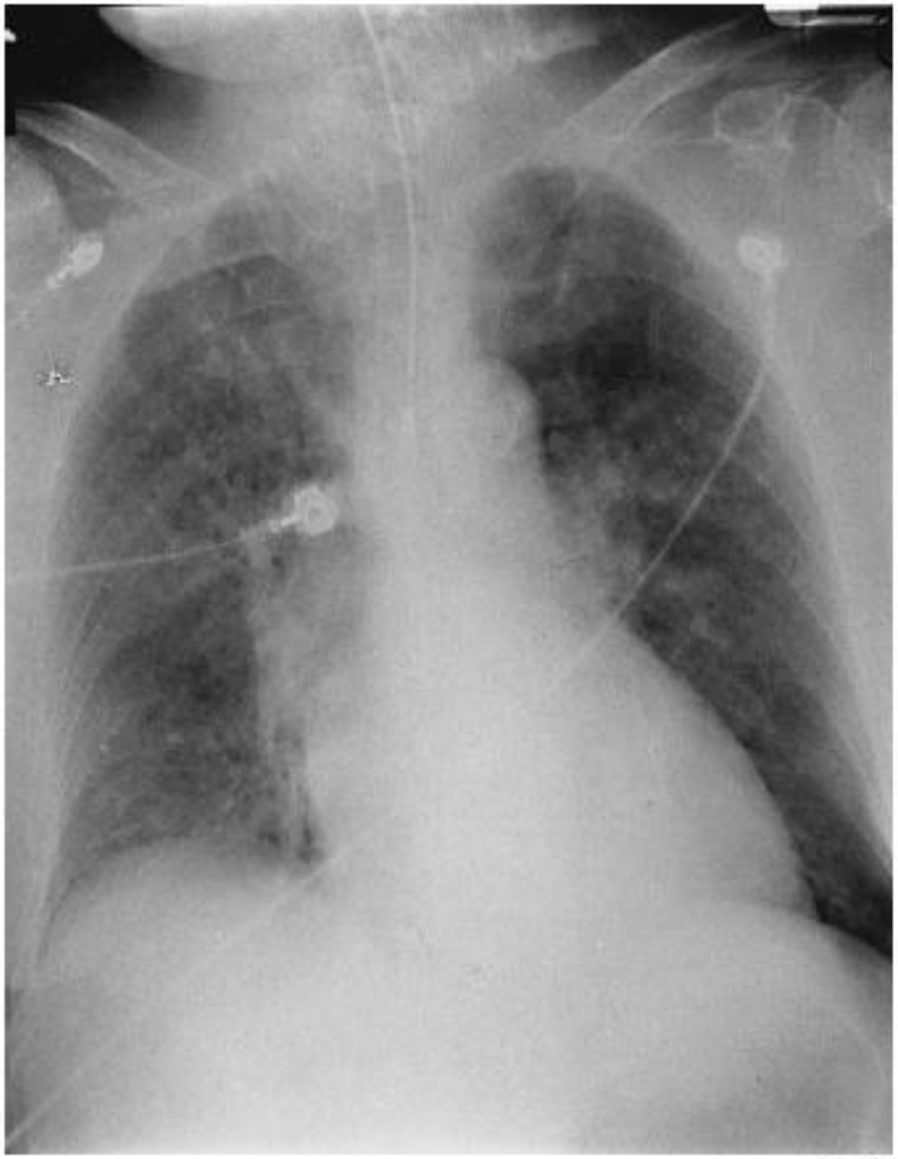


Fig. 25.1

Case 25. This was a routine CXR (Fig. 25.1) in an ICU patient who was admitted for aspiration pneumonia. Name the most obvious abnormality.

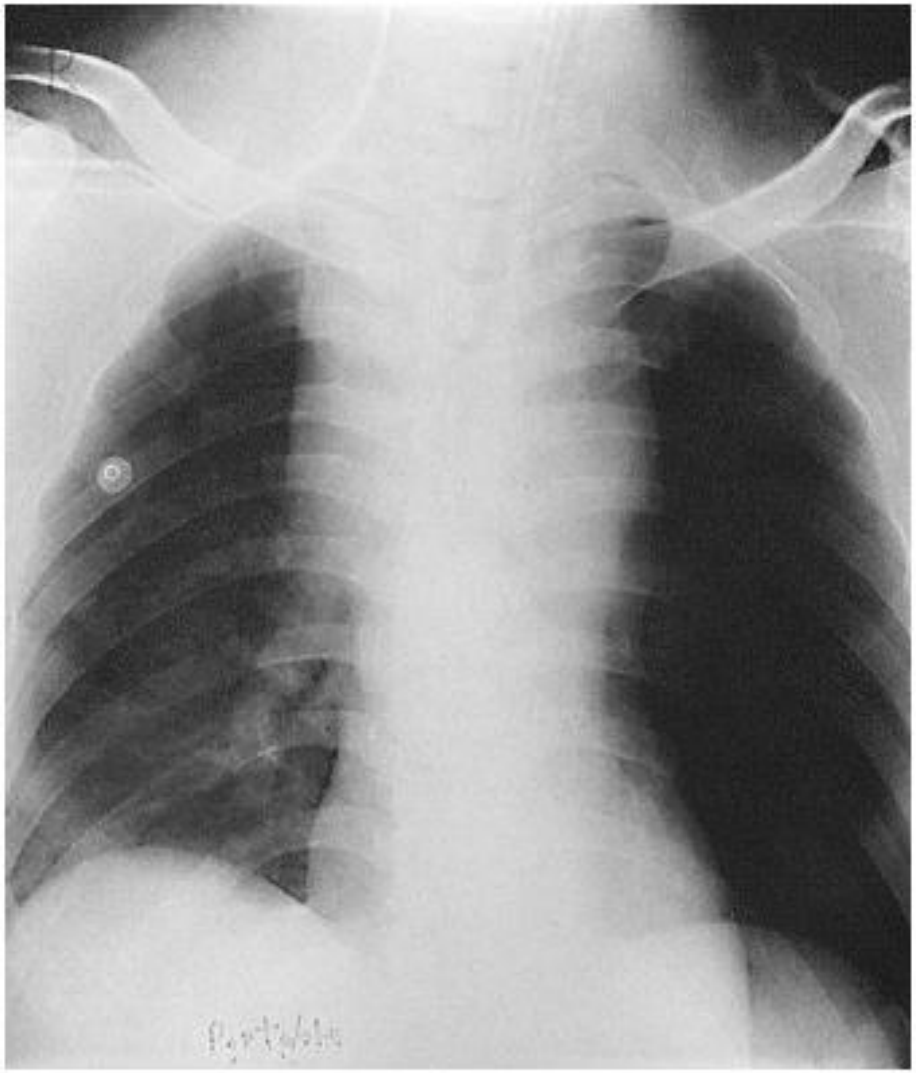


Fig. 26.1

Case 26. This was a routine CXR (Fig. 26.1) taken after placement of a subclavian central venous catheter.

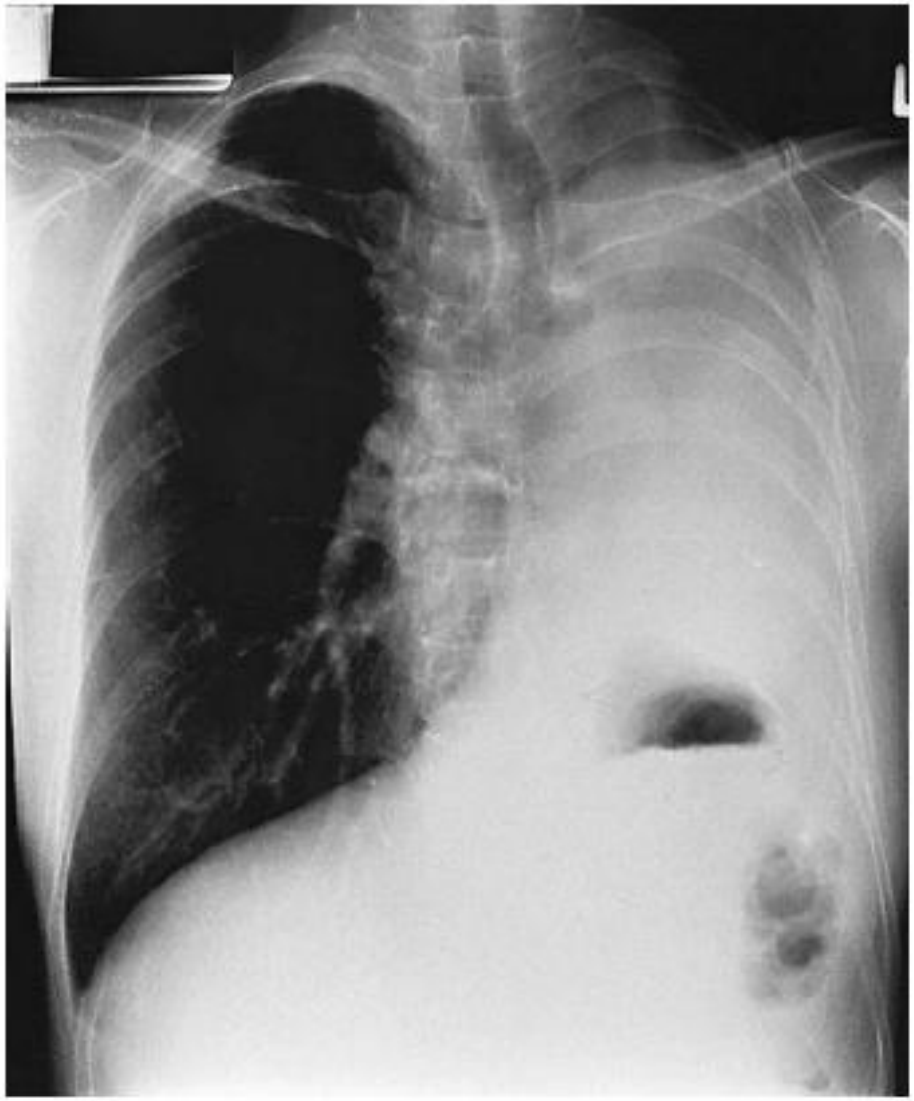


Fig. 27.1

Case 27. This patient was asymptomatic. Past history was significant for previous thoracotomy. The CXR is shown (Fig. 27.1).

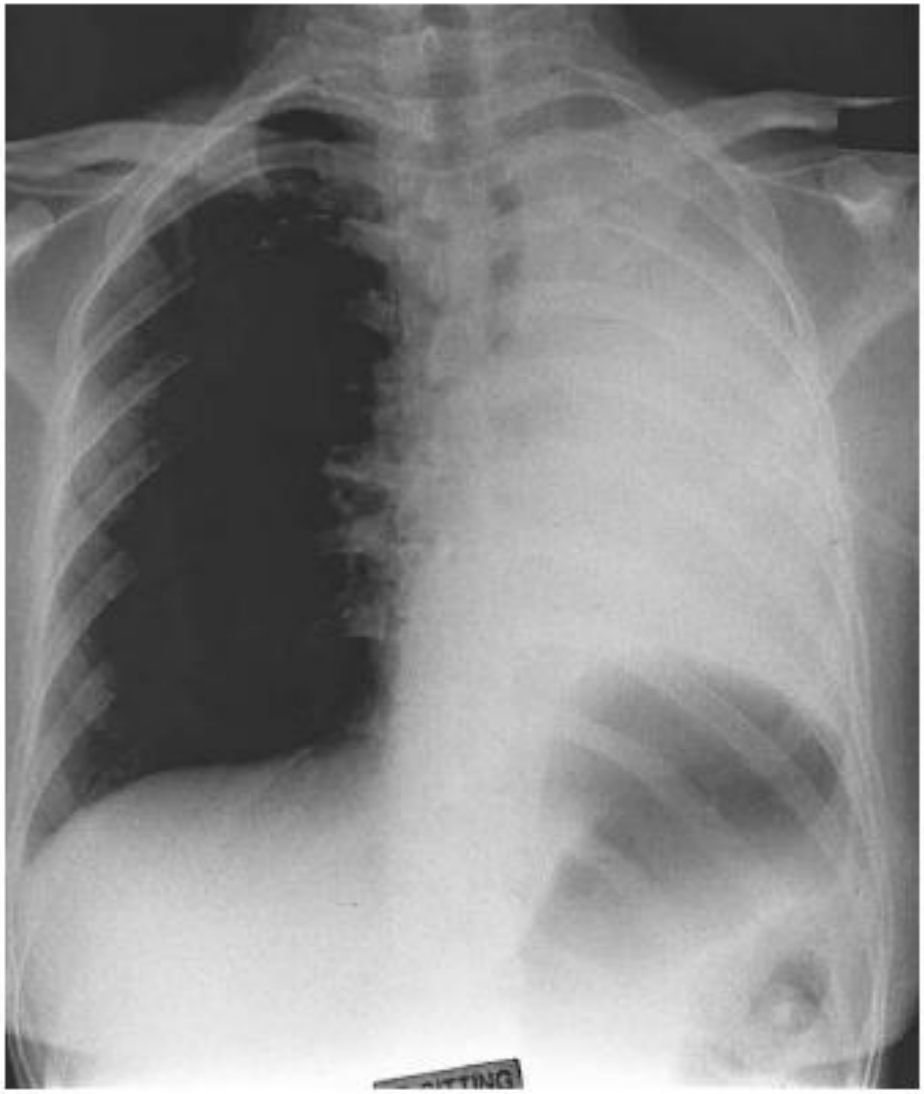


Fig. 28.1

Case 28. This patient presented with recent onset of dyspnea and streaky hemoptysis. The CXR is shown (Fig. 28.1). What is the radiological diagnosis?

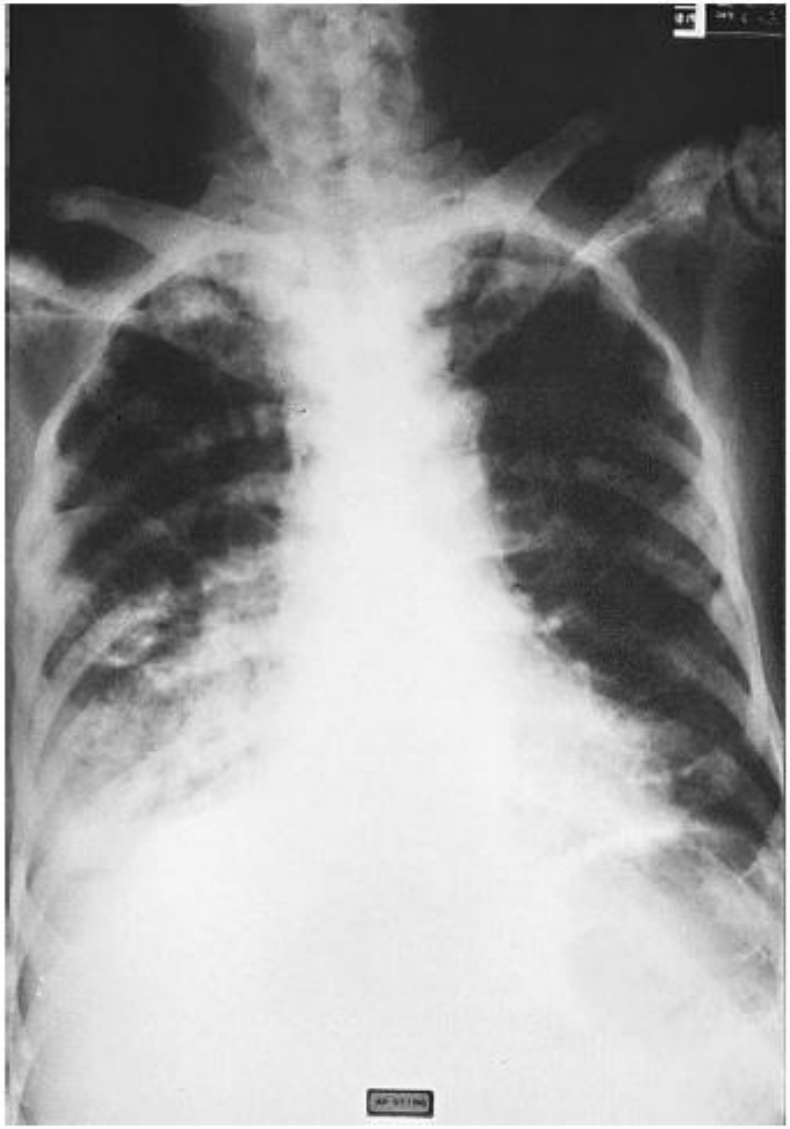


Fig. 29.1

Case 29. This elderly male patient had recent loss of weight and bone pains. What is the most obvious CXR abnormality (Fig. 29.1)? Name the differential diagnoses?

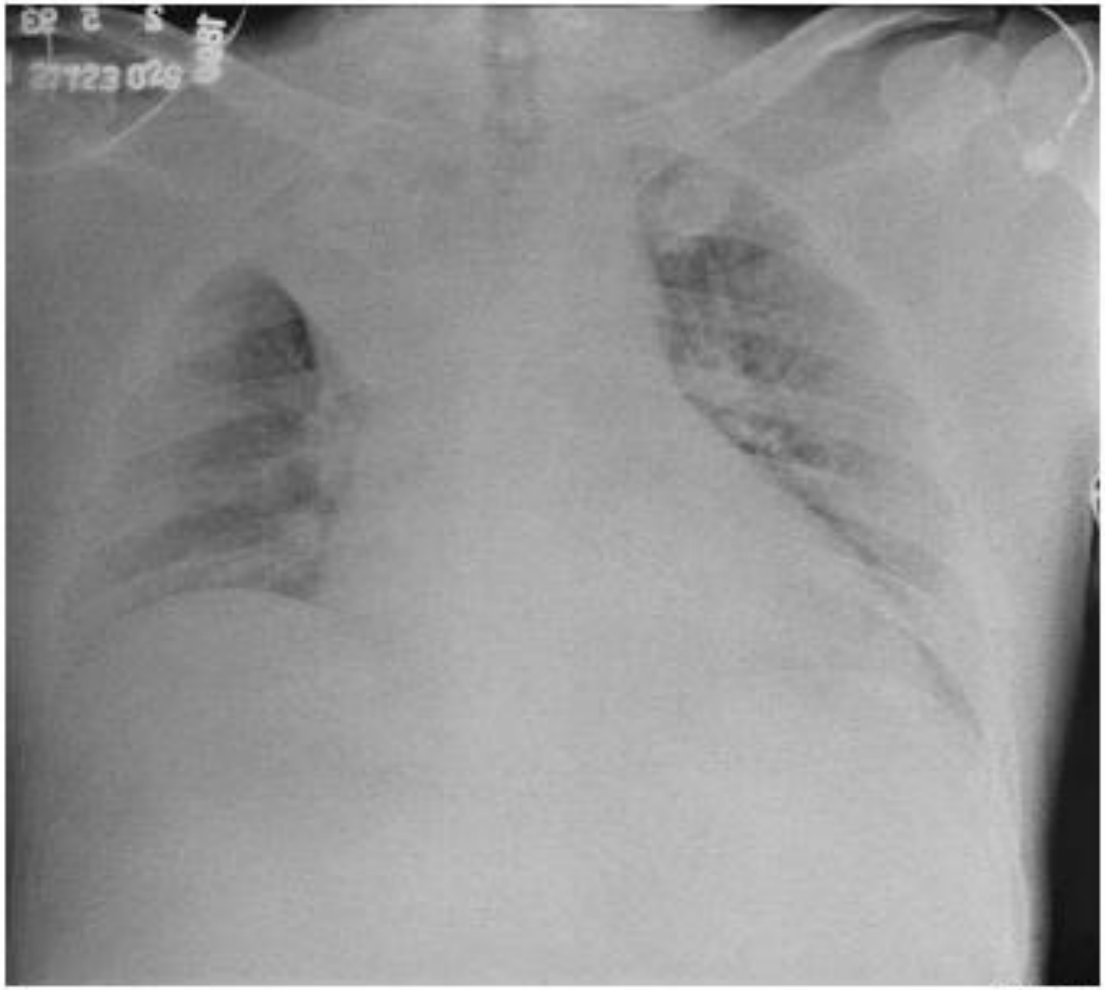


Fig. 30.1

Case 30. This elderly male had recent onset of streaky hemoptysis. Name the radiological sign (Fig. 30.1).

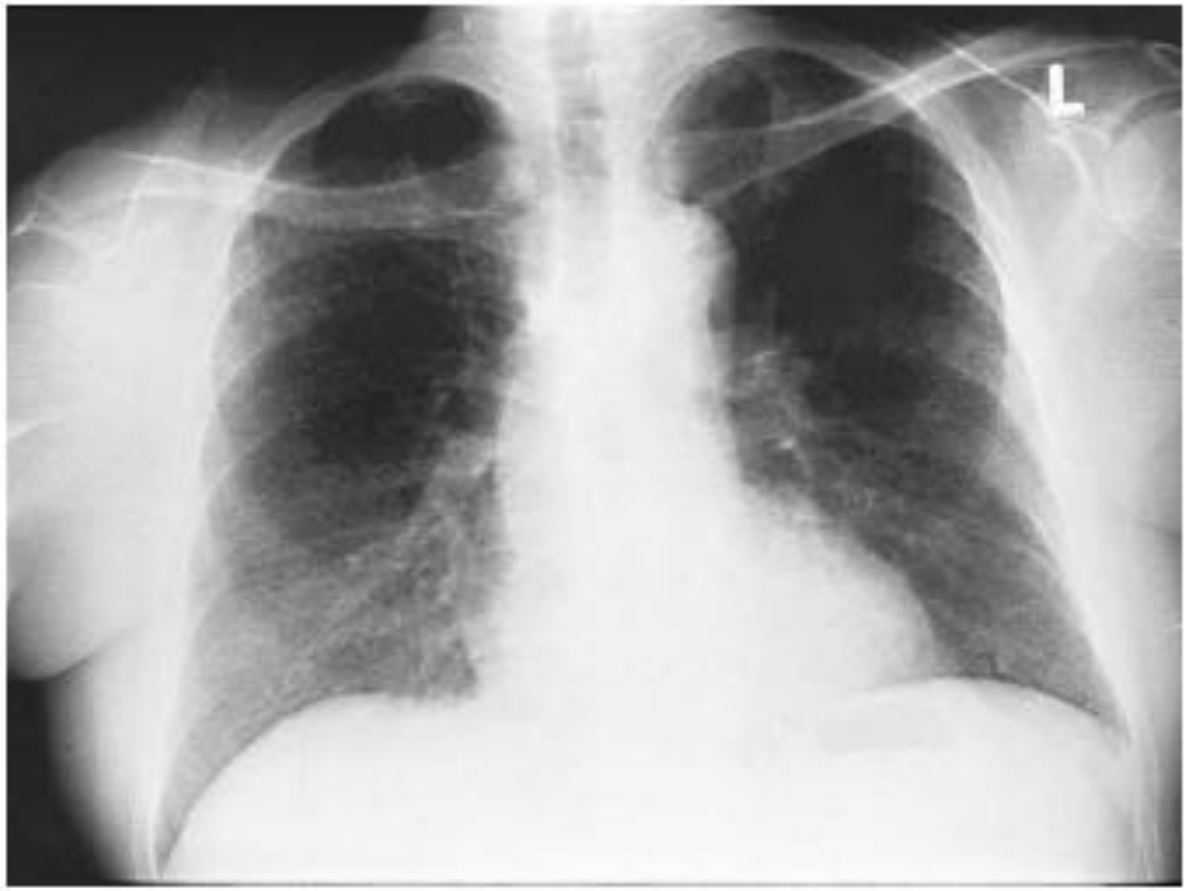


Fig. 31.1

Case 31. This diabetic presented with prolonged pyrexia of uncertain origin (PUO). Describe the CXR abnormality (Fig. 31.1).

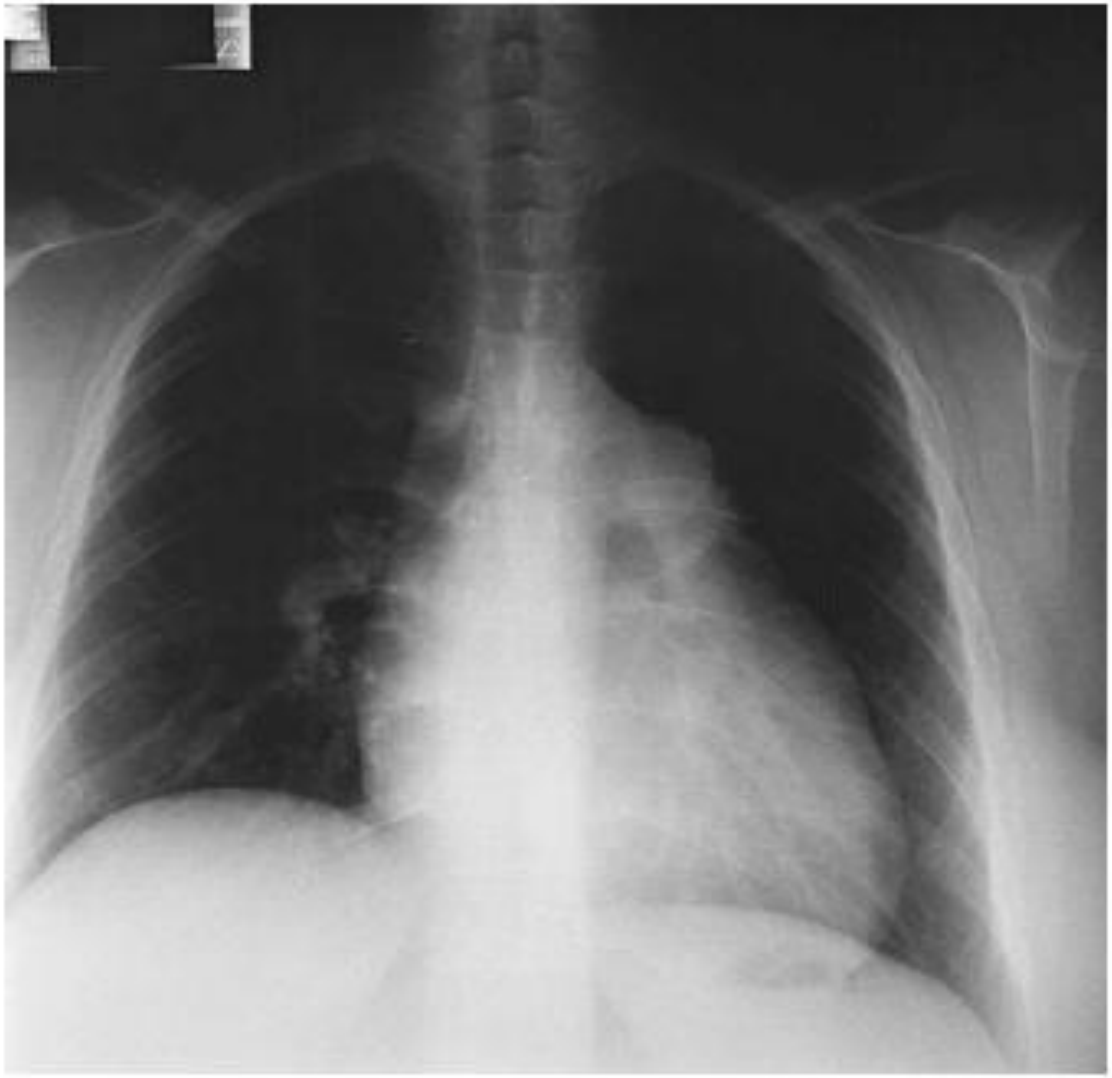


Fig. 32.1

Case 32. This 25-year-old female had tiredness and shortness of breath for the past year. Describe the CXR (Fig. 32.1).

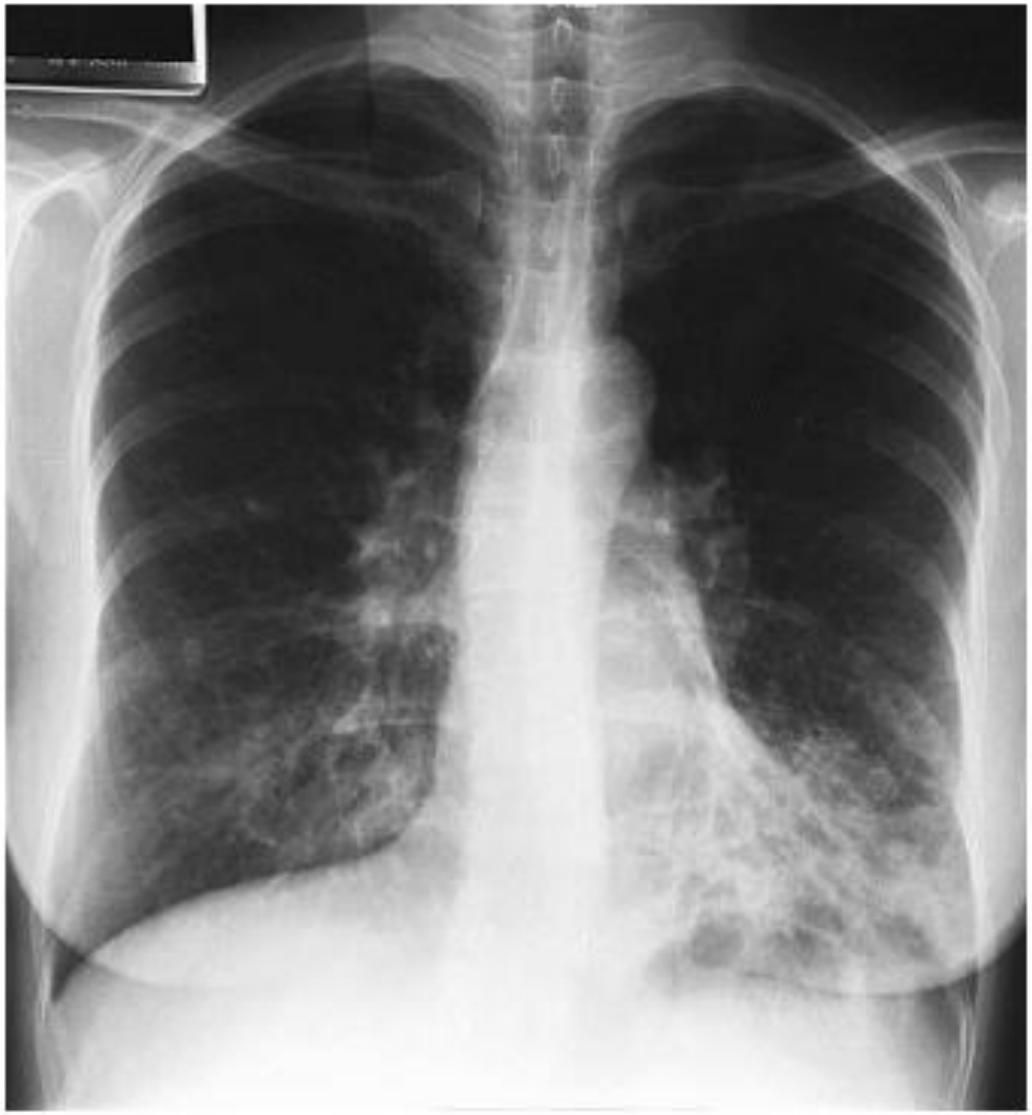


Fig. 34.1

Case 34. This middle-aged female had chronic productive cough for many years. What is the diagnosis (Fig. 34.1)?

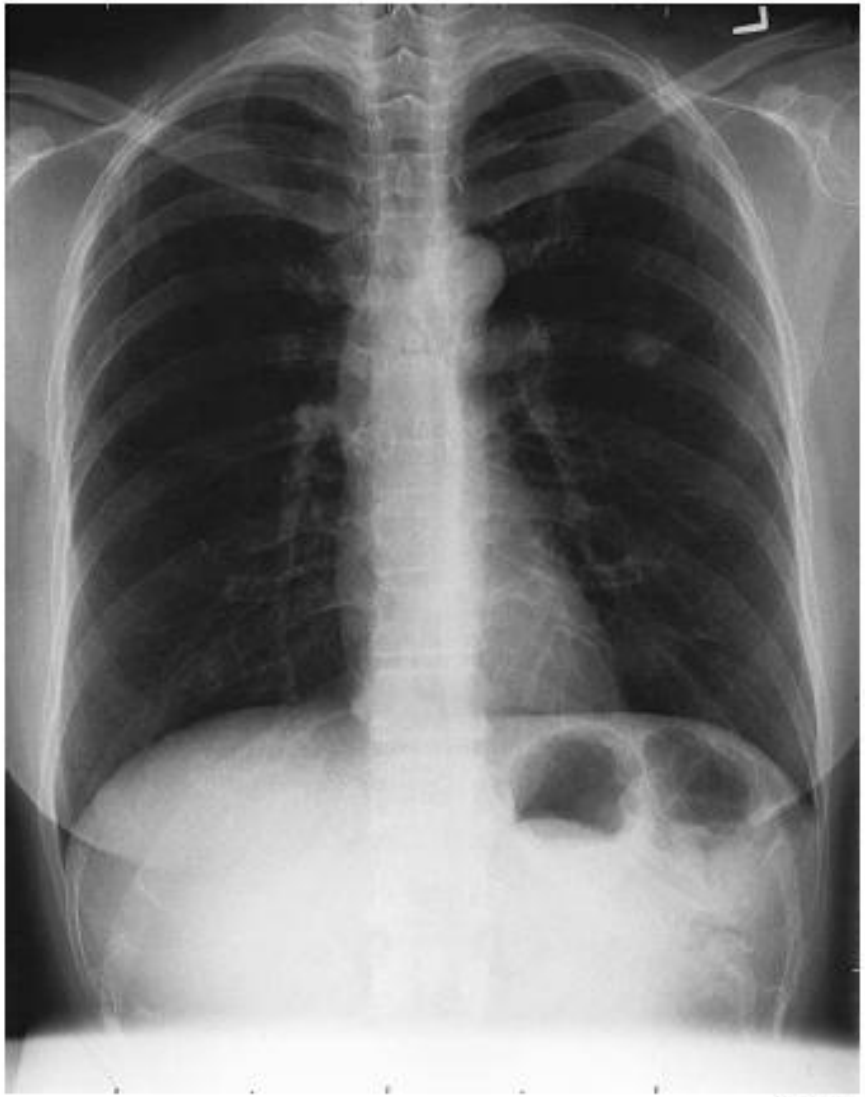


Fig. 35.1

Case 35. This middle-aged female smoker was asymptomatic. Describe the CXR abnormality (Fig. 35.1).

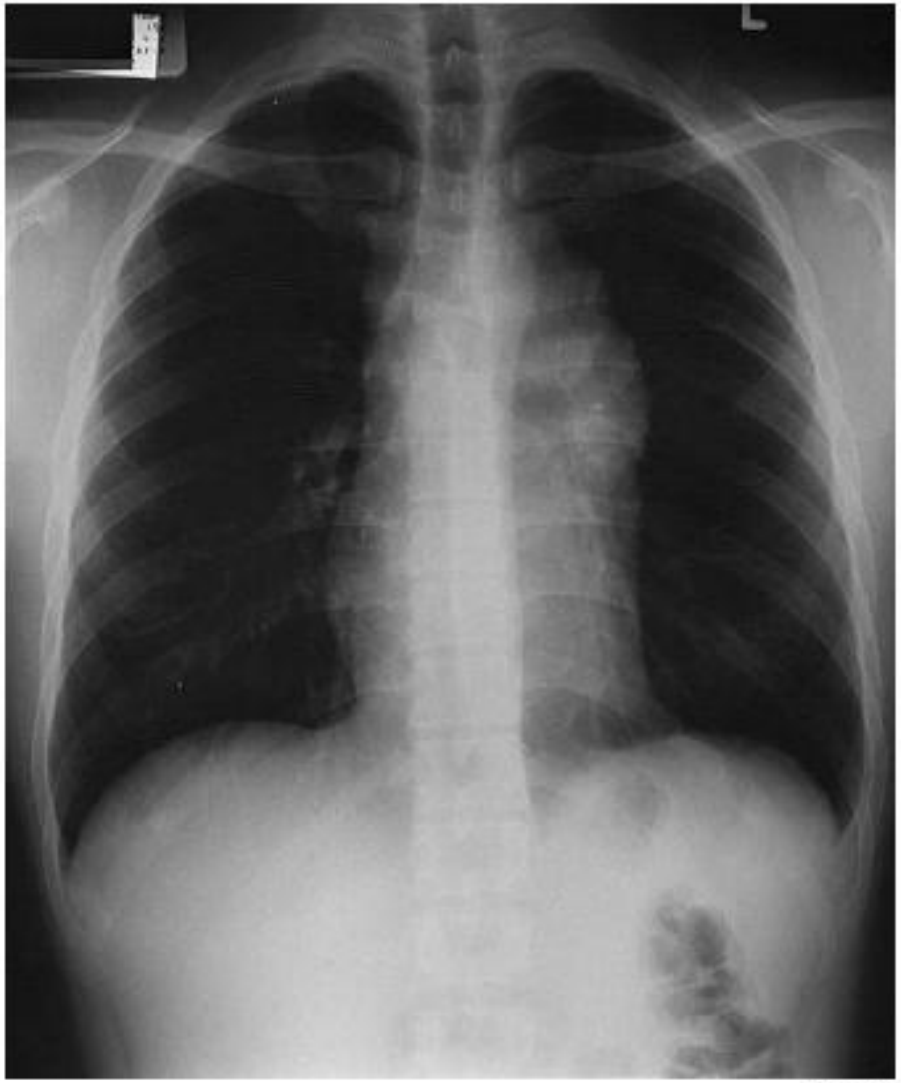


Fig. 36.1

Case 36. This middle-aged male had loss of weight and bilateral cervical lymphadenopathy. His CXR is shown (Fig. 36.1).

Fig. 37.1

Case 37. This elderly male was asymptomatic. What is the abnormality on his CXR (Fig. 37.1)? What is the cause?

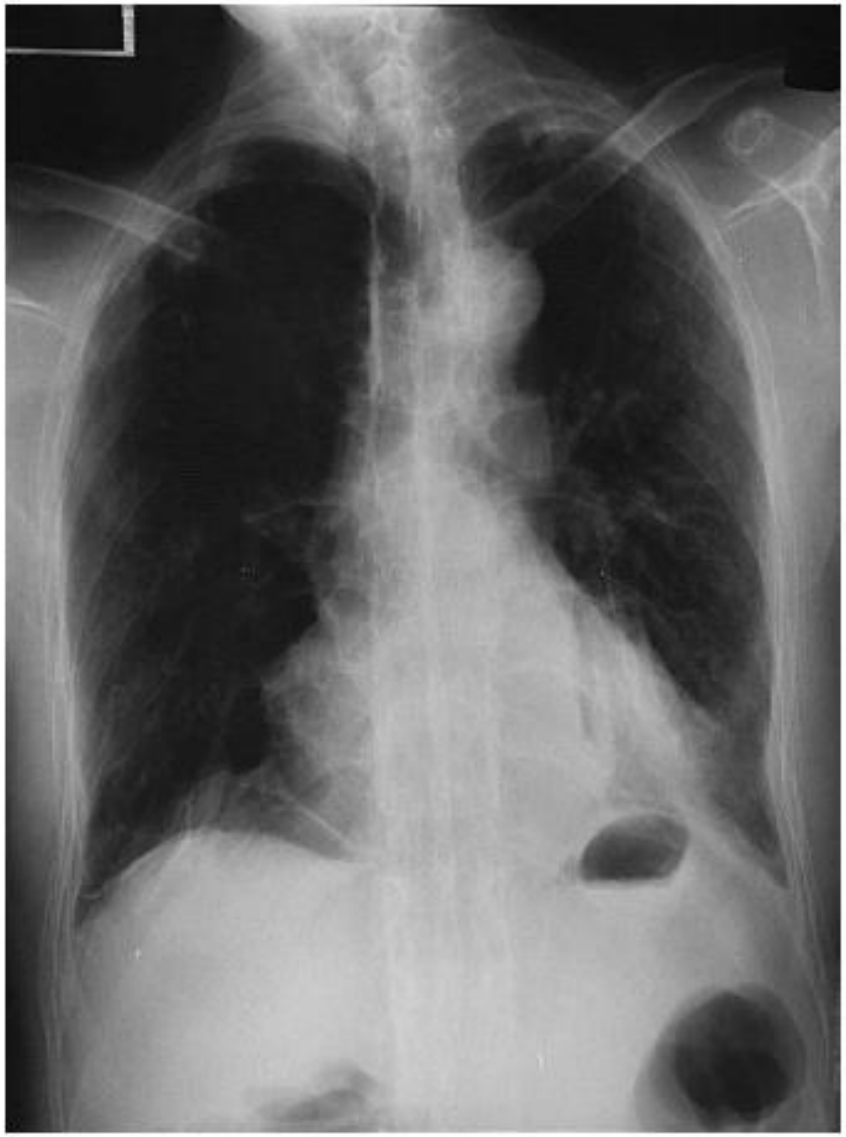


Fig. 39.1

Case 39. This middle-aged male was asymptomatic. What is the CXR abnormality (Fig. 39.1)?

Fig. 39.2

CASE 39 BAMBOO SPINE APPEARANCE DUE TO ANKYLOSING SPONDYLITIS

The most obvious finding is calcification of the interspinous ligaments causing a bamboo spine appearance on CXR, typical of ankylosing spondylitis. This disorder typically affects young males with predominant involvement of the axial spine and the sacroiliac joints (Fig. 39.2). Upper lobe fibrosis may also result. The lung function abnormality that results is usually restrictive. There is a very strong association with HLA-B27.

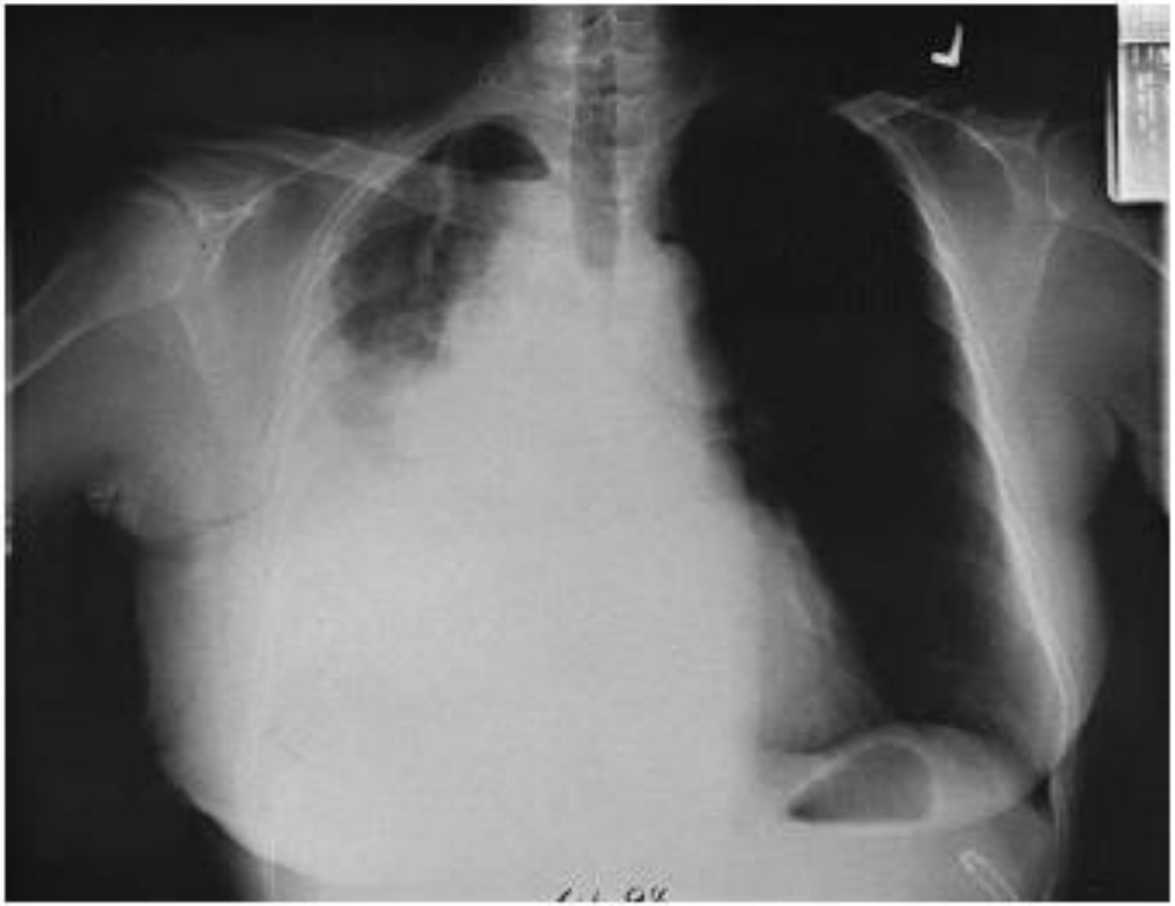


Fig. 40.1

Case 40. This middle-aged female smoker had hemoptysis and loss of weight. What is the CXR abnormality (Fig. 40.1)?

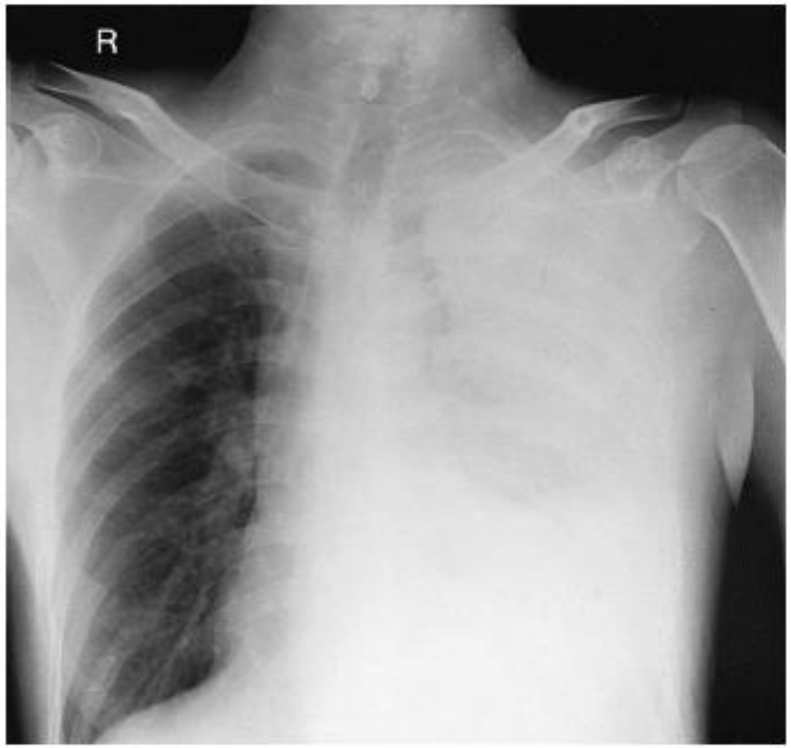


Fig. 41.1

Case 41. This middle-aged male presented with fever, productive cough, and shortness of breath of two weeks' duration. This was his CXR (Fig. 41.1).

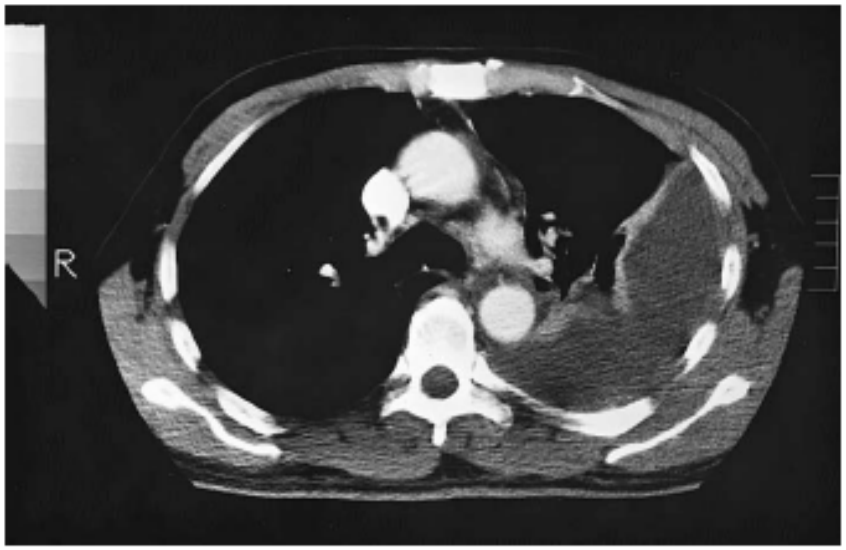


Fig. 41.2

CASE 41 MASSIVE LEFT PLEURAL EFFUSION

The CXR shows a dense homogeneous whiteout of almost the entire left hemithorax associated with a shift of mediastinum to the right, consistent with a massive left pleural effusion. Collapse and previous pneumonectomy may cause a similar appearance except that the mediastinum is shifted to the ipsilateral side. All patients with unilateral pleural effusion should be considered for thoracocentesis to determine the cause of the effusion. The commonest cause of a massive pleural effusion is involvement from lung cancer. In this patient, thoracocentesis yielded frank pus due to an empyema. CT thorax (Fig. 41.2) shows enhancement of both the parietal and visceral pleura, also called the split pleura sign. This results from intense inflammation of the pleura.

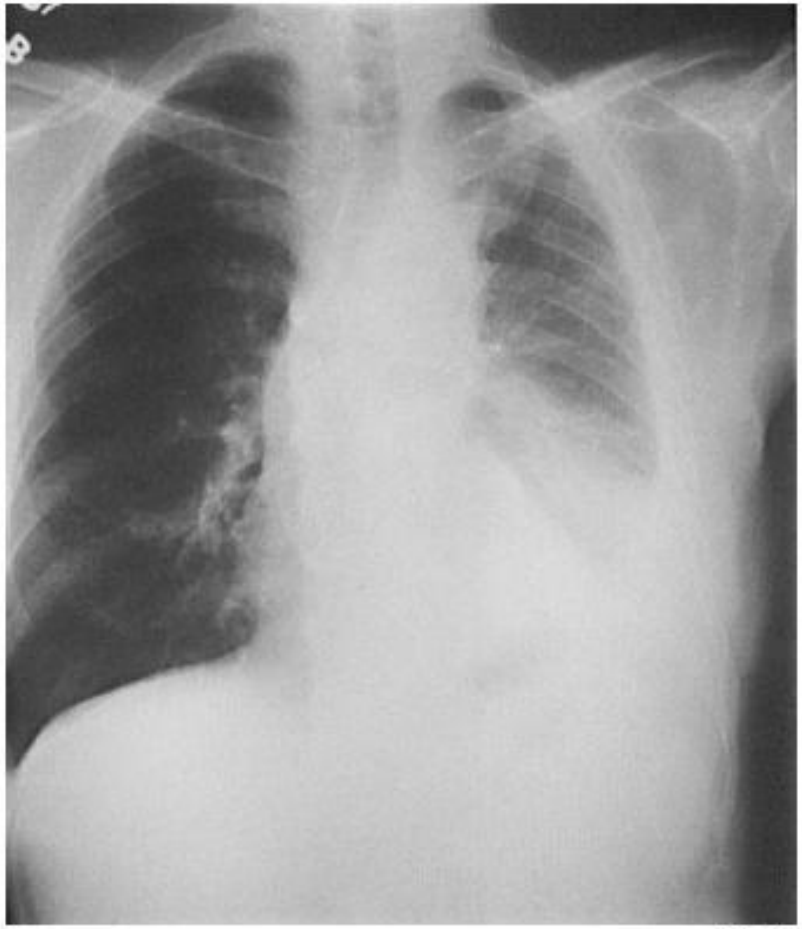


Fig. 42.1

Case 42. This elderly male presented with left-sided persistent chest pain and loss of weight for the past few months. He used to work as an electrician on-board a ship for many years. This was his CXR (Fig. 42.1).

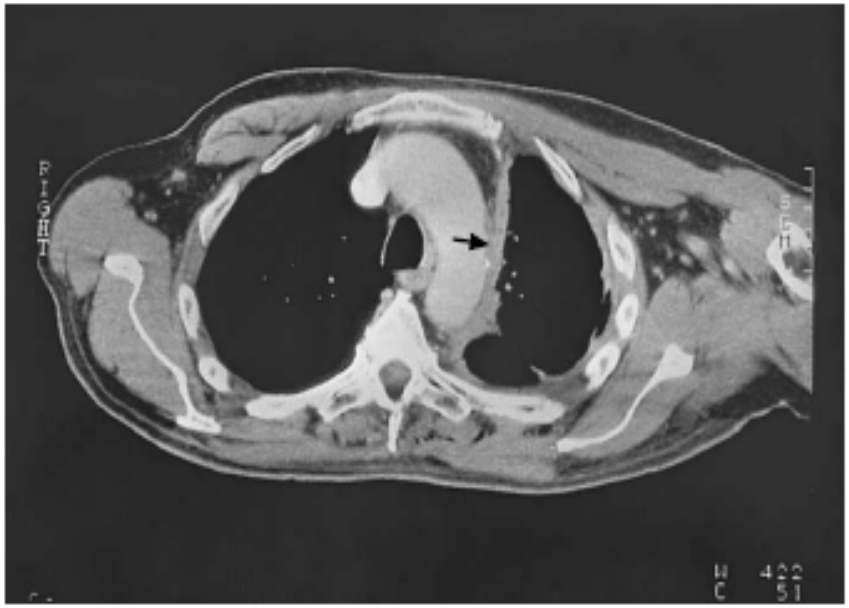


Fig. 42.2

CASE 42 MALIGNANT MESOTHELIOMA

The CXR shows a small left pleural effusion with blunting of the left costophrenic angle. The left hemithorax is smaller than the right. The mediastinum is also widened due to tumor creeping along the pleura. All these are features of malignant mesothelioma, which is a primary malignancy of the pleura and typically spreads along the pleura as demonstrated on CT (Fig. 42.2).

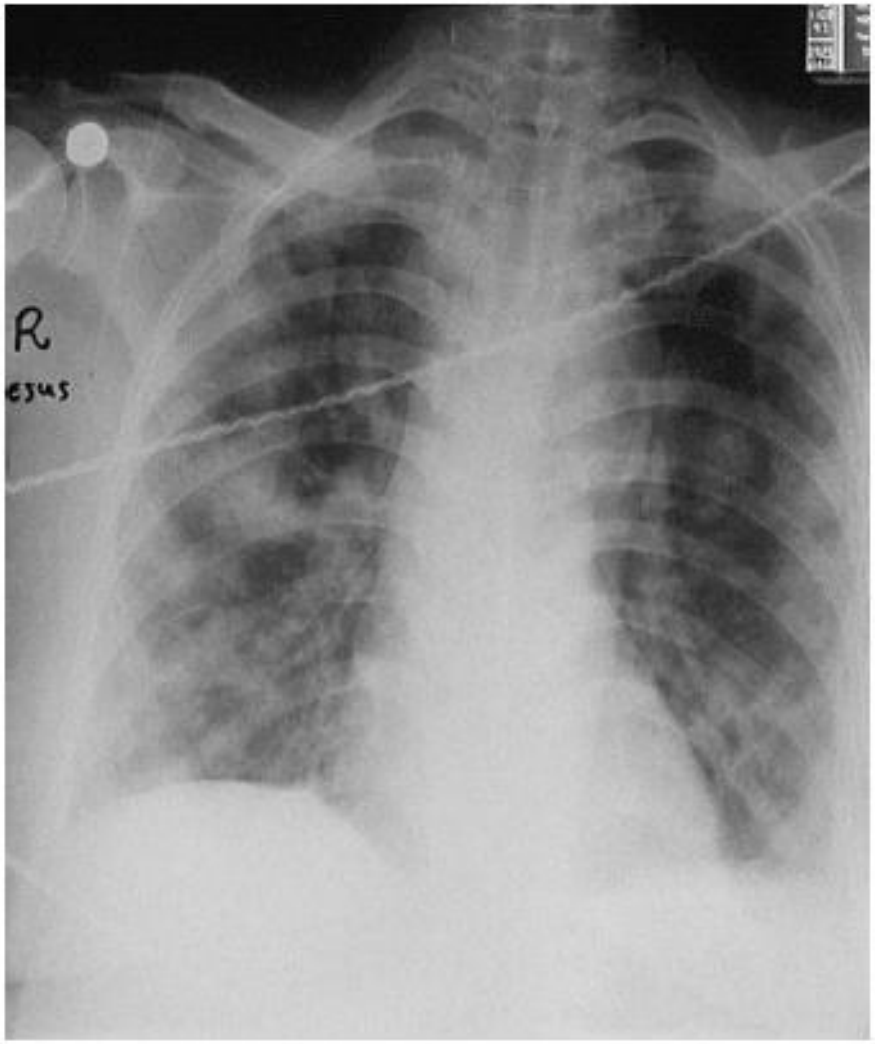


Fig. 46.1

Case 46. This was a 48-year-old male with fever of one week's duration. He was extremely ill and hypotensive requiring inotrope therapy. His CXR is shown (Fig. 46.1).

Fig. 50.1

Case 50. This patient with a history of carcinoma of the colon presented with chronic cough and loss of weight. The CXR is shown (Fig. 50.1).

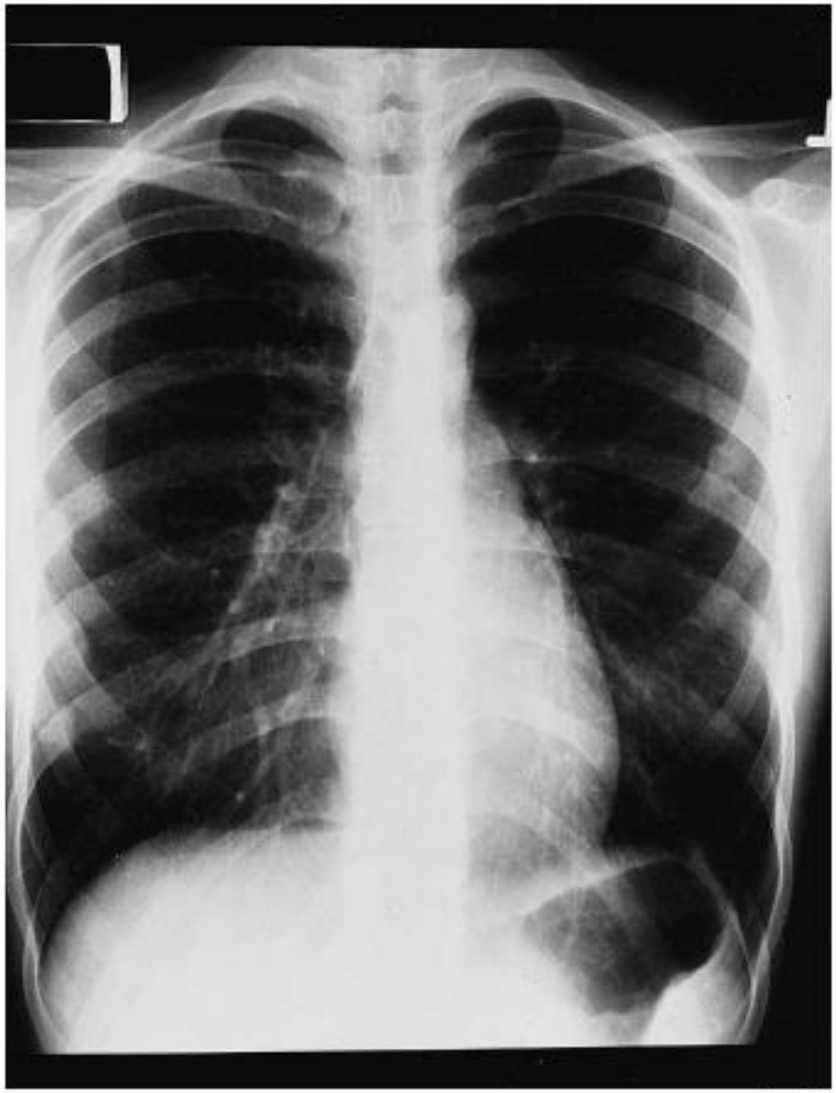


Fig. 52.1

Case 52. This young female had been coughing for the past few weeks. She also had right-sided pleuritic chest pain. Describe the most obvious CXR abnormality (Fig. 52.1).

Fig. 53.1

Case 53. This middle-aged female presented with a one-year history of exertional dyspnea. Examination reveals clubbing, and chest auscultation revealed velcro-like crepitations. Her CXR is shown (Fig. 53.1).

Fig. 54.1

Case 54. This middle-aged woman had symptoms of reflux. This was her CXR (Fig. 54.1).

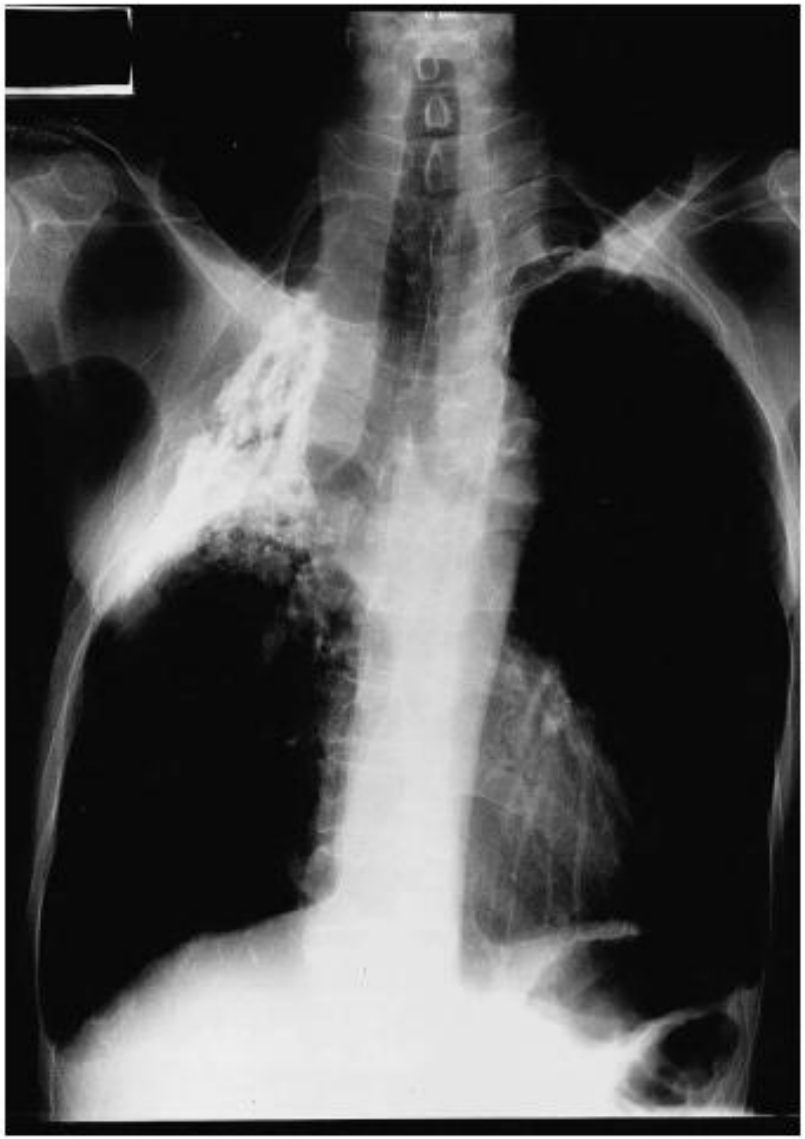


Fig. 55.1

Case 55. This patient gave a history of tuberculosis in the 1950s for which surgery was performed. The CXR is shown (Fig. 55.1).

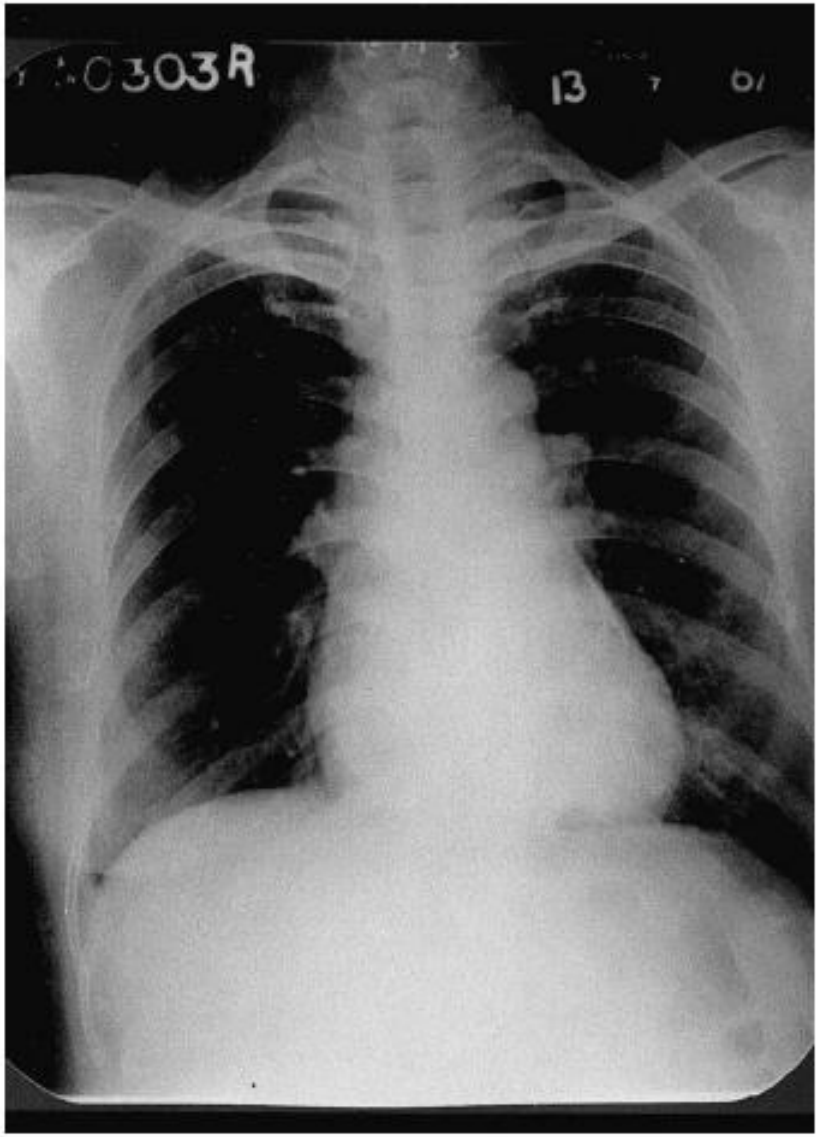


Fig. 58.1

Case 58. This elderly patient is asymptomatic. He gave a history of a prolonged severe viral illness previously. This is his CXR (Fig. 58.1).

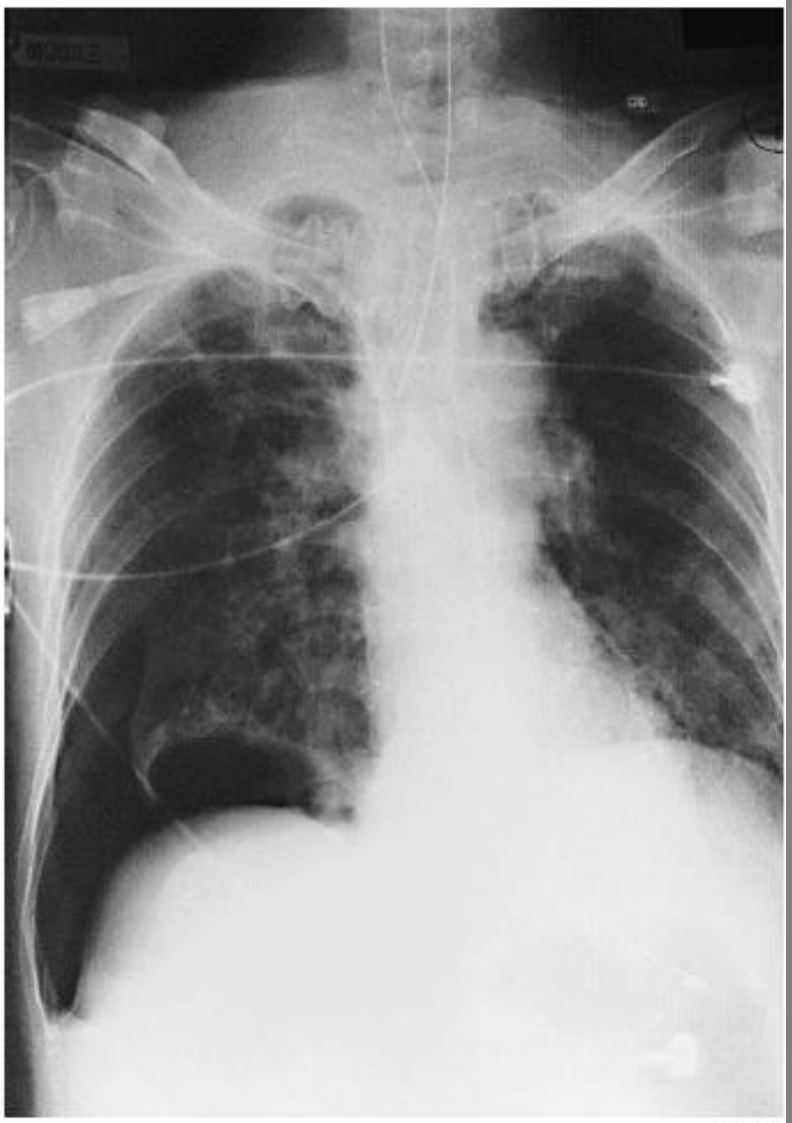


Fig. 60.1

Case 60. This patient was admitted to the ICU for septic shock requiring mechanical ventilation and inotropic support. This CXR was taken after admission (Fig. 60.1).