MEDIASTINUL

Dr C Baicus

www.baicus.ro

anatomia

mijlocul toracelui

apertura toracica

cavitatile pleurale

stern

torace posterior

diafragm

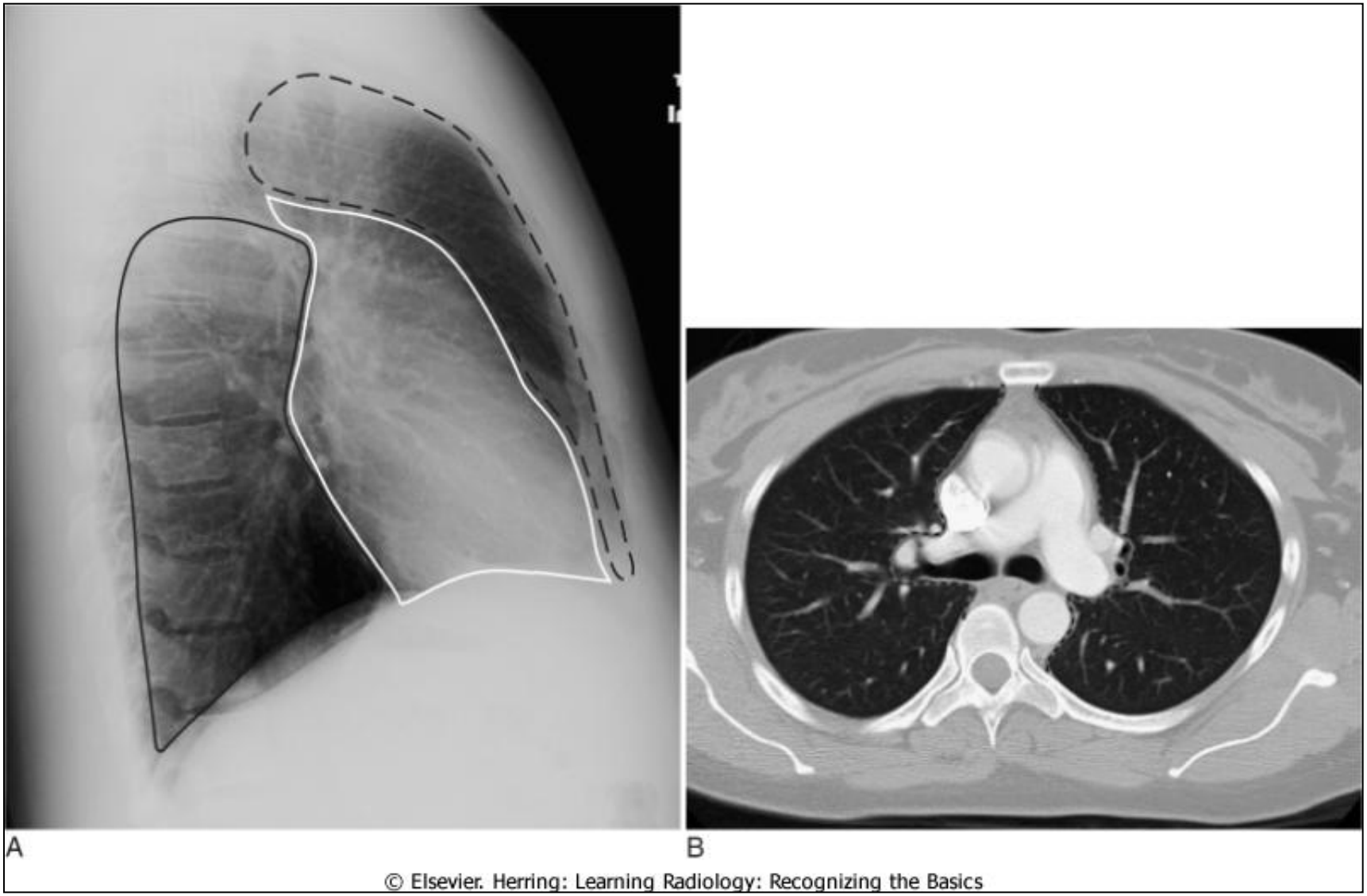
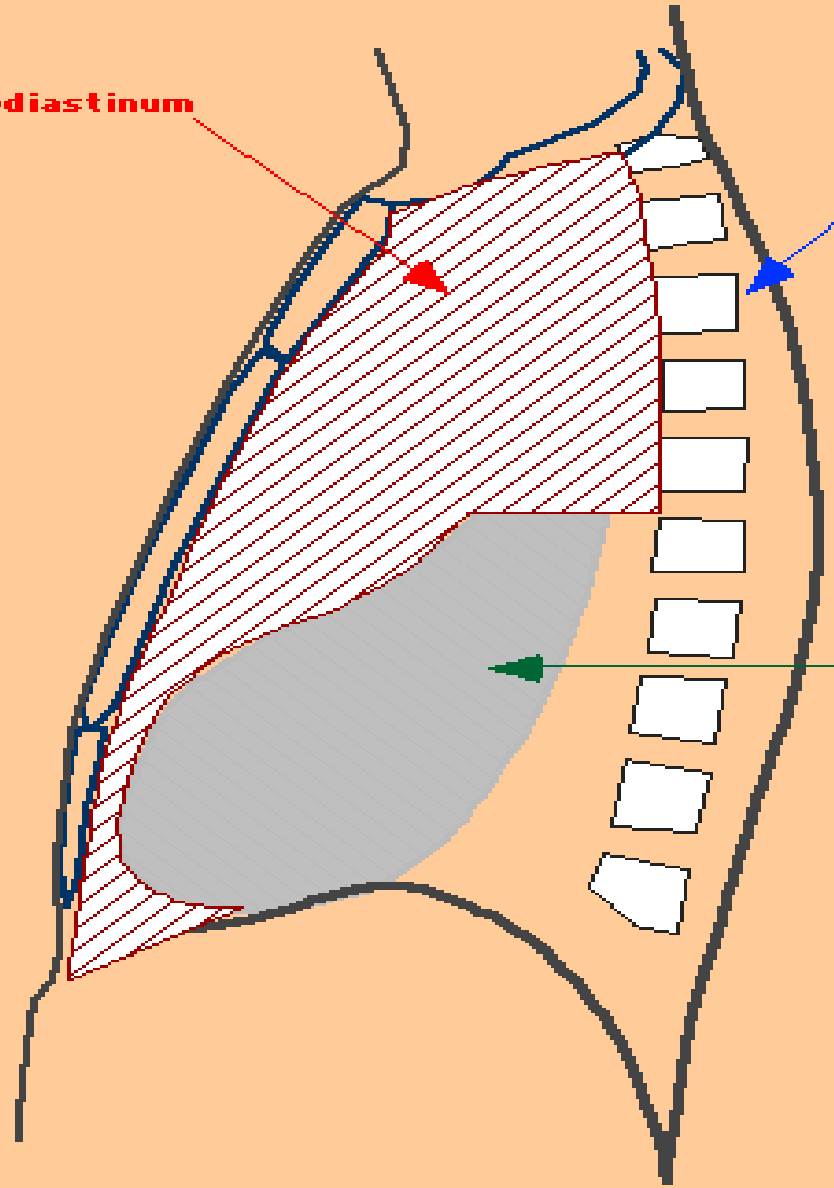


Figure 13-1 The mediastinum can be arbitrarily subdivided into three compartments: anterior, middle, and posterior, with each containing its favorite set of diseases. A, The anterior mediastinum is the compartment that extends from the back of the sternum to the anterior border of the heart and great vessels (broken black outline). The middle mediastinum is the compartment that extends from the anterior border of the heart and aorta to the posterior border of the heart and the origins of the great vessels (white outline). The posterior mediastinum is the compartment that extends from the posterior border of the heart to the anterior border of the vertebral column. (solid black outline) For practical purposes, however, it is considered to extend into the paravertebral gutters. B, An axial CT scan shows the mediastinal structures contained within the broken black outline.



Anterosuperior mediastinum

- Goiter
- Aneurysm
- Parathyroid tumor
- Esophageal tumor
- Angiomatous tumor
- Teratoma
- Thymoma
- Pericardial cyst
- Lymphoma
- Morgagni hernia
- Lipoma

traheea
vase mari

Posterior mediastinum

- Neurogenic tumor
- Aneurysm
- Enteric cyst
- Esophageal tumor, divertic.
- Bronchogenic tumor
- Abces TBC (Pott)

corpi vertebrali
ao descendenta
duct toracic
vv azygos&hemi
lanturi nn simpatice

Middle mediastinum

- Lymphoma
- Lymph node hyperplasia
- Bronchogenic tumor
- Bronchogenic cyst

inima
vase mari
traheea
bronhii pr.
esofag
n.frenic
n.vag

Common diagnostic possibilities of mediastinal masses The differential diagnosis of a mediastinal mass depends upon the anatomic compartment in which it arises. Redrawn from Baue, AE, et al. Glenn's Thoracic and Cardiovascular Surgery. 5th ed. Appleton & Lange, Norwalk, CT, 1991.

Sdr. mediastinal

- Semne si simptome ←

  iritatia/compresia elementelor din mediastin
- Frecvent:
  - durere toracica (n. ic, n.frenic)
  - tuse (n.vag)
  - raguseala (laringeu recurent stg.)
  - dispnee
- mai putin frecvent:
  - stridor - pareza diafragm
  - disfagie
  - Horner (mioza, enoftalmie, ptoza palpebrala, congestie hemifata)

Sdr. specifice

- Timom: miastenia gravis (50%)

- Sdr. VCS:
  - edem in pelerina
  - jugulare turgescente
  - cianoza cefalica
  - edem papilar
  - circulatie colaterala

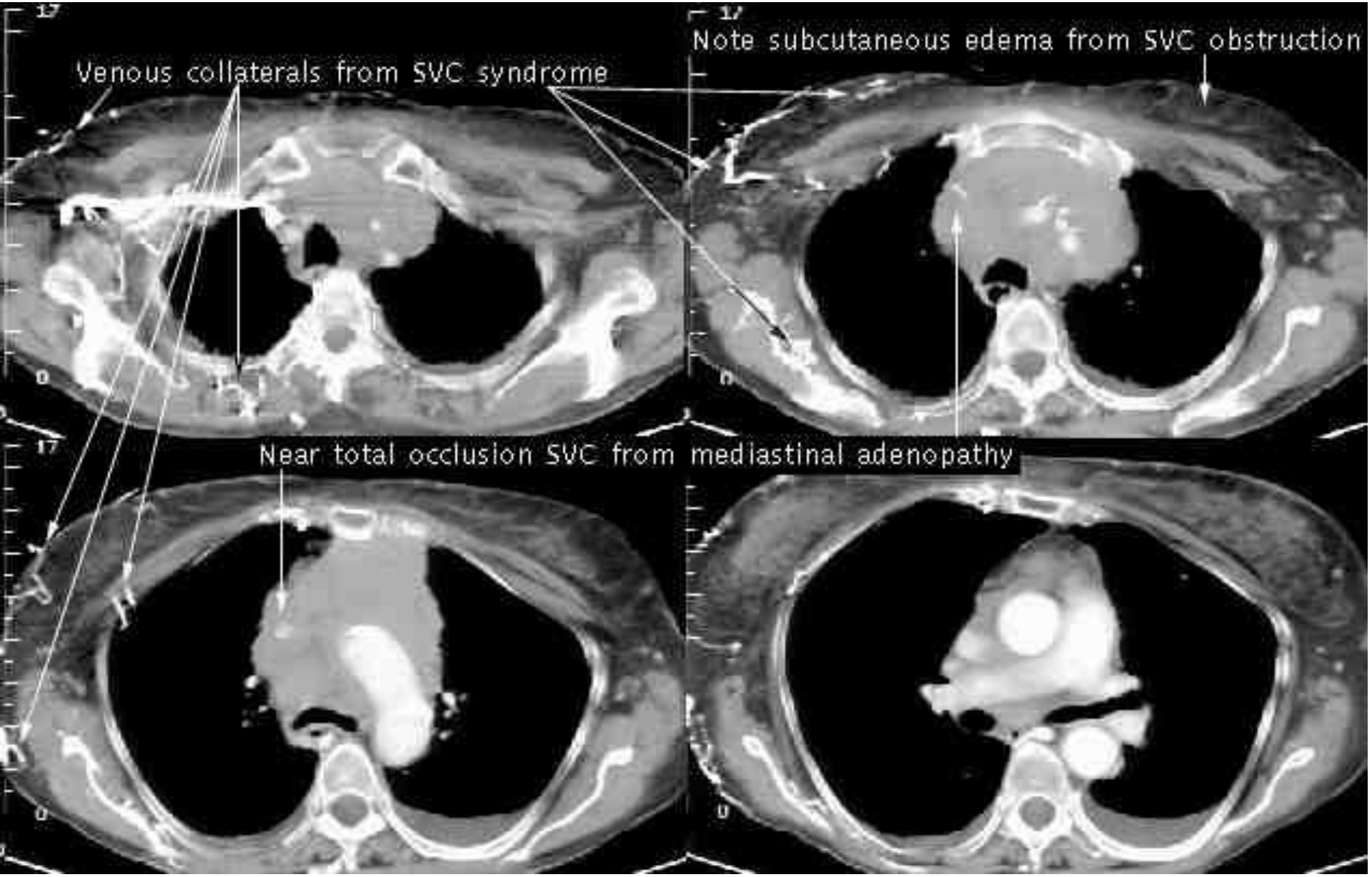

Venous collaterals from SVC syndrome
Note subcutaneous edema from SVC obstruction
Near total occlusion SVC from mediastinal adenopathy

Figure 1 Photographs of the patient showing the reduction in swelling of the face, neck and upper extremities

Chee CE *et al*. (2007) Superior vena cava syndrome: an increasingly frequent complication of cardiac procedures
Nat Clin Pract Cardiovasc Med **4:** 226–230 doi:10.1038/ncpcardio0850

nature CLINICAL PRACTICE
CARDIOVASCULAR
MEDICINE

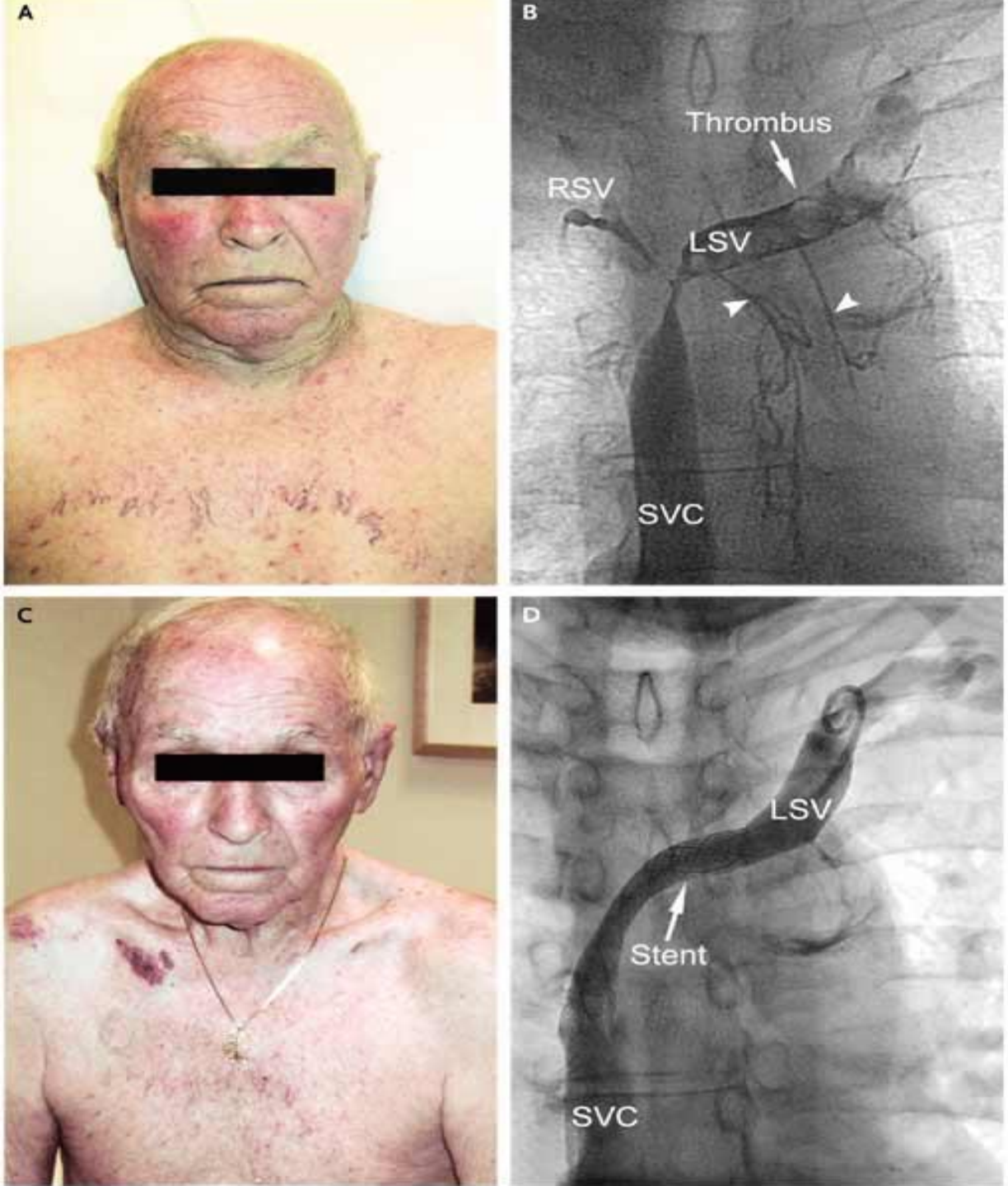
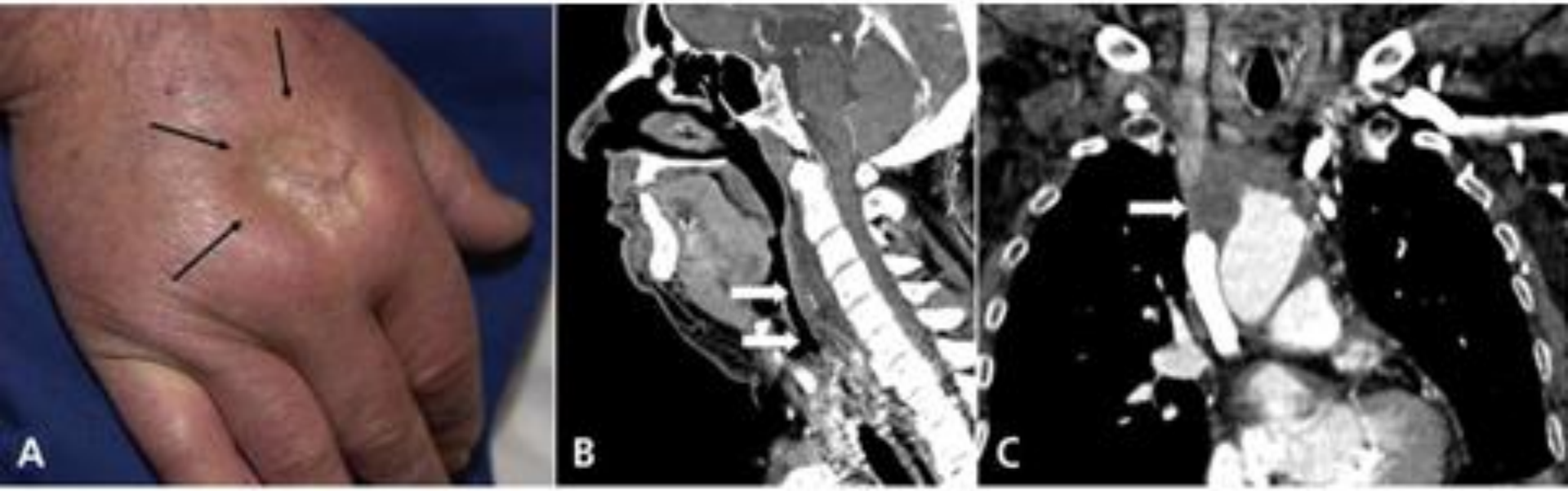

A
B
Thrombus
RSV
LSV
SVC
C
D
LSV
Stent
SVC

Figure 1: (A) Swelling in the hand of a 72-year-old man with signs of pitting edema (A, arrows)



Landis, B. N. et al. CMAJ 2009;180:355

CMAJ·JAMC

- Majoritatea maselor mediastinale:
  - asimptomatice, sau
  - simptomatologie generala (febra, scadere ponderala)

matitate sternala, interscapulo-vertebrala

tumori

- Neganglionare
  - embrionare (benigne sau maligne)
  - tesut conjunctiv
    - neurogene (mediast.post) - benigne
    - sarcoame, fibrosarcoame
  - timus, tiroida
- Ganglionare
  - limfom
  - cancer pulmonar
  - histoplasmoza

- TBC
- sarcoidoza

diagnostic

- Rx. fata + profil
- CT
- mediastinoscopie, toracotomie

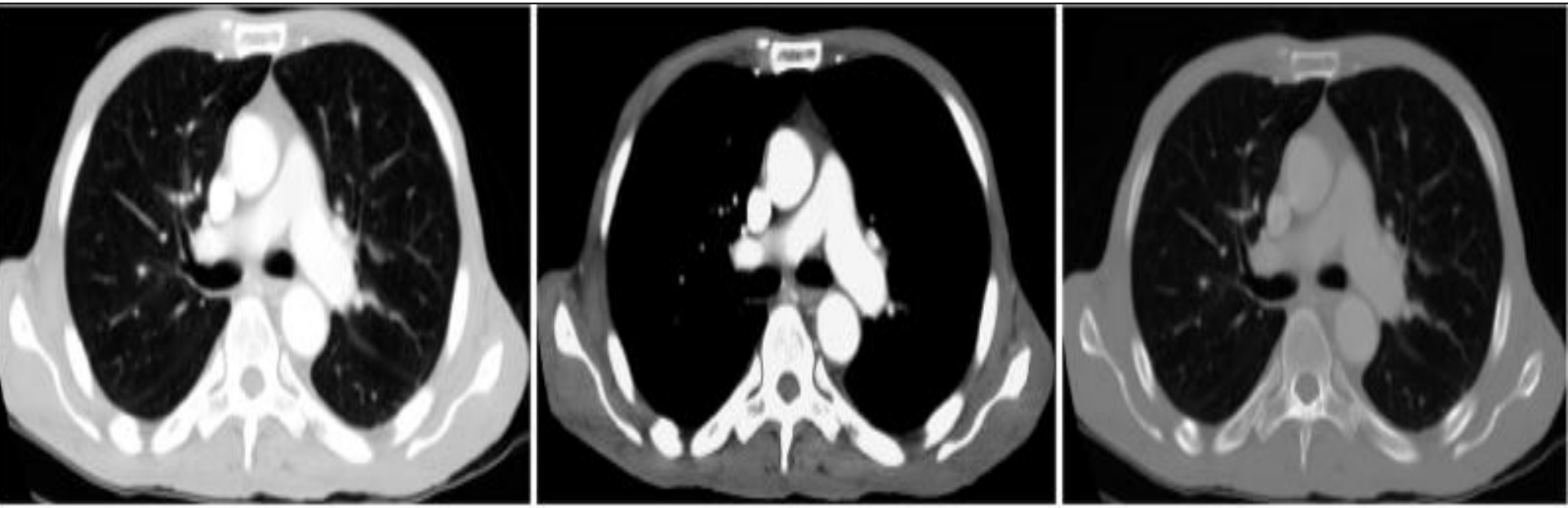
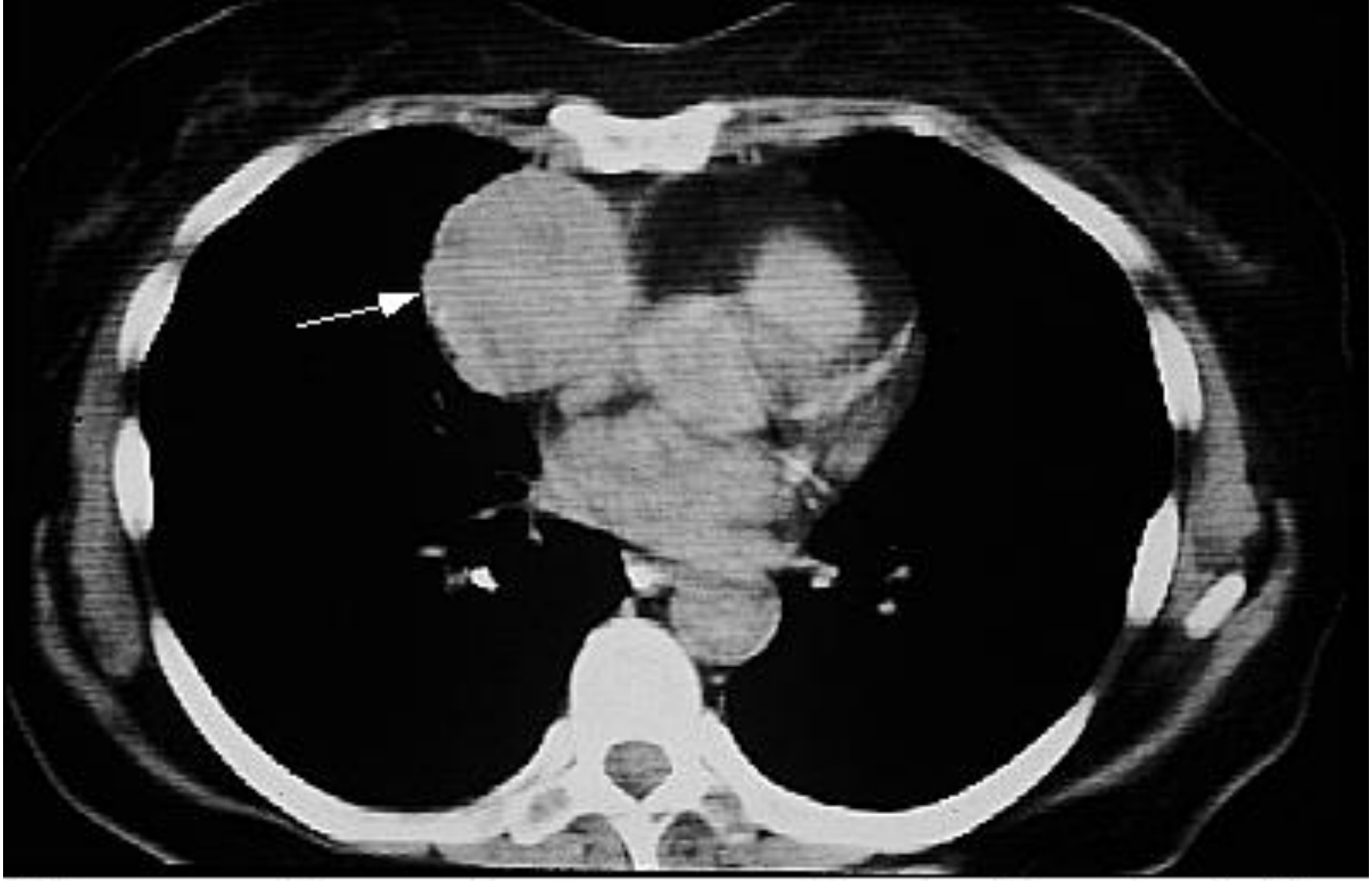
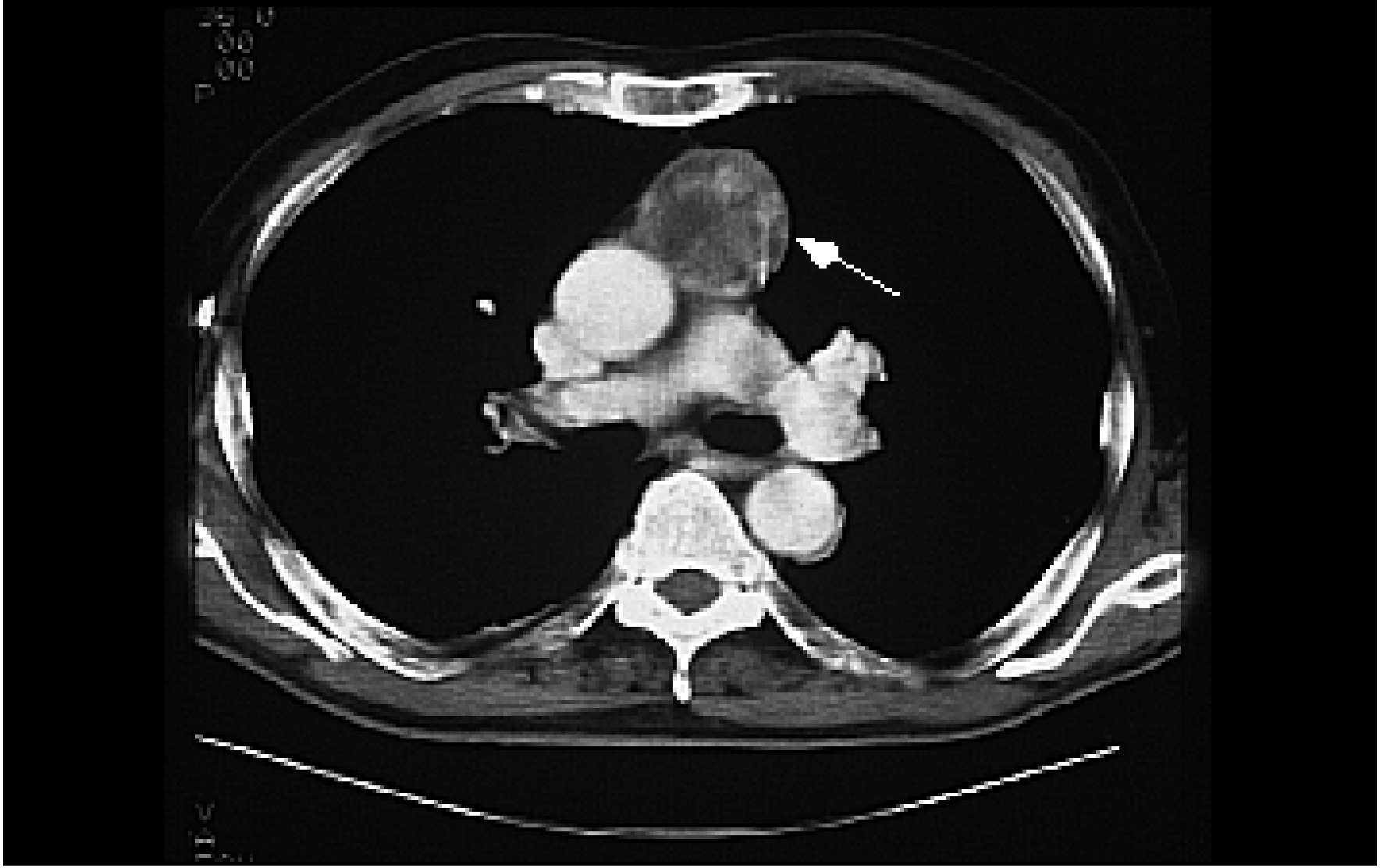


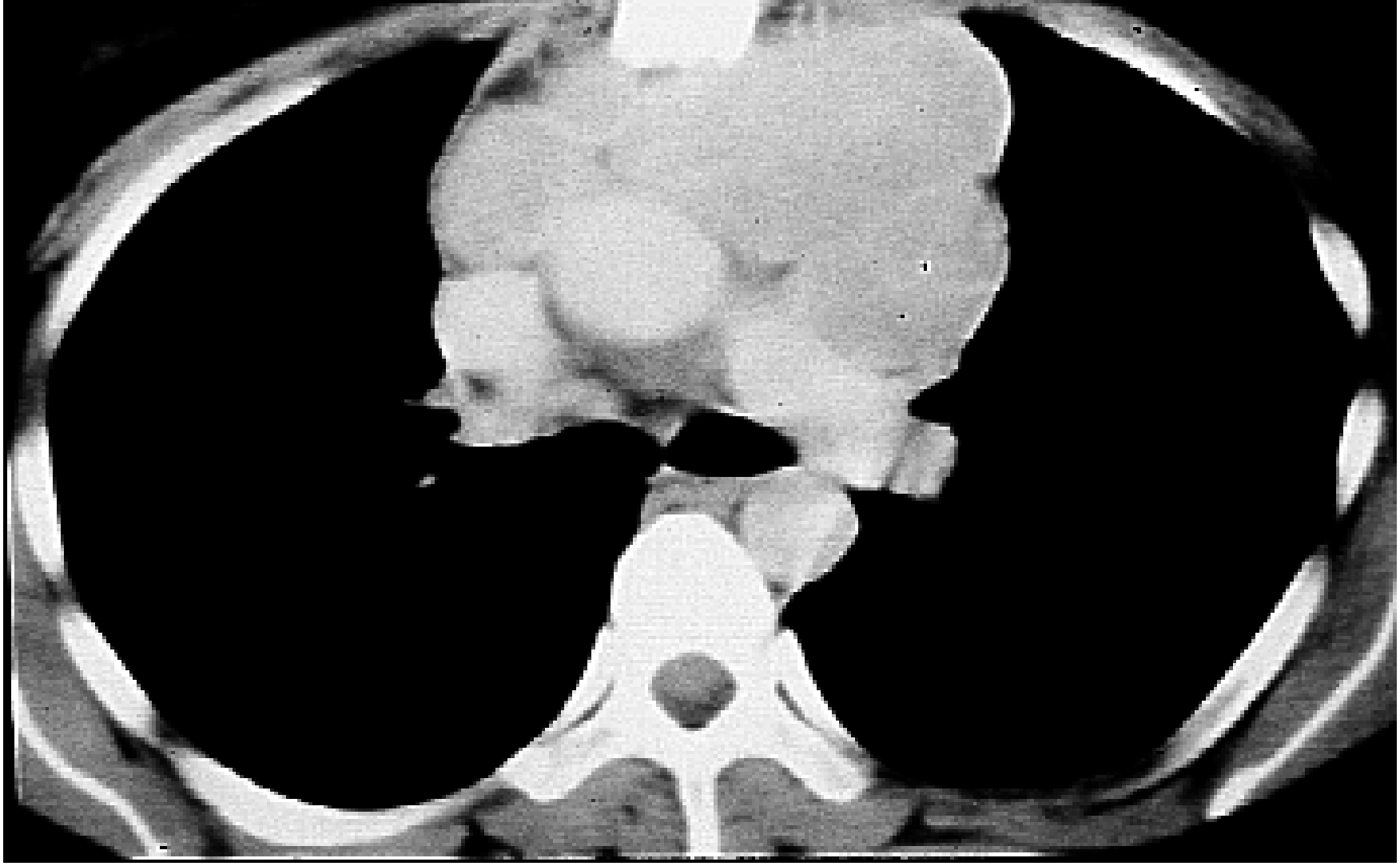
Figure 14-1 Windowing the thorax. Chest CT scans are usually "windowed" and displayed in several formats in order to optimize anatomic definition. Lung windows (A) are chosen to maximize our ability to image abnormalities of the lung parenchyma and to identify normal and abnormal bronchial anatomy. Mediastinal windows (B) are chosen to display the mediastinal, hilar, and pleural structures to best advantage. Bone windows (C) are utilized as a third way of displaying the data, visualizing the bony structures to their best advantage. It is important to recognize that the displays of these different windows are manipulations of the data obtained during the original scan and do not require rescanning the patient.



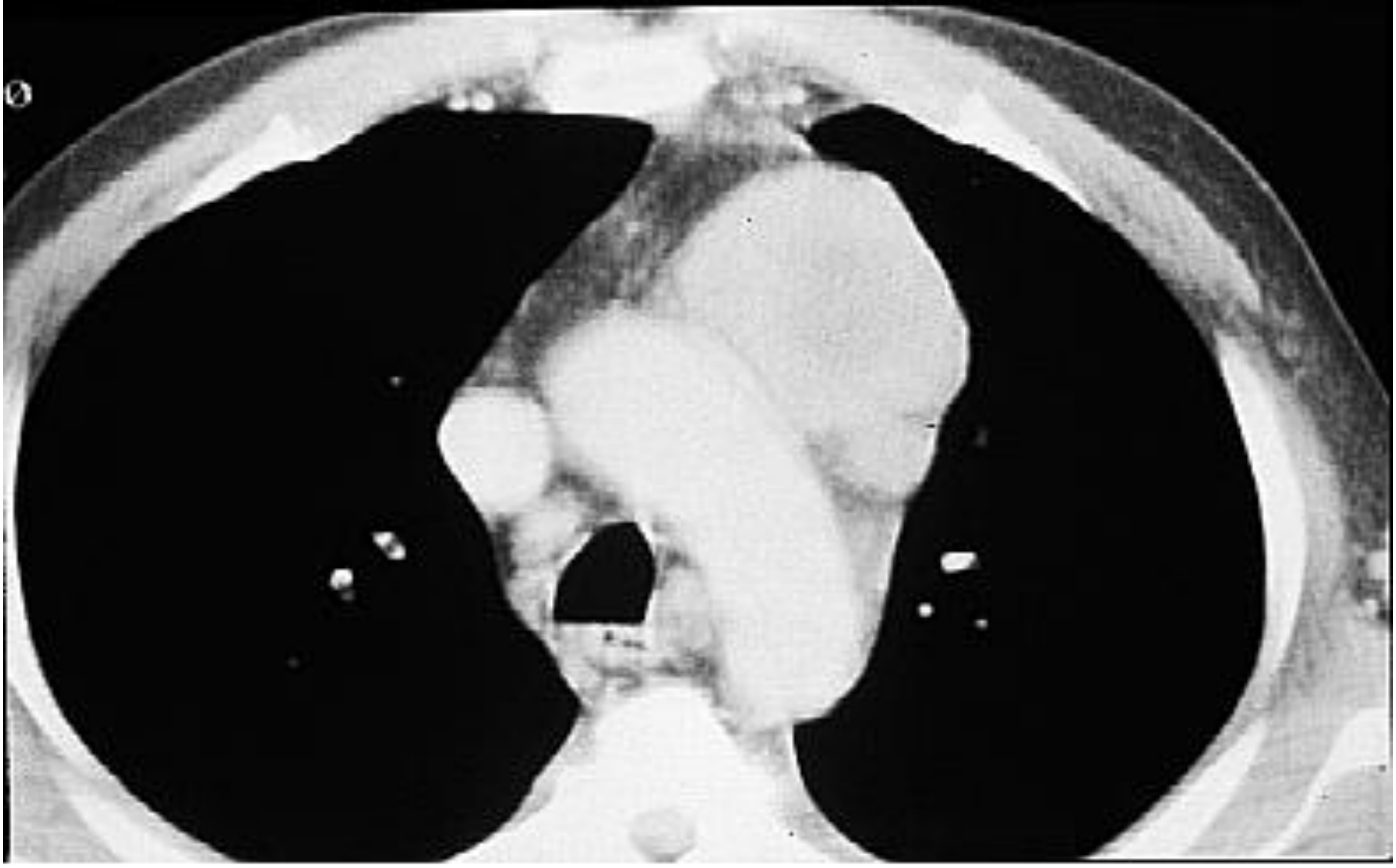
Thymoma CT scan of a thymoma originating from the right lobe of the thymus. A large rounded mass is seen in the retrosternal location, to the right of the midline (arrow). Courtesy of Paul Stark, MD.



Thymoma Thymoma originating from the left lobe of the thymus. There is a large rounded inhomogeneous retrosternal mass located to the left of the midline (arrow). Courtesy of Paul Stark, MD.

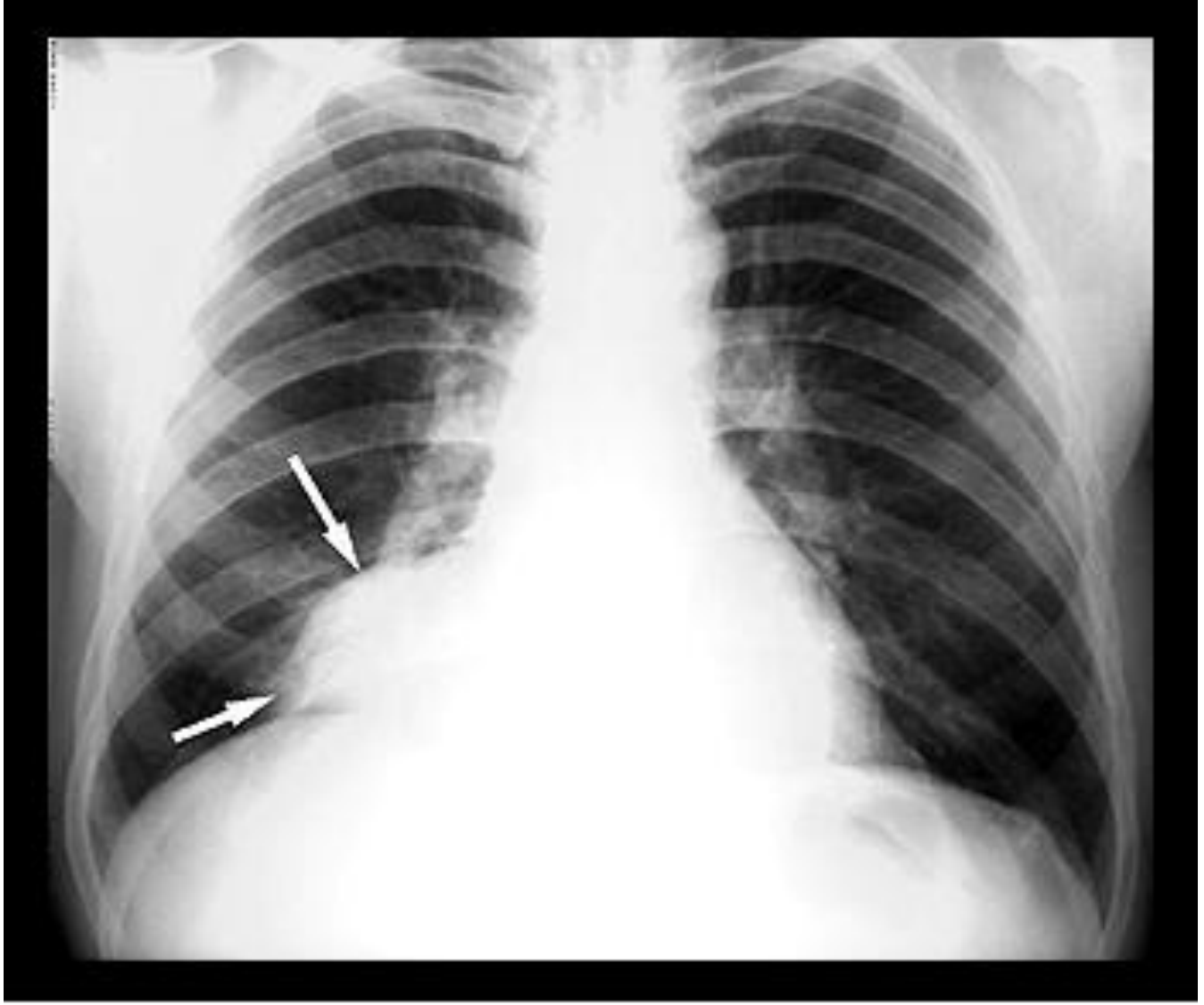


Mediastinal Hodgkin's disease Hodgkin's disease, nodular sclerosis variant, presenting as a multilobulated mass in the anterior mediastinum. The enlarged lymph nodes are homogeneous and tend to be matted together. Courtesy of Paul Stark, MD.



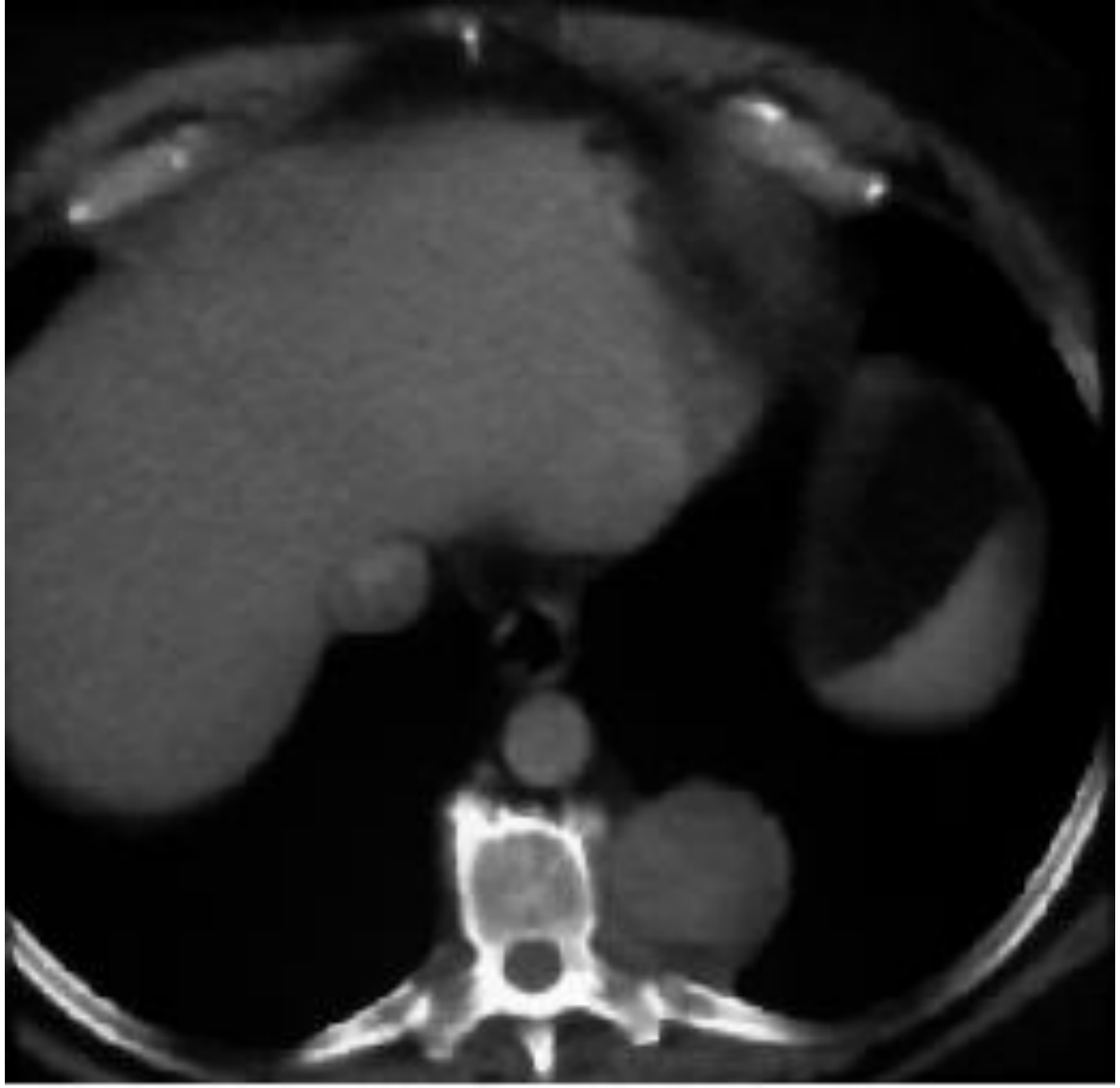
Hodgkin's disease Large mass in the region of the left lobe of the thymus with a second smaller lymph node adjacent to it. Note the lower attenuation center of the mass, not unusual in lymphoma. Courtesy of Paul Stark, MD.

Retrosternal goiter CT scan of a retrosternal goiter seen as an inhomogeneous mass anterior to the trachea. The airway is narrowed and displaced to the left and posteriorly. The aortic branches are "peeled off" the trachea and displaced anteriorly. Courtesy of Paul Stark, MD.

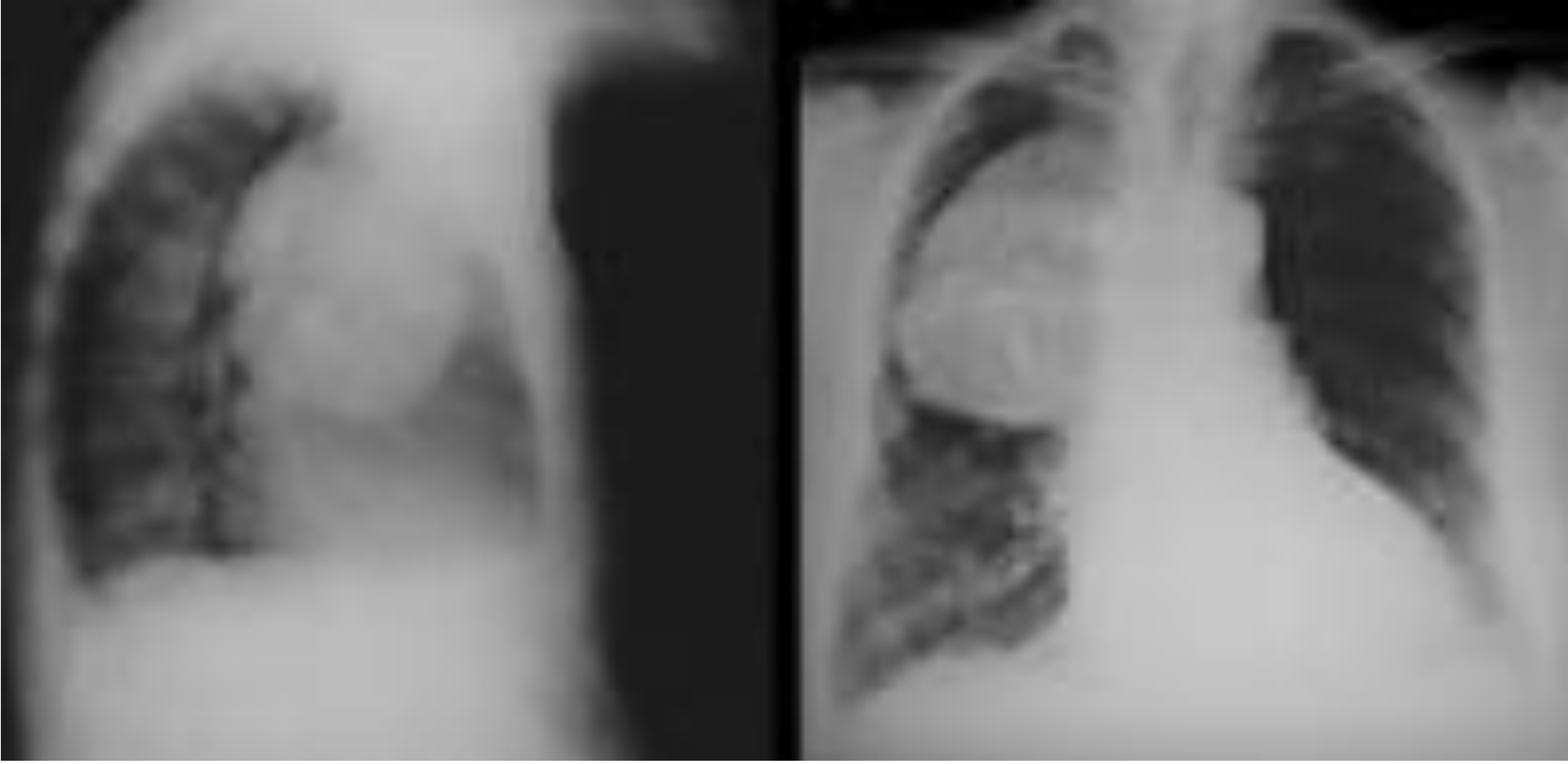


Pericardial cyst This plain frontal chest radiograph from a 56 year old male demonstrates a mass abutting the right cardiophrenic angle, a typical appearance and location for a benign pericardial cyst. (Photo courtesy of Jonathan Kruskal, MD).

Paraspinal ganglioneuroma Large mixed attenuation right paraspinal mass extends anteromedially and displaces and narrows the trachea to the left. The tumor originates most likely from the sympathetic chain. Courtesy of Paul Stark, MD.



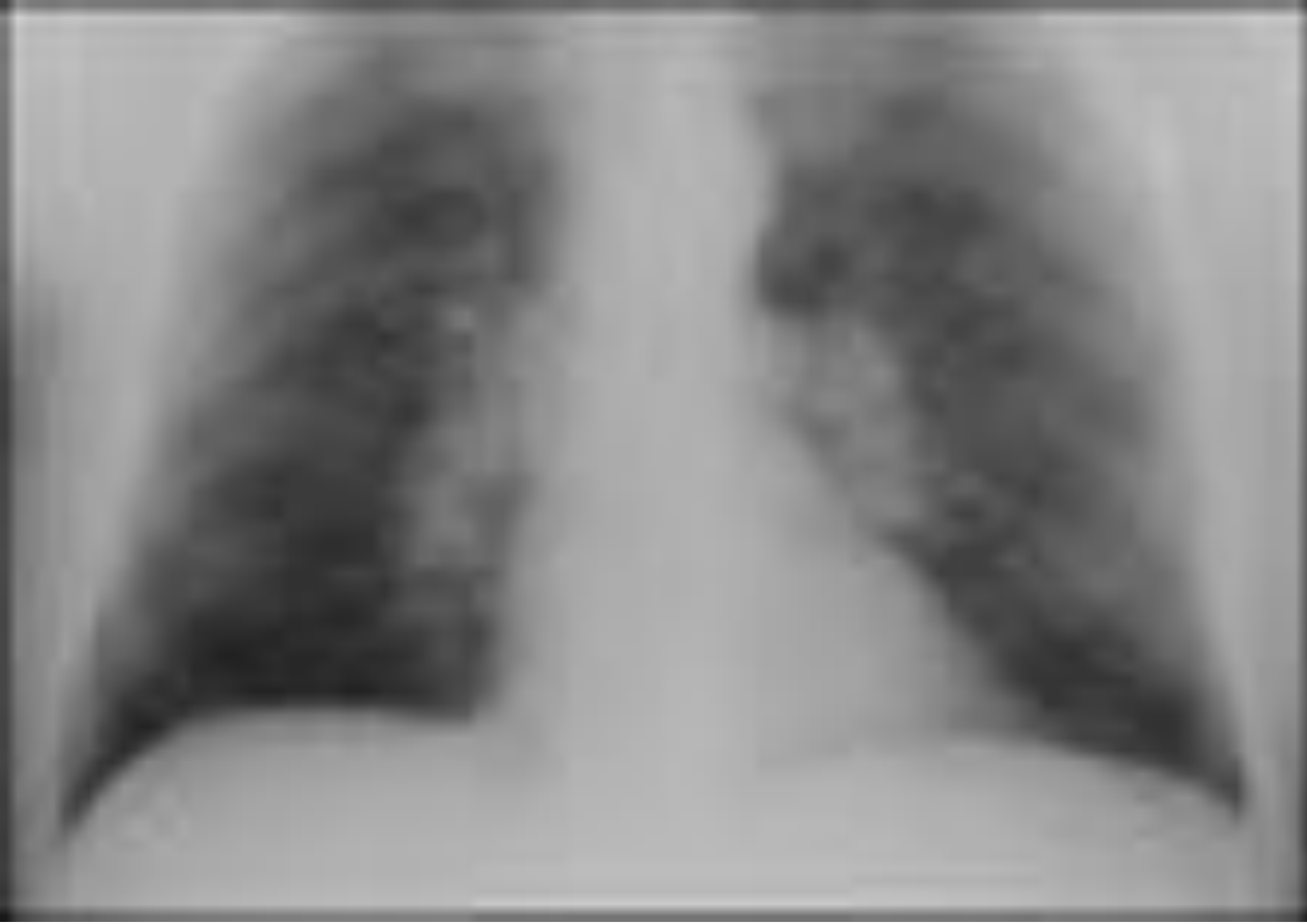
Paraspinal neurilemmoma Large rounded left paraspinal mass originating from an intercostal nerve. Courtesy of Paul Stark, MD.



T (teratodermoid)

Pancoast-Tobias

B Hodgkin



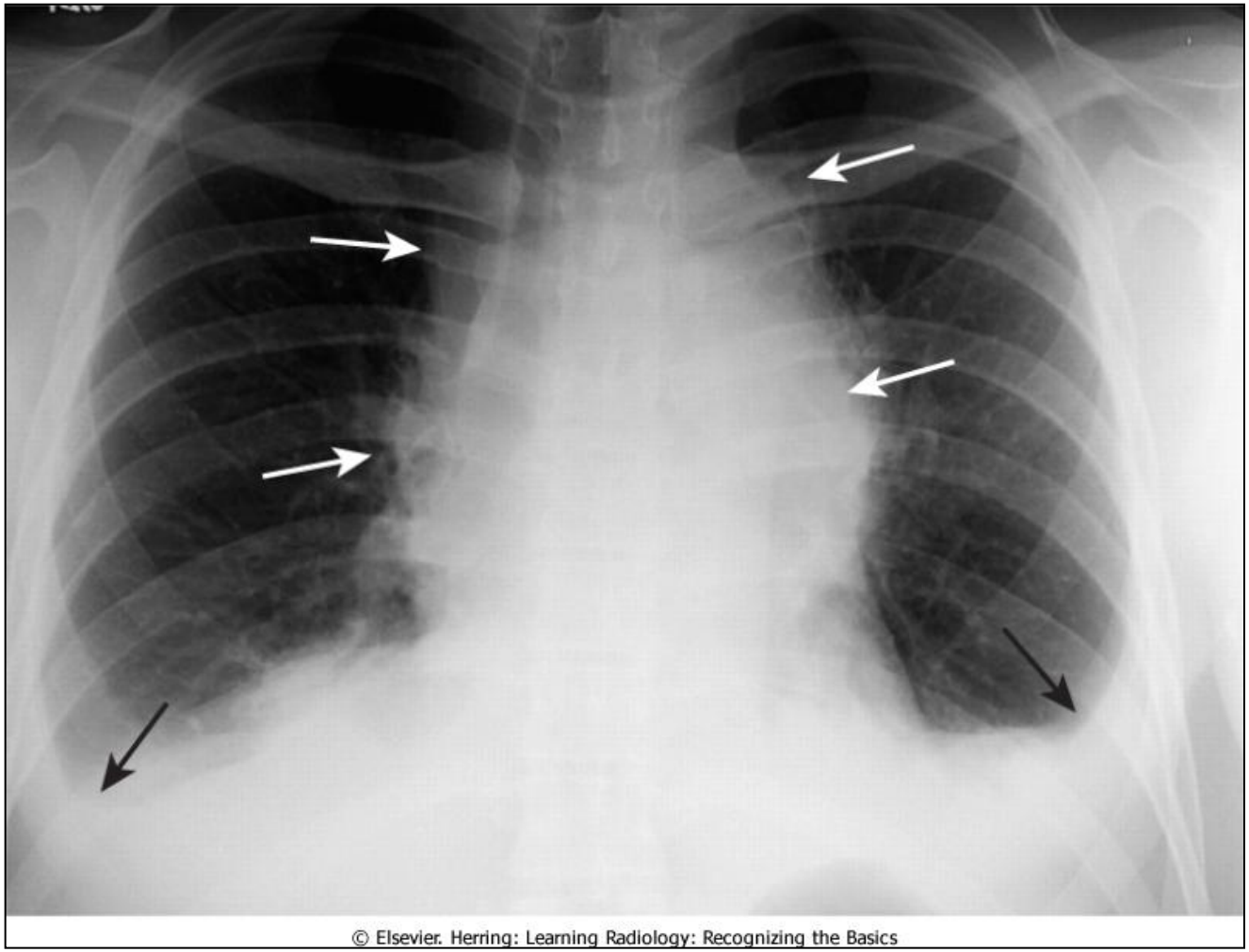


Figure 13-4 Mediastinal adenopathy from Hodgkin's disease. Lymphadenopathy frequently presents with a lobulated or polycyclic border owing to the conglomeration of enlarged nodes that produce the mass (closed white arrows). This finding may help differentiate lymphadenopathy from other masses. Mediastinal lymphadenopathy in Hodgkin's disease is usually bilateral and asymmetrical, as in this case. Pleural effusions (closed black arrows) are common, occurring in up to 33% of patients with the disease.

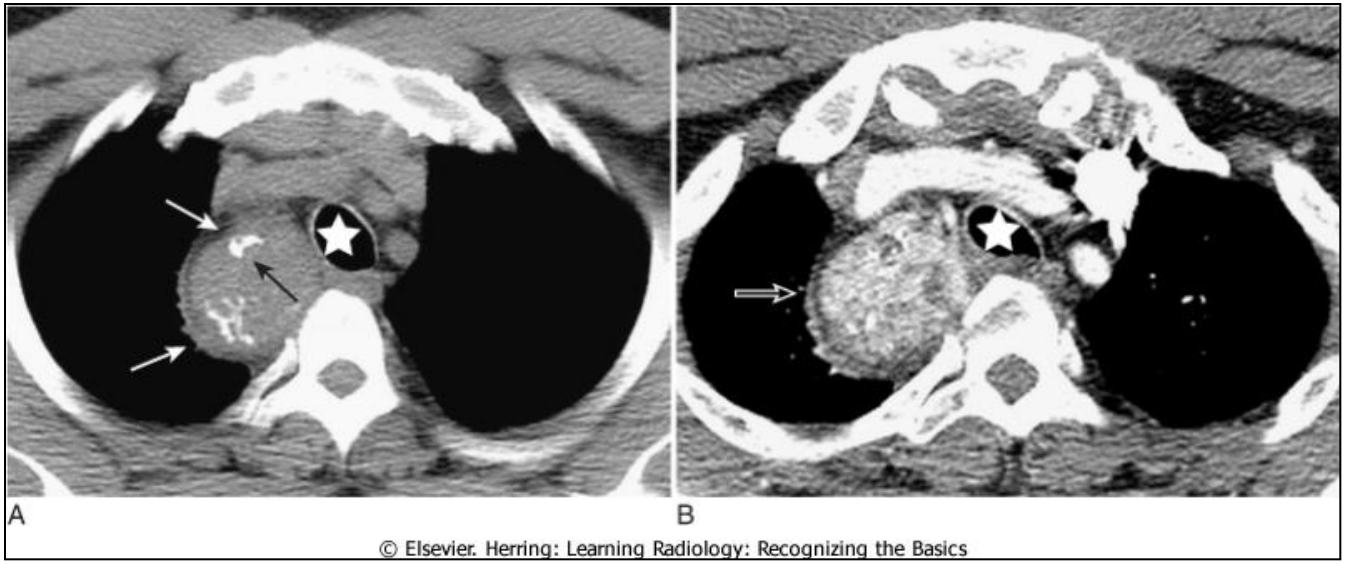


Figure 13-3 CT of a substernal thyroid goiter without and with contrast enhancement. These two images were taken at the same level in a patient who was scanned both before (A) and then after intravenous contrast administration (B). On CT scans, substernal thyroid masses (closed white arrows in A) are contiguous with the thyroid gland, frequently contain calcification (closed black arrow) and avidly take up intravenous contrast but with a mottled, inhomogeneous appearance (open white arrow in B). This mass is displacing the trachea (white stars) slightly to the left.

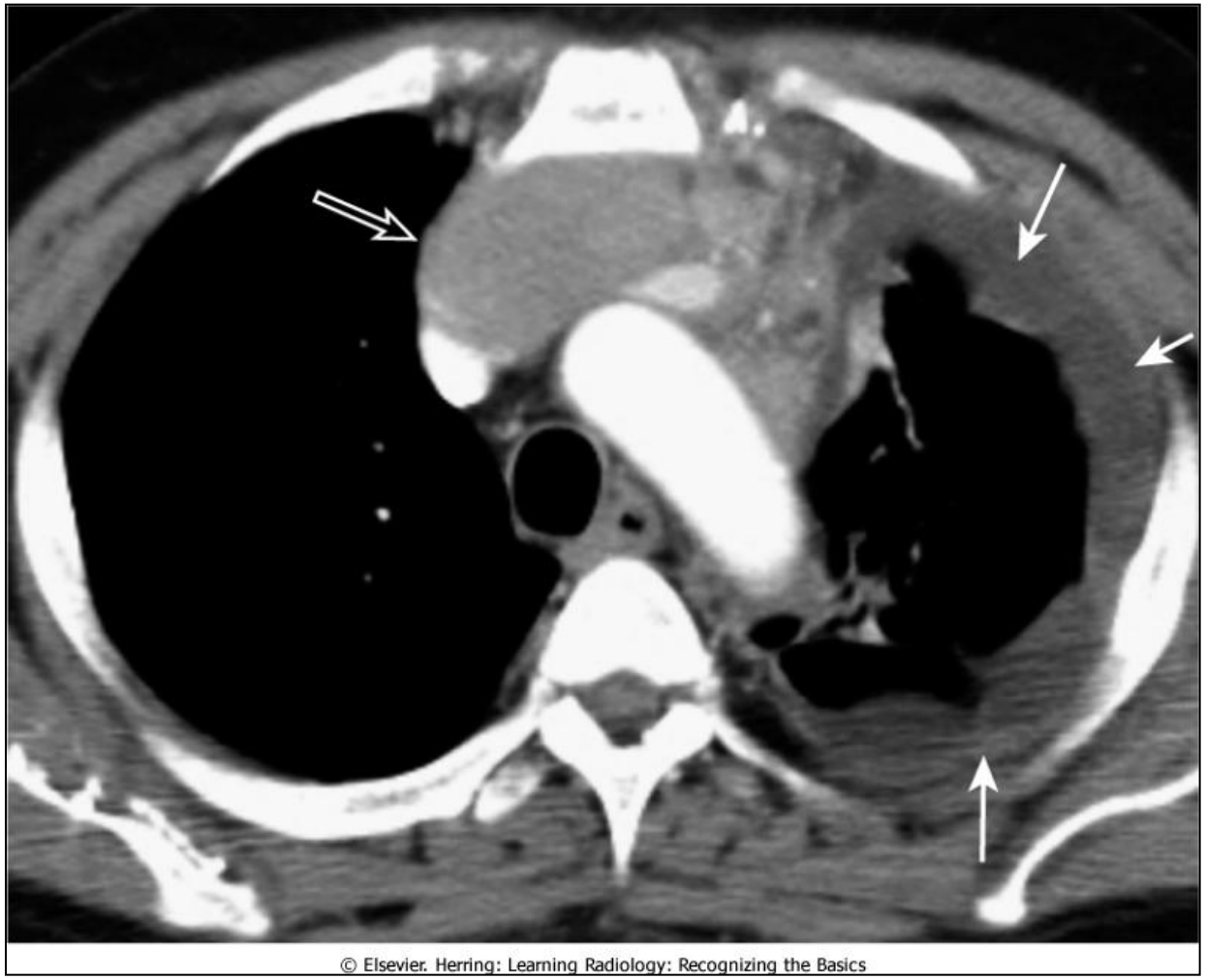


Figure 13-5 CT of anterior mediastinal adenopathy in Hodgkin's disease. On CT, lymphomas will produce multiple, lobulated soft tissue masses or a large soft tissue mass from lymph node aggregation (open white arrow). The mass is usually homogeneous in density, as in this case, but may be heterogeneous when the nodes achieve a sufficient size to undergo necrosis (areas of low attenuation, i.e., blacker) or hemorrhage (areas of high attenuation, i.e., whiter). There is a malignant pleural effusion present in this patient (closed white arrows) as evidenced by the nodular and irregular appearance of the pleural disease.

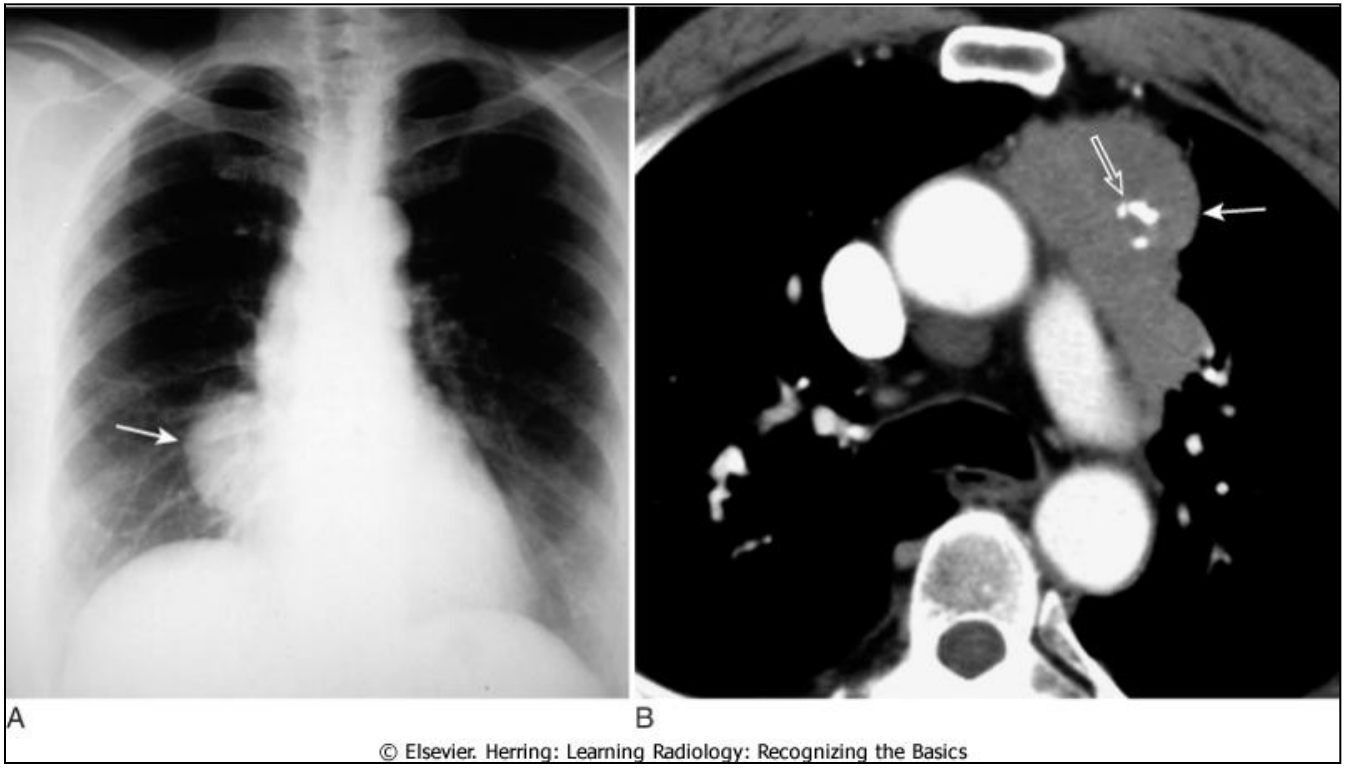


Figure 13-6 Thymomas, conventional radiograph (A) and CT scan (B). Thymomas are neoplasms of thymic epithelium and lymphocytes that occur most often in middle-aged adults, generally at an older age than those with teratomas. The patient in A has a smoothly contoured anterior mediastinal mass seen on the frontal view (closed white arrow). This patient had myasthenia gravis and improved following resection of the thymoma. Another patient with a thymoma (B) has an anterior mediastinal mass (closed white arrow) that contains some amorphous calcification (open white arrow).

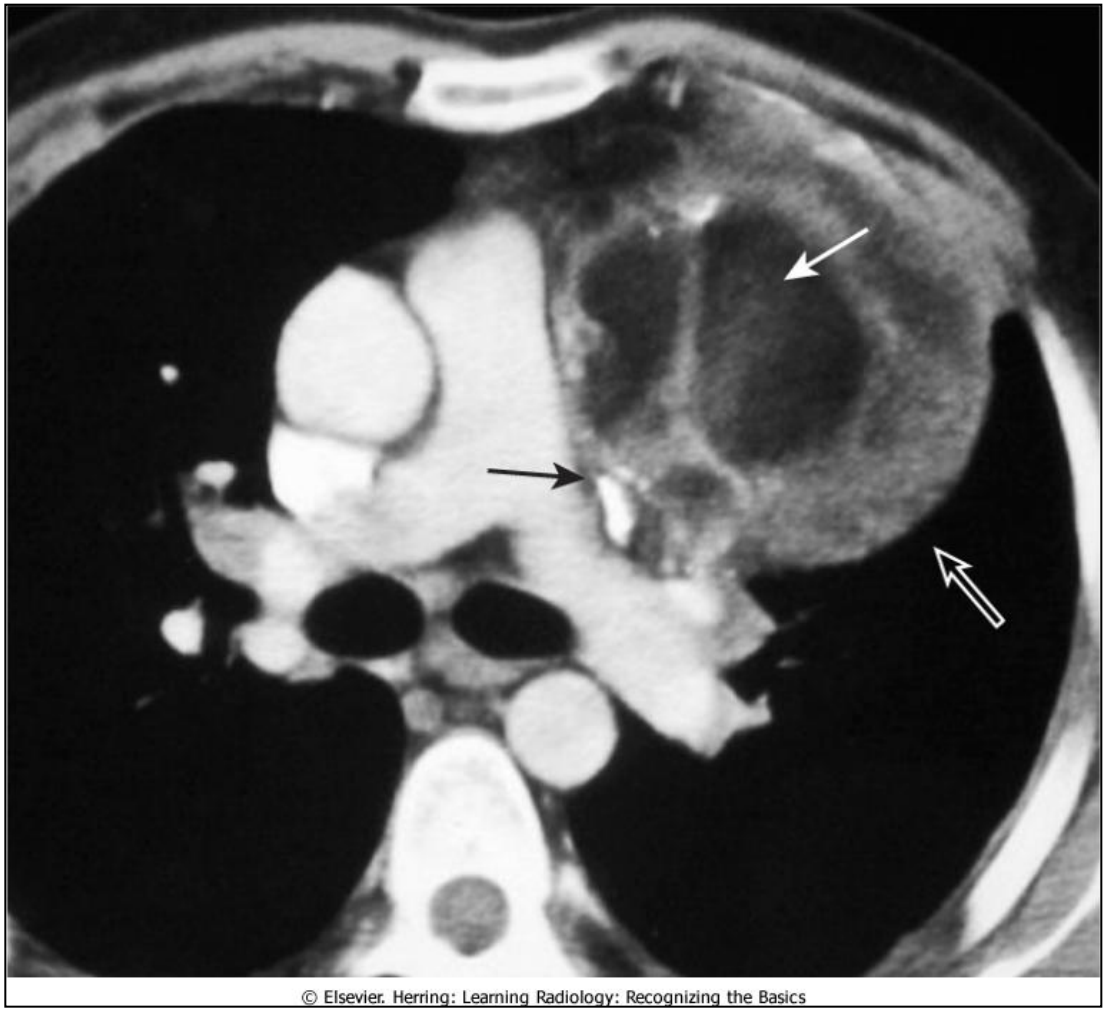


Figure 13-7 Mediastinal teratoma. Teratomas are germinal tumors that typically contain all three germ layers. They tend to be discovered at a younger age than thymomas. The most common variety of teratoma is cystic (closed white arrow), as in this case. As shown here, they usually produce a well-marginated mass (open white arrow) near the origin of the great vessels. They characteristically contain fat, cartilage, and sometimes bone (closed black arrow) on CT.

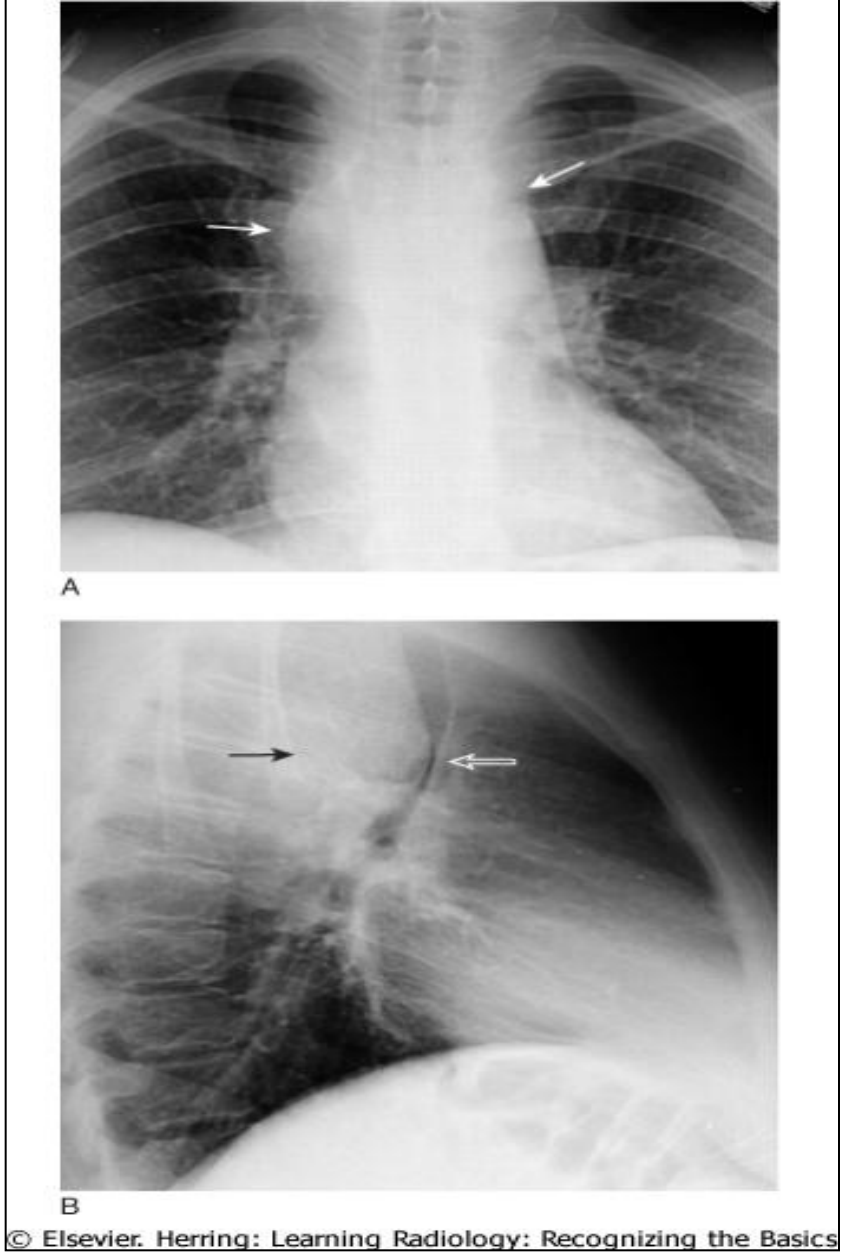


Figure 13-8 Middle mediastinal lymphadenopathy. Although lymphoma is the most likely cause of mediastinal adenopathy in the middle mediastinal compartment, other malignancies, such as small cell lung carcinoma and metastatic disease from tumors such as breast carcinoma, as well as several benign diseases can produce these findings. This patient has a mediastinal mass demonstrated on both the frontal (A) (closed white arrows) and lateral (B) views (closed black arrow). The mass is pushing the trachea forward (open white arrow) on the lateral view. The biopsied lymph nodes in this patient demonstrated small cell carcinoma of the lung.

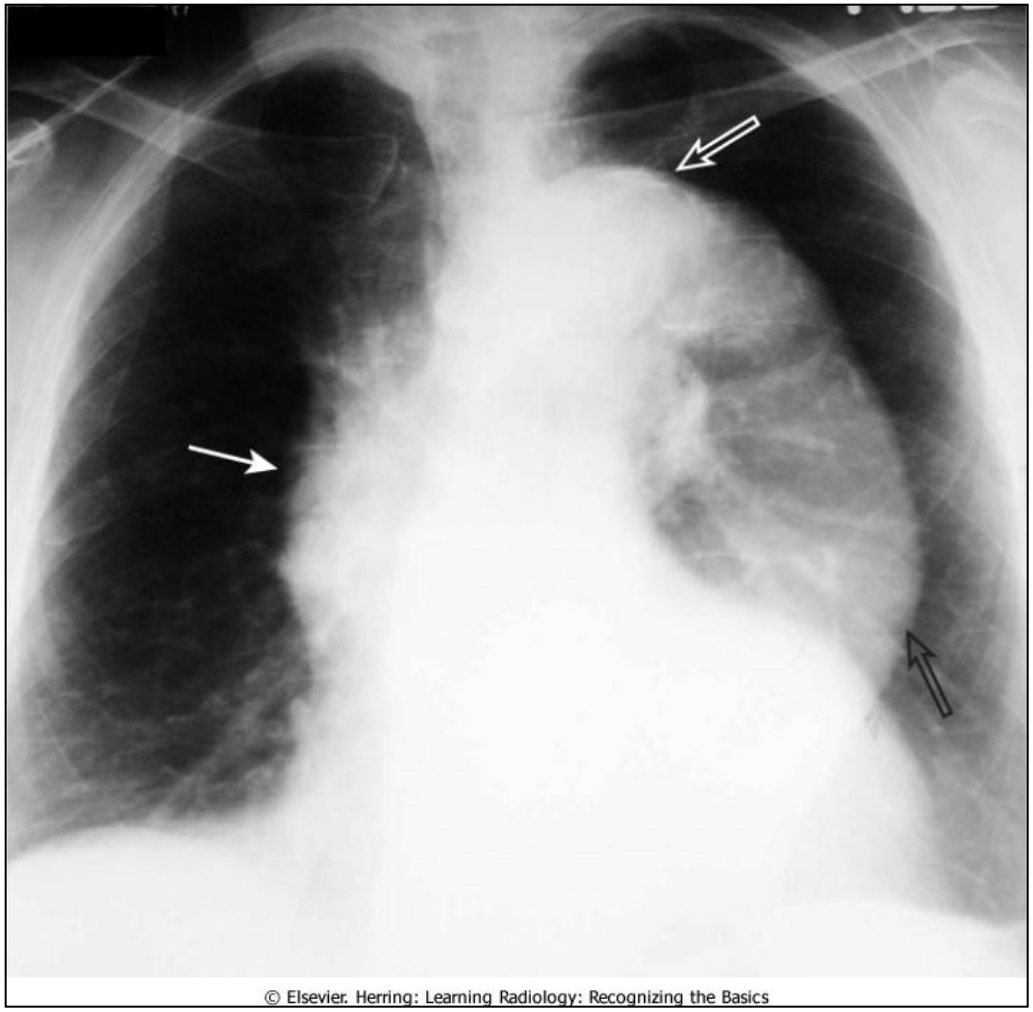


Figure 13-9 Aortic aneurysm. The entire thoracic aorta is enlarged in this 67-year-old man. The ascending aorta (closed white arrow) should normally not project farther to the right than the right heart border on a nonrotated chest radiograph. The aortic knob (open white arrow) should be 35 mm in diameter measured from the air in the trachea to the lateral border of the knob on a frontal chest radiograph. The descending thoracic aorta (open black arrow) normally parallels and almost disappears with the thoracic spine; as it becomes larger, it swings farther away from the spine. Calcification in the wall of an aneurysm (open white arrow) is common.

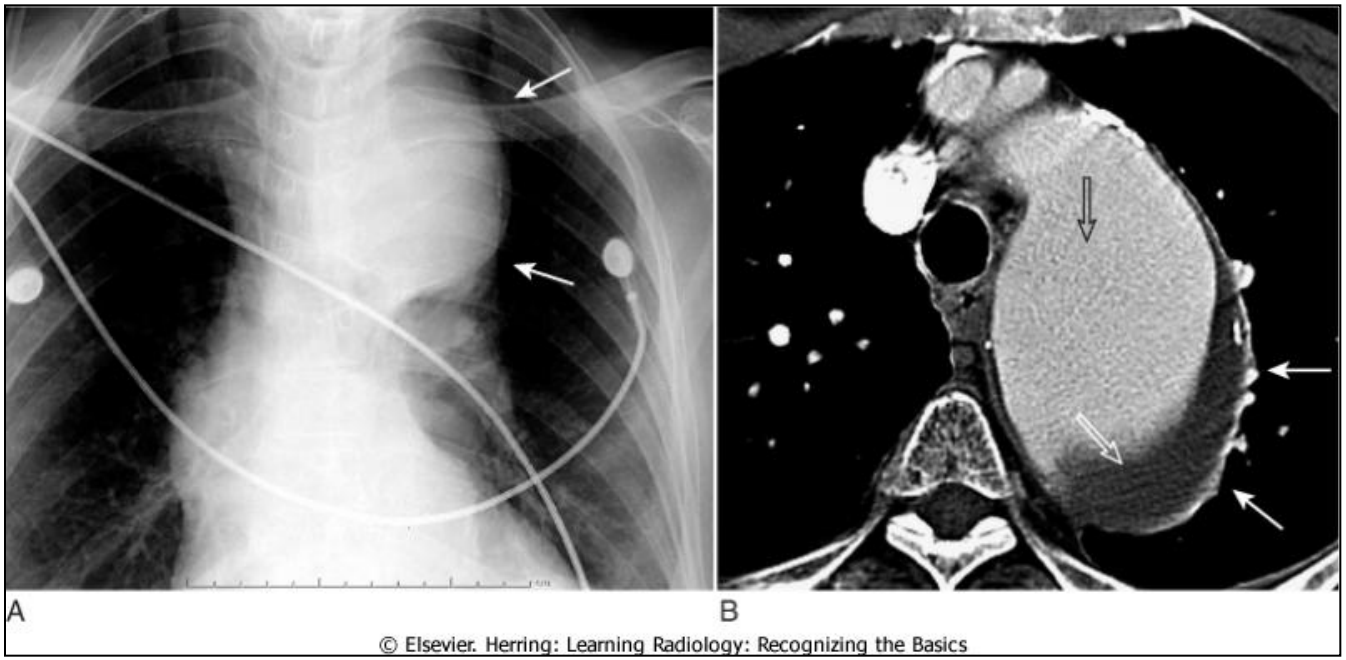


Figure 13-10 Aortic aneurysm, conventional chest radiograph and CT. Close-up view of a frontal radiograph of the chest (A) demonstrates a large mediastinal soft tissue mass with a calcified rim (closed white arrows). This soft tissue density represents a large aneurysm of the proximal descending aorta seen also in the CT scan to the right (B). The aneurysm measured 6.7 cm, which placed it at significant risk for rupture. Calcification in the wall of an aneurysm is common (closed white arrows). Contrast material mixes with blood flowing in the lumen of the aorta (open black arrow), but the flowing blood is separated from the intimal calcification (closed white arrows) by a considerable amount of non-contrast-containing thrombus adherent to the wall (open white arrow).

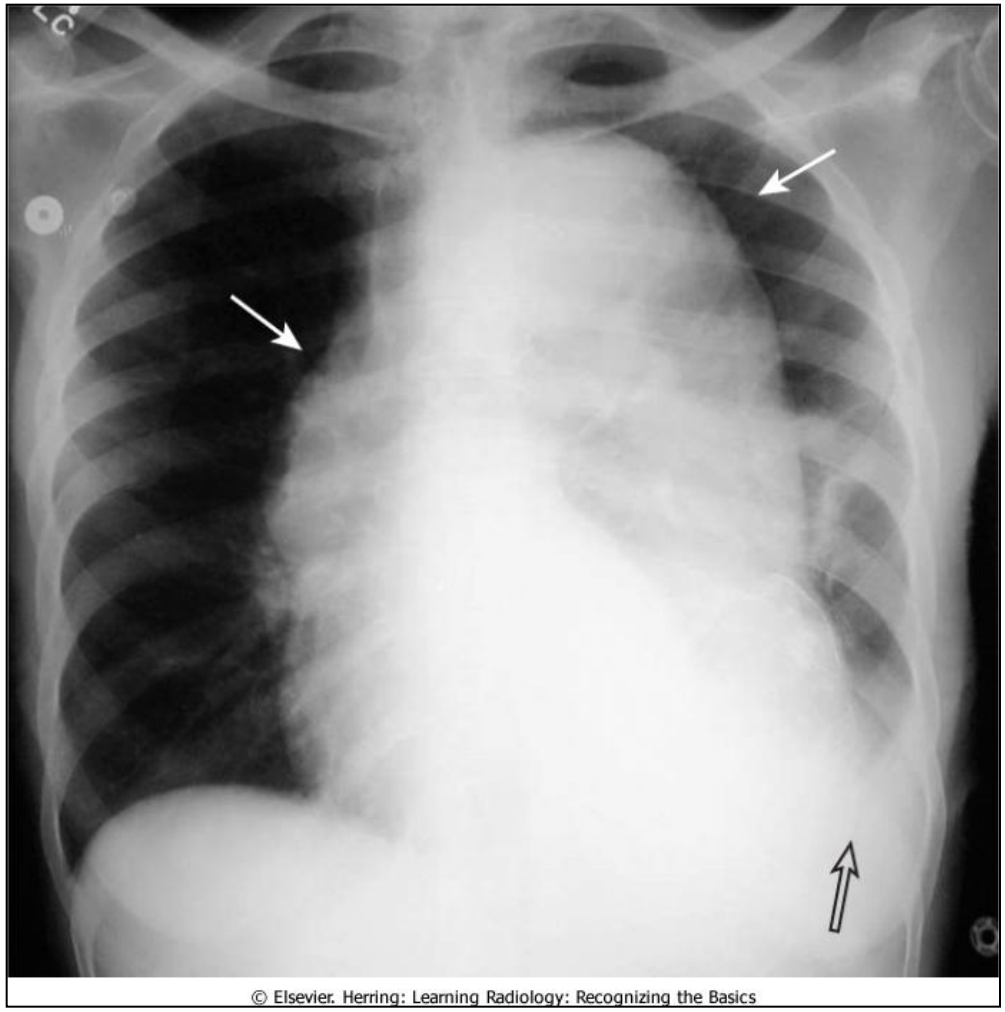


Figure 13-11 Aortic dissection.Conventional radiographs are not sensitive enough to be diagnostically reliable for aortic dissection, but they may point to the diagnosis when several imaging findings occur together, especially in the proper clinical setting. "Widening of the mediastinum" is frequently not present and is a poor means of establishing the diagnosis, although in this patient the mediastinum is clearly widened by an enlarged aorta (closed white arrows). Also, a left pleural effusion is present (open black arrow). The combination of a widened mediastinum and a left pleural effusion in a patient with chest pain should alert you to the possibility of an aortic dissection.

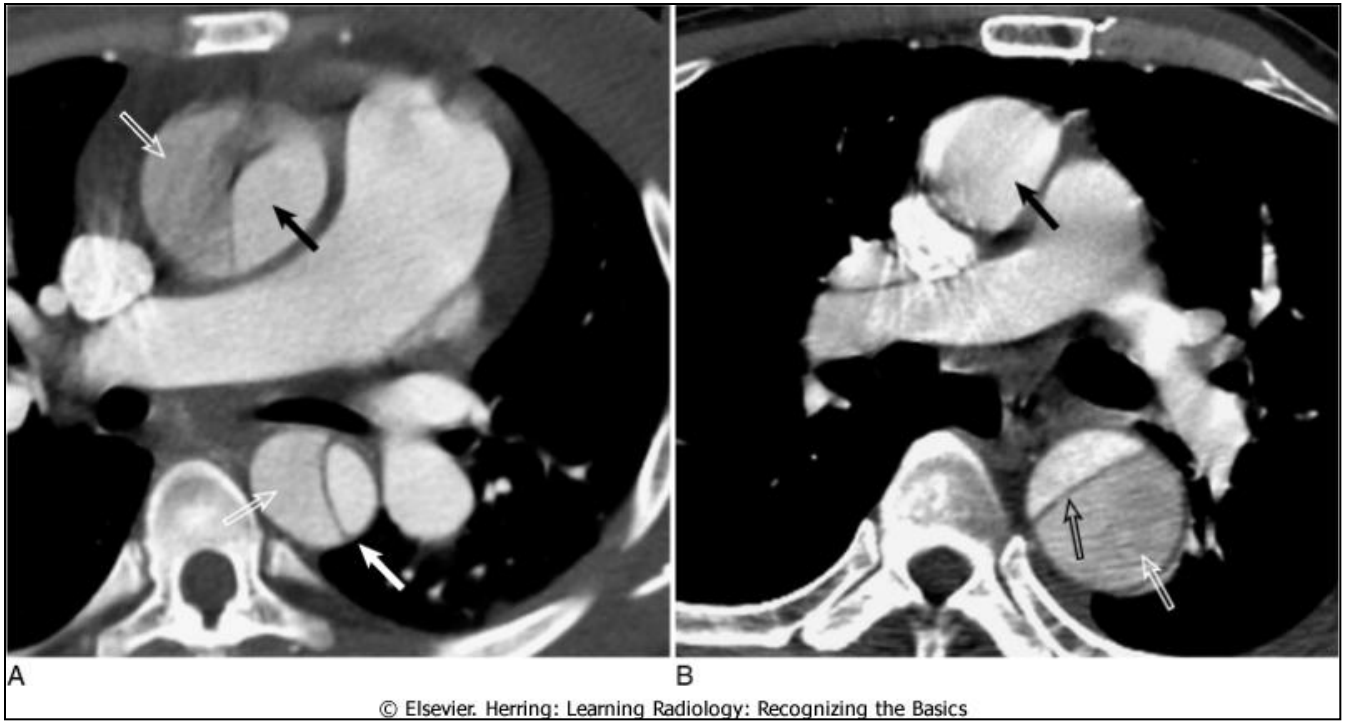


Figure 13-12 Aortic dissections, types A and B. A, An intimal flap is seen to traverse both the ascending (closed black arrow) and descending aorta (closed white arrow). This is a type A dissection. B, There is a normal appearing ascending aorta (closed black arrow) while there is an intimal flap noted by the black line traversing the descending aorta (open black arrow). The intimal flap is the characteristic lesion of an aortic dissection. The smaller lumen is usually the true (original) lumen and the larger, false lumen (open white arrows) is actually a channel that has been produced by blood dissecting through the media.

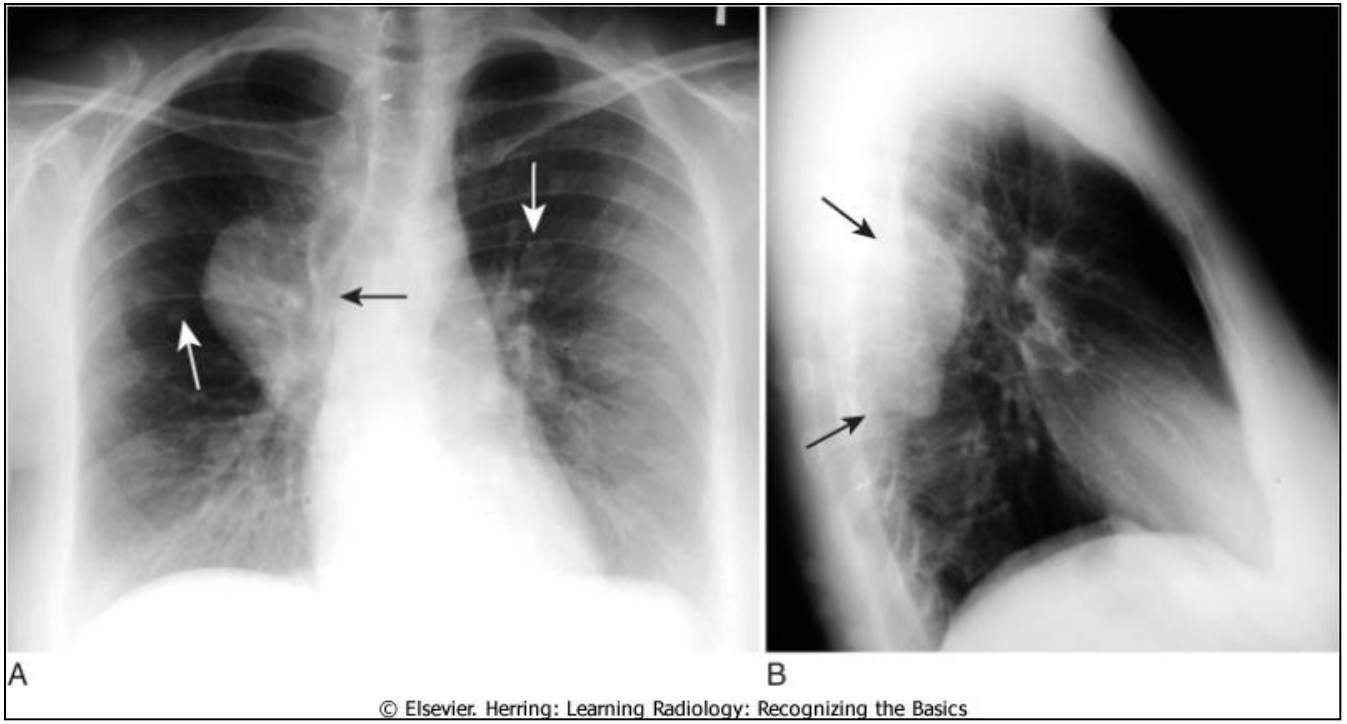


Figure 13-13 Neurofibromatosis.Neurofibromas can occur as an isolated tumor arising from the Schwann cell of the nerve sheath or as part of the syndrome neurofibromatosis, as in this case. A large neurofibroma (closed black arrows) is seen on the frontal (A) and lateral (B) views. Also, multiple nodules (closed white arrows) are superimposed on the lung but actually represent cutaneous neurofibromas.

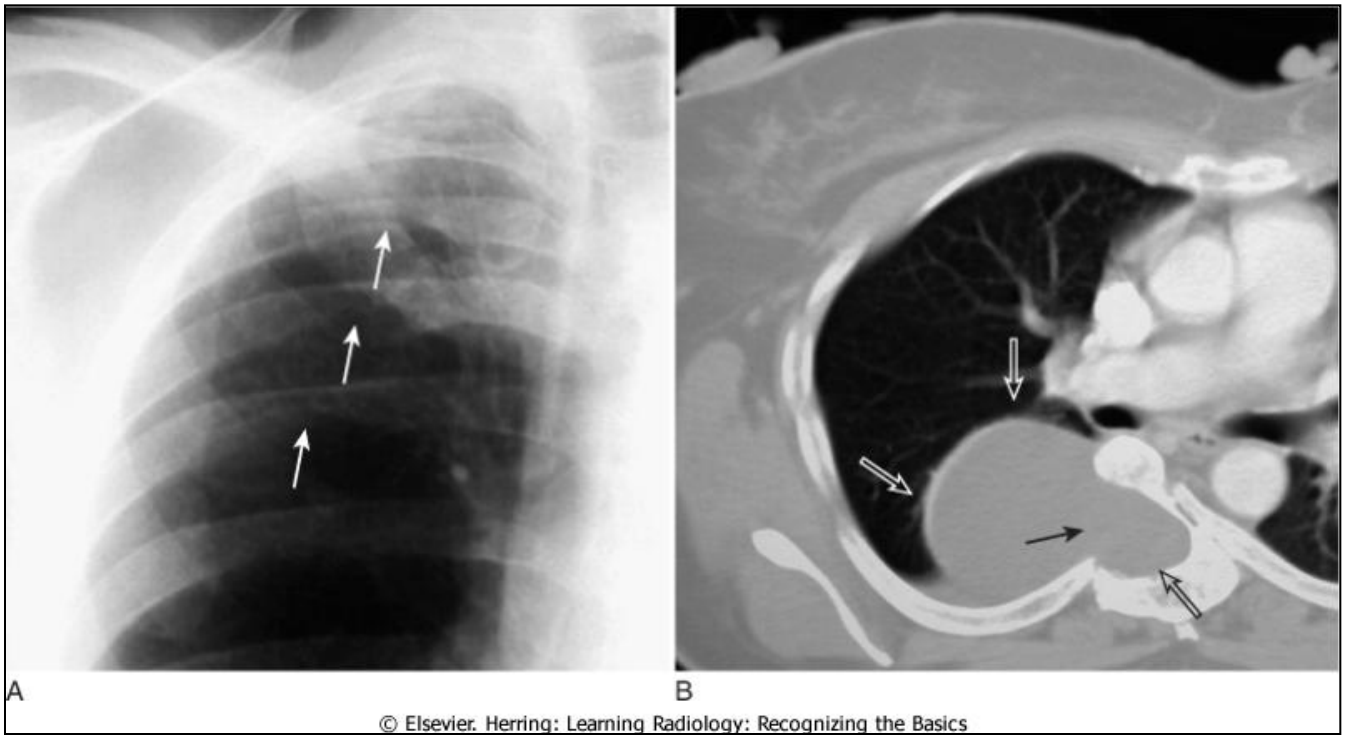


Figure 13-14 Rib-notching and a dumbbell-shaped lateral meningocele. A, Plexiform neurofibromas can produce erosions along the inferior borders of the ribs (where the intercostal nerves are located) and produce either notching or a wavy appearance called ribbon ribs(closed white arrows) B, Another patient demonstrates a lateral meningocele associated with neurofibromatosis that is enlarging the neural foramen producing a dumbbell-shaped lesion that arises from the spinal canal (open black arrow) but projects through the foramen into the posterior mediastinum (open white arrows). The right half of the vertebral body (closed black arrow) has been eroded by the tumor.

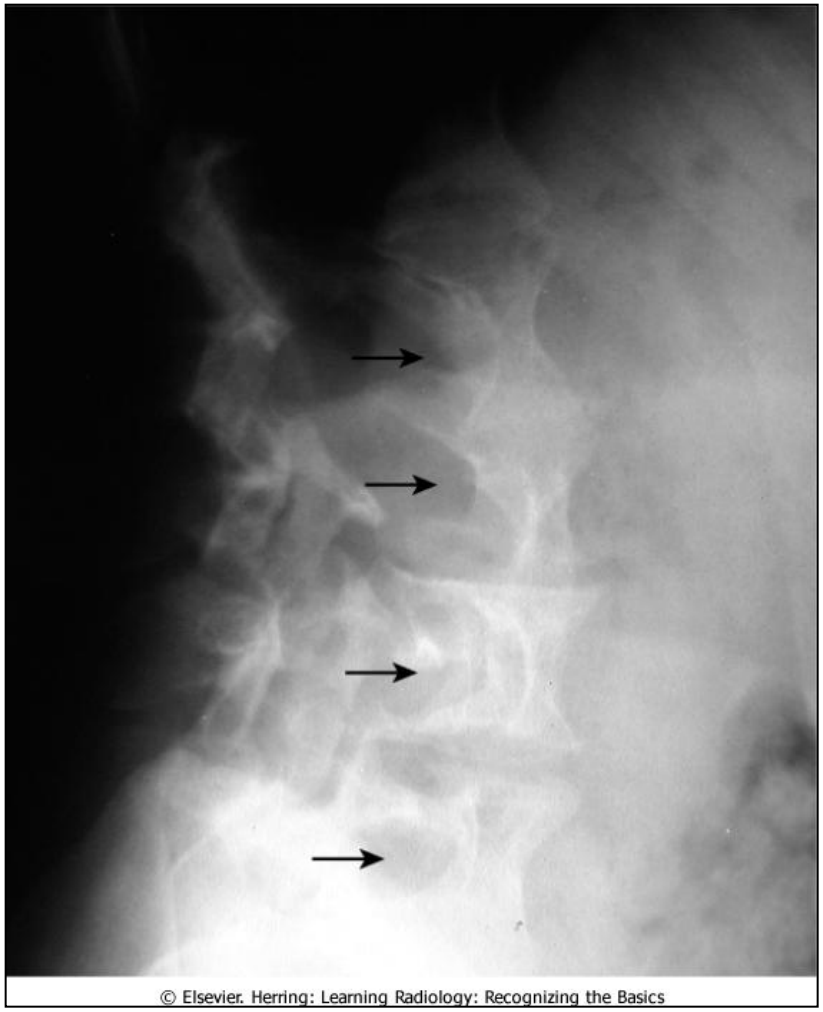


Figure 13-15 Scalloping of the vertebral bodies in neurofibromatosis.Neurofibromatosis is a neurocutaneous disorder associated with a skeletal dysplasia. There may be numerous skeletal abnormalities associated with the disease including scalloping of posterior vertebral bodies (closed black arrows), especially in the thoracic or lumbar spine (as shown here). This is produced by diverticula of the thecal sac caused by dysplasia of the meninges that leads to erosion of adjacent bone through the pulsations transmitted via the spinal fluid.

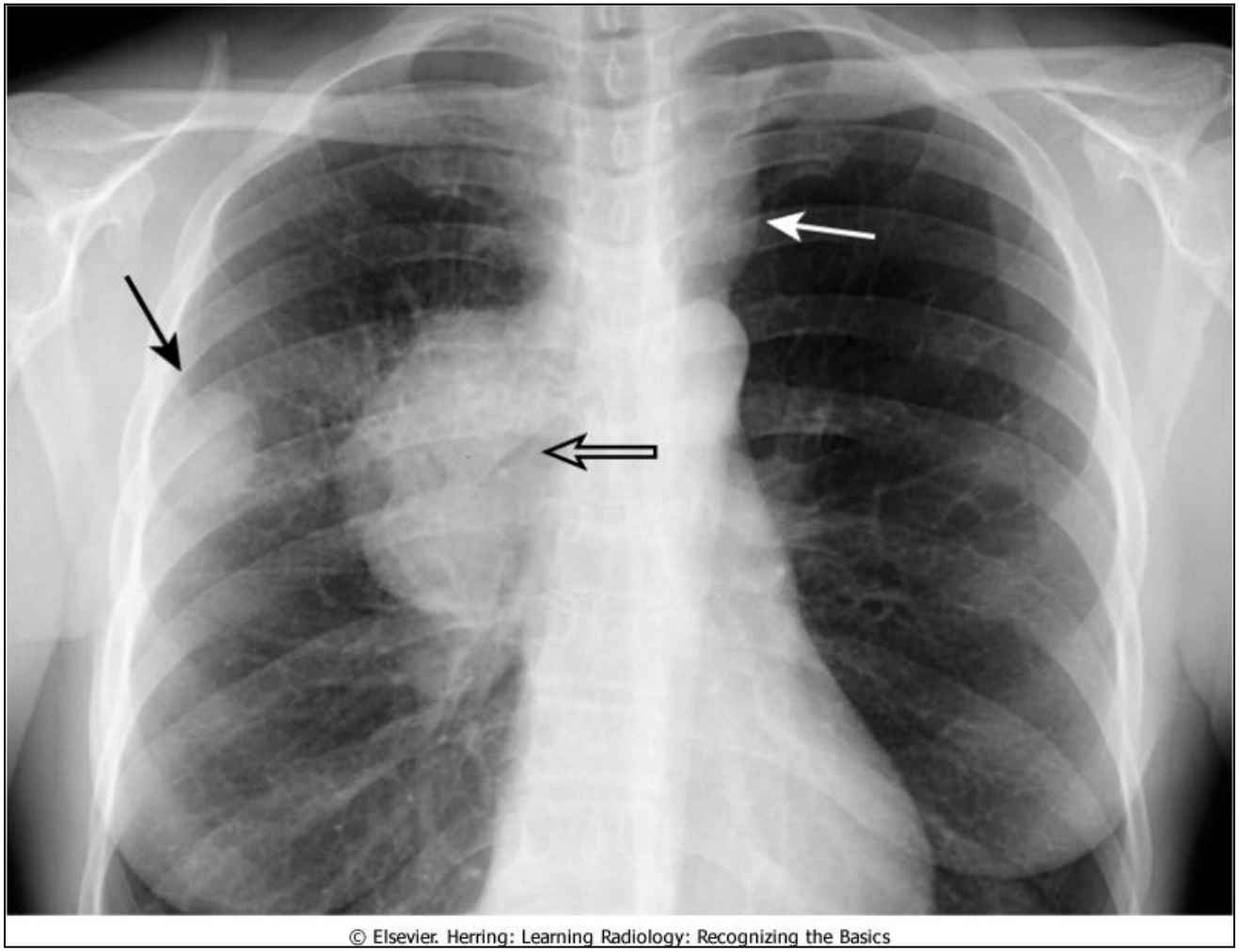


Figure 13-22. Bronchogenic carcinoma with hilar and mediastinal adenopathy.This peripheral lung mass (closed black arrow) shows evidence of ipsilateral hilar and mediastinal adenopathy (open black arrow) and contralateral mediastinal adenopathy (closed white arrow). Bronchogenic carcinoma may present with metastatic lesions that can manifest in distant organs or in the thorax itself. This was an adenocarcinoma of the lung.

MEDIASTINITA ACUTA

- perforatie esofag (tub Blakemore, endoscopie, ingestie obiecte ascutite)
- poststernotomie mediana

  $\rightarrow$5%

MEDIASTINITA ACUTA

- durere toracica
- dispnee
- febra
- soc toxic

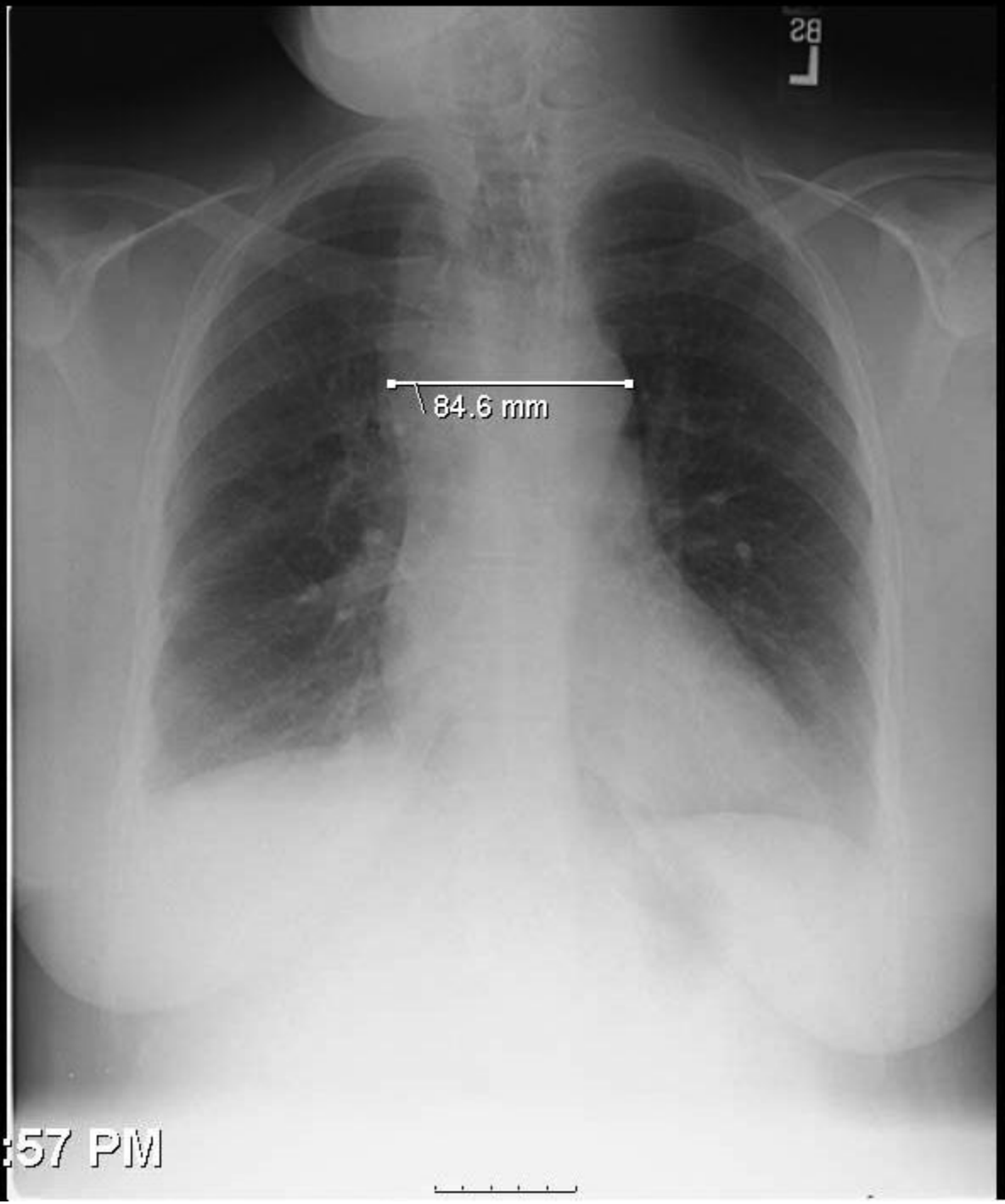
contrast

gravitate simptomatologie toracica ↔ absenta localizarii pulmonare sau pleurale

MEDIASTINITA ACUTA

- Emfizem mediastinal + subcutanat ± fata
- Rx: umbra mediastinala largita, aer retrosternal
- Dg ≠ IM

  ruptura anevrism aortic



C: 511.5, W: 102

16/2006, 8:32:57 PM

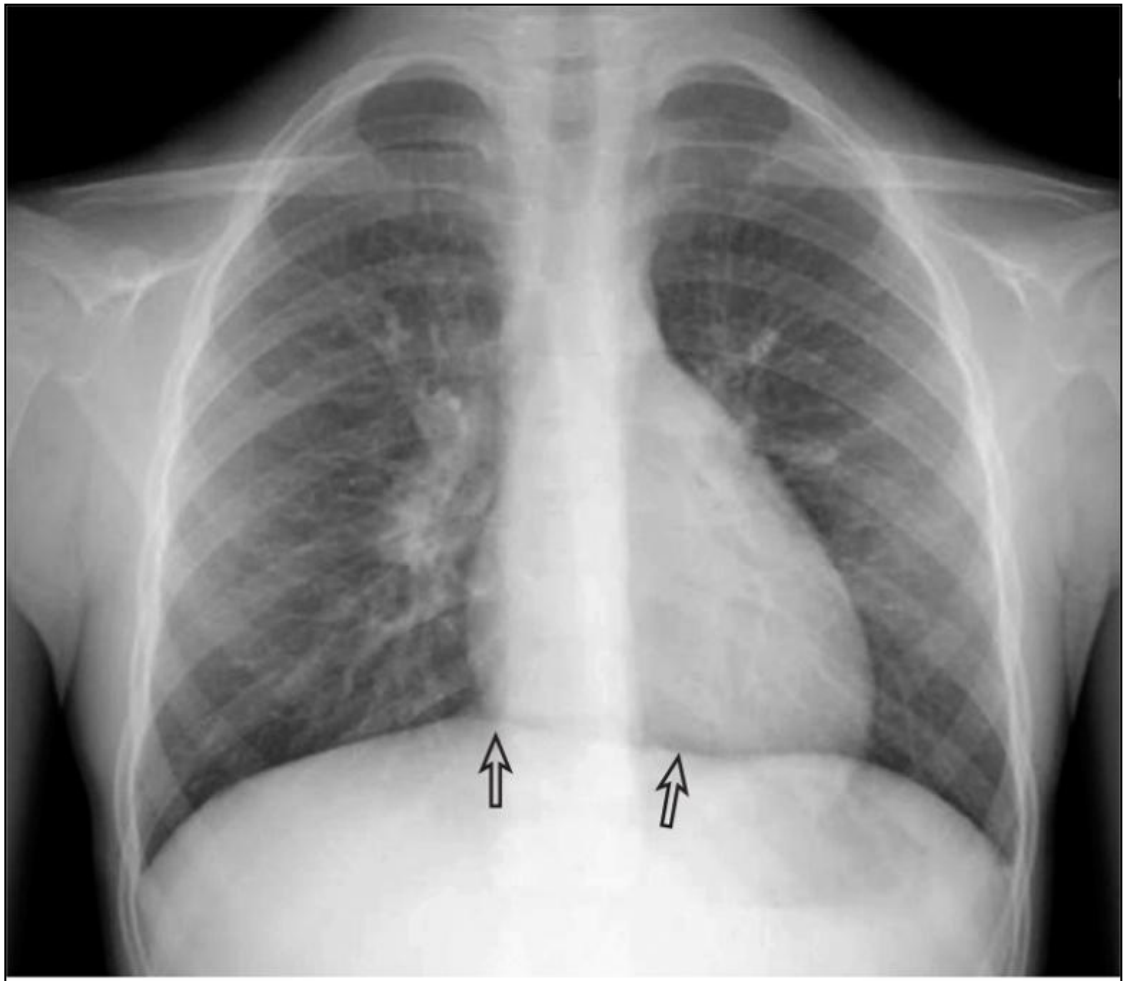


Figure 9-14 Continuous diaphragm sign of pneumomediastinum. With pneumomediastinum, air can outline the central portion of the diaphragm beneath the heart producing an unbroken diaphragmatic contour that extends from one lateral chest wall to the other (open black arrows). This is called the continuous diaphragm sign. Normally, the diaphragm is not visible in the center of the chest because there is no air in the mediastinum and the soft tissue density of the heart rests upon and silhouettes the soft tissue density of the diaphragm in its central portion.

Figure 9-13 Pneumomediastinum seen on CT. CT scan through the upper thorax demonstrates air in the mediastinum outlining the outside of the trachea (T) as well as the esophagus (E) and the major vessels leading to the neck (closed white arrows). There is a small amount of subcutaneous emphysema (open black arrow).

MEDIASTINITA CRONICA

- Inflamatie mediastinala propagata de la procese patologice din vecinatate:

  noduli limfatici→ medastinita fibrozanta → sdr. VCS

  TBC, histoplasmoza, sarcoidoza

- dg: CT