CHAPTER 14

Mediastinal disease

- There is little natural contrast in the mediastinum with most adjacent structures of equivalent density and little low density fat in between.
- As a result, most of the interpretation of mediastinal pathology relates to the changes in the interface between the mediastinum and the lung, abnormalities that do not affect this contour or interface are not readily appreciated on a CXR.
- As a result, the extent of mediastinal disease may be underestimated on a frontal CXR.

Mediastinal tumours

- There are many soft tissues within the mediastinum all of which may give rise to tumours.
- In the interest of reducing the list of differential diagnoses for any given mediastinal mass, the site of the tumour is a useful discriminator.
- The mediastinum is most conveniently divided into three regions.
- This demarcation is based upon the structures that lie within each region and therefore define the likely nature of the pathology in the region, and can be described as follows (Fig 14.1):
    - Anterior mediastinum-heart, thymic region, pericardium
    - Middle mediastinum-SVC, descending aorta, hila, oesophagus, trachea
    - Posterior mediastinum-spine, nerve roots

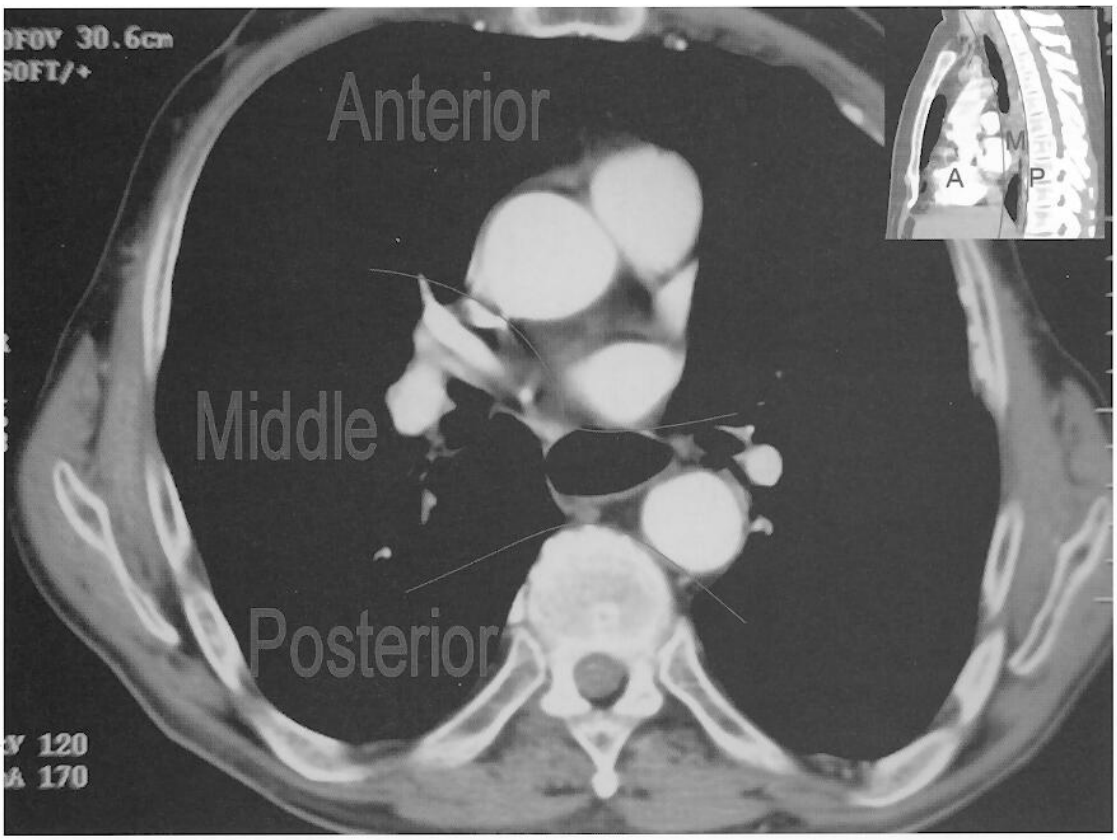

Figure 14.1
The division of the mediastinum into anterior, middle and posterior compartments is easiest to consider in terms of smooth curves drawn anterior to the spine and anterior to the trachea (inset image). However, the true demarcation is somewhat more complicated and governed primarily by the anatomical structures that reside in each compartment.

- Table 14.1 lists the most common tumours in each of those regions.

Table 14.1 **Causes of mediastinal masses**

Anterior mediastinum	Thymic tumour (thymoma, cyst, fat, etc.)
	Teratoma
	Thyroid (2/3rd of retrosternal extension)
	Terrible lymph nodes (TB, lymphoma)
Middle mediastinum	Aneurysm of aorta,
	Tumour of trachea or main bronchi
	Duplication-bronchogenic cyst.
	Oesophageal lesions-achalasia/ hiatus hernia.
Posterior mediastinum	Mass arising from spine–tumour, abscess etc.
	Neurogenic tumours
	Lateral thoracic meningocoele
	Extramedullary haemopoiesis (e.g. thalassaemia)
	Bochdalek hernia, hiatus hernia

- On a frontal CXR, the site of a mediastinal mass can usually be determined from the loss or preservation of the various mediastinal contours and lines (see earlier).

Hilar masses

- The hilar point has been described earlier, at this site lie the hilar lymph nodes.
- Nodal enlargement increases the density and size of the hilum (Fig 14.2, 14.3).

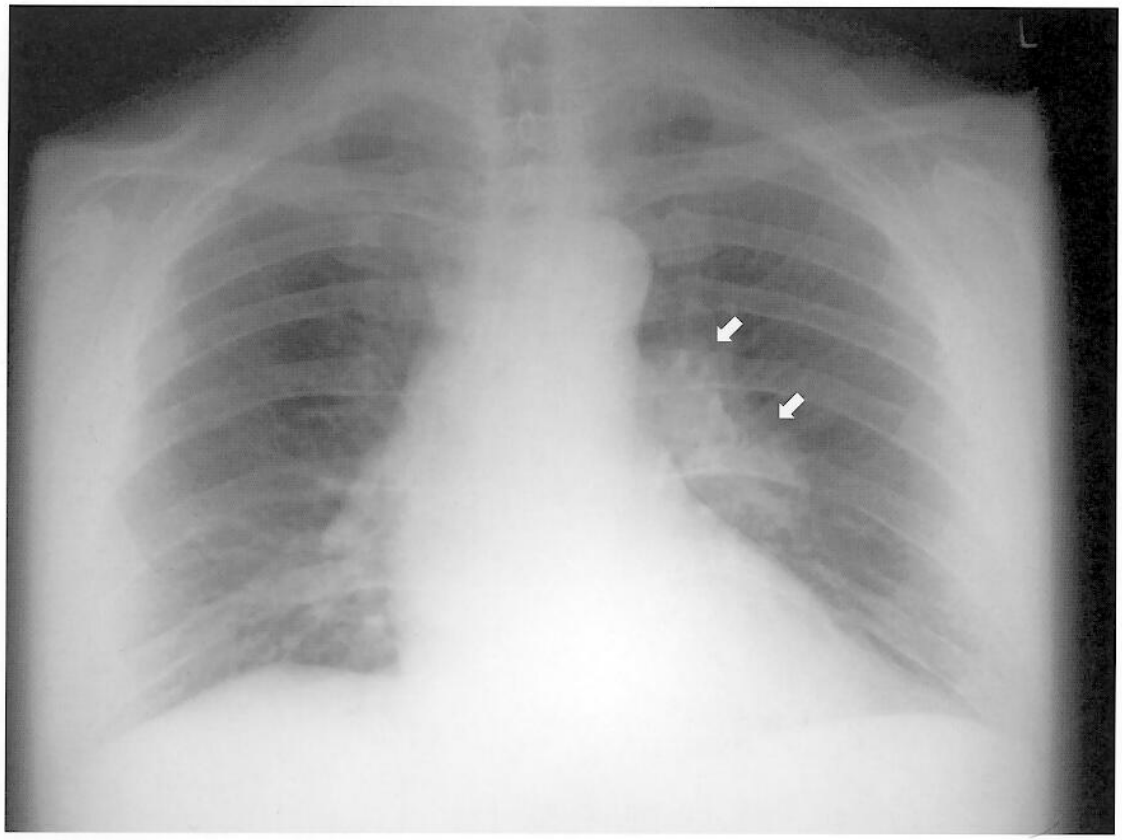

Figure 14.2
Frontal CXR of an adult male with left hilar adenopathy secondary to renal cell carcinoma. Note the increase in size and density of the left hilum (white arrows).

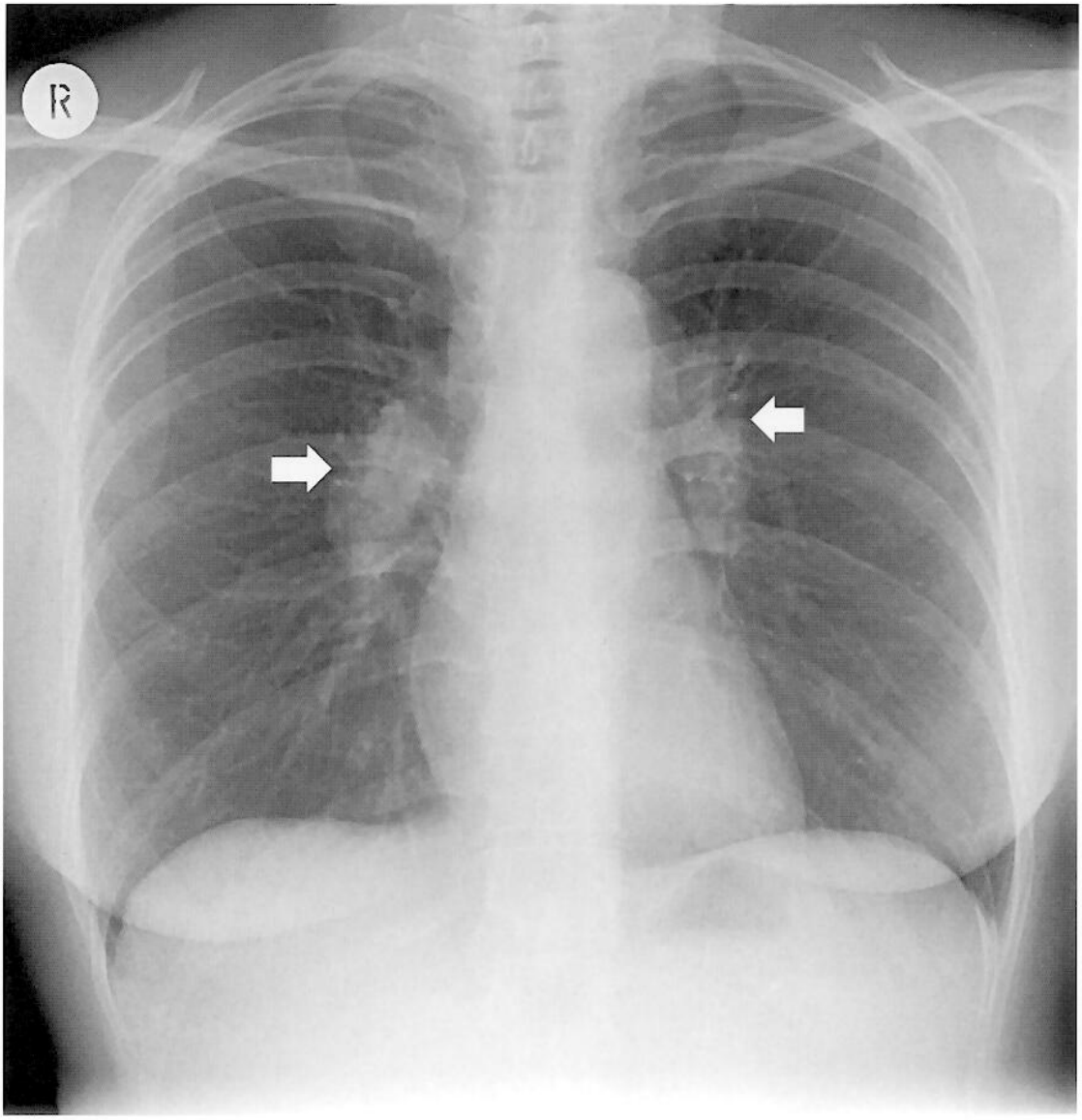

Figure 14.3
Frontal CXR of an adult female with sarcoidosis. Note the bilateral hilar adenopathy with filling in of the concavity normally associated with the hilar point (white arrows).

- Comparison between the hila may assist the observer in deciding whether the enlargement is genuine, but only if the abnormality is unilateral. One should beware of hilar discrepancy as a result of rotation of the patient (Fig 14.4).

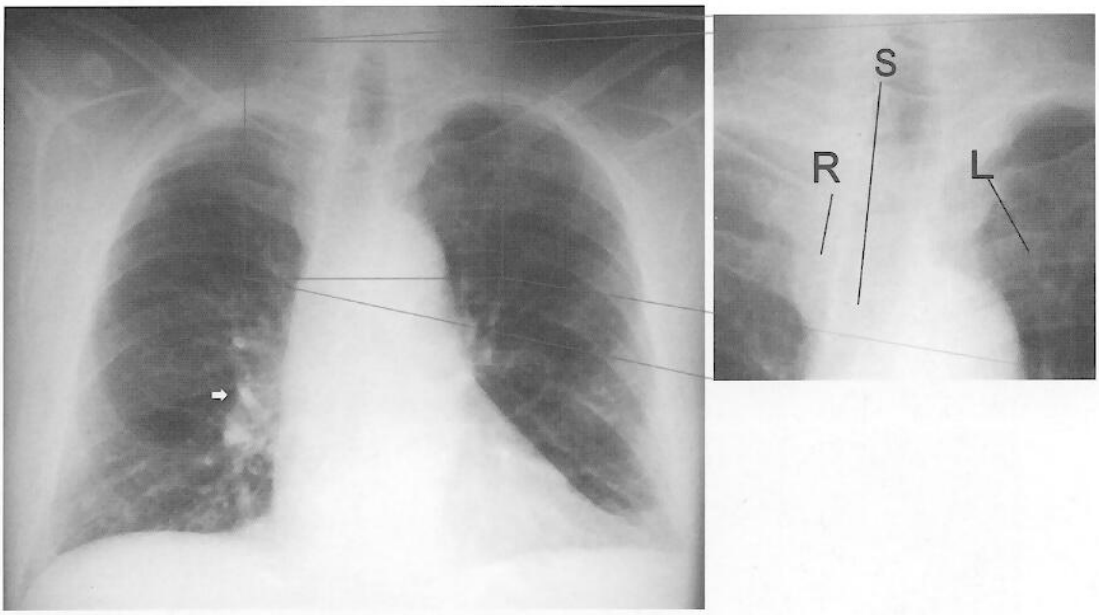

Figure 14.4
Frontal CXR of an adult. Note the apparent increase in the size and density of the right hilum (white arrow). The appearance is due to rotation of the patient to the left, which has partially obscured the left hilum making it look smaller than it is and revealing more of the right hilum, which when compared to the obscured left hilum appears enlarged. Note in the magnified image the relationship between the medial end of the right clavicle (R), the medial end of the left clavicle (L) and the spinous processes (S). The increased distance from S to L confirms left rotation.

Lymphadenopathy (Fig 14.5)

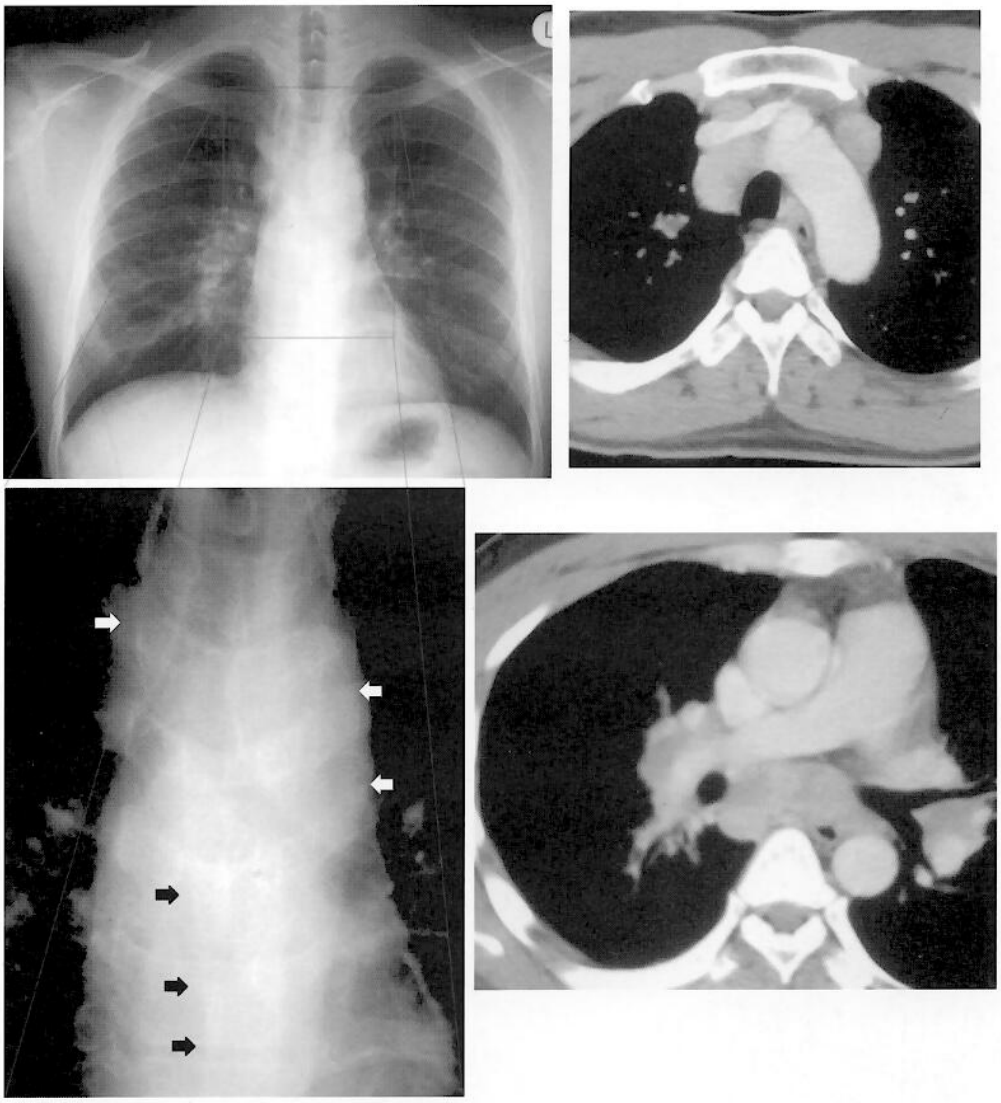

Figure 14.5
Frontal CXR of an adult male patient with lymphoma. Note the bilateral hilar adenopathy more evident on the right. The true extent of the mediastinal adenopathy is less readily appreciated. On the magnified view, the contours caused by the paratracheal and anterior mediastinal lymph nodes are marked (white arrows) and the appropriate CT section is included (top inset image). The sub-carinal lymphadenopathy has caused a subtle bulge of the azygo-oesophageal line (black arrows). The CT image at that level is the bottom inset image.

Mediastinal haemorrhage (Fig 14.6)

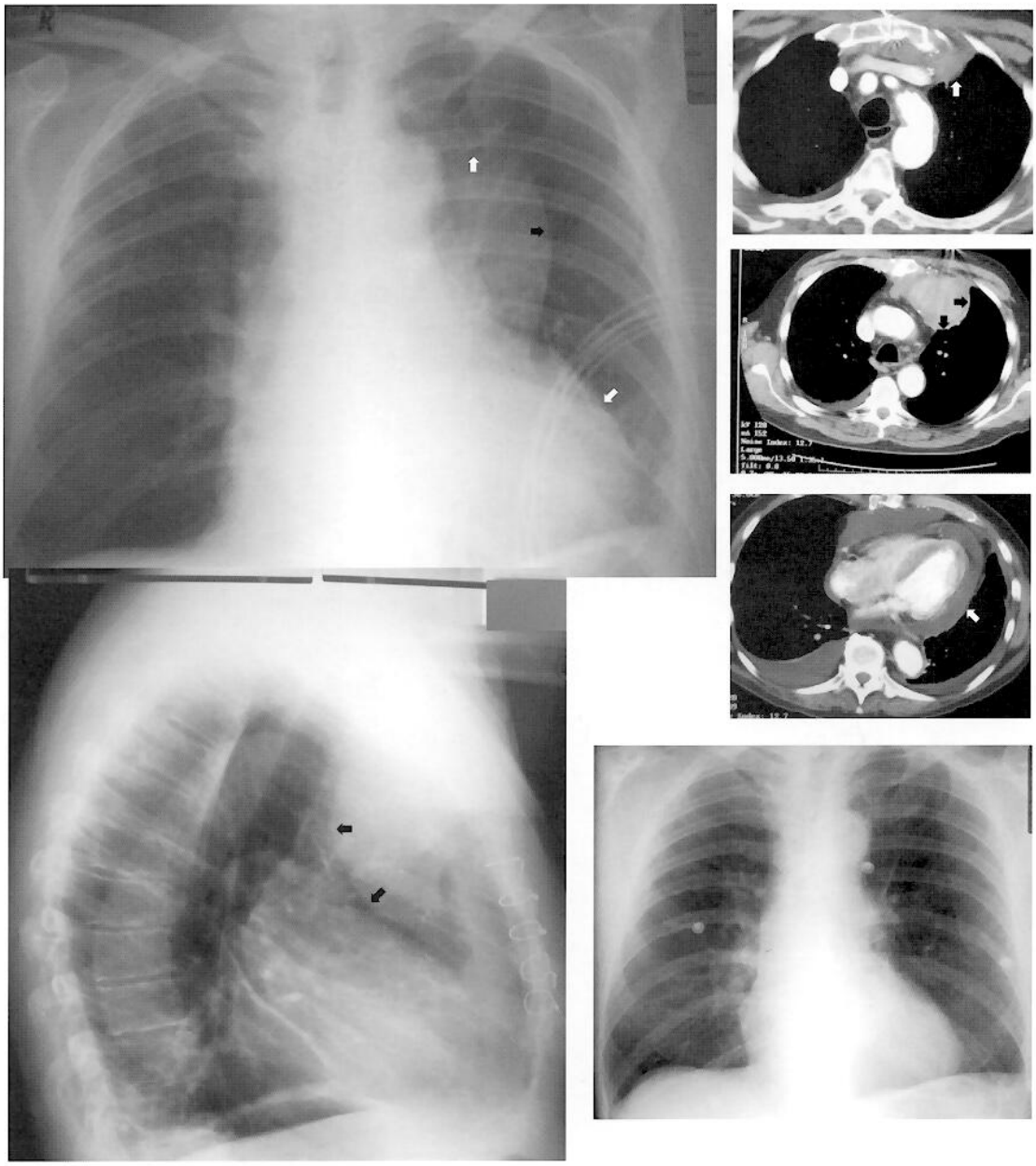

Figure 14.6
Top left: frontal CXR of an adult male following cardiac surgery; bottom left: lateral CXR taken at the same time; bottom right: pre-operative CXR; top right: three post-operative CT images. Note the clearly defined lateral and posterior margins of the mediastinal haematoma (black arrows, the position above the heart makes the posterior silhouette possible. The upper margin is ill-defined (vertical white arrows) as the haematoma merges with the normal tissues of the superior mediastinum at no point causing an abrupt change in tissue density as is found with the posterior and lateral margins. Note also the more globular shape to the heart post-operatively, compared to the pre-operative CXR, due to a pericardial effusion (diagonal white arrows).

Mediastinal abscess (Fig 14.7)

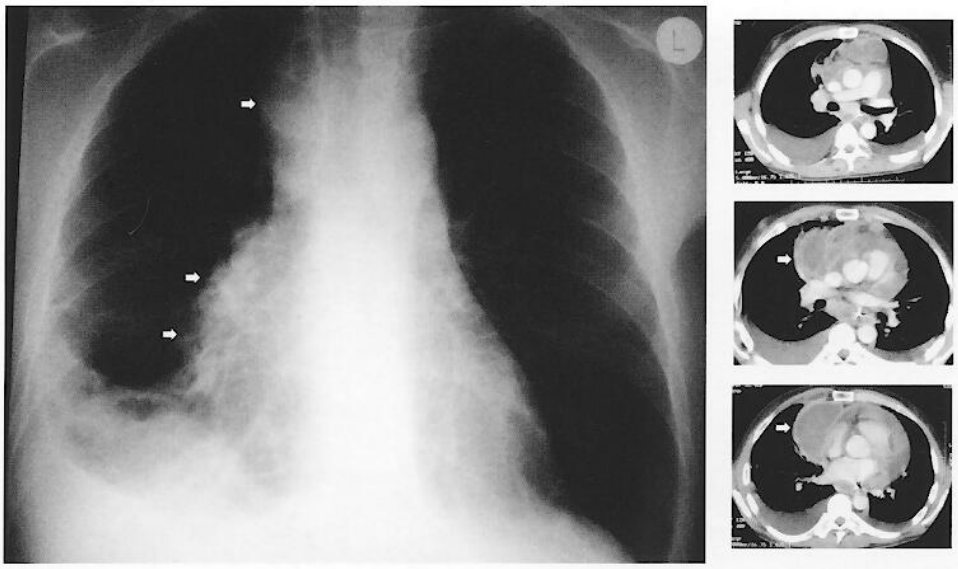

Figure 14.7
Frontal CXR and CT images of an adult male with extensive mediastinal abscesses, initially presenting with a parapharyngeal abscess, which was drained at surgery. Note the abnormal contour to the mediastinum (white arrows) as the only sign of mediastinal pathology. The CT images reveal, as for the case of lymphadenopathy earlier, how the CXR has underestimated the extent of the abscess. Note also the classic appearance of the pleural effusion.