

Intrathoracic goitre

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Section: Chest imaging

Imaging Technique: CT

Case Type: Clinical Cases

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Patient: 70 years, female

Clinical History:

Chronic dyspnoea and cough

Imaging Findings:

The patient presented with chronic dyspnoea and cough. The medical history was unremarkable.

Discussion:

Mediastinal goitre is a well-known benign disease. The descent of a cervical goitre below the plain of the thoracic inlet to become substernal in location, is fairly rare, but not exceptional, with an incidence, derived from several large series of operated patients, ranging from 1% to 13%. The importance of this particular location of the goitre arises chiefly from the fact that the thyroid is growing in a limited space with many surrounding structures that unavoidably, sooner or later, will be compressed or strained.

The goitre may provoke respiratory symptoms (such as cough, dyspnoea, or stridor) or difficulty in swallowing or may determine a superior vena cava syndrome with venous stasis in the neck and in the upper thorax, and with facial oedema. Left recurrent laryngeal paralysis may occur.

The substernal location, which already constitutes a complication of the basic thyropathy, can be further aggravated by incidental malignant transformation of the substernal goitre or by the development of a thyrotoxicosis due to hyper-functioning intra-thoracic thyroid tissue.

Conventional chest examination continues to be the basic roentgen procedure. The basis of the conventional studies is the analysis of the pleuro-mediastinal interfaces which represent the lateral mediastinal borders. The anterior mediastinal line represents the thickness of the visceral and parietal pleura of the two contiguous upper lobes, possibly with a small amount of alveolar tissue interposed. Measuring no more than 1-2 mm in diameter it is commonly visualised on posteroanterior radiograms projected over the air column of the trachea, for several centimeters distal to the plane of the junction of the manubrium and the body of the sternum.

The goitre appears as a right superior mediastinal mass with deviation of the anterior mediastinal line from right to left from above downward. The goitre may displace the trachea or the oesophagus. Other mediastinal structures may be shifted.

Most intrathoracic goitres are located in the right mediastinal compartment and tend to protrude to the right on the chest film. Posterior extension of a goitre into the middle mediastinum occurs occasionally. Goitres of this type always project to the right side on frontal radiograms. Rarely an ectopic mass of thyroid tissue called heterotopic

mediastinal thyroid, is present in the mediastinum and enlarges to form a visible mass lesion.

Goiters can rarely extend into the posterior mediastinum. CT remains the study of choice, since it can be used to confirm the presence of mediastinal masses, but it also helps to define the location and extent of the lesion into different mediastinal compartments, adjacent organ involvement, or vascular involvement. The goitre is a well-defined mediastinal mass with important enhancement after IV contrast medium injection. It may be homogenous or heterogenous with calcifications. It shifts the mediastinal structures without evidence of adjacent organ infiltration.

The administration of contrast is problematic since it will make further lab and scintigraphic evaluation as well as treatment virtually impossible for several weeks or even months. Intrathoracic goitres are one of the commonest causes of upper mediastinal enlargement. The main differential diagnosis of anterior mediastinal masses include thymic benign and malignant neoplasms, a normal hyperplastic thymus, teratoid neoplasms (benign or malignant teratoma, dermoid cyst, seminoma, choriocarcinoma, or embryonal cell carcinoma), lymphoma, lymph node enlargement, pericardial disease (cyst, effusion, neoplasm), sternal lesions, haematoma and aneurysm of the ascending aorta of Valsalva.

Differential Diagnosis List: Intrathoracic goitre

Final Diagnosis: Intrathoracic goitre

References:

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Figure 1

a



Description: The plain film demonstrates an upper right mediastinal mass. **Origin:**

b



Description: The trachea and the anterior mediastinal line are displaced to the left (arrows) demonstrating that the mass is in the anterior mediastinal compartment. **Origin:**

Figure 2

a



Description: The intrathoracic mass is the thyroid (arrow). The CT demonstrates tracheal compression and displacement (arrowheads). **Origin:**

b



Description: Sagittal MPR reconstruction from the axial CT images after IV contrast administration demonstrating the anterior, retrosternal position of the goitre (arrow). **Origin:**