

DIAGNOSTIC IMAGING OF MEDIASTINAL MASSES IN CHILDREN

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An Essay
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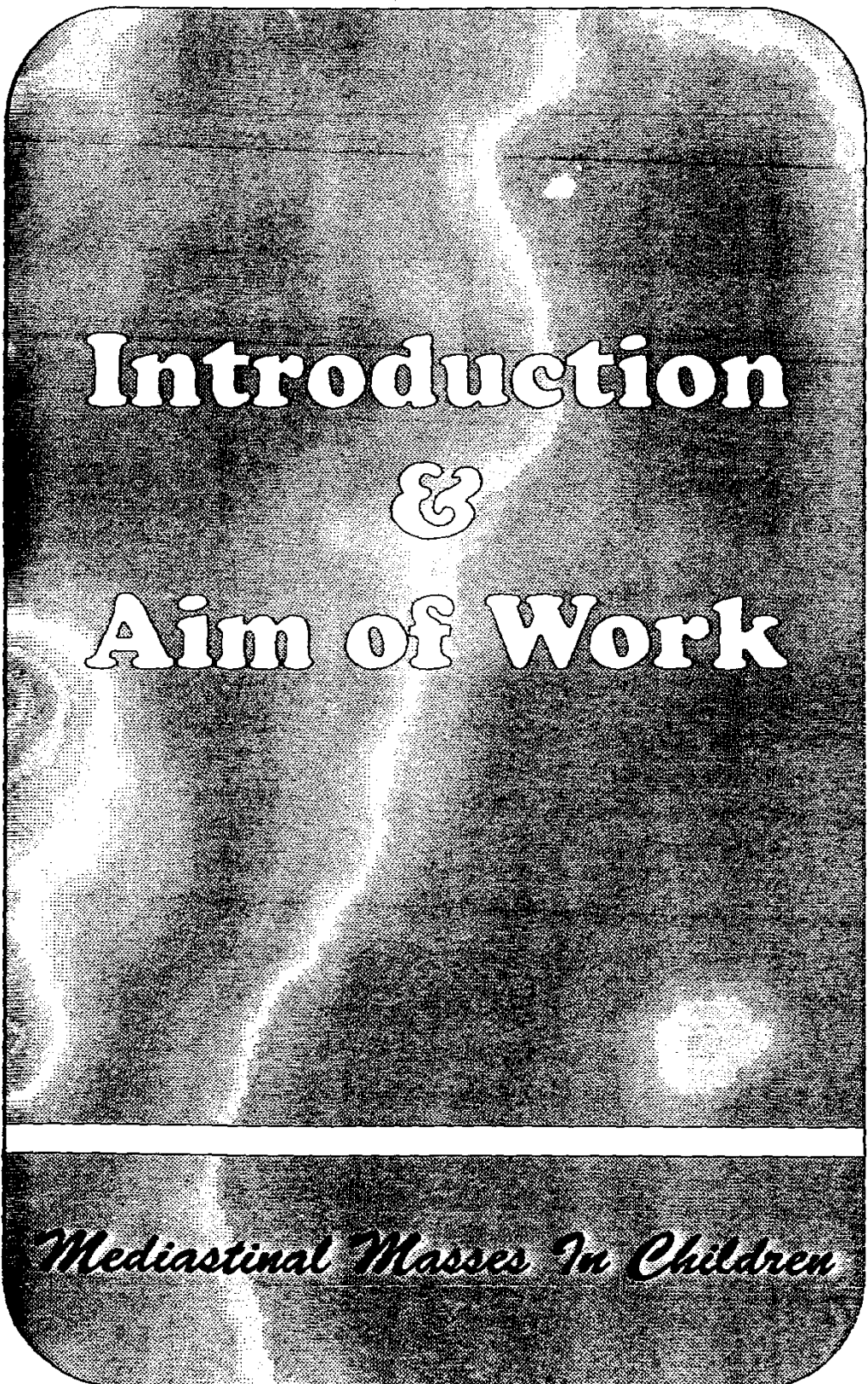
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Introduction & Aim of Work

Mediastinal Masses In Children

INTRODUCTION & AIM OF WORK

The Mediastinum is the anatomic space in the median portion of the thorax that separates the two lungs and their visceral pleura. It extends from the thoracic inlet cranially to the diaphragm caudally and from the sternum ventrally to the vertebral column dorsally. The diagnostic approach to pediatric mediastinal masses is complex and intellectually challenging. A mediastinal mass may be noted on a chest radiograph obtained for other clinical indications.

Diagnostic radiology plays an important role in confirming and characterizing mediastinal abnormalities. The imaging evaluation of the mediastinum demands a thorough knowledge of normal anatomy and normal variants.

Initial evaluation of the pediatric mediastinum is made by chest radiography. Anterior and middle mediastinal masses are further evaluated by CT. Posterior mediastinal masses may involve the extradural space and thus are best imaged with MRI.

The aim of this work is to highlight the pathology of mediastinal masses and the radiological appearance of common mediastinal masses in children; emphasizing the role and efficacy of each individual diagnostic modality in establishing the diagnosis commencing with the principal conventional radiography and reaching the new modalities of cross-sectional imaging.

ANATOMY

Mediastinal Tumors In Children

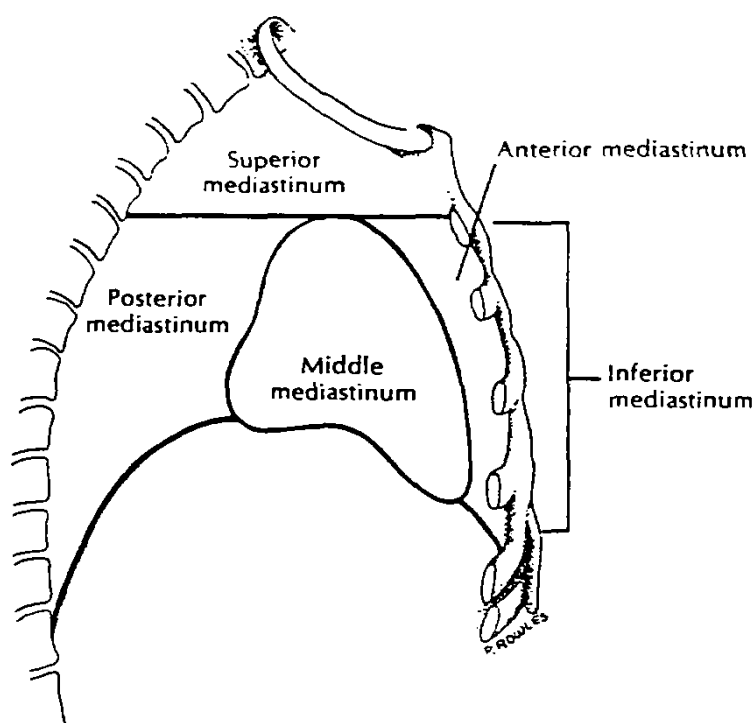


Fig. A-1. Subdivisions of the Mediastinum

(Quoted from Christensen JB and Telford IR, 1978)

ANATOMY OF THE MEDIASTINUM

The cavity of the thorax is completely filled laterally by the lungs, each lying in its pleural cavity. The space between the pleural cavities occupying the center of the thoracic cavity is the **mediastinum**. It contains the heart and the great blood vessels, the oesophagus, the trachea and its bifurcation, the thoracic duct and the phrenic and vagus nerves. It's a very mobile area, the lungs and the heart being in rhythmic pulsation, and the oesophagus dilating with each bolus that passes down it. Hence, there is but a loose connective tissue between the mobile structures. These loose spaces of the mediastinum connect freely with those of the neck; and can be readily distended by inflammatory fluid, neoplasms, etc.

(Mc Minn RMH, 1990)

The mediastinum is situated between the sternum and the thoracic vertebral column, extending from the thoracic inlet to the diaphragm. For description it is divided into superior and inferior mediastina, the latter being subdivided into anterior, middle, and posterior parts. The plane of division into upper and lower mediastina traverses the manubriosternal joint and the lower surface of the fourth thoracic vertebra (Fig. A-1).

(Gray's, 1989)

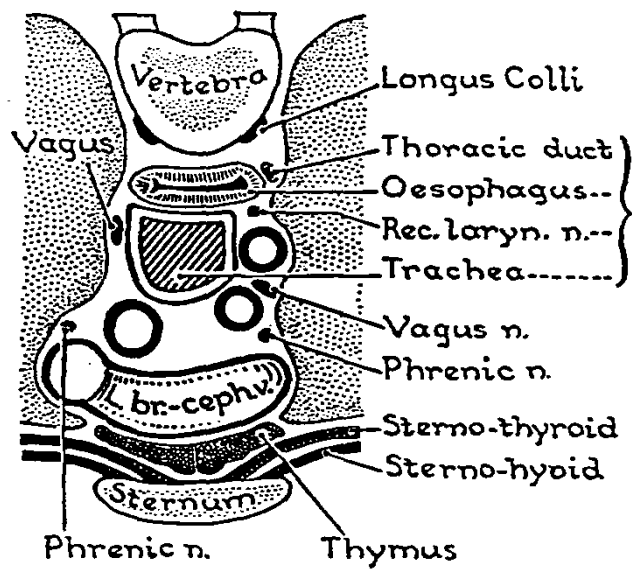


Fig. A-2. Superior Mediastinum
(Quoted from Grant's Atlas of Anatomy, 1978)

The superior mediastinum (Fig. A-1, A-2), lying between the manubrium sterni and the upper four thoracic vertebrae, is bounded below by the sternal plane already noted, above by the plane of the thoracic inlet and laterally by the mediastinal pleurae. It contains: the lower ends of the sternohyoid, sternothyroid and longus colli muscles, the aortic arch, the brachiocephalic artery, left common carotid and subclavian arteries, the brachiocephalic veins and upper half of the superior vena cava, the left superior intercostal vein, the vagus, cardiac, phrenic and left recurrent laryngeal nerves, the superficial part of the cardiac plexus, the trachea, oesophagus, thoracic duct, thymic remnants and the paratracheal, brachiocephalic and the tracheobronchial lymph nodes.

The anterior mediastinum, lying between the sternal body and pericardium, is narrow above the fourth costal cartilage, where the pleural sacs are close. It contains loose areolar tissue, the sternopericardial ligaments, a few lymph nodes and the mediastinal branches of the internal thoracic artery and sometimes part of the thymus gland or its degenerated remains.

The middle mediastinum, the broadest part of inferior mediastinum, contains: the heart, pericardium, ascending aorta, the lower half of the superior vena cava, the terminal azygos vein, tracheal bifurcation and both main bronchi, the pulmonary trunk dividing into right and left pulmonary arteries, both pulmonary veins, the phrenic