ROLE OF RADIOLOGY IN DIAGNOSIS OF MEDIASTINAL SYNDROME

THESIS

Submitted in Partial fulfillment of

Master Degree in

Radio-Diagnosis

By

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1986

Achnowledgement
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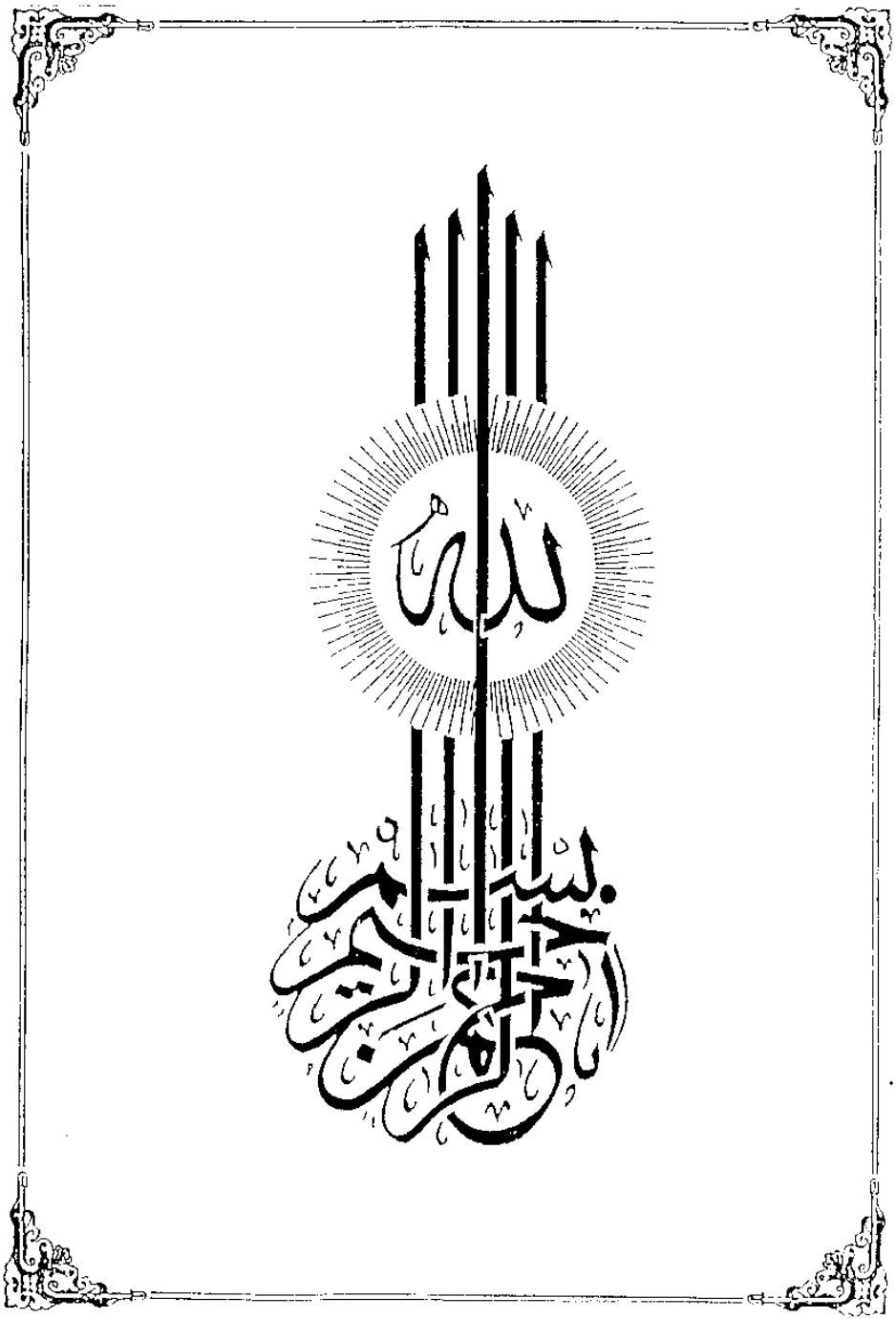
I wish to express my great gratitude to Prof. Dr. M. Samy Albiblawy, Head of department of Radiology Ain Shams University, for his most kind encouragement supervision, guidance & help.

I want also to express my gratfulness to Prof. Dr. Layla Galal., Prof. of Radiology, Ain Shams, University, for her help.

I would like to record my sincere gratitude to Dr. Yosef H. Zaky, Ass. Prof. of Radiology, Ain Shams University, for his prolonged help and sincere advice.

I would like to record my sincere gratitude to my senior staff and collegues.



Content :

INTRODUCTION

Introduction and Aim of the work.

Mediastinal masses may arise from any of the various types of tissue within the mediastinum. They may be tumours, cystic swellings or dilated vascular structures; they may be due to a hernia, to a dilated oesophagus, or to an abscess or other fluid collection, or they may be secondary to a neoplasm arising either within the chest or outside it, (Wright, 1973).

The majority of mediastinal tumours are first detected by radiology. Mediastinal opacity, whatever its cause, is frequently asymptomatic; but if it is from a neoplastic mass it may produce some constitutional upset as respiratory difficulties from tracheal compression (Simon, 1975).

The most important feature in differential diagnosis of mediastinal swellings is the position of the tumour in the mediastinum.

Early detection and observation lead to their removal before pressure symptoms or infection supervene.

Radiology is the most valuable method of investigation, although in many cases no final diagnosis can be established before thoracotomy and histology.

The aim of this work is to present the role of radiology in the differential diagnosis of mediastinal swellings.

REVIEW OF LITERATURE

Anatomy of The Mediastinum

Mediastinal Boundaries :

The mediastinum is that compartment of the thoracic cage that is bounded laterally by the parietal pleural reflections along the medial aspects of both lungs.

Superiorly by the thoracic inlet, inferiorly by the diaphragm, anteriorly by the sternum, and posteriorly by the anterior surfaces of the thoracic vertebral bodies.

Compartements of the Mediastinum:

The mediastinum is divided into four compartments.

1. The superior mediastinum:

Bounded superiorly by the thoracic inlet and inferiorly by a line drawn from the manubriosternal angle to the intervertebral disk between the T_4 and T_5 vertebrae. Below this imaginary line the inferior mediastinum has three compartments or subdivisions.

2. An anterior mediastinum:

Bounded anteriorly by the sternum and other tissues beneath the sternum, and posteriorly by the pericardium covering the heart and major vessels anteriorly.

3. A middle mediastinum:

Which contains the heart, the aorta, the origin of the great vessels to the upper extremities and neck, the pulmonary arteries, superior and inferior venae cavae, and the vessels of the root of the lung.

4. The posterior mediastinum:

Which is bounded anteriorly by the heart and posteriorly by the thoracic spine.

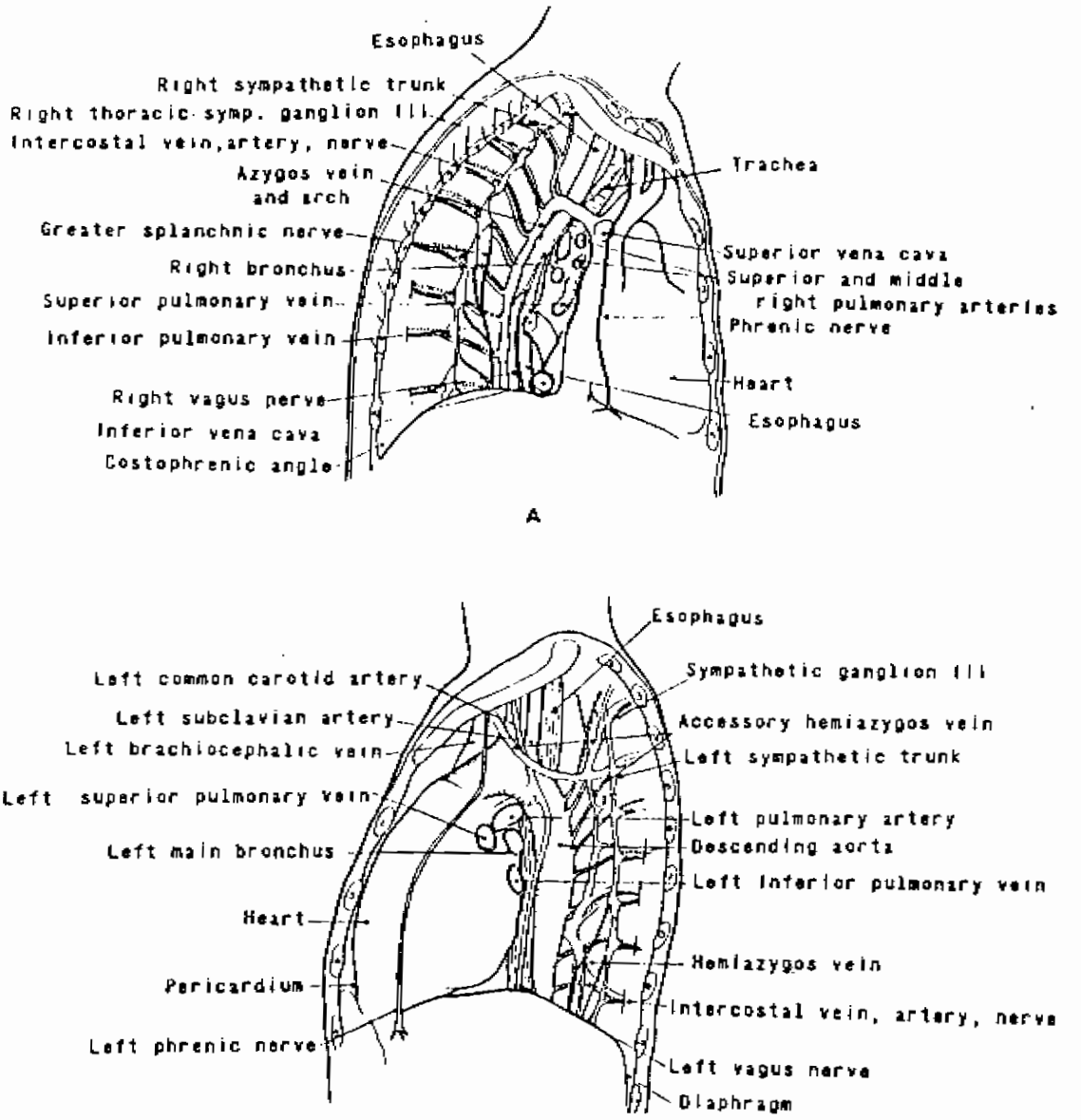


Fig. (1). A . Diagram illustrating a view of the mediastinum from its fight aspect (left lung removed).

B . Diagram illustrating a view of the mediastinum from its left aspect (right lung removed (Pernkopf, 1964).

Major Anatomic structures contained in the Mediastinum:

When the mediastinum is viewed from its right side with the mediastinal and costal parts of the pleura removed and the pericardium open the major structures visualized are (from top to bottom); esophagus, trachea, right vagus nerve, right phrenic nerve, azygos vein, superior vena cava, right atrium of the heart, inferior vena cava, greater splanchnic nerve, and a number of intercostal veins, arteries and nerves. Fig. (1)

In cross section the superior and middle right pulmonary arteries, the superior and inferior pulmonary veins and the right bronchus may be visualized.

Similarly, when are left side of the mediastinal septum is viewed with the mediastinal and costal parts of the pleura removed, the pericardium opened, and the structures exposed and partly dissected, the following structures can be seen (from top to bottom): esophogus, major vessels arising from the arch of the aorta (including the left common carotid artery and the left subclavian artery), left brachiocephalic vein, the entire arch and descending aorta, hemiazygos vein, left

vagus nerve, left phrenic nerve, left ventricle of the heart, in cross section, the left pulmonary artery, left inferior pulmonary vein, left superior pulmonary vein, and left main bronchus. There are in addition, the segmental intercostal veins, arteries, and nerves, as well as the left sympathetic trunk, and some of the sympathetic ganglia.

In sagittal section:

Along the line of the superior and inferior venae cavae, passing through the right aspect of the cavity of the left atrium, one may visualize:

The right innominate vein and the opening of the left innominate vein, a small portion of the ascending aorta, the auricle of the right atrium, the right ventricle, left atrium, superior vena cava, right pulmonary artery in cross - section, and the right bronchus with the azygos vein above it.

In frontal perspective:

The following structures can be identified: The trachea with its left and right main bronchi, the pulmonary arteries and veins, the azygos knob adjoining the inferior margin of the superior vena cava and producing an ovoid shadow in the right tracheo - bronchial angle, the arch of the aorta and descending thoracic aorta, the thoracic spine with its paraspinal lines, and the pleural contours of the mediastinum medially.

The caudal cross section of the superior mediastinum:

Reveals the structures that descend from the neck into the inferior mediastinum.

Anteriorly the fat and remains of the thymus, the left and right innominate veins, the trachea, esophagus, left subclavian and left common carotid arteries and innominate artery, a nerves as the right and left phrenic, right and left vagus and laryngeal (cross section at the level of the third thoracic vertebra).

The innominate veins and innominate artery lie anterior to the trachea.

At the level of the trachea the left common carotid artery can be identified. The left subclavian artery and the esophagus lie posterior to the level of the trachea.

Descending into the inferior mediastinum:

The cross-section allow us to detect more accurately the contents of the anterior, middle, and posterior compartments. At the inferior margin of the superior mediastinum, fourth thoracic