

Original Research Article

Computed Tomography Based Study in the Detection and Characterization of Mediastinal Masses: An Institutional Study

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Abstract: The cross sectional anatomy of the mediastinum is conveniently described in relation to major structures at each level using computed tomography. Hence CT is a superior modality than plain radiography to characterize and detect mediastinal masses and this forms the basis of our study. This study was conducted in the Department of Radiodiagnosis, Sree Mookambika Institute of Medical Sciences, Kulasekharam in 2015. A total 53 cases were evaluated for mediastinal masses. All the patients were selected based on the inclusion and exclusion criteria. Informed consent was taken from all the patients. All patients were subjected to CT and evaluated for mediastinal masses. In this study 46% were anterior, 33% posterior and 20.6% middle mediastinal masses. Among these 27.6% comprised thymic masses, 23.8% neural tumors and 53% lymph nodal masses. Computed Tomography is the most useful tool in the detection and characterization of mediastinal masses.

Keywords: Anterior, Computed Tomography, Mediastinal masses, Posterior, Thymic

INTRODUCTION

Computed Tomography (CT) is an indispensable tool for the radiological assessment of the mediastinum. Although conventional radiographs show recognizable abnormalities in many patients with mediastinal pathology, radiographs are limited in their sensitivity and ability to delineate the extent of mediastinal abnormalities [1, 2]. Based on Computed tomography's excellent density resolution and tomographic format, it is able to identify normal mediastinal structures, vessels and vascular abnormalities; often able to characterize masses based on their attenuation, and precisely localize them to site of origin and extent. Furthermore the transaxial plane of CT is well suited for the investigation of a number of mediastinal structures such as trachea, esophagus, aorta and superior venacava which are oriented perpendicular to the plain of scan [3, 4]. The problem of superimposition of structures which often adds to confusion on plain radiographic evaluation is eliminated with the cross sectional ability of CT [5]. The present study evaluates the efficacy of CT in the detection, characterization and distribution of mediastinal masses

MATERIALS AND METHODS**Study settings and Study Period**

Department of Radiodiagnosis, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari (Dist), Tamil Nadu. The study period is one year (2015-16)

Inclusion criteria

- Clinically suspected cases
- Patients where the chest radiographs showed the evidence of mediastinal mass lesions

Exclusion criteria

- Traumatic cases
- Cardiac cases

Procedure

A total number of 53 cases selected based on the inclusion and exclusion criteria. Informed consent was taken from each patient. All the cases were studied on SEIMENS SOMATOM. The routine anteroposterior topogram of the thorax was initially taken in supine position withholding the breath. Axial sections of 10mm thickness were taken from the level

of thoracic inlet to the level of suprarenals. In all cases plain scan was followed by contrast scan. For contrast OMNIPAQUE (IOHEXOL) 350 mgI/ml was given and axial section were taken from thoracic inlet to the level of suprarenals. Sagittal and coronal reconstructions were made wherever necessary [6, 7].

Statistical analysis

The data was expressed in number and percentage. Microsoft Excel 2010 version used for calculation of percentage

RESULTS

In this study total 53 patients were studied. Males: Females (27:25). Most of the patients had age range between 40-60 years (17). 31.6% patients presented with dyspnoea. Most of them had anterior mediastinum masses (29 in number) followed by posterior (21 in number). Among the anterior mediastinal masses, thymic lesions predominate. In the posterior mediastinum the neurogenic lesions formed the majority.

Table-1: Distribution of patients based on age and gender

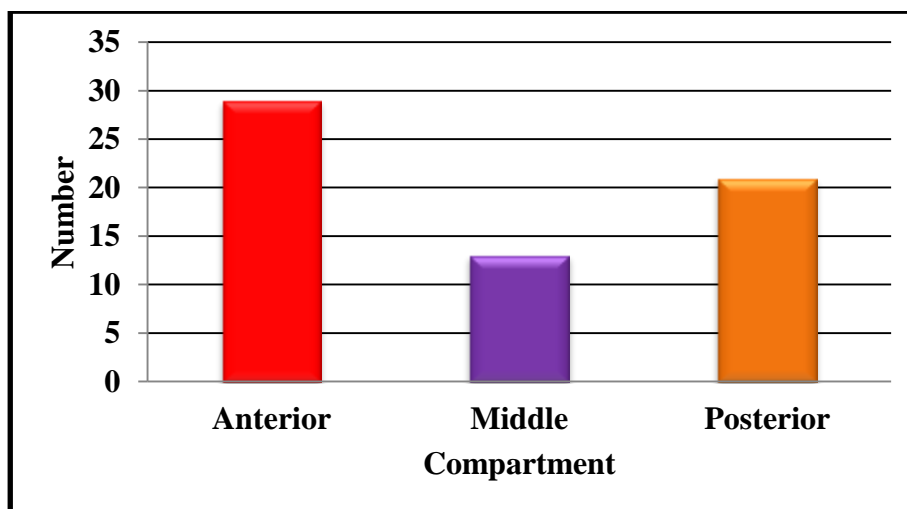
Age (years)	Males		Females		Total	
	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
0-15	9	17.31	5	9.62	14	26.92
16-30	3	5.77	4	7.69	7	13.46
31-45	2	3.85	3	5.77	5	9.62
46-60	7	13.46	10	19.23	17	32.69
Above 60	6	11.54	3	5.77	9	17.31
Total	27	51.92	25	48.08	52	100.00

Table-2: Distribution of patients based on clinical symptoms

Clinical symptom	Number	Percentage (%)
Dyspnoea	31	31.63
Cough	19	19.39
Fever	14	14.29
Chest Pain	12	12.24
Hemoptysis	2	2.04
Dysphagia	4	4.08
Others	16	16.33
Total	98	100.00

Table-3: Distributions of patients based on three different mediastinal masses

Anterior mediastinal masses	Number	Middle mediastinal masses	Number	Posterior mediastinal masses	Number
Thymic mass	8	Metastatic LN	6	Neural tumors	5
Lymphoma	5	Tuberculous Lymphadenopathy	3	Paravertebral abscess	3
Tuberculous lymphadenopathy	4	Neurenteric cyst	1	Tuberculous lymphadenopathy	3
Aortic mass	3	Others	3	Oesophageal mass	2
Metastatic lymphadenopathy	3			Hydatid cyst	2
Thyroid mass	1			Desc.Aorta aneurysm	1
Metastatic GCT	1			Benign mesothelioma	1
Lymphangioma	1			Lymphangioma	1
Thymic (Cervical)	1			Primary Choriocarcinoma	1
Liposarcoma	1			Paravertebral hematoma	1
Sternal chondrosarcoma	1			Teratoma	1
Total	29	Total	13	Total	21



Graph-1: Distribution of patients based on compartment of mediastinum masses

DISCUSSION

Although conventional radiographs can show recognizable mediastinal abnormalities in many patients with mediastinal pathology, radiographs are limited in their sensitivity and ability to delineate the extent of mediastinal abnormalities and the relationship of masses to specific mediastinal structures. With the CT these problems are overcome due to excellent density resolution and tomographic format, therefore CT plays a major important role in the evaluation of the mediastinum masses. Davis *et al.* study had maximum patients with fever and chest pain but in our study, Dyspnoea was the most common presentation [8]. In Strollo *et al.* study most patients had anterior masses which are similar to our institutional study [9]. The pediatric group results matched Strollo *et al.* study [10, 11]. Our institutional study results also show that CT is more efficient than plain radiographs in the evaluation of various mediastinal masses.

CONCLUSION

CT definitely plays a major role in the assessment of various mediastinal pathologies, initially detected on the chest radiographs. Our study concludes that CT is a superior modality of choice in the evaluation of mediastinal masses.

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