A Histomorphological Study of Resected Mediastinal Tumors

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Abstracts: Background: The numerous structures within the mediastinum, make it prone for development of various congenital cysts, benign & malignant neoplasms. Cystic lesions and small tumors are asymptomatic in half of the patients and symptoms develop as a result of compression or invasion. These tumors are thus discovered at very late stages, which proves fatal, or, are diagnosed incidently. Methods: We analysed all resected mediastinal tumor specimens received in Department of Pathology & from few other private laboratories in Rural and Urban areas, in & around Bareilly region of North India. In 10 years duration, a total number of 38 cases were examined. Information was collected from detailed gross & microscopic examination and correlated with that of previous studies. Results: Mediastinal tumors occur more in males, with higher frequency of malignant lesions than benign. Predominant tumors are thymomas occurring in middle age group(20-29yrs), followed closely by neurogenic tumors. Conclusion: This study stresses upon the importance of early screening of all patients with suspicion, with help of radiological modalities along with FNAC & mediastinoscopy. Possible causes of increasing incidence of thymomas in children younger than 16yrs age should be further evaluated. [Mohan N et al NJIRM 2011; 2(4) : 14-17]

Key Words: Mediastinal tumors, thymomas, mediastinal neurilemmomas.

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Introduction: The mediastinum is the portion of the thoracic cavity located between the pleural cavities, extending antero-posteriorly from the sternum to the spine and sagittally from the thoracic inlet to the diaphragm. Division of mediastinum into compartments has been useful[1].

The relative frequencies of various lesions are considerably different in these compartments, and also in different age groups[1]. The mediastinum is arbitrarily divided into superior and inferior compartments. The Inferior compartment is further divided into Anterior, Posterior and Middle, according to their respective locations. Co-relating with the different organs and structures present in these compartments, different lesions are common respectively. Thymic cysts and Thymomas are common in superior and anterior compartments, as are thyroid lesions along with parathyroid adenomas[2]. Anterior compartment shows commonly germ cell tumors, paraganglioma and hemangioma. Posterior compartment shows increased incidence of neurogenic lesions and middle compartment shows pericardial and bronchial cysts[3].

Patients usually present with dyspnoea, cough, weight loss, fever and night sweats. Approximately 40% of the patients are however asymptomatic[4].

Material and Methods: Present Study was conducted in Rural and Urban areas, in & around Bareilly region of North India.

Unit of Study : All resected mediastinal tumor specimens received in Department of Pathology & from few other private laboratories.

Nature of Study : The study includes all resected specimens of mediastinal tumors received at Department of Pathology, Rohilkhand Medical College & Hospital, Bareilly and from other private laboratories in & around Bareilly, after taking permission from Institutions' Ethical Committee and patient's consent.

Study period : 10years (2000 – 2010)

Sample Size : Total no. of cases were 38.

Study Schedule : An elaborate schedule was prepared before undertaking the study. A detailed clinical history and data was recorded from the patients who underwent surgery. All specimens were subjected for histopathological examination.

Gross and microscopic features, after standard processing, were studied in detail and recorded.

Analysis : The information collected from the history & examination was correlated with previous studies done in the similar field and results were compared & correlated.

Result: In present study is tabulated below and also shown in graph.

Chart 1. Sex Distribution of Mediastinal Tumors –

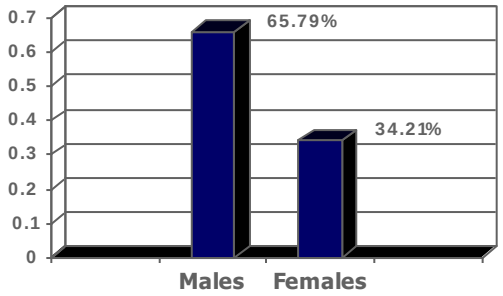

Chart 2. Distribution of Benign & Malignant Tumors

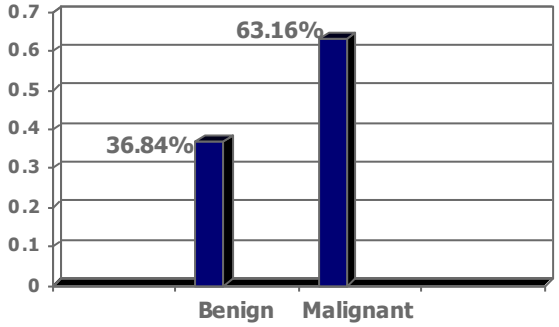

Table No.1. Age distribution of Tumors –

Age (years)	Number	Percentage (%)
0-9	1	3
10-19	7	18
20-29	12	32
30-39	5	13
40-49	9	24
50-59	3	8
60-69	1	3
70-	0	0

Table No.2. Benign Mediastinal Tumors

Name	**Number**
Neurofibroma	**1**(2.63)
Schwannoma	**4**(10.53)
Epithelial Thymoma	**5**(13.16)
Leiomyoma with hyaline change	**1**(2.63)
Ganglioneuroma	**1**(2.63)
Angiolipomatous hamartoma with plasma cell variant of Castleman's Disease	**1**(2.63)
Neurilemomma	**1**(2.63)

Table No.3. Malignant Mediastinal Tumors –

Name	No. (%)
PNET	5 (13.16)
Germ Cell Tumor	5 (13.16)
Lymphocytic Thymoma	8 (21.5)
Yolk Sac Tumor	1 (2.63)
Metastatic Adenocarcinoma	1 (2.63)
Hodgkin's Lymphoma	1 (2.63)
Non Hodgkin's Lymphoma	1 (2.63)
Papillary carcinoma Retrosternal Goitre	1 (2.63)
Neuroendocrine Carcinoma	1 (2.63)

Discussion: In this study we have included patients' details from tertiary institutes as well as referral centres from in and around Bareilly region, located in the northern part of India. This gives a better understanding of the prevalence of these lesions in this zone of India.

In our series of 38 patients, a total of 36.84% were benign, while 63.16% were malignant. Male: Female ratio was 1.92:1, and most patients were between 24 – 29 years of age. Neurogenic tumors were most commonly seen in 10 – 19 years age group, while thymomas were more common in between 30 – 39 years.

Amongst all benign lesions, Epithelial thymomas(13.16%) were most common, followed by schwannomas(10.53%).

Fig.1. Gross specimen of Thymoma

Fig.2.Cut section of specimen of Thymoma

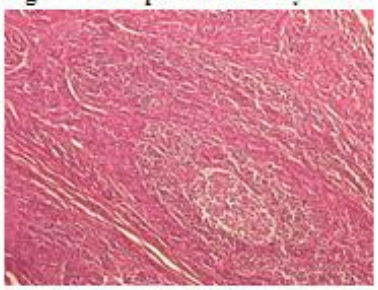

Fig.3.Section of mixed thymoma.H&E

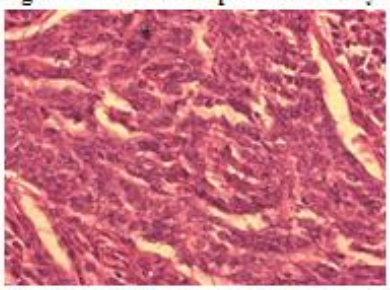

Fig.4.Mixed Thymoma. H&E

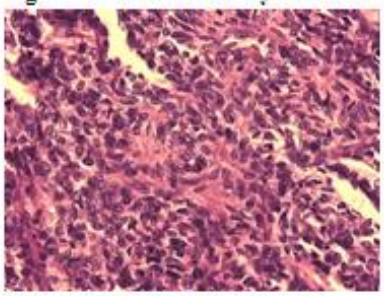

Fig.5. Thymoma with rosettes

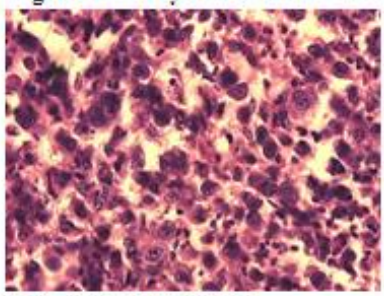

Fig.6. Germ cell tumour

Amongst all malignant lesions, lymphocytic thymomas (21.05%) were most common lesions, followed by Germ cell tumors and PNET (13.16% each).

The data collected & compiled in the present study was compared with that of previous studies[5,6,7,8], done on the same lesions, and some interesting facts were obtained.

In most frequent mediastinal tumour was found to be Thymomas (34%) ,as compared to study by Davis et al(19%), who found neurogenic tumors to be most common (21%)[5].

In children below 16yrs of age, most frequent were neurogenic tumors(50%), which was in accordance with the findings by Bower at al (42%), but frequencies of thymomas drastically increased in our study(38%), as compared to (0%) in their study, which suggests a rising frequency of thymomas in children[6].

Table no. 4 :Demographic characteristics of Thymomas :-

Author	Year	No. of cases	Age Range (yrs)	Male/ Female
Verley[3]	1985	200	5-80	93/107
Hofman[8]	1985	98	2-77	44/54
Lewis[9]	1987	283	16-90	136/147
Kornstein[10]	1988	126	12-82	64/62
Pescarmona[11]	1990	83	21-83	39/44
Wilkins[12]	1991	85	13-81	39/46
Present	2011	13	6-49	7/6

Conclusion: The study showed a rising frequency of epithelial thymomas in the patients, specially in >30yrs age group and strangely in children of <16yrs age, which showed a drastic rise in frequency as compared to other studies carried out earlier. Study also showed a decrease in frequency of lymphomas, especially in young children, the cause for which needs further to be explored. The overall age range

was comparative to other studies and male to female ratio also appeared to be maintained.

The study emphasises the need of immediate screening of patients with the suspicion of these lesions, with the help of various modalities, including chest radiographs, CT, USG and MRI. FNA of these lesions and mediastinoscopy have proved to be useful diagnostics tools. Study emphasis the use of these modalities in daily practice to diagnose these lesions, but being a secondary referral centre, further evaluation of the lesions based on immunohistochemical profile could not be done, especially for confirmation of round cell tumours.

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