

ORIGINAL ARTICLE

Mediastinal Mass: Review of 48 Cases Admitted in Thoracic Surgery Dept. of a Tertiary Hospital in Bangladesh

Hossain Al Mahmud¹, Ankan Kumar Paul², Serajus Salekin³,
Mohammad Zakir Hossain Bhuiyan⁴, Debasish Das⁵, Mohammed Kamrul Hasan⁶,
Md. Kamrul Alam⁷, Osman Goni⁸, S.M. Shafiqul Alam⁹

Abstract:

Introduction: Mediastinal mass is relatively uncommon chest tumor with only 3% prevalence worldwide but the incidence is rising in last 4 decades. As there is very little published data in our country we tried to release a report of mediastinal mass in a tertiary hospital of Bangladesh.

Patients and Methods: 48 patients with mediastinal mass were considered in this retrospective descriptive study. All these patients were admitted in our institute in a 3 years period from January 2016 to December 2018. **Result:** Most of the patients presented in 3^d decade (33.3%), 5th (18.75%) and 4th decade (14.58%) being the next in frequency. Most of them were present in anterior mediastinum (68.75%), the rest were almost equally distributed in middle (16.7%) and posterior (14.58%) mediastinum. Total 12 histological types were found of which mature cystic teratoma (27.08%) and lymphoma (27.08%) were prevalent. Most of them were benign (54.17%) and presenting symptoms were chest pain (68.58%), dyspnea (52.08%) and cough (45.63%) in most of the patients. **Conclusion:** This was a small effort to sort out the variety of this fascinating entity and a multicenter large scale study is needed to ascertain the true nature and outcome of this group of disease.

Key Words: Mediastinal mass, Mediastinal tumor.

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Introduction:

Mediastinal masses are relatively uncommon tumors, that varies in histologic distribution, location, symptomatology, and prevalence of malignancy between different age groups.^{1,2}

Tumors of anterior mediastinum include thymoma, germ cell tumors, thyroid enlargement and lymphoma. Middle mediastinal masses include pericardial cysts, bronchogenic cysts, lymphoma and mediastinal granuloma. Posterior mediastinal

1. Registrar, Dept of Thoracic Surgery, DMCH
2. Resident, Cardiovascular and Thoracic Surgery, NICVD
3. Assistant Professor, Dept. of Thoracic Surgery, DMCH
4. Assistant Professor, Dept. of Thoracic Surgery, CMCH, Chattogram
5. Indoor Medical Officer, Dept. of Thoracic Surgery, DMCH
6. Junior consultant, 250 bed Chest and TB Hospital, Shyamoli, Dhaka
7. Professor, Dept. of Thoracic Surgery, DMCH
8. Assitant Professor, Dept. of Thoracic Surgery, NICVD
9. Associate Professor, Dept. of anaesthesiology, DMCH

Correspondence to: Dr. Hossain Al Mahmud, Registrar, Thoracic Surgery Dept., Dhaka Medical College Hospital(DMCH), Dhaka. E-mail: hamahmud57@gmail.com. Mobile:+8801914388358

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masses are predominantly tumors of neurogenic origins.³ After suspicion from symptoms and signs radiograph (Figure 1) and CT scan (Figure 2, Figure 3) remains the mainstay for diagnosis. Approaches for tissue assessment include percutaneous needle aspiration, mediastinoscopy, video assisted thoracoscopy and anterior mediastinotomy.³ Recent advances in radiographic techniques and immunohistochemistry have led to more accurate preoperative delineation and histologic diagnoses.⁴ The treatment of choice is surgery and/or chemo/radiotherapy. We reviewed all cases of mediastinal masses diagnosed and treated over a 3-year period between 2016-2018 in Dhaka medical college hospital (DMCH) in Bangladesh to determine the presenting features- location- histology- relationship of age to the type of lesion and benignity versus malignancy in these unusual tumors.

Patients and methods:

This study was a retrospective, descriptive study performed on 48 patients with mediastinal masses who were admitted in DMCH over a 3 year period from 2016 to 2018.

Age and sex distribution, location, histologic types of tumors, symptoms and signs, associated diseases and complications were recorded from patients' files. All resected masses had a definitive pathologic diagnosis. Data analysis was performed by SPSS Software (v.24), using descriptive statistics indices such as frequency, mean, median, standard deviation and standard error.

Results:

A total of 48 patients with mediastinal masses including 31 males (64.58%) and 17 females (35.42%) with a mean age of 31.08 years (range 1-68 years) who were admitted in department of Thoracic surgery, DMCH entered the study.

Most mediastinal tumors (53.05%) were identified in the third and fifth decades of life. (Table I) The incidence of malignancy was 45.83%, the highest being in 6th and 7th decades (Table I) and the most common malignancy was malignant lymphoma (27.08%). The most common benign tumour was mature cystic teratoma (27.08%). Inflammatory pseudotumors were found which looked like a mediastinal mass but actually found to be lung mass later on during surgery. (Table II)

Considering the location of mediastinal masses, the anterior mediastinum was the most common site (68.75%) followed by middle mediastinum (16.7%) and posterior mediastinum (14.58%) (Table IV). The commonest tumor of anterior mediastinum was mature cystic teratoma. Malignant lymphoma was found both in anterior and middle mediastinum. 54.17% were solid and 45.83% were cystic in nature.

Symptoms such as pain (64.58%), dyspnea (52.08%) and cough (45.83%) constituted the most commonly presenting complaints followed by fever (35.42%) and weight loss (27.08%). Pleural effusion found in one patient only and one patient was asymptomatic. Encapsulated Thymoma was the asymptomatic case. (Table III)

The most common complication observed in this series of mediastinal tumors was Superior Vena Cava (SVC) syndrome. Other complications were brachial plexus involvement, horner's syndrome and pleural effusion. There was no post operative complications. No in hospital mortality were recorded.

Table-I

Age distribution and type

Age group	Frequency	Malignancy	Benign
1 st decade	5 (10.42%)	1 (20%)	4 (80%)
2 nd decade	8 (16.7%)	2 (25%)	6 (75%)
3 rd decade	16 (33.3%)	7 (43.75%)	9 (56.25%)
4 th decade	7 (14.58%)	3 (42.86%)	4 (57.14%)
5 th decade	9 (18.75%)	6 (66.67%)	3 (33.33%)
6 th decade	2 (4.2%)	2 (100%)	0 (00%)
7 th decade	1 (2.1%)	1 (100%)	0 (00%)

Table-II

Distribution of patients according to histological type

Histological type	Frequency
Lymphoma	13 (27.08%)
Mature cystic teratoma	13 (27.08%)
Thymic cyst	5 (10.42%)
Thymoma	2 (4.17%)
Cystic lymphangioma	2 (4.17%)
Immature teratoma	2 (4.17%)
Bronchogenic cyst	1 (2.08%)
Pericardial cyst	1 (2.08%)
Inflammatory pseudotumor	2 (4.17%)
Undifferentiated carcinoma	3 (6.25%)
Neurogenic sarcoma	1 (2.08%)
Undifferentiated pleomorphic sarcoma	1 (2.08%)

Table -III

Distribution of patients according to symptoms

Symptoms	Frequency
Pain	31 (64.58%)
Dyspnoea	25 (52.08%)
Cough	22 (45.83%)
Fever	17 (35.42%)
Weight loss	13 (27.08%)
Pleural effusion	1 (2.08%)
Asymptomatic	1 (2.08%)

Table-IV

Distribution of patients according to location

Mediastinum	Frequency
Anterior	33 (68.75%)
Middle	8 (16.7%)
Posterior	7 (14.58%)

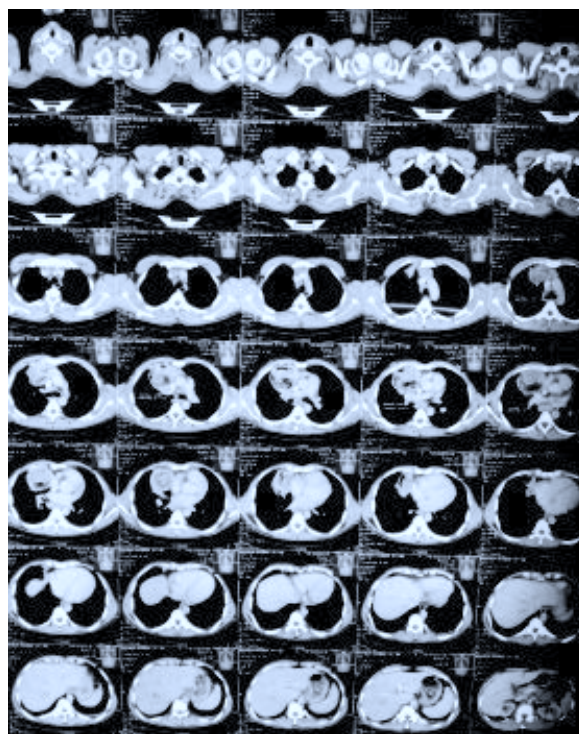


Fig.-2: CT scan of chest multi-axial view showing mediastinal mass



Fig.-1: X-ray chest P/A view showing a mediastinal mass.

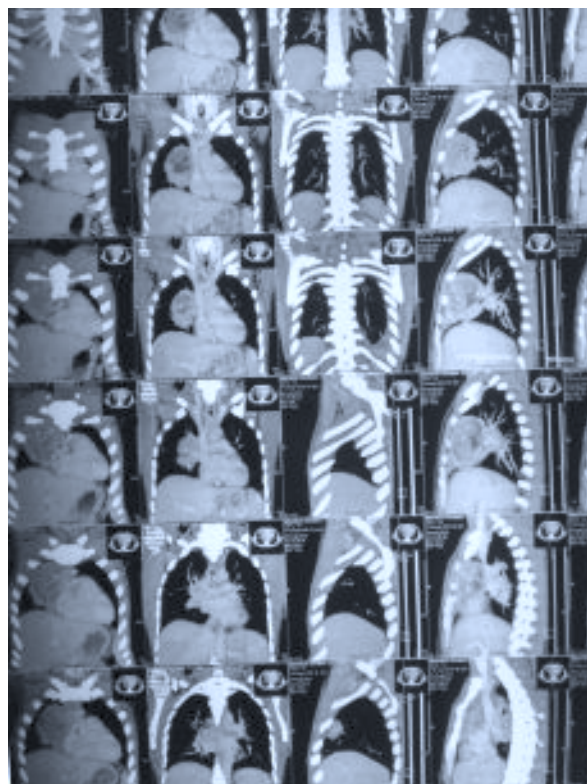


Fig.-3: CT scan of chest coronal and saggital view showing mediastinal mass .

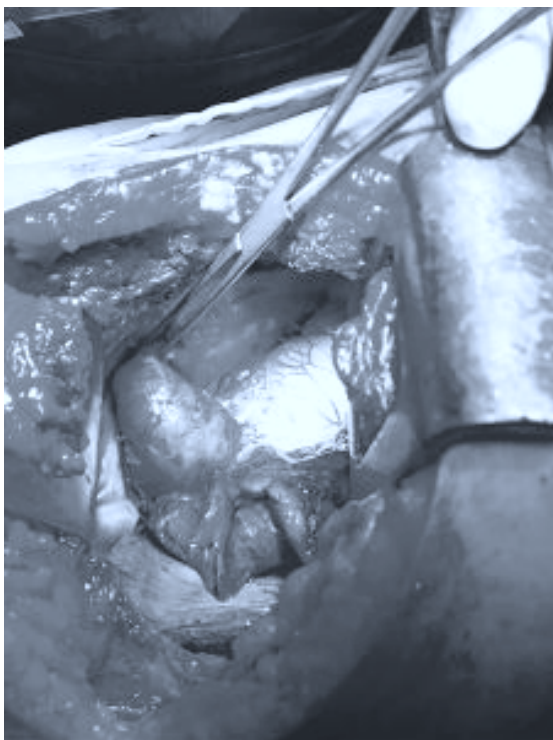


Fig.-4: *Per-operative picture of mediastinal mass*

Discussion:

Different types of tumors and cysts occur in the mediastinum and affect people of all ages. They are not that much common as only about 8 cases are found per year and accounts of 3% of total tumors of chest.⁵ In this study we encountered important differences in histologic distribution, malignancy rate, age range, site and type of mediastinal tumors between our patients and other reported series.

Diagnoses were made on the basis of clinical features which led us to do radiograph, CT scan of chest, MRI of chest. Histopathological type were sort out from biopsy taken by needle aspiration guided by CT scan and ultrasonography, biopsy by VATS, excisional biopsy through thoracotomy.

Most of the tumors were found in anterior mediastinum (68.75%) as most of our cases were mature cystic teratoma (27.08%) and lymphoma (27.08%). Other studies have reported that anterior mediastinal neoplasms account for 50% of all mediastinal masses with thymomas being the most common.⁶ There was no significant difference in the incidence of solid (54.17%) and cystic (45.83%) masses.

In our study most of the patient presented in 3rd decade (33.3%), 5th and 4th decade being the next higher in frequency. This probably due to higher prevalence of teratoma in the 3rd decade. Patients with lymphoma presented mostly in 4th and 5th decade of life. In most of the series the frequency was highest in 3rd decade as us and next frequent age group were 5th and 2nd decade.^{1,7,8}

Most of the patient presented with pain, dyspnea and cough. Fever and weight loss were also common. Only one patient was asymptomatic and he was found to have encapsulated thymic tumor.

Most of the cases in our study were benign (54.17%) although with the increase of age malignancy increased and all the patients of 6th and 7th decade were found to have malignant tumor. There were 12 histological types of tumors among bthe most common malignant tumor was lymphoma and most common benign tumor was mature cystic teratoma. In collected series of mediastinal masses, 25% to 49% of these lesions are malignant^{1,8,9} which matched ur study. They also found the lowest incidence of malignancy in children with 10 years of age and younger (50%) and the highest incidence in patients in the eighth and second decades of life (80%).⁷ there is an interesting fact that we found 2 cases of inflammatory pseudotumor which by all means mimicking mediastinal mass but on operation turned out to be lung mass.

Some patient presented with thoracic outlet obstruction, brachial plexus compression, horner's syndrome and pleural effusion. No significant post operative complications were seen. We couldn't report any mortality probably because it was a retrospective study and there were no in hospital mortality.

In conclusion findings in our study almost matched previously encountered reports although higher incidence of mature cystic teratoma was a new finding and surprisingly all of the teratomas we found were primary and none of them had testicular disease sort out by ultrasonography. Whether in later life they developed any testicular tumor or not is unknown to us as we didn't follow up them yet.

Conclusion:

Mediastinal tumors have always fascinated thoracic surgeons because of their variety and

unpredictability of diagnosis which recently have been conquered due to advances in radiology and histopathology. The majority is amenable to permanent surgical excision, excluding some malignant cases that need to obtain a diagnosis for neoadjuvant chemotherapy before surgery. In our study we demonstrated differences in histologic distribution, location, and symptomatology in mediastinal tumors. These differences should be considered carefully to evaluate and plan a therapeutic modality with mediastinal tumors. A multicenter study can accurately predict its nature in our country.

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