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PATTERNS OF MEDIASTINAL TUMORS;
A TWO AND HALF YEAR EXPERIENCE

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ABSTRACT… Objective: To review all the mediastinal tumors and cysts operated upon at Department of Thoracic Surgery, OICD, DUHS over a 2.5 year period. **Study design**: Retrospective descriptive study. **Place and duration of study**: Ojha Institute of Chest Diseases, Dow University of Health Sciences, Karachi, Pakistan from November 2012- April 2015. **Material and methods**: 50 patients with mediastinal masses of either sex were included in the study. Tumors were categorized as arising from the anterior, middle and posterior mediastinum on the basis of CT scan chest. Tumors were classified into various type based on the results of histopathology. Data was obtained from hospital medical records and proformas were filled for each patient. **Results:** A total of 50 patients with mediastinal masses were seen at the Department of Thoracic Surgery, Ojha Institute of Chest Diseases between Nov 2012- April 2015. There were 30 males and 20 females (ratio 1.5:1). Most of the patients were between 11-70 years of age, with mean age of 32 years. The most common location for mediastinal tumors was found to be the anterior mediastinum which comprised of 40% of all tumors, followed by posterior (32%) and middle mediastinum respectively (28.0%). Shwanomma (18%) was the most common type of tumor observed, followed by lymphoma (12%) and germ cell tumors (10%). **Conclusion:** Mediastinal tumors are relatively uncommon in clinical setting. These tumors represent a group of heterogeneous masses present between two pleural cavities. A definitive early diagnosis is the key in management and prognosis of the patient.We present our 5 year experience of patterns of mediastinal tumors.

Key words: Mediastinal masses, schwanomma, anterior mediastinum

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INTRODUCTION

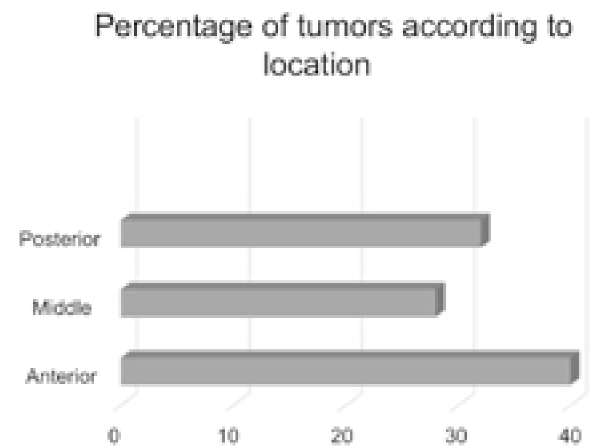
Mediastinum is the space between two pleuralcavities which houses vital organs includingesophagus, lymph nodes, trachea, heart, majorvessels and nerves.[1] Depending on location inthe mediastinum, these masses are classified as arising from, either, anterior, middle, or posteriormediastinum.[2] Categorization into 3 groups helps in identifying the origin and location of the tumor. Thymomas and germ cell tumors are most common lesions in anterior mediastinum. Bronchogenic cysts are common in middle mediastinum whereas neurogenic and soft tissue tumors comprise the largest group of tumors in the posterior mediastinum. Mediastinal lymphomas arecommon, and maybe found in any of the three regions. Radiological investigations like Chest X-ray and CT scan chest with contrast aid in delineating the extent of the tumor and its location.[3] Mediastinoscopy, thoracoscopy, VATS and Endobronchial Ultrasound are other diagnostic modalities that assist in the diagnosis of mediastinal tumors. Treatment involves surgical resection for lesions that appear clinically and radiologically benign while tumors that appear malignant on presentation are usually biopsied first followed by surgery depending on the location and spread of tumor.[4] Adjuvant radio or chemotherapy is based on individual tumor characteristics, extent of spread and distant metastasis. We present our 2.5 year analysis of tumors in the mediastinal region.

MATERIALS AND METHODS

This retrospective study was conducted at the Department of Thoracic Surgery, Ojha Institute of Chest Diseases from Nov 2012- April 2015. All patients, whether male or female, aged 12 or above, who presented to us with a mediastinal mass as confirmed by radiological investigations, were included in the study. Tumors were categorized as arising from the anterior, middle and posterior mediastinum on the basis of CT scan chest. Tumors were classified into various type based on the results of histopathology. Data was obtained from hospital medical records and proforma was filled for each patient. The data analyzed included gender, clinical, histologic, and radiologic findings and therapeutic approach for various mediastinal tumors.

RESULTS

A total of 50 patients with mediastinal masses were seen at the Department of Thoracic Surgery, Ojha Institute of Chest Diseases between Nov 2012- April 2015. There were 30 males and 20 females (ratio 1.5:1). Most of the patients were between 11-70 years of age, with mean age of 32 years. The most common location for mediastinal tumors was found to be the anterior mediastinum which comprised of 40% of all tumors (20 cases), followed by posterior mediastinum which comprised of 32% (16 cases) where as 28% of the tumors were seen to arise in the middle mediastinum (14 cases) (Chart No.1). Based on the results of histopathology, Shwanomma (18%) were found to be the most common type of tumor with 9 cases out of 50 reported as Shwanommas. There were 6 cases of lymphoma, making it the 2nd most common tumor(12%) followed by 5 cases which were diagnosed as germ cell tumors (10%).Other tumors included thymomas,3 cases (6%), leiomyomas (4%), ganglioneuromas (4%), paragangliomas (4%) and benign bronchial cysts (6%). There was one case each of Ewing sarcoma, synovial sarcoma, enteric cyst, carcinoid tumor and pericardial cyst, clear cell adenocarcinoma, adenosquamous cell carcinoma and large cell carcinoma respectively (Table-I).



Graph-1.

DISCUSSION

Mediastinal masses are a common clinical problem for which patients are referred to pulmonologists or thoracic surgeons for evaluation. In our study, we found that the incidence of mediastinal tumors was higher in men as compared to women (male to female ratio 1.5:1). A study conducted in Ethopia by Bekele E2 reported a similar gender incidence with a male to female ratio being 2:1. Most of the patients in our study were between 11-70 years of age, with mean age of 32 years. This finding is compatible with Bekele's study where the mean age of patients was 35.9 +/- 10.5 years (range 14 to 74).

The mediastinum is divided into 3 different regions, each giving rise to a different tumor. Anterior mediastinal neoplasms include thymoma, thymic carcinoma, thymic carcinoid, thymolipoma, germ cell tumors, and parathyroid adenoma; non neoplastic conditions include thymic cyst, lymphangioma, and intrathoracic goiter.

Mediastinal germ cell tumors are very rare, representing approximately 12% of mediastinal primitive tumors, -0.5% of thoracic tumors. They are part of the embryonic mediastinal tumors. Germ cell tumors of the mediastinum occur in young patients, mean age 31 years old.[6] Primary germ cell tumors (GCT) of the mediastinum share similar clinical and biologic characteristics, which are different from their testicular counterpart.

TYPE OF TUMOR	NUMBER OF CASES	PERCENT
Schwanoma	9	18%
Thymoma	3	6%
Lymphoma	6	12%
Leiomyoma	2	4%
Neurofibroma	1	2%
Ganglioneuroma	2	4%
Ectopic thyroid	1	2%
Germ cell tumor	5	10%
Pericardial cyst	1	2%
Lipomapericordia	1	2%
Thymic hyperplasia	3	6%
Benign bronchial cyst	3	6%
Paraganglioma	2	4%
Clear cell adenocarcinoma	1	2%
Adenosquamous carcinoma	1	2%
Chronic granulomatous inflammation	4	8%
Ewing sarcoma	1	2%
Synovial sarcoma	1	2%
Enteric cyst	1	2%
Reactive benign	1	2%
Large cell carcinoma	1	2%
Carcinoid tumor	1	2%
Total	50	100%

Table-I.

Treatment depends on histological type of tumor, clinical stage and primary site of tumor. For teratomas, complete surgical treatment is the goal of treatment with no role of chemotherapy or radiation. Seminomas respond exquisitely to radiotherapy whereas combination chemotherapy with a cisplatin based regimen is recommended for non-seminomatous germ cell tumors.[7]

Lymphoma constitutes one of the most common mediastinal neoplasms and may affect any mediastinal compartment whereas congenital cysts usually affect the middle mediastinum.[9] Lymphomas are responsible for approximately 15% of mediastinal masses. Only 10% of mediastinal lymphomas are primary and the majority are Hodgkin lymphomas. In our study, lymphoma was the 2nd most commonly encountered diagnosis with 12% of the patients with mediastinal masses diagnosed as having lymphoma. In a similar study by Wychulis et al,[10] 10% of the total patients were diagnosed with mediastinal lymphoma. The typical clinical presentation is a patient aged 25 to 40 years with a mediastinal mass, systemic symptoms as weight loss, fever, and night sweats.[11] For lymph node biopsy, mediastinoscopy or anterior mediastinotomy is necessary. Histopathological diagnosis and stage have major impact on treatment protocol and prognosis. Chemotherapy and radiation remain the mainstay of treatment.

Neurogenic tumors represent approximately 20% of all adult and 35% of all pediatric mediastinalneoplasms.[12,13] Neurogenic tumours are divided into three important categories: derived from peripheral nerves (nerve sheath tumours), derived from autonomic ganglia (tumours from nerve cells) and derived from paraganglionic cells (paragangliomas).[14,15]

Schwannomas are the most common benign neurogenic neoplasms in the posterior mediastinum. These tumors originate from Schwann cells, which are the principal neuroglial cells in the nerve sheath of the peripheral nervous system.[16] The prevalence of these tumors is similar in both genders. Schwannomas are either asymptomatic or present with vague symptoms such as chest discomfort, cough and weakness.[17] Surgical resection is the treatment of choice for benign schwannomas as well as for other posterior mediastinal neurogenic tumours. Video-assisted thoracoscopic surgery (VATS) has progressively become the gold standard approach to these tumours, as it has proven to be a safe and reliable approach, with excellent surgical results and with less morbidity as compared to open surger.

CONCLUSION

Mediastinal tumors are a group of heterogenous masses present in the mediastinal region. They are classified according to the region of the mediastinum they arise from and their distinct histopathology. Early diagnosis is important in the management and treatment of these tumors.

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“Without a struggle,
there can be no progress.”

Frederick Douglass

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
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2	Dr. Ali Shan Shariff	Data Collection	
3	Dr. Aneeqa Ahsan Zafar	Drafting of the article	
4	Dr. Omar Ehtisham	Drafting of the article	
5	Dr. Guzel Maxood	Critical revision of the article for important intellectual content	
6	Dr. Kinza Panjwani	Data Collection	