A Case Report on Incidental Finding of Anterior Mediastinal Mass – Thymoma

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Abstract:
Thymomas are rare tumours of the thymic epithelium with an incidence of 1.5 cases in a million. Thymoma accounts for approximately 20% of all mediastinal tumours and is the most common tumour of anterior mediastinum. They are of unknown aetiology; about 50% of patients with thymomas are diagnosed incidentally with chest radiography. Despite its benign histological appearance, it can invade nearby structures or metastasize hence clinicians need to have a high index of suspicion for early diagnosis. Thymoma is classified into different stages, which determine the prognosis and type of management, the standard primary treatment for these tumours is Thymectomy. In this case study we present 50 year female presented with shortness of breath and chest pain for few months. Chest x-ray revealed left mediastinal widening. On the non contrast CT images, there was a well-defined heterogeneous anterior mediastinal mass adjacent to the left border of heart and on CECT chest showed solid enhancing mass lesion. CT guided FNAC showed features in favour of thymoma. Biopsy was done that confirmed spindle cell type thymoma.

Keywords*: Anterior mediastinal mass, Thymoma.*

Introduction:

The thymus is made up of two lobes, triangular in shape that occupies the thyropericardiac space of the anterior mediastinum, and stretch from below the thyroid in the neck to as low as the cartilage of the fourth rib[1]. The lobes are covered by a capsule[2]. The thymus lies beneath the sternum, rests on the pericardium, and is separated from the aortic arch and great vessels by a layer of fascia. In the neck, it lies on the front and sides of the trachea, behind the sternohyoid and sternothyroid muscles[1].

At birth it is about 4–6 cm long, 2.5–5 cm wide, and about 1 cm thick[3]. It increases in size until puberty, where it may have a size of about 40–50 g, following which it decreases in size in a process known as involution[2,4].

Thymus is a lymphoid organ that is mainly composed of epithelial cells in the outer cortex, myoid cells and lymphocytes in the germinal centre. It is responsible for the processing and maturation of T-lymphocytes.

Tumours arising from the thymus are among the rarest neoplasms with an incidence of 0.15 cases per 100000[5,6]. Thymoma accounts for approximately 20% of all mediastinal tumours and is the most common tumour of anterior mediastinum. Seventy-five percent of thymomas occur in the anterior mediastinum, 15% occur in both anterior and superior mediastinum, and 6% occur in the superior mediastinum. Another 4% occur ectopically.

Thymoma can be associated with a variety of systemic and autoimmune disorders, such as pure red cell aplasia, pancytopenia, hypogammaglobulinemia, collagen vascular disease, and most commonly with myasthenia gravis[7-9].

Although thymomas can occur in children, most patients are older than 40 years at presentation. There is an equal incidence in men and women. Several classification systems of thymomas have been developed and described. However, clinical, pathological, and surgical classification of thymomas remains controversial.

Currently, computed tomography is the first choice technique to characterize a mediastinal mass with regard to its anatomic dissemination and invasion of neighbouring structures, as well as possible distant metastases[7]. Magnetic resonance imaging is frequently implemented in the radiologic diagnosis of thymomas[10]. The major role of MRI seems to lie in its value for surgical planning, especially if resection of thymoma is considered

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that invade neighbouring structures such as the great vessels or the heart[7].

Case Report:

A 50-year female presented with chest pain and shortness of breath for past few months. She was referred to radiology & imaging department to do Chest x-ray and CT scan of chest. Her Chest x-ray P/A view showed a well outlined lobulated left hilar mass and on left lateral view of chest x-ray revealed a large mass obscuring cardiac silhouette in the anterior compartment of the mediastinum. On the contrast enhanced CT chest showed a well circumscribed heterogeneous solid enhancing mass lesion in anterior mediastinum of left side. There was no definite invasion to superior vena cava or left brachiocephalic vein.

Routine laboratory examination for blood and urine were done and no abnormality was detected. Sputum examination for acid fast bacilli was also negative. Abdominal ultrasound was done and no significant abnormality was detected. FNAC was planned that showed features in favour of thymoma. Biopsy was done that confirmed spindle cell type thymoma.

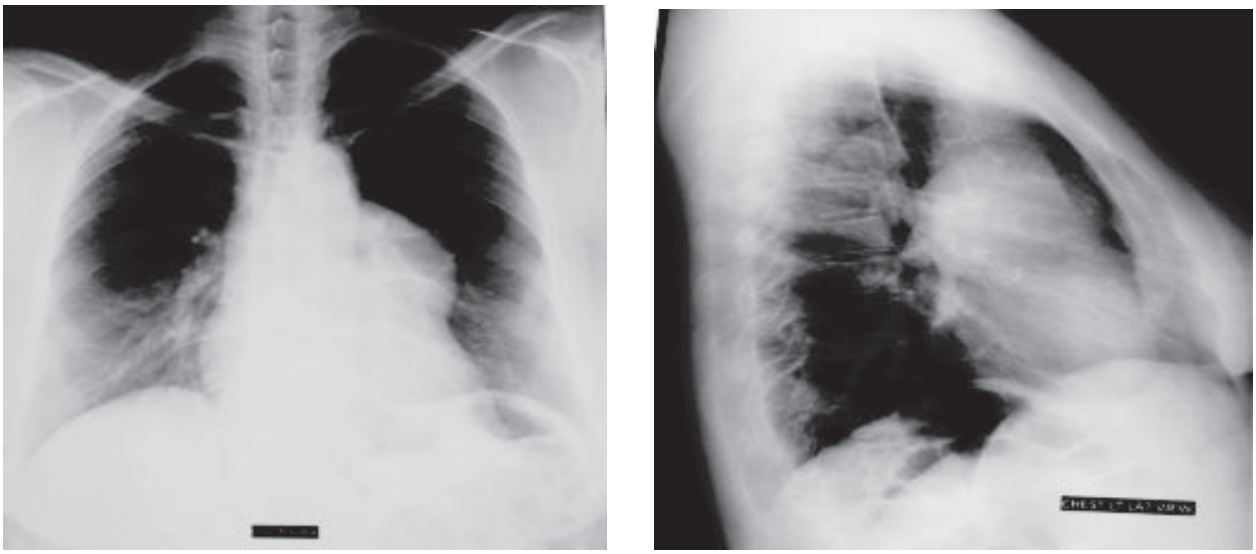

Fig-1: *Chest X-ray P/A and Left Lateral view showing a well-defined lobulated left hilar mass obscuring the left upper border of the heart and, is in the anterior mediastinum.*

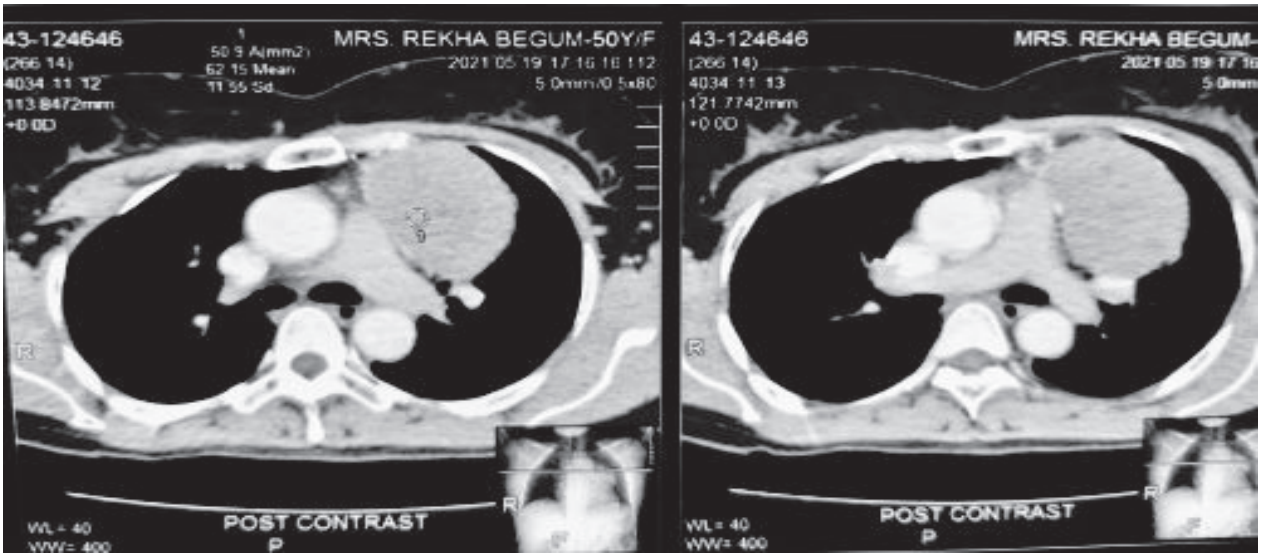

Fig.-2: *Axial post contrast CT scan demonstrating well-defined heterogeneous enhancing soft tissue mass in the anterior mediastinum.*

Discussion:

Thymic neoplasms are rare tumors accounting for less than 1% of all adult malignancies. Peak incidence occursin the fourth and sixth decades of life[11]. most thymomas are solid neoplasms that are encapsulated and localized to the thymus, but approximate a third of these invade the tumor capsule and the surrounding structures[12].

Given the slow growing nature of thymomas, one third to half of all persons are asymptomatic, and the mass is often identified as an incidental finding on imaging performed for an unrelated problem. The tumor does tend to recur locally but is unlikely to metastasize hematogenously or to regional lymphatics[13].

Thymoma often do not cause symptoms and are picked up incidentally by imaging studies performed for other reasons like when patients present with vague symptoms such as chest pain, difficulty in breathing, or cough[14]. Radiographically thymoma appears as a soft tissue mass with ill-defined borders and infiltrative growth into the surrounding structures, mediastinal fat planes and pleural surfaces. It is rare malignancy of unknown etiology that peaks in incidence in middle age[15]. It is associated with myasthenia gravis in 20-25% of patients[16]. When a thymoma is suspected, the mainstay of diagnosis is a CT scan and is performed to estimate the size and extent of the tumor. However, FNAC and biopsy is required to confirm diagnosis[17].

Thymic carcinoma mostly appears to arise de novo, but in rare instances, they can also arise in thymomas. The World Health Organization recently developed a classification system according to the histologic type of thymoma based on cytological features of normal thymic epithelial cells and neoplastic cells[18] shown in Table 1.

Table-I

WHO Classification of Thymoma

Type	Histologic description
A	Medullary thymoma
AB	Mixed thymoma
B1	Predominantly cortical thymoma
B2	Cortical thymoma
B3	Well- differentiated thymic carcinoma
C	Thymic carcinoma

Although most reports follow another classification system by Masaoka et al (Table 2). The most widely used staging system acknowledging the presence of invasion and anatomic extent of involvement, both clinically and histopathologically, was defined by Masaoka and colleagues[19].

Table II

Masaoka Staging System of Thymoma

Stage 1	Encapsulated tumour with no gross or microscopic invasion
Stage 2	Macroscopic invasion into mediastinal fat or pleura
Stage 3	Invasion of pericardium, great vessels or lung
Stage 4	Pleural or pericardial metastatic spread
Stage 5	Lymphatic or haematogenous spread

According to stages of Thymoma, In stage 1 disease can be managed by complete surgical excision, stage 2 and 3 disease requires surgical excision and postoperative radiotherapy, stage 4 and 5 disease requires surgical debulking, radiotherapy and chemotherapy. Inspite thymoma is sensitive to both chemotherapy and radiation, the most appropriate treatment of most thymomas is Thymectomy, which is usually performed via a median sternotomy.

Conclusion:

Thymomas are rare anterior mediastinal tumours. Thymomas may be diagnosed incidentally at chest imaging, patients may be asymptomatic or present with symptoms due to the presence of an anterior thoracic mass or due to paraneoplastic disorders such as myasthenia gravis. Thymectomy is the initial treatment for all patients with a thymoma.

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