



A giant mediastinal thymolipoma: a rare pathological entity

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Abstract

Thymolipoma is a rarely seen benign pathological entity of anterior mediastinum and constitutes of around 2–7% of thymic tumors. They usually present as soft tissue mass composed of mature adipose tissue and thymic tissue, which are clinically silent most of the time, i.e., the reason they reach to a larger dimension before diagnosis. Preoperative diagnosis is always challenging for the thymolipoma. We wish to report a case of the soft tissue mass of anterior mediastinum in a young male, which on surgical exploration and final histopathological examination was diagnosed as thymolipoma.

Keywords Thymolipoma · CECT · Ultrasonography-guided biopsy

Introduction

Thymolipoma is a rarely seen benign pathological entity of anterior mediastinum and constitutes of around 2–7% of thymic tumors [1]. They are usually present as soft tissue mass composed of mature adipose tissue and thymic tissue. They are slow-growing, and most of the cases are diagnosed when they cause pressure symptoms or are incidentally detected during evaluation for other complaints. Preoperative accurate diagnosis is always challenging for thymolipoma due to lesser sensitivity of computed tomography (CT) scan and ultrasonography-guided biopsy showing fat cells only [2]. Treatment of choice remains to be complete surgical excision. We report a case of well-defined encapsulated soft tissue mass of fatty consistency occupying the whole of the left hemithorax extending beyond the midline with mediastinal shift, and apparently, no significant respiratory complaints. R0 resection of the mass was done, and final histopathological examination revealed a thymolipoma.

Case report

A 23-year-old nonsmoker male was apparently alright 1 month back. He was presented to us with complaints of cough and dull ache pain since 4 weeks. The patient was admitted in our hospital. Physical examination and routine investigation were found to be normal.

X-ray chest postero-anterior view was suggestive of homogeneous opacity in left hemithorax.

Contrast-enhanced computed tomography (CECT) chest (Fig. 1) was suggestive of a large fat dense mass lesion arising from the anterior mediastinum, occupying almost all the left hemi thorax extending into right hemi thorax. The left lung was almost completely collapsed and compressed. Findings were suggestive of liposarcoma. As there was a large fat dense mass lesion without any solid component, preoperative biopsy was not done. Contrast-enhanced CT chest including upper abdomen was done as staging workup and serum beta human chorionic gonadotrophin (HCG) and serum alpha fetoprotein (AFP) were done to rule out extragonadal mediastinal germ cell tumor. The patient was planned for surgery. The key point in this surgery was requirement of adequate exposure. Hence, left anterolateral thoracotomy with sternotomy was done, and adequate exposure was achieved. A soft tissue tumor mass was excised en bloc along with horns of thymus and mediastinal fat, away from the pericardium and innominate vessels as the tumor was abutting (not infiltrating) the pericardium and innominate vessels. The collapsed lung automatically got expanded as soon as the tumor was excised.

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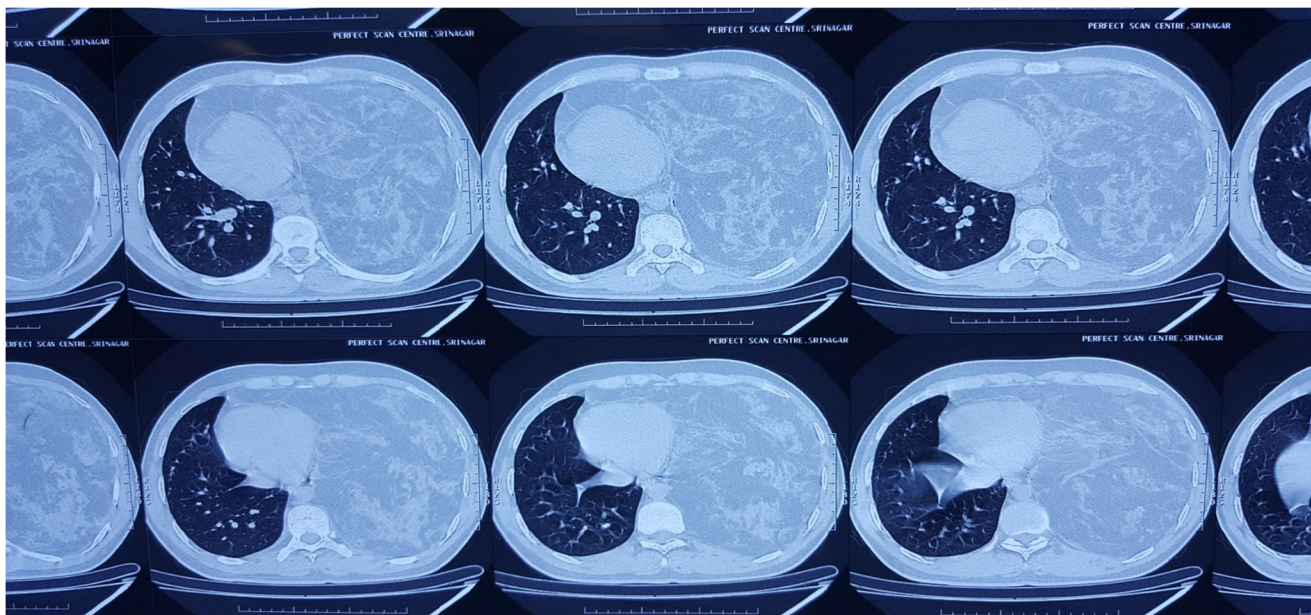


Fig. 1 Computed tomography scan chest showing mass lesion originating from the anterior mediastinum involving the left hemithorax

Intraoperative findings

A huge well-encapsulated fatty mass occupying whole of the left hemithorax with compressed upper lobe and collapsed lower lobe. The mass was also crossing the midline towards the right parasternal area.

Intraoperative period was uneventful, and the patient recovered well postoperatively.

Pathological findings

Total specimen measuring was $26 \times 18 \times 11$ cm. The specimen weighs approximately 6000 g. External surface: capsule intact and smooth (Fig. 2). The cut section shows a circumscribed tumor with homogeneously yellowish appearance and ill-defined gray white streaks traversing in between. No necrosis was seen on gross examination. Sections showed the tumor was composed of abundant mature adipose tissue admixed with remnant thymic tissue in variable proportion throughout the tumor. The adipose tissue comprised of mature fat cells showing no cytological atypia. The thymic tissue was formed of strands of atrophic thymic epithelium with viable

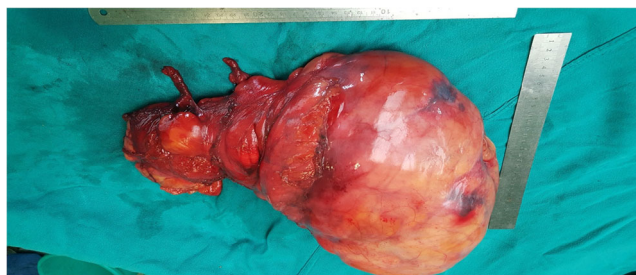


Fig. 2 Gross morphology showing smooth and lobulated appearance

and calcified Hassall's corpuscles and squamous epithelial nests surrounded by immature and mature lymphoid cells (Fig. 3). No necrosis/hemorrhage/cystic degeneration was seen. On immunohistochemistry, no cyclin dependent kinase (CDK) 4 expression was evident in adipocytes, while TdT (terminal deoxynucleotidyl transferase) highlights the thymic lymphoid (immature) cells. Immunostain for cytokeratin (CK) is positive in the thymic epithelium. Features are in favor of *thymolipoma*. No evidence of any atypia/malignancy.

Discussion

Thymolipoma is a rare benign pathological entity of the anterior mediastinum and few case reports have been reported until date in world literature. Several theories for the origin of thymolipoma have been proposed, but in all of them, most accepted is the multifocal origin of the tumor from proliferating

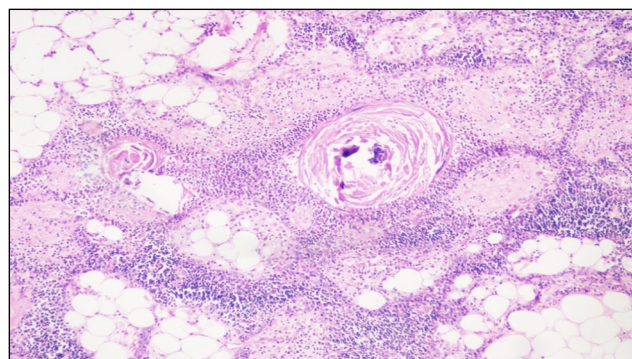


Fig. 3 Thymic tissue with Hassall's corpuscle and entrapped mature adipose tissue (hematoxylin & eosin; $\times 20$)

perivascular connective tissue in the medulla. Therefore, there is a replacement of thymic hyperplastic tissue with a mature adipose tissue [3].

Incidences of the thymolipoma are equal in both males and females and are usually seen in second or third decade. Thymolipoma is usually a clinically asymptomatic tumor and usually grows in larger size before diagnosis and produces symptoms on compressing the adjacent structures. Rest of the patients may have dyspnea, weight loss, or pain at the local site [3]. We have reported a giant thymolipoma in a 23-year-old young male who came with dyspnea and pain at a local site. Though in the current literature, most of the case reports are of pediatric thymolipoma [4]. We have reported a case in context of the Indian population where a patient might deny his symptoms from the very beginning due to lack of education and other social stigmas.

Association of thymic tumors can be with myasthenia gravis and other autoimmune disorders like Grave's disease, aplastic anemia, and hypogammaglobulinemia. In our case, there was no such association noted.

Diagnosis of thymolipoma is based on the radiological imaging. Chest x-ray is usually confusing in such cases because the tumor drapes over the pericardium and present as an enlarged cardiac silhouette. Computed tomography scans or magnetic resonance imaging are definite ways of imaging the thoracic cavity and noting the extent of the tumor in the mediastinum. Although differential diagnosis like thymoma, lipoma, liposarcoma, or lymphoma can be ruled out with imaging, but in difficult cases, preoperative tissue biopsy is required with ultrasonography or computed tomography-guided fine needle aspiration cytology/core needle biopsy.

The weight of these tumors may vary from 150 to 6000 g. We have reported one of the largest and heaviest of all in current literature, the tumor weighed around 6000 g and measured 26 × 18 × 11 cm. Thymolipomas are characterized by mesodermal (fat) and endodermal (thymic epithelium) elements, as we saw in our case. Large lobes of mature adipose tissues are interspersed with small areas of thymic tissue [5]. Pathogenesis of thymolipoma is controversial and unclear with very few cytogenetic studies conducted. One study showed mutation in high mobility group AT-hook 2 (HMGA2) gene on chromosome 12q15 [6]. The only curative treatment for this benign tumor with excellent prognosis is surgical resection of the tumor.

Conclusion

Thymolipoma is a rare pathological entity of anterior mediastinum reported in children mostly. It is composed of mature adipose tissue intermixed with the thymic tissue. Due to asymptomatic presentation, these patients present with large mediastinal tumor, and in few cases, due to masking of symptoms by the patient may lead to huge tumors on presentation, which gives operative challenges to the surgeon. It is a benign tumor, which has got an excellent prognosis following complete surgical excision. Due to its rarity and difficult preoperative diagnosis, these tumors should always be kept in back of mind while dealing with the anterior mediastinal tumors. Also, proper knowledge and orientation should be encouraged in the public for early visit to the physician on encountering such symptoms to avoid landing up into intraoperative technical difficulties and other related consequences.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the comparable ethical standards.

Informed consent A separate consent for this article not taken. But routine consent of surgery and scientific publication taken.

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