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Mediastinal Thymic Cyst in Adults: A Rare Case Report

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Abstract **Case Report**

Thymic cysts are rare, benign lesions located in the cervico-thoracic region, often incidentally discovered. The only curative treatment is complete surgical excision, which eliminates symptoms, prevents complications, and provides a definitive diagnosis through histopathological examination, typically revealing the presence of Hassall's corpuscles. Minimally invasive approaches are preferable. We present the case of a 40-year-old patient with an anterior mediastinal cystic mass that underwent successful complete surgical resection. The histopathological examination confirmed a diagnosis of benign unilocular thymic cyst, resulting in favorable clinical and radiological outcomes.

Keywords: Thymic cyst, mediastinal mass, minimally invasive surgery, thymus.

INTRODUCTION

Thymic cysts, constituting only 5% of all mediastinal cysts, are rare benign lesions within the mediastinum [1]. Their cervico-thoracic localization and varied clinical presentations can be attributed to thymic migration during organogenesis. Typically asymptomatic, these cysts are often discovered due to compressive complications. With no specific markers and an uncertain diagnosis, surgical intervention becomes essential for both diagnostic clarification and one-stage treatment of cervico-mediastinal thymic cysts. Here, we present a clinical case of a patient with a confirmed diagnosis of benign unilocular thymic cyst through histopathological examination of the surgical specimen.

OBSERVATION

The 40-year-old patient had no previous medical history but was admitted with retrosternal pain accompanied by a dry cough persisting for two months. The overall condition was preserved, and there was no fever. The physical examination revealed no abnormalities. However, a chest X-ray (Figure 1) displayed an enlargement of the upper, middle, and lower mediastinum.

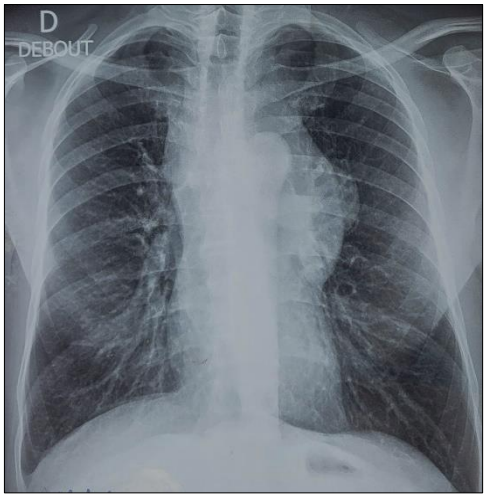

Figure 1: Front chest X-ray showing upper, middle and lower mediastinal enlargement

The thoracic CT scan (Figure 2) revealed a substantial oblong cystic mass in the anterior mediastinum characterized by a thin wall, certain parietal calcifications, and an absence of partitions, fleshy, or fatty components. The dimensions measured 15x12x9cm. This formation, located pre-vascularly, exerted a mass effect on the major vessels and closely approached the pericardium.

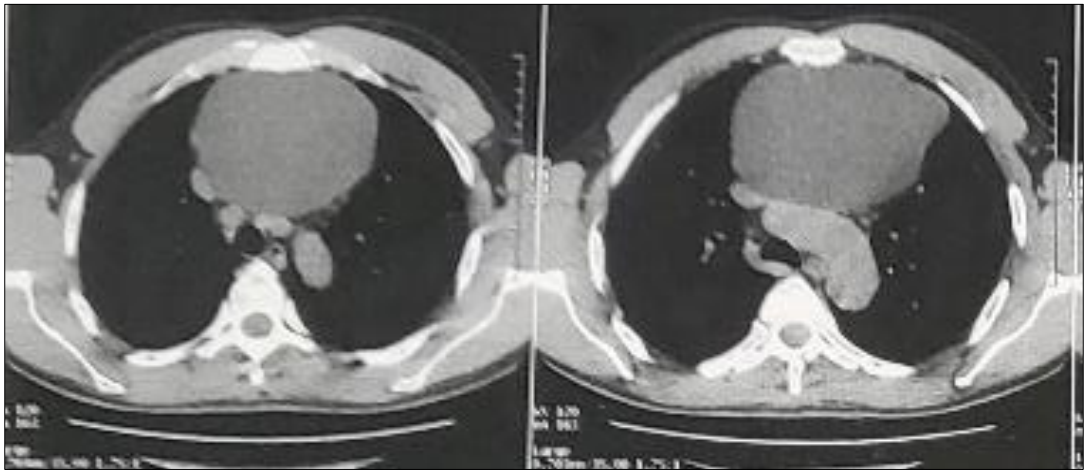

Figure 2: Chest CT scan in axial section and mediastinal window, showing a large anterior mediastinal cystic mass

Flexible bronchoscopy revealed diffuse first-degree inflammation, and spirometry results were normal. The case underwent discussion at a multidisciplinary consultation meeting, leading to the decision to perform diagnostic and therapeutic surgery.

As part of the preoperative work-up, a myasthenia work-up was conducted, including the anti-acetylcholine antibody assay, which returned negative results. The electromyogram showed no post-synaptic neuromuscular block. The patient subsequently underwent surgical resection through left uniportal video-thoracoscopy (U-VATS).

The investigation revealed an enormous anterior mediastinal cystic formation in proximity to the left lobar bronchus, containing thick mucoid fluid. The anatomopathological study of the surgical specimen demonstrated a cystic formation with a fibrous wall, exhibiting hemorrhagic features, few calcifications, no endocystic vegetations, and focal lining with a squamous epithelium bordered by thymic tissue containing regular appearances of Hassal's corpuscles. Importantly, no associated malignant tumor proliferation was observed.

The final diagnosis was a benign unilocular thymic cyst. The patient's post-operative course was uneventful, resulting in a favorable clinical and radiological outcome (Figure 3).

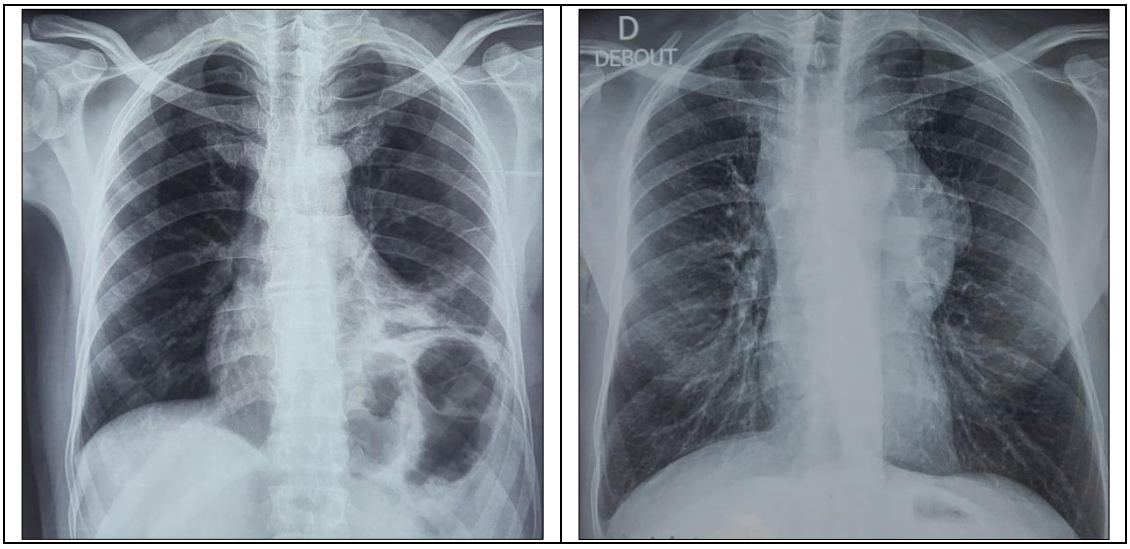

Figure 3: Front thoracic X-ray before/after complete surgical resection of mediastinal thymic cyst

DISCUSSION

Thymic cysts are rare benign tumors, constituting less than 4% of mediastinal tumors [1]. The development of the thymus during gestation involves its derivation mainly from the third branchial pouch around the sixth week. Subsequently, migration occurs from the seventh to the tenth week, following a caudal and medial path from the neck to the mediastinum. This migration pattern explains the cervico-mediastinal location of thymic cysts and the diversity in clinical presentations [2]. Pathogenesis may arise from a thymic migration defect during organogenesis or cystic degeneration of thymic residues, even in the absence of migration abnormalities [3]. Graeber categorizes thymic cysts into

congenital, neoplastic, and degenerative types, with the latter two often associated with thymic radio-chemotherapy [4].

While thymic cysts are extremely rare in adults, they commonly affect children aged between 4 and 7 years, with a slight male predominance. The left side is affected in 68% of cases [5]. In 90% of cases, these cysts are asymptomatic and discovered incidentally through radiological examinations. Clinical symptoms, when present, are nonspecific and may include chest pain, dyspnea, and cough. Complications such as compressive effects, intracystic hemorrhage, infection, and degeneration can lead to intermittent obstruction of the brachiocephalic vein and compression of the right ventricle [6].

Chest X-rays and CT scans typically depict a homogeneous mass, occasionally exceeding 10 cm, with fluid density, thereby supporting the diagnosis of a thymic cyst in most cases. However, definitive confirmation can only be achieved through histological examination following surgical resection. The macroscopic appearance of the intracystic fluid varies, ranging from "rock water" to chocolate-colored fluid in instances of anterior intracystic hemorrhage. The analysis of this fluid is insufficient for establishing a definitive diagnosis or excluding the possibility of a malignant lesion [7].

The association of thymic cysts with thymoma or basaloid carcinoma of the thymus has been documented [8]. Additionally, it is worth noting that an association with immune system disorders, particularly Gougerot Sjögren's syndrome, Langerhans cell histiocytosis, and HIV infection, has been described, although a causal link has not been firmly established [7].

For mediastinal thymic cysts, the conventional approach often involves a vertical median sternotomy. However, a minimally invasive surgical approach (cervicomanubriotomy, ministernotomy, axillary thoracotomy, videothoracoscopy) may be considered if the diagnosis is certain. Complete surgical excision of the tumor lesion involving the thymus is necessary, despite the benign histological appearance on extemporaneous examination. This is done to eliminate any associated tumor contingent and prevent recurrence [9].

The definitive diagnosis can only be established through histopathological examination after surgical removal. Histologically, thymic cysts, which may be unilocular or multilocular, are characterized by the presence of a clear or typically blackish fluid content, occasionally containing necrotic debris and cholesterol crystals. The presence of Hassall's corpuscles is a pathognomonic feature.

The prognosis for this pathological entity is excellent, with a very low risk of local recurrence. Importantly, no cases of malignant degeneration have been reported [3].

CONCLUSION

Thymic cysts are a rare etiology of anterior mediastinal masses. Frequently undetected before surgery, this condition can be mistaken for other cystic mediastinal tumors. Surgical intervention remains the sole therapeutic approach, facilitating excision and providing anatomopathological confirmation. While congenital cysts are more commonly located in the neck, they may extend into or originate within the mediastinum. Meticulous management is crucial to prevent recurrence, particularly in cases of incomplete resection.

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