CLINIC CASE

TUMOR RETROESTERNAL EN MEDIASTINO SUPERIOR HALLAZGO INCIDENTAL: REPORTE DE CASO

RETROSTERNAL TUMOR IN THE SUPERIOR MEDIASTINUM: INCIDENTAL FINDING, CASE REPORT

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RESUMEN:

Los quistes mediastínicos primarios son poco comunes, representan entre el 12% y el 18% de las lesiones mediastínicas. Los quistes tímicos, raros y benignos, constituyen entre el 1% y el 3% de las masas mediastínicas, y a menudo se diagnostican tras su resección, ya que las pruebas de imagen no logran determinar su etiología, Pueden ser congénitos (uniloculares) o adquiridos (multiloculares) debido a inflamación o condiciones neoplásicas. Aunque el 60% de los pacientes no presentan síntomas, los quistes sintomáticos requieren resección quirúrgica, lo cual suele ser curativo, Se presenta un caso clínico de una paciente de 46 años que acude por exacerbación de ortopnea, cianosis peribucal y pérdida de peso de 14 kg en dos años. Los estudios revelan una masa retroesternal en el mediastino superior, independiente de las estructuras del cuello, La junta de tórax concluye que la lesión es de posible origen tímico, sugiriendo timoma o adenopatía, y se indica manejo quirúrgico, se identificó una masa quística encapsulada en el mediastino anterior y superior, con engrosamiento pleural mediastinal. Se realizó una resección total de la masa, que resultó ser un quiste tímico según el análisis anatomopatológico.

Palabras clave:

Incidental, timo, reporte de caso, quiste mediastínico

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ABSTRACT:

Primary mediastinal cysts are rare, accounting for 12% to 18% of mediastinal lesions. Thymic cysts, which are uncommon and benign, make up 1% to 3% of mediastinal masses and are often diagnosed after resection, as imaging studies typically cannot determine their etiology. They may be congenital (unilocular) or acquired (multilocular) due to inflammation or neoplastic conditions. Although 60% of patients are asymptomatic, symptomatic cysts require surgical resection, which is usually curative. We present the case of a 46-year-old female patient who presented with worsening orthopnea, perioral cyanosis, and a weight loss of 14 kg over two years. Imaging studies revealed a retrosternal mass in the superior mediastinum, independent of neck structures. The thoracic board concluded that the lesion was possibly thymic in origin, suggesting thymoma or adenopathy, and surgical management was recommended. A total resection of the encapsulated cystic mass in the anterior and superior mediastinum was performed, revealing a thymic cyst upon pathological analysis.

Keywords:

Incidental, thymus, case report, Mediastinal cyst

Introducción

The mediastinum is a complex anatomical space located between the lungs, bounded superiorly by the thoracic inlet, inferiorly by the diaphragm, anteriorly by the sternum, and posteriorly by the vertebral column. It contains vital structures that may be affected by a wide range of pathologies, including benign and malignant neoplasms, cystic and solid lesions, both primary and secondary in origin.[1,6] The mediastinal compartment classification system proposed by the International Thymic Malignancy Interest Group (ITMIG) in 2014 is the standard used to localize masses within the mediastinum. This system divides the mediastinum into three compartments—prevascular (anterior), visceral (middle), and paravertebral (posterior)—based on anatomical landmarks identified on computed tomography (CT).[2]

Although two-thirds of mediastinal masses are benign, approximately 59% of anterior compartment masses are malignant. Thymomas and thymic carcinomas represent the most common neoplasms of the anterior mediastinum.[3–5] Benign thymic masses are rare, but include thymolipomas, which are characterized by adipose composition, and thymic cysts.[3] The most common cystic lesions in the visceral compartment include bronchogenic cysts and esophageal duplication cysts.[1] Bronchogenic cysts are the most frequent type (40%), followed by

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pleuropericardial (20–30%), thymic (20%), and enteric cysts (10%).[7]

Primary mediastinal cysts are relatively uncommon, accounting for only 12% to 18% of all mediastinal lesions,[7] and are generally discovered incidentally on chest radiographs.[1] They represent approximately 3% of all tumors originating in the thoracic cavity.[3] Among these, thymomas, neurogenic tumors, and benign cysts account for 60% of surgically treated mediastinal pathologies.[6]

Mediastinal thymic cysts are rare and benign anomalies, representing 1% to 3% of all diagnosed mediastinal masses.[8,9,11,12] They often present as asymptomatic cervical masses, and in many cases the diagnosis is made following surgical excision, as preoperative imaging studies frequently fail to determine the etiology of the cyst.[10]

Most primary mediastinal cysts are embryonic in origin and congenital in nature; only a few are considered acquired.[7] Congenital (unilocular) thymic cysts typically arise from remnants of the thymopharyngeal duct and are characterized by a thin, translucent wall.[13] In contrast, acquired thymic cysts, which are multilocular and less common, originate from inflammation of thymic parenchyma and are associated with neoplastic (e.g., Hodgkin lymphoma[3]), autoimmune, and infectious conditions.[13] Consequently, thymic or parathyroid cysts may be found in cervical or anterior mediastinal locations.[7]

In children, the mediastinum contains the large thymus, a vital immunologic organ. In adults, this organ undergoes involution, decreasing in size and function, leaving a region susceptible to tumor formation.[3]

Approximately 60% of patients with a thymic cyst are asymptomatic. When symptoms do occur, the clinical presentation is nonspecific and typically related to the compressive effect of the mass on adjacent structures.[13] The most common symptoms include cough, dyspnea, and chest pain.[9] Due to their benign nature, most asymptomatic cysts require only imaging surveillance. In contrast, symptomatic cysts require treatment, and surgical resection generally results in a cure.[13]

Cysts presenting with more severe symptoms, or those located in atypical regions or with multilocular architecture, require surgical resection. This can be performed via thoracotomy or video-assisted thoracoscopic surgery (VATS), although in some cases sternotomy may be necessary.[14]

Clinic case

A case is presented of a 46-year-old female patient with a single relevant medical history of confirmed COVID-19

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by PCR on November 18, 2020. She was referred for thoracic surgery evaluation by the pulmonology service due to the exacerbation of orthopnea episodes that have affected her since early childhood. The patient reported signs of central hypoperfusion, to the extent that her husband would wake her due to the presence of perioral cyanosis. She also experienced significant weight loss, 14 kg over the past two years, which led her to seek medical attention on her own initiative. An initial chest X-ray revealed the presence of a retrosternal consolidation (Figure 1). Based on this finding, further imaging studies were requested, which incidentally revealed a retrosternal mass in the superior mediastinum, independent of cervical visceral structures, indicating the need for surgical intervention. Consequently, she was referred as a priority case to the thoracic surgery board, which, after evaluating the available studies, requested a contrast-enhanced computed tomography (CT) scan of the chest and neck, along with an evaluation by the head and neck surgery team to rule out a possible thyroid origin.

The non-contrast and contrast-enhanced chest CT (Figure 2) revealed a tumor located at the thoracic inlet, anterior to the origin of the right carotid artery and the left brachiocephalic trunk, above the aortic arch. The thyroid gland appeared normal, as did the pulmonary vascular distribution, with no evidence of active pleuroparenchymal lesions. The mediastinum was centered, and no adenopathy was observed in the mediastinal chains. The great vessels and cardiac silhouette were also reported as normal. Additionally, the upper abdominal sections showed no structural abnormalities.

The non-contrast and contrast-enhanced neck CT reported a well-defined nodular formation measuring 32 × 27 × 29 mm, located between the emergence of the right carotid artery and the brachiocephalic trunk. This nodule had sharply demarcated borders and solid density, with a central fatty component registering as low as −134 HU. The thyroid gland appeared homogeneous, with no continuity with the tumor, and demonstrated a normal appearance. The paranasal sinuses and salivary glands were unremarkable. No abnormalities were observed in the muscular or vascular structures of the neck, and no lymphadenopathy was detected in the cervical chains. The airway appeared normal. Upon evaluation by the head and neck surgery team, it was determined that the mass was entirely thoracic in origin and did not compromise cervical anatomy.

On January 19, 2023, the case was reviewed by the thoracic surgery board at Erasmo Meoz University Hospital. Based on the findings of the contrast-enhanced chest CT (Figure 2), it was concluded that the patient presented with a superior

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mediastinal lesion of probable thymic origin, suggestive of a thymoma or lymphadenopathy, for which surgical management was indicated. The treatment plan included bronchoscopy and resection of the mediastinal lesion via a cervical open approach, with the possibility of sternotomy depending on intraoperative findings. The patient underwent surgery on May 18, 2023, performed by the thoracic surgery team, with resection of a mass measuring 6 × 2.5 × 2 cm (Figure 3). The microscopic pathology report described a cystic lesion lined by columnar epithelium, with a fibrous connective-type stroma exhibiting focal fibrosis. Adipose tissue, lymphoid aggregates, and residual thymic tissue were also observed in continuity.

Histopathological Diagnosis: Thymic cyst.

Figure 1. Chest X-ray shows an incidental finding of a retrosternal mass in the superior mediastinum.

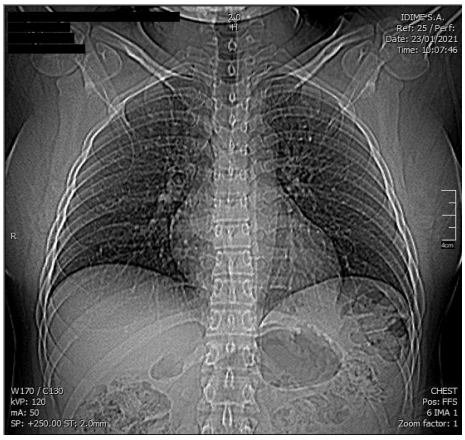

Figure 2. Coronal and axial chest computed tomography showing an incidental finding of a superior prevascular mediastinal lesion with cystic characteristics.

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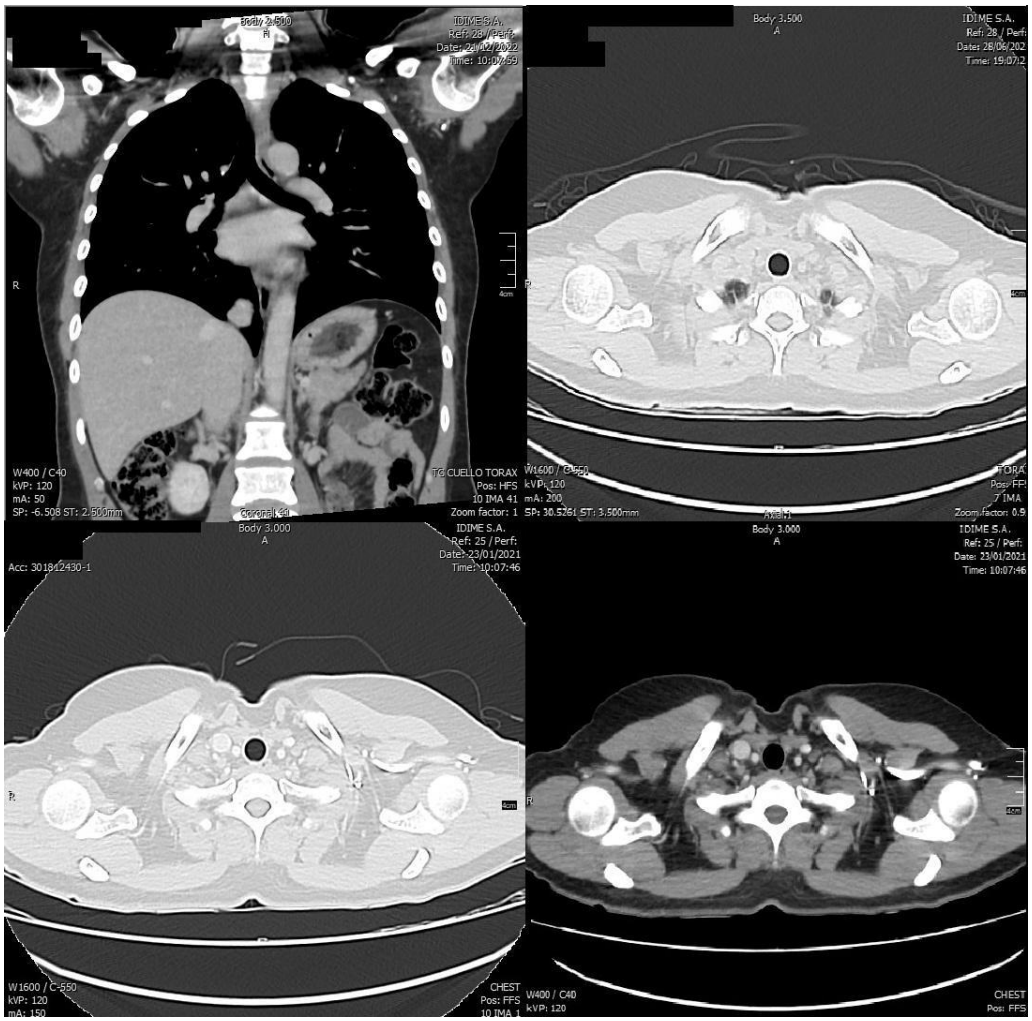

Figure 3. Resected surgical specimen: dimensions of 6 × 2.5 × 2 cm. **A**. Anterior view. **B**. Posterior view.

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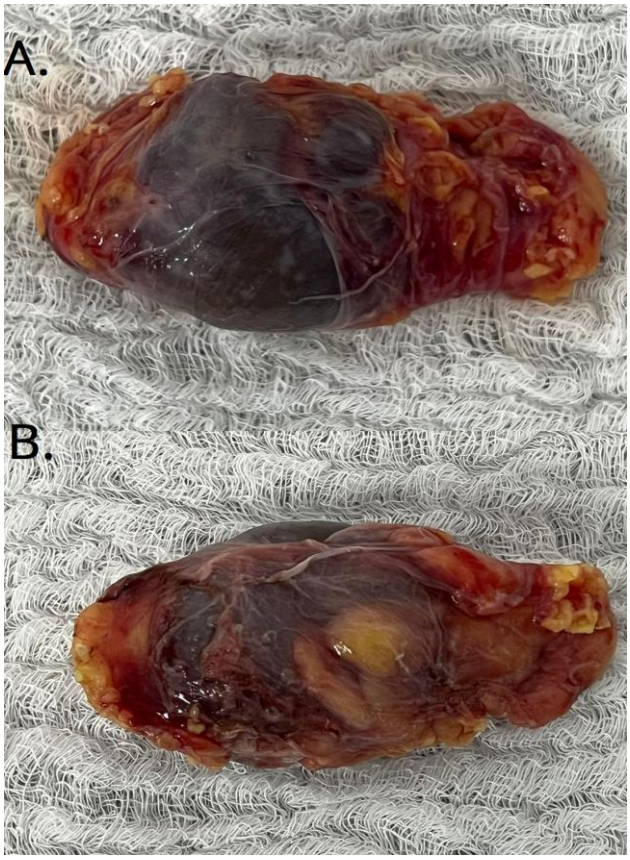

therapeutic management

During the fibrobronchoscopic study performed via orotracheal intubation, no significant findings were observed in the tracheobronchial tree. No endobronchial lesions or bleeding were identified, which led to the decision to perform a transverse cervical incision by anatomical planes, followed by a mediastinoscopy. This procedure revealed the presence of an encapsulated cystic mass located in the anterior and superior mediastinum, associated with pleural thickening adjacent to the great vessels. Complete macroscopic resection of the mass was carried out through a mediastinal pleurectomy, followed by exploration of the mediastinal vessels and resection of a cervical mass. Hemostasis was verified, and the surgical site was closed in anatomical layers.

The gross pathology report describes that the tissue specimen was cystic in nature, measuring 6 × 2.5 × 2 cm and weighing 25 grams. Its internal surface was brownish in color and partially covered by adipose tissue. Upon incision, a brown-colored fluid was

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released. The largest cystic component measured 1.7 × 1 × 0.2 cm, with an additional fragment measuring 0.4 × 0.3 × 0.1 cm. The internal surface of the lesion was entirely smooth.

Microscopic examination revealed that the cyst wall was lined by columnar epithelium. The lesion's stroma was of fibroconnective type, with areas of focal fibrosis. Additionally, there were continuous regions showing adipose tissue, lymphoid aggregates, and residual thymic tissue. The final histopathological diagnosis was consistent with a thymic cyst.

Conclusion

The patient has shown a favorable postoperative imaging evolution, with no evidence of new consolidations or recurrence. Additionally, the pathological report confirmed the benign nature of the thymic cyst. The patient's respiratory symptoms have completely resolved, and she is currently able to perform her daily activities without any limitations. She remains under follow-up with the thoracic surgery team every six months, along with routine imaging surveillance.

Discussion

The mediastinum is a crucial anatomical space for human life, as it houses vital structures such as the heart, great vessels, thymus, trachea, main bronchi, and esophagus, among others. Its location between the lungs makes it a potential site for the development of various pathologies, both benign and malignant. In the clinical case presented, the patient was diagnosed with a thymic cyst, which, according to radiological studies, appeared as a mediastinal mass independent of the cervical visceral structures. The preoperative diagnosis was challenging, as imaging studies failed to precisely determine the lesion's etiology, a common scenario in thymic cysts.

The study of mediastinal lesions, particularly thymic cysts, highlights the complexity of these pathologies and underscores the importance of accurate classification, precise diagnosis, and timely surgical intervention. Although many of these lesions are benign and asymptomatic, their location and characteristics can complicate the diagnostic process, making surgery the cornerstone of treatment. The clinical case presented effectively illustrates how early detection and surgical resection can lead to successful recovery, emphasizing the importance of thorough clinical evaluation and a personalized approach in the management of mediastinal lesions.

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