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CASE REPORT

Mediastinal mass in an infant - case report

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Abstract

Introduction: Mediastinal Teratoma is a neoplasm originating from germ cells and comprises about 8-16% of tumors in this region. They are uncommon in children and equally incident among sexes. Commonly, diagnosis is made after birth due to the emergence of respiratory symptoms, often being incidental. It presents an excellent prognosis when completely resected, highlighting the vital importance of early suspicion and diagnosis through imaging exams. **Objective:** To highlight the occurrence of mediastinal tumors in children with a history of recurrent pneumonia presenting atypically, emphasizing the importance of considering mediastinal tumors as a differential diagnosis to ensure appropriate investigation. **Case Report:** A 7-month-old infant presented to the Emergency Department of a university hospital in the interior of Minas Gerais, Brazil, with symptoms of tachypnea, respiratory failure, and rejection of maternal breastfeeding. The patient had multiple previous diagnoses of pneumonia with no response to antibiotic therapy. Imaging exams during the investigation revealed a mediastinal mass in the anterior compartment with fatty components and areas of calcification. Left thoracotomy was performed at the 5th intercostal space, with complete resection of the teratoma. The patient had complete resolution of symptoms and was followed up until 13 years of age without recurrence. **Conclusion:** Mediastinal tumors are rare and increase infant morbidity and mortality. Suspecting and applying appropriate diagnostic methods and surgical procedures are essential for treatment and reducing harm to these patients, who often undergo unnecessary treatments before diagnosis.

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INTRODUCTION

Teratomas are germ cell tumors, usually containing three germ layers (endoderm, mesoderm, and ectoderm), multiple tissues, and variable architecture. Many contain normal skin, neural, fat, cartilaginous, intestinal, and lymph node tissues.^{1,2}

The mediastinum is the most frequent extragonadal site for the presentation of teratomas. Epidemiologically, they account for approximately 10% of primary mediastinal neoplasms, and 70% are benign.³

Eighty percent of the germ cell tumors affecting the pediatric population are of benign etiology. Four percent occur in the mediastinum. They equally affect individuals of both sexes.³ Patient prognosis does not change with the etiology of the tumor.¹

The symptoms of patients with mediastinal masses are pretty nonspecific and present according to the structures affected, ranging from none to respiratory distress, chest pain, cough, and stridor due to compression of vital organs.⁴

Mediastinal teratomas are challenging to diagnose due to the scarce symptoms most patients present. However, there are reports of patients with initial symptoms, such as hemoptysis, cough, pleuritis, chest pain, and dyspnea, who were wrongly diagnosed with empyema, tuberculosis, or pneumonia.⁵ Diagnostic mistakes and delays result in ineffective and potentially harmful therapies.

Mediastinal teratomas are rare tumors, especially in children. Most are diagnosed accidentally during routine examinations.⁶ This report reminds us that teratomas should be considered in differential diagnoses for conditions where respiratory symptoms of unknown origin are present. Early diagnosis is essential to prevent complications.

CASE REPORT

A white male infant from Araxá, Minas Gerais, was diagnosed with pneumonia, hospitalized, and treated with antibiotics when he was one month old. Symptoms relapsed when he was six months old, and he was hospitalized again for treatment. A month later, he was referred to the emergency unit of the Triângulo Mineiro Federal University Hospital. The patient was in good general condition, flushed, hydrated, tachypneic/dyspneic, showing intense respiratory distress, expiratory wheezing, and an oxygen saturation level of 91%. He was afebrile (36.2°C) and refused to breastfeed. Laboratory tests and a chest X-ray were ordered. The patient did not present with leukocytosis or hydroelectrolytic disorders, and his CRP was slightly altered. The X-ray images showed opacity in the left hemithorax with well-defined contours, a deviation of the heart to the right, and subsegmental atelectasis in the right lower lobe

(Figure 1). Computed tomography scans of the chest were ordered. They revealed a mass in the left hemithorax, with dense and hypodense elements pushing the heart to the right hemithorax in close contact with the left common carotid artery, proximal branches of the aortic arch, the aortic arch, the left atrium, the left ventricle, and the left pulmonary artery (Figure 2 - A). The images suggested the patient had a tumor, and magnetic resonance imaging scans were ordered to characterize the soft tissues better. An encapsulated mass of approximately 7.4 to 9.5 cm in the left anterior mediastinum was found, with a fatty component and calcification foci suggestive of a teratoma. It did not invade adjacent structures (Figure 2 - B). After further examination, the diagnostic hypotheses were thymoma, teratoma, and pericardial cyst.

A left-sided thoracotomy was performed in the 5th intercostal space (Figure 3) to remove the mediastinal mass. The procedure was uneventful. The infant was transferred to the pediatric ICU with a chest drain and a central venous catheter. The pathology report described a 185 g tumor without signs of malignancy, wrapped by a segment of the thymus measuring 9.5 x 7.5 x 6.0 cm (Figure 4). The thymus was invaded by a benign neoplasm consisting of nervous, epithelial (respiratory, intestinal, and thyroid), connective (cartilaginous, bone, myeloid, and fat) tissues, and cystic areas without lining (Figures 5 and 6). The tumor was diagnosed as a benign cystic mature teratoma.

The child was discharged four days after the teratoma was removed. He was followed up annually until 13 years and 11 months, with no recurrences.

DISCUSSION

Mediastinal teratomas are challenging to diagnose since they account for 4% of pediatric tumors, and most patients are asymptomatic.³ When present, symptoms vary depending on the organs compressed by the tumor.

This case report shows that teratomas with symptoms similar to those seen in airway infections are diagnosed by exclusion or when the patient's condition worsens. In some cases, imaging scans suggest other conditions, such as pulmonary tuberculosis.⁵ Although rare, mediastinal teratomas must be considered and suspected in patients with nonspecific symptoms for whom therapy has not resulted in complete improvement.

The time between the onset of symptoms and the establishment of an accurate diagnosis allows the tumor to grow and, possibly, compress vital organs. Our patient's mediastinal organs, including the heart, lungs, and large vessels, were affected.

Early surgical excision improved patient survival, avoiding global development complications and impairments.



Figure 1. Chest x-ray image showing opacity with defined contours in the left hemithorax and an area of subsegmental atelectasis in the right lower lobe.

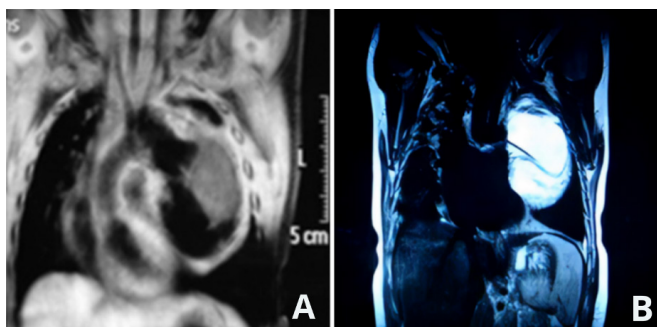


Figure 2. A: Chest tomography scan showing a mass in the left hemithorax with dense and hypodense elements and deviation of the heart to the right; **B-** Magnetic resonance imaging scan showing a solid cystic mass, with a fatty component and foci of calcification.

CONCLUSION

It is important to consider less prevalent conditions in differential diagnosis. Although surgeons predominantly treat mediastinal teratomas, other healthcare professionals should know their existence. The wide array of symptoms caused by the tumor compressing thoracic organs can lead to diagnostic confusion and treatment delays.

Mediastinal tumors must be included in the list of differential diagnoses for lung infections in atypical conditions, in which there is no fever or laboratory alterations typical of infection, such as leukocytosis. Thus, unnecessary antibiotic treatment, which increases morbidity and contributes to the emergence of resistant bacterial strains, is avoided.



Figure 3. Infant positioned in right lateral decubitus, with the incision site visible on the left hemithorax.

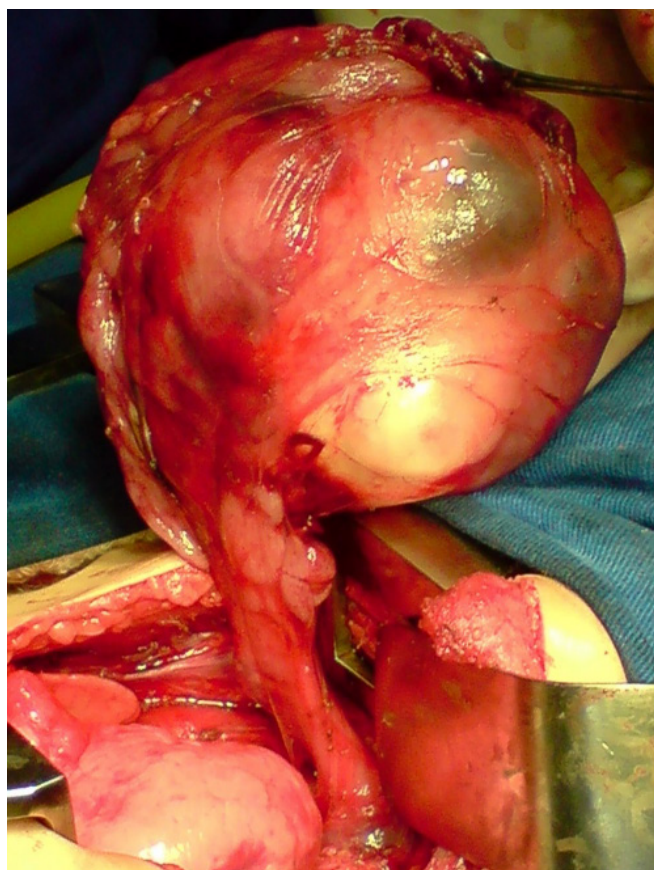


Figure 4. Mediastinal mass removed through an incision in the left hemithorax.

Healthcare professionals need to understand and study this class of tumors better. Correct diagnosis based on clinical history and imaging is essential to avoid erroneous treatments and harm to the patient.

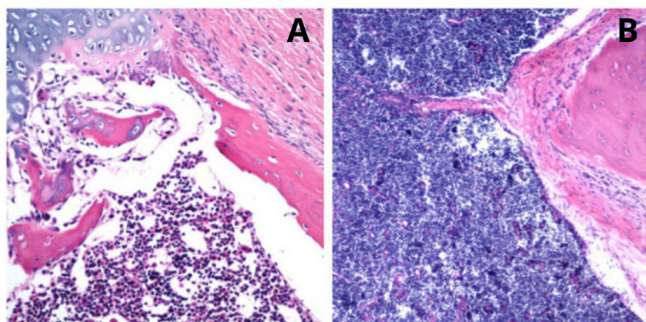


Figure 5. A: Area of myeloid tissue surrounded by bone and cartilage (H&E staining, 20x); **B-** Photomicrograph of the teratoma with an area of preserved thymus tissue, adjacent to bone tissue (H&E staining, 10x)

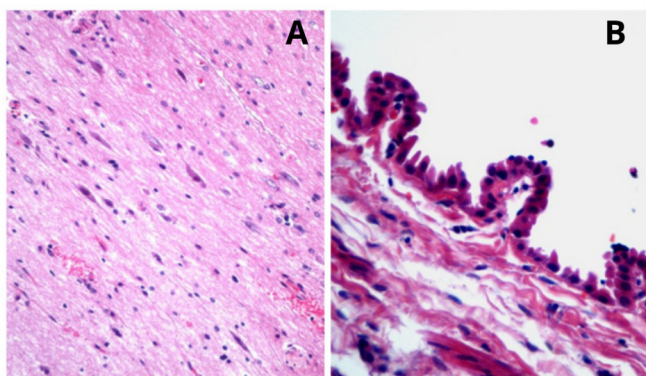


Figure 6. A: Nervous tissue with neurons (H&E staining, 100x); **B-** Area of prismatic epithelium without atypia (H&E staining, 400x).

REFERÊNCIAS

1. Tovar JA, Tumores Mediastinais. In: Holcomb GW, Murphy JP, Ostlie DJ. Ashcraft – Cirurgia Pediátrica. 6. ed. São Paulo: GEN Guanabara Koogan; 2017 p. 341-350
2. Avelino MA, Berquó LSAP, Caixeta JA, Oliveira CG. Lesão congênita rara como causa atípica de estridor neonatal: relato de caso de teratoma congênito de orofaringe (epignathus) causando manifestação tardia de obstrução de via aérea. *Resid Pediatr.* 2021;11(2):1-4 DOI: 10.25060/residpediatr-2021.v11n2-130
3. Brady LW, Yaeger TE. Encyclopedia of radiation oncology. Heidelberg: Springer; 2013.
4. Sereke S., Oriekot A, Nalikka O, Magala J., Bongomin F. Mature cystic teratoma of anterior mediastinum in a 4-month-old infant: a rare case report. *General thoracic and cardiovascular surgery.* 2021 Jan 15;69(6):1016–21.
5. Liu J, Tian B, Zeng Q, Chen C, Zhou C, Li H, et al. Mediastinal teratoma presenting with hemoptysis and pleuritis misdiagnosed as tuberculosis (empyema). 2018 Dec 1;18(1).
6. Lukovic A, Arsenijevic M, Milisavljevic S, Stojkovic D, Mrvic S, Radovanovic D. Cystic Lesions of Anterior Mediastinum: Case Report. *Serbian Journal of Experimental and Clinical Research.* 2020 Jun 1;21(2):185–8.