CASE REPORTS

MEDIASTINAL TERATOMA IN CHILDREN - CASE REPORT

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Abstract

Mediastinal teratomas presenting in the pediatric age are extremely rare. We report three cases of mediastinal teratomas in children aged 15 months to 9 years. Patients were submitted to complete tumor resection, with an uneventful postoperative course and follow-up.

Our report emphasizes the importance of a detailed patient examination and careful interpretation of routinely performed image studies.

Keywords: *Teratoma; mediastinal mass; children; case report.*

CASE REPORT

Primary mediastinal teratomas are rare in children, being typically located in the anterior mediastinum. Clinical presentation is determined by size and mass effect. Children may present with a wide spectrum of symptoms, including respiratory complaints, chest pain or non-specific symptoms. Conversely, some patients are asymptomatic and diagnosed incidentally. Surgical resection can be challenging due to proximity of major thoracic structures. Herein we present our experience in the surgical management of mediastinal teratoma.

CASE PRESENTATION

Case 1

A healthy 15-month-old presented with a 7-day history of wheezing, cough, nasal discharge and fever. Upon examination she presented without respiratory distress, with normal auscultation. Chest x-ray (CXR) revealed a central high-density consolidation. Subsequent computer tomography (CT) revealed a heterogeneous mass sized 52x52x70mm located in the anterior mediastinum with both soft-tissue density and calcification areas (Figure 1).

The infant was submitted to a right lateral thoracotomy. Intraoperatively the mass was located in an apical position extending to the right hemithorax, adherent to the pericardium in its medial aspect and compressing the heart and great vessels. Complete excision was performed combining both blunt and harmonic dissection. Surgery and postoperative period were uneventful. Histological examination confirmed a cystic mature mediastinal teratoma. Two years post-surgery, the child remains asymptomatic with no evidence of recurrence.

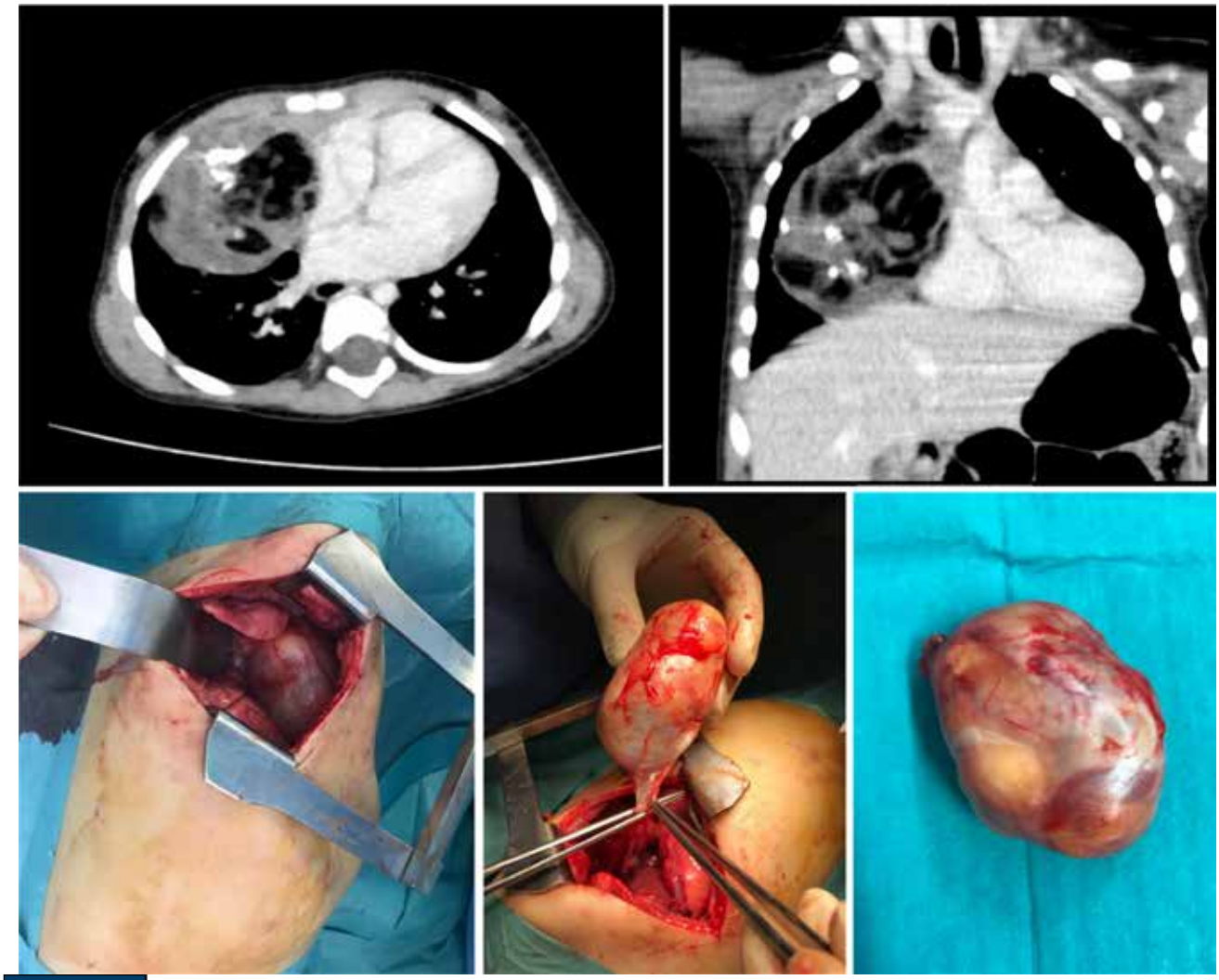

Figure 1 *Heterogeneous right paramedian mass, compressing the heart and great vessels. Complete resection was performed via right lateral thoracotomy.*

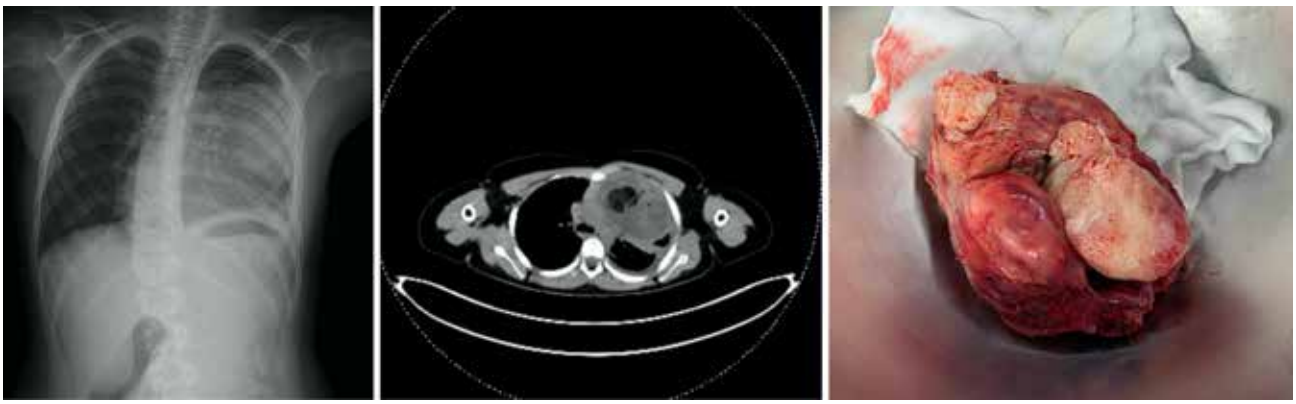

Figure 2 *Left mediastinal mass with both cystic and solid components on CXR and CT scan. A sharply demarcated lesion on CXR should arise suspicion of a mediastinal mass.*

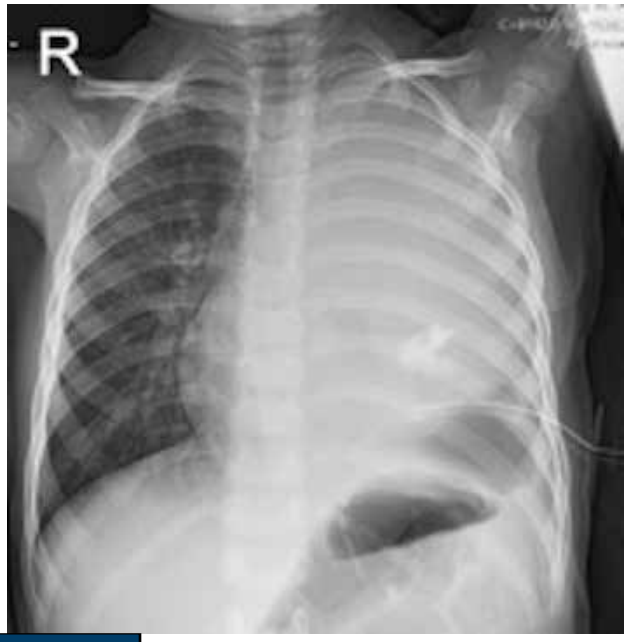

Figure 3 *Left mediastinal mass causing lung collapse and obstructive pneumonia, accompanied by massive left pleural effusion. Notice the right mediastinal shift and the presence of calcifications visible in CXR (arrow).*

Case 2:

A healthy 9-year-old presented with sudden left-sided chest pain and respiratory distress, without fever or other respiratory symptoms. CXR revealed mediastinal widening and left-sided hypotransparency. CT showed a large mediastinal mass (101x66mm) with heterogenous attenuation suggesting fatty tissue and calcification presence, causing mass effect resulting in pericardial effusion, left lower lobe atelectasis and left pleural effusion (Figure 2). Further work-up revealed a normal complete blood-count and biochemistry and negative AFP and B-HCG levels. A CT-guided trucut biopsy was performed, both histological and cytogenic analysis suggesting a mature teratoma. CT-PET excluded extrathoracic involvement

Median sternotomy was performed, exposing a large mass in the anterior mediastinum, adjacent to the pericardium and causing left superior lobe atelectasis. Careful blunt dissection allowed for phrenic nerve preservation, and complete excision was performed. Post-operatory recovery was uneventful, with patient discharge after three days. Histopathology revealed a mature teratoma with thymic tissue found on periphery of the mass. After 22 months of follow-up, the patient remains asymptomatic.

Case 3

A 3-year-old was referred to pediatric urgent care for cough, nasal discharge, respiratory distress and anorexia. Clinical and radiologic diagnosis of complicated pneumonia with pleural effusion was made. CT revealed a left paramedian heterogeneous mediastinal mass, mostly cystic with a small solid component. The lesion exerted mass effect on the left main bronchus causing lung collapse and massive pleural effusion, and both right mediastinal shift and a small volume right pleural effusion. A chest drain was inserted and kept in situ for 7 days, allowing for clinical resolution and discharge 2 weeks after.

Control CT showed an increased in size (97x76x67mm) mostly due to enlargement of the cystic component, left pleural effusion with pleural thickening, left main bronchus obliteration with complete atelectasis and right mediastinal shift. Additional features included close contact with the great vessels without signs of vascular invasion (Figure 3).

A left lateral thoracotomy was performed, revealing a firmly adherent mass both to the parietal pleura and pericardium anteriorly. Mass resection was complicated by incidental rupture, causing content spillage that was promptly removed. Recovery was uneventful. Histopathology confirmed the diagnosis of mature mediastinal teratoma. The patient is asymptomatic at 18 months follow-up.

DISCUSSION

Germ cell tumors (GCT) are a heterogeneous group of benign and malignant neoplasms of pluripotent germ cell origin. Mediastinal CGT are more common in adults than in children with a 5:1 ratio. In fact, these lesions are exceedingly rare in children, representing only 3% of pediatric GCT.[1]

Teratomas comprise 34–57% of mediastinal GCT.[2] Teratoma are benign tumors, consisting of any cell type from the three germ layers. Histologically, teratomas are classified as mature when presenting well-differentiated tissue components such as skin, hair, teeth, bone or neural tissue, and considered immature when undifferentiated cells are present.

Mediastinal teratomas are typically located in the anterior mediastinum, with only 5% in the posterior mediastinum.[3] Clinical presentation varies significantly depending on volume and compression of adjacent structures. Patients may present within a wide spectrum of symptoms, including respiratory complaints such as cough, stridor, dyspnea and hemoptysis. Mass effect may also cause atelectasis and post-obstructive pneumonia, often with pleural effusion.[4] Chronic non-infectious respiratory symptoms in pre-verbal children should raise the suspicion of a mediastinal mass. Other symptoms include chest or cervical pain, orthopnea, superior vena cava syndrome or non-specific symptoms such as weight loss. Conversely some patients are asymptomatic, and up to 60% are diagnosed on routine CXR.[3] Mediastinal teratomas should be suspected whenever a sharply demarcated lesion is present in CXR. Cross-sectional image studies are vital for diagnosis and surgical planning. Mediastinal teratomas are classically described on CT scans as round or lobulated masses with cystic, solid or mixed components and a smooth, well delineated outline. Content imaging is usually heterogenous due to the different density of fat, fluid and soft tissue.[5] Intralesional calcifications may be present, although this finding is non-specific and may also occur in neuroblastoma and lymphangioma, which are usually located in the posterior mediastinum. Mediastinal

teratomas account for 6-18% pediatric mediastinal tumors.[6] Differential diagnosis includes lymphomas, thyroid masses and thymomas.[7]

The standard of care is tumor resection using either minimally invasive or conventional approach. While VATS has been increasingly performed with favorable outcomes, thoracotomy is preferred for large lesions.[8] Anatomical relationship with adjacent vital structures and potential adhesions pose a challenge to surgical resection. Nevertheless, complete excision of a mediastinal teratoma is possible, allowing for curative treatment with minimal morbidity. Overall survival is 99% with complete surgical excision.

Mediastinal teratomas are particularly rare findings in children, even more so when diagnosed during infancy. This rareness is emphasized by the scarcity of published patient series. In fact, available reports focusing on children present either small case series or isolated case reports.[3,9,10] By reporting our experience, we intend to contribute to expand the medical community's knowledge of this rare tumor.

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