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Case Report

Posterior mediastinal teratoma presenting as an abdominal mass in a child: A case report☆

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ABSTRACT

We report the case of a 2.5-year-old child admitted for abdominal distension, whose imaging revealed a large posterior mediastinal cystic mass, with a tissue component, a calcification, and a minimal fat component. The ultrasound- guided biopsy led to the diagnosis of a benign extragonadal germ cell tumor, also called mature teratoma or dermoid cyst, whose mediastinal localization is rare, often localized in the anterior mediastinum, and rarely in the posterior mediastinum. The mainstay of treatment is complete surgical excision.

Introduction

Teratomas are the most frequent germ cell tumors, localized mainly in the anterior mediastinum. Localization in the posterior mediastinum is rare, representing 3 to 8% of mediastinal teratomas, and 10%-15% of mediastinal masses [1,2]. CT and MRI orient the diagnosis by detecting the fatty component.

Case report

We report the case of a two and a half year old child, without any notable pathological history, admitted for an asymmetric increase of the abdominal volume more accentuated on the left side, without transit disorder. The clinical examination found a child in good general condition, apyrexic, asymmetric abdominal distention, with a mass on the left flank about 15

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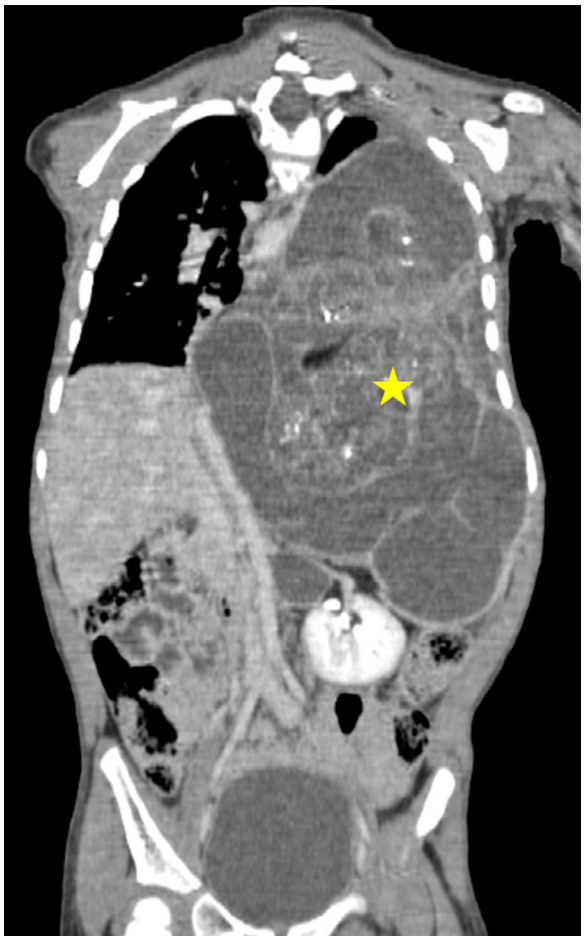

Fig. 1 – CT scan in injected coronal reconstruction showing the voluminous left posterior mediastinal mass.

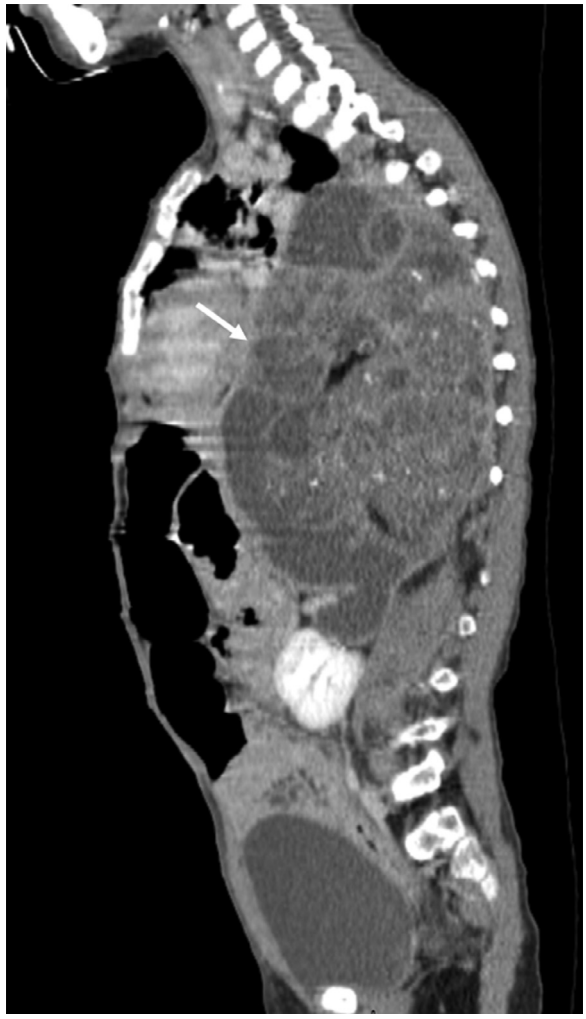

Fig. 2 – CT scan in injected sagittal reconstruction showing the topographic relationship of the voluminous left posterior mediastinal mass with the heart, and the lung parenchyma.

cm long, painless, of hard consistency, immobile in relation to the deep plane. The pleuro-pulmonary examination showed a decrease in vesicular breath sounds at the left basi-thoracic level and a dullness on percussion. The cardiovascular examination was without abnormality. At this stage, the diagnosis given was a malignant abdominal tumor such as neuroblastoma or lymphoma.

A thoraco-abdomino-pelvic CT scan showed a huge mass extending from the retroperitoneal region to the left thoracic apex, with a predominantly cystic component, contrast enhanced tissue, calcification, and fatty component (Fig. 1). Biopsy was consistent with a teratoma without immature contingent within the limits of the samples examined with no evidence of a neuroblastic tumor. Tumor marker assay showed a weakly positive AFP level at 22.41 ng/ml (for a normal value less than 10 ng/ml), and B HCG less than 2.00 mIU/ml (for a normal value less than 1 mIU/ml). The diagnosis of a mature tumor was very likely given the low level of AFP, surgery was the ideal treatment but the mass was very large and mutilating. The multidisciplinary consultation meeting decided to start with 02 courses of low-risk germ cell tumor type chemotherapy, to continue if there is improvement on the control imaging, otherwise the patient would have to be operated. And this was the case, despite the decrease in the level of AFP dosed at 9940 ng/ml after the 5th course of chemotherapy according to the TGM 95 protocol, over a period of 5 months, given the episodes of neutropenia, the tumor did not respond well to chemotherapy. Which was expected given the absence of an immature contingent on the biopsy. The CT scan noted the stability in size of the large tumor mass compatible with a mediastinal teratoma, occupying almost the entire left thoracic hemifield, poorly limited, solidocystic containing scattered calcifications and a fatty contingent, measuring approximately 9.5 × 10 × 18 cm in diameter. It had a regular interface with the lung parenchyma above. Below, it pushed back the diaphragm, the left kidney, the spleen and the transverse colon. Medially, it pushed back the descending aorta, inferior vena cava, azygos vein and the tracheobronchial tree, with a fleshy portion still in contact with the aorta and pericardium, which made surgery difficult (Figs. 1-3). Surgical exploration found a large tumor mass located in the posterior mediastinum pushing the left lung up and anteriorly and the diaphragm down

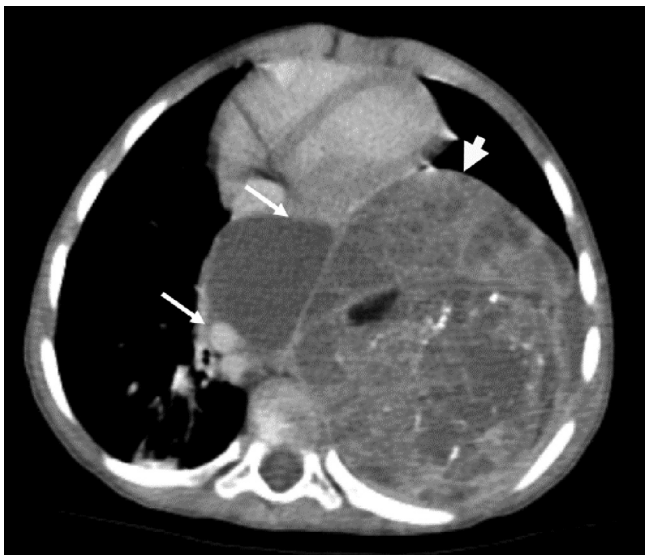

Fig. 3 – Axial injected CT scan showing the topographic relationship of the voluminous left posterior mediastinal mass with the heart, the aorta and the lung parenchyma.

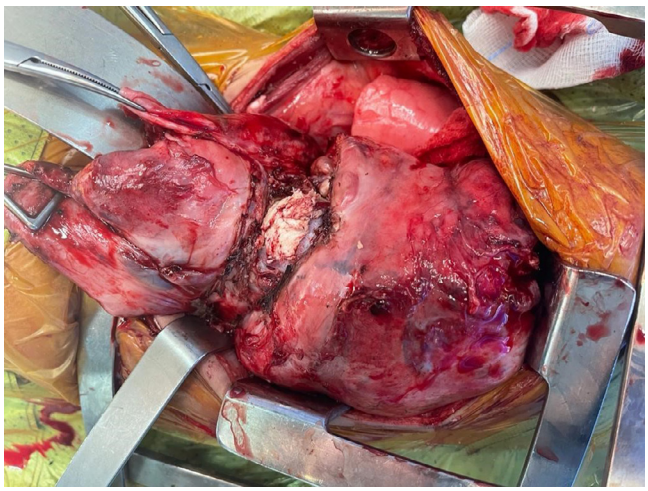

Fig. 4 – Intraoperative image of the posterior mediastinal mass.

with which it adheres separated by a cleavage zone. The surgical procedure lasted 2h30min, and consisted of excision of the tumor after a left lateral thoracotomy (Figs. 4 and 5). After a 3-day stay in intensive care unit, she was transferred to the pediatric surgery department. The post-operative follow-up was simple, and the patient was discharged after removal of the chest tube and return of the lung to the wall.

The control chest radiograph was normal (Fig. 6). In addition, the control CT scan 10 days after the operation showed re-expansion of the left lung parenchyma, with 02 homolateral pleural collections, related to post-operative changes (Fig. 7).

The anatomopathological result of the surgical specimen, concluded to a pluritissular teratoma with a small immature

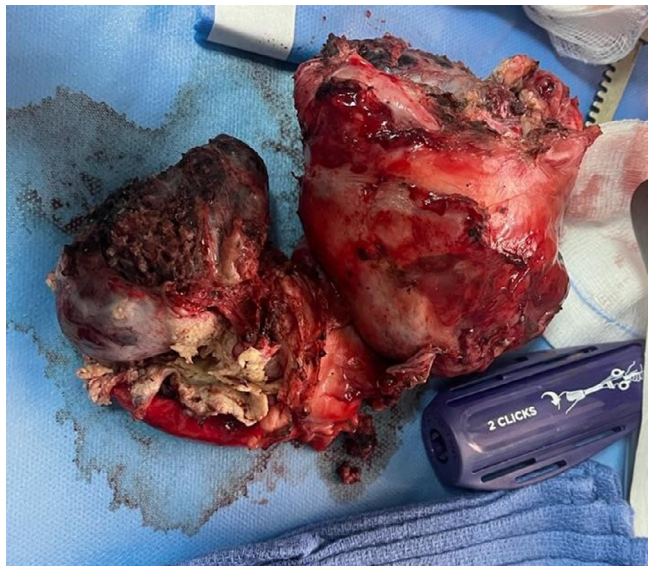

Fig. 5 – Image of the large resected mass.

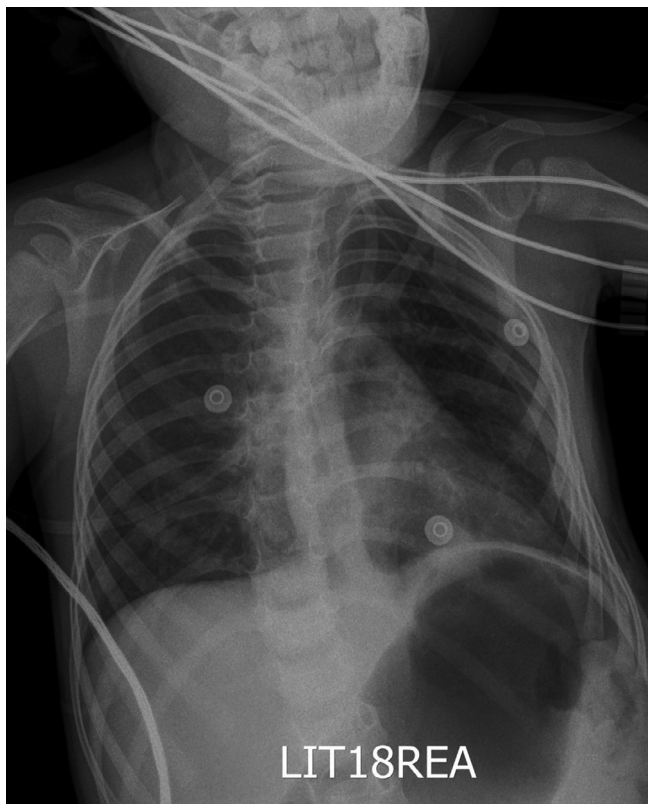

Fig. 6 – Normal postoperative chest radiograph.

component grade 1, which did not require adjuvant treatment. The immunostaining by anti AFP antibody was completely negative which eliminated the presence of an associated vitelline tumor component (Figs. 8, 9).

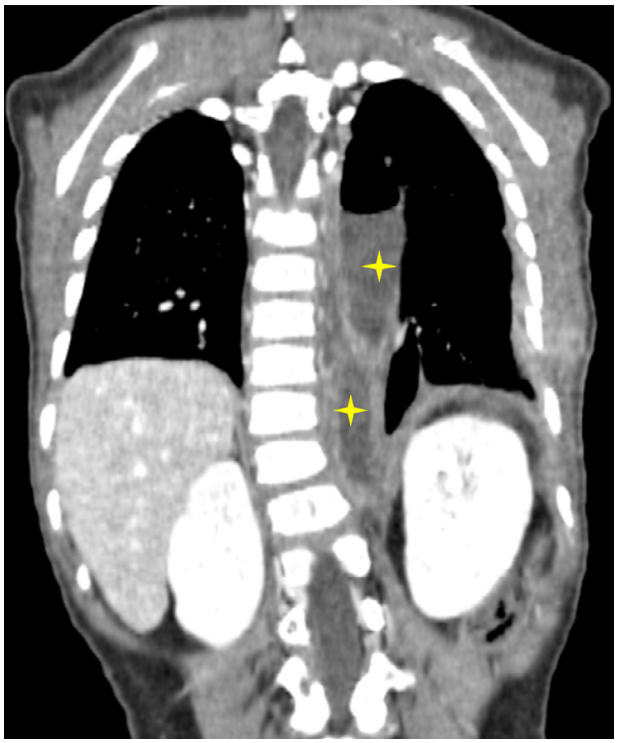

Fig. 7 – CT scan in injected coronal reconstruction showing two pleural collections, related to postoperative remodeling.

Discussion

Teratomas are germ cell tumors derived from the 3 embryonic layers (ectoblastic, endoblastic, and mesoblastic). The most common location is the ovary or testis, and they are divided into 3 categories benign mature teratoma, malignant immature teratoma, and teratoma with an additional malignant component. Mature posterior mediastinal teratoma is a rare pathology, the preoperative diagnosis is difficult, especially in its pure cystic form.

Typical mature teratomas represent 75% of mediastinal germ cell tumors [2]. They are asymptomatic when they are small. They increase in size progressively and will cause symptoms by compression of surrounding organs (chest pain, dyspnea). They appear as a cystic lesion, with well-defined contours, rounded or lobulated, with calcifications detected in CT, a macroscopic fatty component visualized in CT and MRI, and/or microscopic component detected in MRI by the decrease in signal when switching from the in phase to the out phase sequence. The absence of the fatty component does not eliminate the diagnosis.

The content of the cystic component may be serous (hypodense on CT, hyposignal T1, and hypersignal T2), hemorrhagic or hyperproteic (hyperdense on CT, hypersignal T1, and intermediate T2 signal). In this last case, the subtracted dynamic injected sequences allow to avoid the masked T1 hypersignal, and to detect the enhancement of a tissue component, which raises fears of an immature teratoma.

Immature teratomas are seen in 27% of cases, and the incidence is high in young adults between 18 and 40 years old. The mediastinum represents the most frequent extragonadal localization of immature teratomas. Late diagnosis, advanced age, and high histological grade are associated with poor prognosis [3,4].

Mediastinal teratomas may be complicated by rupture into the pleural or pericardial cavity, or in the mediastinum. This complication may be related either to focal ischemia of the wall given the large size of the tumor, wall fragility by infection, following erosion by proteolytic enzymes produced by a component of digestive tissue, or in case of multiple adhesions with adjacent structures. The mainstay of treatment is complete surgical excision, the role of chemotherapy and less radiotherapy in malignant immature forms is not well established [5].

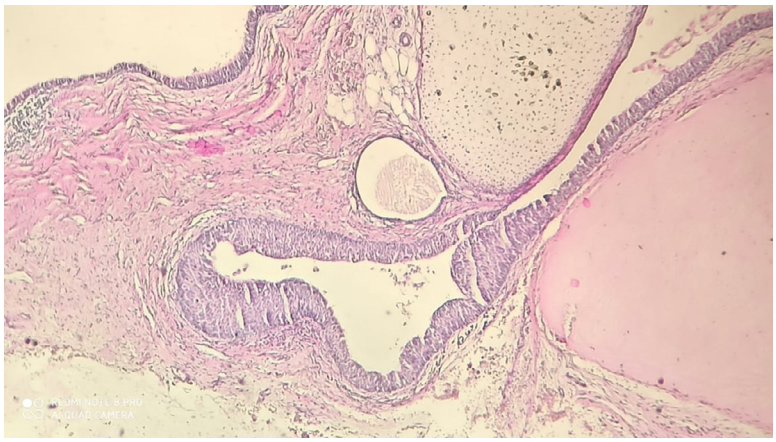

Fig. 8 – Anatomopathological image showing a tumor proliferation made of cartilaginous tissue, squamous epithelium and respiratory epithelium (HESX40).

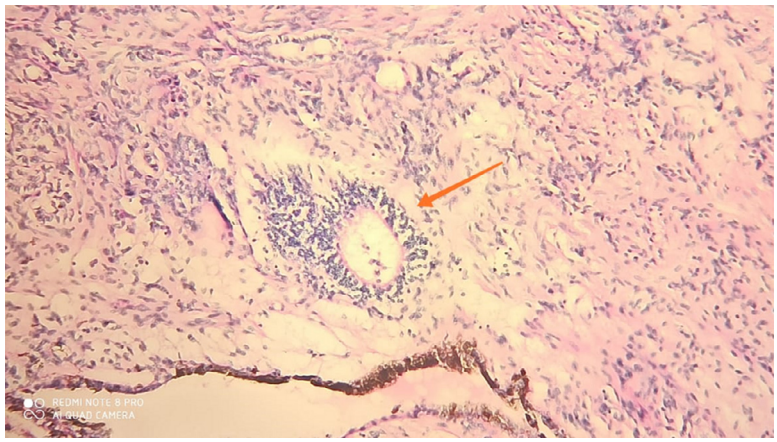

Fig. 9 – Anatomopathological image showing the presence of a small immature contingent (HESX100).

Conclusion

The diagnosis of posterior mediastinal teratoma should be considered in the presence of an asymptomatic mediastinal cystic mass, in child or young adult, with a fatty component on MRI and/or CT scan. Biopsy confirms the diagnosis, and treatment is based on surgery. In case of a malignant component, adjuvant treatment is discussed.

Patient consent

The patient and his parents had given their consent for the publication of this data

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