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Giant Mediastinal Mature Cystic Teratoma in a Five-year-old Girl - Case Report

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Abstract

Mediastinal teratomas are rare tumors in the pediatric population and are most commonly located in the anterior mediastinum. We present the case of a five-year-old girl in whom radiological evaluation was performed due to chest wall asymmetry. Chest radiography, computed tomography (CT), and magnetic resonance imaging (MRI) revealed an expansive mass occupying the right hemithorax, causing displacement of mediastinal structures to the left and subatelectasis of the right lung, without signs of infiltrative growth. Due to the pronounced mass effect, a right thoracotomy, adhesiolysis, and complete tumor extirpation were performed. Histopathological examination confirmed a mature mediastinal teratoma. Surgical resection represents the treatment of choice, particularly because of the proximity of vital mediastinal structures, including major blood vessels and airways. This case highlights the importance of radiological imaging in the differentiation of mediastinal masses and in planning surgical management.

Keywords: Mediastinum, teratoma, mature

Introduction

Teratoma is a germ cell tumor originating from pluripotent embryonic cells and is characterized by the presence of tissues derived from all three embryonic germ layers: ectoderm, mesoderm, and endoderm. Although teratomas most commonly occur in the gonads, a significant number may arise at extragonadal sites along the midline of the body, such as the sacrococcygeal region, retroperitoneum, pineal region, and mediastinum. Among these locations, the mediastinum is one of the most common sites of germ cell tumors in children and adolescents [1]. Mediastinal teratomas most frequently develop in the anterior mediastinum, where they account for 1–10% of primary germ cell tumors in this region [2]. In the pediatric age group, they are relatively uncommon and represent 6–18% of pediatric mediastinal tumors [3], while their incidence compared to adults is approximately 1:5 [4]. Histologically, teratomas are classified as mature (benign) or immature (malignant). Mature teratomas are considerably more common, accounting for approximately 80% of cases [5].

They are characterized by the presence of well-differentiated tissues of various origins, including skin, sebaceous glands, hair, cartilage, bone, and respiratory epithelium. The incidence of teratomas is approximately 1 in 4,000 live births [6]. Although most mature teratomas follow a benign clinical course, their location and potential for growth may lead to compression of surrounding intrathoracic structures. They are most often diagnosed during childhood and early adulthood, either incidentally during radiological evaluation or following the onset of symptoms caused by compression of adjacent structures, such as cough, dyspnea, chest pain, or recurrent respiratory infections. Given the rarity of this pathology in the pediatric population and the potential diagnostic challenges it presents, individual case reports play an important role in expanding clinical knowledge regarding the presentation, diagnosis, and therapeutic management of these tumors. In this paper, we present the case of a five-year-old girl diagnosed with a mature teratoma of the anterior mediastinum, with the aim of highlighting the clinical features, diagnostic workup, and therapeutic approach in the management of this rare pediatric tumor.

Case Presentation

A previously healthy five-year-old girl was brought to the hospital by her mother because of mild chest wall asymmetry on the right side, first noticed approximately three months earlier. The patient had no significant subjective complaints except for a cough that had developed one day before admission. She was afebrile. On auscultation, breath sounds over the right hemithorax were audible only apically, whereas no breath sounds were heard over the middle and lower lung fields. On the same day, a chest radiograph was obtained in the standing posteroanterior projection. The radiograph demonstrated complete opacification of the lower and middle lobes and partial opacification of the upper lobe of the right lung. The right hilar structures, costophrenic angle, and right hemidiaphragm could not be clearly visualized. The right cardiac border was also obscured.

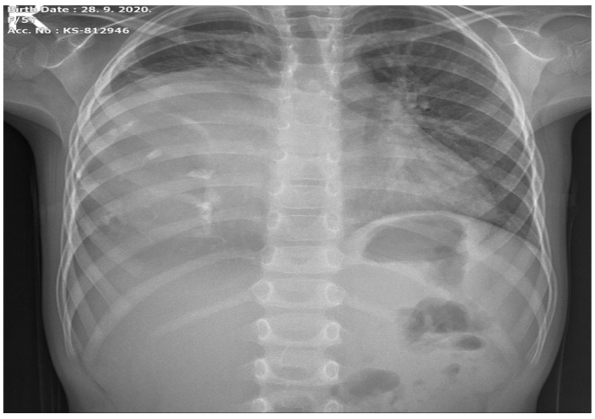

Figure 1: *Chest radiograph showing opacification of the right hemithorax.*

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A non-contrast computed tomography (CT) scan of the thorax was subsequently performed using 1-mm slices with soft tissue and lung windows. A well-circumscribed expansive lesion measuring 130 × 95 × 88 mm (CC × AP × LL) was identified in the right hemithorax, adjacent to the ventral and lateral contours of the right lung. The lesion was predominantly cystic, containing irregular thick and thin septa, small soft-tissue components, areas of adipose tissue, and irregular calcified foci. Bilateral axillary lymph nodes measuring up to 15 mm were also noted.

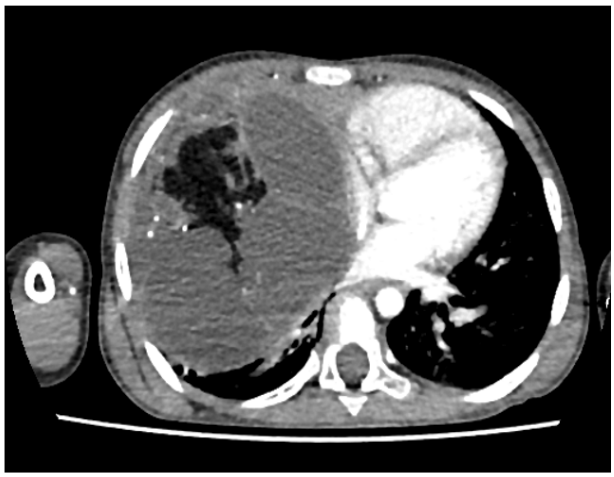

Figure 2: *CT scan demonstrating a well-defined expansive lesion measuring 130 × 95 × 88 mm.*

Based on the CT findings, an urgent magnetic resonance imaging (MRI) examination of the thorax was indicated and performed before and after contrast administration. MRI demonstrated a multilocular tumor with a distinct capsule occupying the right hemithorax and measuring 142 × 105 × 93 mm (CC × AP × LL). The lesion contained fluid, central fatty components, and calcifications. It displaced the mediastinal structures toward the left side and compressed the upper and lower lobes of the right lung, resulting in subatelectasis. The middle lobe was not visualized. A small amount of pleural effusion was present in the right hemithorax. Following contrast administration, only peripheral enhancement of the lesion was observed, while the septa demonstrated increased signal intensity and the remaining contents showed no contrast enhancement. MRI findings indicated a non-infiltrative tumor with a pronounced mass effect on adjacent anatomical structures, most consistent with a mature teratoma.

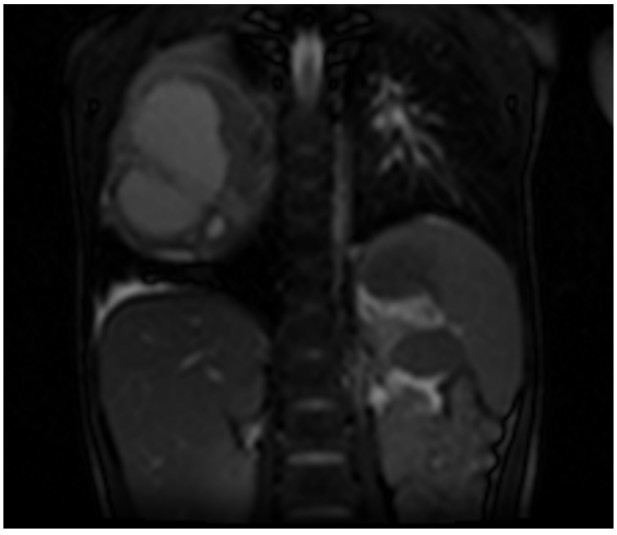

Figure 3: *RI showing a multilocular encapsulated tumor measuring 142 × 105 × 93 mm.*

Surgical treatment was indicated. A right posterolateral thoracotomy, adhesiolysis, complete tumor extirpation, pleural cavity irrigation with metronidazole solution, and drainage of the right pleural cavity were performed. The right posterolateral thoracotomy was carried out through the sixth intercostal space, providing access to the pleural cavity. Apical adhesions were released using a LigaSure device.

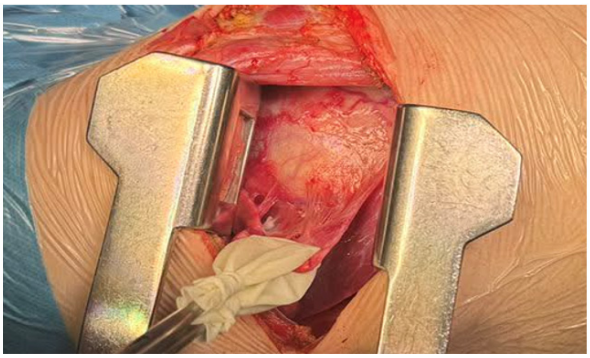

Figure 4: *Right posterolateral thoracotomy.*

Inspection and palpation revealed a mediastinal tumor occupying nearly two thirds of the right hemithorax. The lesion was well-circumscribed, with tense walls and fluctuation in certain areas.

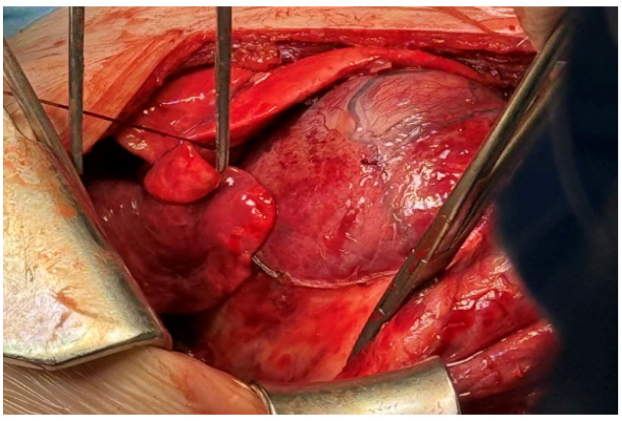

Figure 5: *Centrally located mediastinal tumor.*

Loose adhesions between the tumor and adjacent lung parenchyma were completely dissected using combined blunt and sharp dissection techniques. Entering the cleavage plane, the lesion was carefully separated from the inferior vena cava and the bronchovascular structures of the right lung. Further dissection from the superior vena cava was technically demanding but successfully completed.

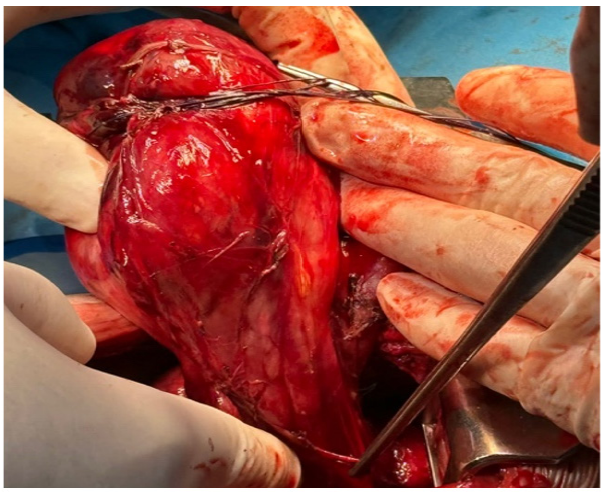

Figure 6: *Resection of the tumor.*

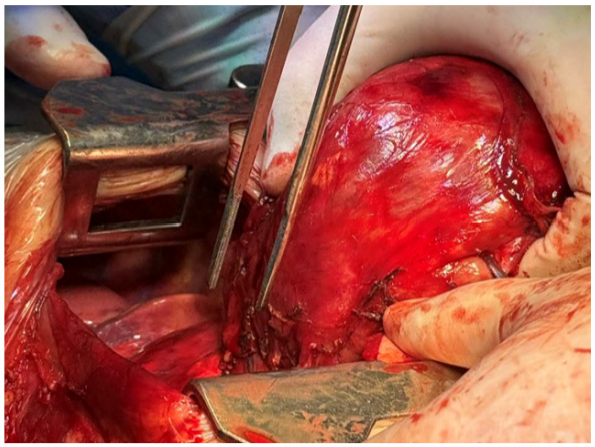

Figure 7: *Dissection of the tumor from major vascular structures.*

Due to the large size of the lesion and the limited volume of the right hemithorax, the cystic components were aspirated intraoperatively. Two different types of fluid were obtained: serous fluid from one collection and turbid fluid containing cheesy debris from another. The aspirated material was sent for microbiological analysis. Following meticulous dissection, the tumor was completely excised. A horn-like extension of the lesion was noted extending retrocavally and paratracheally toward the superior thoracic aperture. The pleural cavity was repeatedly irrigated with metronidazole solution. After confirmation of hemostasis and the absence of air leakage, two chest drains were inserted and the thoracotomy was closed in layers.

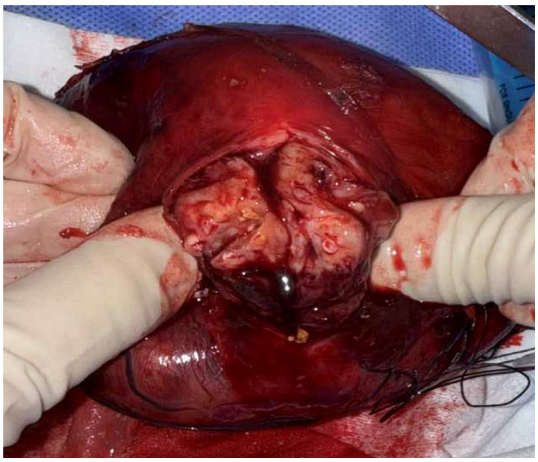

Figure 8: *Completely excised tumor specimen.*

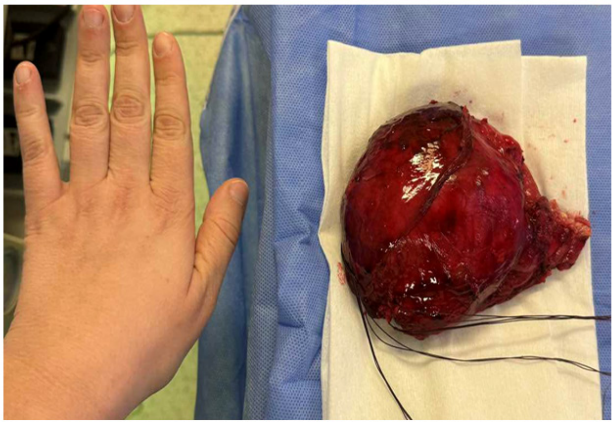

Figure 9: *Completely excised tumor specimen.*

Following surgery, the patient was transferred to the intensive care unit. The postoperative course was uneventful. Antibiotic therapy and analgesic treatment were administered. Early re-expansion of the right lung parenchyma was confirmed by postoperative chest radiography.

The chest drains functioned appropriately and were subsequently removed. A follow-up chest radiograph obtained ten days after surgery showed normal findings.

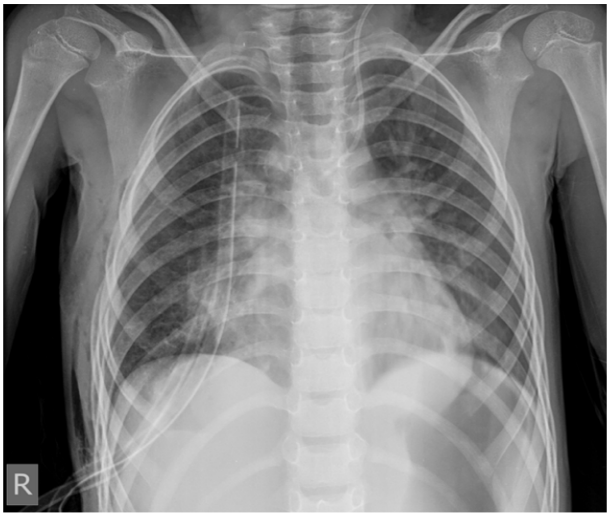

Figure 10: *Chest radiograph demonstrating early re-expansion of the lung parenchyma.*

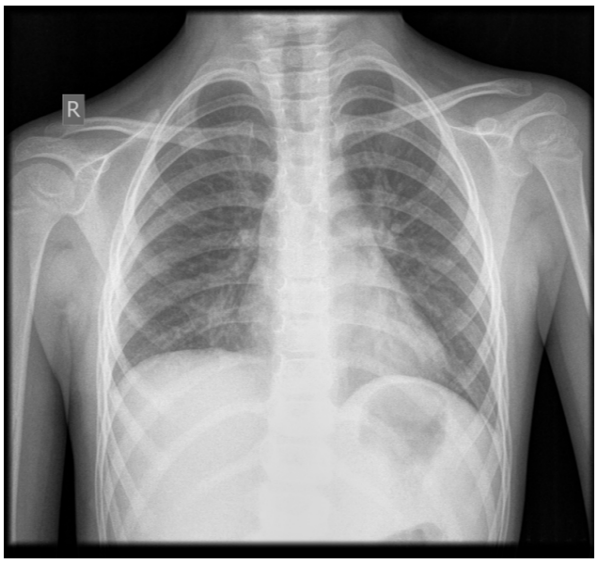

Figure 11: *Follow-up chest radiograph.*

Histopathological examination revealed a cystic tumor lined by stratified squamous epithelium with mucinous glands and pancreatic tissue present within the wall. The solid areas consisted of fibrous and adipose tissue containing fragments of mature cartilage, peripheral nerves, ganglion cells, and foci of columnar and squamous epithelium. Gross examination demonstrated a well-circumscribed lesion with both solid and cystic components.

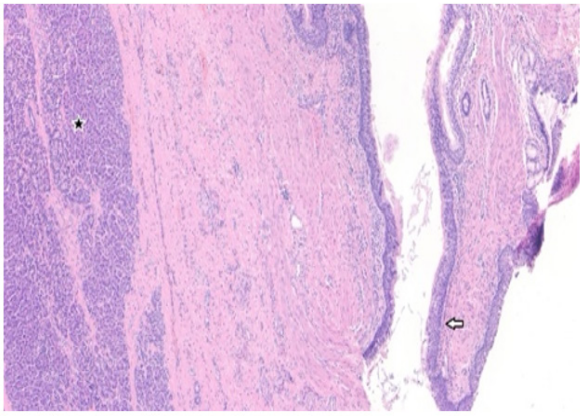

Figure 12: *A cystic tumor mass lined by stratified squamous epithelium (arrow), with mucinous glands and pancreatic tissue (star) present within the wall.*

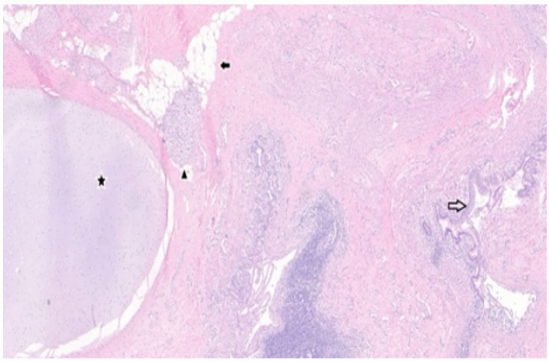

Figure 13: *In solid areas, the tumor is composed of fibrous and adipose tissue (black arrow), with fragments of mature cartilage (star), peripheral nerves, ganglion cells (arrowhead), and foci of columnar and squamous epithelium (empty arrow)*

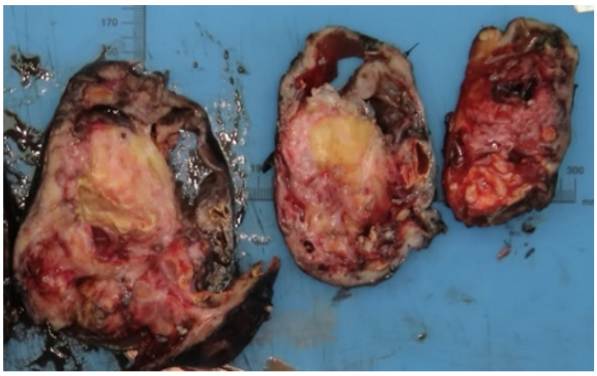

Figure 14: *Cut section of a well-circumscribed tumor demonstrating solid and cystic areas.*

Discussion

Mediastinal teratomas are rare extragonadal germ cell tumors that most commonly arise in the anterior mediastinum, particularly during childhood and adolescence. Although predominantly benign, their clinical significance lies in their potential for progressive growth and compression of adjacent vital intrathoracic structures. In the present case, a mature mediastinal teratoma was diagnosed in a five-year-old girl, consistent with reports indicating that these tumors are frequently identified early in life, often incidentally or after the development of symptoms related to mass effect [1].

The clinical presentation of mediastinal teratomas is highly variable. Smaller lesions may remain asymptomatic, whereas larger tumors can cause respiratory symptoms such as cough, dyspnea, chest pain, or recurrent respiratory infections [2]. In our patient, chest wall asymmetry was the predominant clinical finding, with only minimal respiratory symptoms despite a tumor occupying nearly two-thirds of the right hemithorax. Similar discrepancies between tumor size and clinical presentation have been reported in other pediatric cases [3].

Radiological imaging plays a crucial role in the preoperative evaluation of mediastinal tumors. CT imaging enables accurate assessment of tumor size, internal composition, and relationships with surrounding anatomical structures. The presence of cystic components, fat, and calcifications is considered highly characteristic of mature teratomas [4]. MRI further contributes to the assessment of tumor invasiveness and its relationship to vascular and mediastinal structures, information that is particularly valuable for surgical planning. In our patient, MRI demonstrated a well-defined, non-infiltrative multilocular mass containing fat and calcifications, findings highly suggestive of a mature teratoma.

Definitive diagnosis is established by histopathological examination. In this case, the tumor contained well-differentiated tissues derived from different embryonic germ layers, including squamous epithelium, mucinous glands, pancreatic tissue, cartilage, and neural elements, confirming the diagnosis of a mature cystic teratoma. Such histological features are typical of benign teratomas and are associated with an excellent prognosis following complete resection [1]. Complete surgical excision remains the treatment of choice for mediastinal teratomas and is curative in the vast majority of cases [5]. However, surgical management may be technically challenging because of the close proximity of the tumor to major vessels, airways, and other mediastinal structures. In the present case, the procedure was complicated by the tumor's large size and its close relationship to both the superior and inferior vena cava. Nevertheless, complete resection was successfully achieved without postoperative complications. The uneventful postoperative course and early re-expansion of the lung further emphasize the importance of timely surgical intervention.

This case highlights the importance of recognizing subtle and nonspecific clinical signs in children, as well as the value of comprehensive radiological evaluation in the differential diagnosis of mediastinal masses. Furthermore, it confirms that complete surgical excision of mature mediastinal teratomas is associated with excellent therapeutic and prognostic outcomes [6].

Conclusion

Mature mediastinal teratoma is a rare benign germ cell tumor of childhood that may remain clinically unrecognized for a prolonged period because of minimal or absent symptoms. Despite its benign histological nature, large tumors can produce significant compressive effects on intrathoracic structures. Radiological imaging modalities, particularly CT and MRI of the thorax, play a pivotal role in establishing diagnostic suspicion and planning surgical treatment. Definitive diagnosis is achieved through histopathological examination. Complete surgical excision remains the treatment of choice and is associated with an excellent prognosis and a low risk of recurrence. This case further emphasizes the need to include mediastinal teratoma in the differential diagnosis of intrathoracic masses in children, even in the absence of pronounced symptoms.

References

1. El-Zaatari ZM, Ro JY (2021) Mediastinal Germ Cell Tumors: A Review and Update on Pathologic, Clinical, and Molecular Features. Adv Anat Pathol 28(5):335-350.
2. Nusjirwan R, Hermawan K, Dewi M, Nugraha HG, Dewayani BM, Nataprawira HM (2024) Mediastinal teratoma in children: A case series of misdiagnoses in a high-endemic tuberculosis setting. Int J Surg Case Rep 116: 109307.
3. Barbosa-Sequeira J, Correia MR, Carvalho C, Paupério G, Carvalho F (2022) Mediastinal Teratoma in Children - Case Report. Rev Port Cir Cardiotorac Vasc [Internet] 29(3) :71-74.
4. Nusjirwan R, Hermawan K, Dewi M, Nugraha HG, Dewayani BM, Nataprawira HM (2024) Mediastinal teratoma in children: A case series of misdiagnoses in a high-endemic tuberculosis setting. Int J Surg Case Rep 116: 109307.
5. živan V (2008) Maksimović: Hirurgija za studente medicine, Beograd, CIBID Medicinski fakultet. Univerziteta u Beogradu.
6. Nusjirwan R, Hermawan K, Dewi M, Nugraha HG, Dewayani BM (2024) Nataprawira HM. Mediastinal teratoma in children: A case series of misdiagnoses in a high-endemic tuberculosis setting. Int J Surg Case Rep 116: 109307.