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CLINICAL CASES

Pulmonary teratoma, an exceptional presentation: case report

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Abstract

Introduction: *Teratomas are most frequently located in the thoracic anterior mediastinum.* **Case presentation:** *A 26-year-old female patient who was admitted after respiratory distress was protocolized with a tomography that reported data of cyst tumor involving the upper left pulmonary lobe, a thoracotomy and tumor resection were performed, the pathology report mentioning data from mature cystic teratoma. The presence of pulmonary teratoma has a few reports in the world literature, the thomography provides suggestive findings of cystic tumor and allows surgical planning for its resection.* **Conclusion:** *Pulmonary teratoma is a rare and infrequent entity, its finding requires surgical resection due to the risk of rupture and malignancy.*

Keywords: *Pulmonary teratoma. Mature teratoma. Pulmonary cyst tumor. Thoracotomy.*

Introduction

Pulmonary teratoma is a type of extragonadal germinal tumor whose frequency in the thorax is higher in the anterior mediastinum. Its intrathoracic presence, mainly mediastinal, comprises 80% of this type of tumors[1]; however, its intrapulmonary presentation is exceptionally rare, there have been reports of this entity since 1839 by Mohr[2] and up to 2010 only approximately in 81 cases in the literature[3]. It is usually asymptomatic and is found as a finding due to another condition or in advanced stages there may be symptoms due to compression or invasion of neighboring organs. The importance of making a pre-operative diagnosis involves minimizing surgical risk. If teratoma is not treated it can cause life-threatening complications such as hemoptysis, airway compression, and malignant transformation.

Clinical case

This is a 26-year-old female patient, non-smoker and with no significant history, who attended the emergency department after a 15-day history of non-productive cough, pain in the left hemithorax radiating to the subscapular region, and dyspnea. On moderate exertion, on physical examination, he was afebrile, with the presence of tachypnea and on auscultation crackles were found in the left apical region. He was admitted to the emergency department with the following laboratories: hemoglobin 11.7 g/dL, leukocytes 9.31, 8.35% neutrophils, kidney and liver function within normal limits. A protocol was carried out with a computed tomography that showed the presence of a heterogeneous left apical lesion with a cystic component and suggestive of a lung abscess (Figs. 1 and 2). Antimicrobial therapy is started, and evaluation is requested by the thoracic surgery

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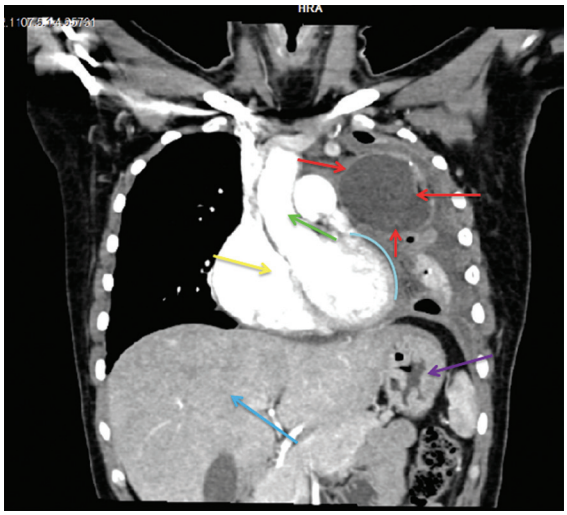

Figure 1. Coronal section contrasted chest tomography. Yellow arrow: cardiac silhouette. Red arrows: tumor mass in the left apical lobe. Blue arrow: liver. Green arrow: ascending aorta. Purple arrow: left kidney. Blue curve: heart delimitation and tumor lesion.

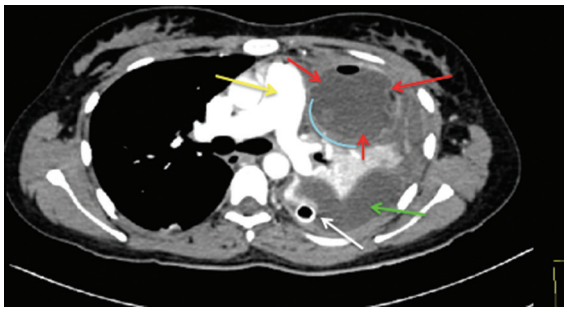

Figure 2. Contrasted chest tomography axial section. Yellow arrow: cardiac silhouette, red arrows: tumor mass, blue arrow: liver, green arrow: ascending aorta, purple arrow: left kidney, blue curve: heart delimitation and tumor lesion.

service and surgical exploration is indicated, a left anterolateral thoracotomy is performed, which presents as findings pleural effusion, pachypleuritis and a 70 × 70 × 35 mm left apical cystic lesion (Figs. 3 and 4), macroscopically with the presence of hair and skin, decortication and tumor resection are performed. The patient was admitted to intensive care with the need for ventilatory support for 48 h, progressing satisfactorily, discharged without complications, and was followed up by the outpatient clinic. It is presented with a definitive histopathological report that reports mature cystic

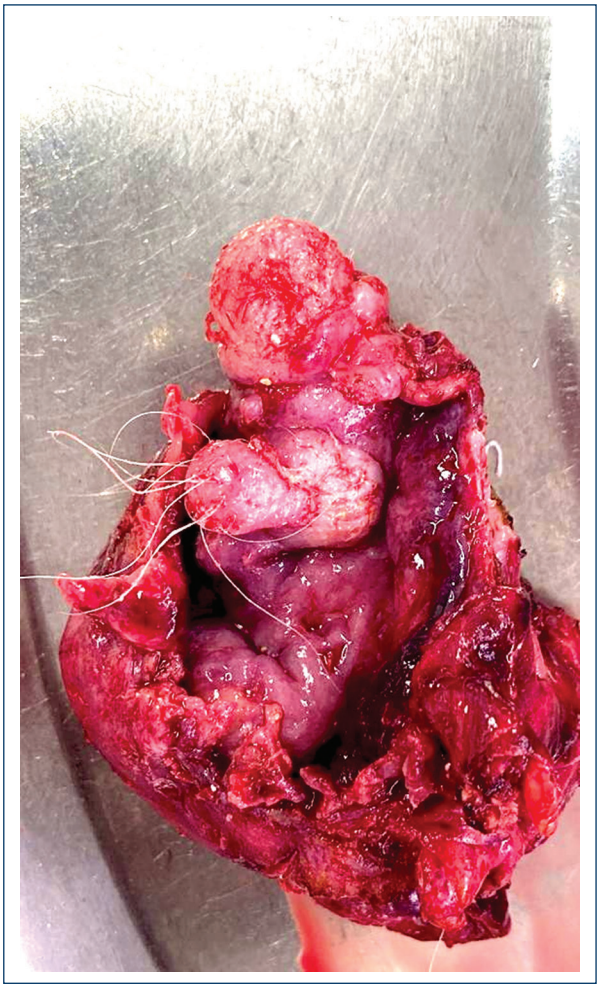

Figure 3. Surgical specimen: cystic teratoma with presence of ectodermal tissue (skin and hair).

teratoma and chronic eosinophilic pleurisy as a finding (Fig. 5). Due to this, in follow-up by external consultation, a tomography of the chest, abdomen and pelvis was requested, which reported chest with post-surgical changes, abdomen without data of tumor activity, intra-abdominal organs with normal characteristics, pelvis with uterus and annexes with normal characteristics, of In the same way, tumor markers are requested that report human chorionic gonadotropin beta fraction of 4 mUI/mL, alpha-fetoprotein (AFP) of 1.60 IU/mL, lactic dehydrogenase 125 IU/L, carcinoembryonic antigen (ACE) 1.49 ng/mL. Now with no recurrence data, she continues to be monitored by the outpatient clinic.

Discussion

The most common mediastinal tumors are lymphoma, thymoma, and teratoma. Teratomas are a type of

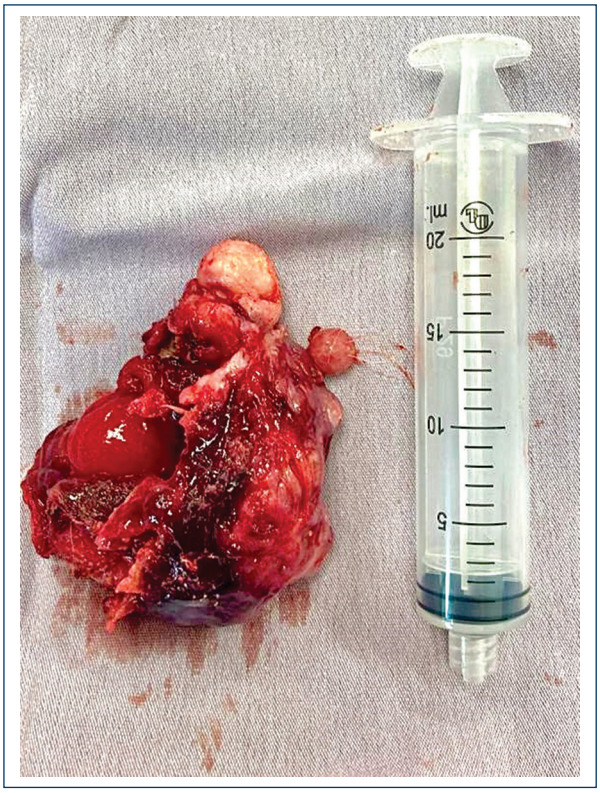

Figure 4. Surgical piece: mature cystic teratoma of 7 × 7 cm.

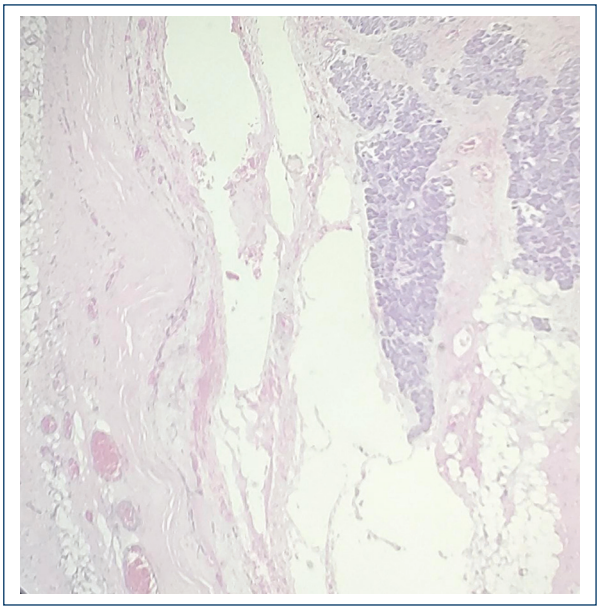

Figure 5. Teratoma components: mature adipose tissue, fibroconnective, monolayered glands, adjacent to the pleura (40×).

tumor that originate from pluripotent cells, with one or more endodermal, mesodermal or ectodermal components[4], to later differentiate into any type of tissue other than the site where they develop. It can involve different organs, most commonly it occurs in the ovaries, testicles, sacrococcygeal region, mediastinum, and other sites[5]. While the extragonadal form represents only 3%, anterior mediastinal teratoma corresponds to 15-20% of this percentage; however, its pulmonary presentation is rare, with few reports of this location[6]. Extragonadal tumors are only considered if there is no evidence of a primary tumor in the testicles or ovaries, which corresponds to the case of this patient. In this case, and due to the characteristics of the patient and the tumor, it is worth mentioning the existence of giant mediastinal tumors, which are defined as a tumor that occults half of the hemithorax or if it is > 10 cm, with a similar clinical picture. Despite the size, the prognosis will depend on the histological type with respect to the risk of metastasis and recurrence. Several studies suggest that both thoracic and mediastinal teratomas have a common origin from thymic tissue of the third pharyngeal arch[7]. They usually present as an imaging finding. The criterion is determined with exclusive pulmonary origin and the exclusion of gonadal origin or another primary extragonadal site[8]. There is a predilection for the left upper lobe, which corresponds to the case presented[9]. They usually present as mature, benign teratoma. Their age range varies from 10 months to 68 years, with no preferences between both sexes[10]. Up to 53% are usually asymptomatic[11], while in advanced stages, its clinical picture is insidious, it can present chest pain, hemoptysis, and cough, in advanced stages, the symptoms are the result of compression/obstruction of neighboring organs, there are even reports of trichoptysis in cases of invasion of the tracheobronchial tree[12]. The use of chest radiography, computed tomography, and magnetic resonance can be used to consider the diagnosis and assess its resectability[13]. Findings such as thin-walled cysts and calcifications are highly suggestive of teratomas, which in the case of the patient led to the presence of a cyst versus lung abscess. Tumor markers such as AFP and beta-hCG are usually at reference values; their elevation suggests the presence of a malignant tumor[14], the rest of the laboratories usually report within normal parameters. In the case of this patient, due to her urgent admission to the operating room, the protocol with tumor markers and extension studies was carried out after the intervention, with no data on tumor activity in another region and the tumoral markers in normal parameters. This kind of tumor is

generally benign, the size of the tumor is not related to malignancy. Malignant teratomas tend to be solid and nodular, while benign ones are frequently cystic and contain mature tissue. Macroscopically, your multicystic tumor is found that contains hair, teeth or skin. Its differential diagnosis depends on the location and includes bronchogenic cysts, pulmonary hamartomas, and cystic lymphangioma. Surgical treatment with complete resection by sternotomy, thoracotomy, or video-assisted thoracoscopy is the management of choice due to the potential risk of rupture and injury to other organs by proteolytic enzymes, as well as the risk of malignant transformation, which occurs in 1-2%[15]. In the case of presenting an immature teratoma, the combined approach with surgery and two circles of chemotherapy (BEP) is foreseen. Follow-up after resection is defined by histopathology, while malignant tumors require adjuvant treatment and close follow-up due to the risk of local or distant recurrence. While in benign tumors, local recurrence is not expected after en bloc resection with free margins[16].

Conclusion

There are some peculiarities in this case that require consideration, mainly due to the unusual location of the tumor, despite the fact that 5% of germ cell tumors have an extragonadal origin, the pulmonary location to date has few reports in the literature. The use of tomography for pre-operative diagnosis is important for surgical planning; however, the diagnosis is not always integrated due to the unusualness and non-specific symptoms of the condition. The definitive management is surgical with complete resection to avoid complications and malignant transformation. Close follow-up is important, even more so if the pathology result shows the presence of an immature teratoma, which, due to the risk of recurrence and metastasis, will require support with adjuvant treatment. The relevance of this type of cases is knowing about their existence, having a high index of suspicion and being able to carry out a complete diagnostic approach for adequate surgical planning, which will have direct repercussions on the evolution and outcome of the patient.

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Conflicts of interest

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Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

Use of artificial intelligence for generating text. The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

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