A Giant Mature Mediastinal Teratoma Simulating a Pleural Effusion
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Abstract
Mediastinal teratomas account for 10% of mediastinal tumors, mainly affecting the young population. There are two types of teratomas: mature (benign) and immature. The radiological presentation is variable given the great variety of the tissues constituting it: epithelial and muscular tissues, fat, liquid, cartilage and even teeth. We report the case of a 27-year-old female, with no pathological history, who consulted for a progressive dyspnea, in a context of apyrexia and general state preservation. The clinical examination found a dyspnoeic patient with a left fluid effusion syndrome. The chest X-ray has shown a left lung opacity. The patient underwent a thoracic drainage bringing back 600cc of purulent liquid at the beginning then herematc but the patient remained dysnopecic. The cytobacteriological analysis was negative. A thoracic CT was performed revealing an abundant left pleural effusion, containing a three component mass: tissue, fat and calcium; suggestive of a teratoma with ultrasound and MRI in favor of a pleural localization. The patient underwent a thoracotomy revealing a large soluble-cystic mass with a large mediastinal implantation base pushing up the left lung and very adherent to its lower lobe, histologically compatible with a mature teratoma. Teratomas represent 50% to 70% of mediastinal germ tumors, their radiological presentation is often suggestive of the diagnosis, but in some cases - not as rare - they can simulate a massive pleural effusion, and should therefore be included in the list of diagnoses to evoke in front of an opaque hemi-thorax especially in the presence of calcification and in the young population.

Keywords: Mature teratoma, mediastinum, imaging.

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INTRODUCTION
Mediastinal teratomas account for 10% of mediastinal tumors, mainly affecting the young population. It is the most common extra gonadal localization. There are two types of teratomas: mature (benign) and immature. The radiological presentation is variable given the great variety of the tissues constituting it: epithelial and muscular tissues, fat, liquid, cartilage and even teeth [1]. The aim of this work is to illustrate a particular form of the radiological presentation of a mature mediastinal teratoma simulating a massive pleural effusion.

CASE REPORT
We report the case of a 27-year-old female, with no pathological history, who consulted for a progressive dyspnea, in a context of apyrexia and general state preservation. The clinical examination found a dyspnoeic patient with a left fluid effusion syndrome. The chest X-ray has shown a left lung opacity pushing the heart and the mediastinum to the contralateral side. The patient underwent a thoracic drainage bringing back 600cc of purulent liquid at the beginning then hematic but the patient remained dysnopecic. The cytobacteriological analysis was negative. A thoracic CT was performed revealing a massive left pleural effusion, containing a three component mass: tissue, fat and calcium; suggestive of a teratoma (fig 1). A thoracic CT was performed revealing a massive left pleural effusion, containing a three component mass: tissue, fat and calcium; suggestive of a teratoma (fig 2). A complementary ultrasound was performed showing a massive left pleural effusion with a floating oval heterogeneous echogenic mass, not lit by color Doppler and containing a calcification (fig 3). The Thoracic MRI showed a heterogeneous left pleural lesion, bilobed, with triple component (tissue, fat and calcification), the transitional part was iso intense in T1, hyper intense in T2 and diffusion with a restricted ADC, evoking a pleural teratoma (fig 4). The patient underwent a thoracotomy revealing a large soluble-cystic mass with a large mediastinal implantation pushing up the left lung and very adherent to its lower lobe with no...
pleural rupture. The mass was histologically compatible with a mature teratoma.

Fig-1: Scout view showing a calcification within left lung opacity.

Fig-2: Axial and coronal sections of a chest CT with and without contrast showing a massive left pleural effusion with a three component mass (tissue, fat and calcification).

Fig-3: Thoracic ultrasound showing a massive left pleural effusion with a floating oval heterogeneous echogenic mass, not lit by color Doppler and containing a calcification.
**DISCUSSION**

Germ cell tumors occur most frequently in the gonad but can rarely occur in extragonadal locations, usually in or near the midline. Germ cell tumors in the gonad are thought to originate from multipotential primitive germ cells. Extragonadal germ cell tumors may arise from similar cells that are “misplaced” along midline structures during their migration from the yolk endoderm to the gonad during early embryogenesis [2]. They are composed of mature tissues derived from the three embryonic leaves: ecto, endo, and meso-dermic. Mediastinal teratomas are the most frequent mediastinal germ cell tumors accounting for 50% to 70% [1]. They are mature in 80 to 88% and represent the most common benign variant of tumors of embryonic origin [3]. Mature teratomas are slow-growing neoplasms of the anterior superior mediastinum that usually arise near the thymus or within the thymic parenchyma. Patients with mature teratoma are usually young adults; however, children are also affected. Male and female patients are affected equally [2]. If symptomatic, most of symptoms are related to compression of nearby structures such as dyspnea (25%), thoracic pain (23%), cough (17%), fever (13%), weight loss (11%), superior vena cava occlusion (6%) and extrathoracic pain (5%) while pleural effusion is rarely seen in such cases [4]. The typical radiographic appearance of mature teratoma is that of a rounded, sometimes lobulated anterior mediastinal mass with the borders of the mass sharply marginated against the adjacent lung. Calcification has been reported in approximately 20–43% of cases and may be central, curvilinear, or peripheral. The radiographic visualization of teeth is pathognomonic of teratoma. The presence of a fat-fluid level is considered specific for the diagnosis of teratoma but is seldom seen radiographically [2]. CT is the modality of choice for the diagnostic evaluation of these tumors. It exquisitely shows the location and extent of the tumors as well as intrinsic elements including soft tissue, fat, fluid, and calcification. Mediastinal mature teratomas typically manifest on CT as heterogeneous sharply marginated, spherical or lobulated anterior mediastinal masses containing soft tissue, fluid, fat, or calcium attenuation, or any combination of the four. Fat-fluid levels, considered highly specific for the diagnosis of mediastinal mature teratoma, are uncommon. It is also useful in the evaluation of adjacent structures. Complications such as rupture into the pleural space or pericardium with associated effusions can be evaluated. Rupture of the teratoma can also be suspected if the wall of the lesion appears disrupted and consolidation is evident in adjacent lung. It has been reported that presence of pancreatic enzymes inside the tumors might lead to their rupture. Malignant transformation must be ruled out if contrast enhanced CT scanning reveals a non-homogeneous cystic mass with a fat or oil component and a thick wall with calcification and invasion of the pericardium and great vessels [2]. On MRI, T1- and T2-weighted MR images reveal areas of signal intensity abnormalities corresponding to fat, fluid, soft tissue, or calcification within the mass. Fat-suppressed MR images can be used to help delineate macroscopic fat, and in-phase and opposed-phase pulse sequences can be used to depict intracellular lipid. In contradistinction to CT, the high contrast resolution and multiplanar imaging capabilities of MR imaging may be used to better define the interface of the pericardial mass with the myocardium and other contiguous structures for purposes of surgical resection [5]. Complete surgical excision is the treatment of choice for mediastinal teratoma because of probable complications such as compression of adjacent structures, rupture or malignant transformation [6].

**CONCLUSION**

Mediastinal mature teratoma is uncommon. This slow growing tumor is usually asymptomatic. The radiological presentation is often suggestive of the diagnosis, but in some cases - not as rare - they can simulate a massive pleural effusion, and should
therefore be included in the list of diagnoses to evoke in front of an opaque hemi-thorax especially in the presence of calcification and in the young population.

REFERENCES


