ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 16, Issue, 06, pp.28985-28987, June, 2024
DOI: https://doi.org/10.24941/ijcr.47478.06.2024

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

MEDIASTINAL TERATOMA CAUSING ACUTE CHEST PAIN: CASE REPORT AND LITERATURE REVIEW

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ARTICLE INFO

Article History:
Received 20th March, 2024
Received in revised form
15th April, 2024
Accepted 24th May, 2024
Published online 30th June, 2024

Key words:
Teratoma, Chest pain, Radiology.

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ABSTRACT

Acute chest pain often prompts evaluation for life-threatening conditions such as myocardial infarction, pulmonary embolism, or aortic dissection. Thoracic teratomas, though rare, should be considered in the differential diagnosis, particularly in younger patients without cardiovascular risk factors. Mediastinal teratomas can present with acute chest pain due to rapid growth, compression, or rupture, causing severe complications like hemothorax or pericardial effusion. Imaging studies such as chest X-ray or CT scan are essential for identifying such unusual causes. This article presents the case of a patient whose acute chest pain was due to a thoracic teratoma, highlighting the importance of considering rare diagnoses for timely and effective management.

Citation: Franciane Melo Meireles MD, Bruno Castro Silva MD, Luiz Marcio de Almeida Araruna Filho MD *et al*. 2024. "Mediastinal teratoma causing acute chest pain: case report and literature review*". International Journal of Current Research*, 16, (06), 28985-28987.

INTRODUCTION

Acute chest pain is a common clinical presentation that often necessitates prompt evaluation to rule out life-threatening conditions such as myocardial infarction, pulmonary embolism, or aortic dissection.

However, thoracic teratomas, although rare, should also be considered in the differential diagnosis, particularly in younger patients without significant cardiovascular risk factors. Teratomas are germ cell tumors that can contain tissues from all three germ cell layers (1-3) and are most frequently found in the gonads, but extragonadal locations such as the mediastinum can also occur (5). Mediastinal teratomas typically present with non-specific

symptoms or may be asymptomatic, but they can occasionally lead to acute chest pain due to rapid tumor growth, compression of adjacent structures, or rupture (1, 2). When ruptured, these tumors can cause sudden onset of severe pain and potentially life-threatening complications, such as hemothorax or pericardial effusion (1-3). Therefore, when a patient presents with acute chest pain, imaging studies such as chest X-ray or computed tomography (CT) scan are crucial for identifying unusual causes like thoracic teratomas (1).

This article describes the case of a patient whose acute chest pain was ultimately attributed to a thoracic teratoma. The case underscores the importance of considering rare causes in the differential diagnosis of chest pain, particularly when initial evaluations do not support more common diagnoses. Awareness and consideration of this rare entity can lead to timely diagnosis and appropriate management, thereby reducing the risk of complications and improving patient outcomes.

Purpose of the Study: This work proposes a didactic presentation on thoracic teratoma, highlighting the main characteristics that every radiologist must recognize when faced with this diagnosis.

MATERIALS AND METHODS

We present a case report with a literature review on thoracic teratoma, using imaging exams of a patient who sought our service.

CASE REPORT

A 32-year-old female patient, a teacher, presents with continuous moderate to severe chest pain for the past 3 months, localized to the left hemithorax and associated with exertional dyspnea.

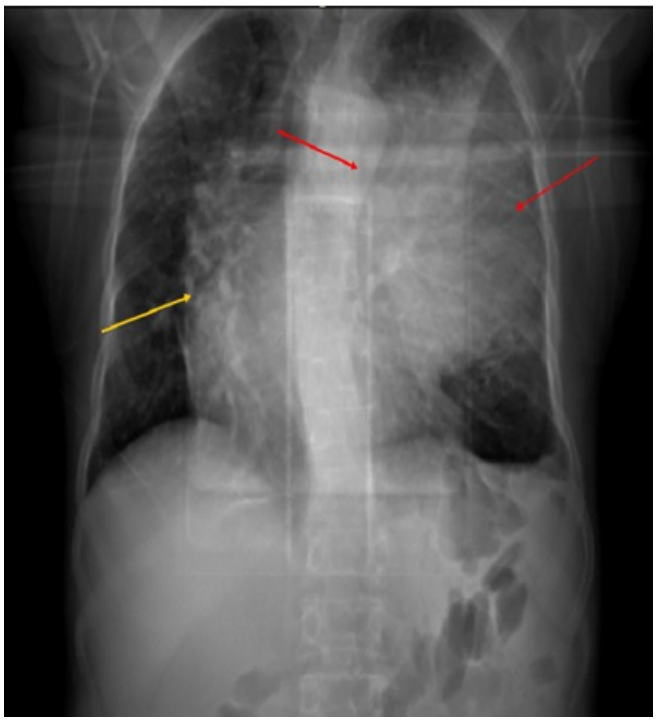

Figure 1. Chest X-ray in PA showing an important mediastinal widening, highlighting a large mass in the middle and lower third of the left hemithorax (red arrows), causing a shift of the mediastinal structures to the contralateral side (yellow arrow)

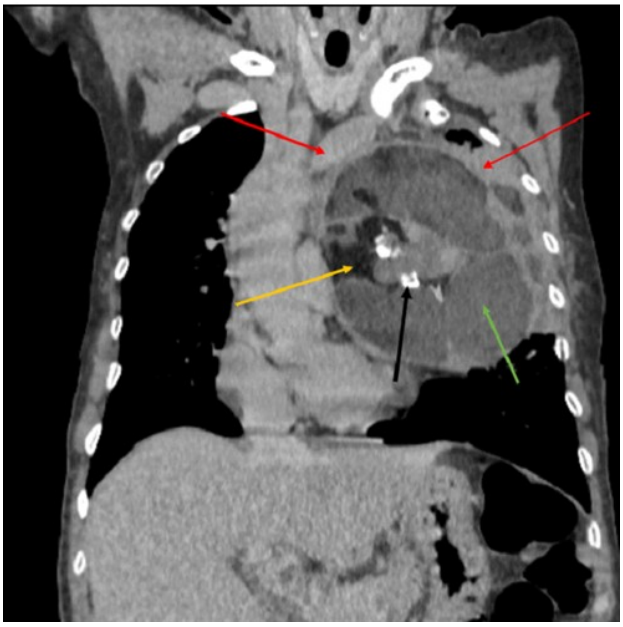

Figure 2. Computed tomography of the chest, in coronal section, soft tissue window, without the use of contrast medium, showing a large mass in the left hemithorax, probably mediastinal (red arrows), with heterogeneous content, highlighting solid content (green arrow), fatty content (yellow arrow) and calcifications (black arrow) within this mass, which is relatively well defined

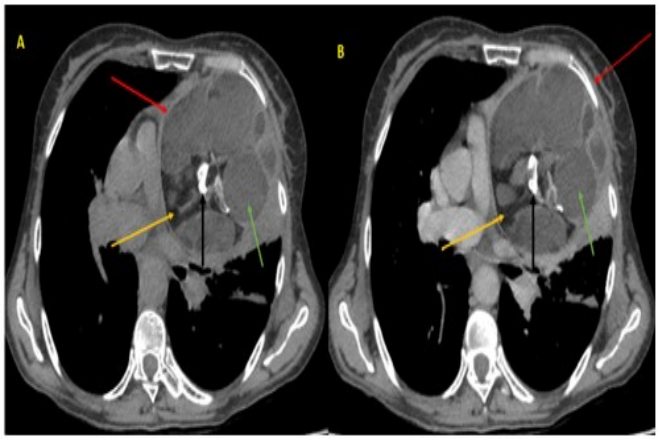

Figure 3. Computed tomography of the chest, in axial section, soft tissue window, without the use of contrast medium (A) and with the use of contrast (B), showing the mass in the left hemithorax (red arrow), well defined, probably mediastinal, displacing the mediastinal structures towards the right. This mass has heterogeneous content, with solid content (green arrow), fatty content (yellow arrow) and calcifications (black arrow), denoting characteristics of a teratoma-type germinal tumor. We also highlight a discreet septal enhancement within the lesion.

Physical examination reveals dullness and decreased breath sounds at the base of the left hemithorax. Chest X-ray shows opacity at the base of the left hemithorax, suggesting a mediastinal mass. Chest CT scan reveals an anterior mediastinal mass measuring 8 cm with solid and cystic components, calcifications, and fatty density areas, suggestive of a thoracic teratoma.

DISCUSSION

Teratomas are germ cell tumors that can contain tissues from all three germ layers, with pathological diagnosis requiring that at least two tissues be derived from the endoderm (2).

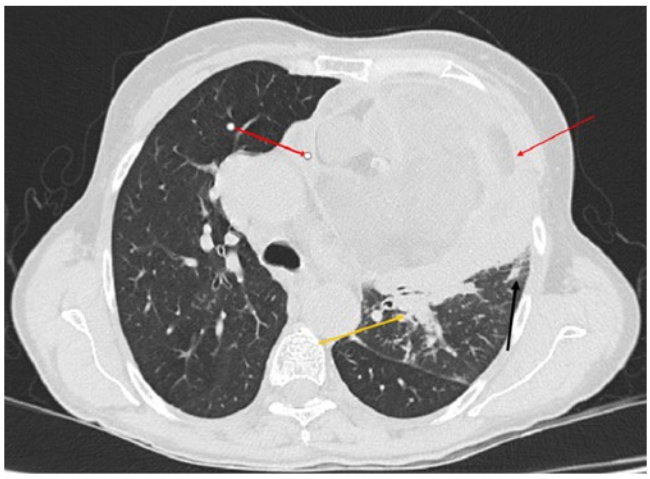

Figure 4. Computed tomography of the chest, in axial section, lung window, without the use of contrast medium, showing a well-defined mass in the left hemithorax (red arrow), probably mediastinal, causing compression on the adjacent lung parenchyma and on the bronchovascular structures of this lung (yellow arrow), with consequent locoregional subsegmental atelectasis

In the mediastinal region, mediastinal teratoma is the most common germ cell tumor, with no significant difference in incidence between genders, and it is most commonly found in the 20 to 40-year age group (2). However, it's worth mentioning that most mediastinal cystic teratomas are benign in young women and children, while in men, they can be malignant (1). Benign mediastinal teratomas are generally asymptomatic or present with nonspecific symptoms such as chest pain, cough, and dyspnea (1-3). Although rare, there are reports of pleural effusion due to rupture into the pleural cavity, cardiogenic shock with rupture into the pericardial cavity leading to cardiac tamponade, and mediastinitis due to rupture into the mediastinum (2). In a case report of a 26-year-old white woman came to the emergency department after being involved in a motor vehicle accident. She had a history of atypical chest pain and palpitations three years earlier, but her physical examination, electrocardiography, and troponin levels were normal at that time. She denied any other cardiovascular symptoms and was otherwise in good health, with no significant medical or surgical history. Current chest radiography revealed a large mass lesion silhouetting the right cardiac border, appearing intimately involved with the mediastinum, but without radiographic evidence of calcification or fat within the lesion (4). Occasionally, the diagnosis occurs through an unexpected finding of an anterior mediastinal mass on a chest radiograph or computed tomography (CT) scan of the chest (1, 2).

On radiography, cystic teratomas typically appear smooth, rounded, and well-circumscribed, while solid ones are more lobulated and asymmetrical (5). It is noteworthy that teratomas are one of the few mediastinal tumors that can be confidently diagnosed preoperatively, as on CT scans (4) they present with the presence of soft tissue, cystic components, hair, fat density, and calcifications; in some cases, bone fragments or teeth may also be visualized (2). On the other hand, malignant teratomas, besides showing elevated levels of tumor markers such as alpha-fetoprotein and beta-HCG, can reveal signs of invasion, lymphadenopathy, or metastatic lesions in the lungs or pleura, requiring additional examinations such as chest magnetic resonance imaging (MRI) or PET-CT (1). For benign tumors, surgical resection is the modality of choice, as it is an effective treatment method (1, 2, 5), with the choice of surgical method primarily depending on the location, size, and relation of the tumor to surrounding tissues. It is important to note that mediastinal teratomas should be resected as soon as possible since, even as a benign lesion, they can cause perforation of adjacent organs leading to a potentially fatal outcome (3).

CONCLUSION

In conclusion, thoracic teratomas should be considered in the differential diagnosis of acute chest pain, especially in atypical cases. Early imaging can lead to accurate diagnosis and appropriate management, preventing serious complications. This case emphasizes the importance of a comprehensive approach to chest pain, considering rare causes to improve patient outcomes.

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