ADVANCES IN THORACIC DISEASES
2021, Volume 3, ID 556
DOI: 10.15342/atd.2021.556

MBMJ

CASE REPORT

MEDIASTINAL MATURE TERATOMA PENETRATING THE CHEST WALL

Abdelfettah Zidane [a], Ikram Samri[b], Adil Arsalane[c]

[a] Department of Thoracic Surgery, Avicenne Military Hospital, Marrakech, Morocco
[b] Department of Thoracic Surgery, Faculty of Medicine and pharmacy Mohamed VI, Morocco
[c] Department of Thoracic Surgery, Cady Ayyad University, Marrakech, Morocco

ABSTRACT
Mediastinal mature teratomas (MMT) are benign and slow-growing tumors in the anterior mediastinum, reaching a huge size. Surgical resection is often challenging. However, complete resection is feasible with good outcomes with proper surgical planning. We report a rare case of MMT penetrating the chest wall due to chronic inflammation successfully treated by en bloc surgical resection.

KEYWORDS: Mature Teratoma, Mediastinum, Chest Wall, Surgical Treatment

Correspondence: Dr Abdelfettah Zidane, Adress: Avicenne Military Hospital, PB 40000, Marrakesh, Morocco. Email: zidaneaf@yahoo.fr

INTRODUCTION

Mediastinal germ cell tumors (GCTs) are rare with an incidence of 0.1–0.2 per 100,000 people and account for approximately 10%-15% of mediastinal masses. However, they are the most common extragonadal site for a primary germ cell tumor [1]. Mediastinal mature teratomas are benign and the most common histological variants of these tumors. Because of their insidious growth, they can reach a vast size and sometimes rupture into adjacent structures. We report a rare case of a huge mediastinal teratoma invading the chest wall, which was successfully treated by surgical resection.

CASE REPORT

A patient is a 69-year-old man, diabetic, presenting with a 2-month history of dry cough, exertional dyspnea. Physical examination was unremarkable. A chest roentgenogram (fig 1) revealed a left mediastinal round opacity. Contrast-enhanced chest computed tomography (fig 2) showed a cystic-solid mass with a clear, smooth outline in the anterior mediastinum, measuring 9 × 10 × 12 cm, containing rim calcification and fat tissue suggesting a teratoma.

The mass extended into the left pleural space and penetrated the left antero-basal chest wall. Laboratory data were standard, including serum tumor markers (α fetoprotein and human chorionic gonadotropin). Computed tomography (CT)- guided mass biopsy suggested a mature teratoma. The patient underwent surgical excision via Sterno thoracotomy. Surgical exploration confirmed the tumor Extention into the 6th costal cartilage without large mediastinal structures. The tumor was resected entirely with the 5th and 6th costal cartilages. The parietal defect was closed with a non-resorbable plate and a pedicle flap from the left pectoralis major muscle (fig 3).

The postoperative course was uneventful, and the patient was discharged on the fifth day. Pathologic examination of the specimen confirmed mature teratoma with no malignant elements. At the penetration site into cartilage, the cyst wall contained granulation tissue with foreign body giant cells, suggestive of chronic inflammation. At the latest follow-up at 12 months, the patient as well, without any evidence of recurrence.

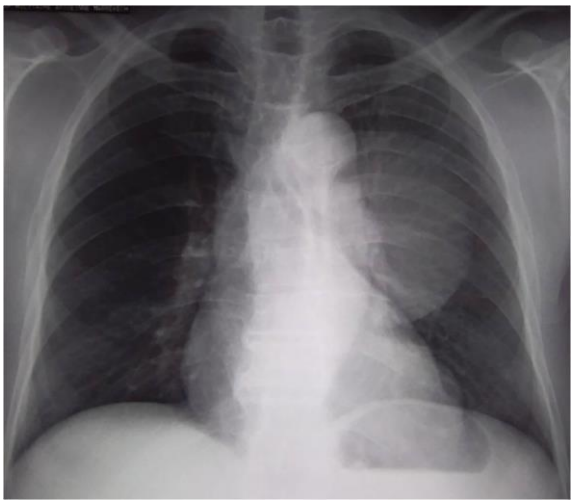


Figure 1: chest roentgenogram showing a left mediastinal round opacity.

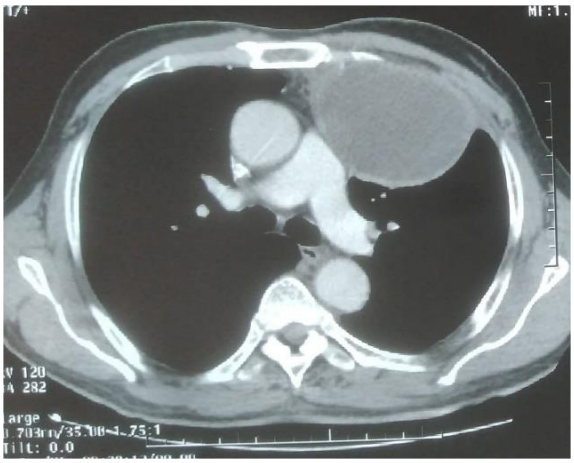


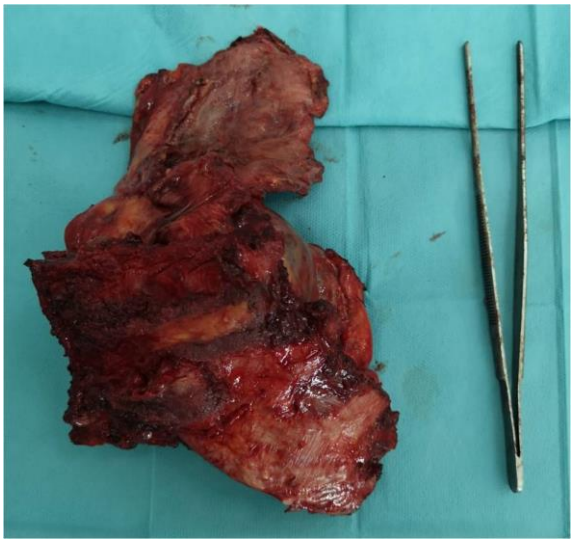
Figure 2: CT scan showing a cystic-solid mediastinal mass containing rim calcification and fat tissue; penetrating the chest wall.

DISCUSSION

Mediastinal mature teratomas (MMT) are benign, slow-growing tumors and account for approximately 75% of mediastinal germ cell tumors, with a fairly equal incidence between men and women. Usually, they do not invade adjacent organs. However, enormous tumors may rupture into adjacent structures, such as the pleural space, pericardium, or tracheobronchial tree. A teratoma with fetal tissue is classified as an immature teratoma with a good prognosis but has a higher potential for recurrence and metastasis. Malignant transformation has been rarely reported.

MMT contains components derived from more than one of the three primitive germ cell layers: ectoderm (hair, skin); mesoderm (bone, cartilage, muscle, fat); endoderm (respiratory epithelium, pancreatic tissue, and gastrointestinal epithelium) [2].

Approximately two-thirds of MMT in adults are asymptomatic and are detected incidentally on standard chest radiographs. Symptoms are often produced when large tumors compress the surrounding structures. Anterior chest pain, dyspnea, and cough are the most common symptoms. Physical findings are usually negative, although massive tumors may penetrate the anterior chest wall and present a bulge in the ribs and costal cartilage overlying the mass [3].



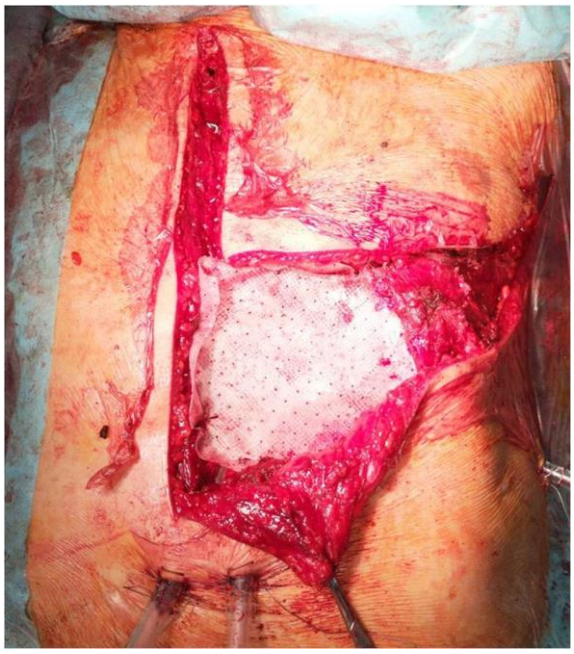


Figure 3: operative view: a- specimen b- reconstruction of the chest wall

For diagnosis of MMT, conventional chest radiograph still plays a significant role in the initial evaluation. At the same time, computed tomography (CT) scan is unavoidable for specifying the nature, location, and relationship of the tumor to the other structures. MMT is often well-defined with internal heterogeneous appearances due to fat, fluid, soft tissue, or calcifications. A fat-fluid level within an anterior mediastinal mass is virtually diagnostic of a teratoma, indicating the existence of sebum [4]. Magnetic resonance imaging (MRI) is considered an adjunct to CT scan in diagnosing mediastinal lesions. MRI is more dominant than CT scan in evaluating the spread through the tumor capsule and the infiltration of adjacent structures by fat plane obliteration. In our case, invasion of the chest wall misled us into believing in the malignant mediastinal

tumor. However, Computed tomography (CT)- guided biopsy redressed the diagnosis.

The appropriate treatment for MMT is complete surgical excision, usually performed through a median sternotomy. However, resection can be surgically challenging because of potential adhesions to major organs, such as the major vessels of the mediastinum and the heart, the lung, and the chest wall. Erosion or inflammatory adhesions to the lung or the chest wall may necessitate adjacent resection. Furthermore, piecemeal resection may be inevitable when large tumors cannot be taken out en bloc [5]. Because of the large size of these tumors, the video-assisted thoracic surgical technique is rarely appropriate.

CONCLUSION

MMT is a typical benign lesion in the mediastinum, reaching a considerable size due to its slow growth rate. Surgical resection is the mainstay of treating these tumors as they respect anatomic boundaries. Complete resection can often be obtained, regardless of the size and extent of the tumor, with good outcomes.

AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals of the International Committee of Medical Journal Editors. Indeed, all the authors have actively participated in the redaction, the revision of the manuscript, and provided approval for this final revised version.

COMPETING INTERESTS

The author declares no competing interests with this case.

PATIENT CONSENT

Written informed consent was obtained from the patient for the publication of this case report.

REFERENCES

[1] Travis WD, Brambilla E, Muller Hermelink HK, Harris CC. World Health Organization Classification of Tumours. Pathology and Genetics of Tumours of the Lung, Pleura, Thymus, and Heart. Lyon: IARC Press; 2004:198-201.

[2] Duwe BV, Sterman DH, Musani AI. Tumors of the mediastinum. Chest. 2005 Oct; 128(4): 2893–909. Doi: 10.1378/chest.128.4.2893

[3] Wood DE. Mediastinal Germ Cell Tumors. Semin Thorac Cardiovasc Surg. 2000 Oct; 12 (4): 278-89. Doi: 10.1053/stcs.2000.16735

[4] Duc VT, Thuy TTM, Bang HT, Vy TT. Imaging findings of three cases of large mediastinal mature cystic teratoma. Radiol Case Rep. 2020 May 21; 15(7): 1058 – 65. Doi: 10.1016/j.radcr.2020.05.011

[5] Yendamuri S. Resection of a Giant Mediastinal Teratoma. Ann Thorac Surg. 2016 Nov;102(5) : e401–e402. Doi: 10.1016/j.athoracsur.2016.04.041