An Unusual Cause of Mediastinal Mass and Chylothorax

Abstract

Mediastinal masses are commonly encountered in clinical practice. The commonly encountered anterior mediastinal masses include those of thymic or thyroid origin, teratomas, and lymphoma. Establishing the diagnosis by histopathology is essential considering the wide range of differential diagnosis and to exclude malignancies. Here, we present an unusual case of large mediastinal mass with chylothorax in a young immunocompetent female.

Keywords: Antitubercular treatment, chylothorax, disseminated tuberculosis, mediastinal mass, tuberculoma

Introduction

Mediastinal masses are commonly encountered in clinical practice. Establishing the diagnosis by histopathology is essential considering the wide range of differential diagnosis and to exclude malignancies.[1] The commonly encountered anterior mediastinal masses include thymic masses, thyroid masses, teratomas, and lymphoma.[2] The age of the patient, clinical features, and certain radiological features are helpful in narrowing the differential diagnosis.

Thoracic involvement by Mycobacterium tuberculosis is common in endemic areas with varied clinical and radiological manifestations. Tuberculosis (TB) presenting as a mediastinal mass and chylothorax in the absence of lung lesions is very unusual. Here, we report a case of disseminated TB in a young immunocompetent female presenting as a large anterior and middle mediastinal mass along with chylothorax without any pulmonary parenchymal involvement which showed complete resolution with antitubercular treatment (ATT).

Case Report

A 19-year-old immunocompetent female presented to us with chief complaints of fever and swelling in the right side of the neck for 1-month duration. The neck swelling was incidentally noted by the patient 1 month ago and gradually increased in size. Fever was low grade, with evening rise and subsided with medication. There was no history of cough, hemoptysis, dyspnea, chest pain, and loss of weight or appetite.

On general physical examination, a 5 cm × 4 cm lump was noted in the right supraclavicular region which was nontender, firm in consistency, and immobile with ill-defined margins. The respiratory system examination showed decreased chest expansion on the right side and a dull note on percussion with absent breath sounds. Rest of the systemic examination was unremarkable. The chest radiograph of the patient showed mediastinal widening and blunting of right costophrenic angle suggestive of a mediastinal mass and right pleural effusion [Figure 1a]. Ultrasound examination of the neck showed an enlarged hyperechoic cervical lymph node measuring 4 cm × 3 cm. A contrast-enhanced computed tomography (CT) of the chest was performed which revealed a heterogeneously enhancing anterior and middle mediastinal mass with areas of necrosis within, along with right-sided pleural effusion [Figure 2a]. A fine-needle aspiration cytology (FNAC) from the right supraclavicular lymph node and diagnostic pleural fluid aspiration were performed subsequently.

On the day of admission to the hospital, the patient had an episode of generalized tonic–clonic convulsions. CT of the

Laxma Reddy Sattavarapu, Narendra Kumar Narahari, Deepika Shree Balaram, Anu Kapoor1, G K Paramjyothi

Departments of Pulmonary Medicine and Radiology and Imaging, Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

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brain showed multiple hypodense brain lesions in the right frontal, temporal, and left parietal lobes. A contrast-enhanced magnetic resonance imaging (MRI) study performed later showed multiple ring-enhancing cerebral and cerebellar lesions, with a few of them showing conglomeration suggestive of tuberculomas [Figure 2b]. The aspirated pleural fluid was opaque, exudative, lymphocyte predominant (90%), with elevated adenosine deaminase 46.0 U/L. Pleural fluid cytology was negative for malignant cells. Pleural fluid triglycerides (300 mg/dl) were elevated suggestive of chylothorax. Her Mantoux was positive and read 20 mm. FNAC of the supraclavicular lymph node was suggestive of granulomatous inflammation with possibility of Koch’s etiology. CT-guided biopsy was done from a mediastinal mass which showed a large area of necrosis and multiple epitheloid cell granulomas suggestive of Koch’s etiology [Figure 3].

Based on the above findings, the diagnosis of disseminated TB was established. ATT was started as per her body weight (isoniazid – 300 mg, rifampicin – 600 mg, ethambutol – 1200 mg, and pyrazinamide – 1500 mg) for the initial 2 months as intensive phase followed by isoniazid, rifampicin, and ethambutol as continuation phase. After a symptomatic response, she was discharged from the hospital on treatment. A repeat chest radiograph [Figure 1b] and MRI scan of the brain [Figure 2c] after 6 months showed significant resolution of thoracic and central nervous system (CNS) lesions. However, ATT was continued for a total of 9-month duration in view of disseminated infection.

**Discussion**

India is the country with the highest burden of TB. The World Health Organization TB statistics for India for 2016 gives an estimated incidence figure of 2.79 million cases of TB for India. It is estimated that about 40% of the Indian population is infected with TB bacteria.[1] *M. tuberculosis* after entering into the respiratory tract disseminates by lymphoheamatogenous route to extrapulmonary organs, and mediastinal and hilar lymph nodes are the first lymphatic tissues to encounter.[2] Extrapulmonary TB (EPTB) represents an increasing proportion of all cases of TB reaching 20%–40% according to published reports.[3] The risk factors involved in the development of EPTB include mainly age, female gender, concurrent HIV infection, and comorbidities such as chronic renal disease, diabetes mellitus, or immunosuppression.[4]

TB can involve the mediastinum in the form of mediastinal lymphadenitis, but presentation with a large mediastinal mass and chylothorax without parenchymal lesion are rather unusual. Mediastinal TB without lung involvement is commonly observed in children[5] in developing countries where TB is endemic. Such presentation is rarely seen in immunocompetent adults. Our patient is a young immunocompetent female who presented with a large mediastinal mass along with chylothorax without any...
l lung parenchymal lesions and CT-guided biopsy from the mediastinal mass showed a large area of necrosis, multiple epithelioid cell granulomas suggestive of Koch’s etiology.

TB can rarely cause chylothorax. Obstruction of the thoracic duct by tuberculous lymphadenopathy and subsequent increase in pressure in the surrounding lymphatic system leading to leakage into pleura was the possible explanation for the development of chylothorax. Our patient might have developed chylothorax by the above mechanism. Rajagopala et al. in their systematic review identified 37 cases of TB chylothorax worldwide and concluded that chylothorax may develop due to TB mediastinal mass or lymphadenopathy compressing the thoracic duct. Chylothorax is a very rare but well-described complication of TB which may also be observed in cases without obvious mediastinal lymphadenopathy due to immune reconstitution inflammatory syndrome.

CNS TB can manifest as meningitis, cerebritis, and tuberculous abscesses or tuberculomas. It occurs in approximately 1% of all patients with TB. Among these, intracranial tuberculomas are the least common presentation of CNS TB. They are multiple in only 15%–33% of the cases. MRI is superior to CT in visualizing the morphological details of tuberculoma, and particularly the tiny brainstem lesions. Our patient had seizures, and MRI brain showed multiple tuberculomas in the right frontal, temporal lobes and left postero-parietal lobe, right cerebellum, and left thalamus, with few of them showing conglomeration suggesting infective etiology of Koch’s.

An extensive review of the literature showed very few cases of TB presenting as an isolated mediastinal mass without lung involvement. Most of the cases are seen in pediatric and young adult populations. Our case is unique in the sense that it presented as a mediastinal mass in a young immunocompetent female in association with chylothorax mimicking a lymphoma and also with dissemination to the brain.

**Conclusion**

TB should always be considered as one of the differentials of the mediastinal mass in endemic areas even in immunocompetent individuals. Careful clinical evaluation along with histopathology of the tissue is essential in establishing the final diagnosis as TB can be treated with better outcome compared with other mediastinal masses as seen in our case.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Khilnani GC, Jain N, Hadda V, Arava SK. Anterior mediastinal mass: A rare presentation of tuberculosis. J Trop Med 2011;2011:635385. doi:10.1155/2011/635385. Epub 2011 Mar 7.
2. Maguire S, Chotirmall SH, Parihar V, Cormican L, Ryan C, O’Keane C, et al. Isolated anterior mediastinal tuberculosis in an immunocompetent patient. BMC Pulm Med 2016;16:24.
3. TB India 2017 Revised National TB Control Programme Annual Status Report. New Delhi; 2017. Available from: http://www.tbcindia.nic.in. [Last accessed on 2019 May].
4. García-Rodríguez JF, Álvarez-Díaz H, Lorenzo-García MV, Mariño-Callejo A, Fernández-Rial Á, Sesma-Sánchez P. Extrapulmonary tuberculosis: Epidemiology and risk factors. Enferm Infec Microbiol Clin 2011;29:502-9.
5. De Ugarte DA, Shapiro NL, Williams HL. Tuberculous mediastinal mass presenting with stridor in a 3-month-old child. J Pediatr Surg 2003;38:624-5.
6. Grobbelaar M, Andronikou S, Goussard P, Theron S, Mapukata A, George R. Chylothorax as a complication of pulmonary tuberculosis in children. Pediatr Radiol 2008;38:224-6.
7. Rajagopala S, Kancherla R, Ramanathan RP. Tuberculosis-associated chylothorax: Case report and systematic review of the literature. Respiration 2018;95:260-8.
8. Rock RB, Olin M, Baker CA, Molitor TW, Peterson PK. Central nervous system tuberculosis: Pathogenesis and clinical aspects. Clin Microbiol Rev 2008;21:243-61, table of contents.
9. Pimentel ML, Alves SM, Novis SA, Brandão RZ, Belo Neto E. Intracranial tuberculomas developing during treatment of pulmonary tuberculosis: Case report. Arq Neuropsiquiatr 2000;58:572-7.
10. Hejazi N, Hassler W. Multiple intracranial tuberculomas with atypical response to tuberculostatic chemotherapy: literature review and a case report. Infection 1997;25:233-9.
11. Kumar N, Gera C, Philip N. Isolated mediastinal tuberculosis:
A rare entity. J Assoc Physicians India 2013;61:202-3.
12. Iyengar KB, Kudru CU, Nagiri SK, Rao AC. Tuberculous mediastinal lymphadenopathy in an adult. BMJ Case Rep 2014;2014. pii: Bcr2013200718.
13. Sahin F, Yildiz P. Mediastinal tuberculous lymphadenitis presenting as a mediastinal mass with Dysphagia: A case report. Iran J Radiol 2011;8:107-11.
14. Chandane P, Shah I. Multi drug resistant tuberculosis presenting as anterior mediastinal mass. J Assoc Chest Physicians 2016;4:33-5.