



MEDISTINAL COMPRESSION SYNDROME SENCONDARY TO TUBERCULOSIS LYMPHADENITIS

Paediatrics

Dr. Veeranna Kotrashetti	Professor And Head of Unit, Department of Paediatrics, D. Y. Patil University, School of Medicine, Nerul, Maharashtra, India.
Dr. Vijay Sonawane	Associate Professor, Department of Paediatrics, D. Y. Patil University, School of Medicine, Nerul, Maharashtra, India.
Dr. Kapil Bainade	Associate Professor, Department of Paediatrics, D. Y. Patil University, School of Medicine, Nerul, Maharashtra, India.
Dr. Shuchi Bhatarkar*	Senior Resident Department of Paediatrics, D. Y. Patil University, School of Medicine, Nerul, Maharashtra, India. *Corresponding Author

ABSTRACT

Mediastinal syndromes are a group of disorders involving the anatomical structures of the mediastinum. An increase in the incidence of this syndrome has been observed following the widespread use of diagnostic imaging. Enlargement of the mediastinal lymphatic glands is a common presentation of intrathoracic tuberculosis (TB). Lymph node tuberculosis constitutes 20-40% of extrapulmonary tuberculosis. Here we report a case of 8 year of male child presented with cervical lymphadenopathy, on investigating had superior mediastinal mass causing compression and displacement of trachea and was diagnosed to have mediastinal compression syndrome secondary to TB lymphadenitis.

KEYWORDS

tuberculosis, lymphadenitis, mediastinal compression, lymph node

INTRODUCTION

Mediastinal syndromes are a group of disorders characterized by infiltration, entrapment or compression of mediastinal structures. Symptoms of the syndromes are associated with the anatomic structures involved; the compression of the trachea results in dyspnoea and respiratory insufficiency, whereas compression of the oesophagus results in dysphagia. The superior vena cava (SVC) and nerves can become trapped, resulting in vein distention, oedema of the face or upper extremities, and nervous system symptoms (1).

Among the mediastinal masses, lymph nodes are the most common involved structures and could be enlarged due to a lymphoma, leukaemia, metastatic disease, or due to infectious diseases as sarcoidosis, tuberculosis and others. Patients with primary tuberculosis (TB) present commonly with mediastinal or hilar lymphadenopathy with or without parenchymal lesions. The organism *Mycobacterium tuberculosis* (MTB) gains access to the lymphatics from the site of infection in the lung parenchyma often resulting in a greater volume of diseased tissue in regional lymph nodes than in the original site.(2) Thirty percent of patients present with extrapulmonary tuberculosis, as in this case.(3)

CASE REPOERT

A 8-year-old boy was admitted with complaints of fever and right sided neck swelling since 1 month and cough since 10 days. On physical examination patient had severe wasting and stunting with enlarged, not movable, and tender latero-cervical lymph nodes measuring 6x6 cm on right side (Figure 1) and 1x1 cm on left side were seen. Systemic examination revealed no abnormalities.

Basic haematology work up showed nutritional anaemia with erythrocyte sedimentation rate of 65 mm at end of 1 h. Mantoux test was positive (30*20mm) with 5 TU of purified protein derivative (PPD)(Figure 2). X-ray chest showed right hilar convexity suggestive of mediastinal lymphadenopathy-paratracheal lymph node causing tracheal shift to left with clear lung fields and costophrenic angles (Figure 3). HIV ELISA was negative. Early morning sputum for acid fast bacilli was negative for 2 consecutive days.

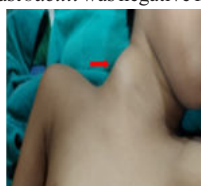


Figure 1: Right Sided Cervical Neck Swelling



Figure 2: positive Mantoux test

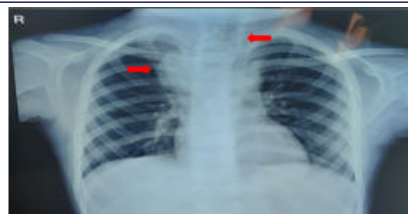


Figure 3: chest x-ray shows right hilar convexity with tracheal shift to left

CT neck and thorax showed a well-defined heterogeneous hypodense area which is seen peripherally enhancing on post contrast study with few enhancing septae within is noted involving the right cervical level VI. The lesion is seen extending from C4-C6 cranio-caudally, medially the lesion is compressing the right internal jugular vein and abutting right carotid artery with near maintained fat planes, measures approximately 3.9 x 5 x 3.8cm (AP x TR x CC). Another similar morphology lesion is noted in the right superior mediastinal space, medially the lesion is abutting and displacing the trachea to left side with near maintained fat planes. Anteriorly the lesion is seen abutting the superior mediastinal vessels with maintained fat planes. Inferiorly it is seen reaching the subcarinal level. It is seen compressing the left brachiocephalic vein along its anterior aspect. It measures approximately 4.6 x 4.3 x 4.9 cm (AP x TR x CC), the lesion is causing luminal compromise of the trachea. Initial differentials were either TB or lymphoma.



Figure 4: right cervical lymph node



Figure 5: enlarged right superior mediastinal lymph node

Cervical Lymph node excision biopsy was done which showed granulomatous inflammation with central necrosis (caseous necrosis) consistent with TB. Thus taking in consideration the clinical presentation and investigation patient was diagnosed to have tuberculosis and anti-tuberculosis medicine were started. On follow up the child has gained weight and chest x-ray showed paratracheal lymph node reduction in size and well centralized trachea.

DISCUSSION

For TB patients of all ages, peripheral lymphadenopathy is the most common form of extrapulmonary TB (3), and account for 47 -67% of all paediatric extrapulmonary TB cases (3). Isolated mediastinal or hilar lymphadenopathy is generally asymptomatic and is frequently diagnosed serendipitously during the course of an assessment as part of a contact investigation. Sometimes the intrathoracic lymph nodes may not be radiographically visible, but lymph node compression on an airway segment may result in atelectasis.

Tuberculous mediastinal and hilar lymphadenitis is a frequent manifestation of primary pulmonary TB in childhood. As the tuberculous lesion undergoes necrosis, it forms a firm cheesy (caseous) material. This is different from the process of most other inflammatory diseases, in which necrosis is followed promptly by liquefaction and abscess formation. The persistence of caseum is attributed to either a paucity of proteolytic enzymes or the presence of inhibitors against them. Later, however, liquefaction of caseous material may occur (2). When this inflammation occur in lymph nodes, multiple adjacent lymph node gets matted together forming localized mass.

Cervical and mediastinal lymph nodes are involved in 70% of the cases, followed by axillary, mesenteric, hepatic portal, peri-hepatic, and inguinal lymph nodes. If left untreated lymph nodes continually enlarge and develop caseous necrosis. Involved extrathoracic cervical, axillary, and inguinal nodes will be tender to palpation and may develop an erythematous and fluctuant centre. The lymph node may suppurate and develop a chronic draining sinus tract. Subcarinal lymph nodes are at risk for extension into the pericardium Pathogenesis of TB lymphadenitis seems to be associated with an LTBI reactivation or with a progressive primary pulmonary TB with mediastinal lymphatic dissemination.

Patients with mediastinal TB disease report only minor and non-specific physical complaints; in particular, fever, weight loss, loss of appetite, nocturnal sweats are frequently. (4,5) The present case-report showed the enlargement of cervical lymph node with paratracheal lymph nodes associated with tracheal compression without any specific respiratory symptoms but it should be kept in mind that sometimes patients can show unusual clinical findings: pulmonary artery occlusion with a lack of lung perfusion that can mimic embolism (6) and compression of laryngeal nerve that can cause vocal cord paralysis.

Bloomberg et al. described an increased prevalence of mediastinal and cervical lymphadenitis particularly right and left hilar, right paratracheal lymph nodes with or without parenchymal involvement, in non-European patients.(4)

In active and inactive TB rim-enhancing, central low attenuation, conglomeration or homogeneous calcifications of the lymph nodes are found; however homogeneous enhancing lymphadenopathy without any calcifications poses a diagnostic dilemma. Viral and fungal infections are less likely to be associated with lymphadenopathy, whereas aggressive lymphomas can show similar CT features. (7)

Moon *et al.* in Korea analysed CT findings of active and inactive disease in adults with mediastinal tuberculous lymphadenitis. With active disease, the nodes varied in size (1.5–6.7 cm: Mean, 2.8 ± 1.0 cm) while with inactive disease, the nodes varied in size (1.0–4.7 cm; mean, 2.1 ± 1.0 cm). (8) This study was done in adult patients. None of the study conducted describe size of lymph node in mediastinal TB in children. Our patient had Superior mediastinal mass of measuring approximately $4.6 \times 4.3 \times 4.9$ cm due to TB lymphadenitis causing luminal compression of the trachea.

Diagnosis of TB lymphadenitis could be done by positive tuberculin skin test and chest radiographs. An excisional biopsy of the lymph nodes with a histology, AFB stain and mycobacterial culture is the best diagnostic procedure.(9) Fine needle aspiration (FNA) or endobronchial ultrasound-guided trans bronchial needle aspiration (EBUS-TBNA), followed by microbiological and cytological examinations are also used. (Sensitivity and specificity are 77% and 80%, respectively) (10,11)

However, FNA and EBUS-TBNA can be helpful for Ziehl-Neelsen staining to detect acid-fast bacilli, but surgical biopsy is necessary if a lymphoma has to be excluded (12,13)

As reported in the scientific literature, FNA has a low sensitivity for lymphoma, is not cost-effective, and may misguide treatment.(14,15)

Histologic examination of lymphoma includes an assessment of the cellular morphology, of the immune-phenotype, and of the genetic pattern. Furthermore, sensitivity of biopsy for TB in comparison with that of FNA is higher (94.2% VS. 62.5%, respectively) (16) Mediastinal involvement in non-Hodgkin lymphoma cases can be seen either as the only involved site of the disease (e.g., primary mediastinal large B cell lymphoma) or as part of a systemic disease. A polymerase chain reaction for Mycobacterium tuberculosis of the fine needle aspiration specimen enhances test sensitivity (17)

In our case positive tuberculin skin test along with a paratracheal lymph node on chest radiograph with histological examination of lymph node showing granulomatous inflammation with caseous necrosis clinching the diagnosis of tuberculosis along with the clinical presentation.

The patient responded successfully to the therapy started in accordance to RNTCP guidelines and did not present the paradoxical reaction or increase in lymph node size or the enlargement of additional lymph nodes during or after treatment cessation; these results agree with those described in 23% of HIV-negative TB cases (18)

CONCLUSION

This case report shows clinical and radiological complexity of extrapulmonary TB. Furthermore, multi-systemic enlarged lymph nodes can pose relevant problems in terms of differential diagnosis with lymphomas. 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.

REFERENCE

- Shahrzad M, Le TS, Silva M, Bankier AA, Eisenberg RL. Anterior mediastinal masses. *AJR Am J Roentgenol*. 2014;203:W128–W138. doi: 10.2214/AJR.13.11998.
- Pratt PC. Pathology of tuberculosis. *Semin Roentgenol* 1979; 14:196–203.
- TB India 2017 Revised National TB Control Programme Annual Status Report. New Delhi; 2017. Available from: <http://www.tbindia.nic.in>.
- Bloomberg TJ, Dow CJ. Contemporary mediastinal tuberculosis. *Thorax* 1980;35 (5): 392–6.
- Drake WM, Elkin SL, al-Kutoubi A, Mitchell DM, Shaw RJ. Pulmonary artery occlusion by tuberculous mediastinal lymphadenopathy. *Thorax* 1997;52 (3):301–2.
- Pirina P, Spada V, Arcadu A, Fois AG. Emerging clinical-radiological-pattern of pulmonary tuberculosis in immunocompetent patients. *Eur Med J* 2014;1–6.
- Popescu MR, Calin G, Strămbu I, Olaru M, Bal așoiu M, Huplea V, et al. Lymph node tuberculosis-an attempt of clinico-morphological study and review of the literature. *Rom J Morphol Embryol* 2014;55(2 Suppl):553–67.
- Moon WK, Im JG, Yeon KM, Han MC. Mediastinal tuberculous lymphadenitis: CT findings of active and inactive disease. *AJR Am J Roentgenol* 1998;170:715–8.
- Rieder HL, Snider DE Jr, Cauthen GM: Extrapulmonary tuberculosis in the United States. *Am Rev Respir Dis*. 1990, 141: 347–351.
- Fanny ML, Beyam N, Gody JC, Zandanga G, Yango F, Manirakiza A, et al. Fine-needle aspiration for diagnosis of tuberculous lymphadenitis in children in Bangui, Central African Republic. *BMC Pediatr* 2012;12:191.
- Boonsarnsuk V, Saengsri S, Santanirand P. Endobronchial ultrasound-guided transbronchial needle aspiration rinse fluid polymerase chain reaction in the diagnosis of intrathoracic tuberculous lymphadenitis. *Infect Dis (Lond)* 2017;49 (3):193–9.
- Hehn ST, Grogan TM, Miller TP. Utility of fine-needle aspiration as a diagnostic technique in lymphoma. *J Clin Oncol* 2004;22(15):3046–52
- Gökner N, Çakır E, Çakır FB, Kasapçopur O, Yegen G, Gedik AH, Oktom F. A difficult case of Hodgkin lymphoma with differential diagnosis of tuberculosis and sarcoidosis. *Hematol Rep* 2015;7(2):5644
- Maffessanti M, Dalpiaz G. In: Maffessanti M, editor. *Pneumopatie infiltrative diffuse: clinica, anatomia patologica, HRCT*. Milano: Springer-Verlag; 2004.
- Omri HE, Hasci Z, Taha R, Szabados L, Sabah HE, Gamiel A, et al. Tubercular meningitis and lymphadenitis mimicking a relapse of Burkitt's lymphoma on (18)F-FDG-PET/CT: a case report. *Case Rep Oncol* 2015;8(2):226–32.
- Smaoui S, Mezghanni MA, Hammami B, Zalila N, Marouane C, Kammoun S, et al. Tuberculosis lymphadenitis in a southeastern region in Tunisia: epidemiology, clinical features, diagnosis and treatment. *Int J Mycobacteriol* 2015;4(3):196–201.
- Narita M, Shibata M, Togashi T, Kobayashi H: Polymerase chain reaction for detection of mycobacterium tuberculosis. *Acta Paediatr*. 1992, 81: 141-144. 10.1111/j.1651-2227.1992.tb12190.x.
- Breen RA, Smith CJ, Bettinson H, Dart S, Bannister B, Johnson MA, Lipman MC (2004) Paradoxical reactions during tuberculosis treatment in patients with and without HIV co-infection. *Thorax* 59: 704–707.