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ISOLATED MEDIASTINAL LYMPHADENOPATHY – ETIOLOGICAL ANALYSIS

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ABSTRACT

Background: The etiology of isolated mediastinal lymphadenopathy (without lung involvement or peripheral lymph node enlargement) is difficult to approach. Though various methods are available for histopathological confirmation, few literatures are there regarding the etiological diagnosis of isolated mediastinal lymphadenopathy.

Aims and objective: This study was taken up with the aim to investigate the pattern of involvement of isolated mediastinal lymphadenopathy and to analyze the etiology among the adult patients presenting to a tertiary care institution in Eastern India.

Materials and methods: A total of 50 patients were subjected to our study. Non-invasive investigation such as x-ray, CT scan, mantoux test etc. were done and these investigations established only a indirect evidence of etiological diagnosis. For definitive diagnosis, fine needle aspiration biopsy cytology (FNABC) or biopsy from peripheral lymph node(if any) or various invasive investigations such as CT guided biopsy from mediastinal lymph node, bronchoscopy with transbronchial biopsy, mediastinoscopy or endobronchial ultrasound-guided transbronchial needle aspiration were done wherever feasible.

Results: Overall tubercular lymphadenopathy was the most common (45 among 50 patients; 90%) followed by sarcoidosis (3 among 50 patients; 6%), lymphoma (1 among 50 patients; 2%) and carcinoma of lung (1 among 50 patients; 2%).

Conclusion: So tuberculosis is the leading cause of isolated mediastinal lymphadenopathy.

Keywords: Mediastinal lymphadenopathy.

INTRODUCTION

Common causes of mediastinal lymphadenopathy include tuberculosis, sarcoidosis, lymphoma, metastatic lymph node, fungal infections, etc. In 1959, Lyons and coworkers[1] reported lymphoma as a group was the most common (26%) followed by sacoidosis (20%), non-lymphomatous neoplasm including metastatic disease (16%), histoplamosis (7%) and Tuberculosis. Tubercular mediastinal lymphadenopathy is common in pediatric age group. However, isolated tubercular mediastinal lymphadenopathy without a parenchymal lung lesion in adults is unusual. The reason why different individuals respond differently to infection with mycobacterium tuberculosis had been reviewed by Crofton J et all[2]. The prevalence of the tubercular mediastinal lymphadenopathy is encountered as high as 49% in children below the age of 3 years[3] and the prevalence decreases with age[4]. The prevalence of tubercular mediastinal lymphadenopathy has been reported to be from 4% to 67% in adults[5-10].

Sarcoidosis has been reported from all over the world. It is prevalent in western countries. In India, the first proven case of sarcoidosis was described by Ghose andChakraborty in1956. In reported study, Gupta (1985) observed an incidence of 150 per100,000 among the hospital population in south Calcutta, while Chakraborty in Delhi found the incidence to be 61.2 per 100,000 population[11].

In carcinoma lung, a mass lesion with or without collapse of lung is the most common finding , the chest skiagram is normal only in rare occasion. Though the finding of mediastinal widening in carcinoma of lung was 16.7% seen in a large Indian series of 1009 patients[12].

In Hodgkin's lymphoma, most patients present with palpable lymphadenopathy in the neck, supraclavicular area and axilla. More than half of the patients will have mediastinal adenopathy at diagnosis, and this is sometimes the initial manifestation[13].

The aim of the study was to investigate the pattern of involvement of the isolated mediastinal lymphadenopathy and to analyze its etiological diagnosis in adult patients attending this tertiary care institution.

STUDY DESIGN AND METHODS

This is a prospective study carried out over a period of two years (January 2010 –January 2012) at the Institute Of Post Graduate Medical Education And Research, Kolkata.

Those patients having mediastinal lymphnode enlargement demonstrated by chest x-ray without presence of other organ involvement like lung, liver, bone, spleen other than cervical lymphnode were included in this study.

Besides routine investigations including complete haemogram, liver function tests, mantoux tests, chest x-ray, the following investigations were done accordingly –

1) Contrast enhanced computed tomography (CECT) of chest

2) Fine needle aspiration biopsy cytology (FNABC) and/or cervical lymph node biopsy .

3) Mediastonoscopy guided biopsy from mediastinal lymphnode

4) CT guided FNABC from mediastinal lymph node and bronchoscopy were done

5) Sputum for AFB (3 times)

6) HIV serology was done by ELISA with consent.

RESULTS

A total of 50 patients with isolated mediastinal lymphadenopathy diagnosed by chest X Ray were subjected to this study. Age at presentation ranged from 14-62 years. In this study population, 37 out of 50 patients were male. CECT scan was done in all 50 cases, It is evident that most common site of lymphadenopathy in tubercular group was right paratracheal nodes. Peripheral rim enhancement with low attenuation at the centre of the node was the most frequent pattern in tubercular group. Homogenous enhancement, inhomogenous enhancement and calcification of the involved lymphnodes were also seen in the same group. In sarcoidosis, both hilar and right paratracheal lymphnode involvement were seen. More than one site was involved in all cases. The distribution of lymphadenopathy and the pattern of nodal involvement have been depicted in table-1 and table-2 respectively.

CECTscan revealed—lung infiltration in 16 cases, consolidation in 4 cases, retro-peritoneal lymphadenopathy in 4 cases, hypodense lesion in spleen in 2cases and in liver in 1 case in tubercular group. In sarcoidosis, lung involvement including peribronchial thickening and subpleural reticulo-nodular changes were seen in all 3 cases. Retro-peritoneal lymphadenopathy was seen in lymphoma. In carcinoma lung, lung involvement was seen.

For confirmation of the diagnosis, peripheral lymph node biopsy from cervical region was done in 21 cases, CT guided mediastinal lymph

node biopsy was done in 2 cases, bronchoscopy was done in 9 cases (broncho-alveolar lavage and transbronchial lung biopy were done), mediastinoscopy with mediastinal lymphnode biopsy was done in 2 cases, cold abscess aspiration in cervical region was done in 1 case. Diagnosis was made in 30 cases by isolation of organism(acid fast bacilli) or by presence of caseating granuloma as tubercular lymphadenopathy. Diagnosis of sarcoidosis was made by bronchoscopy (broncho-alveolar lavage and trasbronchial lung biopsy was done) in 3 cases.

1 case of carcinoma lung and 1 case of lymphoma were diagnosed by cervical lymph node biopsy. Investigation procedure required for diagnosis is shown in table-3.

In the remaining 15 cases, the Mantoux reaction, presence of necrosis in mediastinal lymphnodes on CT scan finding and response to anti-tubercular treatment were the only evidence of tuberculosis and included in tubercular group.

Tuberculin test - it is observed that 36 patients were positive in tubercular mediastinal lymphadenopathy group.

So, among randomly taken 50 cases, tubercular lymph-adenopathy was the most common finding (45 cases) followed by sarcoidosis (3 cases), lymphoma (1 case) and carcinoma of lung (1 case).

DISCUSSION

We are prompted to undertake this study on account of several number of patients having isolated mediastinal lymphadenopathy are found in our outpatient department(O.P.D). Most of the patients had isolated mediastinal lymphadenopathy without any significant pulmonary parenchymal lesion, at least on plain x-ray of chest. CECT of chest is the standard investigation in patients with mediastinal lymphadenopathy. Radiologically, right paratracheal lymphnodes were most commonly involved in tubercular mediastinal lymphadenopathy[5]. In our study, it is observed that in tubercular group, right paratracheal nodes was the most common site (89%) of involvement followed by subcarinal (66%) , pretracheal (55%) and hilar nodes in decreasing order of frequency. In tubercular mediastinal lymphadenopathy, peripheral rim enhancement with relative low attenuation at centre was the commonest pattern of nodal involvement [14-16] . In our study, it is observed that peripheral rim enhancement was the commonest pattern 53% followed by inhomogenous enhancement 24%. Homogenous enhancement was seen in 22% and nodal calcification was seen in 08%. Distribution of lymphadenopathy in tubercular group has been depicted in table-4.Pattern of nodal involvement in tubercular group of patients is shown in table-5.Determining the presence peripheral rim enhancement with relative low attenuation at centre of lymphnodes and location of lymphnodes in young adults with appropriate clinical setting is very helpful in differentiating tuberculosis from other causes of mediastinal lymphadenopathy.

In sarcoidoisis, low density in mediastinal nodes is unusual. Lymphadenopathy in sarcoidosis is usually bilateral and hilar. Calcification is also described in sarcoid glands[16]. The associated reticulonodular pattern of lung parenchymal disease if present, may be a additional help. In our study, bilateral hilar lymphadenopathy was seen in all 3cases. Calcification of lymph nodes and reticulonodular pattern of lung involvement were seen in all 3 cases.

In lymphoma group, the typical CT appearance of a nodal mass in a patient with Hodgkin's disease is usually that of homogenous soft-tissue mass with sharply defined and often lobulated borders. Occasionally the centre of the nodal mass contains an area of decreased attenuation due to necrosis.[17]

In patient with metastatic lymphnode from lung cancer, the primary lung lesion is usually

visible on CT scan. Visible low density within the metastatic nodes are not unusual[15].

The granuloma in sarcoidosis may sometimes caseate, where in tuberculosis there may be absence of caseation. In view of above, diagnosis of tubercular mediastinal lymphadenopathy in present series of patients can only be considered to be a provisional one, except in those few in whom the AFB could be demonstrated. In area of high endemicity of tuberculosis, response to antituberculosis treatment may also consider to be diagnostic criteria for tubercular mediastinal lymphadenopathy. This is specially important, as methods for obtaining tissue diagnosis are sparingly available in developing countries where the disease is prevalent.

CT scan is useful tool for diagnosis of mediastinal lymphadenopathy. The morphology of lymphnode on CT scan may help in diagnosing etiology, however, it is not specific. All efforts should be made to attend a cytological, microbiological, and histological diagnosis[18]. Invasive diagnostic tests including mediastinoscopy[19] , bronchoscopy[20,21] and endobronchial ultrasound- guided transbronchial needle aspiration[22] should be undertaken for definitive diagnosis of mediastinal lymphadenopathy where facilities are available.

CONCLUSION

To conclude, though various differentials are there, tuberculosis is the leading cause of isolated mediastinal lymphadenopathy in our country. CECT of chest is the initial standard investigation to assass the pattern and characteristics of involved lymph nodes. Right paratracheal nodes was the most common site and peripheral rim enhancement with relative low attenuation at centre was the commonest pattern of nodal involvement in tubercular group.

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Table-1: Sites of mediastinal and or hilar lymphadenopathy on CECT scan chest in patients under study. (n=50)

Site	Number of patients in tubercular group	Number of patients with sarcoidosis.	Number of patients with lymphoma	Number of patient with carcinoma lung.
Right paratracheal nodes	40	03		
Left paratracheal nodes	08		01	
Both paratracheal nodes.	08			
Pre-tracheal nodes	25			
Pre-carinal nodes.	20			
Sub-carinal nodes.	30			01
Right hilar nodes.	20	03		
Left hilar nodes.	10	03	01	01
Both hilar nodes.	10	03		
Azygo-oesophageal.				01

Table-2: Pattern of nodal involvement in CECT scan in patients under study (n=50)

Nodal involvement	No of patients in tubercular gr.	No of patients with sacoidosis.	No of patients with lymphoma	No of patients with carcinoma lung.
Peripheral rim enhancement	24			
Homogenous enhancement	10		01	
Inhomogenous enhancement	11			01
Nodal calcification	04	03		

Table-3: Investigation procedure needed for diagnosis of mediastinal lymphadenopathy (n=50)

	Tuberculosis	Sarcoidosis	Lymphoma	CA lung
Cervical lymphnode biopsy (histological study	19		01	01
Bronchoscopy: BAL (Bronchoalveolar lavage) and transbronchial needle biopsy.	06	03		
CT guided mediastinal lymphnode biopsy	02			
Mediastinoscopy with mediastinal lymphnode biopsy	02			
Cold abscess aspiration	01			
Total	30	03	01	01

Table-4: Sites of mediastinal and or hilar adenopathy in tubercular group of patients. (n=45)

Sites	No of patients.	Percentage
Right paratracheal nodes	40	89%
Left paratracheal nodes	08	17%
Both paratrachcal nodes	08	17%
Pre –tracheal nodes	25	55%
Pre –carinal nodes	20	44%
Sub –carinal nodes	30	66%
Right hilar nodes	20	44%
Left hilar nodes	10	22%
Both hilar nodes	08	17%

Table-5: Pattern of nodal involvement in tubercular group (n=45)

Nodal involvement	No of patients.	Percentage
Peripheral rim enhancement	24	53%
Homogenous enhancement	10	22%
Inhomogenous enhancement	11	24%
Nodal calcification	04	08%