INTRATHORACIC TUBERCULOUS LYMPHADENOPATHY: CLINICAL, RADIOLOGICAL AND DIAGNOSTIC FEATURES IN 27 ADULTS WITHOUT PARENCHYMAL LESIONS

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ABSTRACT

The intrathoracic lymphadenitis is a characteristic sign of primary tuberculosis in children. Its presence without parenchymal lesions in adults is unusual and makes the diagnosis difficult by noninvasive technique. In this study, the clinical, radiological and diagnostic features in adults with intrathoracic tuberculous lymphadenitis is reported.

Twenty-seven patients with intrathoracic lymphadenopathy (LAP) who had been diagnosed between 1994-1999 and found to have tuberculosis in the absence of any parenchymal lung lesions evaluated retrospectively.

The most common symptoms were fever, dyspnea, and cough. The chest radiographs of all 27 patients showed abnormal mediastinum with no evidence of extramediastinal disease. Mantoux skin test was positive in all patients. Right paratracheal (70.3%) and right hilar LAP (55.5%) were the most frequent lesions detected by CT. Low attenuation centers (LAC) and rim enhancement (RE) were detected in 78.5% of patients by CT. All patients were administered fiberoptic bronchoscopy (FOB) examination with brushing and biopsies. Mediastinoscopy (n=17) or scalen lymph node biopies (n=2) were performed in patients where fine needle aspiration biopsy (FNAB) was not diagnostic. The rates of true-positive diagnoses were 29.6%, 100%, and 100% for FNAB; mediastinoscopy, and scalen lymph nodes biopsy, respectively.

If LAC and RE in mediastinal lymph nodes obtained by CT in the cases coming from the places where tuberculosis is endemic, and having mediastinal lymphadenopathy and long term subfebril fever, tuberculosis should also be considered. FNAB is the first method to be applied and has an important role in the diagnosis of intrathoracic tuberculous lymphadenopathy. Further invasive methods such as mediastinoscopy must be applied in the cases could not be diagnosed by this method.

Key Words: Tuberculosis, mediastinal lymphadenopathy.

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INTRODUCTION

Although intrathoracic lymphadenitis is recognised as a characteristic manifestation of primary tuberculosis, especially in children, its presence in adults in the absence of any demonstrable parenchymal lesion presents a diagnostic problem (1,2).

In the prechemotherapy era, it was considered to be a rather common complication of cavitary tuberculosis of the lung, but since the introduction of effective chemotherapy, it has become a rare disorder. Enlarged mediastinal lymph nodes can provoke tracheobronchial compression or perforation, which produces acute and chronic complications. The early diagnosis of this type of involvement is essential, as a significant proportion of the patients will require therapeutic endoscopic or surgical treatment to prevent complications (3). Bronchoscopy has significant diagnostic value in patients with isolated tuberculous mediastinal lymphadenopathy and may avoid more invasive procedures such as mediastinoscopy (4). FNAB is known to be an excellent diagnostic procedure in the investigation of patients with mediastinal lesions. If this is not successful or the results are equivocal, then other procedures such as mediastinoscopy and/or thoracotomy may be performed (5).

In this study, 27 cases with mediastinal lymphadenopathies were evaluated, retrospectively. The clinical, radiological and diagnostic data of these cases were discussed in this study.

METHODS

The clinical, diagnostic and radiological findings with mediastinal tuberculous lymphadenopathy (MTL) who presented to the chest diseases and thoracic surgery departments of our institution between Sep-1994 and March-1999 were reviewed retrospectively. The diagnosis of MTL had been confirmed either by the presence of caseating granuloma in a lymph node biopsy sample or a positive smear of lymph node aspirate.

All patients underwent a tuberculin skin test (PPD). Sputum smears and cultures for acid-fast bacilli applied three times.

Chest radiographs from all patients were assessed on admission and subsequent follow up, consequently all patients underwent computed tomographic (CT) scanning of the thorax. FOB had been undertaken on all patients either because of negative findings for acid-fast bacilli on bacteriological examination or to rule out malignancy. During bronchoscopy fine needle aspiration applied to all cases. One case was subjected to endobronchial biopsy. Nineteen patients who could not be diagnosed by FOB underwent intrathoracic lymph node biopsy by mediastinoscopy (17 cases) or scalen lymph node biopsy (2 cases).

All the cases were treated with a standard 6 months' drug regimen consisting of isoniazid (5 mg/kg) and rifampicin (10 mg/kg), supplemented with pyrazinamide (30 mg/kg) for the first 2 months.
RESULTS

There were 18 male and 9 female patients. The ages ranged from 22 to 76 years. Symptoms of fever (81.4%), dyspnea (66.6%), cough (55.5%), chest pain (33.3%), night sweats (25.9%), and weight loss (22.2%) were present.

Results of the physical examination were unremarkable. None of the patients had a history of household contact with tuberculosis. The result of the PPD was positive at the time of diagnosis in all patients (range 10-24 mm, median 18 mm), whereas sputum smears and cultures for acid-fast bacilli were negative.

CT scans of the chest were obtained in all patients. Most of the patients presented with a right-side paratracheal lymphadenopathy (70.3%) and right hilar lymphadenopathy (55.5%). In all cases, radiologic studies showed enlarged mediastinal lymph nodes compressing the trachea or bronchial tree no evidence of extramediastinal disease. In one case lymph node calcification was determined. Esophageal compression was found in 2 patients.

FOB showed obstructive lesions causing extrinsic compression in all cases and additionally in three cases widened carina, and in one case hyperemia in compressed region were determined.

In eight patients the FNAB materials of mediastinal lymph nodes obtained during FOB yielded inflammation in favour of M. Tuberculosis. There was no cellular yield in five patient, while in fourteen patients the results were negative. No any findings in favour of tuberculosis found in endobronchial biopsy from hyperemia determined area. Scalen lymph node biopsy was diagnostic in two patients. In the remaining 17 patients the diagnosis was made from samples taken at mediastinoscopy (Table 1). Histologic study of the lymph node samples obtained demonstrated the presence of granulomas with caseous necrosis and Langhans' giant cell.

Table-1. Diagnostic procedures of intrathoracic tuberculous lymphadenopathy.

<table>
<thead>
<tr>
<th>Diagnostic method</th>
<th>No. Examined</th>
<th>No. Diagnosed</th>
<th>Positivity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediastinoscopy</td>
<td>17</td>
<td>17</td>
<td>100</td>
</tr>
<tr>
<td>Scalen lymph node biopsy</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>FOB (FNAB)</td>
<td>27</td>
<td>8</td>
<td>29.6</td>
</tr>
</tbody>
</table>
Figure 1a. Contrast-enhanced CT scan shows the large mediastinal lymphadenopathies in middle mediastinum between the superior vena cava and bifurcation, also between ascendent and descendent aorta.

1b. A marked reduction in the size of lymphadenopathies was detected from the CT of the same patient at the 2nd month of the treatment.

Figure 2. Contrast-enhanced CT scan shows classic bilateral hilar lymphadenopathies, which are especially on the right side.
Figure 3. Contrast-enhanced CT scan demonstrates an inhomogenously enhancing subcarinal and other mediastinal lymphadenopathies with lower attenuation and significantly rim enhancement.

Figure 4a: Lymphadenopathies entirely surrounding and narrowing trachea shows low attenuation and rim enhancement.

Figure 4b: Significant improvement was detected in lymphadenopathies, after two months' therapy.
None of mycobacteria were of atypical variant and all were reported as sensitive to standard antituberculous drug therapy. All patients responded to antituberculosis treatment after a variable time interval (average, 6 months). One patient had persistent lymphadenopathy, although the size of the lymph nodes decreased after 18 months of follow-up.

**DISCUSSION**

The first works describing mediastinal lymph node involvement in tuberculosis and its complications were published in tuberculosis and its complications were discussed in the 1950s (3). This disorder has been found to occur more commonly in Asians and black adults. It is reported that this disease is more frequently seen in countries where tuberculosis incidence is high (5). In a study about tuberculosis prevalence, it is reported that Southeast of Turkey where our cases live has highest rate (6).

Mediastinal tuberculosis may occasionally be associated with endobronchial disease, which may result from infiltration and/or erosion of the bronchial tree by adjacent mediastinal lymph nodes (3,5). Also, enlarged masses of lymph nodes in the mediastinum may compress the tracheobronchial tree. This process was considered common in the past, particularly in the prechemotherapy era, with compressive syndromes detected in up to 67.8% and bronchial perforations in 27.8% of patients studied. Nowadays, with the early institution of antibacterial therapy, this mode of onset of tuberculosis and its complications is thought to be rare. Freixinet et al. had announced this rate 9.33% (3). In our series, in one case we determined hyperemia in compression region, in all 27 cases compression to tracheobronchial tree and in 3 cases widened carina. We think early diagnosis can explain the low rate of endobronchial lesion except extrinsic compression. Furthermore, the observed difference may be due to the fact that all our patients were selected on the basis that they had only mediastinal disease.

The advantages of CT over chest radiographs in defining the extent of tuberculous disease have been well documented in the literature (7-10). The most common lesion determined at CT in mediastinal tuberculous lymphadenitis is enlargement of mediastinal lymph nodes (7,11). The findings suggest that certain characteristics, such as necrosis with rim enhancement, confluent matted lymph nodes, calcification, and preferential involvement of right paratracheal and azygo-oesophageal lymph nodes, favour a diagnosis of tuberculous disease (9-12). Kim et al. has reported that at CT of MTL cases low-attenuation centres and enhancing rim findings were 85.2% and these findings were useful to exclude the LAPs due to other reasons (lymphoma, metastasis, etc.) (8). We also determined the findings cited above as 78.5%. Sood et al. reported that CT must be taken while investigating the fever aetiology in the areas where tuberculosis were seen frequently (11). Furthermore, Kim et al. reported in his cases that most frequently right paratracheal, right hilar, left hilar and subcranial nodes are involved, respectively (8). In our cases we determined that right paratracheal area is most frequently involved in a rate of 70.3% and right hilar area is following it in a rate of 55.5%.
The presence of mediastinal lymphadenopathy, a positive PPD skin test and a chest X-ray suggesting paranchymal lesion must let us to think the diagnosis of intrathrocic lymphadenitis. Although calcification in lymph nodes are rarely reported (15%) it is indicated that this condition is an important parameter to consider tuberculosis (8). In our cases we met lymph node calcification in only one (3.7%) case. Since we detected lymph node calcification in 13 of 19 cases whose treatments completed and their control tomography taken, we think calcification must be considered as inactivity criteria, as it is already accepted in many situations.

Many different results are reported about the value of bronchoscopy in diagnosing the disease (2-5,12,13). FOB may provide a diagnosis in some patients; however, most patients require invasive procedures such as mediastinoscopy, anterior mediastinotomy, or thoracotomy to establish a definitive diagnosis (13). Raffy et al. and Baran et al. reported a rate of 48% and 58%, respectively (2,4). We reached diagnosis in a rate of 29.6% with FOB. However, Khan et al. reported that CT-Guided FNAB was diagnostic 66% (5). Since in 9 cases the lymph nodes were very close to vascular structures and this might have caused restricted amount of aspiration and the effect of taking the material bluntly without fluoroscopy apparatus, inability to determine endbronchial lesion other than extrinsic compression may be the causes of insufficiency of the results taken by transbronchial biopsies.

Mediastinoscopy is a well-recognized procedure for investigation of radiographically enlarged lymph nodes in the pretracheal area from the thoracic inlet to a point 1 cm beyond the carina bilaterally (5). In literature the rate of diagnosing with mediastinoscopy vary between 75 and 100% (2,3,13). Mediastinoscopy or scalen lymph nodes biopsy must perform in patients where FNAB was not diagnostic. So, by this method the probable complications can be prevented as well.

After successful treatment, the disease will relapse within 2 years in approximately. 3% of the patients; however, with inadequate therapy or early completion of the therapy, the disease will relapse in most patients (14). It is reported that especially the cases degree in which developed complications and surgical treatment applied; in 9 of a series of 58 cases cure provided, in 6 cases bronchopleural fistula, and in 3 cases reoccurrence developed (13). In our series of 27 patients were successfully treated with a short course of standard antituberculous therapy.

Consequently we thought that in cases with unexplained fever and widespread mediastinal lymphadenopathy which are living in regions with high tuberculosis prevalence, tuberculosis must be considered. Furthermore invasive procedures are frequently needed for diagnosis, and with appropriate treatment such patients may recover without any complication.
ÖZET

INTRATORASİK TÜBERKÜLOZ LENF ADENOPATİ: PARANKİMAL LEZYON SAPTANMAYAN 27 OLGUDA KLİNİK, RADYOLOJİK VE DIAGNOSTİK ÖZELLİKLER

İntratorasik lenfadenit, çocuklardaki primer tüberkülozun karakteristik bir bulgusudur. Adultlarda parenkimal lezyon olmadan saptanması nadir olup, non invaziv işlemleri taniya gitmek çoğu zaman güçlük arz eder. Bu çalışmada 1994-1999 yılları arasında parenkimal lezyon saptanmayan ve farklı diagnostik işlemlerle tüberküloz tanısı konan intratorasik lenf adenopatili 27 hasta retrospektif olarak değerlendirildi. Hastalarda en fazla ateş, dispne ve öksürük semptomlarının olduğu belirlendi. 27 hastanın üzerinde standard akciğer radyografisinde extramediastinal tutulum saptanmadığında anormal mediastinal görünüm tespit edildi. Mantoux deri testinin tüm vakalarda pozitif olduğu olduğu belirliendi. Sağ paratrakeal (% 70.3) ve sağ hiler LAP (%55.5) CT'de en fazla saptanan lezyonlardı. CT'de düşük attenuasyon bölgeleri ve periferik kenar genişlemeleri olguların % 78.5'inde tespit edildi. Tüm hastalara fiberoptik bronkoskopi (FOB) uygulandı ve birkaç biyopsi yapıldı. İnce içe aspirasyon biyopsisinin (İİAB) diagnostik olmadığı vakalara mediastinoskopi (17 olgu) ve skalen lenf bezi biyopsisi (2 olgu) yapıldı. Tüm tanı oranları İİAB için % 29.6, mediastinoskopi için % 100 ve skalen lenf bezi biyopsisi için % 100 idi.

Tüberkülozun endemik olduğu bölgelerden gelen ve uzun süreli subfebril ateş ile birlikte lenf adenopati saptanan odlarda CT'de mediastinal lenf nodlarında düşük attenuasyon bölgeleri ve periferik kenar genişlemeleri saptandığında tüberküloz düşünülmelidir. İİAB intratorasik tüberküloz lenf adenitlerinin tanıında önemli bir rol sahiptir. Bu metodla taniya gidilemeyen vakalarda daha invaziv tanı metodları uygulanmalıdır.

Anahtar Kelimeler: Tüberküloz, mediastinal lenfadenopati.

REFERENCES


