Evaluation of 137 HIV Seronegative Tuberculous Pleurisy Cases

137 Seronegatif Tüberküloz Plörezi Olgusunun Değerlendirmesi

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ABSTRACT Objective: Tuberculosis is a major public health concern worldwide, particularly in Turkey. Association between infection with tuberculosis (TB) and close contact is well known but ratio of tuberculosis pleurisy (TP) patients with close contact has not been clearly analyzed. This study was conducted to evaluate its clinical spectrum, close contact with tuberculosis cases and ways of diagnosis. **Material and Methods:** The Pulmonary Department supplied data on 137 TP diagnosed in Turkey from 2003 to 2006. Data regarding demographics, diagnostic parameters were obtained. **Results:** There were 67 women and 70 men with tuberculosis pleurisy cases. TP was more common among patients aged 15-35 years (69.3%). The most frequent symptoms were cough, chest pain and fever(48,9%, 46.7%, 35.03%). Among patients with TP, 43 have an close contact case (31,3%). ADA level was high in 123 (89.7%). Left or right sided involvement had similar frequency (52.5% left, 45.9%right). Additional pulmonary parenchymal disease(PPTP) was found in 13 patients(9.4%). There were skin test positivity in 89/114 cases (89.7%) **Conclusion:** We conclude that pleural fluid with high ADA content, positive tuberculin skin test and young age favors the diagnosis of tuberculous pleural effusion. In addition other parameters, history of contact with a tuberculosis case at diagnosis of TP is important.

Key Words: Tuberculosis, pleurisy, close contact

ÖZET Amaç: Tüberküloz özellikle Türkiye ile birlikte dünyada major bir sağlık problemidir. Tüberküloz (TB) ile yakın temas ilişkisi iyi bilinmekle beraber tüberküloz plörezili (TP) olgulardaki yakın temas açık bir şekilde analiz edilmemiştir. **Gereç ve Yöntemler:** Bu çalışmada TP olguların klinik spektrumu, yakın temas öyküleri ve tanı yöntemleri araştırılmıştır. Göğüs hastalıkları servisimizde 2003-2006 yılları arasında TP tanısı almış 137 olgunun diagnostik parametreleri ve demografik özellikleri araştırıldı. **Bulgular:** Çalışmaya 70 erkek ve 67 kadın olgu alındı. TP'ye 15-35 yaşları arasında daha sık rastlandı (69.3%). En sık semptomlar öksürük, göğüs ağrısı ve ateşti (48,9%, 46.7%, 35.03%). TP olguların 43'ünde yakın temas öyküsü bulunmaktaydı (31,3%). ADA seviyesi 123 hastada yüksek bulundu (89.7%). Sol ve sağ tutulum benzer sayıdaydı (sol %52.5, sağ %45.9). İlave parankim lezyonu (PPTP) 13 hastada bulundu (9.4%). PPD test pozitifliği 89/114 cases(89.7%) olguda vardı. **Sonuç:** Yüksek ADA seviyesi, pozitif deri testi ve genç yaş TP tanısında yön gösterir. Diğer parametrelere ilave olarak, tüberkülozlu olgularla yakın temas öyküsü TP tanısında önemlidir.

Anahtar Kelimeler: Tüberküloz, plörezi, yakın temas

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Tuberculosis infection is one of the most common infections in the world. It is estimated that 30% to 60% of adults in developing countries are infected. Every year about 8 million people die beca-

use of the disease.[1] According to the World Health Organization(WHO) report in 2004, the population of Turkey was 70,318,000, the total number of TB cases reported to WHO was 18,043 and the case notification rate was 26 per 100,000 people.[1]

Pleural tuberculosis, with or without pulmonary tuberculosis, comprises 4% of all tuberculosis cases.[2] Pleural disease due to *Myocobacterium tuberculosis* is generally categorized as extrapulmonary disease despite an intimate anatomic relationship between the pleura and the pulmonary parenchyma. Tuberculosis pleural effusion is thought to result from a delayed hypersensivity reaction which occurs in response to mycobacterium antigen in the pleural space.[3]

Throughout the world, tuberculosis remain one of the principal causes of pleural effusion. It is important to establish diagnosis, because in untreated patients, the effusion resolves but the patient has a greater than 50% chance of developing active pulmonary or extrapulmonary tuberculosis during the next 5 years.[4]

In this article, we review some of the factors-including demographical, clinical, radiological features and PPD skin test results of 137 cases with tuberculosis pleurisy who are HIV seronagative in our center.

MATERIAL AND METHODS

We identified 137 patients with definitive diagnosis of pleural tuberculosis (TP) between January 2003 and December 2006 at Sureyyapasa Chest and Thoracic Surgery Training and Research Hospital. Pleural effusions were considered tuberculosis if 1-Ziehl- Neelsen stains or Löwenstein cultures of pleural fluid, sputum or pleural biopsy tissue samples were positive, or 2-pleural or VATS biopsy showed caseous granuloma in parietal pleura. We exluded other pleural disease and emphyma. Demographic factors such as age, gender, symptoms, parenchymal disease (PPTP), history of contact with a tuberculosis case, skin test results (114 case) were available in all patients. The size of effusion was assessed on the posteroanterior radiography by visually estimating the area of the hemithorax occupied by pleural fluid. Pleural effusion deemed to be *nonlarge* if it occupied less than two third of the hemithorax, *large or massive* if they affected two thirds or more of the hemithorax with reaching its complete length. In none of data avaible during the study period was any clinical or laboratory evidence of human immunodeficiency virus (HIV) infection was present.

DEFINITION

Patients were considered to have index case if there were a history of current disease in family members or coworkers.

RESULTS

One hundred and thirty seven patients were evaluated during the study period. Among this study group, 67 patients were women, 70 patients were men and the median age of all patients was 32.154 years (15-35 age 69.3% patient, 35-60 age 24.8% patients, 60-80 age 5%patients) (Table 1). Common symptoms were cough (48.3%), chest pain (46.7%) and fever (35.03%) and only two patients had neither respiratory or systemic symptoms. Mean period between initial symptom and diagnosis was 27.45 weeks (1-16 weeks). Diagnosis methods was showed in Table 2. The most frequency method of diagnosis was pleural biopsy. Pleural biopsy and VATS (video-associated thoracoscopic surgery) had revealed the diagnosis in 120 and 10 patients consequently. Twentythree patients (14.8 %) exhibited large or massive pleural effusion. Disease was on the right side in 73 (47.09%) patients, left side in 80 (51.6%) and bilateral in two patients (1.2%). Radiological patterns on chest graphy were pleural effusion without parenchymal infiltration (TPWP) in 124 (90.5%), with parenchymal infiltrate (PPTP) in 13 patients (9.4%), spread or bilateral infiltrate in 2 patients (14%). Cavitation was not reported in any patient. There was a significant correlation between sputum stain positivity and parencymal infiltration. Of the 13 patients in whom the lung infiltration was affected, 6 (46.1%) had positive of

TABLE 1: Demograghic and laboratory feature of TP cases

	n	%
Age		
Total	137	100
15-35	95	69.3
36-60	34	24.8
>60	8	5
Sex		
Male	70	51.09
Female	67	48.01
Symptoms		
For ≤ 30 day	105	76.6
For > 30 day	32	23.3
Cough	67	48.9
Chest pain	64	46.7
Fever	48	35.03
Dyspnea	39	28.4
Index case	43	31.3
PPD positively	89/114	78.07
ADA < 40U/L	14	10.2
ADA ≥ 40U/L	123	89.7
Total ADA	137	100
Chest graphy		
Left side	72	52.5
Right side	63	45.9
Bilateral	2	1.4
TP without infiltration	124	90.5
Pulmonary infiltrate with TP	13	9.5
Large or massive effusion	20	14.5
ARB positively	5/40	12.5
Culture positively	8/40	20

TABLE 2: Diagnosis metods of TP cases.

Metods	n	%
Pleural biopsy	120	78.7
VATS or surgery	10	6.4
ARB or culture positively	7	4.5

sputum stain and culture was positive in one patient. (both sputum stain and culture 53.8% in PLTP) (Table 1).

The PPD reaction was positive in 89/114 cases (78.07%). Pleural fluid ADA was found higher than 40IU/L in tuberculosis pleural effusion.[7] There were 14 (10.2%) patients with pleural ADA activity <40 IU/L and 123 (89.7%) patients with levels higher than 40U/L. Index case rate was 43/137 (31.3%) (Table 1).

DISCUSSION

The average age of patients with pleural tuberculosis in industrial nation has steadily increased over the past 50 years, while in less developed countries age has remained low.[5] It appears that in developed countries tuberculosis pleurisy is becoming a form of reactivation rather than primary disease.[6] In Turkey, TP genereally appeared under 45 age. The results in present study in which 69.3% of tuberculosis effusions were among young age group(under 35 age) demonstrate a higher prevelance of tuberculosis than do the series of Valdes et al (62.2%)[9] or the series of Porcel (68%).[10]

Retrospective reviews have suggested that chest radiographs demostrate tuberculosis parenchymal disease associated with the effusion in up to 50% of patients and cavitary infiltrates is typical of reactivation tuberculosis.[3] Unlike other studies, PPTP in our series were low percent (9.4%), because we didn't use CT scan to evaluate parencyhmal disease.

Tuberculosis pleurisy differs from parenchymal infection in that it often presents acutely. The period between the onset of disease and diagnosis of less than one month has been reported in 75% of patients.[11,12] Chest pain, dyspnea and abdominal pain were more common symptoms in TP than pulmonary tuberculosis.[5] Mihmanlı et al.revealed that cough, chest pain, dispnea were the most common three symptoms in TP cases.[13] In our study, the mean duration of symptoms in were longer than 30 days was 23.3% with TP patients and symptoms were similar to other studies.

Of 63 patients with TP, only 8 patients (12.6%) were found to have ADA activity < 55.8U/L by Chen et al.[14] Valdes et al demonstrated that ADA concentration was higher than the diagnostic threshold of 40U/L in TP patients.[9] Akyıldız et al. found that ADA level was higher than 50U/L in 67% TP cases.[15] In our study, 89.7% of pleural tuberculosis patients had ADA level was higher than 40U/L.

The sputum cultures are positive in 30-50% of patients with both pulmonary and pleural tuberculosis.[16] In our series, 53.8% of patients diagnosed with sputum stain or culture in PLTB so that we postulate that either sputum stain or culture positively depend on the number of patients with parencymal infiltration of TP or extend of disease.

In populations with a high prevalence of tuberculosis infection, a positive skin test in a patient with a pleural exudate strongly suggests the diagnosis of tuberculosis.[12] Skin test can be falsely negative in patients due to anergy, immunosupression or lymphopenia.[17] Valdes et al report 66.5% of effusion had positive skin test.[18] In our series, PPD skin test was positive in 78.07% (89/114) of the cases. We attributed this results to high prevelance of tuberculosis in Turkey.

In the present study , the frequency of index case was 31.3%. Although diagnosis of TP was confirmed with clinical, radiological and laboratory finding, history of close contact case could help to diagnosis TP (data not shown).

Luzze and coworkers found that concomitant pulmonary infiltrates were present in a higher proportion of HIV positive patients with tuberculosis pleurisy.[19] Our analysis indicated that TPWP was significantly higher than PLTB but no HIV-seropositive patients with TP or PLTP were found. This may be due to the fact that our hospital is not a refferal center and has no special facilities for the treatment of patients with AIDS.

Tuberculosis was barely demonstrated as a cause of massive effusion in the American series,[20] only 14.5% patients with massive or large effusion were identified in our study.

In conclusion, high ADA level, skin test positivily, clinical and radiological appearance, young age, laboratory parameters may be of diagnostic yield in TP. In addition to other parameters, index case can be help to establish of diagnosis in countries with high tuberculosis prevalence.

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