Extra pulmonary tuberculosis among patients attended the consultation clinic of respiratory diseases in Salahiddin Governorate; an epidemiological study

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Abstract

The study was carried out to identify the impact and pattern of extrapulmonary tuberculosis in Salahiddin governorate during 2009. Four hundred and forty one tuberculosis patients (sputum positive, sputum negative and extrapulmonary) who were diagnosed and treated in between January 2009 and December 2009 in the Consultant Clinic of Pulmonary Diseases in Salahiddin governorate were included in this study. Extrapulmonary tuberculosis accounted for about 25.7% of total tuberculosis cases. Tuberculous Pleural effusion was found to be the commonest form of extrapulmonary tuberculosis, comprising about 39% of the extrapulmonary cases. Tuberculous lymphadenitis was noted in about 30% of cases, bone and joint tuberculosis in 4% and other forms in 27% of cases. Eighty four percent of Extrapulmonary tuberculosis cases were under the treatment, 14% cured after completing the treatment and 2% of cases died.

Introduction

Tuberculosis is an airborne infectious disease caused by Mycobacterium tuberculosis. It most commonly affects the lungs where it is called pulmonary tuberculosis PTB (1). When the infection occurs in other parts of the body it is called extra pulmonary tuberculosis. Tuberculosis is the most common fatal infectious disease in the world. Every second, someone in the world is newly infected with tuberculosis TB. Nearly one percent of the world's population is newly infected with TB each year. 200 million people worldwide, or 10% of those infected, will develop active TB and be able to infect others for 3 decades. 6 - 8 million new cases of TB are diagnosed each year. In the last 100 years, 200 million people have died of TB (2).

TB kills 8,000 people a day - that is 2-3 million people each year. It kills more people than either AIDS or malaria. In fact, TB is the biggest killer of young people and adults in the world today. TB spreads through the air and is highly contagious. On average, a person with infectious TB infects 10-15 others every year (3).

About 15 % of TB cases are extra pulmonary. Extra pulmonary tuberculosis (EPTB) has become more common since the advent of human immunodeficiency virus (HIV) infection (4).

Extra-pulmonary tuberculosis refers to disease outside the lungs. It is sometimes confused with non-respiratory disease. In developed countries, 10-15% of TB cases have extra-pulmonary involvement, but in patients from high-incidence countries the rate is much higher (5).

Both during the initial (or primary) infection with TB and during any subsequent secondary active disease the bacteria are spread by blood or the lymphatic system to other parts of the body (6).

In healthy people these bacteria are usually destroyed by the immune system. If some immune deficit is present some may concentrate at a particular site where they may lie dormant for years or even decades before causing disease (7).
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The aim of the study was to identify some epidemiological aspects of extra pulmonary tuberculosis in and its frequency among patients attended The Consultant Clinic of Pulmonary Diseases in Tikrit City during 2009.

**Patient and methods**

This study is a descriptive cross sectional study done in the Consultant Clinic of Pulmonary Diseases in Tikrit City (Centre of Salahiddin Governorate), from 1st January 2009 till 31st December 2009. The study conducted on 447 cases who attended to the Consultant Clinic of Pulmonary Diseases in Tikrit City during 2009 as referral suspected cases of tuberculosis from the whole districts of Primary Health Care Centers in Salahiddin Governorate. One hundred and fifteen cases were confirmed as EPTB by the specialist doctors after doing Chest X-ray, AFB stain and histopathology. The data were collected through direct interview after taking their permission and a suitable questionnaire where filled for this purpose which includes demographic data, like age, sex, occupation, residency, chief complaint and a thorough physical examination was done for each patient, to determine the site of EPTB and to confirm the diagnosis of Pulmonary Tuberculosis too. CXR and AFB stain where done to confirm the pulmonary tuberculosis, and many other types of EPTB was confirmed by the specialist doctors who sent the case to the consultant clinic of Pulmonary Tuberculosis after doing X ray, AFB stain and histopathology. The study used the records also to find some of the outcome prognosis of the cases with EPTB. Data were arranged in master table, and then analyzed by using, SPSS version 16 and presented by tables, charts & columns.

**Results**

The total number of TB cases in Salahiddin governorate during 2009 was 447, 115 of them were EPTB. The frequency of EPTB in Salahiddin governorate at 2009 was 25.7%. According to age groups, the highest number of cases was among young age group (15-24), where as the lowest number of EPTB cases was among age group less than four years as shown in figure (1).

The number of male cases of EPTB was 51(44.3%), while that of females was 64(55.6%); figure (2). The EPT in 44(38.2%) case was pleural effusion, while it affect lymph nodes in 35 case (30.4%); and bone in 5 cases (4.3%). Other sites in body affected by EPT were in 31 case (26.9%); figure(3). The number of EPTB cases in Tikrit, was 40(34.7%), 27(23.4%) in Balad, 17(14.7%) in Samara, 8(6.9%) in Baiji and Shurkat,7(6%) in Tooz,5 (4.3%) in Dour and only 3(2.6%) in Dujail; figure (4). The complete recovery of EPTB cases to treatment was only in 16 case (13.9%), and only 2 dead (1.7%), the remaining 97 case (84.3%) yet under treatment; figure (5).

**Discussion**

In this study the frequency of EPTB was (25.7%), while the frequency were (12.5%) in similar study carried out by the department of Community Medicine / Tikrit Medical College during 1998, this increasing frequency, about double, can be explained resulted from better diagnostic facilities identifying more cases and better reporting system. However, it must be emphasized that immigrants play a major role in the epidemiology of tuberculosis. The contribution of foreign-born to the changing rate of tuberculosis has been observed in other regions of the World, such as Germany, Denmark and USA (8).
Differences in the likelihood of EPTB have been observed in various studies among tuberculosis patients by demographic characteristic. In this study although not statistically significant, the proportion of EPTB among females is higher than males. As observed in other studies, female tuberculosis patients were considerably more likely to present with an extra pulmonary manifestations than male patients (9). The increased likelihood of females with tuberculosis presenting with an extra-pulmonary disease manifestation was particularly pronounced among those aged (40-49 years). On the contrary, male patients showed high prevalence of EPTB in the younger age group (20-29 years). An explanation for this finding remains unclear, but it suggests that endocrine factors might play a role. An important finding in this investigation was the predominance of EPTB among the young age group (20-29 years). This is consistent with studies from the USA and Europe which have found that young age was independent risk factor for EPTB (10). A recent case-controlled study from Nepal has reported a strong association between younger age and female gender with EPTB. (11)

This raises the possibility that after primary infection in the lungs the probability of reactivation at an extra-pulmonary site may be higher at younger age. Our results suggest that at older ages reactivation of TB was common in the lungs. This may be due to decreased local immunity in the lungs in the elderly as a result of associated life-style factors (smoking) or diseases such as emphysema and bronchitis.

In this study, The number of EPTB cases in Tikrit, was 40(34.7%), 27(23.4%) in Balad, 17(14.7%) in Samara, 8(6.9%) in Baiji and Shurkat,7(6%) in Tooz,5(4.3%) in Dour and only 3(2.6%) in Dujail, and this probably explained by difference in population residence among these areas respectively, the study conducted at 1998 recognized the frequency distribution of EPTB cases between urban and rural area, therefore there is no way of comparison between the two studies. In our study, the lymph nodes were the second common site of EPTB. Our results are comparable to earlier studies from Nepal and Turkey, which have reported that lymph nodes accounted for nearly half the cases of EPTB (12). In Hong Kong, the genitourinary system and the skin were the common sites, whereas in the USA, bones and/or joints were the most common sites. Other forms of EPTB, such as TB of the skin, CNS, military TB were rare and diagnosed mostly in adults. This is consistent with other studies from Saudi Arabia which have reported that CNS and TB meningitis were rare in children. (13)

However, a study from Turkey found that, the most commonly involved site among 64 children with EPTB was the CNS (25%). (14) It is known that bacilli Calmette-Guerin (BCG) vaccinations had a protective effect against TB forms such as meningeal TB in children. In IRAQ BCG vaccination is mandatory to be given at birth. Several studies have reported an increasing trend of EPTB among HIV infected persons. (15)

However, it has been demonstrated that EPTB was associated with a poor immune status even in the absence of HIV infection, both in developing and industrialized countries.

The diagnosis of EPTB was based upon several parameters referred to in the methodology. In all cases,. A total of 155, (97.84%) of them were still under treatment, (16.14%) were cured and 2.2% died due to failure to response. Possible reasons for failure were missed diagnosis of drug resistance, non tuberculous mycobacteria, and late diagnosis of patients with TB meningitis or pericarditis who suffered complications. A close relationship between patient and physician generally ensures...
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continuity of care and good adherence to treatment

Conclusions

- There are better diagnostic facilities identifying more cases and better reporting system.
- Immigrants play a major role in the epidemiology of tuberculosis.
- Endocrine factors might play a role in the discrepant distribution of EPTB in relation to gender and age.

References

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Figure (1): Distribution of 115 cases with EPTB according to age groups

Figure (2): Distribution of 115 cases with EPTB according to gender.
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Figure (3) Distribution of 115 cases with EPTB according to site of infection.

Figure (4): Distribution of 115 cases with EPTB according to the referring District.
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Figure (5): Distribution of 115 cases with EPT according to outcome of the Disease