

The Effect of Age on Clinical and Radiological Presentation in Patients with Pulmonary Tuberculosis in Baghdad

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ABSTRACT:

BACKGROUND:

Mycobacterium tuberculosis causes the most common type of human *tuberculosis* worldwide. The most common mode of transmission is by inhalation of droplet nuclei from expectorated respiratory secretions. Active infection is diagnosed by documenting the presence of *M tuberculosis* in respiratory secretions or other body fluids or tissues. Age is an important determinant of the risk for the disease. The risk may increase in the elderly.

OBJECTIVE:

To compare the effect of age between elderly and younger on clinical and radiological presentation in patients with pulmonary tuberculosis in Iraq.

PATIENTS AND METHODS:

A prospective study was done for 251 patients with smear positive pulmonary tuberculosis in outpatient's clinic in the Chest and Respiratory Disease Specialized Center in Baghdad. Collected from January to May 2009. The following parameters were assessed:

Age, gender, symptoms, risk factors, radiological findings, and incidence of recurrent. The relation of these parameters between elderly and younger was evaluated.

RESULTS:

There were 174 young adult patients and 77 elderly patients. The elderly group age was between 60-80 years, and younger adult age was between 17-59 years. There was no significant difference in the symptoms between the two groups. Family history of pulmonary tuberculosis ($p=0.009$) was more common in young adult, while DM ($p=0.001$) was more common in elderly. Comparison of radiological findings in young adults vs. elderly patients shown a typical findings ($p=0.036$) which is more in elderly. There was no significant difference in the incidence of recurrence between the two groups.

CONCLUSION:

There was no significant difference in the symptoms between elderly and younger age groups. Family history of PTB was more common in young adults, while DM was more common in elderly. A typical radiological findings were more in elderly. There was no significant difference in the incidence of recurrence between the two groups.

KEY WORDS: tuberculosis, age, radiology

INTRODUCTION:

Tuberculosis is one of the important communicable diseases worldwide ⁽¹⁾. It is an airborne infectious disease caused by *Mycobacterium tuberculosis* and is a major cause of morbidity and mortality, particularly in developing countries ⁽¹⁾. About 80 percent of cases are pulmonary tuberculosis, the remainder are variety of extrapulmonary infections ⁽²⁾.

Tuberculosis is a more devastating disease in the elderly and its clinical features may be atypical, nonspecific, or confused with coexisting diseases

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⁽³⁾. Even in developed countries where the overall incidence of TB is low, pulmonary TB remains common among the elderly ⁽⁴⁾. Increases in the elderly population due to prolonged life expectancy, have increased the use of drugs that suppress cellular immunity, and may further increase the incidence of pulmonary TB among the elderly in the future ⁽⁵⁾. The diagnosis of pulmonary tuberculosis is overlooked easily in elderly, due to several factors, among them the atypical clinical and roentgen graphic presentation as well as the age-related changes in the tuberculin skin test ⁽⁶⁾. The risk factors for tuberculosis are either

immunocompromise state as HIV infection, Glucocorticoid, Diabetes⁽⁷⁾, Malegnancy⁽⁸⁾. Or other risk factors as the economically disadvantaged and inner-city residents, alcoholics, drug-dependent persons, homeless, nursing home residents, prison inmate, and patients with gastrectomies, neoplasia, renal transplantation, uremia, silicosis, people who travel to countries where tuberculosis is endemic, health care worker, cigarette smoking-there is a relative risk of 1.4 to 1.6⁽⁸⁾.

The clinical signs and symptoms of pulmonary TB in an infected adult are often nonspecific; systemic manifestations include low-grade fever, anorexia, fatigue, night sweats, and weight loss that may persist for weeks to months⁽⁹⁾. Cough is the most frequent symptom. Early in the disease, it may be nonproductive, but subsequently there usually is production of sputum, hemoptysis may also occur⁽¹⁰⁾. Pleuritic chest pain is not common, with or without an effusion; dyspnea is unusual unless extensive lung involvement, pleural effusions, or a pneumothorax is present⁽¹¹⁾.

Physical findings may include fever, asthenia, focal rales or findings of a pleural effusion. In some cases, pallor and finger clubbing⁽⁷⁾.

Radiological manifestation of post primary tuberculosis include focal or patchy heterogeneous consolidation, poorly defined nodules and linear opacities⁽⁸⁾, cavitation in single or multiple sites⁽¹²⁾, tuberculoma⁽⁸⁾, hilar or mediastinal lymphadenopathy⁽¹²⁾, pleural effusion, typically unilateral⁽¹³⁾.

PATIENTS AND METHODS:

This prospective study was conducted between January to May 2009 in newly diagnosed patients of pulmonary tuberculosis, at the Chest and Respiratory Disease Specialized Center in Baghdad. Demographic data, presenting symptoms, risk factors, chest x ray, sputum or bronchial wash were examined for AFB. The information from prisoners was attended during their visit to the center.

The patients were divided into two groups: elderly (60 years or more) and younger (<60 years) age groups.

The CXR presentations were classified according to the site and extent of the lesion (upper, middle, lower zones or bilateral infiltration, cavitation, pleural effusion). The radiographs were considered typical if either an upper lobe infiltrate or a

cavitary lesion was present. On the other hand, atypical radiographs were those with lower or middle lobe infiltrates, or effusions without the presence of either a cavity or upper lobe infiltrate⁽¹⁴⁾.

Patients with smear negative for AFB were excluded from the study.

Statistical analysis:

Data were analyzed using the available computer software of Statistical Packages for Social Sciences-version 15 (SPSS-15). The data were presented in simple measures of number and percentage.

The test of significance Pearson chi-squared test was applied for testing the significance of difference between proportions. P value equal or less than 0.05 was used as the level of significance.

RESULTS:

Table 1, showed 174 patients less than 60 years and 77 patients 60 years and more. The age in the younger group was 17-59 years (mean 32.1±10.7) and in the elderly group 60-80 years (mean 70.1±4.34). For the evaluation of gender, a male predominance was observed; however, this male predominance was similar in both younger and older tuberculous populations.

Table 2 shown no statistically difference in AFB smear positivity in sputum and bronchial wash in age groups.

Table 3: Data shown that there was no statistically difference in symptoms in patients with pulmonary tuberculosis in elderly people from that in younger patients: cough (p=0.728), sputum (p=0.767), fever (p=0.709), night sweating (p=0.832), anorexia (p=0.257), haemoptysis (p=0.172).

Table 4: The prevalence of family history of pulmonary tuberculosis was higher in younger age group (p=0.009), while DM was more frequently seen in elderly (p=0.001). Other factors as alcohol (p=0.783), prisons (p=0.526) showed no statistically difference in both groups. There was no case reported for HIV infection during the study period.

Table 5 show upper zone infiltration and cavitation are still have high incidence in both groups, but no statistically difference (p=0.177) is shown in both groups.

In the elderly patients, higher a typical radiological findings was significantly observed (p=0.036) compared with the younger patients as shown in table 6

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The incidence of the initial and recurrent infection in patients with pulmonary tuberculosis was not statistical different in both age groups ($p=0.057$) as shown in table 7.

Table 1 :Demographic data of patients with pulmonary tuberculosis

Patients characteristics	<60years	60years or more	p-value
No.	174	77	
Age	17-59	60-80	
Gender			
male	103(59.2%)	48(62.3%)	0.639*
female	71(40.8%)	29(37.7%)	

*Not significant

Table 2 : Sputum and bronchial wash AFB smear positive

AFB Smear positive	<60years	60years or more	p-value
Sputum AFB Smear	158 (90.8%)	69(89.6%)	0.9*
Bronchial wash AFB smear	16(9.2%)	8 (10.4%)	0.9*

*Not significant

Table 3 : Symptoms in patients with pulmonary tuberculosis

Symptoms	<60years	60years or more	p-value
Cough	163(93, 7%)	73 (94.8%)	0.728*
Sputum	158(90, 8%)	69(89.6%)	0.767*
Fever	150(86, 2%)	65(84.4%)	0.709*
Night sweating	131(75, 3%)	57(74%)	0.832*
Anorexia	140(80, 5%)	57(74%)	0.253*
Hemoptysis	32(18, 4%)	20(26%)	0.172*

*Not significant

Table4 : Risk factors in patients with pulmonary tuberculosis

Risk factors	<60years	60years or more	p-value
Family history of TB	68 (39%)	17 (22.1%)	0.009
DM	12 (6.9%)	31 (40.3%)	0.001
Alcohol	14 (8%)	7 (9.1%)	0.783*
Prisons	18 (10.3%)	6 (7.8%)	0.523*
Health care worker	3 (1.7%)	0	
HIV	0	0	

*Not significant

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Table 5 : Major radiographic findings in patients with pulmonary tuberculosis

Radiographic findings	<60years	60years or more	p-value
Upper zone infiltration	63 (36.2%)	19 (24.7%)	0.098*
Middle zone infiltration	11 (6.3%)	10 (13%)	0.065*
Lower zone infiltration	6 (3.5%)	6 (7.8%)	0.122*
Bilateral infiltration	36 (20.7%)	18 (23.4%)	0.76*
Cavitation	48 (27.6%)	21 (27.3%)	0.92*
Pleural effusion	10 (5.7%)	3 (3.8%)	0.76*

*Not significant

Table 6 : Typical and atypical radiographic findings in patients with pulmonary tuberculosis

Radiographic findings	<60years	60years or more	p-value
Typical	111 (80.4%)	40(66.7%)	0.1
A typical	27 (19.6%)	20 (33.3%)	0.036
total	138 (100%)	60 (100%)	

Table 7 :Incidence of the initial and recurrent infections in patients with pulmonary tuberculosis

infection	<60years	60years or more	p-value
Initial infection	152(87.4%)	60 (77.9%)	0.087
Recurrent infection	22 (12.6%)	17 (12.1%)	0.087
Total	174 (100%)	77 (100%)	

*Not significant

DISCUSSION:

Despite extensive tuberculosis control efforts in the past by WHO and local health departments, the tuberculosis epidemic continues to ravage the developing world⁽¹⁵⁾.

This study found that male predominance was found both in young adults and elderly patients. Stead et al⁽⁴⁾ have also reported similar male predominance.

The classic symptoms of tuberculosis were seen in both groups. The above results agree with those of Umeki⁽¹⁶⁾, who reported that there is no significant difference in these symptoms between the two groups. Alvarez⁽¹⁷⁾ reported significant difference in these symptoms between the two groups. Differences in symptom frequencies between these studies and the present study may be

explained by earlier pulmonary TB detection in these studies.

Family history of TB in this study is significantly more in younger age group; this may be due to high number of young population of Iraq. Diabetes is significantly high risk factor of pulmonary tuberculosis in elderly, and this result is fit with that of Calos⁽¹⁸⁾ who reported that diabetes is significantly higher in elderly patient with pulmonary tuberculosis.

The present study shows significantly higher frequencies of a typical radiological findings, in the elderly. These findings are consistent with that of Liaw⁽¹⁹⁾ who also show same results. The higher frequency of a typical lung disease in the elderly may be due to immunologic abnormalities⁽²⁰⁾, or

aging leads to increased alveolar ventilation and reduced perfusion⁽²¹⁾.

In this study there is no statically significant different between the two age groups regarding recurrence, which goes with the result of Juan⁽²²⁾ who reported that the age is not a risk factor for TB recurrence.

CONCLUSION:

This study showed that there is no statistically difference between elderly and younger age groups regarding symptoms. Family history of TB is the most common risk factor for the disease in the younger, and DM is the most common risk factor in the elderly.

Typical radiological findings are more common in the younger, while a typical radiological findings are more common in the elderly. These clinical points must be considered in the diagnostic evaluation. There was no significant difference in the incidence of recurrence between the two age groups in this study.

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