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*For further information about this article or if you need reprints, please contact:*

Ghorbani Gholamali  
Military Health Research Center,  
Baqiyatallah University of  
Medical Sciences,  
Tehran, Iran

## **Comparison of Clinical and Radiology Manifestation of Pulmonary Tuberculosis in Younger and Elderly Patients**

Ghorbani Gholamali, Alishiri Gholamhossain and A. Esfahan

To study the differences of presentation pulmonary tuberculosis related with age. This study is a retrospective as case-control match in one hundred patients with pulmonary tuberculosis in Iran for five years. All patients had pulmonary tuberculosis divided in two group, younger (age<50) as control and older (age≥50) as case group. Data was collected included; clinical presentation and radiology manifestation. Data were analyzed with chi-square and student's t test and p<0.05 levels were significant. In here showed that 46 patients in control (mean age 28.6±6.8) and 54 patients in case (mean age was 67.5±8) were evaluated. In case group fever and cough were less than control (p<0.005). Fibrosis was more (p<0.005) and miliary was less in case group than control group (p<0.01). In conclusion, absence of fever and cough and increase of fibrosis should not be delayed diagnosis of pulmonary tuberculosis in elderly and physicians need to have a high level suspicion of unusual manifestation of tuberculosis in elderly patients.

**Key words:** Pulmonary tuberculosis, age, radiology, clinical manifestation.

**INTRODUCTION**

Tuberculosis is still a major global health problem. TB is responsible of approximately 3 million deaths each year and 1.7 billion people are infected with M. tuberculosis. Unfortunately, control of disease is not insight and TB control is essentially a management problem (Mario *et al.*, 2005; Amdekar, 2005). Despite the fact that World Health Organization in its effort to control declared it a global emergency in 1993, TB still continues to account for the largest burden of mortality by any infections agent worldwide (Khan and Malik, 2003). Yet, initially wrong diagnosis was made more often in the elderly. Malignancy, chronic pulmonary disease, smoking (Alvarez *et al.*, 1987) and immunosuppressant was more frequently encountered in the elderly. Clinical and radiographic manifestation of tuberculosis in elderly was varied and no specific and mistaken with other disease and may be cause delay of therapy (Jick *et al.*, 2006). For this reason we compared the clinical and radiographic manifestation of pulmonary tuberculosis associated with age.

**MATERIALS AND METHODS**

This study is a retrospective as case-control match was performed for over five year's period in hospitalized patients with pulmonary tuberculosis in three teaching hospitals of Loghman Hakim, Bouali and Labafinejad in capital city of Iran. Medical records of patients with documented tuberculosis with smear and culture positive sputum for mycobacterium tuberculosis and PPD skin test positive (PPD>10 mm) was documented to this study. The patients divided in two groups, younger (age<50) as control and elderly (age ≥ 50) as case group. Data was collected contain, sex, age, HIV antibody ELISA and chart of clinical manifestation contain: fever, weigh loss, loss of apatite. cough, hemoptysis, weakness and purulent sputum. Radiographic chart contain: cavity, apex lesion, lower lobe infiltration, right lobe infiltration, bilateral infiltration, military pattern, fibrosis scar and lymphadenopathy. The different in this presentation of two groups were analyzed for statically difference with chi-square test for different of percentage and the student's t-test for different of mean. The p<0.05 level of significant was adopted.

**RESULTS AND DISCUSSION**

In this study one hundred patients with pulmonary tuberculosis were evaluated. Fifty four patients in group of case age of 50 years old and above (mean 67.5±8) and 46 patients in control group age less than 50 years (mean 28.6±8.2). In case group 50% and in control 54.3% were man. In case group fever was less than control

Table 1: Clinical manifestation of pulmonary tuberculosis associated with age

Clinical manifestation	Control		Case		p-value, NS (no significant)
	Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)	
Fever	44(95.6)	2(4)	39(72.2)	15(27.8)	p<0.005
Weigh loss	32(69)	14(31)	29(53)	35(47)	NS
Loss appetite	20(43.4)	26(56.6)	16(48)	38(52)	NS
Cough	44(95.6)	2(4)	50(92.6)	4(7.4)	p<0.005
Hamoptysis	15(32)	31(68)	17(31.5)	37(68.5)	NS
Weakness	15(32)	31(68)	13(24)	41(76)	NS
Purulent sputum	39(85)	7(15)	37(68)	17(32)	NS

Table 2: Radiology manifestation of pulmonary tuberculosis associated with age

Radiology manifestation	Case		Control		p-value (nosignificant)
	Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)	
Cavity	12 (22)	42 (78)	13 (28)	33 (72)	NS
Apical infiltration	25 (46)	29 (54)	21 (45)	25 (55)	NS
Lower lobe zone	26 (48)	28 (52)	22 (47)	24 (53)	NS
Right lung	23 (42.5)	31 (57.5)	20 (43)	26 (57)	NS
Both lung	21 (39)	33 (61)	15 (33)	31 (67)	NS
Military pattern	2 (3.7)	52 (96.3)	4 (8.7)	42 (19.3)	p<0.01
Pleurisy	10 (18)	44 (82)	7 (15)	39 (85)	NS
Fibrosis	10 (18)	44 (82)	2 (4.3)	44 (95.7)	p<0.005
Lymphoid enopathy	2 (3.7)	52 (96.3)	0	46 (100)	NS

(72.2 vs. 95.6%, p<0.005), cough in case was less than control (92.6 vs. 95.6%, p<0.005) that significant different in each two groups. The radiographic manifestation in case as fibrosis were highest than control (18 vs. 2.3%, p<0.005) and miliary pattern in case group was less than control (3.7 vs. 8.7%, p<0.01). Other results showed in Table 1 and 2.

In this study showed that many clinical manifestations such as fever and cough in elderly group were less frequent than younger age group but radiology manifest such as fibrosis pattern was more frequent in elderly age group. In here determined that some clinical and radiology manifestation to be related with age but some of them had not relationship with age. Compared these manifestation associated with age may be helped to early diagnosis and treatment of pulmonary tuberculosis.

In this study cough was the most common clinical manifestation in two groups, but in elderly frequency of cough was less than control group, that significantly different that resemble to other study (Tsai *et al.*, 1991; Korzeniewska-kosela *et al.*, 1994) but opposite to study of van den Branand that reason for different may be contributed to underling disease and ageing (Kaltenbach *et al.*, 2001; Vanden Brande *et al.*, 1991). Productive cough is usually present in pulmonary tuberculosis but nonproductive cough is non specific and may be ignored with chronic bronchitis (Lee *et al.*, 2005).

One the most frequent symptoms of tuberculosis are fever (Kaltenbach *et al.*, 2001). In this study fever was more common in younger group that resemble to other study and in elderly patients fever is absent in 28% and the reason may be due to immunocomprised in elderly patients (Alvarez *et al.*, 1987) and aging or other features compromises cellular immunity, producing the subtle and often fatal syndrome of late hematogenous or progressive generalized tuberculosis without fever (Sonnenberg *et al.*, 2005).

The clinical manifestation such weighs loss, diminish of appetite, weakness and sputum were equal frequency in both younger and older group. These manifestations are gradually in onset and well tolerated and often not recognized specifically by elderly patients (Tsai *et al.*, 1991) and these clinical manifestation may be variable and related to rapid or slowly progressive of pulmonary tuberculosis (Katz *et al.*, 1987). However, non specific constitutional symptoms such as anorexia, fatigue, weight loss, chilly sensation, afternoon fever and night sweating may ensue in patients with pulmonary tuberculosis (Lee *et al.*, 2005).

Hemoptysis resulting from caseous sloughing or end bronchial erosion is usually minor but connotes advanced disease (Chan *et al.*, 1995). Sudden massive hemoptysis resulting from erosion of a pulmonary artery that may be fatal but it is seldom seen now (Zamarron *et al.*, 1997). In this study hemoptysis was equal in two groups but in other study hemoptysis was highest in younger group.

The chest radiography is central to diagnosis and determination of the extent and character of disease and evaluation of the response to therapy. Pleural involvement is often early complication of post primary or childhood tuberculosis but may complicate of chronic pulmonary tuberculosis (Tsai *et al.*, 1991). In this study pleurisy was not significant different between two group that opposite to other and reason may be due to endemic tuberculosis infection in Iran and the most people infected and give primary tuberculosis in early of life and pleurisy is low frequent in reactive tuberculosis in adult and elderly patients (Zamarron *et al.*, 1997).

In this study fibrosis scars showed that highest in elderly group than younger group and cause of this subject may be due to antecedents of previous tuberculosis or pulmonary chronic infection in elderly patients and it is a risk factor for reinfection or reactivated of pulmonary tuberculosis in elderly patients, that common in developing country (Stend *et al.*, 1998).

Miliary tuberculosis in immunocompetent adult is rare even in endemic area and usually occurred either soon after primary infection in children or young adult or as a terminal event in untreated chronic tuberculosis. Opposite to other study, in here control group had more miliary pattern of radiology than elderly group that may be

contributed to primary tuberculosis in younger group (Korzeniewska-Kosela *et al.*, 1994) but in here sample is very least and should be need further evaluation.

Lymphadenopathy with or without parenchyma abnormality is the radiographic hallmark of primary tuberculosis in children (Kim *et al.*, 2001). Lymph node enlargement may pass undetected on plain radiography (Bosch-Marcet *et al.*, 2004), in this study elderly group had more lymphadenopathy than younger group but not significant different in each two group, but should be considered that lymphadenopathy may be due to underlying malignancy disease such lymphoma (Liaw *et al.*, 1995) in elderly patients resemble to study as shown by Qaswari *et al.* (2003) but in this study for definite diagnosis, result of pathology wasn't available and this problem is common in retrospective study.

Tuberculosis can sometimes present with consolidation in the lower lung field but literature shows a great variation in reported frequency (Wang *et al.*, 2006). These terms are not appropriate for chronic pulmonary tuberculosis in adult and may depend to recently infect old individual (Rizvi *et al.*, 2003). In this study lower field tuberculosis were not different between two each group and between man and woman that opposite to study that shown by Ayatollahi, (2006). steroid therapy, diabetic mellitus and pregnancy and HIV coinfection also can caused lower lobe field pulmonary tuberculosis (Skodric-Tri-funovic *et al.*, 2004).

Infection acquired years earlier can progress as age compromised immunity, producing typical apical posterior disease (Lee *et al.*, 2005). Secondary or post primary pulmonary tuberculosis in adult is an apical of upper lobe lesion. Cavity lesion also may be more frequent in older age, smoking patients, insulin-dependent diabetic patients (Skodric-Tri-funovic *et al.*, 2004). Pulmonary CT scan can better detect the apical lesion of tuberculosis than plan radiology exam. In this study apical and cavity lesion were not depended with age and this different may be contributed to used of chest plane x ray instead of CT scan in this study (Bosch-Marcet *et al.*, 2004)

Relationship between HIV infection and tuberculosis is well diagnosed and co infection is correlated with the severity of the immunodeficiency (Sonnenbeg *et al.*, 2005).

HIV co infection with tuberculosis may be caused asymptomatic clinical and radiology manifestation (Reyes Corcho *et al.*, 2004). In this study all patients had negative HIV Elias antibody because HIV was not high frequent in elderly paints in Iran (Ayatollahi, 2006).

In both clinical and radiology manifestation was not different in male and woman that resemble to study of Liaw YS because it is endemic in developing country and cause pulmonary tuberculosis in equally in two sex (Liaw *et al.*, 1995).

## CONCLUSIONS

This study showed that clinical and radiology manifestation of pulmonary tuberculosis was not specific and absent of fever and cough should not rule out the pulmonary tuberculosis in elderly patient's. In other hand; fibrosis should not be delayed diagnosis of tuberculosis in elderly patients. Ultimately, Physicians need to have a high level suspicion of varied and non specific clinical and radiology manifestation for pulmonary tuberculosis, especially in elderly patients for earlier diagnosis and treatment of tuberculosis.

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