

A Comparative Study of Assessment of Profile of Pulmonary and Extrapulmonary Tuberculosis among Patients: An Institutional based Study

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ABSTRACT

Background: Tuberculosis (TB) is a chronic necrotizing bacterial infection characterized by the presence of granulomatous lesions, caused by the Mycobacterium tuberculosis complex. Recent studies have suggested that the sites of extra-pulmonary tuberculosis (EPTB) may vary according to geographic location and population. Hence; present study was planned to assess profile of pulmonary and extrapulmonary tuberculosis among patients of known population.

Materials & Methods: The present investigation included assessment of profile of pulmonary and extrapulmonary tuberculosis among patients of known population. A total of 100 patients were included in the present study. Complete demographic and clinical details of all the patients were obtained. Relevant clinical and medical history in all the patients was obtained. Cases were categorized into pulmonary and extrapulmonary. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software.

Results: Significant results were obtained while comparing the EPTB group and PT group in terms of age group, gender and

presence of diabetes mellitus. Significant results were obtained while assessing the age group and gender as risk factors for development of EPTB.

Conclusion: In comparison to occurrence of PT, young females might be independent risk factor.

Key words: Extrapulmonary, Pulmonary, Tuberculosis.

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INTRODUCTION

Tuberculosis (TB) is a major global health problem and may appear as a multisystem disease. It is a chronic necrotizing bacterial infection characterized by the presence of granulomatous lesions, caused by the Mycobacterium tuberculosis complex. This includes *M. africanum*, *M. microti*, *M. tuberculosis*, and *M. bovis*. *M. tuberculosis* is responsible for 97-99% of disease development. Pulmonary tuberculosis (PT) represents one of the common manifestations of TB.¹⁻³

It continues to be a major medical and social problem with high morbidity and mortality. TB is second only to human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) as the greatest killer worldwide due to a single infectious agent.^{4,5}

After primary infection, TB may reactivate at anytime and anywhere in the body. Recent studies have suggested that the sites of extra-pulmonary tuberculosis (EPTB) may vary according to geographic location and population. Clinical manifestations of TB are variable and depend on a number of factors that are related to the microbe, the host and the environment.⁶⁻⁸

Hence; present study was planned to assess profile of pulmonary and extrapulmonary tuberculosis among patients of known population.

MATERIALS & METHODS

The present investigation was commenced in the Department of Pulmonary Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha (India) and it included assessment of profile of pulmonary and extrapulmonary tuberculosis among patients of known population. Written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 100 patients were included in the present study. Diagnosis of TB was confirmed in all the patients by examination of a minimum of three sputum smears by Ziehl Nielsen staining for acid fast bacilli [AFB]. For confirming the diagnosis, chest radiographies were also analyzed. Complete demographic and clinical details of all the patients were obtained. Relevant clinical and medical history in all the patients was obtained. Cases were categorized into pulmonary and

extrapulmonary based on the criteria described previously in the literature.⁹ Patients with history of any other systemic illness, any immune-compromised state, or any known drug allergy were

excluded in the present study. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

Table 1: Comparison of demographic and clinical details of PT and EPTB

Parameter		EPTB (n= 50)	PT (n= 50)	P- value
Age group (years)	Less than 30	20	10	0.01*
	31- 40	15	10	
	More than 40	15	30	
Gender	Males	18	20	0.02*
	Females	32	30	
Diabetes mellitus	Present	1	5	0.01*
	Absent	49	45	

*: Significant

Graph 1: Demographic and clinical details of PT and EPTB

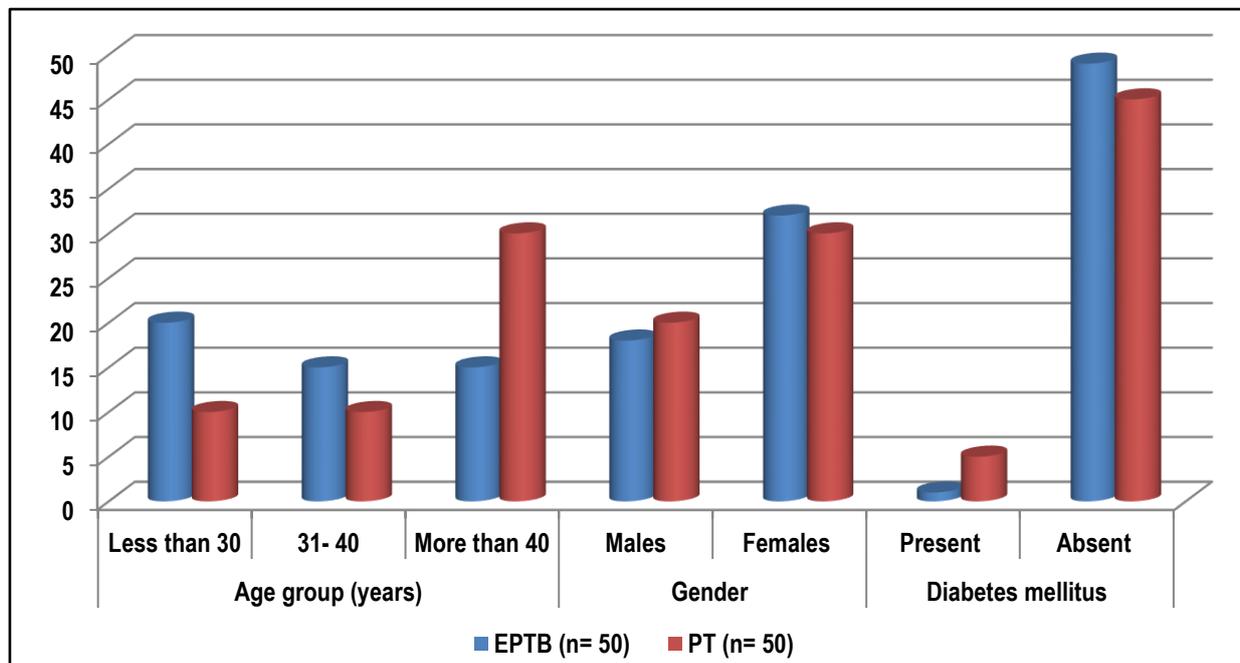


Table 2: Risk factors for development of EPTB

Parameter		Odd ratio	95% CI	P- value
Age group (years)	Less than 30	1.64	1.08-3.01	0.02*
	31- 40	0.80	0.50-1.60	0.65
	More than 40	1	-	0.25
Gender	Males	1	-	0.58
	Females	1.76	1.10-2.40	0.01

*: Significant

RESULTS

In the present study, 50 cases of PT and 50 cases of EPTB were analyzed. Mean age of the subjects with PT was 41.5 years while mean age of the subjects of the EPTB was 29.3 years.

There were 18 males and 32 females in the EPTB group while there were 20 males and 30 females in the PT group. 1 and 5 patients were diabetic in the EPTB group and PT group respectively.

Significant results were obtained while comparing the EPTB group and PT group in terms of age group, gender and presence of diabetes mellitus. Significant results were obtained while assessing the age group and gender as risk factors for development of EPTB.

DISCUSSION

In the present study, 50 cases of PT and 50 cases of EPTB were analyzed. Mean age of the subjects with PT was 41.5 years while mean age of the subjects of the EPTB was 29.3 years. Ates Guler S et al evaluate the demographic factors and clinical features of extrapulmonary tuberculosis (EPTB) compared to those of pulmonary tuberculosis (PTB) among adult immunocompetent patients. A total of 427 patients with clinically, radiologically and histopathologically confirmed TB were enrolled in the study. Patient data were obtained retrospectively. Among the 427 patients, 55 patients with both PTB and EPTB and who were using steroids or had taken immunosuppressive drugs were excluded from the study.

Of the 372 patients, 227 (61%) were males and 168 (45.2%) had EPTB; 204 (54.8%) patients had PTB. The most frequent sites of EPTB were the lymph nodes (n = 45, 12.1%), pleura (n = 40, 10.7%) and brain (n = 7, 1.8%). The most common symptoms were cough (n = 174, 46.7%), night sweats (n = 127, 34.1%) and fever (n = 123, 33%). Compared to EPTB patients, PTB patients were less likely to have received Bacillus Calmette-Guérin vaccination. Eighty-one (48.2%) of the EPTB and 146 (71.6%) of the PTB patients were males. Pulmonary involvement was more common among men than among women. There was a high incidence of EPTB in our study. Early diagnosis of EPTB is crucial for treatment, and atypical presentations of TB should be kept in mind for immunocompetent patients living in endemic areas. Females especially should be investigated for EPTB.¹⁰

There were 18 males and 32 females in the EPTB group while there were 20 males and 30 females in the PT group. 1 and 5 patients were diabetic in the EPTB group and PT group respectively (Table 1). Sreeramareddy CT et al compared demographic, life-style and clinical characteristics between EPTB and PTB patients. A retrospective analysis was carried out on 474 Tuberculosis (TB) patients diagnosed in a tertiary care hospital in western Nepal. Characteristics of demography, life-style and clinical features were obtained from medical case records. Risk factors for being an EPTB patient relative to a PTB patient were identified using logistic regression analysis. The age distribution of the TB patients had a bimodal distribution. The male to female ratio for PTB was 2.29. EPTB was more common at younger ages (< 25 years) and in females. Common sites for EPTB were lymph nodes (42.6%) and peritoneum and/or intestines (14.8%). By logistic regression analysis, age less than 25 years and female gender were associated with EPTB. Results suggested that younger age and female gender may be independent risk factors for EPTB in a high-burden country like Nepal.¹¹

Significant results were obtained while comparing the EPTB group and PT group in terms of age group, gender and presence of diabetes mellitus. Significant results were obtained while assessing the age group and gender as risk factors for development of EPTB (Table 2). Lin JN et al analysed the risk factors for Extra-pulmonary TB (EPTB) compared with PTB. This retrospective study compared patients with EPTB and PTB in

southern Taiwan by analysing their demographic data and clinical underlying diseases. A total of 766 TB patients were enrolled in this study, with 102 (13.3%) EPTB and 664 (86.7%) PTB cases. Of the 766 patients, 3% of PTB patients had EPTB, while 19.6% of EPTB patients also had PTB. The most frequently involved EPTB site was the bone and joints (24.5%). The incidence of EPTB vs. PTB decreased significantly for each decade increase in patient age. Multivariate logistic regression analysis showed that being female, not being diabetic, having end-stage renal disease and not smoking were independent risk factors for EPTB. This study defined the risk factors for EPTB compared with PTB. Awareness of these factors is essential for physicians to have a high index of suspicion for accurate and timely diagnosis.¹² Gonzalez OY et al evaluated covariates associated with EPTB. A 4-year cohort of EPTB patients was compared with PTB cases. Enrollees were assessed for TB risk, medical records were reviewed, and Mycobacterium tuberculosis isolates were fingerprinted. They identified 538 EPTB cases (28.6%) in a total of 1878 enrollees. The most common sites of infection were lymph nodes (43%) and pleura (23%). EPTB cases included 320 (59%) males, 382 (71%) patients were culture-positive, and 332 (86.9%) patient isolates were fingerprinted. Fewer EPTB than PTB patients belonged to clustered M. tuberculosis strains. A multivariate model identified an increased risk for EPTB among African Americans, HIV-seropositive, liver cirrhosis, and age <18 years. Patients with concomitant pulmonary and extra-pulmonary infections were more likely to die within 6 months of TB diagnosis. African American ethnicity is an independent risk factor for EPTB. Mortality at 6 months is partly due to the dissemination of M. tuberculosis and the severity of the underlying co-morbidity.¹³

CONCLUSION

Under the light of above mentioned results, it can be concluded that in comparison to occurrence of PT, young females might be independent risk factor. However; further studies are recommended.

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