

EXTRA PULMONARY TUBERCULOSIS: AN OBSERVATIONAL STUDY IN A TERTIARY CARE HOSPITAL, MYSOREArchana Rao K¹, Deepa S², Ravindranath C³, Venkatesha D⁴**HOW TO CITE THIS ARTICLE:**

Archana Rao K, Deepa S, Ravindranath C, Venkatesha D. "Extra Pulmonary Tuberculosis: an Observational study in a Tertiary Care Hospital, Mysore". *Journal of Evolution of Medical and Dental Sciences* 2014; Vol. 3, Issue 17, April 28; Page: 4491-4496, DOI: 10.14260/jemds/2014/2464

ABSTRACT: BACKGROUND: Extra pulmonary tuberculosis (EPTB) is a major health problem due to its destructive nature. The term EPTB, which encompasses all forms of TB other than pulmonary TB (PTB), has a broad spectrum of clinical manifestations, hence a real diagnostic challenge. **AIM:** The primary objective of this study was to describe the basic demographic, clinical characteristics, trends of various types of tuberculosis and to detect the incidence of EPTB in Mysore over a period of two years. **MATERIALS AND METHODS:** This is an observational study of patients of all types of Extrapulmonary tuberculosis from January 2011 to December 2013 in all age groups, evaluated at Mysore Medical College and Research institute, Mysore, Karnataka, India. **RESULTS:** Among 4500 cases registered for treatment of all forms of tuberculosis, 710(15.77%) had EPTB. More than half of the cases of EPTB (n = 472, 66%) were among adult age groups. Pleural TB was the commonest type of EPTB (n = 268, 37.03%), followed by lymph node TB (n = 210, 29.81%). Involvement of lymph nodes was the commonest manifestation in less than 14 years of age group, while involvement of pleura was more common among > 65 years. **CONCLUSION:** The burden of EPTB is more among the productive age group. Increase in the trend of EPTB cases, and other rare forms of EPTB are a point of concern highlighting the importance of strengthening the services towards this group.

KEYWORDS: (Extra pulmonary tuberculosis, Pleural TB, lymphnode TB).

INTRODUCTION: Extra pulmonary tuberculosis (EPTB), by definition, is the isolated occurrence of TB at body sites other than the lung.¹ It is estimated that about one-third of the world's population is infected with *Mycobacterium tuberculosis*.² Tuberculosis (TB) remains a major global public health problem, despite improved living standards, the availability of free anti-tuberculosis medications, and the implementation of mass *Bacillus Calmette-Guerin* (BCG) vaccination at birth.³ TB, HIV- TB, and Extra pulmonary TB continue to be a major public health threat even in the era of DOTS. Extrapulmonary organ involvement of TB is estimated as 10-34% of patients who are not infected with human immunodeficiency virus (HIV), whereas the frequency is about 50-70% in patients infected with HIV.¹

By and large pulmonary tuberculosis is a global disease, but EPTB is also not uncommon in human history.⁴ Although patients with EPTB hardly ever spread the disease, this form of the disease is a major public health problem due to its destructive nature.⁵

The Indian branch of Advocacy to Control TB Internationally (ACTION) says the country's TB control program is failing to take sufficient action to diagnose cases of the condition. Diagnosis of EPTB is not covered by RNTCP, and for treatment, these cases are forwarded to the DOTS regimen.⁶

Tuberculosis, which is one of the three largest single-agent cause of infectious diseases (along with malaria and human immunodeficiency virus), is a global public health problem due to its high morbidity and mortality. The term EPTB, which encompasses all forms of TB other than pulmonary

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TB (PTB), has a broad spectrum of clinical manifestations, hence a real diagnostic challenge.⁷ The diagnosis whose confirmation reposes on obtaining material for culture is much more difficult and technically more demanding than for PTB.⁸ Compared with pulmonary TB, EPTB poses more challenges for diagnosis and monitoring of treatment because it involves relatively less accessible sites.

In general, the true prevalence of EPTB is therefore probably grossly underreported.⁹ Recent studies suggested that sites of EPTB may vary according to geographic location, population and host factors, also literature on various forms of EPTB is scant and this lack of evidence is of particular concern in case of treatment guidelines.

With this background we conducted the present observational study to describe the basic demography, incidence and clinical presentations of extra pulmonary TB.

MATERIALS AND METHODS: This observational study was done over a period of two years at Mysore Medical College & Research Institute and its attached hospitals from January 2011 to December 2013.

In our study the diversified presentations of the patients with EPTB had complaints of fever and weight-loss, neck swelling, malaise, discharging sinuses, breathlessness and cough. Samples included were pus, pleural fluid, aspirates from joints, urine, CSF, tissues from lymph node and by spinal decompression. All these specimens were examined by fluorescent microscopy and Ziehl-Neelsen staining and subjected to biochemical examinations.¹⁰ Hematological examination for Erythrocyte sedimentation rate (ESR), Total leucocyte count (TLC) and differential leucocyte count (DLC) were taken as contributing investigations.

All the patients had undergone radiological examination of the chest (X-ray chest).

Investigations like USG chest, abdomen, computed tomography (CT) scan and magnetic resonance imaging (MRI) were performed in required cases.

RESULTS: The total number of diagnosed tuberculosis cases was 4500, in which Extra pulmonary TB accounted for 710 cases. The total incidence of EPTB in our study accounted for 15.7%. Diversified presentation included pleural effusion, pleurisy, lymphadenopathy, pott's spine, cervical rib TB, osteomyelitis, abdominal TB, TB Meningitis and lupus vulgaris.

The cases were divided into four age groups as 0-14years, 15-44 years, 45-64 years and more than 65 years. The distribution of the cases in the above age groups are depicted in table 1. Out of 710 cases, 415 were males and 295 were females, among them 42 were children below 16yrs of age. In our study male to female ratio was about 1.5:1. The number and percentage of cases of different types of EPTB in different age groups was calculated.

Pleural TB was the commonest type of presentation 37% (n =268) in the age group of 45-64 years as well as in the age group of > 65 years. Lymph node tuberculosis was the 2nd most common type of tuberculosis in all age groups accounting for 29% (n = 210). Abdominal TB accounted for 19.1% (n =137) which was the commonest presentation in the age group of 25-45 years. Other presentations of EPTB were TB bones and joints which are as depicted in table 2.

DISCUSSION: This study was conducted to assess age, sex, and clinical presentations of EPTB in a large cohort of 4500 tuberculosis patients diagnosed in Mysore during 2011-2013. Access to

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diagnosis and health care was essentially the same over time for all patient groups. Therefore, the study offered a unique opportunity for studying host factors by determining relative differences in disease patterns among different groups.

This study is a single-center experience, wherein mainly patients from the neighboring districts seek medical care. In our study the age of the patients ranged from 03-67 years with mean age of 32.56 ± 13.49 years. The most common age group affected with EPTB belonged to 15-45 yrs. which is considered to be productive age group posing a major burden on family and on economical conditions. The complications of EPTB like bone deformities, pelvic inflammatory disease and infertility increases the morbidity and also psychological burden on this age group.

In our study male to female ratio was about 1.5:1 which is similar to the study done by S Rama Prakash et al.⁶ In comparison of male to female ratio in patients of pulmonary tuberculosis i.e. 2:1,¹¹ there is a definitive rise in female predominance in EPTB. The reasons being joint family system in our society and females are neglected regarding healthcare.⁴

We did not study lifestyles body mass indices of these women, however we postulate that possible reasons may be the social exclusion of younger women who are generally homebound and have poorer nutritional status than their male counterparts, social stigma associated with TB which discourages women from seeking early medical care.¹² In this study the patients belonged to various groups of life and most of them were from lower socioeconomic stratum of life.

The most common site of EPTB being pleura (n=268, 37%) followed by lymph nodes (n=210, 29%) similar to the study done by Ozvaran MK, et al.¹ Pleural TB was the commonest presentation in the age group of 45-64 years as well as > 65 years. This raises the possibility that the probability of reactivation in pleura may be higher as the age increases.

In children below 1yr cervical lymphadenitis was the common presentation (n=28, 3.9%) similar to the study done by H C Maltezou et al. Younger age and delay in the introduction of appropriate therapeutic agents rendered these children vulnerable targets for the development of serious complications. Delay in identification and contact tracing of infected adults render young children at increased risk of developing tuberculosis. Childhood tuberculosis reflects the inadequacy of the public health system in controlling transmission of infection in the community. Prompt and efficient identification of the source of transmission and application of effective environmental measures are intimately linked to the control of childhood tuberculosis.¹³

Tuberculosis is the commonest cause of cervical lymphadenopathy in young age people in developing countries and should be suspected in every case of granulomatous lymphadenopathy unless proved otherwise.⁴ Therefore it is important that a high index of suspicion for tubercular lymphadenopathy should be kept in mind.

TB of bone was the fourth most common site in EPTB (n=52, 7%) in our series. Pott's disease accounts for 2% of all TB infections.¹⁴ The diagnosis of Pott's disease is principally based on classical clinical manifestations of spinal infection supplemented by modern imaging like CT and MRI. Because of a low index of suspicion for its diagnosis, early lesions may be neglected. Osteoarticular tuberculosis is a major problem in many parts of the world.

The spine is the site of bone tuberculosis in about half the cases and isolated bone involvement without spread to a joint often fails to attract attention. Because of the subtle nature of the symptoms, the diagnosis is not made until the process is well advanced.¹⁵

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TB orchitis is least common site of presentation (n=4, 0.6%) in our study. Genitourinary TB is still a major health problem in many developing countries including India. In India, the incidence of genital TB is nearly about 18%. TB epididymo-orchitis is a common form of Genitourinary TB but when it is isolated, it may mimic testicular tumor.¹⁶

Confirmation of EPTB is challenging for a number of reasons: the difficulty to obtain an adequate sample; the processing of the sample for various diagnostic tests resulting in non-uniform distribution of microorganisms; the pauci-bacillary nature of the specimens; the presence of inhibitors that undermine the performance of nucleic acid amplification-based techniques; and the lack of an efficient sample processing technique universally applicable on all types of extra pulmonary samples. Diagnoses of EPTB without microbiological confirmation may result in over-diagnosis.¹⁷

To ignore private practitioners would be an omission on the part of national tuberculosis programme, particularly in places where a substantial proportion of tuberculosis patients visit private practitioners whose management practices are suspected. There is a weak link between private practitioners and public health sectors.¹⁸ This implies the importance of sensitizing private practitioners to management of EPTB. A study from Mysore, India showed that only less than half of the doctors in the private sector prescribed DOTS compared to 95.1% in the government sector.¹⁹ Intensified scale up of public private mix has shown improvement in case detection of pulmonary TB and notification rates by providers. A similar approach needs to be extended to EPTB management.²⁰

Diagnosis of EPTB is not covered under RNTCP. Hence there is a need for a well-defined program with specified protocols and ongoing medical education will increase the total number of EPTB cases detected in the community and treated under the program by gaining the confidence of treating practitioners. This will also help many patients in developing countries who cannot access private healthcare.⁶

CONCLUSION: The burden of EPTB is more among the productive age group. The difference in the occurrence of various types of EPTB cases in different age groups and sexes without the declining trend highlights the importance of strengthening the services for this vulnerable group. Higher reporting of EPTB cases in tertiary centers necessitates the need for ongoing medical education on a larger scale and well-defined program-specified protocols for the diagnosis and treatment of extra pulmonary tuberculosis cases. Raising awareness among non-pulmonary physicians about EPTB and guidelines for diagnosis and treatment of EPTB may result in more timely and adequate diagnosis.

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| Age years | Total no. of cases (n) (n=710) | Percentage (%) |
|--------------|--------------------------------|----------------|
| 0-14 | 38 | 5 |
| 15-45 | 472 | 66 |
| 45-65 | 168 | 24 |
| 65 and above | 32 | 5 |

Table 1: DEMOGRAPHIC CHARACTERISTICS OF EPTB

| Clinical features | Total no. of cases (n=710) | Percentage (%) |
|-------------------|-------------------------------|-------------------|
| Pleural effusion | 268 | 37 |
| Lymphadenopathy | 210 | 29 |
| Abdominal TB | 137 | 19.1 |
| TB Bone & joints | 52 | 7 |
| TB Meningitis | 37 | 5 |
| TB orchitis | 4 | 0.6 |
| Lupus vulgaris | 2 | 0.3 |

Table 2: DIFFERENT SITES OF EXTRA PULMONARY TB

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