## **Original Research Article**

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# Prevalence of extra pulmonary tuberculosis among patients registered under a district TB centre in North East India

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#### **ABSTRACT**

**Background:** Worldwide, tuberculosis (TB) is one of the top 10 causes of death and the leading cause from a single infectious agent (above human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS)). Extra pulmonary tuberculosis (EPTB) is TB outside of the lungs. In general, EPTB is more difficult to diagnose than pulmonary TB (PTB), invasive methods are often needed to obtain samples for microbiological and histological testing and in some locations treatment should be extended to avoid the appearance of relapses. The purpose of this study was to find out the prevalence of EPTB among all registered TB patients in a capital city in northeast India.

**Methods:** A retrospective study conducted at district TB Centre (Aizawl) from data collected from patient's treatment cards. The study period was 1 year from January 2019 to December 2019. All the registered TB patients except those registered under the programmatic management of drug-resistant TB (PMDT) were included in the study and patients registered under PMDT were excluded. All the analysis was performed using simple percentage method.

**Results:** Out of 1502 patients, 48.8% were PTB and 51.2% were EPTB. Male comprised of 54.3% and 45.7% were Female. Majority of them (87.5%) were new patients and 10.91% were recurrent cases. History of contacts was given by 8.25% of the patients. Of the 769 EPTB cases, pleural effusion was the most common finding (350) followed by lymph nodes TB (196). Among PTB, majority of them (72.71%) were microbiologically confirmed whereas majority of the patients (84.66%) were clinically diagnosed in EPTB patients.

**Conclusions:** This study found a high prevalence of HIV-TB co-infections, recurrent TB infection and extra pulmonary tuberculosis.

Keywords: Tuberculosis, Pulmonary, Extra pulmonary, Recurrent, HIV, Diabetes

#### INTRODUCTION

Worldwide, tuberculosis (TB) is one of the top 10 causes of death and the leading cause from a single infectious agent (above human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS)). India has the highest TB burden in the world having an estimated incidence of over 26.9 lakh cases in 2019. Pulmonary tuberculosis is the most common type of tuberculosis. Extra pulmonary tuberculosis (EPTB) is TB outside of the lungs. In general, EPTB is more difficult to diagnose than

PTB, invasive methods are often needed to obtain samples for microbiological and histological testing and in some locations treatment should be extended to avoid the appearance of relapses.<sup>3</sup>

#### **Objective**

The purpose of this study was to find out the prevalence of extra pulmonary TB among all registered TB patients in a capital city in northeast India.

#### **METHODS**

This study was a retrospective study conducted at District TB Centre (Aizawl) from data collected from patient's treatment cards. The study period was 1 year from January 2019 to December 2019. All the registered TB patients except those registered under the programmatic management of drug-resistant TB (PMDT) were included in the study and patients registered under PMDT were excluded. All the analysis was performed using simple percentage method.

#### **RESULTS**

Out of 1502 patients, 733 (48.8%) were pulmonary tuberculosis and 769 (51.2%) were extra pulmonary tuberculosis as shown in Figure 1.

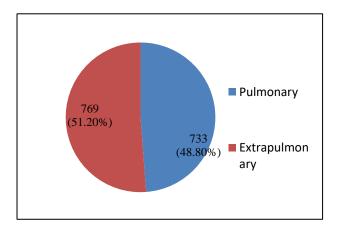


Figure 1: Type of infection.

Higher number of cases- 54.3% (815) were male and 45.7% (687) were female as shown in figure 2.

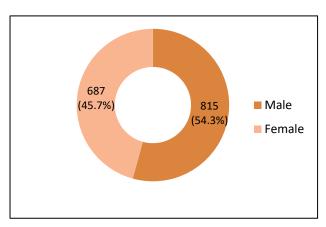


Figure 2: Gender wise distribution.

Majority of them (87.5%) i.e.,1315 were new patients, 164 of them were recurrent cases, 19 of them were lost to follow up and 4 of them were treatment after failure as shown in figure 3.

Maximum number of patients, i.e. 88.48% (1329) were non-diabetic and 81 of them were diabetic and 92 diabetic status was unknown as shown in figure 4.

119 patients (7.9%) were HIV positive whereas majority, i.e., 1334 were HIV negative as shown in figure 5.

History of contacts was seen in 124 (8.25%) only. Of the 769 EPTB cases, 350 were pleural effusion, 196 were lymph node TB, 95 were abdominal koch's, 33 were Tubercular meningitis (TBM) and 29 were diagnosed as Potts spine as shown in Table 1.

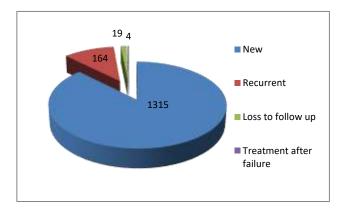


Figure 3: Types of patients.

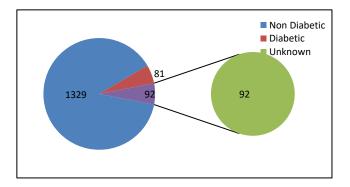


Figure 4: Diabetes status.

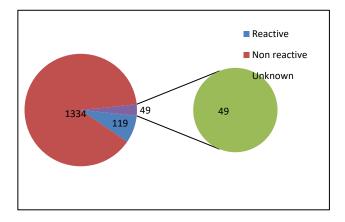


Figure 5: HIV status.

Out of 733 pulmonary TB, majority of them (72.71%) were microbiologically confirmed whereas majority of the patients (84.66%) were clinically diagnosed in EPTB patients as shown in Table 2.

**Table 1: Site of infection.** 

Sites of infection	Number of patients (%)
Pleura	350 (45.51)
Lymph nodes	196 (25.49)
Abdomen	95 (12.35)
TBM + Tuberculoma	33+1=34 (4.42)
Spine	29 (3.77)
Disseminated	21 (2.73)
Skin	17 (2.21)
Genitourinary	11 (1.43)
Superficial abscess	10 (1.30)
Knee + Hip joints	3+2=5 (0.65)
Pericardial effusion	1 (0.13)

Table 2: Mode of diagnosis.

Diagnosis	PTB (%)	<b>EPTB</b> (%)
Microbiologically confirmed	533 (72.71)	118 (15.34)
Clinically diagnosed	200 (27.29)	651 (84.66)

#### **DISCUSSION**

This study was conducted to have an insight on the prevalence of extra pulmonary tuberculosis in Mizoram and the common sites affected. We found that EPTB was more common than pulmonary tuberculosis which is in contrast with a study conducted by Sama et al and Arora et al.4,5 There is a difference in EPTB sites involvement shown by different studies, the common sites involved are pleura, lymph nodes, bones, joints, meninges, bowel and or peritoneum, urogenital tract and skin. In this study, pleural TB was the most common EPTB seen which is in accordance with a study conducted by Chander et al and Manjareeka et al.<sup>6,7</sup> about 10-50% of EPTB patients have concomitant pulmonary involvement. Therefore, all suspected cases of EPTB should be assessed for concomitant PTB to determine whether the case is infectious and to assist with diagnosis.8

Recurrent TB patients are defined as patients who have previously been treated for TB, were declared cured or treatment completed at the end of their most recent course of treatment, and are now diagnosed with a recurrent episode of TB (either a true relapse due to reactivation of the disease or a new episode of TB caused by reinfection). In this study, recurrent cases comprised of 10.9%, which is very alarming. Patients classified as treatment completed had significantly higher smear positive recurrence than those classified as cured. Recurrent TB patients also had a higher likelihood of having an

unfavorable treatment outcome compared with new TB cases.<sup>11</sup>

In this study, male patients were more than female patients. A study by Salim et al in Bangladesh also found male predominance among TB patients. <sup>12</sup> Diabetes was found in 5.39% of all the patients. In a study conducted by Pande et al, the overall prevalence of diabetes mellitus amongst hospitalized TB patients was 25.2%. <sup>13</sup> Diabetes triples the risk of developing TB and is a common co-morbidity in people with TB. It can worsen the clinical course of TB, and TB can worsen glycemic control in people with diabetes. Strategies are needed to ensure that optimal care is provided with both diseases. <sup>14</sup> In our study, diabetes status was unknown in 92 patients which needs to be checked as all the TB patients should get screening for diabetes as well.

The prevalence of HIV-TB co-infection was 7.9% (119). Manjareeka et al found HIV-TB co-infection prevalence to be 12.3% in their study.<sup>7</sup> The risk of developing TB is estimated to be between 16-27 times greater in people living with HIV than among those without HIV infection. Almost 60% (57%) of TB cases among people living with HIV were not diagnosed or treated, resulting in 390,000 tuberculosis-related deaths among people living with HIV in 2015.<sup>15</sup> At 2.04%, Mizoram currently recorded the highest HIV prevalence state in the country and TB being the most common opportunistic infections among HIV infected patients in India as found by several studies, a robust screening system is the need of the hour.

Among pulmonary TB, majority of them were microbiologically confirmed and among EPTB patients, only 15.34% were microbiologically confirmed. The most common diagnostic tools used for EPTB are chest X rays, body fluid analysis, fine needle aspiration cytology, ultrasonography, magnetic resonance imaging and histopathological examination of biopsy specimen. EPTB is difficult to diagnose due to their difficult to access site of infection, their variable clinical presentation and lack of laboratory facilities in resource limited settings. They often require longer duration of treatment. Clinical diagnosis may lead to diagnostic delays, misdiagnosis, resistant strains and increased mortality. Now that MDR TB is also rising in the state, every patient should be subjected for universal drug susceptibility testing (UDST).

#### **CONCLUSION**

This study found a high prevalence of HIV-TB coinfections, recurrent TB infection and extra-pulmonary tuberculosis. The high EPTB in our findings could partly be contributed by lack of awareness that many of EPTB involvement exist along with PTB. Unfortunately, the laboratory infrastructure is still relatively weak and culture and drug sensitivity testing laboratory are still not functional in every state including our state even though National TB Elimination Program is giving priority to expand and strengthen laboratory network in the country and establishment of it is underway. Despite the limitations in laboratory network system, there should be a proper system to utilize well whatever resources we have including microscopy and cartridge- based nucleic acid amplification test (CBNAAT). Screening of HIV and DM should also be advised for every patients before starting TB treatment so that if co-infection and/or co-morbidities exist, early and accurate treatment could be given which will contribute greatly on the timely recovery of these co-infected patients.

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