MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.59218/makrjms.2023.855.860

OPEN ACCESS

Key Words
Tuberculosis, extra pulmonary tuberculosis, lymph node tuberculosis, pleural tuberculosis

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Received: 27 July 2023
Accepted: 8 August 2023
Published: 11 August 2023

Citation: M. Natraj, P.P. Mohammed Mustafa, S. Vignesh and Nisha Parveen, 2023. Clinico: Epidemiological Profile of Patients with Extra Pulmonary Tuberculosis in Andaman and Nicobar Islands. Res. J. Med. Sci., 17: 855-860, doi: 10.59218/makrjms.2023.855.860

Clinico: Epidemiological Profile of Patients with Extra Pulmonary Tuberculosis in Andaman and Nicobar Islands

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ABSTRACT
Tuberculosis remains a major global health problem with India having maximum number of cases. Although extra pulmonary cases are less frequent than pulmonary tuberculosis, it accounts for significant proportion of cases worldwide. Andaman and Nicobar Islands, a Union Territory of India is a tropical Island located 1200 kilometres from Mainland India. On account of its specific geographic location that may have an impact on the clinical and epidemiological features. The objective of this study was to examine the clinico epidemiological profile of EPTB cases diagnosed in Tertiary Hospital, tropical Islands, by reviewing records. This is retrospective observational record based study of patients with EPTB treated at the Department of chest and TB and aman and Nicobar Islands institute of medical sciences, Port Blair from 1st August 2019 till 31st August 2022. Total of 786 patients had EPTB involvement. Out of which maximum number of patients belonged to 21-30 age group (25%) with majority of the patients being female (53%). 98% of the EPTB patients were drug sensitive among which 11% were diabetic and 1% were retro positive. Majority of EPTB cases were LN (41%) followed by pleural involvement (28%). Through this study we found that majority of the patients were female, lymph node tuberculosis was the most common form of extra pulmonary tuberculosis with maximum number of patients being in the age group between 21-30 years, the most productive age group.

INTRODUCTION

Tuberculosis is a communicable disease that is a major cause of ill health and death worldwide. Until COVID 19 pandemic, TB was the leading cause of death from a single infective agent ranking above HIV[1]. It is one of the main infectious causes of death in India. India has the highest TB burden worldwide[2]. As per the Global TB Report 2021, the estimated incidence of all forms of TB in India for the year 2020 was 188 per 100,000 populations (129-257 per 100,000 population). The total number of incident TB patients (new and relapse) notified during 2021 was 19, 33,381 which was 19% higher than that of 2020 (16, 28,161)[3]. TB is a multi-system disorder having wide variety of presentation. There are two types of clinical manifestations, pulmonary tuberculosis (PTB) and extra pulmonary tuberculosis (EPTB). With pulmonary tuberculosis considered being the most common form of presentation variety of other organs can also get involved such as lymph node, pleura, abdomen, genitourinary tract, brain, skin, breast, etc[4]. Compared to PTB, data available on EPTB is very limited probably because of lack of studies about EPTB or because EPTB cases are wrongly classified as PTB. In fact EPTB contributed to significant proportion of TB cases worldwide. Many studies have found that 20-53% of all TB cases are EPTB[5]. In India percentage of EPTB in tertiary care centers varies between 30 and 53% while the percentage estimated by the national control program in HIV negative adults is between 15 and 20%[6]. This implies that tertiary care centers like medical colleges cater for a larger and variety of EPTB cases by also providing patients with excellent and advanced diagnostic facilities. This is the need of the hour as HIV co infection, diabetics, multi-drug resistant tuberculosis have made an EPTB a major public health issue[7].

MATERIALS AND METHODS

Aim: Aim of the study is to study the clinico epidemiological profile of patients with extra pulmonary tuberculosis along with their anatomical site involvement.

Study design: This is a retrospective observational record based study of patients diagnosed with EPTB belongs to all age groups.

Study area: This study was conducted at Department of Chest and TB and aman and Nicobar Islands Institute of Medical Sciences (ANIIMS), Port Blair which is the tertiary center for South Andaman.

Study period: Data for this study was obtained between from 1st August 2019 till 31 August 2022.

Study population: All the patients diagnosed with extra pulmonary tuberculosis within the above mentioned time period was included in this study. Total of 786 patients were included who were diagnosed with EPTB.

Source of data: Data for this study was obtained from the medical records department, lab registers and from NTEP, South Andaman.

Inclusion criteria: All patients diagnosed with extra pulmonary tuberculosis.

Exclusion criteria:

- Patients having pulmonary tuberculosis
- Patients having pulmonary tuberculosis with extra pulmonary tuberculosis

Methods: The study includes all patients who has come to various departments in ANIIMS during the above mentioned study period and were diagnosed with EPTB. Diagnosis of EPTB was based on histopathology report, FNAC, radiological evidences like X ray, CT imaging, ultrasound imaging, MRI imaging, fluid analysis, one culture positive specimen from extra pulmonary site, positive gene X pert sample from the organ involved or clinical evidence strongly suggestive of EPTB. After the diagnosis was established, patients were registered under DOTS. Similarly patients belonging to other states, districts and villages were transferred to their respective DOTS center. Data analysis were done using Microsoft excel 2010 and expressed in percentages.

At first, datas of all the patients who were diagnosed with EPTB during the study period were collected and analyzed. Total of 786 cases were included in the study. Clinical and epidemiological data of the patients were obtained from medical records department, lab registers and from NTEP, South Andaman. Study variables included age (<10, 11-20, 21-30, 31-40, 41-50, 51-60, >60), sex (male and female), diabetic or non-diabetics, drug sensitive or resistant, retro positive or negative, site of involvement like lymph node, pleura, abdomen, bone, GUTB, eye, breast, skin, etc.

Ethical consideration: The Institute Ethical committee clearance was taken dated 09/12/2022, F. No. 1: 268/ANIIMS/ISRC/2022s.

RESULTS

Age: Out of 786 patients, majority of the patients belonged to the age group 21-30 years (25%) followed by 31-40 years (19%) and 41-50 years (19%). Youngest patient was 2 years old and the oldest patient was 87 years old (Table 1 and Fig. 1).

Table 1: Age with anatomical site

	<10		11-20		21-30		31-40		41-50		51-60		>60		
Characteristics	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Total
Lymph node	12	5	15	38	29	72	21	44	28	28	7	13	6	5	323
Pleura	0	3	15	10	24	20	20	16	27	19	28	14	23	6	225
Abdomen	0	3	8	6	7	17	14	8	7	11	11	5	9	5	111
Bone	1	0	1	2	1	5	4	2	8	6	5	3	7	1	46
GUTB	0	0	0	0	4	4	1	8	2	4	0	0	0	0	23
Eye	0	0	1	0	2	1	3	0	1	3	1	2	1	1	16
Skin	0	0	0	2	0	3	0	1	1	1	1	2	1	1	13
Brain	1	0	1	2	1	0	0	2	1	0	0	0	1	1	10
Heart	0	0	0	0	0	1	3	0	0	0	1	1	1	2	9
Breast	0	0	0	2	0	3	0	2	0	0	0	0	0	0	7
Chest wall	1	0	0	0	0	0	0	0	0	0	1	0	1	0	3

M: Male and F: Female

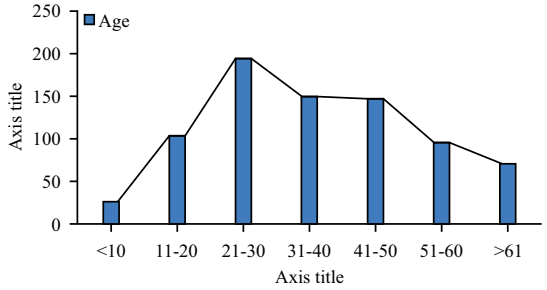

Fig. 1: Age distribution of patients

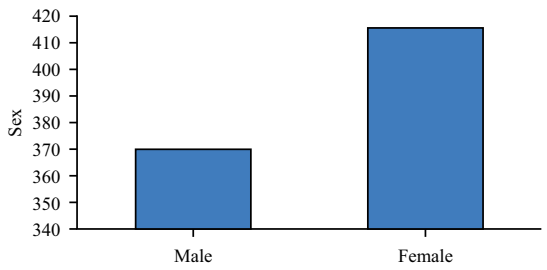

Fig. 2: Sex distribution of patients

Sex: Out of 786 EPTB patients females were 53% (416 patients) while male were 47% (370 patients) (Fig. 2).

Diabetic: Out of 786 patients 11% (86 patients) were diabetic while 89% (700 patients) were non diabetic (Fig. 3).

HIV status: Out of 786 patients all were screened for HIV out of which 1% (7 patients) were HIV positive while the remaining 99% (779 patients) patients were HIV negative (Fig. 4).

Drug resistance: Out of 786 patients only 2% (13 patients) were found to be drug resistant, while the remaining 98% (773 patients) were drug sensitive (Fig. 5).

Anatomical site involvement: Out of 786 patients, 41% of cases had lymph node TB (323 patients), 28% of the cases had pleural involvement (225 patients), 14% of the cases had abdominal involvement (111 patients), 6% of the cases had bone (spine, elbow, hip, knee) involvement (46 patients), 3% of the cases had GUTB

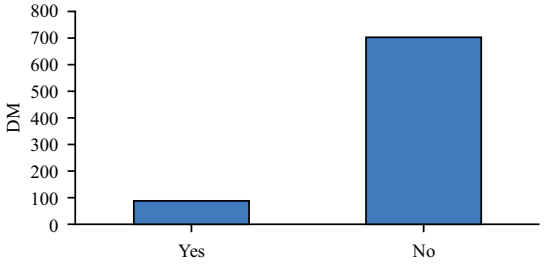

Fig. 3: Diabetic patients

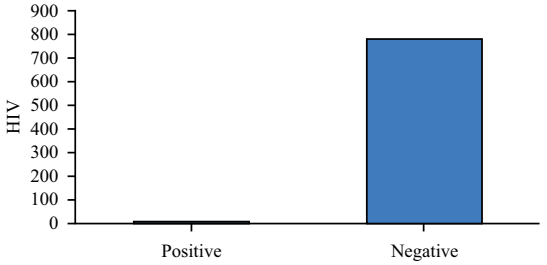

Fig. 4: HIV status of patients

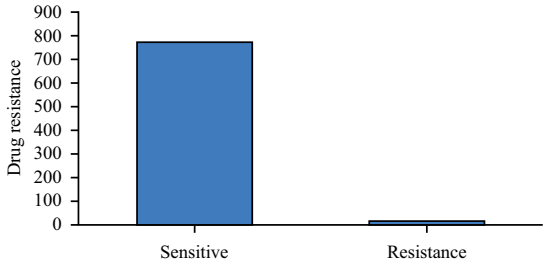

Fig. 5: Drug resistance

involvement (23 patients), 2% of the cases had eye involvement (16 patients), 2% of the cases had skin involvement (13 patients), 1% of the case had brain involvement (10 patients) 1% of the case had breast involvement (7 patients), 1% case had heart involvement (9 patients), 1% of the case had chest wall involvement (3 patients) (Fig. 6).

DISCUSSIONS

EPTB refers to the TB involving organs other than lungs e.g., pleura, lymph node, abdomen, genitourinary tract, skin, joints and bones or meninges. Diagnosis of

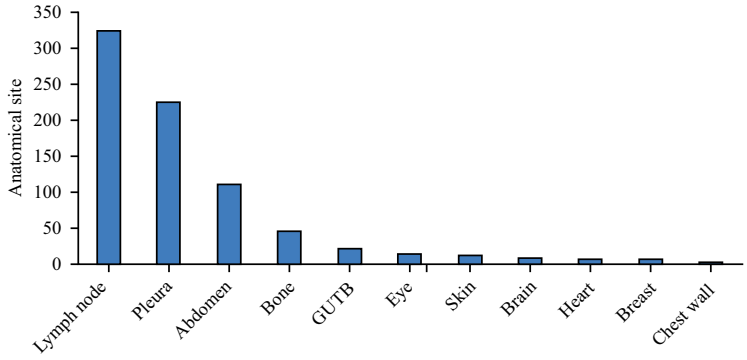

Fig. 6: Anatomical site involvement

EPTB was based on fine needle aspiration cytology, biochemical analysis of the CSF/pleural/pericardium/ ascetic fluids, histopathological examination from excision biopsy, or even strong clinical suspicion[2]. EPTB constitutes about 15-20% of TB cases in immunocompetent people. But in immunocompromised individuals with end organ diseases, cancers, COPD, HIV, diabetics, post organ transplant, malnutrition its incidence increases[8]. In HIV positive patients EPTB accounts for more than 50%[9].

Out of 786 patients included in our study majority of them were females 53% (416 patients) while male were 47% (370 patients). Globally also women were found to be more at risk of developing extra pulmonary tuberculosis[10-12]. Few studies from Ethiopia, Nigeria and Turkey, even from India has also found to have male predominance[12-14].

Although EPTB was seen in all age group majority of the patients in our study were between the age group of 21-30 years (25%) followed by 31-40 (19%) and 41-50 years (19%). This constitutes of young individuals and working group in both males and females. This is the reproductive and working group highlighting the socio economic burden of EPTB on Indian economy. Various studies from India, Ethiopia, Pakistan, Saudi Arabia, USA, Nepal, etc. also found the similar trend[6,11,13,15-18].

The prevalence of diabetes found in our study was 11 % (86 patients) while 89% (700 patients) were non diabetic out of 786 patients. This is similar to the data found in other studies ranging between 5.4-12% with diabetics increasing the risk of TB by three times. Therefore, routine of diabetes is recommended to achieve the better clinical outcome[8].

All these 786 patients were screened for HIV, out of which 1% (7 patients) were HIV positive while the remaining 99% (779 patients) patients were HIV negative. Lower number of HIV cases in our study is because of the fact that our union territory is known to have moderate prevalence of HIV infection.

Around the world lymph node TB continues to be the most common form of extra pulmonary tuberculosis with cervical group of lymph nodes being the most common site to be involved[6,13,15,19]. In our study also we found the similar pattern with lymph node TB (40.71%) being the most common. Similar pattern of distribution was also found in other studies done in Ethiopia, Canada, Turkey, Nepal and other Indian states[13,17,20-22]. Second most common site of involvement was pleural cavity (28.37%) followed by abdomen, bones and joints, GUTB, eye, skin, brain, heart, breast, miliary and chest wall in decreasing order.

Out of 786 patients only 2% (13 patients) were found to be drug resistant, while the remaining 98% (773 patients) were drug sensitive. Since our study was respective study data on number of patients who underwent gene X pert was not available.

A number of social and environmental makes few people more susceptible to tuberculosis than others by reducing their immunity. This reduction in immunity level can cause significant impact on the incidence of TB. Globally most common risk factor is HIV but there are other risk factors like smoking, diabetics, alcohol, malnutrition, cancer and underlying diseases like COPD[23]. Ours being a retrospective study this aspect could not be studied due to the non-availability of the data.

CONCLUSION

Extra pulmonary tuberculosis remains a significant health care problem, especially in TB endemic countries like India. Considering the fact that majority of the patients belong to the sexually and economically productive age group this can affect the growth of the country. This prompts early diagnosis and quick initiation of treatment of EPTB. Latest diagnostic modalities like gene X pert should be used in all EPTB cases as it is more sensitive, less time consuming and also help us to identify resistant cases. In conclusion our study helps to extend the knowledge of EPTB especially in the remotest part of India.

LIMITATIONS OF THE STUDY

Since our study was a record based study we could not include the data on risk factors like contact history with tuberculosis, alcohol, smoking, nutritional status, vitamin D3 status, associated respiratory illness, prior TB history, number of cases that was subjected to gene X pert etc. Secondly since it's a retrospective study, it cannot be generalized to the community but it gives valuable information on the trend of EPTB in South Andaman and aman and Nicobar Islands. Another major limitations of our study is that treatment outcome and response to the therapy could not be assessed since the cases enrolled in this tertiary care are transferred out to neighboring districts like North and Middle Andaman and Nicobar Islands for the continuation of the treatment.

Novelty of the study:

- This study will provide the database on the clinico epidemiological profile of EPTB cases in Andaman and Nicobar Islands
- This study will also add up to the existing knowledge of EPTB especially from one of the remotest part of India
- This study has concluded that majority of the patients were females, belonging to the age group between 21-30 years of age, non-diabetic, retro negative, drug sensitive, with lymph node being the most common site of involvement
- This study also found that in spite of its specific geographic location; clinico epidemiological trend of EPTB cases in Andaman and Nicobar Islands is very similar to other studies done in mainland India

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