



PROFILE OF TUBERCULOSIS IN CHILDREN (0-18 YEARS): A HOSPITAL BASED STUDY FROM MEGHALAYA, INDIA

Paediatrics

Chinchu Rajan*	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India. *Corresponding Author
Santanu Deb	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.
Palash Ranjan Gogoi	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.
Prasenjit Paul	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.
Sabrina Yesmin	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.
Lima Sangla	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.
Pramod Paharia	Department of Paediatrics, Nazareth Hospital, Shillong, Meghalaya, India.

ABSTRACT

Objective: To record the various demographic details and presentation of all types of tuberculosis presenting in children (0-18 years). **Design:** Prospective observational **Setting:** Department of Pediatrics & Neonatology, Nazareth Hospital, Shillong, Meghalaya. **Participants:** All children below 18 completed years of age diagnosed with any form of tuberculosis. **Main outcome measures:** Various demographic details, clinical presentations, and relevant investigations of all types of tuberculosis. **Results:** 31 children and adolescents with tuberculosis were included in the study. Among 31 patients, most (87%) belonged to the 12 to 18 years of age group. Females (51.61%) were more common. Most of the patients belonged to the Class V socioeconomic class and lived in overcrowded rooms (54.8%). Most of them were malnourished (51.6%). Second hand smoking was present in 70 % of patients. History of contact with pulmonary TB cases was seen in only 38.7% of patients. BCG scar was present in 38.7% of patients. Fever (54.8%) was the most common symptom followed by cough (51.6%) and weight loss (41.9%). The most common type of TB was extrapulmonary TB (45.16%) followed by pulmonary TB (35.48%) and disseminated TB (19.35%). Microbiologically confirmed cases (64.52%) were more common than clinically diagnosed cases (35.48%). Smear positivity was seen in only 19.3% of patients. Chest X-ray suggestive of TB was present in 45.1% of patients. CBNAAT positivity was seen in 45.1% of patients. **Conclusions:** The commonest form of tuberculosis was extrapulmonary TB followed by Pulmonary and disseminated tuberculosis in our study

KEYWORDS

Children, Tuberculosis, clinical profile, pulmonary Tuberculosis, extrapulmonary Tuberculosis

INTRODUCTION

TB is one of the top 10 causes of death, globally. It is the leading cause of death from a single infectious agent (above HIV/AIDS). Each year, millions of people fall sick due to TB. As per the 2018 estimate, around 1.3 million HIV-negative people died and around 1.6 million HIV-positive people died because of TB.(1)

In 2018 around 10.0 million people were affected with TB, out of which 5.8 million were male, 3.2 million were female and the rest 1.0 million were children. Tuberculosis cases were reported in all countries and people of all age groups were affected. Among the diseased, around 90% of people who were affected with TB were adults (aged ≥ 15 years). Around 9% of people who were affected with TB were HIV positive. Two third of people affected with TB are from eight countries. India (27%), China (9%), Indonesia (8%), the Philippines (6%), Pakistan (5%), Nigeria (4%), Bangladesh (4%), and South Africa (3%) are the leading eight countries. As per WHO's report, these are high TB burden countries. These countries accounted for 87% of the world's TB cases. (2)

METHODS

This study was a hospital-based prospective observational study conducted in the Department of Pediatrics and Neonatology, Nazareth Hospital, Meghalaya from 15th October 2020 to 14th October 2021. Thirty-one children below 18 years of age diagnosed to have tuberculosis were enrolled in the study after obtaining informed consent. The data of patients were collected on a structured proforma. The period of study inadvertently coincided with the peak of SARS CoV2 pandemic when the footfalls in Pediatric OPD and IPD significantly declined.

RESULTS

Thirty-one children diagnosed to have tuberculosis were enrolled into the present study. Most of the patients were above 12 years of age 87.1% (n=27). Female patients [51.61% (n=16)] were more common. The majority of the patients were living in rural area 54.84% (n=17) and in kutch house 58.06% (n=18). Most of the patients belonged to socioeconomic class V [38.71% (n=12)](3). The majority belong to

Khasi community 64.52% (n=20).

Table 1: Demographic Variables In The Present Study

Variables	Number Of Cases	Percentage (%)
AGE	< 6 years of age	3.23
	6 to 12 years of age	9.68
	> 12 years of age	87.10
GENDER	Female	51.61
	Male	48.39
PLACE OF RESIDENCE	Rural	54.84
	Urban	45.16
SOCIO ECONOMIC CLASS	Class I	3.23
	Class II	12.90
	Class III	22.58
	Class IV	22.58
	Class V	38.71
COMMUNITY	Khasi	64.52
	Jaintia	19.35
	Bengali	6.45
	Bihari	9.68

Table 2: Distribution Of All Children In The Study Population Based On The Type Of TB

Types Of TB	Number Of Cases	Percentage (%)
Types Of TB On The Basis Of Site	Pulmonary TB	35.48
	Extra pulmonary TB	45.16
	Disseminated TB	19.35
Type Of TB On The Basis Of Diagnosis	Microbiologically confirmed	64.52
	Clinically diagnosed	35.48

Table 3: Spectrum Of Types Of TB

	Disseminated TB	TOTAL
Pulmonary TB	11	15

Extra pulmonary TB			
1. Lymph node	4	2	6
2. Pleural effusion	4	2	6
3. CNS	2	3	5
4. Abdominal	4	1	5

Most common type of TB among study population was extra pulmonary TB 45.16% (n=14). Most of them were microbiologically confirmed cases 64.52% (n=20). Lymph node and pleural effusion were common type of TB among extrapulmonary TB. All the patients among pulmonary TB were above 12 years of age 100% (n=1). Most of the patients with pulmonary TB 54.55% (n=6) and disseminated TB 66.67% (n=4) were females. Most of the patients with extra pulmonary TB were males 57.14% (n=8). Most of the patients with pulmonary TB 36.36% (n=4) and extra pulmonary TB 42.86% (n=6) belong to class V (BG Prasad)(3). Most of the patients in the study population with extrapulmonary TB 64.29% (n=9) and disseminated TB 66.67% (n=4) were living in kutcha houses. Most of the patients with disseminated TB were malnourished 83.33% (n=5). Most of the patients with pulmonary TB were living in overcrowded houses 81.82% (n=9).

In this present study, most of the patients with pulmonary TB (72.73%, n=8) and extra pulmonary TB (78.5%, n=11) were exposed to second hand smoking. (p = 0.01). Most of the patients with pulmonary TB were living in overcrowded conditions (81.82%, n=9)(4). (p = 0.07).

The commonest symptoms in the study population were fever (54.8%, n=17), cough (51.6%, n=16), and weight loss (41.9%, n=13). The most common symptom in patients with pulmonary TB was cough 90.9% (n=10), followed by fever 63.6% (n=7). The most common symptom in extrapulmonary TB was fever 42.9% (n=6), followed by cough, weight loss, and lymphadenopathy 28.6% (n=4). Fever 66.7% (n=4) was the most common symptom in patients with disseminated TB. Most of the patients in the study population presented with fever 54.8% (n=17), cough 51.6% (n=16), and weight loss 41.9% (n=13).

A history of contact with a pulmonary TB case was present in only 12 (38.7%) cases of the study population. BCG scar was present in only 12 patients (38.7%) in the study population. The majority (n=19, 61.2%) were not vaccinated with BCG.

Chest X-rays of most of the patients with pulmonary TB 72.72% (n=8, p=0.001) were suggestive of TB.

Microbiologically confirmed	
Smear positivity	6
CBNAAT positive	12
Culture Positive	2
Clinically diagnosed	11

Sputum smear positivity was seen in most of the patients 54.5% (n=6) with pulmonary TB. Sputum smear positivity was absent in all patients with extrapulmonary TB and disseminated TB (p = 0.001). CBNAAT was positive in most of the patients with pulmonary TB 63.6% (n=7) and disseminated TB 83.3% (n=5) p=0.001.

DISCUSSION

In this prospective study, we assessed demographic details, clinical profiles and laboratory investigations in thirty-one children who were diagnosed to have TB.

We evaluated a few risk factors to develop TB like secondhand smoking, malnutrition, lower socioeconomic status, and overcrowding. In this study, most of the patients were exposed to second-hand smoking. More than half of the patients were malnourished. Most of the patients were from socioeconomic class V and lived in kutcha houses. 54.8% of patients were living in overcrowded rooms. These findings were similar to other studies conducted in India.(5)(6)

The commonest symptoms that were present in the cases in our study were fever, cough, and weight loss in that order. These are also the symptoms of presumptive TB (National Tuberculosis Elimination Program)(7). The commonest form of tuberculosis was extrapulmonary TB followed by Pulmonary and disseminated tuberculosis in our study(8)(9).

The study was conducted in a tertiary, referral, postgraduate teaching hospital which treats referred cases. This may be the reason for more EP TB cases in the study population which were difficult to diagnose in peripheral units of Meghalaya. The same reason explains the good rate

of microbiologically proven cases in the study population.

Amongst the study population, BCG scar was present in about a third of the patients,(10) and this proportion was worst in the extrapulmonary TB group.

Limitations of our study -

1. Small sample size as the study was conducted during the peak period of SARS COVID-19 pandemic.
2. Single centered study
3. Patients studied were not followed up

REFERENCES

1. Geneva: World Health Organization; 2018. WHO Global Tuberculosis Report 2018.
2. World Health Organization. Global Tuberculosis Report. WHO.s.l: WHO 2019 [Internet]. 2019. 283 p. Available from: <https://www.who.int/publications/i/item/9789241565714>
3. Debnath DJ, Kakkar R. Modified bg prasad socio-economic classification, updated – 2020. Indian J Community Heal. 2020;32(1):124–5.
4. Park K. Park's textbook of preventive and social medicine. 26th, 2021st ed. Banarsidas Bhanot Publishers; 2021.
5. G. A, G. M. Clinical profile of children with tuberculosis from a semi urban referral centre in South India: a prospective observational study. Int J Contemp Pediatr. 2019;6(4):1450.
6. Jain SK, Ordóñez A, Kinikar A, Gupta N, Thakar M, Mave V, et al. Pediatric tuberculosis in young children in India: A prospective study. Biomed Res Int. 2013;2013.
7. Paediatric TB management guidelines 2022 Shortc. 2022. p. 20.
8. Pereira NMD. Clinical profile and outcome of children with tuberculosis in a tertiary care hospital in Mumbai, India. Sri Lanka J Child Heal. 2019;48(4):338–44.
9. Muley P, Odedara T, Memon R, Sethi A, Gandhi D. Clinical Profile of Childhood Tuberculosis in a Tertiary Care Rural Hospital. Int Arch Integr Med. 2017;4(6):109–24.
10. Shrestha S, RP B, A S, S U, Rijilal P. Clinical profile of tuberculosis in children. Nepal Med Coll J. 2011;13(2):119–22.