



SPECTRUM OF TUBERCULOSIS PRESENTATION IN PAEDIATRICS AGE GROUP IN A TERTIARY CARE INSTITUTE

Community Medicine

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ABSTRACT

This cross-sectional descriptive study was conducted using the convenience sampling technique in which records of 122 patients (females: 65, 53.02%; males: 57, 46.8%) who were admitted in the Pediatrics ward in the tertiary care centre in metropolitan city in Western India during the year 2020 & 2021 was analyzed maintaining the confidentiality of the patients. Fever and cough were the major symptoms observed (89.4% and 84.3%). 111(91%) received BCG immunization. Mantoux test was positive in 82% case while history of contact with a confirmed case of TB was present in 30(24.6%) cases. X-ray chest findings were suggestive of TB in 92.6% cases, Pulmonary Tb was observed in age group < 6 years, while extra-pulmonary Tb was observed in age group > 6 years.

KEYWORDS

Pulmonary TB , Extra-Pulmonary TB

INTRODUCTION

Tuberculosis in young children, a vulnerable population differs from adults in many ways like atypical radiological features, non-specific symptoms, difficulty in obtaining samples, lower bacillary load, absence of a gold standard test for diagnosis and by being commonly extra pulmonary or disseminated at its presentation.^(1,2) Tuberculosis can mimic common diseases like pneumonia, generalized bacterial or viral infections, malnutrition and HIV.⁽³⁾

The incidence of TB in India in 2015 was estimated to be 2,840,000.⁽⁴⁾ According to the estimates, childhood TB constitutes 10-20% of all TB in high burden countries like India and the annual risk of tuberculosis in children is around 2-5%.^(5,6) Drug-resistant (DR) strains of Mycobacterium tuberculosis are also highly prevalent among the paediatric population. The death rate due to tuberculosis in children is nearly 8-20%.^(6,7,8)

Tuberculosis among the pediatric population is underestimated in developing countries like India due to lack of ideal diagnostic methods. In addition to this, the hurdles in diagnosing a case of paediatric tuberculosis include very low bacillary count,^(9,10) atypical clinical presentations⁽¹¹⁾ difficulty in obtaining specimens and amount of sample collected is often sparse in children.

Pediatric Tuberculosis (TB among the population aged less than 15 years) is among the 10 major causes of mortality among children globally. An estimated 10 lakh children became ill with TB and 2,50,000 children died of TB in 2017 (including children with HIV associated TB). Though MDR-TB and XDRTB is documented among paediatric age group, there are no estimates of overall burden.

In the national programs for control of tuberculosis also, paediatric population remains neglected. This leads to increased morbidity and mortality among children. Children in developing countries have latent tuberculosis most commonly and its progression to active tuberculosis depends on various factors. Age, nutrition, HIV status, contact with a known case of tuberculosis, diseases like measles and pertussis determine the progression of tuberculosis in children.⁽¹²⁾ The recent advances in diagnosis and newer drug formulations have not yet reached the paediatric population.⁽¹³⁾

Pulmonary tuberculosis and intra-thoracic lymphadenopathy constitutes 60%-80% of the paediatric cases. Among the extrapulmonary tuberculosis, lymphadenopathy is the most common (67%), followed by central nervous system involvement (13%), pleural (6%), disseminated (5%) and skeletal (4%) TB. Disseminated (miliary) disease and TB meningitis are commonly seen in very young children and/or HIV-infected children.⁽¹⁴⁾

MATERIALS AND METHODS

This cross-sectional record based hospital study was conducted in which records of patients diagnosed with tuberculosis admitted in paediatric ward during year 2020 & 2021 in a Tertiary Care Centre in a metropolitan city in Western India using convenient sampling method was analysed maintaining the confidentiality of the patients. All the patients aged 1- 12 yrs diagnosed with tuberculosis were included. The data were entered in Microsoft Excel (Microsoft Corporation, Redmond, WA, USA) and were statistically analyzed using EpiInfo Version 7.0 (public domain software package from the Centers for Disease Control and Prevention, Atlanta, GA, USA). Continuous data were presented as Mean and Standard Deviation (SD). The 95% Confidence interval (CI) was estimated and stated as: [Mean-(1.96)*Standard Error] - [Mean+(1.96)*Standard Error].

RESULTS AND DISCUSSION

In all, there were 122 participants (65 females: 53.2% and 57 males: 46.8%).

Socio-Demographic:

In this study , majority of patients (36,29.5%) belong to age group 7-9 yrs while 32, 26.8% belong to age group more the 10 yrs. (27, 22.1%) belong to age group 0-3yrs & 4-6 yrs each. 58, 47.5% were urban inhabitant while 64(52.4%) were rural inhabitant. (Table 1)

Clinical profile

Fever -108(89.3%) was most presenting symptoms while cough 102, (84.3%), convulsions 4(3.3%) & lymphadenopathy 4(3.3%) were the other presenting symptoms documented. (Table 2.) 111(91%) received BCG vaccination while 11(9%) were non vaccinated with BCG. X Ray changes were reported in 113(92.6%) patients while 9(7.4%) patients did not have any signs on XRay. (Table 3). 84(68.9%) reported as pulmonary TB cases while 38(31.1%) were extrapulmonary TB cases. Among the pulmonary TB cases 26(31%) were in age group 0-3 yrs while 23(27.4%) were in age group 10yrs & above, 18(21.4%) were in age group 7-9 yrs & 17(20.2%) were in age group 4-6 yrs. Among the extra-pulmonary TB case, 18(47.4%) belong to age group 7-9yrs while 9(23.7%) belong to age group 10 yrs & above, 10(26.3%) age group 4-6 yrs & 1 (2.6%) was in age group 0-3 yrs. (Table 5)

The age wise analysis of our study revealed that the proportion of tuberculosis positive cases was found to be 22.1% in 0-3years of age, 22.1% in 4-6 years of age, 29.5% in 7-9 years of age, 26.2% in age 10 years and above. Study conducted in the United States of America reported, 59% of cases in <5 years of age and 41% in 5-15 years of age.⁽¹⁷⁾ Report from Europe as the proportion of TB cases in <5 years of age was 40% whereas in children between 5-15 years of age it is 60%.⁽¹⁵⁾

No gender predominance could be appreciated in the detection of tuberculosis in children <12 years of age and older children in our study. Similar reports were observed in many studies from various parts of the world. As the age increases, due to hormonal changes at puberty and other male dependent factors, there is difference in detection rates. The male population has been found to have higher detection rates when compared with females⁽¹⁶⁾

In our study, the proportion of pulmonary tuberculosis was 68.9% (n=84) and extra pulmonary tuberculosis was 38% (n=38). These findings corroborate with previously published studies from USA which reported 75% pulmonary tuberculosis cases and 25% extra pulmonary cases under the age of fifteen years. (17) Studies from Middle East (Iran and Turkey) have reported similar detection rates of pulmonary and extra pulmonary tuberculosis.^(18,19)

In our study, the history of contact with an infectious case was present in 24.6% of the positive cases. History of contact is a key factor as most of the children acquire infection from infected adult population. Similar studies from Pune & Chennai also reported history of contact with infectious case in their community of around 30% among children less than five years of age, diagnosed with active tuberculosis.^(20,21) In our study, Mantoux positivity was seen in 82% of the tuberculosis positive cases. This is very high when compared to a study done in the Institute of child health, Chennai which reported Mantoux positivity of 34.7% in various forms of paediatric tuberculosis.⁽²¹⁾

Table 1: Socio demographic profile of the patients

	Age-group	Frequency	Percentage
Age-group	0-3 years	27	22.1
	4-6 years	27	22.1
	7-9 years	36	29.5
	10 and above	32	26.2
Gender	Male	57	46.8
	Female	65	53.2
Place of Residence	Urban	58	47.5
	Rural	64	52.5
BCG Vaccination Status	Immunised	111	91
	Non-Immunised	11	9

Table 2: Presenting Symptoms

Symptom	Frequency	Percentage
Fever	108	89.3
Cough	102	84.3
Convulsions	4	3.3
Lymphadenopathy	4	3.3
Total	122	100

Table 3: X-ray & Mantoux test findings

Test		Frequency	Percentage
X-ray chest	Signs of TB Present	113	92.6
	Signs of TB Absent	9	7.4
Montoux test	Positive	100	82
	Negative	22	18

Table 4: Diagnostic classification of TB

Diagnosis	Frequency	Percentage
Pulmonary TB	84	68.9
Extrapulmonary TB	38	31.1
Total	122	100.0

Table 5: Distribution of Tuberculosis in different Age-group

	0-3years	4-6 years	7-9 years	10 and above	Total
Pulmonary TB	26(31%)	17(20.2%)	18(21.4%)	23(27.4%)	84 (100%)
Extra-pulmonary TB	1(2.6%)	10(26.3%)	18(47.4%)	9(23.7%)	38(100 %)

Table 6: History of contact and type of TB

Type of TB	History of contact		Chi-square, p-value
	Present	Absent	
Pulmonary	22(26.2%)	62(73.8%)	0.372, 0.542
Extra-pulmonary	8(21.1%)	30(78.9%)	

CONCLUSION

Tb is an important cause of morbidity & mortality among the paediatrics age group. Tuberculosis among the pediatric population is underestimated due to lack of ideal diagnostic methods. In addition to this, the hurdles in diagnosing a case of paediatric tuberculosis include very low bacillary count & atypical clinical presentations difficulty in obtaining specimens and amount of sample collected is often sparse in children. Various advances in diagnosis of tuberculosis, clinical suspicion, clinical presentation, history of contact and the conventional methods of diagnosing tuberculosis are more conclusive in the diagnosis of tuberculosis. A strong clinical suspicion with aid of available modern diagnostics tool can better serve boon for early diagnosis & timely initiation of treatment & furthermore improve the quality of life of patients. Earlier detection can reduce the death rate among children and prevent the spread of tuberculosis in the community.

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