

## ORIGINAL ARTICLE

# Clinical Pattern of Pediatric Tuberculosis in a Tertiary Care Hospital in Bangladesh

Mohammed Rizwanul Ahsan<sup>1</sup>, Manzoor Hussain<sup>2</sup>, Sabrina makbul<sup>3</sup>, Probir Kumar Sarkar<sup>4</sup>, ABM Mahfuj Hasan Al Mamun<sup>5</sup>

### Abstract

**Background:** Pediatric tuberculosis (TB) contribute a significant proportion of the TB burden in Bangladesh yet little is known about the clinical characteristics of this childhood TB which remains unclear.

**Objectives:** This study of paediatric TB is designed to evaluate the clinical profile of childhood TB to determine the various clinical presentation of various type of childhood TB among the patients admitted in Dhaka Shishu(Children) Hospital.

**Methods:** This is a cross-sectional retrospective study, we reviewed all case file of TB patients from January to June 2018 in the Division of Pediatrics medicine of Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh.

**Results:** Among 51cases of tuberculosis most cases presented in the age between 1 to 5 years 21(41.18%), 7(13.73%) were within 1 year, 17(33.33%) were 6 to 10 years, 6(11.76%) were above 10 years of age. Most of them were male 27(52.94%) and 24(47.06%) were female. Maximum cases presented with symptoms of Fever 48(94.12%), Cough (84.31%), Vomiting 25(49.02%), Cold 36(70.59%), abdominal pain (18.8%), Breathlessness 12(23.53%), Convulsion 6(11.76%), lymphadenopathy 5 (16.13%), Swelling 4(7.84%) and Skin lesion 1(1.96%). Finally among all Tuberculosis cases most of them were Pulmonary TB 32(62.76%) and other forms of TB were abdominal TB 6(11.76%), CNS TB 5(9.80%), TB lymphadenitis 3(5.88%), miliary TB 2(3.92%), Disseminated TB 2(3.92%) and Tubercular abscess 1(1.96%).

**Conclusion:** In this study pulmonary tuberculosis patients are more commonly found than extra-pulmonary tuberculosis in pediatric age group.

**Key words:** Tuberculosis, clinical profile, fever.

### Introduction

Bangladesh, one of 22 high burden countries that collectively account for about 80% of the world's TB cases, has an estimated TB disease incidence of 147 cases per 100,000.<sup>1</sup> The caseload of tuberculosis patients in South Asia including Bangladesh is

staggering and not well appreciated.<sup>2</sup> South Asia has almost 40% of the global TB burden with 4,028,165 cases in 2015.<sup>2</sup> Bangladesh has a estimated population of children <15 years is 53.7 million (33.8%).<sup>3</sup> The incidence rate of all forms of TB for all age groups was 224/100,000 population in

1. Resident Physician and Assistant Professor, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.
2. Former Professor and Head of Pediatric Medicine and Pediatric Cardiology, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital.
3. Senior Nutritionist, Dhaka Shishu (Children) Hospital, Dhaka.
4. Associate Professor, Pediatric Respiratory Medicine, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka
5. Resident Medical Officer, Dhaka Shishu (Children) Hospital, Dhaka.

**Correspondence to:** Dr. Md. Rizwanul Ahsan, Resident Physician and Assistant Professor, Bangladesh Institute of Child Health (BICH) & Dhaka Shishu (Children) Hospital. Cell: 01711465405, E-mail: rizwanul.ahsan@gmail.com

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2013, while the prevalence rate of the same was 402/100,000 population for the same year. The NTP in 2007<sup>4</sup> and an NGO working with TB in 2009<sup>5</sup>, reported detection rates of 9 and 8.6 per 100,000 0-14-year-olds, respectively. In high burden TB countries it has been noted that 15-20% of all TB cases are among children, whereas in low burden TB countries it is estimated that 2-7% of all TB cases are among children.<sup>6</sup> In 2014, there were 187,005 new cases of TB in Bangladesh and it was the leading cause of death, accounting for 81,000 fatalities. Ending the TB epidemic by 2030 is one of the health targets of the newly adopted Sustainable Development Goals. WHO has set a target for a 95% reduction in deaths and a 90% reduction in TB incidence by 2035.<sup>7</sup> TB remains a major public health problem in Bangladesh. Although there is no estimate on the prevalence of childhood TB, it is believed that childhood TB is severely under-diagnosed.<sup>8</sup> Tuberculosis (TB) remains a major public health problem. It is a curable disease but still millions of people suffer every year and a number of them die from this infectious disease, resulting in devastating social and economic impact. Mycobacterium tuberculosis, the bacteria that causes tuberculosis, has been around for centuries. Fragments of the spinal columns from Egyptian mummies from 2400 B.C.E. were found to have definite signs of the ravages of this terrible disease.<sup>9</sup> The actual burden of pediatric TB is not known due to diagnostic difficulties. The actual percentage of TB occurring in children is likely as high as 11-15%, given the lower case ascertainment rates in children compared with adults.<sup>10,11</sup> The impact of TB is particularly profound in young children because they progress more rapidly to TB disease and are more susceptible to severe TB.<sup>12</sup> Childhood tuberculosis is under-reported in Bangladesh due to difficulties in confirming diagnosis, lack of guidelines for systematic screening, difficulties in referral of suspected childhood TB cases. High prevalence of malnutrition renders the skin test for TB ineffective and lack of laboratory facilities is also an impediment for diagnosis of children. Absence of awareness about TB in children also plays a role in the low detection rate of the disease.<sup>13</sup> WHO recommends that children with TB should be treated and notified through the national TB control programme.<sup>14</sup> However, studies on epidemiology,

clinical profile and diagnostic methods of childhood TB from low-income countries are lacking. There is often a substantial gap between policy and practical implementation.<sup>15</sup> This study underline the need to improve our fundamental armory in the fight for TB elimination through strengthened and sustained researches.

### Materials and Methods

It was a retrospective study. Total 51 diagnosed cases of tuberculosis admitted in different departments of Pediatric Medicine at Dhaka Shishu (Children) Hospital Dhaka, Bangladesh between January 2018 to June 2018 were enrolled. Data were collected to assess differences in age, sex, clinical characteristics and final diagnosis. Treatment regimens were also noted.

### Results

A total 51 patients diagnosed as tuberculosis were enrolled. Age distribution of cases, 7(13.73%) were within 1 year, 21(41.18%) were between 1 to 5 years, 17(33.33%) were 6 to 10 years, 6(11.76%) was above 10 years of age (Table I).

Age in Year	Number of patient	Percentage
<1	7	13.73
1-5	21	41.18
6-10	17	33.33
>10	6	11.76

Among 51 patients of Tuberculosis cases most of them were male 27(52.94%) and 24(47.06%) were female (Table II).

Gender	Number	Percentages
Male	27	52.94
Female	24	47.06
Total	51	100

Most common symptoms were fever 48(94.12%), cough (84.31%), vomiting 25(49.02%), cold 36(70.59%), abdominal pain 13(18.8%), breathlessness

12(23.53%), convulsion 6(11.76%), lymphadenopathy 5 (16.13%), swelling 4(7.84%) and skin lesion 1(1.96%) (Table III).

**Table III**  
*Presenting sign/symptoms of the children diagnosed with tuberculosis*

Sign / Symptoms*	No. of patients	Percentages
Fever	48	94.12
Cough	43	84.31
Vomiting	25	49.02
Cold	36	70.59
Abdominal pain	13	25.49
Breathlessness	12	23.53
Convulsion	6	11.76
Lymphadenopathy	5	16.13
Swelling	4	7.84
Skin lesion	1	1.96

\* Multiple response

Among all Tuberculosis cases most of them were Pulmonary TB 32(62.75%) and other forms of tb were abdominal TB 6(11.76%), CNS TB 5(9.80%), TB lymphadenitis 3(5.88%), military TB 2(3.92%), Disseminated TB 2(3.92%) and Tubercular abscess 1(1.96%) (Table IV).

**Table IV**  
*Spectrum of different type of tuberculosis*

Final diagnosis	No. of patients	Percentages
Pulmonary TB	32	62.76
Abdominal TB	6	11.76
CNS TB	5	9.80
TB Lymphadenitis	3	5.88
Miliary TB	2	3.92
Disseminated TB	2	3.92
Tubercular abscess	1	1.96
Total	51	100

## Discussion

Bangladesh comes under a group of high prevalence countries, As per the global review of Tuberculosis

by World Health Organization. In this retrospective study, only 51 patients were enrolled for the study from January 2019 to June 2019 conducted at Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh, which is the biggest pediatric tertiary Care Hospital. According to prevalence number of cases were less as because there are other tertiary care hospital with pediatric department. Usually children <5 years of age are found to be more frequently affected.<sup>16</sup> Most cases of TB presented in the age between 1 to 5 years 21(41.18%). This is similar to a study done by Sanchez-Albisua et al.<sup>17</sup> According to WHO rates of childhood TB are usually considered the highest among those aged 1-4 years.<sup>18</sup> Similarly, studies from the tertiary care setting in India have previously shown that patients aged less than 5 years constituted a much higher proportion (18-34%)<sup>19</sup> of total childhood TB cases. Then second most TB cases were presented at the age of 6 to 10 years 17(33.33%), then followed 7(13.73%) were within 1 year and 6(11.76%) were above 10 years of age. Shrestha et al<sup>20</sup> also had maximum patients in age group of 10-15 years (63.4%) followed by age group of <5 years (29.3%). There was preponderance of males 27(52.94%) in study population as compared to females 24(47.06%). The male to female ratio was 1.12:1. that was also found in several other studies.<sup>21</sup> This distribution was similar to study done in Bhutan which had 57% male's and 43% females.<sup>22</sup> Also, one study in Nepal had similar distribution with 58.5% males and 41.5% were females.<sup>23</sup> The male predominance in the study may be due to their ambulatory nature which make them more expose to the TB infected cases or could be because of more attention given to male child in developing country like Bangladesh. Most common symptoms were fever 48(94.12%), cough (84.31%), vomiting 25(49.02%), cold 36(70.59%), abdominal pain (18.8%), breathlessness 12(23.53%), convulsion 6(11.76%), lymphadenopathy 5 (16.13%), swelling 4(7.84%) and skin lesion 1(1.96%) as seen in other studies.<sup>24,25</sup> Hatwal et al<sup>26</sup> found symptoms like fever (75.6%), cough (63.4%). Another study from Chennai, India had predominant symptoms as fever, cough (47%) and a visible glandular swelling (49%).<sup>27</sup> Also, in a study done at Philippines, most frequent symptoms were fever (86.6%), cough (76.1%) and breathing difficulty (28.4%).<sup>28</sup> This shows

nonspecific symptoms are most common presenting features of TB in children, which makes early diagnosis difficult and which requests high degree of suspicion for proper work up. Fever were present in the majority of patients regardless of site of infection, and the majority of those with intrathoracic TB had cough, consistent with other studies.<sup>29-31</sup> While calculating the spectrum of tuberculosis, Pulmonary TB was observed to be the most common form of tuberculosis (62.76%) and other forms of TB were abdominal TB (11.76%), CNS TB (9.80%), TB lymphadenitis (5.88%), military TB (3.92%), Disseminated TB (3.92%) and one patient (1.96%) was diagnosed as Tubercular abscess. As with other studies found, pulmonary TB was the most common then other forms of TB.<sup>32-37</sup> Pattern of TB according to Sing et al<sup>38</sup> was TB lymphadenitis (41.3%), TBME (22.4%), pleural effusion (13.7%), musculoskeletal (12%) and abdominal TB (5.2%). In another study done in Philippines also, the most common diagnosis was pulmonary tuberculosis (40.3%).<sup>39</sup> Which is similar to the study conducted in Maryland where pulmonary tuberculosis was seen in 75% children.<sup>40</sup> This is a single hospital-based study, retrospective in nature, and record keeping may have been sub-optimal. In this retrospective record review, we may have noted a different pattern in the clinical features and preponderance of the disease.

### Conclusion

Pulmonary TB is the commonest presentation of tuberculosis among children. Males were mostly affected. Fever is the most common symptom of childhood TB followed by cough. Children between one to five years of age are more commonly affected.

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