

# Clinical Patterns of Tuberculosis in Children

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In children tuberculosis may present as any type of clinical pattern. Common presentations are primary complex, tuberculosis lymphadenitis and progressive primary disease. This study was conducted to determine the relative frequency of different clinical patterns of tuberculosis in children and their relationship with different pediatric age groups. Seventy children between 0-15 years of age with clinical presentation suspected of tuberculosis were evaluated by taking detail history, examination and investigations for a period of six months. Thirty-eight patients were male and thirty-three were female. The most common clinical pattern was pulmonary tuberculosis mainly primary pulmonary disease.

**Key words:** Tuberculosis, children, clinical pattern.

Tuberculosis is an ancient disease that is known to have existed in prehistoric time. Tuberculosis is one of the common communicable diseases in majority of developing countries<sup>1</sup>. It is caused by the *Mycobacterium tuberculosis* which usually effect lungs but may cause lesions in any organ or tissue of human body<sup>2</sup>.

Among infectious diseases tuberculosis is at present the leading cause of death<sup>3</sup>. It has been predicted by WHO that 30 millions people could die from tuberculosis in next ten years<sup>4</sup>.

In Pakistan tuberculosis is generalized and wide spread. According to prevalence surveys done in 1960-1962, and 1974-1978, 54% of entire population is infected. Infection rate in children from 0-4 years of age were 25% and 22% respectively<sup>5</sup>.

In children tuberculosis may present as any type of clinical pattern. Common presentations are primary complex, tuberculous lymphadenitis and progressive primary disease. Due to introduction of BCG vaccination just after birth, the clinical patterns of tuberculosis has been changed. Incidence of tuberculous meningitis has been decreased.

## Aims and objectives

This study was conducted to determine the relative frequency of different clinical patterns of tuberculosis in

children and their relationship with different pediatric age groups.

## Patients and methods

This study was conducted in Paediatric departments of Lahore General Hospital for a period of six months.

All children between 0-15 years of age with clinical presentation suspected of tuberculosis both from inpatient and out patient departments were evaluated by taking detailed history and examination according to study proforma.

Mantoux was applied to all patients. Appropriate Laboratory investigations including total and differential counts, X- Ray chest done in each patient. Selective investigations were done according to the type of presentation which included gastric aspirate examination for AFB, Skeletal X- Rays, CSF examination and lymph node biopsy.

Diagnosis of tuberculosis was made by using scoring system. Modified Keneth Jones criteria (Table 1) for diagnosis of tuberculosis was used. Only those patients were included in the study who had scored more than 7 by using Keneth Jones criteria.

Table 1 Incidence of tuberculosis

	n	T.B Cases			Ratio		Incidence		
		Total	Male	Female	Male	Female	Total	Male	Female
Total cases	20245	71	38	33	1.2	1	0.35%	0.19%	0.16%
Admitted cases	1725	46	23	23	1	1	2.66%	1.33%	1.33%
OPD cases	18520	25	15	10	1.5	1	0.13%	0.08%	0.05%

## Results

A total of 71 patients were included in the study, which constituted (0.35%) of total patients seen in the pediatric in patients and out patients department and (2.66%) of total

admissions. Out of 71 total patients 38(53.5%) were male and 33(46.5%) were female, with male to female ratio 1:2/1 (Table 1)



The study was conducted in age group 0-15 years. Maximum numbers of cases 26(36.6%) were between 1-5 years. Next common age group was 6-10 years of age 22(30.9%). There was 11(15.4%) and 12(16.9%) patients of age <1 year and >10 years of age respectively (Table 2).

Table 2 Age distribution of tuberculosis

Age (Years)	n	%age
< 1	11	15.49
1-5	26	36.61
6-10	22	30.98
11-15	12	16.90
Total	71	

Median age of whole group of patients included in study was 2 years. Median age for primary complex was 2 years, 3 years for lymphadenitis, 3 years for tuberculous meningitis, 8.5 years for miliary tuberculosis and more than 10 years for abdominal and Skeletal tuberculosis (Table 3)

Table 3. Median age for different clinical patterns of tuberculosis

Clinical Pattern	Median Age
<b>Pulmonary Tuberculosis</b>	
Primary complex	2 years
Hilar lymphadenitis	3 years
Progressive pulmonary disease	6 years
Miliary tuberculosis	
Pleural effusion	8.5 years
<b>Extra Pulmonary Tuberculosis</b>	9 years
Tuberculous meningitis	
Cervical lymphadenitis	3 years
Skeletal tuberculosis	10.5 years
	11.5 years

Table 4. Clinical patterns of tuberculosis

Clinical Patterns	n	%age
<b>Pulmonary Tuberculosis</b>	38	53.52
1. Primary complex	11	15.49
2. Hilar lymphadenitis	13	18.30
3. Progressive pulmonary disease	6	8.45
4. Miliary tuberculosis	2	2.81
5. Pleural effusion	5	7.04
6. Disseminated tuberculosis	1	1.40
<b>Extra Pulmonary Tuberculosis</b>	31	43.66
1. Tuberculous meningitis	15	21.12
2. Cervical lymphadenitis	10	14.08
3. Abdominal tuberculosis	2	2.81
4. Skeletal tuberculosis	4	5.63
TB of spine	3	4.22
TB of joints	1	1.40
<b>Perinatal Tuberculosis</b>	2	2.81
<b>Total</b>	71	

Thirty eight (53.5%) patients had pulmonary tuberculosis and 33(43.6%) had extra pulmonary tuberculosis. In pulmonary tuberculosis hilar lymphadenitis was most

common and was found in 13(18.3%) patients, followed by primary complex present in 11(15.4%) patients and pleural effusion present in 5(7%) patients. There were 2 cases of miliary tuberculosis and one case of disseminated tuberculosis.

In extra pulmonary lesions, tuberculosis meningitis was the most common 15(21.1%) followed by cervical lymphadenitis 10(14%) and skeletal tuberculosis 4(5.6%). There was 2(2.8%) cases of abdominal tuberculosis and 2(2.8%) cases of perinatal tuberculosis (Table 4)

In admitted patients tuberculosis meningitis was the most common presentation followed by progressive pulmonary disease and pleural effusion. In out door patients cervical lymphadenitis was most common presentation followed by hilar lymphadenitis (Table 5).

Tuberculosis meningitis was present in all age groups. Primary complex was found in patients with age <5 years. Cervical lymphadenitis was not present in patients of <1 year of age. Skeletal and abdominal tuberculosis was seen in patients with age > 5 years.

In 45 patients (63.3%) there was positive history of contact with a tuberculous patient. Mantoux test was positive in 37(52%) patients.

Table 5. Clinical patterns of tuberculosis in indoor and outdoor

Clinical Patterns	No. of patients	
	Indoor	Outdoor
<b>Pulmonary Tuberculosis</b>	25	13
Primary complex	7	4
Hilar lymphadenitis	4	9
Progressive pulmonary disease	6	-
Miliary tuberculosis	20	-
Pleural effusion	5	-
Disseminated tuberculosis	1	-
<b>Extra Pulmonary Tuberculosis</b>	20	11
Tuberculous meningitis	15	-
Abdominal tuberculosis	1	1
Skeletal tuberculosis	4	-
Cervical lymphadenitis	-	10
<b>Perinatal Tuberculosis</b>	1	1
<b>Total</b>	46	25

**Discussion**

Tuberculosis is a wide spread disease in Pakistan with a large number of open adult cases who are constant threat to the whole population specially children. It can effect any age but children are more commonly involved.

In developing countries there was a decline in the incidence of tuberculosis since 1986 but there is resurgence of tuberculosis in these countries due to AIDS and other factors<sup>6</sup>. In developing countries, tuberculosis continued to be a major health problem.

In this study incidence of tuberculosis in admitted children under 15 years was about 2.66%. This is really same as in study conducted in 1982 in hospitalized children in Lahore<sup>7</sup>. There is no decline in the incidence of tuberculosis in admitted children.



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The most vulnerable and hard hit age group is the first five years of life, younger the subject, greater the likelihood of spread and dissemination of tuberculosis. The maximum number of patients 52% under five years of age in our study favors this observation.

Pulmonary lesions were present in 53.5% of patients and 43.6% of patients had extra-pulmonary tuberculosis. Malik Zafarullah et al found that 31.5% of patient had pulmonary lesion and 68.5 had extra pulmonary lesion<sup>7</sup>. Among the patient with pulmonary tuberculosis, most common (63%) was primary pulmonary disease which correspond to the seth-v study in which 67% of patient had primary pulmonary disease<sup>8</sup>. Second most common pulmonary lesion was progressive pulmonary disease which was present in 17% of patients. In seth-v series 23% patients had progressive pulmonary disease. Tuberculosis meningitis was the most common form of tuberculosis in admitted patients. It was present in 32% of admitted cases and 21% of total cases. Cureless studies revealed that 5% of total children with tuberculosis had CNS involvement<sup>9</sup>. In study of Malik et al tuberculosis meningitis was present in 56% of admitted cases in hospitals of Lahore. There is decline in the incidence of tuberculosis meningitis. In our study 66% of the patients having tuberculosis meningitis were under five years of age. This confirms the findings of Humphries study in which majority of patients with tuberculosis meningitis were under the age of 4 years<sup>10</sup>.

A positive mantoux was present in 52% of patients in comparison to 77% in seth-v study<sup>11</sup>. Chaudhry et al showed that mantoux test was positive in 50% of confirmed cases). Negative mantoux does not completely rule out tuberculosis. Various factors like malnutrition, overwhelming disease may be responsible for negative results.

### Conclusion

- This study showed that the tuberculosis is still a major health problem in children
- The incidence of tuberculosis has not much declined in last 2 decades.
- Diagnosis of tuberculosis in children is a difficult task. New diagnostic modalities are not freely available, so we have to rely on clinical presentation and indirect evidence of infection. There is much more chance of over or under diagnosis.

- The most common clinical pattern is pulmonary tuberculosis mainly primary pulmonary disease.
- Main cause of mortality and morbidity is tuberculous meningitis.
- Childhood tuberculosis directly reflects the magnitudes of adult disease so tuberculosis control programme for adults should be instituted nation wide.
- Health education of people should be improved.

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