

**Original article:**

## **Clinical profile of children with pulmonary tuberculosis: An observational study**

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### **Abstract**

**Background:** To evaluate the clinical profile of children with pulmonary tuberculosis

**Material and method:** This retrospective study included 100 children less than 17 years of age. All the demographic details of the patients were recorded from the hospital records. The patient sample was divided into 3 groups based on age: less than 8 years, 8-12 years, 13-17 years. Entire data was recorded in the Microsoft excel sheets. SPSS software was used for statistical analysis.

**Results:** 40% of patients were less than 8 years of age. 42% of patients belonged to age group of 8-12 years whereas 18% of the patients were above 13 years and less than 17 years. Out of 100 patients 60 were females and the rest 40 were males. It was observed in this study that cough was the most common presenting symptom amongst the patients (80%). Fever, fatigue and weight loss was present in 75%, 65% and 58% cases respectively.

**Conclusion:** Children are highly vulnerable to tuberculosis, and there are particularities specific to pediatric patients.

**Key words:** Pediatrics, tuberculosis, sputum, pulmonary.

### **Introduction**

Since the declaration by the WHO of a 'global TB emergency' in 1993, a wealth of publications has addressed important aspects of the burden, management and control of tuberculosis (TB). In general, however, the emphasis has been on adult disease. By contrast, paediatric TB has been relatively neglected, mainly due to greater challenges in diagnosis and the lower priority traditionally afforded to children by TB control programmes. As a result both research and surveillance data in the field of childhood TB have been greatly limited. Nevertheless, with roughly a million cases estimated globally each year,<sup>1-4</sup> and a much higher risk of severe disease and death among young children than adults, paediatric TB remains a public health emergency. This is particularly evident in developing countries with poor public

health infrastructure. Priorities for future research should therefore enhance collaborations between developing and developed nations. Furthermore, by providing insights into current rates of transmission and circulating strains, TB in children remains a sentinel indicator of the effectiveness of TB control programmes. This review addresses some of the unique features of TB in children; summarises existing and novel diagnostic, therapeutic and preventative measures; and outlines important areas of future research. As in adults, infection with *Mycobacterium tuberculosis* (MTB) usually occurs by inhalation of tubercle bacilli in aerosolised respiratory droplets derived from an infectious case of pulmonary TB. Risk of infection is therefore dependent on the probability, duration and proximity of exposure to an infectious case, and on the infectiousness of the source. This is usually an adult with cavitary pulmonary disease, although older children may also contribute to transmission. Social factors, community TB prevalence and age determine where exposure is most likely to occur and may vary between communities. A household source is most commonly implicated for young children; older children are increasingly likely to be infected outside the household. Poverty, poor housing, urban environments and overcrowding are all associated with increased transmission.<sup>5-8</sup> Hence this study was undertaken to assess the clinical profile of children with pulmonary tuberculosis.

### **Material and method**

This study was undertaken to assess the clinical profile of children with pulmonary tuberculosis. A total of 100 patients were included in this study. This retrospective study included children less than 17 years of age who were admitted in the pulmonary ward of the medical hospital and had a discharge diagnosis of pulmonary tuberculosis (TB). All the demographic details of the patients were recorded from the hospital records. A thorough clinical record of patient and contact history and physical examination, TST, CXR, sputum smear microscopy and culture was noted. Cases with positive bacteriology (smear, culture or both) were considered TB. Entire data was recorded in the Microsoft excel sheets. SPSS software was used for statistical analysis. Chi square test and student T test were used to compare the variables. P-value of less than 0.05 was considered significant.

### **Results**

40% of patients were less than 8 years of age. 42% of patients belonged to age group of 8-12 years whereas 18% of the patients were above 13 years and less than 17 years. Out of 100 patients 60 were females and the rest 40 were males. It was observed in this study that cough

was the most common presenting symptom amongst the patients (80%). Fever, fatigue and weight loss was present in 75%, 65% and 58% cases respectively.

Table 1: Demographic details

Parameter		Number of patients	Percentage
Age group (years)	Less than 8	40	
	8 to 12	42	
	13 to 17	18	
Gender	Males	40	41.42
	Females	60	58.57

### Discussion

40% of patients were less than 8 years of age. 42% of patients belonged to age group of 8-12 years whereas 18% of the patients were above 13 years and less than 17 years. Out of 100 patients 60 were females and the rest 40 were males. It was observed in this study that cough was the most common presenting symptom amongst the patients (80%). Fever, fatigue and weight loss was present in 75%, 65% and 58% cases respectively. Tuberculosis, an infectious disease caused by *Mycobacterium tuberculosis*, remains a leading public health problem worldwide. The global incidence of tuberculosis is rising, with ~8.8 million new cases and 2 million deaths each year. However, not all individuals exposed to *M. tuberculosis* become chronically infected. Epidemiological studies of tuberculosis in highly endemic countries indicate a consistent pattern of host stratification, with ~20% of individuals retaining negative tuberculin skin tests throughout life, despite repeated exposure to the bacteria. Mortality rates for disseminated tuberculosis (blue bars) and chronic pulmonary tuberculosis (red bars) per 100,000 untreated persons of various ages living in Bavaria in 1905. Note that there were too few deaths to accurately plot cases of pulmonary tuberculosis before the age of 20 and disseminated tuberculosis between the ages of 5 and 20 yr. These data relate to the natural history of tuberculosis in an endemic area before BCG vaccines and antimycobacterial antibiotics were available. Vaccination against and early diagnosis and treatment of tuberculosis in children may now have blurred the corresponding clinical phenotypes of tuberculosis, but not the underlying genotype. There are other forms of tuberculosis, with primary infection in adults and reactivation in late childhood. There is,

however, clearly a “golden age” between the ages of 4 and 13 yr. Before Pasteur's groundbreaking microbial theory of disease, tuberculosis was suspected to reflect an intrinsic host disorder, often echoing familial predisposition. As Benjamin Marten described in 1720, “Some persons are of such an happy constitution that if any of one of the inimical animals that causes consumption [of the lungs], happen to get into their bodies, they may likewise be quickly forced out again, through some of the emunctories, before they are produced into life; or else wholly destroyed”. This “familial” hypothesis, suggested by the familial clustering of cases, gained favor by the end of the 18th century and dominated medical thinking for most of the 19th century. However, Pasteur's microbial theory and Koch's subsequent identification of *M. tuberculosis* overturned such theories, which were based on anecdotal observations in the absence of epidemiological or experimental evidence. It was not until 1933 that rigorous genetic epidemiological studies provided strong evidence for the contribution of genetic factors to tuberculosis, with higher concordance rates of tuberculosis observed among monozygotic than dizygotic twin pairs. In addition, although it was long known that the incidence of tuberculosis was particularly high in newly exposed populations, this observation was poorly understood. A genetic interpretation of this observation was provided when the ancestors of susceptible individuals, unlike those of resistant individuals living in the same environment, were found to be more likely to have originated from tuberculosis-free areas.<sup>8-10</sup>

### **Conclusion**

From the above study the author concluded that Children are highly vulnerable to tuberculosis, and there are particularities specific to pediatric patients. It was inferred that cough, fever, fatigue and weight loss are the most presenting signs of pulmonary tuberculosis in children. Further studies are recommended.

### **References**

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