



PREVALENCE OF EXTRA PULMONARY TUBERCULOSIS IN CHILDREN AT A TERTIARY CARE PEDIATRIC HOSPITAL

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ABSTRACT

Introduction: India might alone account for one-fourth of the world's tuberculosis burden, but the prevalence of childhood tuberculosis (TB) in India is not known. Non-specific symptoms and difficulty in diagnosis interfere with early detection of extra pulmonary tuberculosis (EPTB) in children, hence it is often overlooked.

Methodology: A 6 months, cross-sectional, retrospective study was conducted in children aged 0 – 15 years with tuberculosis disease. Then prevalence of EPTB in children was determined and associated risk factors analysed.

Results: This study showed that EPTB formed 53.95% of all TB cases. Tuberculosis lymphadenitis was the most prevalent form of EPTB (8%).

Conclusion: The present study establishes that diagnosis of EPTB is challenging in children, with high rates of extra-pulmonary disease in them.

KEYWORDS : Paediatric, EPTB

INTRODUCTION:

Pediatric tuberculosis, (among the population aged less than 15 years) has been thought to be pauci bacillary, non-infectious, and difficult to diagnose. Therefore it was wrongly assumed that effective control of adult TB and use of BCG by itself could prevent childhood TB. Hence it has traditionally received a lesser importance than adult TB in National TB programs.

Worldwide, about 10 lakh cases of pediatric TB are believed to occur yearly, attributing to 10-15% of all TB¹; with a mortality of more than 1 lakhs per year. In India, the numbers of pediatric TB cases registered under RNTCP have been growing. The reporting rate was 5.6% (59846 cases) in 2005 and has increased to 7% (84064 cases) in 2011². However this data underestimates the true burden of childhood TB; although it is estimated to be 10.2% of the total adult incidence³

Children also show an increased liability to develop EPTB. Infants and young children are most affected and are inclined towards developing more severe extra-pulmonary disease, especially meningitis and miliary tuberculosis.

Few studies have shown an interest in EPTB during childhood in India. Hence the study was undertaken to determine the prevalence of EPTB in children and associated risk factors.

METHODOLOGY:

The present study is a 6 month (January 2019 to June 2019) retrospective analysis and was conducted at Bai Jerbai Wadia Hospital, a tertiary care pediatric teaching hospital in Mumbai. The study included only the confirmed cases of EPTB (Microscopy, Xpert MTB/RIF and MGIT liquid Culture) with or without other co-infections. Prevalence of EPTB and the apparent risk factors were analyzed.

RESULTS:

In the 6 months study, among the 76 tuberculosis cases detected in children between the age of 0 to 15 years, 41 cases (53.95%) had EPTB.

Table 1: Distribution of Specimen

	Total Samples Processed	MTBC Detected
CSF	53	05
LN Aspirate	98	28
Tissue	19	03

Pleural Peel	26	03
Other Fluids	41	02
Urine	01	00
Total	238	41

In all, 238 extra pulmonary samples from children (0 to 15 years of age) were processed of which 41 (17.23%) were positive for Mycobacterium Tuberculosis. Tuberculous lymphadenitis was the commonest form of EPTB, 28 cases (68.29 %) followed by tuberculous meningitis, 05 cases (12.2%)

Table 2: Age & Gender Distribution

	MTBC Detected		TOTAL
	MALE	FEMALE	
< 1 Year	0	2	2
1 - 3 (Years)	6	1	7
4 - 6 (Years)	6	1	7
7 - 9 (Years)	4	2	6
10 - 12 (Years)	4	12	16
13 - 15 (Years)	1	2	3
Total	21	20	41

It is seen from Table 2 that, overall EPTB was equally distributed among the male and female children in our study. Male children were equally affected with EPTB between the ages of 1 to 12 years. However 75% (12/16) of the cases in the age group of 10 – 12 years were female children.

Table 3: Age vs. Distribution of Specimen

	CSF	LN Aspirate	Tissue	Pleural Peel	Fluids
< 1 Year	1	0	0	0	0
1 - 3 (Years)	0	6	1	0	1
4 - 6 (Years)	2	2	1	1	1
7 - 9 (Years)	0	4	1	1	0
10 - 12 (Years)	2	13	0	1	0
13 - 15 (Years)	0	3	0	0	0
Total	5	28	3	3	2

39% (16/41) of the cases were seen in the age group of 10 – 12 years. 13/16 cases, (81.25%) were due TB lymphadenitis.

DISCUSSION:

Extra pulmonary tuberculosis (EPTB) defines the clinical conditions caused, when Mycobacterium tuberculosis bacilli infects organs or tissues outside the lungs. There are many

forms of EPTB, some of which are life threatening like TB meningitis and TB pericarditis, while others can cause significant ill-health and lasting disability like such as pleural TB and spinal TB.

TB in children is unlike that in adults as they are more plausible to develop extra-pulmonary TB. Studies have demonstrated that 47% of childhood TB cases are extra-pulmonary cases, compared with 16% in adults⁴. These unfolding trends reflect the worldwide increasing incidence of pediatric tuberculosis.

Authors in the near past have reported that the sites of EPTB may vary according to a variable host factors.⁵⁻⁸ Although pleural tuberculosis is the most common EPTB presentation in the adults, superficial lymphadenitis continues to remain the predominant manifestation of EPTB among the children included in this study; and this is in agreement with other authors⁹. Tuberculous meningitis was the second most common EPTB manifestation 05 cases (12.2%) in our study. Tuberculous meningitis is the most serious form of extra-pulmonary tuberculosis. Young age, delay in the diagnosis and initiation of a suitable treatment, put these children at risk for the development of serious complications. Similar findings have been reported from other studies¹⁰. Pleural TB was detected in only 3 of the cases in our study. This is in contrast to adult population where in Pleural tuberculosis is the most common presentation of EPTB¹¹.

Recently a study from India¹² has shown a higher rate of EPTB in adolescents, in comparison to younger children. In our study, it was observed that the 46.3% (19/41) patients with EPTB were 10 to 15 years old. Even though in adolescents, the immune system is less responsive against Mycobacterium tuberculosis¹³, the age factor might not be significant and requires further research. Due to the absence of classic symptoms and signs of fever, cough, night sweats, loss of appetite, and weight-loss, diagnosis of EPTB might be delayed in these patients^{14, 15}. No other age dependent, specific EPTB manifestations were seen in our study.

Diagnosis of TB is very demanding in young children, and the diagnostic methods at our disposal tend to fall short of expectations. The rate of extra-pulmonary is very high in our study population, making the task of definitive diagnosis even more provocative.

CONCLUSION:

So actual burden of TB in children is like the tip of the iceberg, which makes diagnosing childhood TB in India a big challenge. If we are to meet the WHO global goal of eliminating TB by 2050, then treatment and prevention of TB in children needs as much priority as in adults.

REFERENCES:

1. World Health Organization. Guidance for National Tuberculosis Programs on the Management of Tuberculosis in Children, Geneva: WHO, 2006.
2. Central TB Division. Tuberculosis India 2012. Annual Report of the Revised National Tuberculosis Control Program, Directorate of General Health Services, Ministry of Health and Family Welfare, Government of India; 2012.
3. Nelson LJ, Wells CD. Global epidemiology of childhood tuberculosis. *Internat J Tubercul Lung Dis.* 2004;8:636-47
4. Arora VK, Gupta R. Directly observed treatment for tuberculosis. *Indian J Paediatr* 2003; 70: 885-889.
5. Yang Z, Kong Y, Wilson F, Foxman B, Fowler AH, Marrs CF, et al. Identification of risk factors for extrapulmonary tuberculosis. *Clin Infect Dis.* 2004;38:199-205.
6. Noertjojo K, Tam CM, Chan SL, Chan-Yeung MM. Extrapulmonary and pulmonary tuberculosis in Hong Kong. *Int J Tubercul Lung Dis.* 2002; 6:879-86.
7. Musellim B, Erturan S, SonmezDuman E, Ogden G. Comparison of extrapulmonary and pulmonary tuberculosis cases: Factors influencing the site of reactivation. *Int J Tubercul Lung Dis.* 2005; 9:1220-3.
8. Ilgazli A, Boyaci H, Basyigit I, Yildiz F. Extrapulmonary tuberculosis: Clinical and epidemiologic spectrum of 636 cases. *Arch Med Res.* 2004; 35:435-41.
9. Prakash SR, Suresh G, D's IP, Shetty SS, Kumar SG. Mapping the Pattern and Trends of Extrapulmonary Tuberculosis. *Journal of Global Infectious Diseases.* 2013; 5(2):54-59.
10. Marais B.J., Schaaf H.S. Childhood tuberculosis: An emerging and previously

- neglected problem (Review). *Infectious Disease Clinics of North America.* 2010 Sep; 24(3):727-49.
11. Chander Vishav, Raina SK, Bhardwaj AK, Kashyap S, Gupta AK, Sood Abhilash. Clinico-Epidemiological Profile of extra Pulmonary Tuberculosis: A Report from a High Prevalence State of Northern India *Public Health Research* 2012, 2(6): 185-189.
 10. Poroor J, George D. Tuberculosis in adolescents and children: Data on clinical presentation and treatment outcomes for a period of 4 years, from a tertiary care hospital in South India. *J Evid Based Med Healthc.* 2015; 2(18) : 2752-7
 11. Pickering LK, Baker CJ, Kimberlin DW, Long SS. *Red Book: 2009 Report of the Committee on Infectious Diseases.* 2009; : 680-701
 12. Sreeramareddy CT, Panduru KV, Verma SC, Joshi HS, Bates MN. Comparison of pulmonary and extra pulmonary tuberculosis in Nepal- a hospital-based retrospective study. *BMC Infect Dis.* 2008; 8 : 8 [DOI][PubMed]
 13. Yang Z, Kong Y, Wilson F, Foxman B, Fowler AH, Marrs CF, et al. Identification of risk factors for extrapulmonary tuberculosis. *Clin Infect Dis.* 2004; 38(2) : 199-205