

## ASSESSMENT OF PROFILE AND OUTCOME OF CHILDHOOD TUBERCULOSIS TREATED WITH DOTS

Ankita Verma<sup>1</sup>, Akhilesh Kumar<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of TB and Chest, ASMC, Shahjahanpur, Uttar Pradesh, India.

<sup>2</sup>Assistant Professor, Department of Pediatric, ASMC Shahjahanpur, Uttar Pradesh, India.

Received : 10/05/2022  
Received in revised form : 01/07/2022  
Accepted : 12/07/2022

Keywords:  
Directly observed treatment short course,  
Extra- pulmonary tuberculosis,  
Neurotuberculosis

Corresponding Author:  
**Dr. Ankita Verma,**  
Email: dranky185@gmail.com  
ORCID: 0000-0001-5659-9524

DOI: 10.47009/jamp.2022.4.3.27

Source of Support: Nil,  
Conflict of Interest: None declared

Int J Acad Med Pharm,  
2022; 4 (3); 117-119



### Abstract

**Background:** The aim is to assess profile and outcome of childhood tuberculosis treated with DOTS. **Materials and Methods:** Seventy- four children age ranged 0-14 years of tuberculosis of either gender was selected. A detailed history such as demographic profile and clinical examination were carried out. All were prescribed isoniazid 10 mg/kg, Rifampicin 10 mg/kg, Ethambutol 30 mg/kg, Pyrazinamide 35- mg/kg, Streptomycin 15 mg/kg. Outcome of patients was assessed as cured, treatment failure or lost to follow-up. Treatment failure was any TB patient who was smear-positive at 5 months after starting treatment. **Result:** Common clinical features were convulsion in 12, fever in 65, cough in 38, pallor in 50, headache in 8, vomiting in 6, loss of appetite in 16, altered sensorium in 12, hepatomegaly in 7, splenomegaly in 6 and abdomen distension in 3 cases. The difference was significant ( $P < 0.05$ ). There were 32 cases of pulmonary tuberculosis and all were cured. 2 cases of abdominal, 1 was cured. Out of 4 cases of lymphadenitis, 3 cured and 1 died. Out of 2 cases of pleural effusion, all cured. Out of 3 cases of constrictive pericarditis, all cured, out of 28 cases of neurotuberculosis, 26 cured and 2 died, out of 2 cases of constrictive pericarditis, all cured and out of 1 case of Phlyctenular conjunctivitis, all were cured. **Conclusion:** Extra- pulmonary tuberculosis was more common than pulmonary TB and among EPTB, neurotuberculosis was more common.

## INTRODUCTION

Tuberculosis (TB) continues to be one of the most devastating and widespread infections in the world. Various professional bodies have published standardized treatment of various types of TB in children according to clinical manifestations.<sup>[1]</sup> World Health Organization (WHO) has suggested a category based treatment of TB. Recently, Revised National Tuberculosis Control Programme (RNTCP), in association with Indian Academy of Pediatrics (IAP), have categorized various types of TB placed in line with existing WHO guidelines.<sup>[2]</sup> Globally in 2016, an estimated 10.4 million people fell ill with TB and out of them an estimated 6.7 million incident cases of TB among males, of which 6.2 million were adults and 550 000 were children.<sup>[3]</sup> There were 3.7 million incident cases of TB in females, of which 3.2 million were adults and 490 000 were children. These numbers correspond to 65% of cases being males and 35% females, and 90% of cases being adults and 10% children.<sup>[4]</sup> Directly observed treatment short (DOTS) course strategy aims at treatment of adult patients, particularly, to prevent spread of infection.<sup>[5,6]</sup> While TB in children may not contribute significantly to spread of infection in the community, but it remains

an important cause of morbidity and mortality. Therefore, it is appropriate to include children as beneficiaries of the DOTS strategy.<sup>[7]</sup> Considering this, we performed present study with the aim to assess profile and outcome of childhood tuberculosis treated with DOTS.

## MATERIALS AND METHODS

After considering the utility of the study we selected seventy- four children age ranged 0-14 years of tuberculosis of either gender. Exclusion criteria was children with tuberculosis on Antitubercular treatment (ATT) other than DOTS regimen. A detailed history such as demographic profile and clinical examination were carried out. Diagnosis of tuberculosis was made based on WHO/RNTCP guidelines. All the diagnosed children were categorized and treated with DOTS regimen. All children were referred to DOTS centre for drugs and were followed up in pediatric TB clinic once in 2 weeks in intensive phase and once in 4 weeks during continuation phase and were prescribed isoniazid 10 mg/kg, Rifampicin 10 mg/kg, Ethambutol 30 mg/kg, Pyrazinamide 35- mg/kg, Streptomycin 15 mg/kg. Outcome of patients was assessed as cured, treatment failure or lost to follow-up. Treatment failure was any

TB patient who was smear-positive at 5 months after starting treatment.

Clinical improvement was evaluated at the end of the intensive phase of treatment and at the end of completion of treatment. Radiological improvement was determined by chest radiograph examination in all smear negative pulmonary TB cases at the end of treatment. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

## RESULTS

Out of 74 patients, boys comprised of 45 (60%) and girls 29 (40%) [Table 1].

**Table 1: Patients distribution**

<b>Total- 74</b>		
<b>Gender</b>	<b>Boys</b>	<b>Girls</b>
Number (%)	45 (60%)	29 (40%)

**Table 2: Assessment of signs and symptoms**

Clinical features	Number	P value
Convulsion	12	0.01
Fever	65	
Cough	38	
pallor	50	
headache	8	
vomiting	6	
Loss of appetite	16	
Altered sensorium	12	
hepatomegaly	7	
Splenomegaly	6	
Abdomen distension	3	

**Table 3: Outcome of DOTS therapy**

Type	Number	Treatment completed	Cured	Death
Pulmonary TB	32	32	32	0
Extra pulmonary TB				
Abdominal	2	1	1	0
Lymphadenitis	4	3	3	1
Pleural effusion	2	2	2	0
Constrictive pericarditis	3	3	3	0
Neurotuberculosis	28	26	26	2
Constrictive pericarditis	2	2	2	0
Phlyctenular conjunctivitis	1	1	1	0

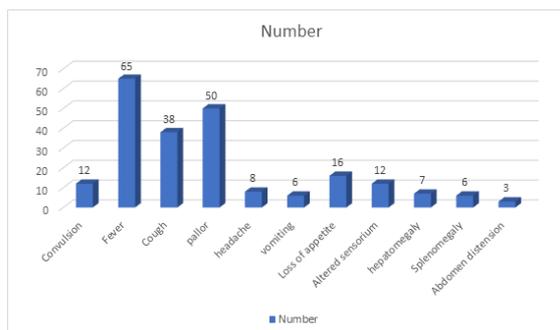
There were 32 cases of pulmonary tuberculosis and all were cured. 2 cases of abdominal, 1 was cured. Out of 4 cases of lymphadenitis, 3 cured and 1 died. Out of 2 cases of pleural effusion, all cured. Out of 3 cases of constrictive pericarditis, all cured, out of 28 cases of neurotuberculosis, 26 cured and 2 died, out of 2 cases of constrictive pericarditis, all cured and out of 1 case of Phlyctenular conjunctivitis, all were cured.

## DISCUSSION

Tuberculosis in children is mainly due to failure of TB control in adults.<sup>[8]</sup> This orphan disease exists in the shadow of adult TB and is a significant child health problem, but is neglected because as cases are usually smear negative it is considered to make a relatively minor contribution to spread.<sup>[9,10]</sup> In an infected child, risk of developing the disease is determined by various factors including age, malnutrition, immune status in deficient states like in Human Immunodeficiency Virus (HIV) infections, genetic factors, virulence of the organism, magnitude of initial infection and maturity of immune

headache	8
vomiting	6
Loss of appetite	16
Altered sensorium	12
hepatomegaly	7
Splenomegaly	6
Abdomen distension	3

Common clinical features were convulsion in 12, fever in 65, cough in 38, pallor in 50, headache in 8, vomiting in 6, loss of appetite in 16, altered sensorium in 12, hepatomegaly in 7, splenomegaly in 6 and abdomen distension in 3 cases. The difference was significant ( $P < 0.05$ ) (Table II, graph I).



**Figure 1: Assessment of signs and symptoms**

response.<sup>[11,12]</sup> Pulmonary TB (PTB) is commoner in children, with only 20-30 percent of the cases being the extra-pulmonary TB (EPTB), which includes peripheral lymphadenopathy, TB meningitis, skeletal TB, skin TB, gastrointestinal tract and other organ involvement.<sup>[13,14]</sup> The present study aimed to assess profile and outcome of childhood tuberculosis treated with DOTS.

Our results showed that out of 74 patients, boys comprised of 45 (60%) and girls 29 (40%). Panigatti et al,<sup>[15]</sup> determined clinical profile and outcome of childhood tuberculosis treated with directly observed treatment short (DOTS) course regimen. Total number of children enrolled in the study were 93. Mean age was 6 years. Male to female ratio was 0.9:1. Extra pulmonary tuberculosis (EPTB) was common 58 (62.4 %) than pulmonary tuberculosis 35 (37.6 %). The common symptoms/signs were fever (83.8 %), cough (46.2 %), convulsion (17.2 %), loss of appetite (11.8 %) and pallor (75.3%), lymphadenopathy (18.3%), hepatomegaly (9.7 %) and splenomegaly (6.5 %). Mantoux test was positive in 59 (63.4 %) children. Acid fast bacilli (AFB) was isolated in 13 (14%) children in various

fluid/histological specimens. The prevalence of HIV infection was 7.5 %. Among 93 children, 88 (94.6 %) completed treatment and were declared cured; four children were lost to follow up and one child died. Compliance of DOTS was good and there were no side effects due to ATT.

Our results showed that common clinical features were convulsion in 12, fever in 65, cough in 38, pallor in 50, headache in 8, vomiting in 6, loss of appetite in 16, altered sensorium in 12, hepatomegaly in 7, splenomegaly in 6 and abdomen distension in 3 cases. Dhaked et al,<sup>[16]</sup> in their study a total of 141 study subjects were enrolled. Majority of the subjects (51.8%) belonged to 11–14 years of age group were females (63.8%) and from lower middle-class families (48.9%). There were 70.2% cases of Extra pulmonary TB which was almost three times more prevalent than pulmonary TB. During follow up visits symptoms like chest pain, breathlessness disappeared by the end of intensive phase and fever, cough and skin lesion improved by the end of continuation phase. Mean weight gain in malnourished children (2.6 kg) was lesser as compared to normal children (3.0 kg) at the end of 3rd visit. Treatment success rate in category 1 was 96.2% and in category 2 was 90%.

There were 32 cases of pulmonary tuberculosis and all were cured. 2 cases of abdominal, 1 was cured. Out of 4 cases of lymphadenitis, 3 cured and 1 died. Out of 2 cases of pleural effusion, all cured. Out of 3 cases of constrictive pericarditis, all cured, out of 28 cases of neurotuberculosis, 26 cured and 2 died, out of 2 cases of constrictive pericarditis, all cured and out of 1 case of Phlyctenular conjunctivitis, all were cured. Shahab et al,<sup>[17]</sup> in their study among pediatric tuberculosis patients observed a prevalence of 2%. The study shows higher seroprevalence rate probably because, this part of the state is having higher number of HIV cases. In India, HIV seroprevalence in tuberculosis patients varies from as low as 0.7 % in Delhi, 2 % in Aligarh and as high as 5.89 % in Mumbai and 20.1 % in Pune.

## CONCLUSION

Extra- pulmonary tuberculosis was more common than pulmonary TB and among EPTB, neurotuberculosis was more common.

## REFERENCES

1. Harries AD, Hargreaves NJ, Graham SM, Mwansambo C, Kazembe P, Broadhead RL, et al. Childhood tuberculosis in Malawi: Nationwide case-finding and treatment outcomes. *Int J Tuberc Lung Dis.* 2002;6:424–31.
2. Hong Kong Chest Service, British Medical Research Council. Controlled trial of four thrice weekly regimens and daily regimen all given for six months for pulmonary tuberculosis. *Lancet.* 1981;8213:171–4.
3. Marais BJ. Tuberculosis in children. *Pediatr Pulmonol.* 2008;43(4):322-9.
4. Hailu D, Abegaz WE, Belay M. Childhood tuberculosis and its treatment outcomes in Addis Ababa: a 5-years retrospective study. *BMC Pediatr.* 2014;14(61)1-7.
5. Ruchi, Thakur HP. Characteristics of childhood tuberculosis patients registered under RNTCP in Varanasi, Uttar Pradesh. *Indian J Public Health.* 2013;57(1):36-9.
6. Arora VK, Gupta R. Directly observed treatment for tuberculosis. *Indian J Pediatr.* 2003;70(11):885-9.
7. Sharma S, Sarin R, Khalid UK, Singla N, Sharma PP, Behera D. The DOTS strategy for treatment of pediatric pulmonary TB in South Delhi, India. *Int J Tuberc Lung Dis.* 2008;12(1):74-80.
8. Bai SS, Devi RL. Clinical spectrum of TB in BCG vaccinated children. *Indian Pediatr.* 2002;39(5):458-62.
9. Sreeramareddy CT, Ramakrishnareddy N, Shah RK, Baniya R, Swain PK. Clinico-epidemiological profile and diagnostic procedures of pediatric tuberculosis in a tertiary care hospital of western Nepal- A case-series analysis. *BMC Pediatr.* 2010;10:57.
10. Pama CLP, Gatchalian SR. Clinical profile of culture-proven tuberculosis cases among Filipino children aged 3 months to 18 years. *Phil J Microbiol Infect Dis.* 2001;30:133–43.
11. Datta M, Swaminathan S. Global aspects of tuberculosis in children. *Paediatr Respir Rev.* 2001;2:91–6.
12. Kiwanuka JP. Interpretation of tuberculin skin test results in the diagnosis of tuberculosis in children. *Afr Health Sci.* 2005;5: 152–6.
13. Agarwal M, Koppikar GV, Ghildiyal R, Charvakar M, Joshi SM, Lahiri KR. Seropositivity rate for HIV infection in hospitalized children on selective screening. *Indian Pediatr.* 2001;38: 267–71.
14. Lahiri S, Shahab T, Malik A, Alam S. HIV seropositivity in hospitalized children with high likelihood of AIDS. *Indian Pediatr.* 2000;39:372–5.
15. Panigatti P, Ratageri VH, Shivanand I, Madhu PK, Shepur TA. Profile and outcome of childhood tuberculosis treated with DOTS—an observational study. *The Indian Journal of Pediatrics.* 2014;81(1):9-14.
16. Dhaked S, Sharma N, Chopra KK, Khanna A, Kumar R. Socio-demographic profile and treatment outcomes in pediatric TB patients attending DOTS centers in urban areas of Delhi. *Indian Journal of Tuberculosis.* 2019;66(1):123-8.
17. Shahab T, Zoha MS, Malik MA, Malik A, Afzal K. Prevalence of human immunodeficiency virus infection in children with tuberculosis. *Indian Pediatr.* 2004;41:595–9.