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ORIGINAL ARTICLE

A RECORD BASED STUDY ON PAEDIATRIC TUBERCULOSIS IN AHMEDABAD CITY, INDIA

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ABSTRACT

Backdround: Good data on the burden of all forms of TB amongst children in India are scarce. There is an urgent need to study the available data.
Methodology: This record based study was conducted in Ahmedabad city situated in western region of India. Five treatment units out of total ten units were selected by random sampling method. Records of Paediatric TB patients registered between February 2007 and January2008 were studied.
Results: Out of total 382 records studied 193 (50.5%) were girls and 189 (49.5%) were boys with mean age of 8.3 years. Forty six percent of cases were in category III. Fifty four percent cases were of Extra-Pulmonary TB (EPTB). Total 123 patients who missed the doses, only one third were paid home visit. Eighty three percent of the children completed their treatment and 6% cases were declared as cured. Five children died during treatment.
Conclusions: Analysis of records suggests high treatment completion rate amongst RNTCP paediatric TB patients in Ahmedabad city. It also suggests scope of improvement in home visits paid to patients who miss the doses during the treatment.

Key words: Pediatric Tuberculosis, Record based study, RNTCP, Urban

INTRODUCTION

The exact burden of childhood tuberculosis is unknown and World Health Organization estimates the burden between 10 to 11% of all incident cases of tuberculosis[1]. Global estimates of 1.5 million new cases and 1, 30,000 deaths occur annually due to paediatric tuberculosis (TB) [2]. However, globally, national TB control programmes have given low priority to childhood TB.[3]

Since March 2006 Revised National Tuberculosis Control Program (RNTCP) covers entire country[4]. In early 2004, in consultation with Indian Academy of Paediatrics, RNTCP has taken steps to make the paediatric drugs available in patient-wise boxes (PWBs) [5]. The DOTS strategy also appears to be highly effective for paediatric TB, as reported by studies from all over the world[6]. There is an urgent need of analysing available data from the RNTCP. Thus, current study was conducted to analyse the available data with Ahmedabad Municipal Corporation (AMC) run RNTCP. The aim of the study is to contribute to the current knowledge on paediatric tuberculosis.

METHODOLOGY

Ahmedabad city is located in western part of the country. It is divided into six administrative zones and 53 municipal wards. There are 10 Treatment units (TU) under RNTCP program in Ahmedabad Municipal Corporation area.

Five TUs were selected by random sampling method for this record based cross sectional study. Records of paediatric TB patient (children

up to 14 years.) who were diagnosed and treated between February 2007 and January 2008 in the selected five TUs were studied and analyzed.

Permission was taken from the head of the TB Unit of Ahmedabad Municipal Corporation. Primary information of paediatric TB patient was taken from patients' register of selected TUs. Detailed information regarding outcome was taken from the individual treatment cards submitted by the DOT worker at TU.

Data Analysis

Data was analysed with the help of free software Epi Info. Proportions and appropriate statistical test of significance were used.

Table 1: Distribution of Tuberculosis patients according sex and various characteristics

	Girls (%)	Boys (%)	Total (%)
Age groups (Years)			
0 to 5 yrs	36(33.6)	71(66.35)	107(100)
6 yrs to 10 yrs	80(52.63)	72(47.36)	152(100)
11 yrs to 14 yrs	77(62.60)	46(37.39)	123(100)
Category			
I	88(52.69)	79(47.3)	167(100)
II	22(56.41)	17(34.69)	39(100)
III	83(47.15)	93(52.84)	176(100)
Type of registration			
New	171 (49.7)	173 (50.3)	344(100)
Treatment after default	4 (66.66)	2 (33.33)	6 (100)
Relapse	1 (100)	0	1(100)
Others	17 (54.83)	14 (45.16)	31 (100)
Site of involvement			
Extra-Pulmonary	108 (52.17)	99 (47.82)	207 (100)
Pulmonary	83 (49.40)	85 (50.59)	168 (100)
Both	2 (28.57)	5 (71.42)	7 (100)
Doses missed			
Intensive phase	24(50)	24(50)	48 (100)
Continuous phase	22(46.80)	25(53.19)	47 (100)
Both phase	18(64.28)	10(35.71)	28(100)
Outcome			
Cured	19(79.16)	05(20.83)	24 (100)
Completed treatment	153(48.57)	162(51.42)	315 (100)
Defaulted	03(25)	09(75)	12 (100)
Died	03(60)	02(40)	05 (100)
Transferred out	02(50)	02(50)	04 (100)
No information in card	13(59.09)	09(40.90)	22 (100)

RESULTS

Mean age of the study population was 8.3 years, with mean age of boys 7.3 years and that of girls 9.3 years. This difference was statistically significant (p= 0.00). Majority (40%) of children were in 6 to 10 years of age group. Majority (46.1%) of the patients were in category- III, followed by category I (43.7%) and then category II (10.2%).Girls dominated in category I and II, while boys dominated in category III as shown in the table-1.Ninety percent of patients were registered as new case, 1.6% as treatment after default, 0.3% as relapse and 8.1% as others. Others were as mentioned in the card and no further information was available for the same. Majority (54.2%) of patients had extra-pulmonary tuberculosis while only 1.8% had both pulmonary and extra-pulmonary involvement. Among the patients of extra-pulmonary type of tuberculosis, Lymph nodes (43%) were the major site of involvement. Abdomen (16.9%), Pleura (9.2%), Meninges (4.4%), Joints (4.4%), Spine (4.4%) and Skin (2.9%) were the other sites of involvement. No records regarding site of involvement were mentioned for eleven patients. Patients in age group of 6-10 years dominated category-1 and 3 while age group of 11-14 years dominated category-2 as shown in table-2.Total 123 patients (32.2%) missed doses during the treatment. During intensive phase 57.9% patients missed more than one dose while range of the doses missed was from one dose to twenty doses. Similarly in the continuous phase 64.6% of patients missed more than one dose range being one dose to ten doses. Total 28 patients missed the doses in both the phases, girls dominated with 65% as shown in table-1.Only one third of patients out of total patients who missed the doses were visited at home as shown in table-3. Eighty three percentages of the children completed their treatment and 6 % were declared as cured. Thus, success rate for the treatment of TB was 89%. Defaulter rate in the study was 3.1%. Five children died during treatment. Information of 22 children was not available in the cards at the time of data collection. Cure rate, treatment completion rate, and default rate for the new cases were respectively 5.8%, 89.6% and 3.1%, while for the re-treatment case the same were respectively, 14.7%, 67.6% and 5.9%. In pulmonary tuberculosis the cure rate, treatment completion rate and default rate were 14.9%, 79.5%, and 2.5% respectively. For the extra pulmonary

cases, the treatment completion rate was 94% and default rate was 4.2%. All 7 cases with both pulmonary and extra pulmonary tuberculosis completed the treatment.

Table-2 Age Group and various characteristics

	Age group			Total (%)
	0-5 years (%)	6-10 years (%)	11-14 years (%)	
Category				
1	44(26.34)	69(41.31)	54(32.33)	167(100)
2	10(25.64)	10(25.64)	19(48.71)	39(100)
3	53(30.11)	73(41.47)	50(28.40)	176(100)
Site of involvement				
Extra-Pulmonary	51 (24.63)	87 (42.02)	69 (33.33)	207 (100)
Pulmonary	54 (32.14)	63 (37.50)	51 (30.35)	168(100)
Both	02 (28.57)	02 (28.57)	03 (42.84)	7 (100)

DISCUSSION

RNTCP status report 2008 reported 73430 new paediatric cases out of all new case in India during 2007, which was 6% of total new cases. Similarly in Gujarat state total 3548 new paediatric cases were detected which was again 6% of all new cases. In Ahmedabad Municipal Corporation area 773 new paediatric cases were detected which was 12% of all new cases[4].

Table 3: Distribution of home visits against doses missed

Doses missed	Home visit		Total (%)
	Yes (%)	No (%)	
Intensive phase	12 (25)	36 (75)	48 (100)
Continuous phase	16 (34)	31 (66)	47 (100)
Both phase	13 (46.2)	15 (53.8)	28 (100)
Total	41 (33.3)	82 (66.6)	123 (100)

The mean age of the study population was 8.3 years. A similar study on paediatric tuberculosis in South Delhi by Sharma et al reported it at 11.2 years[6]. However the mean age of boys was 2 years less than that of girls (p= 0.00) in the present study. Majority (40%) of children were in 6 to 10 years of age group while Sharma et al reported that majority of children were in 11-14 years of age group. About the categories of Paediatric TB patients, Sharma et al reported 38.9% in category III, 50.6% in category I and 10.5% in category II similar to our study. Their study reported that majority (87.7%) were new cases, 1.9% were relapses, and 5% default cases, while our study showed low default rate.

Extra-pulmonary TB cases were predominant (54%) with Lymph node being the most common site of involvement (43%) in the present study. Similarly, unpublished RNTCP data from consensus statement of IAP and GOI also showed Lymph node (LN) TB cases predominated (>75%) amongst the paediatric EPTB registered cases.

Home visit to the patients who missed the dose is an indicator of operational efficiency of the program. As per RNTCP, if patient miss a dose home visit should be made by DOT worker. We observed that only 33% of patients who missed the dose during treatment were visited by workers at home. It was also observed that workers were not recording the home visit in the treatment card even if they had made visit.

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