Research Article

Clinicoepidemiological profile and experience of tuberculosis in pediatric patients - A community-based cross-sectional study

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ABSTRACT

Background: Childhood tuberculosis is common in developing country like India. The diagnosis in most cases is still based on clinical evidence. **Objectives:** This study aims at describing clinicoepidemiological profile of pediatric tuberculosis (TB) patients and to document experiences of them. **Materials and Methods:** This cross-sectional study done in a city of Gujarat during 2014–2016. Patients registered under revised national TB control program included in this study. **Results:** The most common presenting symptom is fever followed by cough, swelling, etc. Swelling is not commonly associated with other symptoms and presents as the second most commonly perceived the first symptom. Almost 70% of parents consulted one or more private practitioner before coming to government hospital. The present study finds out statistically significant difference between the family history of TB and the type of TB. It was also noted that more number of boys were first consulted to the private hospital than girls and it's also statistically significant. **Conclusion:** Symptoms of pediatric TB not easily correlated with TB by parents of patient as well as many private practitioners. Patients having family history of TB have more chances of pulmonary TB than others.

KEY WORDS: Pediatric; Tuberculosis; Experience; Epidemiology

INTRODUCTION

Tuberculosis (TB) is one of the most important global health problems. According to the 2016 World Health Organization (WHO) global TB report, it was estimated that in 2015 there were 10.4 million TB cases globally. In the WHO Southeast Asia region, an estimated 4.74 million cases of TB were reported and about 784,000 people died of it.[1] India accounts for one-fourth of the global TB burden. In 2015, an estimated 28 lakh cases occurred and 4.8 lakh people died due to TB. The proportion of children among new TB patients reported was 6% in 2016.[2] Although TB is primarily the disease affecting the lungs pulmonary TB (PTB), it can also affect many sites such as lymph nodes, central nervous system, bones, and gastrointestinal tract which is known as extra PTB (EPTB).[3]

This study aims at describing clinicoepidemiological profile of pediatric TB patients and to document experiences of them.

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MATERIALS AND METHODS

Surat city is located in western part of the country. It is divided into seven administrative zones. There are nine TB units (TU) under revised national TB control program in Surat Municipal Corporation (SMC) area. A cross-sectional community-based study was done using pre-tested semi-structured questionnaire with a sample size of 111. The

sample size (111) was calculated using open Epi software. As per the TB India report 2013, the prevalence of pediatric TB in Gujarat was 6–8% of total registered adult TB cases.[4]

Primary information of all pediatric TB patients (331) was taken from patients' register of all TUs. Detailed information regarding outcome was taken from the individual treatment cards submitted by the DOT worker at TU. The patients (111) were selected using simple random sampling method out of total 331 registered pediatric TB patients in nine TUs of SMC. Selected patient house visited thrice before moving to other houses.

Ethical approval was taken from the Government Medical College, Surat, and permission was taken from the City TB Officer, Surat. Data analysis was analyzed with the help of free software Epi Info. Proportions and appropriate statistical test of significance were used.

RESULTS

In the present study, 61% were girls and 39% were boys. In this study, 51% of participants were registered as EPTB followed by 47% pulmonary and 2% both (pulmonary and extrapulmonary).

The most common presenting symptom is fever followed by cough, swelling, loss of weight, and loss of appetite [Figure 1].

Although fever was the most common presenting symptom, it is not the symptom which appears first. In the most number of cases, cough (32.6%) was the first symptom which appeared first, followed by swelling (30.4%), fever (26.1%), and loss of appetite (9.8%). Swelling is not commonly associated with other symptoms and presents as sole symptom in most extrapulmonary cases [Figure 2].

Table 1 shows that there was statistically significant difference between the family history of TB and the type of TB, but there was no statistically significant difference between the TB patients in community and the type of TB [Table 1].

Table 2 shows that around 33 (29.7%) parents consulted government hospital, out of this 25 (75.8%) were girls and only 8 (24.2%) were boys. This study also shows that around 78 (70.3%) were consulted in private hospital, out of which 43 (55.1%) were girls while 35 (44.9%) were boys. And it's also appeared that more number of girls directly consulted to the Government hospital than boys.

Above Table 3 shows that nausea or vomiting (81.4%) was the most common side effect, followed by acidity or stomach pain (11.6%), vertigo (4.7%), and drowsiness (4.3%) experienced by children. This side effect was solved by health worker in 37 (86%) patients, and in 5 (11.6%) patients, it was experienced to have been solved on its own over a period of time [Table 3].

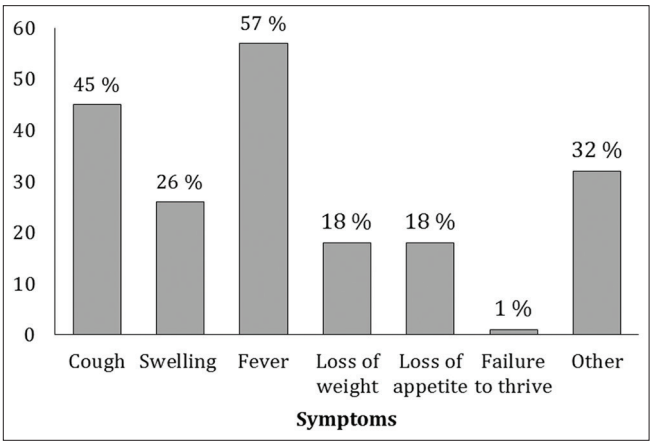

Figure 1: Presenting symptoms of the children diagnosed as tuberculosis (n = 111)

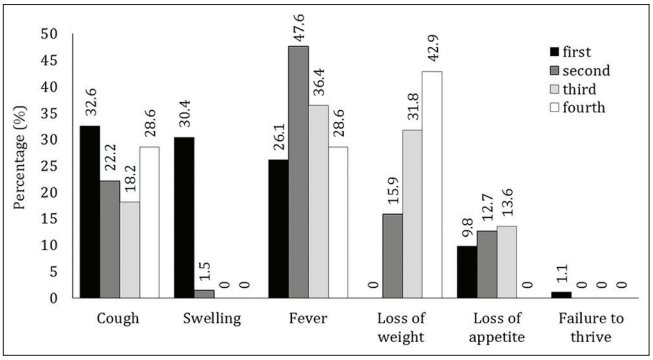

Figure 2: The chronological order of appearance of symptoms in pediatric tuberculosis patient (n = 111)

Table 1: Association between history of contact and type of tuberculosis (n=109)

Variables	Pulmonary	Extra pulmonary	Total	Test
Family history of TB				
Absent	33	50	83	χ^2=8.81
Present	19	7	26	df=1, P=0.0015
Did you know TB patient in community				
Yes	7	7	14	χ^2=0.033
No	45	50	95	df=1, P=0.4270

*Mixed type of TB so excluded from comparison, TB: Tuberculosis

Table 4 shows that around 65.8% completely agree that patients were treated differently than other persons in community, but they also 100% agreed that stigma did not affect their motivation to complete the treatment.

DISCUSSION

In the present study, mean age of patients was 10.37 ± 3.7 and female-to-male ratio was 1.6. Similar results were observed by Satyanarayana *et al*. (2010) and Nelliyanil *et al*. (2012).[5,6]

This study found that fever (56.8%) was most frequently associated with other symptoms while consulting in the beginning of illness, followed by cough, swelling, loss of weight, loss of appetite, and failure to thrive were 45%, 26.1%, 18%, 18%, and 0.9%, respectively. Similar kind of results was observed in a study done by Panigatti *et al*. (2013), Shrestha *et al*. (2011), and Sreeramareddy *et al*.[7-9]

Table 2: Gender-wise distribution by number of private doctor consulted (*n*=111)

Gender	Number of private doctor consulted				Total
	0* (%)	1 (%)	2 (%)	>2 (%)	
Boys	8 (18.6)	20 (46.5)	8 (18.6)	7 (16.3)	43
Girls	25 (36.8)	28 (41.2)	8 (11.8)	7 (10.3)	68
Total	33 (29.7)	48 (43.2)	16 (14.4)	14 (12.6)	111

*Directly consulted government health facility (χ^2 =4.158, Df=1, *P*=0.0207)

Table 3: Distribution of side effect and how it was solved

Parameters	Number of family (%)
Side effects (*n*=43)	
Nausea/vomiting	35 (81.4)
Acidity/stomach pain	5 (11.6)
Vertigo	2 (4.7)
Drowsiness	1 (4.3)
How it is solved (*n*=43)	
By HW/DOTS provider	37 (86)
Gradually solved itself	5 (11.6)
By skipping/stopping drugs	0 (0)
Not solved	1 (2.3)

Table 4: Participants' view on the stigma and their motivation to complete the treatment of child

Participants' view	Does TB stigma affect your motivation to complete treatment?	Did TB patients treated differently than other?
Completely agree (%)	0	65.8
Somewhat agree (%)	0	10.8
Neutral (%)	0	0.9
Somewhat not agree (%)	0	0.9
Not agree (%)	100	21.6

TB: Tuberculosis

The present study shows that though fever was the most common presenting symptom while consulting. Cough (32.6%) was the symptom which appeared first in the course of development of disease followed by swelling in 30.4% and fever in 26.1% of cases, respectively. It was also noted that swelling as a presenting symptom is presented as a sole symptom without association with other symptoms.

In the present study, there was statistically significant difference between family history of TB and the type of TB ($P < 0.005$). The present study did not find statistically significant difference between TB case in community and type of TB ($P > 0.05$). That means the children who were having the family history of TB have more chances of getting PTB.

A study done in Thailand, Tipayamongkholgul *et al*. (2005) had found that the history of contact (very close, close, and not close) was significantly associated with childhood TB ($P < 0.05$).[10]

In the present study, 29.7% of parents confessed that they directly consulted to the government health facility while 70.3% of parents first consulted to the private hospital and then came to government setup. From this study noted that most of parents first consulted the private hospital then came to government hospital.

It was observed that 75.7% of patients were diagnosed in government setup while 24.3% in private setup. Lolekha *et al*. (2008) found that 98% of patients diagnosed in government only 2% diagnosed in private.[11] In the present study, 39% of children experienced side effect while remaining 61% did not experience side effect. In 81.4% of cases experienced nausea and vomiting as the most common side effect followed by acidity or stomach pain (11.6%), vertigo (4.7%), and drowsiness (4.3%). This side effect got solved by health worker (86%) or gradually on its own (11.6%).

On exploring about discrimination between TB patients and other persons in society, 65.8% completely agree that patients were treated differently than other persons in community, followed by 10.8% somewhat agree, 0.9% neutral, 0.9% somewhat not agree, and 21.6% not agree. Hence, there is stigma-like condition against TB patients present in society.

All 100% of participants said that they were not affected by anything (stigma) on their motivation to complete the treatment.

Strength and Limitation

It is a community-based study to note clinicoepidemiological profile of pediatric TB patients. List of all registered patients

was prepared. To pick the patients simple random sampling method done so, every participant get equal chance to be in the study. Personal one-to-one interview was taken in the presence of parents.

In this study, patients registered in government were taken. Hence, the patients taking treatment from private hospitals' scenario are missing.

Recommendation

There is need to spread awareness regarding different types of pediatric TB and their symptoms in community. Patients could not be diagnosed by many private doctors who led to treatment delay in many cases. This study concludes that there is a need of the training of private practitioners about pediatric TB.

CONCLUSION

Cough was the most commonly reported as first occurring symptom followed by swelling and fever. Swelling was solely present as single symptom in pediatric TB patient's that not associated with other symptoms.

Due to more prevalence of EPTB compared to PTB cases in pediatric TB cases, there is wide variety of different symptom according to the affected area. That makes really difficult for parents to understand their children suffering from Extrapulmonary TB as most parents familiar with pulmonary TB symptoms but not with extrapulmonary TB symptom. That led more than one consultation before final diagnosis. If there was positive family history, then child has more chance to develop PTB.

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