

To Determine the Prevalence of Tuberculosis among Children Admitted at Tertiary Care Center of Quetta

MOBIN-UR-REHMAN KHAN¹, SHAMYAL MANDOKHEL², IJAZ HUSSAIN³

ABSTRACT

Aim: To determine incidence of tuberculosis among children admitted at tertiary care center of Quetta.

Methods: This cross-sectional study was carried out from January 2014 to December 2104 at BMCH Quetta Pediatric Medicine, Unit-I. A total of 112 patients were selected by non-probability consecutive sampling. Modified Keith Jones score was applied on each patient. Those whose score on MKJSC was less than 7 and those who were already diagnosed and were taking ATT were excluded from the study. The patients scoring more than 7 on MKJSC with or without positive AFB or culture were put on 4 drugs for 2 months, then on 2 drugs (rifampin and isoniazid) for 4 months.

Results: Out of 112 patients, 67 patients were male and 40 were female. 68 patients were under five years and 29 were between six to fifteen years. Pulmonary tuberculosis was present in 66, tuberculous meningitis in 26, abdominal tuberculosis in 4, lymph node tuberculosis in 8, pericardial tuberculosis in 1, pleural tuberculosis in 1 and bone tuberculosis in 4 patients. 22 patients presented in first quarter, 6 in second quarter, 36 in third quarter and 50 in fourth quarter. 106 patients were cured and 4 were lost to follow up.

Conclusion: Tuberculosis in children is common and frequently underreported.

Key words: Tuberculosis, Pulmonary, Meningitis, Abdominal, Pleural, Pericardial

INTRODUCTION

Infectious diseases of poverty disproportionately affect the poorest population in the world and contribute to a cycle of poverty as a result of decreased productivity ensuing from long-term illness, disability, and social stigma¹. Paediatric tuberculosis (TB) has long been an evasive entity for public health practitioners striving to control the disease². Pakistan ranks sixth on the list of 22 high-burden tuberculosis countries in the world³. Confirmation of a diagnosis of tuberculosis in children (aged <15 years) is challenging; under-reporting can result even when children do present to health services. Direct incidence estimates are unavailable, and WHO estimates build on paediatric notifications, with adjustment for incomplete surveillance by the same factor as adult notifications⁴. Its treatment is costly especially for poor countries like Pakistan. But fortunately it is a preventable disease⁵. Reliable research and surveillance data on childhood TB is limited in most regions of the world⁶. The control of childhood tuberculosis (TB) has been of low priority in TB programmes in high-burden settings⁷. The NTP Pakistan adapted the global approaches by developing and piloting its policy guideline on childhood TB in ten districts of the country⁸. TB is mainly a disease of the poor and illiterate people.

Despite many achievements a bulk of patients are not picked by the community health providers nor are they properly observed⁹. The Stop TB Strategy, which builds on the DOTS strategy developed by the World Health Organization and the International Union Against TB and Lung Disease, has a critical role in reducing the worldwide burden of disease and thus in protecting children from infection and disease¹⁰. Only a few series of pediatric tuberculosis (TB) have been reported in the last 20 years¹¹.

PATIENTS AND METHODS

This cross-sectional study was carried out from January 2014 to December 2104 at Bolan medical complex hospital (BMCH) Quetta Pediatric Medicine, Unit-I. A total of 112 patients were selected by non-probability consecutive sampling. Informed consent was taken from the parents. Patients admitted through OPD and emergency department were submitted to detail history and examination. Modified Keith Jones score was applied on each patient. All patients had CBC with ESR, Chest X-ray, Gastric aspirate for AFB and diagnostic BCG was done in all cases. Those with joint swelling and abdominal distension and heart failure had fluid aspirated and analyzed for culture and sensitivity. Those whose score on MKJSC was less than 7 and those who were already diagnosed and were taking ATT were excluded from the study. The patients scoring more than 7 on MKJSC with or without positive AFB or culture were put on 4 drugs for 2 months (rifampin, isoniazid, pyrazinamide and ethambutol), then on 2

^{1,2}Department of Pediatrics, Bolan Medical College, Quetta,
³Department of Oral Medicine, Margalla Institute of Health Sciences Rawalpindi
Correspondence to Dr. Mobin-ur-Rehman Khan, e-mail: mobin38@gmail.com

drugs (rifampin and isoniazid) for 4 months. They were provide ATT by TB control center and were followed every month. The variables like age, gender, season and type of tuberculosis were calculated. Percentages were calculated for variables.

RESULTS

Out of 112 patients who fulfilled the inclusion criteria, 67 patients were male and 40 were female with male to female ratio was 1.67:1. Sixty-eight (61%) patients were under five years and twenty-nine (26%) were between six to fifteen years. The distribution according to the type of tuberculosis is shown in Table 1. The Quarterly distribution is shown in Table 2. All were given treatment for six months and their course is described in Table 3. Morbidity was 15 % whereas mortality was 2%. Morbidity was seen mostly in tuberculous meningitis and abdominal TB. Mortality was due to tuberculous meningitis and pericardial tuberculosis.

Table 1: Type of tuberculosis and percentage

Type of Tuberculosis	No.	%
Pulmonary tuberculosis	66	58.92
Tuberculous meningitis	26	23.21
Abdominal tuberculosis	4	3.57
Lymph node tuberculosis	8	7.14
Pericardial tuberculosis	1	0.89
Pleural tuberculosis	1	0.89
Bone tuberculosis	4	3.57

Table 2: Quarterly distribution of patients

Period	No.	%
First quarter (January-March 2014)	22	19.64
Second Quarter (April-June 2014)	6	5.35
Third Quarter (July-September 2014)	36	32.14
Forth Quarter (October-December 2014)	50	44.64

Table 3: Course of patients at the end of treatment

Course of patients	No.	%
Cured	106	94.64
Lost to follow-up	4	3.57
Died	2	1.78
MDR	-	-

DISCUSSION

Our study should a slight preponderance of male patients and indeed male gender has been described as a risk factor for tuberculosis¹². Other workers have linked the incidence of tuberculosis to hormonal factors and so have found no difference in incidence between male and female pediatric patients¹³. Moreover female gender has been associated with drug intolerance leading to non-compliance¹⁴. Male preponderance has also been reported from Sudan¹⁵ and Brazil¹⁶. There is also a cultural bias in bringing

the male patients to male attention in our society. The preponderance of under-5 population seen in our study is consistent with other international studies^{17,18}.

Almost 60% of our patients had pulmonary tuberculosis and this is also consistent with international studies^{19,20}. Pulmonary tuberculosis in pediatric population represents a diagnostic challenge for the fact that clinical manifestations are unspecific and the diagnosis is not confirmed in all cases; that is why clinical suspicion, X-ray findings and PPD are indispensable for opportune start of treatment²¹. Tuberculous meningitis was the second presentation of tuberculosis encountered and this was especially true of patients <5 years. The association of tuberculous meningitis with young age is well documented in literature^{22,23}. Infected children aged <3 years remain candidates for the urgent institution of chemoprophylaxis and the search for close household contacts²⁴. A long diagnostic delay contributed to the high incidence rate in children²⁵. After pulmonary and meningeal tuberculosis lymph node tuberculosis was most common in our study and this is consistent with international data.²⁶ Indeed pediatric age group is a risk factor in lymph node tuberculosis²⁷. In some Ethiopian studies it has the largest proportion within EPTB group²⁸. In India it is reported to occur in 25-60% of all EPTB cases²⁹. The reasons for this diversity are not known and should be investigated in further studies. Intestinal tuberculosis can be very difficult to diagnose and mimic those of Chron's disease^{30,31}. The incidence of tuberculosis in our study was less compared to Nepal³² and Iran³³. This may be due to racial or dietary factors but further studies are needed in this regard. Our incidence of bone tuberculosis was equal to that reported in Iran³⁴ but less than reported in India³⁵. This may be because of the racial similarity with Iran.

Our study showed increased incidence in summer and fall and this is consistent with studies done in England where incidence was strongly correlated with sunlight and Vitamin D levels³⁶. In United States, Thailand and India on the other hand it was more often seen in spring³⁷⁻³⁹. This is perhaps related to degree of sunshine that differs in these countries as compared to the hilly station like ours. Workers in Cameroon recorded more TB cases in the wet season compared with the dry season⁴⁰.

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