

A Measurement of Clinical Profile, Complication and Outcome of the Studied Patients with Typhoid Fever

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Abstract

Original Research Article

Introduction: Typhoid fever is a common pyretic illness and one of the major health complications in Bangladesh. Hence, the present study was conducted to determine the, clinical profile, complication and outcome of the studied patients suffering from typhoid fever in some of the tertiary care hospitals in Dhaka. **Material & Methods:** This was a cross sectional study conducted in the Department of Paediatrics, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka Medical College Hospital (DMCH) and Sir Salimullah Medical College Hospital (SSMCH), Dhaka, Bangladesh for a period of one year from July 2015 to June 2016. A total number of 100 children with Typhoid fever were studied and analyze based on clinical profile, complications and outcome. During the study period febrile patients admitted in above mentioned hospital with the diagnosis of suspected typhoid fever was screened. Suspicion was made on the basis of clinical features like continued fever, toxic look, diarrhea/constipation, splenomegaly, hepatomegaly, diffuse tenderness and caeca gurgling. Clinically suspected cases undergone laboratory investigation that includes CBC, Widal test and blood culture and other tests as per individual case merits. **Results:** Out of 100 diagnosed typhoid fever children, 60 (60%) were male and 40 (40%) were female. Fever was present in all patients. Other most common appearance is loss of appetite, vomiting, diarrhea, headache and constipation. Coated tongue was the predominant examination finding followed by hepatomegaly, splenomegaly and abdominal tenderness. Sensitivity to ceftriaxone was 100% in our study while resistance to nalidixic acid was 90%. **Conclusion:** Clinical profile of typhoid fever in children admitted in tertiary care hospitals matches to what had been seen in the past and recorded in different local and regional publications. Typhoid fever is endemic in our country and affect all ages beyond infancy as found in this study.

Keywords: Clinical Profile, Complications, Distribution, Typhoid Fever, Abdominal, Nalidixic acid.

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INTRODUCTION

Until the first quarter of the 19th century, typhoid fever was not recognized as a separate clinical entity and was often confused with other prolonged febrile syndromes such as typhus fever of rickettsia origin. The word typhus is said to have been used first by Hippocrates (460 BC) to describe 'stupor' caused by fever and is thought to have been used to describe many febrile illness causing mental aberrations [1]. Typhoid means typhus-like and thus the name was given to this disease. The term enteric fever was introduced in 1869 and now includes both typhoid fever and paratyphoid fever¹. Thomas Willis is regarded as the pioneer in diagnosis of typhoid fever [2]. Again it was on the clinical picture alone [3]. Jenner in 1850, long before *S.*

typhi was discovered, put the matter beyond all reasonable doubt in an admirable and detailed comparison of the two diseases (typhus and typhoid fever) [3]. The lack of specific clinical signs complicates the diagnosis of typhoid fever, which must be distinguished from other endemic acute and sub-acute febrile illness [3]. Leukopenia and neutropenia commonly develop in typhoid fever. Mild leukocytosis can also be seen initially in children, even in uncomplicated cases, low grade normocytic anaemia, mild thrombocytopenia, modestly elevated serum transaminase and proteinuria are common [4]. In some studies from developing countries where high incidences of typhoid fever, co-agglutination test is much more reliable than culture, because so many patients have already taken antibiotics before being

seen by a physician. Promising new enzyme immunoassay (ELISA) that detects *S.typhi* outer membrane proteins (OMP) is being evaluated [5]. The definitive diagnosis of typhoid fever requires isolation of the organism from the patient. Blood culture still remains the gold standard for diagnosis of typhoid fever. Culture of blood, stool, urine, rose spots, bone marrow, buffy coat of blood and streptokinase treated blood clots can all be useful in diagnosis. In untreated patients, blood cultures are usually positive in about 80% during the first week, declining to 20-30% later in the course of the disease. By the conventional blood culture method, isolation of the bacteria is positive in about 60-80% of the cases provided a large volume of blood is incubated and it takes about 3-5 days. However, recently introduced fully automatic computerized blood culture system (BACTEC) can detect positive growths within a period of 6-24 hours [6]. A sensitive and specific multiplex polymerase chain reaction (PCR) for VI antigen promises to be highly sensitive and specific, but no prospective studies on large number of typhoid cases to evaluate the specificity and sensitivity of PCR is yet available. Cost and non-availability of equipment required may limit its application in developing countries [6].

OBJECTIVES

a) General objective

- This study was commenced to determine of Clinical profile, complication and outcome of the studied patients with typhoid fever.

b) Specific Objectives

- To measure the Clinical profile, complication of the patients with typhoid fever.
- To observe outcome of the studied patients with typhoid fever

METHODOLOGY AND MATERIALS

This was a Cross-sectional observational study. The study was carried out under the department of Pediatrics of Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital and Sir Salimullah Medical College Hospital, Dhaka, Bangladesh. In the above centers, a lot of pediatric patients with typhoid fever are admitted every year for evaluation and management. Overall, period of study was July 2015 to June 2016 (One year). Ethical clearance was taken from Institutional Review Board (IRB) of BSMMU and the participants were explained that there will be no physical or social risk. The Children admitted in the Pediatrics wards of the above-mentioned hospital during the study period with suspected diagnosis of typhoid fever were the study population. Children with positive blood culture were diagnosed as 'confirm case' and cases with a titer of TO

$\geq 1:160$ or rising titer of Wedel test were diagnosed as 'probable case'. All children with diagnosis of 'confirmed' or 'probable cases' admitted in those hospital during the study period were the sample. During the study period febrile patients admitted in above mentioned hospital with the diagnosis of suspected typhoid fever was screened. Suspicion was made on the basis of clinical features like continued fever, toxic look, diarrhea/constipation, splenomegaly, hepatomegaly, diffuse tenderness and caeca gurgling. Clinically suspected cases undergone laboratory investigation that includes CBC, Widal test and blood culture and other tests as per individual case merits. To determine the sample size the following formula 100 children with the diagnosis of typhoid fever and fulfilling the inclusion and exclusion criteria's during the study period were selected purposively.

Inclusion Criteria

- Patient diagnosed as typhoid fever and admitted in mentioned hospitals during the study period.
- Pediatric age group of both sexes

Exclusion Criteria

- Patient with severe co-morbidities unrelated to typhoid fever.
- Patient with paratyphoid fever.
- Care-giver not willing to give written consent

RESULTS

A total number of 100 children were selected for this study. (Figure-1) Figure 4.1 showed, out of 100 patient 60% were probable case and 40% were confirmed case of typhoid fever. (Table-1) shows the age distribution of the 100 participants. Here, chosen age group were divided into three criteria, 37 children were selected for 1-5 years group, 35 children for the 5-10 years group and 28 were selected for above 10 years aged group. (Figure-2) showed most (87%) of the children had improved sanitation facility in their home (Table-2). Personal hygiene practice by the studied children, the percent of children were quite good particularly in respect to washing hand after defecation as shown in this table. However, a good number of children are exposed to street food (Figure-3). Fever was universal, followed by anorexia (60%) and nausea/vomiting (35%). Abdominal complaints were also common {diarrhea (30%), abdominal pain (25%) constipation (15%)}. (Table-3) showed electrolyte imbalance and shock in 2% patient while hepatitis, shock and pancytopenia present in 1% cases. (Table-4) showed most (86%) of the children had abatement of fever < 5 days while 58.1% children achieved normal liver span between 3-5 days of treatment and mortality was 0%.

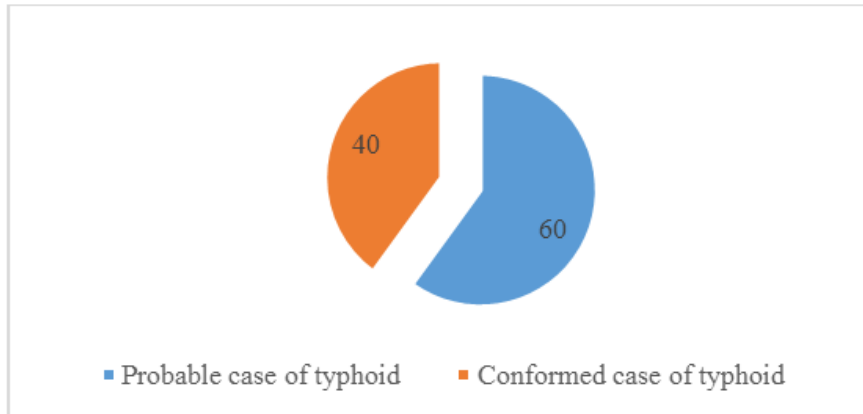


Fig-1: Distribution of typhoid patient according to case definition (n=100)

Table-1: Age distribution of the studied participants (n=100)

| Age | N | % |
|------------|----|----|
| 1-5 years | 37 | 37 |
| 5-10 years | 35 | 35 |
| >10 years | 28 | 28 |

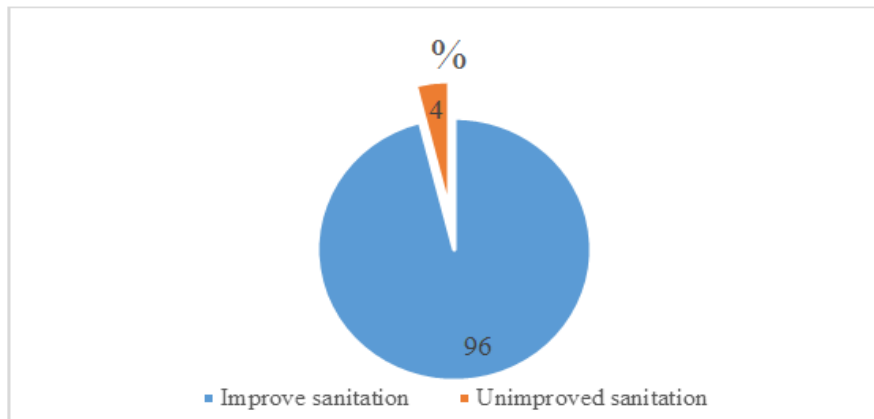


Fig-2: Distribution of children on availability of sanitary facility (n=100)

Table-2: Distribution of children as personal hygiene practice and exposure to outside food (n=100)

| Subject | Number of patients | % |
|--------------------------------------|--------------------|----|
| Hygiene category | | |
| Hand wash before meal with soap | 60 | 60 |
| Hand wash after defecation with soap | 90 | 90 |
| Food habit | | |
| Accustomed to street food | 64 | 64 |
| Male | 42 | |
| Female | 22 | |

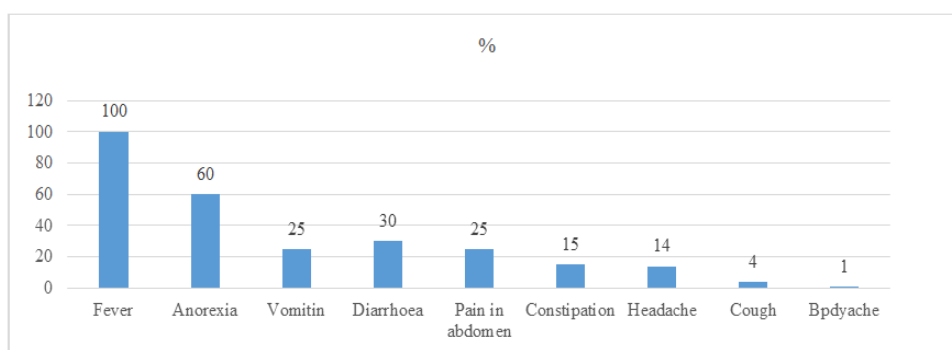


Fig-3: Presenting symptoms of patients (n=100)

Table-3: Complication of children with typhoid fever (n=100)

| Complications | Number of children | % |
|-----------------------|--------------------|---|
| Hepatitis | 1 | 1 |
| Thrombocytopenia | 2 | 2 |
| Pancytopenia | 1 | 1 |
| Electrolyte imbalance | 2 | 2 |
| Shock | 1 | 1 |

Table-4: Outcome of the children with typhoid fever (n=100)

| Parameters | Number of children | % |
|---|--------------------|------|
| Defervescence from day of treatment | | |
| < 5days | 83 | 83 |
| 5-7days | 16 | 16 |
| >7days | 1 | 1 |
| Normal liver span from day of treatment | | |
| <3 days | 25 | 40.3 |
| 3-5 days | 36 | 58.1 |
| >5days | 1 | 1.6 |
| Mortality | 0 | 0 |

DISCUSSION

The present study showed male preponderance 1.5:1. This is consistent with the result of [7, 8]. However, other report suggests similar prevalence amongst both sexes [9]. Probable explanation might be that in a male dominant society like ours male child has higher access to medical care. It may also be due to the fact that the male children are more independent and has more chance of exposure to street food. Most (87%) of the children had improved sanitation facility in their home but needs to be cent percent. According to BBS 2014 report the distribution of sanitation in Dhaka division were improved sanitation 70%, unimproved sanitation 29%, others 1%. Though the use of improved sanitation in case of typhoid patient were similar to general population in Dhaka but percentage of hand washing seems to be less. Majority of children in present study used 'safe' water, like boiling or using filtered water, but there is no study that document effect of boiling or filtering from our country. According to report of BBS 2014 source of drinking water in Dhaka division-supply water-39.7%, tube well water-59.4%, others-0.7%. So it seems that consumption of unboiled water (45%) was relatively high in children suffering from typhoid fever. Similarly, the personal practice as found in the present study cannot explain such high rate. A high percent of children is exposed to street food as was observed by [10] in their observation (79.17% of studied children). The clinical presentation of present study matches to different local and regional publications by [11-13]. However, classical typhoid fever presenting as "stepladder fashion" was not seen in present study. Atypical presentations are rare and may be manifested as cough, jaundice, burning micturition, joint pain and others as shown in table. Islam and colleagues [14] in a similar study from Bangladesh on clinical presentation of typhoid fever in children presented with similar atypical pattern. In our study abdominal tenderness was present in (25%) patient. In

another study done by [15] showed, abdominal tenderness in only 8% of patient. Jaundice was present in only (01%) patient in our study, whereas [16] reported 04% in their series. Contrary to adult, relative bradycardia is not common in children, which was observed in only 3 patient in present study, which is similar to the observation of [17]. Rose spot was observed in none of our series, which is in conformity with the findings of Yaramis A et.al [18]. The probable explanation of absence of rose spot is that, it is difficult to find in dark skinned children. According to a study mild jaundice may occur in typhoid fever and may be due to hepatitis, cholangitis and cholecystitis. Biochemical changes indicative of hepatitis are common during the acute stage [6]. This study showed two of the major complications are thrombocytopenia and Electrolyte imbalance in typhoid fever. In the present study, 90% patients were resistant to nalidixic acid. Khanam F et al., [19] in their study found 100% isolates from were resistant to nalidixic acid. In existing study there were few complications and mortality rate was nil which was similar to the findings of [20].

LIMITATIONS OF THE STUDY

This was a cross-sectional observational study with small sample size, which doesn't reflect the scenario of the whole country.

CONCLUSION AND RECOMMENDATIONS

Clinical profile of typhoid fever in children admitted in tertiary care hospitals matches to what had been seen in the past and recorded in different local and regional publications. Typhoid fever is endemic in our country and affect all ages beyond infancy as found in this study. However, Nalidixic acid associated resistance was found to be high and the reason behind that can be the poor sanitary condition and non-availability of safe water. Recommendations: Efforts

should be taken to find the complications of typhoid fever and solve them. Continuous surveillance of typhoid fever will be done to see the changes in demographic characteristics.

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Conflict of Interest: None declared.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

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