Research Article

Profile of typhoid fever in admitted pediatric patients from tertiary care hospital

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Abstract

Introduction: Typhoid fever is preventable infectious diseases caused by gram negative bacteria Salmonella typhi and is still a major public health problem in India**. Objective:** The main aim of our study was to find out the clinical profile in admitted pediatric patients of typhoid fever. **Design:** Retrospective case study .Subjects: 292 hospitalized Widal positive typhoid fever pediatric cases admitted to tertiary care hospital from1st August 2014 to 31st July 2015. **Methods:** Records of all the patients who were discharged with the diagnosis of Widal Positive enteric fever were retrieved, compiled and analyzed. **Results:** Out of 292 total patients: 18(6.16 %) were below 2 years of age; 54(18.49%) cases were between 2-5 years; 124(42.46%) were between 5 to 10 years of age and 96 (32.87%) were above 10 years of age. Fever was the main presenting complains in all cases. Vomiting (49.31%), diarrhea (36.98%) and cough (33.56) were common associated complains. Almost all (289, 98.97%) patients were treated with Injection *ceftriaxone* after positive Widal reports to start with. Only in 62(21.23%) patients, oral Azithromycin was added along with *ceftriaxone*. 58.20% patients required more than 6 days hospital stay. **Conclusion:** The incidence of typhoid fever was 5.63 % amongst the total admitted patients. Typhoid fever is having high morbidity but with availability of third generation cephalosporin, mortality has reduced. 24.65% patients were below 5 years of age which shows changing trends in age of presentation which was considered rare below 5 years of age.

Keywords: Typhoid Fever, children, Antibiotics, Widal test

Introduction

Typhoid fever is one of the most important diseases caused by Salmonella typhi. It is an acute systemic febrile illness. It is manifested by step wise increasing high grade fever, lethargy, headache, vomiting, abdominal pain, hepatosplenomegaly and rarely stupor. The clinical features of the disease in children are nonspecific and vary significantly. It is one of the most important public health problems in India. [1] and carries a significant morbidity and mortality in both pediatric and adult population [2]. Deffervescence in typhoid fever usually requires at least 36 hours of therapy and fever can persist for 5 to 7 days even with effective therapy [3]. WHO bulletin had mentioned high incidence of enteric fever in below 5 years of age in India, Indonesia and Pakistan [4]. The aim of our study was to find out the disease burden, clinical profile, the age distribution and commonly used effective treatment in admitted patients of typhoid fever in a tertiary care hospital of Ahmedabad. An increase in the incidence of typhoid fever in young children has been reported in many studies [5, 6, 7]. Vi polysaccharide vaccines are given after two years of age but conjugate vaccines can be given in infants also. Study was done and published for effective dissemination of research results for immunization policy.

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Material and Methods

This is a retrospective observational study conducted at Pediatric Department of tertiary care hospital of Ahmedabad. All 292 hospitalized Widal positive typhoid fever pediatric cases (less than 15 years) admitted during 1 year period from 1st August 2014 to 31st July 2015 were included in the study.

Case definition: The cases were diagnosed as having typhoid fever if presented with fever (temp >37.5C) for at least 5 days and serum Widal test positive (O titer >1:160 or H titer >1:160) [8].

As most of patients were admitted after 1 week of fever and culture tests were costly, we have used tube agglutination (Widal) test against O and H antigen for the diagnosis of typhoid fever which is having sufficient sensitivity and specificity along with cost effectiveness.

All the patients were treated with injectable ceftriaxone to start with. Oral Azithromycin was added when patient remained febrile after five days of injectable ceftriaxone.

Exclusion criteria: All the patients having fever less than five days, fever more than five days but serum widal test negative, all the fever patients with serum Widal titer less than 160 for O and H antigen, all the fever patients with other diagnosis and all the patients who took discharge against medical advice were excluded.

The Records of all the patients who were discharged with the diagnosis of Widal Positive typhoid fever were retrieved from the medical record section of the hospital. Data was entered in to excel sheet, compiled and analyzed by statistical method of frequency and percentage.

Results

Total 292 hospitalized pediatric patients were diagnosed as having Widal positive typhoid fever from 1st Aug 2014 to 31st July 2015 in Pediatric wards of a tertiary care hospital in Ahmadabad city.

Table 1: Age and Sex distribution of typhoid fever

Age (in years)	Total Patients n=292	Males n=152	Females n=140
<2	18 (6.16%)	11	7
2-5	54 (18.49%)	29	25
5-10	124 (42.46%)	67	57
10-15	96 (32.87%)	45	51

Out of 292 total patients: 18(6.16 %) were below 2 years of age; 54(18.49%) cases were between 2-5 years; 124(42.46%) were between 5 to 10 years of age and 96(32.87%) were above 10 years of age. Out of total 292 cases 152 (52.05%) were males and 140 (47.94%) were females.

Table 2: Age Distribution in below 2 years cases

Age	No of patients (n=18)
0-6 months	0(0%)
6-12 months	2(11.11%)
12-18 months	7(38.88%)
18-24 months	9(50%)

Out of 6.16% (n=18) cases who were below 2 years of age; most of them were above 1 year (88.88%) and only 11.11% were between 6 months to 12 months. No case was reported below 6 months.

Table 3: Clinical Features of typhoid fever

Clinical features	No of patients	%
Fever	292	100%
Vomiting	144	49.31%
Diarrhea	108	36.98%
Anorexia, malaise, bodyache And headache	124	42.46%
Cough	98	33.56%
Altered sensorium	8	2.73%
Convulsion	6	2.05%
Hepatomegaly	210	71.91%
Splenomegaly	103	35.27%
Coated Tongue	42	14.38%

Fever was the main presenting complains in all cases. Vomiting was present in 144(49.31%) cases and diarrhea in 108(36.98%) cases along with fever. 98 (33.56%) complained of cough and 124 (42.46%) cases complained of malaise, anorexia, body ache, headache etc. vague complains. Altered sensorium in form of delirium was noted in 8(2.73%) cases and convulsions were present in 6(2.05%) cases mostly with fever episode (febrile seizures).Hepatomegaly 150 (51.36%), Splenomegaly 43(14.72%) or both hepatosplenomegaly 60(20.54%) were noted in total 253(86.64%) cases. Coated tongue was noticed in 42(14.38%) cases.

Table 4: Diagnostic tests done for typhoid

Diagnostic Tests	Done	Positive
Serum Widal	292	292(100%)
Blood Culture	15	4(26.66%)
Stool Culture	3	2(66.66%)

All patients were diagnosed as having typhoid after Widal test (Tube Agglutination Test) positive (O titer or H titer >1:160).Blood Culture was sent in only 15 patients out of which only 4 samples turned out to be positive for Salmonella typhi. Stool cultures were sent in 3 patients with prolonged fever and diarrhea, of which two samples turned out positive for Salmonella typhi.

Table 5: Antibiotics used in Enteric Fever

Antibiotics Given	No of cases	%
Inj.Ceftraixone alone	227	77.73%
Inj.Ceftriaxone+oral azithromycin for 5 days	62	21.23%
Other drugs	3	1.02%

Almost all (289) patients were treated with Inj. Ceftraixone after positive Widal reports. Out of them 227(77.73%) responded to the drug. In 62(21.23%) patients, oral Azithromycin was added after 6^{th} or7^{th} day. Other drug Cefaperazone was used in 2 patients and 1 patient was treated with Inj.Amoxiclav. Almost all patients were discharged on Oral Cefixime after 24 hours of afebrile stay at hospital.

Table 6: Duration of Hospitalization

Duration of hospitalization	No of patients	%
<3 days	52	17.80%
3-6 days	70	23.97%
6-9 days	158	54.10%
>9 days	12	4.10%

52 (17.80%) patients were discharged within 3 days; 70(23.97%) patients were discharged before 6 days while 158(54.10%) patients required hospital stay of 6-9 days. Only 12 patients (4.10%) had to remain admitted for more than 9 days. There was no mortality in our study. Serious complications like intestinal perforation, peritonitis and Myocarditis were also not observed in our study.

Discussion

In our study we noted 6.16% cases below 2 years of age and 18.49% were between 2 to 5 years of age. 42.46% were between 5 to 10 years and 32.87% pediatric patients were above 10 years of age. Ramaswamy et al noted 1.8% cases in less than 1 year, 16% between 1 to 2 years, 32% between 2 to 5 years, 33.5% between 5 to 10 years and 15.8% in more than 10 year children [5].

Among the cases (6.16%) below 2 years; 11.11% were between 6 months to 12 months and remaining 88.88% were between 1 to 2 years. No case was reported below 6 months of age. Monorama et al noted 10.9% of total cases below 2 years of which majority(85.7%) were between 13 to 20 months of age and only 14.3% cases were seen in infancy all of whom were more than 6 months of age [6]. Saha et al stated in their study that according to recent reports infants and children below 2 years of age are highly susceptible to typhoid fever [7].

The preschool children have 8-9 times more risk for S.typhi infection than older persons in highly disease endemic areas [9]. Our data indicate high incidence of typhoid fever in children below 5 years (24.65%). This suggests that our area has high incidence of typhoid fever. This findings are consistent with earlier work of Sinha A et al showing that in high incidence area, the incidence of typhoid fever in preschool children can approximate that of school age children [10].

The high disease burden in pre school children in our area highlights the importance of vaccine at early age as well as improvement in water sanitation and hygiene [4].

52.05% were males and 47.94% cases were females making ratio of 1.08:1. Ramaswamy et al noted M: F ratio of 1.29:1 in his study [5].

We noted fever as a main presenting complaint in all cases. Other common symptoms were vomiting (49.31%), diarrhea (36.98%), and cough (33.56%). Altered sensorium (2.73%) and convulsion (2.05%) were rarely associated symptoms. Ramaswamy et al noted fever in all cases and vomiting in 49 % and diarrhea in 29% cases as associated symptoms [5]. S. Jog et al noted vomiting, abdominal pain and loose stool as most common associated symptoms in 42%, 33.6% and 31% patients respectively [11]. We noted only Hepatomegaly in 51.36%, only Splenomegaly in 14.72% and hepatosplenomegaly in 20.54 % patients. Ramaswamy et al noted Hepatomegaly in 71% and Splenomegaly in 34% [5] while S Jog et al noted only Hepatomegaly in 15.9% only Splenomegaly in 7.5% and hepatosplenomegaly in 12.6% cases [5].

We used widal test for diagnosis of typhoid fever as it is cost effective, easily available, rapid diagnostic test. Blood culture is the gold standard for diagnosis of typhoid in 1st week of illness but it was not possible in all cases because most patients were admitted after 1 week of fever as well as cost factor was the major hurdle. Stool cultures were done in only 3 patients who needed to be admitted for more than 14 days and were having complained of persistent diarrhea.

77.73% patients of typhoid fever became afebrile within 6 to 7 days of Inj. Ceftraixone. In only 21.23% cases it was required to add Oral Azithromycin along with Inj. Ceftraixone to treat typhoid fever. S Jog et al also noted that 62.1% patients of typhoid fever were treated by only Inj. Ceftraixone and combination of Inj. Ceftraixone and Azithromycin was used in 13.4 % cases [11].

In our studies 58.20% patients required more than 6 days hospital stay while remaining 41.80 % cases were discharged within 6 days. Ramaswamy et al noted mean hospital stay of 6.5 days in their study for typhoid fever [5].

Conclusion

The incidence of typhoid fever was 5.63 % amongst the total admitted patients. High morbidity was observed but with availability of third generation cephalosporin, mortality has reduced which was 0% in our study. 6.16% patients were below 2 years of age which shows changing trends in age of presentation which was considered rare below 5 years of age [12]. With availability of conjugated vaccine against typhoid fever, we can prevent it in young children.

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