

Clinico Demographic Profile of Typhoid Fever In Children In Teaching Institute.

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Abstract

Introduction: Salmonella typhi and Salmonella paratyphi are the multisystemic diseases that produce enteric fever. Salmonella typhi exclusively affects humans and is transmitted via the fecal-oral route. It is challenging to distinguish enteric fever from other potential diagnoses because of the wide range of signs and symptoms it is accompanied by.

Aim: To determine the clinico Demographic profile of Typhoid fever in children

Material and methods: The present retrospective study was conducted in the Department of Pediatrics at Acharya

Shri Chander College of Medical Sciences & Hospital (ASCOMS) Hospital, Jammu from June, 2022 to June, 2023 on 200 subjects, clinically suspected enteric fever and either Widal or Blood culture was positive were included in this study. All the patients data including detailed clinical history and examination was taken from admission files. The data was collected with the help of a structured proforma and was analyzed using statistical package for social science (SPSS) software and appropriate statistical analytical tests.

Results: It was observed that the majority of the subjects were in the age group of 6-10 years (43%) and the male

female ratio was 1.7:1. Blood culture was positive in 74 patients (37%). Blood culture revealed Salmonella typhi in 66 (33%) patients and Salmonella paratyphi A in 8 patients (4.0 %).

Conclusion: It is concluded that the effective management of enteric fever should include early diagnosis, appropriate antibiotic delivery, and attention to local sensitivity patterns.

Keywords: Enteric fever, Typhoid, Clinical manifestation, Clinical profile and Salmonella.

Introduction

The Enteric fever is also called Typhoid fever. Typhoid fever is an multisystemic disease caused by Salmonella typhi and Salmonella paratyphi, which is common among the population of developing countries mainly the population with poor sanitation, poor sewage, improper disposal, unprotected water suppl.¹

The mode of transmission of Salmonella typhi is Fecal-oral route and it affects only humans. As the enteric fever is associated with a diverse sign and symptoms, it is difficult to differentiate it from other differential diagnosis.^{2,3}

After 1 or 2 weeks following infection, the clinical symptoms typically show up. From mild constitutional symptoms to a severe, debilitating disease, typhoid has a wide spectrum of clinical presentations. Hepatosplenomegaly, a high-grade fever, headache, exhaustion, vomiting, abdominal discomfort, and, in rare instances, stupor are the typical symptoms. Constipation, coughing, headaches, loss of appetite, and sore throat are some of the additional typical symptoms. The less common symptoms include diarrhoea, delirium, and rectal bleeding.^{4,5}

Typhoid fever can only be diagnosed with certainty if S. typhi is isolated from bone marrow, blood, or a specific

anatomical lesion. Since the causal organism is present in the blood of more than 80% of typhoid fever patients, blood cultures are the primary method of diagnosis. Enteric fever can be effectively treated early on to lower mortality and the incidence of sequelae.⁶

Thus, the present study was undertaken to analyze the clinical profile of enteric fever.

Material and Methods

The present retrospective study was conducted in the Department of Pediatrics at Acharya Shri Chander College of Medical Sciences & Hospital (ASCOMS) Hospital, Jammu from June, 2022 to June, 2023 on 200 subjects, aged between 1-18 years with clinically suspected enteric fever and either Widal or Blood culture was positive were included in this study.

Inclusion Criteria

- Fever for ≥ 3 days without obvious focus of infection and proven either by positive blood culture or positive Typhoid IgG/IgM rapid test.
- Patients aged between 1-18 years.

Exclusion Criteria

- Negative blood culture or negative Typhoid IgG/IgM rapid test.
- Children with documented typhoid fever within past 8 weeks.
- Parents or children not willing to participate.

Informed consent was taken from parents of all the eligible candidates. All the indoor children, admitted through OPD or emergency fulfilling the inclusion criteria were enrolled for the study. All the patients were subjected to detailed clinical history and examination. Baseline laboratory investigations (CBC, LFT, RFT) were performed in all cases and the findings were recorded in a pre-made proforma. In addition to baseline investigations Blood culture and Typhoid IgG/IgM rapid

test were also performed during the course of hospital stay. The chest and abdominal X-rays, ultrasound abdomen were done in children when indicated.

Ethical clearance was obtained from the Institutional Ethics Committee before the commencement of the study. Data was entered in a Microsoft Excel Spreadsheet. Continuous variables were summarized as mean and standard deviation whereas Categorical variables were summarized as percentages. All the data was analyzed using statistical package for social science (SPSS) software and appropriate statistical analytical tests.

Results and Observation

Table 1: Age Distribution

Age Distribution	Frequency	Percent
0-5 years	38	19%
6-10 years	86	43%
11-15 years	58	29%
16 and above	18	09%

Table 1, showed that the majority of the subjects were in the age group of 6-10 years (43%), followed by 11-15 years (29%), 0-5 years (19%) and ≥16 years (9%).

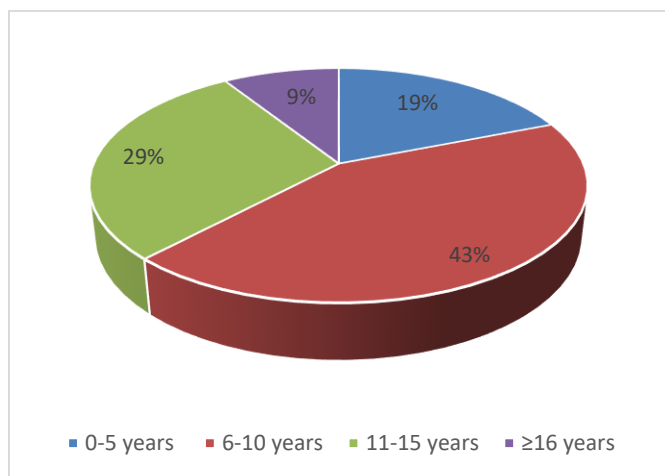


Figure 1: Age distribution

Table 2: Gender Distribution

Gender	Frequency	Percent
Male	124	62%
Female	76	38%

It was observed that there was male predominance and the male female ratio was 1.7:1 as shown in table 2.

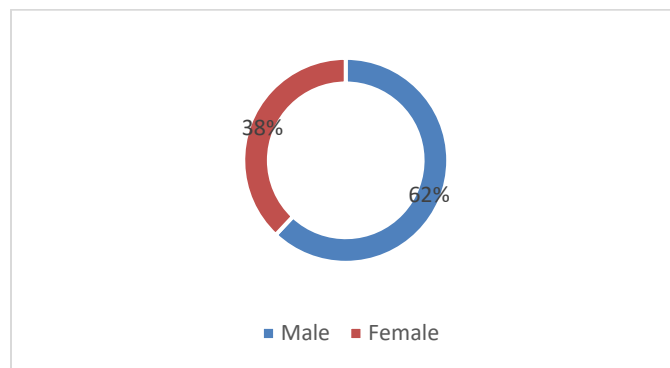


Figure 2. Gender distribution

Table 3: Duration of Fever

Duration in days	Frequency	Percent
1-3 days	9	4.5%
4- 6 days	82	41%
7-9 days	64	32%
10-12 days	18	09%
13-15 days	18	09%
>15 days	9	4.5%

Table 3 depicted that in most of the cases the duration of fever was 4 to 6 days (41%), followed by 7-9 days (32%), 10-12 & 13-15 days (9% each respectively) and 1-3 & >15 days (4.5% each respectively).

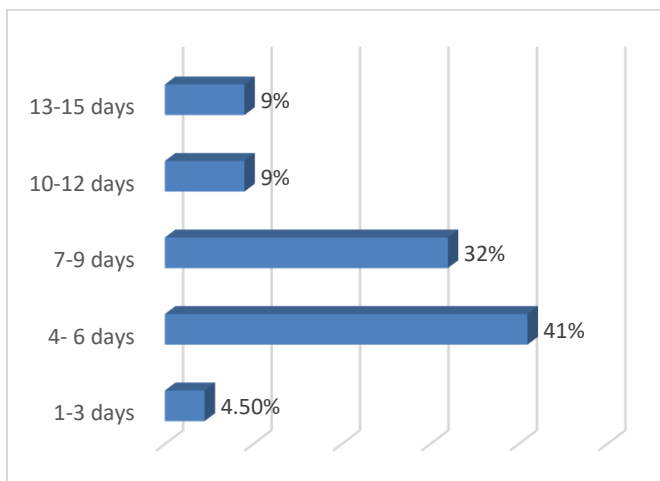


Figure 3. Duration of fever

Table 4: Signs

Physical findings	Frequency	Percent
Toxic Look	112	56%
Coated Tongue	130	65%
Lymphadenopathy	48	24%
Splenomegaly	56	28%
Abdominal Distention	3	1.5%

The commonest sign of enteric fever was coated tongue (65%), followed by toxic look (56%), splenomegaly (28%), lymphadenopathy (24%) and abdominal distention (1.5%) as presented in table 4.

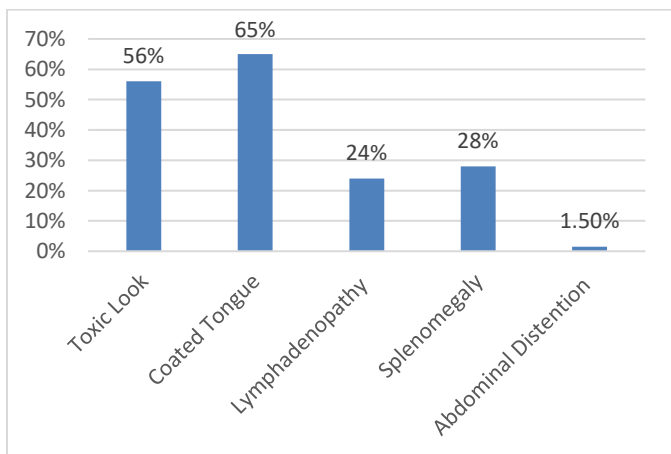


Figure 4. Signs

Table 5: Symptoms

Presenting Symptoms	Frequency	Percent
Diarrhoea	56	28%
Vomiting	72	36%
Abdominal pain	42	21%
Cough	36	18%
Anorexia	140	70%

The commonest symptom of enteric fever was anorexia (70%), followed by vomiting (36%), diarrhoea (28%), abdominal pain (21%) and cough (18%) as shown in table 5.

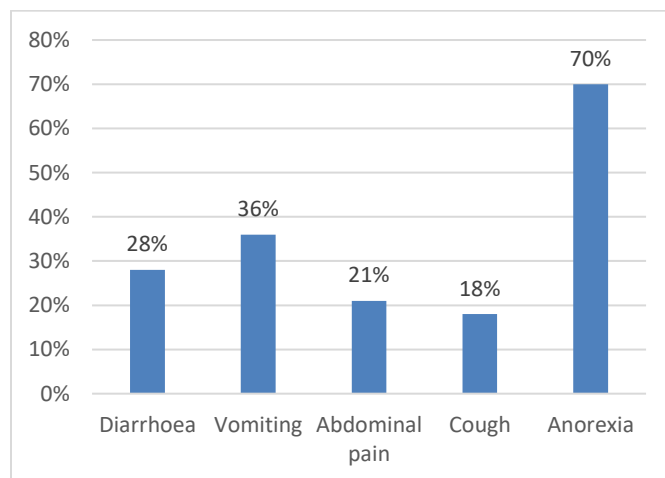


Figure 5. Symptoms

Table 6: Laboratory Findings

Laboratory findings	Frequency	Percent
Anemia	124	62%
Total count (WBC)		
<5000	44	22%
>12000	30	15%
Elevated SGOT	62	31%
Elevated SGPT	64	32%
Platelet count less than 1.5 lakhs	16	08%
Eosinopenia	20	40%
Thrombocytopenia	64	32%

Table 6 showed the laboratory findings of patients. Most of the patients had low Hb level (62%), followed by eosinopenia (40%), elevated SGPT (32%), thrombocytopenia (32%), elevated SGOT (31%), Total WBC count <5000 (22%), Total WBC count <12000 (15%) and low platelet count (8%).

Table 7: Complications

Complications	Frequency	Percent
Persistent Tachycardia	2	1.0%
Myocarditis	1	2.0%
Hepatitis	6	3.0%
Encephalopathy	4	2.0%
Pneumonia	2	1%
Typhoid Adenitis	4	2%

Table 7, showed that the commonest observed complication of enteric fever was hepatitis (3%), followed by encephalopathy, typhoid adenitis & myocarditis (2% each respectively), pneumonia & persistent tachycardia (1% each respectively).

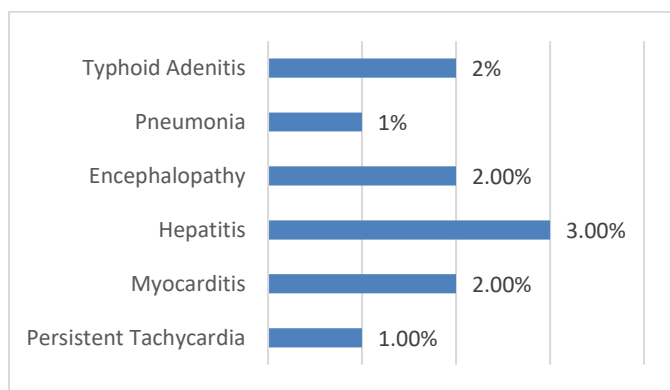


Figure 6. Complication

Table 8: Rapid Typhoid IgM

Rapid Typhoid IgM	Frequency	Percent
Yes	194	97%
No	6	3%

Table 8: Depicted that 97% study subject had positive rapid typhoid IgM.

Table 9: Enteric Culture

Enteric Culture	Frequency	Percent
Yes	74	37%
No	126	63%

Blood culture was positive in 74 patients (37%) as depicted in table 9. Blood culture revealed Salmonella typhi in 66 (33%) patients and Salmonella paratyphi A in 8 patients (4.0 %). All 74 culture positive patients were sensitive to ceftriaxone and azithromycin, 85% resistance was seen to amoxyclav, amoxicillin and nalidaxiac acid. Ciprofloxacin resistance was seen in 26 (13.0%) patients. The mean time to defervescence defined as time period in days from the day of onset of antibiotic therapy in the hospital to the disappearance of fever was 5.9 days.

Discussion

It was observed that the majority of the subjects were in the age group of 6-10 years (43%) and the male female ratio was 1.7:1. These findings are consistent to the study conducted by Behera JR et al. (2021), observed that the enteric fever was common among age group of 6-14 years and the male to female ratio was 1.66:1.⁷ In another study conducted by Ahmad S, et al. (2016) reported that the mean age of the study subjects was 7.6 ±3.9 years, there was male predominance and the male to female ratio was 1.4:1.⁸

In most of the cases the duration of fever was 4 to 6 days (41%), commonest sign of enteric fever was toxic look (56%), splenomegaly (28%), lymphadenopathy (24%) and abdominal distention (1.5%) and commonest symptom of enteric fever was anorexia (70%), followed by vomiting (36%), diarrhoea (28%), abdominal pain (21%) and cough (18%) and commonest observed complication of enteric fever was hepatitis (3%), followed by encephalopathy (2.5%), hepatitis (2%) and pneumonia (1%). The laboratory findings showed that most of the

patients had low Hb level (62%), followed by eosinopenia (40%), elevated SGPT (32%), thrombocytopenia (32%), elevated SGOT (31%), Total WBC count <5000 (22%), Total WBC count <12000 (15%) and low platelet count (8%). These findings are correlated with the study conducted by Behera JR et al. (2021), found that the commonest symptom was fever (98.21%) followed by vomiting (39.29%), diarrhoea (26.79%), pain in abdomen (21.43%), cough (19.64%), anorexia (14.29%) and headache (7.14%). The commonest signs were pallor (25.8%), hepatomegaly (16.07%), icterus (10.71%), splenomegaly (8.93%) and coated tongue (1.79%). Most of the patients had elevated CRP (73.21%), followed by eosinophilia (58.93%), anemia (42.86%), leucopenia (10.71%), leucocytosis (19.64%), thrombocytopenia (14.29%), pancytopenia (7.14%), transaminitis (30.36%), hyponatremia (12.50) and hypokalemia (8.93%). The reported common complication was hepatitis (10.71%), followed by bronchitis (7.14%), bronchopneumonia and encephalopathy (1.79% each respectively).⁷ In similar study conducted by Nusrat N et al. (2022) found that the commonest clinical manifestation of enteric fever was fever (100%), followed by coated tongue (35.5%), hepatomegaly (33.5%), vomiting (25.5%), abdominal pain (21.5%), diarrhea (16.5%) and splenomegaly (16%).²

In our study 97% study subject had positive rapid typhoid IgM. Blood culture was positive in 74 patients (37%). Blood culture revealed Salmonella typhi in 66 (33%) patients and Salmonella paratyphi A in 8 patients (4.0 %). All 74 culture positive patients were sensitive to ceftriaxone and azithromycin, 85% resistance was seen to amoxycylav, amoxicillin and nalidaxiac acid. Ciprofloxacin resistance was seen in 26 (13.0%) patients. The mean time to defervescence defined as time period in days from the

day of onset of antibiotic therapy in the hospital to the disappearance of fever was 5.9 days. These outcomes are in accordance with the study performed by Shah SC et al. (2018), in 70% and 30% of the study subjects respectively, Salmonella typhi and Salmonella paratyphi A were isolated.⁹ Other similar study done by Nusrat N et al. (2022) found that 56.5% of patients had significantly elevated Widal test titers, while 43.5% of patients tested positive for culture. 84 (96.55%) of the 87 cases with a positive culture were S. typhi, and three (3.44%) were S. paratyphi. The most sensitive antibiotic was shown to be ceftriaxone (100%), followed by cefotaxime (95.1%) and ceftazidime (91.5%). Among oral antibiotics, cefixime had the highest sensitivity (92.8%). Least sensitive medication (18.30%) was nalidixic acid.²

Conclusion

The present retrospective study concluded that enteric fever among children is still a big public health concern, and many patients needs hospitalisation in tropical area. As there is diverse range of signs and symptoms, a high index of clinical suspicion is essential for diagnosis. The early diagnosis and effective treatment with proper antibiotic administration and attention to local sensitivity patterns should be there for effective management of enteric fever.

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