

AGE, PATTERN OF PRESENTATION AND RISK FACTOR FOR ENTERIC FEVER IN 2-15 YEARS OLD CHILDREN

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ABSTRACT

OBJECTIVE: To find out age related common pattern of presentation of enteric fever in children.

STUDY DESIGN: A cross sectional study.

PLACE AND DURATION: Pediatric Department Al-Nafees Medical College and Hospital Islamabad over a period of 6 months from 1st July 2013- 31st Dec 2013

METHODOLOGY: Patients irrespective of gender between 2-15 years, with fever of more than 4 days without focus were included in the study. Complete blood count and typhi dot test performed on all patients for diagnosis. Performa containing bio data, symptoms and clinical signs was filled of patients with positive serology.

RESULTS: A total of 60 patients studied and among them 92 % (n= 55) and 90% (n=54) patient presented with poor appetite and fever respectively. Among them 90% (n=54) had white coated tongue and 66% (n=40) had low grade fever (100°F -102°F) while 33% (n=20) were having high grade fever (>102°F). Hepatomegaly was found in 73% (n=44) patients while Hepatosplenomegaly in 20% (n=12) patients. Leukocytosis was more common in children than leucopenia.

CONCLUSION: Common symptom of enteric fever is poor appetite and low grade fever, and white coated tongue with hepatomegaly is common findings on clinical examination. Thrombocytopenia is consistent laboratory finding.

KEY WORDS: Enteric Fever, Clinical Presentation, Poor Appetite, Hepatomegaly, Diagnosis

INTRODUCTION

Enteric fever is caused by bacteria *Salmonella typhi* and *S. paratyphi A, B, and C*. Only humans are infected by them through Oro-fecal route¹. The overall incidence of enteric fever is approximately 16 million cases each year. Out of them 7 million cases occurs in South East Asia alone, this leads to more than 600,000 deaths each year². It means 93% of global episodes occurs in this region, causing high morbidity and mortality³. We are also victim of enteric fever as our country falls into this region⁴. Studies are not available to show the exact figures on the incidence and prevalence of enteric fever in Pakistan but all studies done locally indicates that enteric fever is a major health problem for Pakistan and the prevalence is deemed comparable to that in South East Asia. Children are worst affected. In endemic areas the children under 5 years of age are equally affected as children above 5 years of age⁵.

In endemic areas, the factors responsible for high prevalence include poor hygiene, low socioeconomic status of a large part

of the population and unavailability of portable water supply to most localities^{6,7}. The development of resistance to antibiotics and overburdened health care systems poses additional threats of increased morbidity and mortality and made disease control difficult and contribute to endemicity^{8,9}. In such situation the clinician can help in control of enteric fever by early disease recognition and appropriate treatment.

When enteric fever is not diagnosed appropriately in time, the fever gets prolonged and results in complications¹⁰. The standard diagnostic tools for enteric fever are blood culture and PCR, which are either not available or not affordable in endemic areas with poor socioeconomic status. So mostly we rely on clinical diagnosis¹¹. In the absence of standard diagnostic tools, the clinician of a third world country must be familiar with the age related common patterns of presentation of enteric fever and other simple laboratory abnormalities occurring in enteric fever, otherwise the diagnosis may be delayed or missed, and patients without enteric fever may receive unnecessary and inappropriate antimicrobial therapy leading to drug resistance. Therefore, we studied the clinical and laboratory features of enteric fever in typhi-dot positive cases presenting to our hospital.

METHODOLOGY

This is a cross sectional study conducted at Pediatric Department Al-Nafees Medical College and Hospital Islamabad from 1st July to 31st Dec 2013. A total of 60 patients with fever of more than 4 days without focus aged 2-15 year of either gender were included. Exclusion criteria were fever with sore throat, burning micturition, viral exanthema, ear discharge, pneumonia, seizures. Written consents were taken from the parents and guardian after explaining the purpose of study. 3cc blood was drawn and sent to hospital laboratory for complete blood count and differentials and typhi- dot. No charges were

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demanded from caregivers. Those with positive typhi-dot were further evaluated for presenting symptoms and clinical signs. Performa consisting of bio data and presenting complaints, examination and laboratory results were filled. Caloric intake less than 40kcal/kg/day was defined as poor appetite, whitish coat involving more than 2/3rd of tongue was defined as white coated tongue. Fever > 102 F was defined as high grade fever, while fever <102 F but >100 F was defined as low grade fever. Thrombocytopenia was defined as platelet count <150,000. Those with negative typhi dot were further evaluated with urine complete examination for urinary tract infection and smear for MP for malaria. Data was entered analyzed with statistical package for social sciences (SPSS) version 10. Frequencies and percentages were calculated for all qualitative/categorical variables including gender, age groups, symptoms, physical signs and laboratory results. Mean and standard deviation were calculated for age.

RESULTS

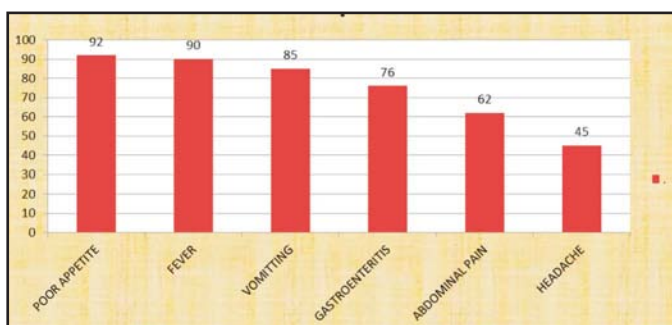
A total of 60 children were included in study that met our

TABLE - I: AGE DISTRIBUTION OF CHILDREN WITH ENTERIC FEVER. (n=60)

Age group(yrs.)	%age
2-5	26.66% (16)
6-9	53.33% (32)
10-13	20.00% (12)
Total	100.00% (60)

TABLE – III: LABORATORY FINDINGS IN CHILDREN WITH ENTERIC FEVER (n=60)

Common laboratory findings	%age of patients
TLC>11000/cumm	60.00% (36)
TLC<5000/cumm	33.33% (20)
Hb≤11g/dl	30.00% (18)
Platelets <150,000/cumm	83.33% (50)
SGPT>45IU/L	40.00% (24)



↑ % of children ↓ Symptoms →

FIGURE-1: PRESENTING FEATURE OF CHILDREN WITH ENTERIC FEVER

inclusion criteria, out of which 57% (n=34) were male and 43 % (n=26) were females. Mean age of presentation was 60.25 months (SD±15.14). signs and symptoms of enteric fever were most common in Children aged 6-9 years as shown in Table-I. Most common presenting complaint was poor appetite and least common was intestinal perforation Figure-1. Three patients with prolonged fever and one patient with complication of enteric hepatitis needed admission while rest of them treated as out-door patient after conformation by positive serology. Most common clinical finding was white coated tongue and least common was rose spots Table - II. All (n=60) of them were not vaccinated against enteric fever. Common risk factor identified in our patients is shown in Figure-2. 60% (n=36) patients presented with leukocytosis and 33.33 % (20) had leucopenia. The laboratory findings are mentioned in Table - III. Risk factors according to age group are presented in Figure - 2.

TABLE – II: PHYSICAL SIGNS IN CHILDREN WITH ENTERIC FEVER (n=60)

Physical Signs	%age of patients
White coated tongue	90% (54)
Low grade fever(100°F-102°F)	66% (40)
High grade fever(>102°F)	33% (20)
Hepatomegaly	73.33% (44)
Splenomegaly	60% (36)
Hepatosplenomegaly	20% (12)
Jaundice	3.33% (2)
pallor	3.33% (2)
Rose spots	0% (0)

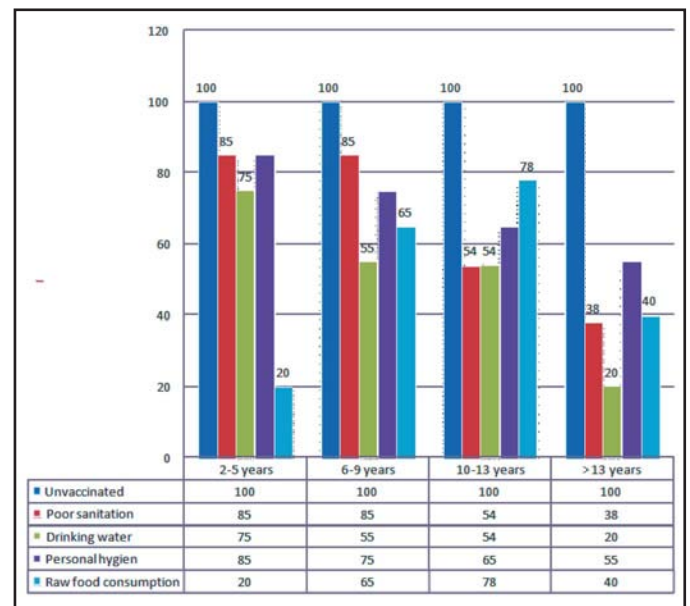


FIGURE – 2: RISK FACTORS IN CHILDREN WITH ENTERIC FEVER.

DISCUSSION

Enteric fever is a common and significant cause of morbidity between 1 and 5 years of age regardless of gender in endemic areas. The presentation of enteric fever in children in endemic areas is dramatic and different as mentioned in literature. Although clinical diagnosis of typhoid may be difficult, there are indications that simple algorithms can be developed for diagnosis and patient triage in endemic areas. Such algorithms would have implications for diagnostic and treatment protocols in endemic areas. In our study there is slight male predominance with male to female ratio 1.30:1 and same result were observed in study conducted by Verma and his colleagues¹¹. Results by Prajapati B et al, also indicated that boys more commonly develop enteric fever than girls¹². Our data indicate that the incidence of typhoid in pre-school children approximate that for school-aged children, as other studies showed that in the higher-prevalence region, the incidence of typhoid fever in pre-school children aged 2–5 years was of the same order of magnitude as that for school-aged children aged 5–15 years^{13,14}. The most common presenting complaint in children was poor appetite and fever these findings are consistent with earlier work showing that main presenting complaint is fever in children^{15,16} but in our study we further categorize fever in high grade fever and low grade fever and found that low grade fever was more common than high grade fever which differ from many studies^{17,18}. Our data showed that most common clinical finding was white coated tongue followed by hepatomegaly. This coincides with findings of Abdullah¹⁹ and Butt²⁰. While other studies show splenomegaly and Hepatosplenomegaly are common in contrast to ours²¹. Possibility to these findings is that we studied children under 5 years, and such children do not have well developed reticuloendothelial system so they can present atypically as results of our study showed. Also we did not find rose spots in any of the patient. In our study total 4 patients got admission only one of them developed enteric hepatitis while other three³ without complication get admitted because fever was not responding to oral medication. This suggests that complication of enteric fever is not common in children and our results are in accordance with the results observed by Kelly-Hope and his colleagues²². Vague abdominal pain without tenderness was also found in significant number of children. Although risk factors for typhoid fever was not our objective but we observed them as a by-product in our study and found that regarding risk factors our findings compares with many of other studies and common factors were poor hygiene and sanitation, consumption of street food^{23,24,25}. But in this study we identified risk factor according to age group and found that vaccination was common risk factor for all age groups while poor sanitation affected age groups 2-5 years and 6-9 years and raw food consumption affected age groups 10- 13 years and more than 13 years. In our study no difference in low income and high income families were found as mentioned in study by Sur D et al²⁶.

CONCLUSION

The most common presenting feature of enteric fever is poor appetite and fever, and white coated tongue and hepatomegaly are the common clinical findings in children. Thrombocytopenia is most common laboratory finding.

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