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Original Article

Assessment of cases of typhoid fever in children age ranged 5-16 year of both genders

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ABSTRACT:
Background: Typhoid fever is an acute systemic illness caused by Salmonella enterica serovar Typhi. The present study was conducted to assess cases of typhoid fever in children. **Materials & Methods:** 72 children age ranged 5-16 years were included. Symptoms of respiratory distress, cardiovascular examination, central nervous system examination and detailed abdominal examination was recorded. **Results:** Age group 5-8 years had 23, 9-12 years had 30 and 13-16 years had 19 patients. Clinical features found in patients were fever in 70, abdominal pain in 34, cough in 28, vomiting in 21, myalgia/arthralgia in 30, headache in12, constipation in 9, chest discomfort in 12, diarrhoea in 24 and anorexia in 6 patients. Organisms found to be S. Enterica serovar typhi in 45%, S. paratyphi in 25%, Others in 20% and no growth in 10%. The difference was significant (P< 0.05). **Conclusion:** Common clinical features were fever, abdominal pain, cough, vomiting, myalgia/arthralgia, headache, constipation, chest discomfort and diarrhoea.
Key words: Abdominal pain, cough, Typhoid fever.

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INTRODUCTION

Typhoid fever is an acute systemic illness caused by Salmonella enterica serovar Typhi. It is characterized by sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough.[1] The disease continues to be a worldwide health problem. Recent data show the annual burden of disease to be 21 million cases globally with over 200 000 deaths due to typhoid fever.[2] Earlier it was estimated to be 16 million with over 600 000 deaths. There is also considerable epidemiological interest in the seasonal variation of pediatric typhoid fever. The impact of climatic factors is substantial and prophylactic measures for the summer months are advocated.[3]

Recent data have found a strong variation of prevalence rates among blood culture positive isolates collected in local hospitals, ranging from 9% to 21.4% for Salmonella enterica serovar Typhi (S. Typhi). As the clinical picture of typhoid fever is often unspecific, misdiagnosis and insufficient or inadequate treatment are potential risks associated with the disease.[4] In the absence of difficult-to-obtain bone marrow specimens, microbiologic culture of a blood sample is considered to be the current state-of-the art test for the diagnosis of typhoid fever even though its sensitivity may be as low as 40%.[5]

The widely in use Widal test provides a cost- efficient alternative for serological diagnosis, however its performance remains unsatisfying with sensitivity reported of 75% using blood culture as the gold standard and applying a cut off titer of 1:80.[6] The present study was conducted to assess cases of typhoid fever in children.

MATERIALS & METHODS

The present study was conducted among 72 children age ranged 5-16 years of both genders. Parents were informed regarding the study and their written consent was obtained.

Demographic data such as name, age, gender etc. was recorded. A detailed clinical encounter form was completed and findings such as tongue coating, pallor, jaundice, lymph nodes, dehydration, rose spots, severity of toxicity, edema, symptoms of respiratory distress, cardiovascular examination, central nervous system examination and detailed abdominal examination was recorded. Core body temperature (axillary) was measured by clinical thermometer and recorded. History and duration of presenting complaints, family history and prior use of antibiotics were also recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Age group (years)	Number	P value
5-8 years	23	0.02
9-12 years	30	
13-16 years	19	

Table I, graph I shows that age group 5-8 years had 23, 9-12 years had 30 and 13-16 years had 19 patients. The difference was significant (P< 0.05).

Graph I Distribution of patients

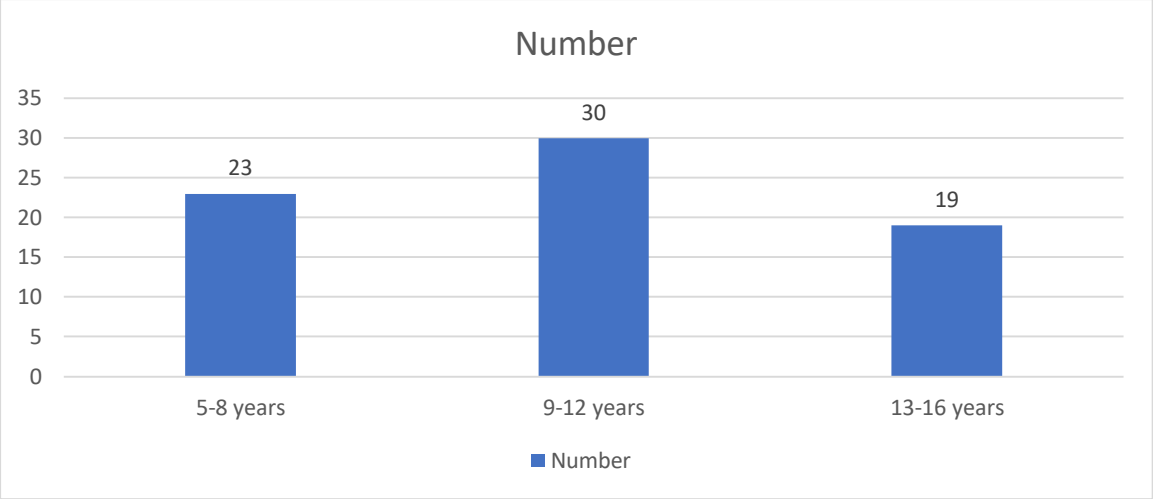

Table II Clinical features in patients

Clinical features	Number	P value
Fever	70	0.04
Abdominal pain	34	
Cough	28	
Vomiting	21	
Myalgia/arthralgia	30	
Headache	12	
Constipation	9	
Chest discomfort	12	
Diarrhoea	24	
Anorexia	6	

Table II, graph II shows that clinical features found in patients were fever in 70, abdominal pain in 34, cough in 28, vomiting in 21, myalgia/arthralgia in 30, headache in12, constipation in 9, chest discomfort in 12, diarrhoea in 24 and anorexia in 6 patients. The difference was significant (P< 0.05).

Graph II Clinical features in patients

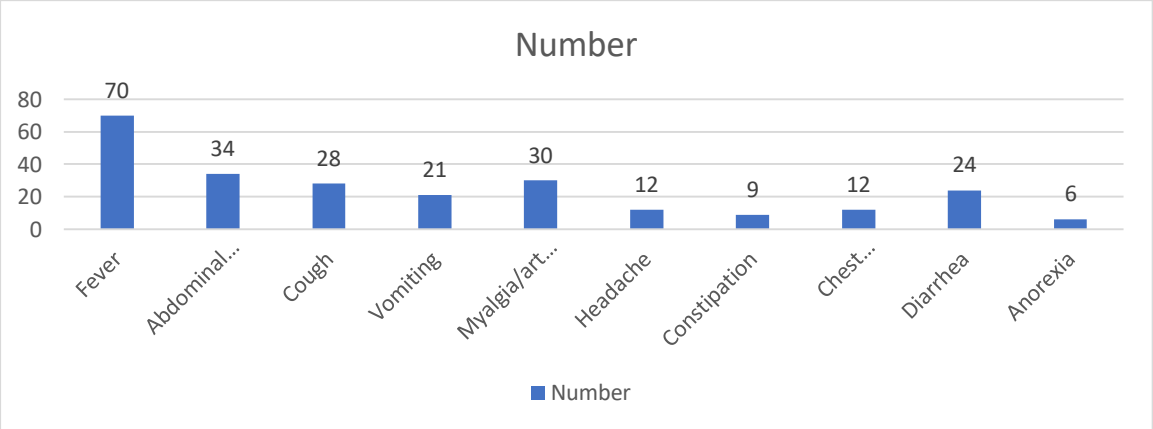

Table III Distribution of organisms grown from the blood cultures

Organisms	Percentage	P value
S. Enterica serovar typhi	45%	0.01
S. paratyphi	25%	
Others	20%	
No growth	10%	

Table III shows that organisms found to be S. Enterica serovar typhi in 45%, S. paratyphi in 25%, Others in 20% and no growth in 10%. The difference was significant (P< 0.05).

DISCUSSION

The morbidity of typhoid fever is highest in Asia with 93% of the global episodes occurring in this region.[7] It also has the highest regional incidence rate of 274 cases per 100 000 population, over five times higher than the second highest, Latin America.[8] Southeast Asia has an incidence of 110 cases/ 100 000 population, which is the third highest incidence rate for any region. Pakistan falls into this region. Although population-based data are scarce, several hospital-based studies from different parts of the country have consistently shown a very high incidence of typhoid fever, especially in the younger age groups.[9] More recent information from Delhi has indicated that the relative incidence of typhoid fever is considerably greater in preschool children. Not only is the morbidity quite high but the emergence of multidrug-resistant isolates has made effective therapy of typhoid very difficult as first-line drugs are losing their efficacy against the organism.[10] The present study was conducted to assess cases of typhoid fever in children.

In present study, age group 5-8 years had 23, 9-12 years had 30 and 13-16 years had 19 patients. Ley et al[11] assessed the sensitivity and specificity of the Tubex test among Tanzanian children hospitalized with febrile illness using blood culture as gold standard. Evaluation was done considering blood culture confirmed S. Typhi with non-typhi salmonella (NTS) and non - salmonella isolates as controls as well as with non-salmonella isolates only. Of 139 samples tested with Tubex, 33 were positive for S. Typhi in blood culture, 49 were cultureconfirmed NTS infections, and 57 were other non-salmonella infections. Thirteen hemolyzed samples were excluded. Using all non - S. Typhi isolates as controls, we showed a sensitivity of 79% and a specificity of 89%. When the analysis was repeated excluding NTS from the pool of controls we showed a sensitivity of 79% and a specificity of 97%. There was no significant difference in the test performance using the two different control groups (p > 0.05).

We observed that clinical features found in patients were fever in 70, abdominal pain in 34, cough in 28, vomiting in 21, myalgia/arthralgia in 30, headache in12, constipation in 9, chest discomfort in 12, diarrhoea in 24 and anorexia in 6 patients. Siddiqui et al[12] found that one-third of the 4198 cases with febrile episodes of three or more days detected in the community were screened at the centers; 341 were clinically suspected of having typhoid fever. Forty-nine were positive by culture whereas 161 were positive by serology. Ten cases were multidrug resistant. Incidence of culture-proven typhoid was estimated to be 170 (95% CI: 120, 220)/ 100 000 population, whereas serology-based incidence was 710 (95% CI: 620, 810)/100 000 population. Peak incidence was noted in October followed by May and June. Passive surveillance, even when augmented by household visits, misses a significant portion of suspected cases. Morbidity of typhoid is quite high and needs public health intervention. Hot months have higher incidence of typhoid. Healthcare behavior studies will help to develop a better surveillance system.

The limitation of the study is small sample size.

CONCLUSION

Authors found that common clinical features were fever, abdominal pain, cough, vomiting, myalgia/arthralgia, headache, constipation, chest discomfort and diarrhoea.

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