

ORIGINAL RESEARCH

Assessment of prescriptions for the treatment of typhoid fever in children

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ABSTRACT

Background: Typhoid fever is an acute systemic febrile illness caused by the bacterium *Salmonella enterica* serovar Typhi. The present study was conducted to assess prescriptions for the treatment of typhoid fever in children.

Materials & Methods: 110 patients of enteric fever of both genders were enrolled. A thorough clinical examination was carried out. Clinical features and various antibiotics used to treat these patients was recorded.

Results: Out of 110 patients, males were 60 and females were 50. Among culture positive, 24 was IgM positive, 1 was widal positive and 23 were both IgM +ve, Widal +ve. Among Culture negative, 28 were IgM positive, 10 were widal positive and 25 were both IgM +ve, Widal +ve. The difference was significant ($P < 0.05$). Azithromycin was used among 27, ofloxacin among 28 and cefixime among 55. The difference was significant ($P < 0.05$).

Conclusion: Most common used antibiotics was cefixime followed by ofloxacin and azithromycin.

Key words: Antibiotics, Cefixime, Ofloxacin

INTRODUCTION

Typhoid fever is an acute systemic febrile illness caused by the bacterium *Salmonella enterica* serovar Typhi. *Salmonella enterica* serovars Paratyphi A, B, and C cause the clinically similar condition, paratyphoid fever.¹ Typhoid and paratyphoid fevers are collectively known as enteric fevers.² While both diseases share clinical features, paratyphoid fever tends to have a more benign course of illness.³ Enteric fever is an endemic disease in the tropics and sub-tropics primarily affecting children and young adults whereas in high-income countries it is mainly a disease of returning travellers. The disease is most commonly acquired by ingestion of water and food contaminated with faeces or urine of carriers. Human beings are the only reservoir host for enteric fever.⁴

Multidrug resistant strains were prevalent worldwide and had previously caused outbreaks in India. In recent years, there has been an increase in fluoroquinolones resistance because of which ciprofloxacin is no longer the empirical choice of treatment in our country.⁵ Ceftriaxone and cefixime are presently the drug of choice to treat these infections but there are also reports on increased minimum inhibitory concentration (MIC) to ceftriaxone causing delayed defervescence and even reports on the full resistance.⁶ Azithromycin, the current alternative treatment option requires more clinical and laboratory data to support its use in the treatment of complicated enteric fever. Possibilities of using the current drugs in

combinations are an alternative solution which is being evaluated.⁷The present study was conducted to assess prescriptions for the treatment of typhoid fever in children.

MATERIALS & METHODS

The present study comprised of 110 patients of enteric fever of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. The diagnosis of enteric fever was clinically consistent case in a child presenting with fever of at least three days with no localization along with one or more of the following signs and symptoms: abdominal pain, vomiting or diarrhoea, loss of appetite, mental confusion and on examination had either splenomegaly, neutropenia or abnormal liver function tests. A thorough clinical examination was carried out. Clinical features and various antibiotics used to treat these patients was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 110		
Gender	Males	Females
Number	60	50

Table I shows that out of 110 patients, males were 60 and females were 50.

Table II Serology test of patients

Test	IgM positive	Widal positive	IgM +ve, Widal +ve
Culture positive (47)	24	1	23
Culture negative (63)	28	10	25

Table II shows that among culture positive, 24 was IgM positive, 1 was widal positive and 23 were both IgM +ve, Widal +ve. Among Culture negative, 28 were IgM positive, 10 were widal positive and 25 were both IgM +ve, Widal +ve. The difference was significant (P< 0.05).

Graph I Serology test of patients

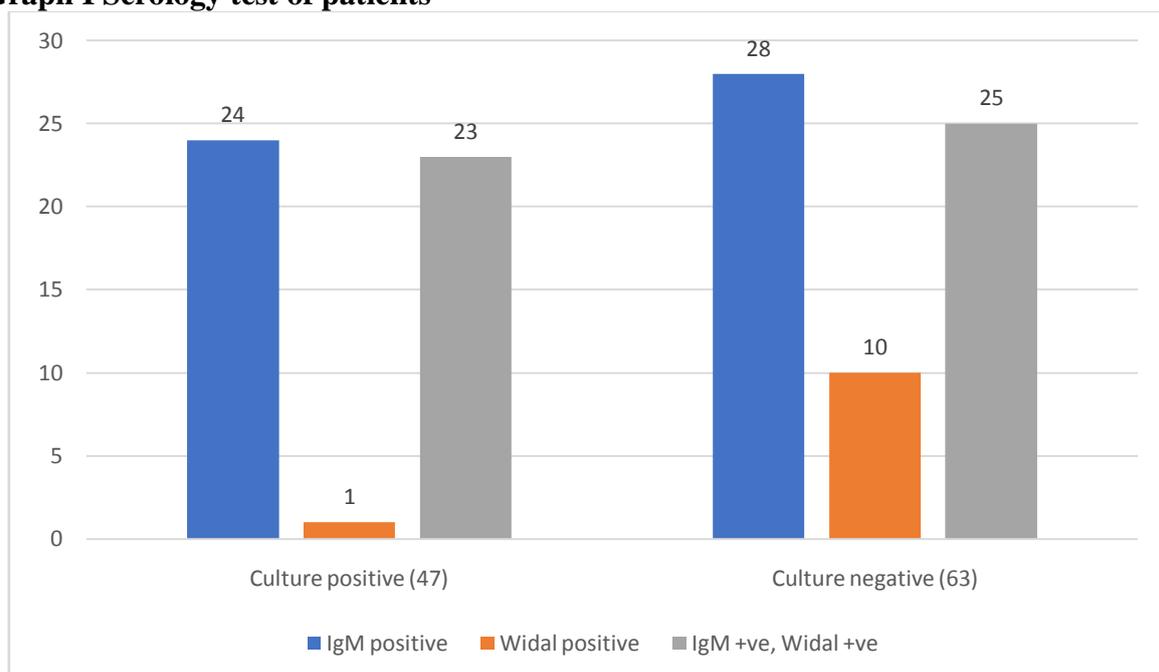


Table III Antibiotic used in patients

Antibiotics	Number	P value
Azithromycin	27	0.05
Ofloxacin	28	
Cefixime	55	

Table III shows that azithromycin was used among 27, ofloxacin among 28 and cefixime among 55. The difference was significant ($P < 0.05$).

DISCUSSION

Isolation of *Salmonella Typhi* from blood culture is a more practical even though less sensitive alternative to bone marrow culture.⁸ However, it is not always available and, when available, it takes 3 to 5 days.⁹ As a result, diagnosis may be delayed or overlooked and patients without enteric fever may receive unnecessary and inappropriate antimicrobial treatment due to the heavy dependence of rapid diagnosis using clinical features and serological methods. The detection of specific antibody response is only suggestive of enteric fever but not definitive.¹⁰ The Widal test is an agglutination reaction demonstrating the presence of lipopolysaccharide (LPS) somatic (O) and flagella (H) agglutinins to *Salmonella Typhi* in the serum of a patient using suspensions of O and H antigens.¹¹ The test has been widely used for over a century for the diagnosis of typhoid fever.¹² The present study was conducted to assess prescriptions for the treatment of typhoid fever in children.

We found that out of 110 patients, males were 60 and females were 50. Dahiya et al¹³ determined the current practices of antibiotic use in children attending a tertiary care hospital in north India. The antibiotic audit in hospitalized children was measured as days of therapy per 1000 patient days and in outpatient department (OPD) as antibiotic prescription on the treatment card. Results: A total of 128 children with enteric fever were included in the study, of whom, 30 were hospitalized and 98 were treated from OPD. The mean duration of fever was 9.5 days at the time of presentation. Of these, 45 per cent were culture positive with *Salmonella Typhi* being aetiological agent in 68 per cent followed by *S. Paratyphi A* in 32 per cent. During hospitalization, the average length of stay was 10 days with mean duration of defervescence 6.4 days. Based on antimicrobial susceptibility ceftriaxone was given to 28 patients with mean duration of treatment being six days. An additional antibiotic was needed in six patients due to clinical non-response. In OPD, 79 patients were prescribed cefixime and additional antibiotic was needed in five during follow up visit.

We found that among culture positive, 24 was IgM positive, 1 was widal positive and 23 were both IgM +ve, Widal +ve. Among Culture negative, 28 were IgM positive, 10 were widal positive and 25 were both IgM +ve, Widal +ve. Deksissa et al¹⁴ estimated the prevalence of enteric fever among febrile patients visiting Ambo hospital, comparison of Widal test and stool culture, evaluation of the antimicrobial susceptibility of isolates; and assessed potential risk factors to acquire enteric fever infection. Blood and stool samples were collected from 372 febrile patients with symptoms clinically similar to enteric fever. Widal test was used for testing sera while stool culturing and bacterial identification was done using WHO standard methods. The apparent and true prevalence of enteric fever were 56.2% and 57.52% respectively, while, the culture prevalence was 2.7%. Isolation rates of *S. Typhi* and *S. Paratyphi* were 0.8% and 1.9% respectively. The isolates showed 100% resistance to amoxicillin, bacitracin, erythromycin, 80% resistance to cefotaxime and streptomycin and 20% for chloramphenicol. The sensitivity, specificity, positive and negative predictive values of Widal test was 80.0, 44.5, 3.8 and 98.8% respectively. Multivariable logistic regression analysis revealed that age, religion, level of education, source of water, raw milk and raw meat consumption are the predictors of enteric fever seropositivity.

CONCLUSION

Authors found that most common used antibiotics was cefixime followed by ofloxacin and azithromycin.

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