Original Article

Emerging trends in clinical profile, lab diagnosis, culture and sensitivity pattern of typhoid fever in a semi-urban tertiary care hospital

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Abstract

Typhoid fever is one of the common fevers endemic in our country, which is caused by Salmonella enterica serovar typhi. The aim of the present study is to find the recent trends in clinical presentation, laboratory profile, culture and sensitivity pattern of it as this would give more confidence in the treating physician especially regarding the selection of antibiotics. This study was done in Chettinad Hospital and Research Institute, Kelambakkam, Kancheepuram district. About 40 cases of culture proven typhoid fever were analysed. Males and females were equally affected with mean age of presentation being 17.4 years with maximum number of cases in <20 years group. Fever(100%) followed by abdominal pain(80%) were the most common symptoms. Among the laboratory profile leucopenia which is considered common in typhoid occurred only in 10% of the patients in our study. Instead thrombocytopenia(50%) was more common in our patients. Among the antibiotics, Salmonella was most sensitive to ceftriaxone followed by conventional antibiotics like chloramphenicol, ampicillin and cotrimoxazole but the resistance was more to fluoroquinolones.
Keywords: Antibiotic susceptibility, Ceftriaxone, Thrombocytopenia, Typhoid fever.

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INTRODUCTION

Typhoid fever is an increasing global burden with estimated prevalence of 12 million cases in 2010 all over the world[1,2] and about 130,000 deaths annually. Globally south-central and south-east Asia have the highest incidence exceeding 100 cases per 100,000 person years. The scenario is further complicated by changing trends in incidence within the same country, increase in antibiotic resistance and more enteric fever cases being caused by Paratyphoid A[3]. The risk factors include low socio-economic status[4], contaminated drinking water, poor personal hygiene and sanitation with open defecation playing a more important role. Even though typhoid fever has been in existence for more than 50,000 years[5], its been really difficult to completely eradicate the disease mainly due to the varying sensitivity pattern of the organism. Time and then various antibiotics were found to be effective against S. Typhi and paratyphi, but these organisms have developed remarkable mechanisms to persist in their host[6]. But still enteric fever is a manageable infection mainly due to antibiotics like chloramphenicol, third generation antibiotics, amoxicillin, cotrimoxazole, fluoroquinolones and azithromycin. Unfortunately in the late 1980s and 1990s, the causative organism showed an increase in resistance to antibiotics like chloramphenicol, cotrimoxazole, ampicillin and amoxicillin[7]. Recently, even resistance to fluoroquinolones and third generation cephalosporins

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have been increasing[8-11]. With this background, we have tried to find the clinical profile and drug sensitivity pattern among culture proven typhoid fever cases in a tertiary care setting in a semiurban hospital and to our surprise we have found an increasing sensitivity to older antibiotics like chloramphenicol, cotrimoxazole, ampicillin and amoxicillin, in addition to ceftriaxone which is a relatively newer drug.

MATERIALS AND METHODS

The study was conducted in Chettinad Hospital and Research Institute, Department of General Medicine.

Study Design: Retrospective study

Study Period: April 2013- June 2015.

Inclusion Criteria

1. All cases of culture proven enteric fever cases.
2. All patients who are willing to participate in the study.

Exclusion Criteria:

Patients not willing to participate in the study.

Methodology

All cases of culture proven cases of typhoid fever were studied during the study period. All cases were analysed for their clinical presentation both history and clinical examination, laboratory profile, culture and sensitivity pattern of common antibiotics used in the treatment of enteric fever.

RESULTS

A total of 40 cases were studied during the period from April 2013 to June 2015 in Chettinad Hospital and Research Institute, Chennai. These cases included 20 males and 20 females with 24 patients in the age group of less than 20 years, 14 patients in 20-39 years and only 2 patients above 40 years. The clinical features (FIGURE.2) included fever in all the 40 cases. The next common manifestation was abdominal pain in 32 (80%) of the patients, diarrhoea in 18 (45%), vomiting in 15 (37.5%), headache in 9 (22.5%), constipation in 5 (12.5%) and rash in 1 (2.5%). Out of 40 patients, 9 of them had hypotension at least once during the hospital stay and all of them responded to intravenous fluids and none required ionotropic support. Hepatomegaly was present in 20 patients, splenomegaly in 14, mesenteric lymphadenopathy in 3 patients. Haematological profile showed leucopenia in only 4 patients, leucocytosis in 2. Interesting findings were thrombocytopenia in 20 patients with severe thrombocytopenia (< 50000) in 2 patients, basopenia in 9 patients, but eosinopenia in only 2 patient.

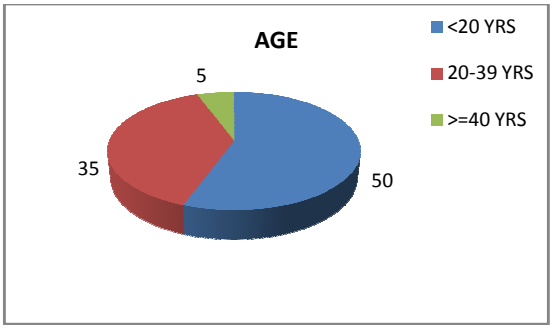

Figure 1: Age distribution

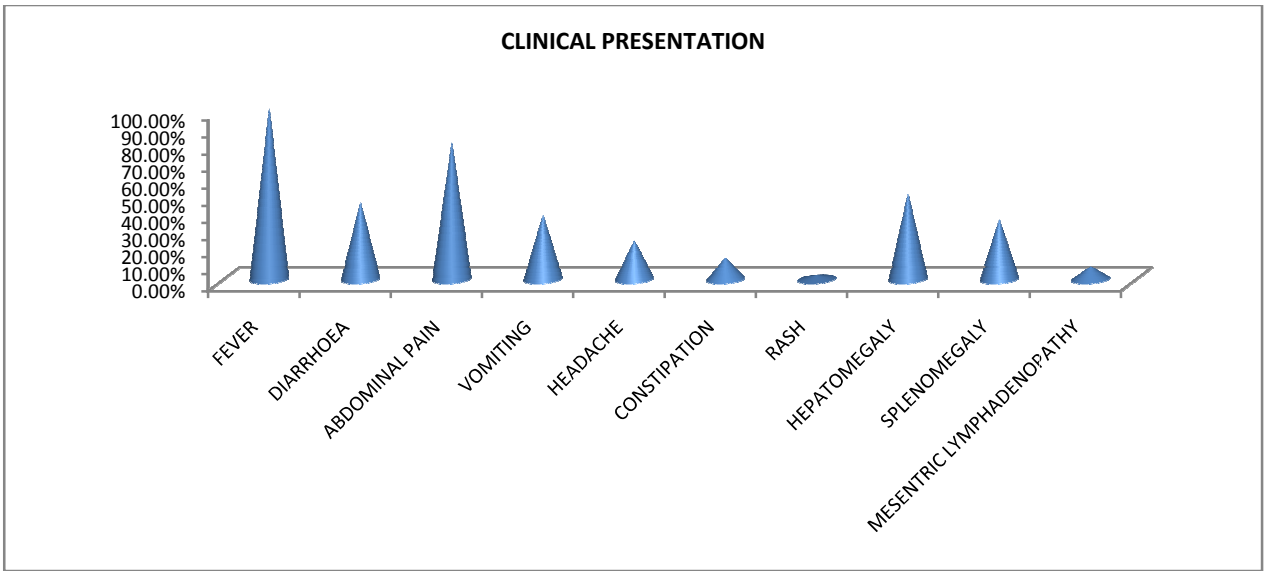

Figure 2: Clinical presentation of typhoid fever cases

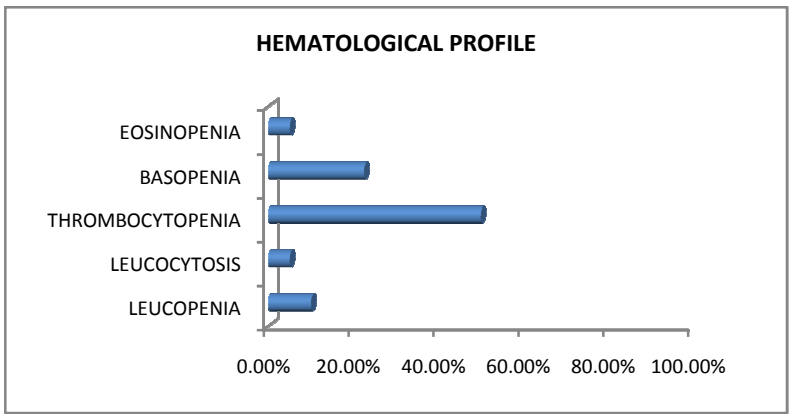

Figure 3: Hematological profile of typhoid fever cases

Further the antibiotic sensitivity was also studied and the following pattern was noted. Most of the cases were sensitive to the 3rd generation cephalophorin, Ceftriaxone. Old drugs such as cotrimoxazole and chloramphenicol were sensitive in 33 and 29 of the patients respectively. The resistance was very high among the commonly used drugs such as ciprofloxacin and ofloxacin but sensitivity was high for ampicillin interestingly. The sensitivity pattern is shown in Table 1

Table 1: Sensitivity pattern of common antibiotics used in treatment of typhoid fever

Drugs	Sensitive No. of Patients (%)	Resistant No. of Patients (%)
Tetracycline	37 (92.5)	3 (7.5)
Ceftriaxone	35 (87.5)	5 (12.5)
Cotrimoxazole	33 (82.5)	7 (17.5)
Ampicillin	33 (82.5)	7 (17.5)
Chloramphenicol	29 (72.5)	11 (27.5)
Cefotaxim	7 (17.5)	33 (82.5)
Ciprofloxacin	5 (12.5)	35 (87.5)
Ofloxacin	3 (7.5)	37 (92.5)
Amikacin	2 (5)	38 (95)

Out of 40 patients, 38 cases were treated with parenteral ceftriaxone for 14 days. The remaining cases were treated with amikacin and ampicillin. Among the 38 patients treated with ceftriaxone, fever subsided by 4 days in 24 patients (60%).

DISCUSSION

Typhoid fever is a common health problem in India and Southeast Asia. This infection if not treated adequately can lead onto a mortality of about 30% but with appropriate antibiotic treatment the mortality reduces to 0.5%[12]. In our study the incidence of typhoid fever was higher in age group <20 years as in previous researches[13]. The common clinical manifestations were fever, abdominal pain, vomiting and diarrhoea which is in accordance with the previous study[14]. Eventhough constipation was considered a prominent symptom in typhoid fever, in our study only 12.5% of patients had constipation. The typical rose spots of typhoid fever occurred only in one patient and it occurred on the seventh day of illness. The occurrence of mesenteric adenopathy was 77% in one study[15] whereas in our study was found in only 7.5% (3 patients). Thrombocytopenia was noticed in 50% of patients compared with about 40% in a study done by Ali Hassan Abro *et al*[16]. In our study there was only 12.5% of multidrug resistant cases who had resistance to first line drugs such as ampicillin, chloramphenicol and cotrimoxazole which is in accordance with other studies on enteric fever[17,18]. Nalidixic acid resistance was found in 87.5% of the cases. This trend has also been substanciated by other studies which showed about 78.3%[19] and 78%[17] of Nalidixic acid resistance. This is mainly due to indiscriminate use of ciprofloxacin as the first line drug in treatment of Salmonella typhi cases. Eventhough there had been more multidrug resistant cases of enteric fever in 1980s and 90s, change in antibiotic preference for typhoid has changed the trend of increased susceptibility to conventional antibiotics such as chloramphenicol, ampiciilin and cotrimoxazole. Most importantly the proportion of ceftriaxone sensitive cases was more in our study which shows that it could be considered the first line treatment in inpatient cases of enteric fever. The response to this drug has been good with defervescense of fever in about 4 days in 60% of cases treated with ceftriaxone.

CONCLUSION

Enteric is a common endemic fever in India. Eventhough the incidence has gone down recently due to improved sanitation and heathcare facilities, still it is a major burden to the society. It mainly affects children and young adults. Community based studies on risk factors, clinical presentation and especially culture and sensitivity pattern are necessary for improved care for these cases. In

our locality, the interesting finding was association of many cases with thrombocytopenia and constipation which was more common in many studies was less common in our study. Further there has been a trend of improved susceptibility to conventional antibiotics like chloramphenicol, cotrimoxazole, ampicillin and newer antibiotics like ceftriaxone with increased resistance to quinolones.

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