ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 03 | March - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A STUDY ON CLINICAL PROFILE AND LABORATORY PROFILE CHANGES OF ENTERIC FEVER

Paediatrics

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ABSTRACT

AIM: The aim of the study is to asses study the clinical and laboratory profile. Culture positive & sensitivity pattern of Salmonella enteric and its response to antimicrobial therapy admitted in SSKM Hospital in Kolkata. **MATERIAL AND METHOD:** This is a prospective, observational study of paediatric aged between 5-12 years who are admitted in SSKM Hospital in Kolkata, West Bengal, India during the period of Sep 2016- Sep2018 the study includes 104 pediatric who were suffering from Enteric fever.**RESULT:**We found that 22(21.2%) patients had lymphadenopathy, 83(79.8%) patients had positive widal test (O antigen), 18(17.3%) patients had positive widal test (H antigen) and 42(40.4%) patients had positive blood culture. According to blood culture, 5(4.8%) patients had S.para typhi and 36(34.6%) patients had S.typhi. **CONCLUSION:** Leucopenia, eosinopenia and mildly elevated liver enzymes are common laboratory findings. Widal is though a good screening test but has poor specificity for diagnosing culture positive enteric fever cases.

KEYWORDS

Antibiotic sensitivity, clinical profile,enteric fever.

INTRODUCTION

Enteric fever is a systemic bacterial infection caused by Salmonella enteric serotype Typhi or Paratyphi A or B. Symptoms may vary from mild to severe. Often there is gradual onset of a high fever over several days. Weakness, abdominal pain, constipation and headaches also commonly occur. As enteric fever is a disease transmitted by the feco-oral route, its greatest burden is in resource-limited countries where water supply and sanitary conditions are poor. Enteric fever is the most common cause of fever lasting for more than 7 days in clinical practice in India. It is endemic in India and reported data for the year 2014 shows 1.53 millioncasesand361deaths.

The clinical presentation of typhoid varies widely from mild constitutional symptoms to severe complicated disease. Typhoid fever has wide range of manifestations in the pediatric age group, it can present as septicemia in neonates, as diarrhoea in infants, and as lower respiratory tract infections in older children.[1-3] Typically, it manifests as step wise increasing, high grade fever, headache, lethargy, vomiting, abdominal pain, hepatosplenomegaly and rarely stupor. There is also significant difference in age distribution and population at risk. This is mainly a disease of school age children and young adults. The wide range of clinical symptoms especially in children often mimic other endemic infectious diseases, causing delays in diagnosis and treatment, in turn leading to severe complications including death.[4,5] Typhoid can involve multiple organs therefore resulting in diverse symptoms.[6] An atypical presentation of typhoid in older children includes liver abscess, splenic abscess, meningitis, ataxia, cholecystitis, chorea, palatal palsy, osteomyelitis, peritonitis, aphasia and even psychosis.[7-9]

Complications are reduced now because of use of antibiotics prior to initiation of appropriate therapy. However, rarely, clinically significant hepatitis, jaundice and cholecystitis may be seen. Intestinal haemorrhage and perforation are very rare in children. Toxic myocarditis usually manifests as arrhythmias or sinus block. CNS complications are relatively uncommon in children; this includes delirium, psychosis and raised intracranial tension. Other complications include DIC, bone marrow failure, hemolytic uremic syndrome, meningitis, pyelonephritis and nephrotic syndrome.[10]

Assessment of a child presenting with fever is always a challenge to most paediatricians. To determine the aetiology and plan the management in the first few days is always difficult. In view of the anxiety of the parents most paediatricians have the tendency to start some antibiotics before any real clue about the aetiology. Most of these fevers might just be of viral aetiology unnecessarily managed with antibiotics. In enteric fever this initial antibiotic might modify the course of the disease and pose significant difficulty in interpretation of lab investigations. Enteric fever is one of the common causes of fever in children with varied presentation and significant difference in the signs and symptoms compared to adults. It is a common infectious disease presenting as acute multisystem febrile illness caused by S. typhi and S. paratyphi. It is a major public health problem in developing countries including India where patients report throughout the year with monsoon clustering patterns. Low standards of living are the main reasons behind the higher endemicity in India.

We undertook this study to analyze the varied clinical presentations, culture positivity and correlation with lab investigations, with special reference to antibiotic sensitivity in a tertiary hospital in Bangalore.

1) TO study culture positive & sensitivity of S. enteriaca and response to antimicrobial therapy.
2) To study the clinical and laboratory profile in children with culture proven enteric fever admitted in SSKM Hospital in Kolkata.

MATERIALS AND METHODS

STUDY DESIGN: A hospital based cross sectional observational study

PLACE OF STUDY: Medical children ward-6 (MCW-6) in admitted in SSKM Hospital in Kolkata from1 YR & 6 MONTHS

STUDY POPULATION & SAMPLING FRAME: Children in the age group of 5 to 12 yrs. Admitted with history of fever ≥5 days duration will be chosen as study population.

INCLUSION CRITERIA: All children aged 5 to 12 yr presenting with fever of≥5 days without organomegaly during study period.

EXCLUSION CRITERIA:

I. All children aged 5 to 12 yr. presenting with fever <5 days with or without organomegaly during study period.
ii. Children with cerebral palsy.
iii. Mental retardation.
iv. Known case of Thalassemia.

Statistical Analysis:

For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS 24.0. and GraphPad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples.

p-value ≤ 0.05 was considered for statistically significant.

RESULT AND DISCUSSION

This is a prospective, observational study of paediatric aged between 5-12 years who are admitted in Department of Pediatric Medicine, R. G. Kar Medical College and Hospital in Kolkata, West Bengal, India during the period of Sep 2016- Sep2018 the study includes 104 pediatric who were suffering from Enteric fever.

We found 51(49.0%) patients had 61-96 months of age, 48(46.2%) patients had 97-120 months of age and 5(4.8%) patients had 120-140 months of age. 40(38.5%) patients had female and 64(61.5%) patients had male. All patients had fever. 47(45.2%) patients had anorexia.

Chandrashekar A et al [11] found that 21(40%) patients had ≤5 Years and 31(59.65%) patients had >5 Years. 29 (55.7%) had male.

Laishram N et al [12] found that typhoid fever and on Widal test and blood culture found to be positive for salmonella typhi were analysed for clinical features. Detailed history, comprehensive physical examination and other relevant information were recorded by following standard procedures. There were total of 98 cases of typhoid fever admitted. Of the 98 children 59 (60.20%) were boys and 39 (39.79%) were girls, with male:female ratio of 1.51:1. The cases were common among the age group 7 year to 12 years 51 (52 %); 100% of children in our series were unimmunized against typhoid. Predominant symptoms were fever 98 (100%), headache 75 (76.53%), anorexia 80 (81.63%), vomiting 26 (26.53%), abdominal pain 68 (69.38%), diarrhea 37 (37.75%) and cough 26 (26.53%). Hepatomegaly was the most common sign seen among the cases and was seen in 76 cases (77.55%). Other common clinical signs were coated tongue 80(81.63%) and splenomegaly 38 (38.77%). Rose spots were not noticed. During the hospital stay, the most common antimicrobial used was intravenous Ceftriaxone. None of the patients presented with complications. The clinical profile of enteric fever in our study revealed not much difference from that of other studies on enteric fever. There was not a single case of complication of enteric fever. Probably early initiation of antibiotics prevented the complications. Enteric fever is one of the common causes of fever in children with varied presentation and significant difference in the signs and symptoms compared to adults.

We found that 23(22.1%) patients had diarrhia, 5(4.8%) patients had constipation, 26(25.0%) patients had headache, 16(15.4%) patients had arthralgia and 40(38.5%) patients had pallor.

Chandrashekar A et al [11] found that 14(26.4%) patients had diarrhia, 4(7.6%) patients had constipation, 15(24.5%) patients had headache, 11(20.7%) patients had arthralgia and 40(38.5%) patients had pallor.

We found that 28(26.9%) patients had Hepatomegaly, 19(18.3%) patients had splenomegaly and 21(20.2%) patients had coated tongue. **Chandrashekar A et al** [11] found that 11(21.1%) patients had Hepatomegaly, 9(17.3%) patients had splenomegaly and 7(13.6%) patients had coated tongue.

5(4.8%) patients had hepatitis.

We found that 22(21.2%) patients had lymphadenopathy, 83(79.8%) patients had positive widal test (O antigen), 18(17.3%) patients had positive widal test (H antigen) and 42(40.4%) patients had positive blood culture.

Patel AM et al [13] found that 65.97%(64,N=97), of which 89.06%(57) were positive for S.Typhi and 10.93%(7) were positive for S.Paratyphi A. Common clinical features seen along with fever were abdominal pain (53.85%), vomiting (41.76%) and diarrhea (19.78%). All the isolates were sensitive to third generation cephalosporins and fluoroquinolones. The mean time to defervescence was 3.98 days. Conclusions: Enteric fever is major cause of febrile illness in children (especially school going). Fever with abdominal pain, vomiting and diarrhea were major clinical manifestations. There was 100% sensitivity to ceftriaxone, which was highly effective as monotherapy. According to blood culture, 5(4.8%) patients had S.para typhi and 36(34.6%) patients had S.typhi.

We found that 37(90.2%) patients had sensitive ciprofloxacine, 37(90.2%) patients had sensitive ofloxacine, 39(95.1%) patients had sensitive levofloxacine, 37(90.2%) patients had sensitive azithromycine, 38(92.7%) patients had sensitive Cefixime, 38(92.7%) patients had sensitive ceftriaxone, 39(95.1%) patients had sensitive imipenam, 33(80.5%) patients had sensitive cotrimoxazole, 32(78.0%) patients had sensitive amoxicillin and 37(90.2%) patients had sensitive cefotaxime.

The mean age (mean± s.d.) of patients was 96.2788 ± 19.8756.

We found that 40(38.5%) patients had Anaemia (<11). We found that 12(11.5%) patients had Leukopenia and 18(17.5%) patients had Leucocytosis. We found that 34 (32.7%) patients had Neutropenia and 5(4.8%) patients had Neutrophilia. We found that 5 (4.8%) patients had Elevated SGOT and SGPT.

CONCLUSION

Enteric fever is an important cause of febrile illness in children. Fever with anorexia, cough, diarrhoea, headache, hepatosplenomegaly were the common clinical manifestations of enteric fever. Leucopenia, eosinopenia and mildly elevated liver enzymes are common laboratory findings. Widal is though a good screening test but has poor specificity for diagnosing culture positive enteric fever cases. There is reemergence of strains with high sensitivity to first line antibiotics chloramphenicol and co-trimoxazole except nalidixic acid to which there is persistence of high resistance. An adequate trial of first line antibiotics like oral co-trimoxazole, ampicillin or chloramphenicol can be tried before starting injectable antibiotics due to increased emergence of sensitivity to these drugs. In view of increased resistance to nalidixic acid, indiscriminate use of quinolones to be avoided and initial antibiotic has to be started based on the sensitivity pattern in the area. There is trend towards emerging resistance to 3rd generation cephalosporins.

Table: Difference of mean HB, WBC, SGOT, SGPT, Lymphocyte and Neutrophil

	Number	Mean	SD	Minimum	Maximum	Median
HB	104	11.1365	1.5221	8.4000	14.1000	11.5500
WBC	104	9367.3077	2365.2189	4800.0000	14300.0000	9100.0000
SGOT	104	57.9327	58.9423	31.0000	410.0000	42.5000
SGPT	104	54.6442	58.0965	25.0000	430.0000	40.0000
Lymphocyte	104	48.9808	10.0774	31.0000	68.0000	53.0000
Neutrophil	104	45.3558	10.3791	26.0000	64.0000	42.0000

Table: Distribution of BLOOD CULTURE, CIPROFLOXACINE, OFLOXACINE, LEVOFLOXACINE, AZITHROMYCINE, CEFIXIME, CEFTRIAXONE, IMIPENAM, COTRIMOXAZOLE, AMOXICILLIN, CEFOTAXIME

		Frequency	Percent
BLOOD CULTURE	NO GROWTH	63	60.6%
	S.PARATYPHI	5	4.8%
	S.TYPHI	36	34.6%
	Total	104	100.0%
CIPROFLOXACINE	Resistance	4	9.8%
	Sensitive	37	90.2%
	Total	41	100.0%
OFLOXACINE	Resistance	4	9.8%
	Sensitive	37	90.2%
	Total	41	100.0%
LEVOFLOXACINE	Resistance	2	4.9%
	Sensitive	39	95.1%
	Total	41	100.0%
AZITHROMYCINE	Resistance	4	9.8%
	Sensitive	37	90.2%
	Total	41	100.0%
CEFIXIME	Resistance	3	7.3%
	Sensitive	38	92.7%
	Total	41	100.0%
CEFTRIAXONE	Resistance	3	7.3%
	Sensitive	38	92.7%
	Total	41	100.0%
IMIPENAM	Resistance	2	4.9%
	Sensitive	39	95.1%
	Total	41	100.0%
COTRIMOXAZOLE	Resistance	8	19.5%
	Sensitive	33	80.5%
	Total	41	100.0%
AMOXICILLIN	Resistance	9	22.0%

	Sensitive	32	78.0%
	Total	41	100.0%
CEFOTAXIME	Resistance	4	9.8%
	Sensitive	37	90.2%
	Total	41	100.0%

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