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Clinical Profile and Outcome of Typhoid Fever in Children: A Hospital-Based Study

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Abstract

Background: In view of these considerations, the present study, entitled "Clinical Profile and Outcome of Typhoid Fever in Children: A Hospital-Based Study," aims to evaluate the demographic characteristics, clinical manifestations, laboratory findings, complications, treatment response, and clinical outcomes of children diagnosed with typhoid fever at a hospital. The findings may help improve understanding of the local disease pattern, support timely clinical recognition, and contribute to better management strategies for paediatric patients.

Methods: The study was a hospital based prospective observational study. The parents of the children were informed about the research and its objectives, and written informed consent was obtained from them. Children of age 2 -18 years who presented with fever of 5 days or more with clinical signs and symptoms suggestive of typhoid fever and positive Widal test or Typhidot tests were included in the study. The demographic and clinical features of the patients were described.

Results: All the children presented with fever as the main complaint (100%). Loss of appetite and headache were the next common complaints reported by 61.00% cases. Commonest sign noticed was toxic look (83%) followed by coated tongue (76%) and splenomegaly (61%). Hepatomegaly was also noted in 34% of cases. The mean duration of hospitalisation was 6.94 days. Two children had a relapse and three had septic shock. There was no mortality.

Conclusion: Typhoid fever remains an important cause of febrile illness and hospital admission among children, particularly in regions with a high burden of enteric

infections. Its clinical presentation is variable and may include prolonged fever, headache, anorexia, abdominal pain, vomiting, diarrhoea, constipation, hepatomegaly, and splenomegaly. The nonspecific nature of these manifestations often makes early diagnosis challenging. A comprehensive assessment of the clinical profile, haematological and biochemical parameters, microbiological findings, and associated complications is essential for the appropriate management of paediatric patients with typhoid fever. Early diagnosis, timely initiation of effective antimicrobial therapy, adequate hydration, nutritional support, and careful monitoring can help reduce complications and improve clinical outcomes

Keywords: Enteric fever, Splenomegaly, Toxic look

Introduction

Typhoid fever, also known as enteric fever, is a systemic bacterial infection caused by Salmonella enterica serovar Typhi. It remains an important public health problem, particularly in developing countries where inadequate sanitation, unsafe drinking water, poor food hygiene, and overcrowding contribute to the transmission of infection. Children are an important affected population in endemic regions, and the disease continues to cause significant morbidity, hospital admissions, and, in severe cases, mortality.[1]

Typhoid fever is transmitted primarily through the faeco-oral route by the consumption of food or water contaminated with the faeces of infected individuals or chronic carriers. Following ingestion, the bacteria cross the intestinal mucosa, survive within host cells, and disseminate through the reticuloendothelial system. The resulting systemic infection produces a range of clinical manifestations, from uncomplicated febrile illness to severe disease involving multiple organ systems.[2]

The burden of typhoid fever is influenced by socioeconomic conditions, access to safe water and sanitation, population density, vaccination coverage, and the availability of appropriate healthcare services. Although improvements in public health infrastructure and the introduction of typhoid conjugate vaccines have contributed to prevention efforts, enteric fever remains a concern in several regions of South Asia, including India. The emergence and spread of antimicrobial-resistant strains have further complicated the management of this infection.[3]

Children may present with a variable clinical spectrum depending on their age, nutritional status, immune response, duration of illness, and previous antibiotic exposure. In younger children, the symptoms may be nonspecific, making early diagnosis particularly challenging. Fever is the most common presenting feature and may be accompanied by headache, malaise, anorexia, abdominal pain, vomiting, diarrhoea, or constipation. Other clinical findings may include coated tongue, hepatomegaly, splenomegaly, and abdominal tenderness. Rose spots may be observed in some patients but are not consistently present. The classical stepwise rise in temperature described in textbooks is not always observed in contemporary clinical practice, particularly in children who receive antibiotics before presentation.[4]

The clinical presentation of typhoid fever frequently overlaps with other causes of acute febrile illness, such as malaria, dengue, urinary tract infections, and other bacterial infections. This overlap can lead to diagnostic uncertainty and inappropriate antimicrobial treatment. A detailed clinical history, thorough physical examination, and appropriate laboratory investigations are therefore essential for the evaluation of children with suspected enteric fever.[4]

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Laboratory investigations play a significant role in the diagnosis and assessment of disease severity. A complete blood count may reveal anaemia, leukopenia, leukocytosis, or thrombocytopenia, although these findings are variable and nonspecific. Liver function abnormalities may also occur. Blood culture is an important method for confirming infection and identifying the causative organism, while antimicrobial susceptibility testing helps guide appropriate treatment. The Widal test is frequently used in some clinical settings but has limitations in diagnostic accuracy and should not be considered definitive evidence of active typhoid fever on its own. [6]

The clinical course of typhoid fever varies considerably. Many children recover with appropriate treatment, whereas others may develop complications such as gastrointestinal bleeding, intestinal perforation, hepatitis, encephalopathy, or circulatory shock. Delayed diagnosis, inappropriate antibiotic treatment, malnutrition, and antimicrobial resistance may adversely affect outcomes. Assessment of complications, response to treatment, duration of fever, length of hospital stay, and mortality, where applicable, provides a comprehensive understanding of the clinical outcome. [7]

In view of these considerations, the present study, entitled "Clinical Profile and Outcome of Typhoid Fever in Children: A Hospital-Based Study," aims to evaluate the demographic characteristics, clinical manifestations, laboratory findings, complications, treatment response, and clinical outcomes of children diagnosed with typhoid fever at a hospital. The findings may help improve understanding of the local disease pattern, support timely clinical recognition, and contribute to better management strategies for paediatric patients.

Methods

The study was a hospital based prospective observational study. The parents of the children were informed about the research and its objectives, and written informed consent was obtained from them.

Children of age 2 -18 years who presented with fever of 5 days or more with clinical signs and symptoms suggestive of typhoid fever and positive Widal test or Typhidot tests were included in the study.

The demographic and clinical features of the patients were described. All children were enquired about a careful history including family history of similar illness and socio-economic status, source of drinking water.

Children who have been diagnosed as paratyphoid fever by serology like Widal test were clearly excluded from the study. Total leukocyte count was done in all patients.

Results

Table 1: Symptoms at the time of admission to hospital

Symptoms	Number of patients	Percentage
Fever	100	100.00
Anorexia	61	61.00
Vomiting	34	34.00
Diarrohea	14	14.00
Abdominal pain	32	32.00
Constipation	15	15.00

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Headache	61	61.00
Cough	21	21.00

All the children presented with fever as the main complaint (100%). Loss of appetite and headache were the next common complaints reported by 61.00% cases.

Table 2: Signs at the time of admission to the hospital

Sign	Number of patients	Percentage
Coated tongue	76	76.00
Anemia	36	36.00
Abdominal tenderness	26	26.00
Toxic look	83	83.00
Hepatomegaly	34	34.00
Splenomegaly	61	61.00
Respiratory infections	3	3.00

Commonest sign noticed was toxic look (83%) followed by coated tongue (76%) and splenomegaly (61%). Hepatomegaly was also noted in 34% of cases.

Table 3: Total leukocyte count.

TLC	Number of patients	Percentage
<4000	32	32.00
4000-11000	50	50.00
>11000	18	18.00

Only 32% of the children with typhoid had white cell count less than 4000/c.mm. Majority of the children (50%) had White blood cell counts within normal limits. 18% of the children had white blood cell counts of more than 11000/c.mm.

Table 4: Outcome

Mean hospital stay	6.23±1.02 days
Relapse	2/100 patients
Mortality	0/100
Septic shock	3/100

The mean duration of hospitalisation was 6.94 days. Two children had a relapse and three had septic shock. There was no mortality.

Discussion

All present study subjects presented with fever as the main complaint (100%). Loss of appetite and headache were the next common complaints reported by 61% cases. This was followed by pain in abdomen (32%) & Vomiting was present in 34% cases whereas 14% of children complained of loose stools.

Study by Modi R reported that gastrointestinal complaints were second most common after fever with abdominal pain noticed in 57.14% patients and vomiting in 50% of the patients.[7]

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Similar observations were reported by Comeau et al and Kapoor JP et al and Sinha et al.[6,9,10] However, Joshi et al reported that headache was the most common symptom after fever seen in 52.5% cases and abdominal pain and vomiting were the other common associated symptoms seen in 22.5% and 20% cases respectively.[11]

Commonest sign noticed was toxic look (83%) followed by coated tongue (76%) and splenomegaly (61%). Hepatomegaly was also noted in 34% of cases.

Devaranavadagi RA and Srinivasa S also reported Toxic look (68%) as the most common sign followed by coated tongue (49%), Hepatomegaly (44%), and other signs.[8] However, Laishram et al reported coated tongue (80%) as the most common sign followed by Hepatomegaly (76%) and splenomegaly (38%).[12]

In present study, 32% of the children with typhoid had white cell count less than 4000/c.mm. Majority of the children (50%) had White blood cell counts within normal limits. 18% of the children had white blood cell counts of more than 11000/c.mm.

In Devaranavadagi RA and Srinivasa S study, Leucocytopenia and Eosinopenia was found in 34% and 39% cases respectively.[8] However, Eosinopenia was seen in 72 % cases in study by Ganesh R et al.[13]

Conclusion

Typhoid fever remains an important cause of febrile illness and hospital admission among children, particularly in regions with a high burden of enteric infections. Its clinical presentation is variable and may include prolonged fever, headache, anorexia, abdominal pain, vomiting, diarrhoea, constipation, hepatomegaly, and splenomegaly. The nonspecific nature of these manifestations often makes early diagnosis challenging. A comprehensive assessment of the clinical profile, haematological and biochemical parameters, microbiological findings, and associated complications is essential for the appropriate management of paediatric patients with typhoid fever. Early diagnosis, timely initiation of effective antimicrobial therapy, adequate hydration, nutritional support, and careful monitoring can help reduce complications and improve clinical outcomes.

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