

Clinical Presentation of Typhoid Fever

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Introduction: Enteric fever represents a spectrum of acute systemic febrile illness with a myriad of presentations and complications. **Aims:** This study was carried out to evaluate the demographic data such as age, sex, clinical features and outcome of enteric fever patients presenting in District headquarter hospital Muzuffar Garh. **Material and methods:** Over a period of one year all children presenting with clinical and/or laboratory diagnosis of Typhoid fever, who were admitted to the Social Security Hospital M. Garh, were evaluated. The diagnosis of enteric fever was based on a positive Salmonella typhi or paratyphi blood/stool culture and/or a Widal serodiagnosis $>$ or $=1/160$ for O agglutinin, in the presence of evocative symptoms. **Results:** There were 28(66.66%) male and 14(33.33%) female patients, ranging from 1 to 12 years, with a mean age of 6 years. Predominant symptoms were fever, prostration and apathy; anorexia and abdominal pain while the predominant signs were fever, coated tongue, toxic look, hepatosplenomegaly and abdominal tenderness. Hepatomegaly was observed almost as frequently as splenomegaly. Common clinical signs of typhoid fever in adults such as relative bradycardia and rose spots were seldom documented. All patients survived from their severe illness completely. **Conclusions:** Although there is considerable diversity in the clinical spectrum of typhoid fever, yet a presumptive clinical diagnosis of typhoid fever may be made with a combination of clinical features so that appropriate therapy may be started at the earliest possible time to avoid the increasing drug resistance, morbidity and mortality with typhoid fever.

Key words: Typhoid fever, clinical presentation

Salmonella typhi infection remains a serious problem in developing countries. Typhoid Fever is common infectious condition and serious public health problem in many parts of the world¹. It is also true for Muzaffar Garh. Enteric fever represents a spectrum of acute systemic febrile illness of prolonged duration, characterized by a hectic rise of fever, lethargy, delirium, and a wide accompaniment of systemic manifestations. It is caused due to widespread dissemination of infection by predominantly Salmonella typhi, and to a lesser extent, Salmonella paratyphi A, B and C². It has been estimated that approximately 12.5 million cases of typhoid fever occur annually in the developing world (excluding China) with 7.7 million cases in Asia alone.³ Definitive diagnosis of typhoid requires certain laboratory investigations, but a single test may not have sufficient sensitivity to make a confident and rapid diagnosis in endemic areas.

Emphasis must be given to clinical diagnosis of typhoid fever especially in communities where laboratory services are not available, so that a rapid diagnosis can be made and appropriate treatment started on clinical grounds without waiting for pending laboratory investigations. Therefore it is important to study the common clinical spectrum of typhoid fever that favors its diagnosis. The disease is predominantly a disease of school age children and young adults, and is reported to be milder in infants and young children⁴⁻⁶. Various organs have been involved in the course of enteric fever, resulting in a wide array of presentation⁷. While accurate population-based figures of the burden of typhoid fever in developing countries are unavailable, conservative estimates indicate varying incidence rates ranging from 150 per 100,000 population in South America to over 1000 cases per 100,000 population in some Asian countries. Recent data from

community-based studies in both Pakistan and India suggest that the incidence of typhoid may be greatest among children less than 5 years of age⁸.

The presenting symptoms and sign of typhoid fever in children differ significantly from those in adults^{9,10}. Patients report throughout the year, in addition to these endemic cases, during months of summer clustering pattern is also observed suggesting epidemics similar to outbreaks reported by others¹¹⁻¹². Studies from endemic areas show that younger children are more likely to present with a nonspecific febrile illness¹³⁻¹⁴.

The aim of our study was to determine the clinical presentation of typhoid fever in hospitalized children in this endemic area from May 2004 to April 2005.

Material and methods

We reviewed the medical records of all patients (1-12years) admitted to the Pediatric Ward of Social Security Hospital M. Garh during May 2004 to April 2005. The criteria for inclusion were a positive Salmonella typhi or paratyphi blood/stool culture and/or a Widal serodiagnosis $>$ or $=1/160$ for O agglutinin, in the presence of evocative symptoms. All selected patients underwent a detailed historical and clinical evaluation pertaining to all relevant systems. All patients were subjected to investigations including a blood and urine culture, Widal test, complete blood count, liver function tests (serum transaminases, bilirubin), renal function tests (blood urea, serum creatinine, and serum electrolytes), urine examination, chest X-ray, and ultrasonography of abdomen.

Results

The total number of cases was, 42 out of which 28(66.66%) were male and 14(33.33%) female, with a

mean age of 6 years ranging from 1 year to 12 years. The predominant symptoms were fever (100%), prostration and apathy (95%), anorexia (85%), abdominal pain (76%), cough (59%), vomiting (54%), nausea (42%), diarrhea (38%), headache (23%) and constipation (14%) (Table-1). Fever, vomiting, abdominal pain, loss of appetite, diarrhea and cough were the predominant symptoms for those under 5 years of age. None of the patients presenting with a cough had radiological evidence of pneumonia. However, symptoms such as cough, headache and constipation were uncommon in older children. As far as clinical signs are concerned fever was detected in 100% of cases. 92% had coated tongue, toxic look (90%), hepatomegaly (80%), splenomegaly (76%), abdominal tenderness (66%) and fine rales in chest (52%) were amongst the common signs. Jaundice (28%) was seen in significant number of cases. cervical lymphadenopathy (19%), encephalopathy (12%), relative bradycardia (9%) and rose spots (7%) were amongst the uncommon signs. 12% of patients were between the ages of 1-2 years. The number increased to 31% between 3-5 years and the maximum numbers of patients 36% were found between 6-9 years. 21% of patients belonged to 10-12 years of age.

Table 1 - Clinical Symptoms of Patients at Admission (n=42)

Clinical Symptoms	=n	% age
Fever	42	100
Prostration and apathy	40	95
Anorexia	36	85
Abdominal pain	32	76
Cough	25	59
Vomiting	23	54
Nausea	18	42
Diarrhea	16	38
Headache	10	23
Constipation	6	14

Table 2 - Clinical Signs of Patients at Admission (n=42)

Clinical Signs	=n	% age
Fever	42	100
Coated tongue	39	92
Toxic look	38	90
Hepatomegaly	34	80
Palpable spleen	32	76
Abd. Tenderness	28	66
Rales in chest	22	52
Jaundice	12	28
Cervical Lymphadenopathy	8	19
Encephalopathy	5	12
Relative bradycardia	4	9
Rose spots	3	7

Table 3: Age breakdown of patients with typhoid fever

Age groups	=n	% age
1-2 years	5	12
3-5 years	13	31
6-9 years	15	36
10-12 years	9	21
Total	42	100

Discussion

Salmonella typhi infection remains a serious problem in developing countries. It is a common infection in our area as well. Spread is through feco-oral route. Therefore it is common in communities with poor living standards of public health. With an estimation of 12.5-16.6 million cases each year and 600 000 deaths, typhoid fever continues to be a major cause of morbidity and mortality in tropical countries, especially among children^{3,15}. However, in some regions of the world, proper sanitation has successfully diminished the infections with S. Typhi. In Turkey, the number of cases with S. typhi infections has shown an increase in recent years from 10001/year in 1991 to 20 960/year in 1995¹⁶.

Typhoid fever in children in the first 2 years of life exhibits certain differences from the clinical course in adults¹⁷. Amongst the symptoms fever was present in 100% of the cases in our study. Similar finding was shown from Lahore where Javed et al in his study showed that fever was the most consistent feature in all patients which was mostly high grade and remittent¹⁸. Similarly, Waqar et al from Lahore reported that fever was the most consistent feature in all patients. Fever was mostly high grade (67%) and remittent (73%).

Fever was also found to be the most common sign as documented during hospital stay, which occurred in 83% and 100% of cases, respectively¹⁹. These figures are comparable with the studies in South African and Nigerian series^{20,21}. Prostration and apathy, and anorexia were among the other most common symptoms. Gastrointestinal symptoms, headache and diarrhea were more common than constipation in this study, which is in accordance with the results from other studies²²⁻²⁵. In one study fever was 100%, anorexia 83% and gastrointestinal symptoms were 40-50% and these figures are close to our figures²⁶. In most of the patients, there was history of gastrointestinal complaints like loose motions, vomiting, pain abdomen, followed by respiratory complaints²⁷.

In a study from India similar figures were reported. The predominant symptoms were fever (100%), vomiting (52.8%), diarrhea (30.2%) and anorexia (24.5%). Chills and rigor associated with fever was noticed in 38% of the children²⁸. Tohme A et al in their French study gave results that were similar to our figures in which fever were observed in 97% of cases and the other predominant symptoms were abdominal pain (41%), diarrhea (36%), chills (31%) and headache (29%). Febrile gastroenteritis was a frequent manifestation in children (52%)²⁶.

In our study after fever (100%), coated tongue (92%) and toxic look (90%) were the most common signs. Manoj Lakhotia et al in their study showed that the most common sign was coated tongue (83%) which re-enforces our finding²⁹. Coated tongue was also found to be the main physical finding in two studies from Lahore^{18,27}. Hepatomegaly (80%) and splenomegaly (76%) were the 2nd major physical findings in our study. Similarly

hepatosplenomegaly 42% and 20% respectively were the major physical finding in another study but still these figures were much less than our study. The reason might be that in our area the patients present late during the course of disease and by the time of presentation the bacteremia has involved the major organs²⁷.

Coated tongue and hepatomegaly were important physical findings especially in toxic patients says Waqar et al³⁰. Coated tongue and hepatosplenomegaly were recognized as major physical findings in a study from Lahore¹⁸. Seçmeer et al report that, in a large series in children with enteric fever, besides, 68.5% had elevated liver enzymes, while only 44.4% had hepatomegaly with or without splenomegaly³¹.

Oh et al and Laditan reported that, in their series, hepatomegaly was almost twice as frequently observed as splenomegaly^{22, 23}. An Egyptian author suggested that the tetrad of fever, toxic look, bronchitic chest, tumid tympanic abdomen and splenomegaly was a good sign for suggestion of typhoid diagnosis³².

Anemia, relative bradycardia, splenomegaly, hepatomegaly and abdominal tenderness were the common physical findings found in a study from Bahawalpur³³. In a study from Taiwan, the results showed that Hepatosplenomegaly was the most common physical sign observed and abdominal tenderness ranked the second³⁴. Twelve% of our cases presented with encephalopathy and 28% had jaundice showing reactive salmonella hepatitis. In another study in Turkey, Kanra et al. found 17% encephalopathy, 73% reactive salmonella hepatitis, 4% pneumonia and 4% gastrointestinal bleeding³⁵. The extent of liver involvement in typhoid fever varies from mild elevation of transaminases, almost all patients being in the second and third week of illness, to a more dramatic presentation with a picture indistinguishable from viral hepatitis in 1 to 26% of cases³⁶⁻³⁸. Typhoid hepatitis is associated with a significant morbidity, and in one series, the mortality rate reached to 20%³⁸. None of our patients had positive serology for acute viral hepatitis A. Relative bradycardia was observed in 9% of cases and Rose spots were observed in 7% of cases in our study and this percentage was higher than the one found in another study which was 2% and 1% respectively³⁰. While on the other hand these observations were found to be 12% and 3% respectively in another study which enforced our findings²⁶. In our study, 43% of all patients with typhoid fever were under 5 years, which is well above the figure in some series^{13, 22}. The reason might be the lack of breast-feeding, under nutrition, lack of sanitary facilities and improper disposal of excreta in such poor community. School children were the most affected.

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