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Research Article

**RISK OF HEPATOMEGALY IN TYPHOID FEVER: A STUDY
ON CURRENT CLINICAL ASPECTS**Dr Marium Riaz Nawab¹, Dr Safa Sajjd², Dr Hafsa Hashmi³¹Al Nafees Medical College Hospital, Islamabad., ²Holy Family Hospital, Rawalpindi**Article Received:** October 2020 **Accepted:** November 2020 **Published:** December 2020**Abstract:****Objectives:** To characterize the clinical picture, biochemical features and prognosis in typhoid hepatitis.**Material and methods:** This prospective, randomized, controlled parallel study of 100 children up to 12 years of age admitted in Al Nafees Hospital, Islamabad for six months duration from March 2020 to August 2020 with clinical and / or laboratory diagnosis of typhoid fever admitted to a pediatric ward was analyzed in terms of demographic data such as age, gender, clinical features and laboratory test results.**Results:** 08 were under the age of one, and 34 were under the age of five. The dominant symptoms were liver enlargement, spleen enlargement, fever, abdominal pain, vomiting, and headache. Febrile seizures were the main symptom in 2 patients, all of whom were under the age of five. No intestinal perforation was found in any of the patients. Anemia was present in 61%, leukopenia in 31% and thrombocytopenia in 38%. Elevated levels of serum alanine and aspartate aminotransferase ($50 > / U / L$) were observed in 28% of our patients.**Conclusion:** Research suggests that in the diagnosis of typhoid, hematological results and the level of transaminases related to hepatomegaly should be interviewed.**Key words:** typhus, transaminases, blood picture.**Corresponding author:****Dr. Marium Riaz Nawab,**

Al Nafees Medical College Hospital, Islamabad.

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INTRODUCTION:

Typhoid fever is a characteristic acute, multisystemic febrile disease, mainly caused by *Salmonella typhi*. It is recognized as the leading cause of morbidity worldwide with over 21.6 million cases annually worldwide and an estimated 216,500 deaths [1-2]. Nearly 80% of cases and deaths occur in Asia. In developing countries, an attack rate of 1,100 per 100,000 population has been documented. It remains a serious public health in developing countries [3-4]. Typhoid is often associated with abnormal liver biochemistry, but severe liver involvement with clinical evidence of acute hepatitis is a rare complication. The incidence of typhoid fever ranges from 0.4% to 6%. Several patient series have previously reported biochemical evidence of liver dysfunction in 23% - 60% of cases. Possible factors in the development of *Salmonella* hepatitis include virulence, delayed treatment, and poor overall health of patients. The pathogenesis of severe liver involvement in salmonella infection can be multifactorial and includes endotoxins, local inflammatory and / or immune responses from the host [5-6]. Clinical jaundice in *Salmonella* hepatitis usually occurs within the first 2 weeks of a febrile illness. Liver enlargement and moderate elevation of transaminases are common. Extreme hepatic impairment with hepatic encephalopathy is a rare coexisting complication of *Salmonella* hepatitis. Besides the epidemiological pattern, the clinical picture is also a trend observed in the case of typhoid fever. Blood laboratory tests revealed anemia in 25.8% and leukopenia in 31%. Elevated serum enzymes are often the earliest indicators of liver damage in asymptomatic patients [7-8]. Abnormal AST and ALT indicate abnormal hepatocytes. Selected case histories illustrate how enzyme levels, combined with history and physical examination, can guide the rest of the work. Our goal was to characterize the clinical picture, biochemical features and prognosis of typhoid fever.

MATERIAL AND METHODS:

This prospective, randomized, controlled parallel study of 100 children up to 12 years of age admitted to our hospital for six months duration from March

2020 to August 2020 with clinical and / or laboratory diagnosis of typhoid fever admitted to a pediatric ward was analyzed in terms of demographic data such as age, gender, clinical features and laboratory test results. The dominant symptoms were hepatomegaly, spleen enlargement, fever, abdominal pain, vomiting and headache. Febrile seizures were the main symptom in 2 patients, all of whom were under the age of five. No intestinal perforation was found in any of the patients. The blood picture containing hemoglobin, TLC and platelet count was analyzed with an autoanalyzer. Transaminase levels, including AST and ALT, were estimated by the standard kit method (Merck). Standard error of the difference between the means and the p-value used to evaluate the probability and significance of the data using the SPSS version of the computer program.

RESULTS:

Table 1 shows the clinical characteristics of the children on admission. The dominant symptoms were: fever (95%), abdominal pain (66%), vomiting (44%) and headache (38%). The main symptoms were fever, vomiting, abdominal pain, loss of appetite, diarrhea and cough. Liver enlargement was detected in 9 (9%), spleen enlargement in 13 (13%) patients. In patients who were clinically suspected of having typhoid fever in this study, typhi dot was positive and Widal agglutination titers of at least 62 were positive. The table shows the hematological results for hemoglobin, total leukocytes, and platelets in children with typhoid fever (Table 2). It has been observed that 31% of patients have very low hemoglobin levels indicate server anemia, while 30% have moderate anemia and only 39% have normal hemoglobin levels. Total leukocyte counts with normal values were observed in the majority of patients, leukopenia was observed in 31%, and only 10% of patients had high leukocyte counts. The low platelet count seen in only 38% of the cases indicates thrombocytopenia, while most patients have normal platelet levels. ALT and AST levels are also tabulated (Table 3). It was observed that the levels of both ALT and AST were elevated only in 28-29% of cases. On the other hand, the level of these hormones was normal in 70-71% of the cases.

Table 1: Clinical symptoms & signs of patients at admission

Symptoms	(%) of Patients
Fever	95
Abdominal pain	66
Vomiting	44
Headache	38
Diarrhea	23
Constipation	8
Cough	15
Anorexia	39
Weakness	37
Nausea	23
Hepatomegaly	09
Splenomegaly	13
Abdominal tenderness	08
Rose spots	01
Relative bradycardia	02
Cervical lymphadenopathy	06

Table 2: Hematological parameters in patients suffering from typhoid fever No of cases in parenthesis

Hb(g/dl)	TLC	Platelets
13.5±2 (39)	<4000x10 ⁹ /l (31)	150,000-450000/mm ³ (62)
10±1.5 (30)	4000-11000x10 ⁹ /l (59)	>150,000/mm ³ (38)
<8.5 (31)	>11,000x10 ⁹ /l (10)	-

Table 3: Level of transaminase in patients No of cases in parenthesis.

AST	>50 Iu/l (28)
	<50 Iu/l (72)
ALT	>50 Iu/l (29)
	<50 Iu/l (71)

DISCUSSION:

Liver involvement is common in patients with typhoid fever. However, the picture similar to hepatitis with fever and jaundice is unusual and rarely reported in the pediatric literature. Fever was the most common symptom in all cases [9-10]. This was observed in 95% of the cases. Our study is consistent with the majority of studies by other authors. Significant cases of gastrointestinal complaints were reported in children - abdominal pain, nausea, vomiting, diarrhea, anorexia, etc. Our study is consistent with different members who followed the same complaints. However, no study reported gastrointestinal bleeding as in one of the studies. In this study, liver enlargement occurred in only 9% of the cases. However, our study contradicts various studies where a high percentage was observed, ie 88% and 33% of hepatomegaly were observed in these studies. In our study, spleen

enlargement was seen in 13% of the cases, again different from what was described [11]. In conjunction with the spleen, the liver is involved in destroying used red blood cells and recovering their components. Most of the patients in this study have low hemoglobin levels or are anemic. Our study is in line with the study which also found that in typhoid fever the blood pattern revealed anemia, with normal white blood cell counts, and thrombocytopenia. Most of the patients in this study had normal leukocyte counts, although leukopenia is considered to be a common hematological symptom of typhoid fever. Leukopenia was observed in 31% of cases, while the others were followed up. However, the study showed characteristic changes in the differential blood picture, such as lymphomonocytes. Research suggests that hematological findings should be questioned in the diagnosis of this disease [12-13]. In this study, hepatomegaly was more often diagnosed

at week 2 or 3 than at week 1 (36% vs 11%). AST and ALT were mild to moderately increased in 28% and 29% of cases at weeks 2 and 3, respectively. Our study is consistent with a study that found the same results. This study showed that although the clinical picture of hepatitis is atypical, liver involvement is invariably present after week 1 and should not be considered a complication but a feature of the disease. According to studies, liver enlargement and moderate elevation of transaminases are common. Extreme hepatic impairment with hepatic encephalopathy is a rare coexisting complication of Salmonella hepatitis. Another study also found elevated serum transaminases, which are usually indicative of damage to liver cells [14-15]. However, elevations in ALT may also be of extrahepatic origin. A group of workers reported that as many as 2.5% of normal patients had "abnormal" levels of aminotransferase. Liver enzymes usually reflect the integrity of the hepatocytes. However, a study found that 60% of cases of elevated AST levels in the liver can be attributed to ischemic or toxic liver injury.

CONCLUSIONS:

Research suggests that in the diagnosis of typhoid, hematological results and the level of transaminases associated with hepatomegaly should be investigated.

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