

Case report on hepatitis due to salmonella typhi infection

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Abstract

Typical presentation of *Salmonella typhi* infection involves fever, headache, nausea and vomiting, abdominal pain, diarrhoea or constipation. Mild liver involvement has been reported in 21-60% patients, though reports of highly abnormal liver parameters are rare. We report the case of a 22 year old male, with no known comorbidities or social habits such as smoking or drinking, who presented with fever, abdominal pain and gastrointestinal symptoms, along with highly colored urine, icterus and highly elevated AST/ALT, ALP and GGT values. Blood culture and virus markers for hepatitis were evaluated. *Salmonella typhi* was isolated from blood culture; reports for HIV antibodies, Anti-HCV, Anti-HAV IgM and scrub typhus IgM came out negative. He was treated with antibiotic therapy and other supportive measures, and was discharged in stable condition.

Keywords

Typhoid; Hepatitis; Salmonella hepatitis; Acute bacterial infection.

Abbreviations

AST: Aspartate Aminotransferase; ALT: Alanine Aminotransferase; sPO2: Saturation of Peripheral Oxygen; RBS: Random Blood Sugar; RBC: Red Blood Cells; WBC: White Blood Cells; ALP: Alkaline Phosphatase; GGT: Gamma Glutamyl Transferase; USG: Ultrasonography; HIV: Human Immunodeficiency Virus; Anti-HCV: Anti-Hepatitis C Virus; Anti-HAV: Anti-Hepatitis A Virus; IgM: Immunoglobulin M; IV: Intravenous.

Introduction

Typhoid or enteric fever is a direct consequence of consuming food and liquids contaminated with the bacterium *Salmonella typhi*. The involvement of the liver is fairly common in the disease. Hepatomegaly and mild elevation of liver enzymes such as AST and ALT is commonly observed. However, development of jaundice or hepatitis-like symptoms along with marked increase in liver enzymes is a rare observation [1]. Severe Salmonella infection affecting multiple organs can result in poor prognosis and may even prove fatal [2].

Case Summary

A 22 year old male patient presented with low-grade, intermittent fever associated with chills and rigors for the past 10 days. He also complained of 2-3 episodes of vomiting and loose stools per day, and left upper quadrant abdominal pain for 5 days. On conducting patient history interview, it was found that he consumed outside food and had a recent history of travel. He denied consuming alcohol and cigarettes. He had no known comorbid conditions or blood transfusion, and a history of tattooing 8 years ago. On examination, he presented with a blood pressure of 110/70 mmHg, Pulse Rate of 100 bpm, sPO₂ of 98% in room air and icterus. His blood sugars and blood counts were normal- with an RBS of 102 mg/dL, RBC count of $4.3 \times 10^{12}/L$, Total WBC count $10.89 \times 10^9/L$ (Neutrophils- 70.2%, Lymphocytes- 20.3%, Monocyte- 9.2%, Eosinophil- 0.1%, Basophil- 0.2%) and a slightly low Haemoglobin level of 11.3 g/dL. His serum Creatinine was 0.88 mg/dL and serum urea was 20 mg/dL. Liver Function Tests showed elevated transaminases with AST being 321 U/L, ALT 223 U/L, ALP 404 U/L and GGT 375 U/L. Serum Bilirubin levels were also found raised, with total bilirubin levels being 5.0 mg/dL, direct bilirubin level being 4.5 mg/dL. Hence, an initial diagnosis of Acute Viral Hepatitis was made. USG Abdomen showed gall bladder calculus, hepatomegaly and mild splenomegaly with splenic infarcts and enlarged mesenteric nodes. Blood culture showed *Salmonella typhi*, and resistance to Ciprofloxacin. Serology tests for HIV antibodies, Anti-HCV antibodies, Anti-HAV IgM and scrub typhus IgM were negative. Patient had few episodes of vomiting for 6 days, and multiple episodes of fever throughout the duration of hospital stay. He was treated with antimicrobial therapy involving IV Ceftriaxone 2 g/day for 7 days, oral Azithromycin 500 mg twice daily for 7 days along with other supportive measures, and was discharged in stable condition.

Discussion

Typhoid fever is one of the most prevalent infectious diseases throughout the world, with about 11-21 million cases being diagnosed and over 2 lakh deaths occurring each year. The causative organisms are *Salmonella typhi* and *Salmonella paratyphi*, of which *S. typhi* is better researched. Recent trends, however, suggest a gradual increase in *S. paratyphi* cases in the past few decades [3]. The incidence of *S. paratyphi* is now estimated to be about 3.8 million cases per year [5]. The typhoid vaccines currently available (live and attenuated) are only effective against *S. typhi* [4], and vaccines against *S. paratyphi* are still in development [5].

The common symptoms of typhoid include fever with chills and rigors, headache, weakness and fatigue, along with gastrointestinal symptoms such as nausea, vomiting, abdominal pain, diarrhoea or constipation. This patient had fever, nausea, abdominal pain, jaundice and high colored urine similar to a case reported by Ratnayake EC [6]. He also presented with highly elevated transaminases and hepatomegaly, which is commonly associated with viral hepatitis, reported in a similar case by Albyrak A [7]. The involvement of liver in typhoid fever, resulting in hepatomegaly and mild elevations of liver enzymes is seen in about 21-60% of typhoid patients, as reported by Khosla SN et al. [8]. However, hepatitis with significant elevation of bilirubin and transaminases is uncommon. Since the symptoms of acute viral hepatitis and *Salmonella* hepatitis are so similar, a blood culture test to identify the bacterium is essential to distinguish

between them both [9].

Prognosis in this condition is usually good when treated with specific antimicrobial therapy, generally involving fluoroquinolones, third generation cephalosporins and Azithromycin, though changing trends indicate steady rise in antimicrobial resistance. Resistance against fluoroquinolones such as Ciprofloxacin has been widely recorded, particularly in Pakistan [10]. Resistance to Cephalosporins and Azithromycin is relatively low [11]. These findings emphasize the need for blood culture and sensitivity testing to start antibiotic therapy, for better clinical response.

Conclusion

It is crucial to accurately identify and distinguish Salmonella Hepatitis from acute viral hepatitis, in order to treat the condition appropriately, and to prevent extensive organ damage.

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