

A rare presentation of *Salmonella Paratyphi B* associated enteric fever and liver abscess: A case report and brief review

Avinash Rajan¹, Udhayasankar Ranganathan², Mangaiyarkarasi Thiyagarajan³, Sunil Shivekar³, Gopal Rangasamy⁴

From ¹Tutor, ²Assistant Professor, ³Associate Professor, ⁴Professor, Department of Microbiology, Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), Puducherry, India.

Correspondence to: Dr. Udhayasankar Ranganathan, Department of Microbiology, Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), Kalitheerthalkuppam, Madagadipet, Puducherry-605107, India. E-mail: drudhaysnkr@gmail.com

Received - 23 April 2019

Initial Review - 30 May 2019

Accepted - 11 June 2019

ABSTRACT

A pyogenic liver abscess (PLA) is a rare complication of enteric fever and is a potentially life-threatening condition. Here, we report a case of PLA secondary to enteric fever caused by *Salmonella Paratyphi B* in a 60-year-old male with diabetes mellitus and chronic alcoholism, who presented with fever, jaundice and abdominal pain. An ultrasound of the abdomen revealed a large abscess involving the left lobe of the liver with air-fluid level. Pus aspirated from the liver abscess yielded growth of *Salmonella Paratyphi B* which was susceptible to most of the commonly tested antibiotics. A Widal test performed also showed significant titers for *Salmonella Paratyphi B*. Percutaneous aspiration along with appropriate intravenous antibiotics resulted in a favourable clinical outcome in this patient.

Keywords: Enteric fever, Liver abscess, *Salmonella Paratyphi B*.

A pyogenic liver abscess (PLA) is a potentially life-threatening condition. Although the worldwide incidence of the disease is low, it varies from region to region between 2.3 cases per 100,000 in North America to 275.4 cases per 100,000 population in Taiwan ^[1]. Among the risk factors for PLA, biliary tract disease is the most common cause found worldwide as compared to the other causes like malignancies of the liver including secondaries and liver transplantation. It is established in many studies that diabetes mellitus, male gender, and increasing age are also associated with increased risk of development of PLA^[2,3]. Among the organisms isolated from PLA, *Klebsiella pneumoniae* followed by *Escherichia coli* are the most common worldwide including South-east Asian countries^[4]. PLA due to *Salmonella species* is very rarely reported in the literature^[5-7]. We report a case of PLA due to enteric fever caused by *Salmonella Paratyphi B* in an elderly diabetic male with chronic alcoholism, who presented with fever, jaundice and abdominal pain and responded favourably to treatment.

CASE REPORT

A 60-year-old male presented with complaints of fever, yellowish discoloration of conjunctiva, nausea and altered bowel habits for the past 15 days. Fever was high-grade, intermittent and not associated with chills and rigors. He also complained of mild upper abdominal pain, loss of weight and appetite for past 2-3 weeks. He is a known case of type-2 diabetes mellitus for the past 3 years and was on oral hypoglycemic agents. There was no

history of any chronic illnesses in the past. The patient had no history of blood transfusion or other invasive medical procedures in the past. He consumes alcohol, four to five times a week, 180-360 ml per drink for the past 10 years. He took the native form of treatment for the complaints, details of which was not available with the patient.

On examination, the patient was conscious, oriented, febrile (101°F), pale and icteric with normal vitals. Respiratory system, cardiovascular system, and central nervous system were clinically normal. Abdominal examination revealed tenderness over the right hypochondriac and epigastric region. His hemogram revealed anemia (Haemoglobin-7.6gm/dl), and neutrophilic leukocytosis (Total leucocyte count- 27600 with polymorphs 92%). His capillary blood glucose was 227 mg/dl. His renal function parameters were normal (blood urea- 26 mg/dl and serum creatinine- 0.7 mg/dl). Though his liver function test showed bilirubinemia (Total bilirubin- 2mg/dl and direct bilirubin-1 mg/dl), liver enzymes were within the normal range. Tests for human immunodeficiency virus (HIV) and hepatitis viruses A, B, C and E were negative. Routine blood culture did not grow any organism.

An ultrasound of the abdomen revealed a collection of fluid approximately 450 cm³ with floating internal echoes involving the left lobe and anterior segment of the right lobe of the liver. A contrast-enhanced computerised tomogram showed a large ill-defined collection of size 8.5 x 14.2 x 11.3 cm with an air-fluid level in the left lobe of the liver with homogenous peripheral ring enhancement (Fig. 1).

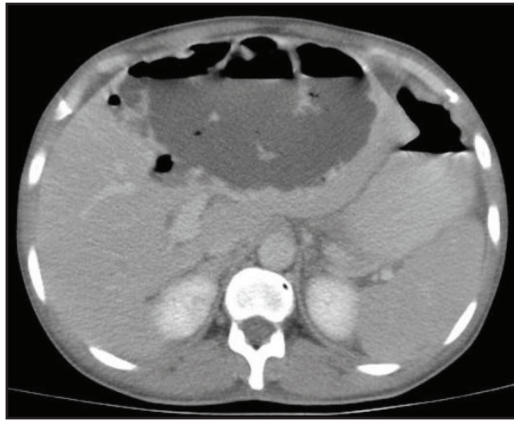


Figure 1: Contrast-enhanced CT abdomen showing a large ill-defined collection of size 8.5 x 14.2 x 11.3 cm with air- fluid level in the left lobe of the liver with homogenous peripheral ring enhancement

Percutaneous aspiration of the abscess was done under ultrasound guidance and the aspirate sent for microscopy, culture, and sensitivity. He was started on insulin for glycemic control. The pus sample received in the microbiology lab was subjected to microscopy and bacterial culture and sensitivity. On microscopy, Gram-stain showed plenty of pus cells and few Gram-negative bacilli, saline wet mount revealed few motile bacilli. The wet mount did not show any trophozoites of *Entamoeba histolytica*. *Salmonella Paratyphi B* was isolated in pure culture from the pus sample, identified by conventional phenotypic methods and using specific anti-sera. An antimicrobial susceptibility testing was done according to Kirby-Bauer disc diffusion method and the organism was found to be susceptible to most antibiotics like ampicillin, co-trimoxazole, chloramphenicol, ceftriaxone, cefotaxime, meropenem and imipenem according to the Clinical Laboratory Standards Institute (CLSI) guidelines^[8]. The patient was treated with intravenous ciprofloxacin 500 mg b.i.d. A Widal test was requested which showed *Salmonella Typhi* 'O' antibody titres of 1 in 160 dilutions and *Salmonella Paratyphi B* 'H' antibody titres of 1 in 320 dilutions. A culture of the drain fluid following one week of antibiotics and repeat blood cultures yielded no growth. The intravenous antibiotics were continued for two weeks. The patient showed complete recovery and was discharged with advice to continue oral ciprofloxacin (500 mg twice daily) for two weeks and to continue oral hypoglycemic drugs regularly.

DISCUSSION

Enteric fever is an illness caused by motile, Gram-negative bacilli *Salmonella enterica subspecies enterica*. The serotype Typhi causes typhoid fever and the serotypes Paratyphi A, B and C cause paratyphoid fever. The burden of enteric fever is much higher in the developing countries than in the developed countries with incidences as high as 11.9 million cases and 129,000 deaths in 2010^[9]. Recently, *Salmonella Paratyphi A* infections are showing an increased incidence, particularly in Asian countries and are known to cause infections as serious as

that of *Salmonella Typhi*^[10]. Gastrointestinal bleeding, intestinal perforation, delirium, relapse, reinfection, and chronic carrier states are the well-known complications of enteric fever. Focal infections like cholecystitis, hepatitis, pneumonia, myocarditis, and acute kidney injuries are also reported in the literature.

A pyogenic liver abscess (PLA) is a rare complication of enteric fever. The usually isolated organisms in PLA are *Klebsiella pneumoniae*, *Escherichia coli*, *Streptococcus species*, and anaerobic bacteria. *Salmonella Typhi*, *Salmonella Paratyphi A* and various non-typhoidal salmonella (NTS) have been reported to be isolated from cases of PLA in the literature. Focal infections due to *Salmonella Paratyphi B* are only rarely reported in the literature and to the best of our knowledge, this is the first report of *Salmonella Paratyphi B* isolated from PLA^[11,12].

The exact reason for the development of PLA in this patient could not be ascertained. The patient did not have any recorded evidence of pre-existing liver and biliary tract abnormalities which is the most common cause for PLA. Diabetes mellitus may be one of the risk factors for the development of PLA in this patient, as its association with PLA has been established in many studies. The patient also had a habit of excessive alcohol consumption for a long period. Alcohol intoxication has been shown as a risk factor for PLA in a few studies^[13]. The patient reported to our medical facility for treatment only after two weeks of the onset of symptoms and such long periods without appropriate treatment may have led to this complication. Although his blood culture samples did not yield any growth, he had a significantly high titre of antibodies to *Salmonella Paratyphi B* in Widal test, proving him to be a case of enteric fever complicated by the liver abscess.

The prompt intervention with percutaneous drainage of the abscess under ultrasound guidance and appropriate intravenous antibiotics have prevented other potentially serious complications and resulted in a favourable outcome in this patient.

CONCLUSION

Focal pyogenic infections due to *Salmonella Paratyphi B* are only rarely reported in the literature and to the best of our knowledge, this is the first report of *Salmonella Paratyphi B* isolated from pyogenic liver abscess which had a favourable outcome, highlighting the importance of the usefulness of early institution of appropriate therapy and the need to be aware of such rare cases in our country.

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Funding: None; Conflict of Interest: None Stated.

How to cite this article: Rajan A, Ranganathan U, Thiyagarajan M, Shivekar S, Rangasamy G. A rare presentation of salmonella paratyphi b associated enteric fever and liver abscess: A case report and brief review. *Indian J Case Reports.* 2019;5(3):205-207.

Doi: 10.32677/IJCR.2019.v05.i03.002