

## Case Report

# Salmonella liver abscess: an unusual complication of typhoid fever with hepatitis: a coinfection

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### ABSTRACT

Typhoid fever continues to be a major cause of mortality and morbidity particularly in children and adolescent in developing countries due to poor sanitation and lack of safe drinking water facilities.

Even in antibiotic era, complications of typhoid fever continue to be a common problem due to many factors like inadequate treatment, delayed presentation, drug resistance and associated morbidity. Hepatic involvement in typhoid fever is common in children, but liver abscess due to *Salmonella* species is rare. We hereby present a case of a 5-year-old Indian female child who was initially managed as acute viral hepatitis (hepatitis-A IgM positive). However, persistence of fever and pain abdomen led to the diagnosis of liver abscess on ultrasound. Blood culture and aspirate of the abscess grew salmonella typhi. She was adequately managed with intravenous antibiotics leading to complete resolution of the abscess.

**Keywords:** Co-infection, Liver abscess, Poor sanitation, *Salmonella typhi*, Typhoid fever, Viral hepatitis

### INTRODUCTION

Enteric fever is a major public health problem causing an estimated 11.9 to 26.9 million cases and 129000 to 217000 deaths worldwide each year.<sup>1,2</sup> The Indian sub-continent bears the brunt of disease with an estimated 6345776 cases per year.<sup>1</sup>

A study conducted by the International Vaccine Institute found the incidence of culture-proven *S. typhi* to be 340 per 100000 population-year among children aged 5 years, 493/100000 population-year in children age 5–15 years and 120/100000 population-year in adults older than 15 years.<sup>3</sup>

*Salmonella enterica* serotype Typhi (*S. typhi*) is the causative organism of typhoid fever, an acute systemic infection that is common in developing countries, associated with low socioeconomic levels and poor

sanitary conditions.<sup>4</sup> Humans are the only natural reservoirs and can be asymptomatic carriers.<sup>5</sup> Transmission usually occurs through the fecal–oral route by ingestion of contaminated food or water.<sup>5</sup>

Common clinical features of typhoid fever in children are high-grade fever, coated tongue, anorexia, vomiting, hepatomegaly, diarrhea, abdominal pain, pallor, splenomegaly, constipation, headache and jaundice.<sup>6</sup> Hepatobiliary involvement can be seen in 1-26% of typhoid fever.<sup>4</sup> Typhoid hepatitis or “hepatitis typhosa” is more frequently seen in younger children but assumes importance as it mimics acute viral hepatitis in the tropics and is likely to either be immunologically mediated or due to the direct effects of the typhoid toxin on the hepatocytes.<sup>7</sup> Hepatic abscesses due to *salmonella typhi* are rare and reported to occur in immunosuppressed, malnourished, pre-existing hepatobiliary disease and those with hemoglobinopathies.<sup>4,7</sup>

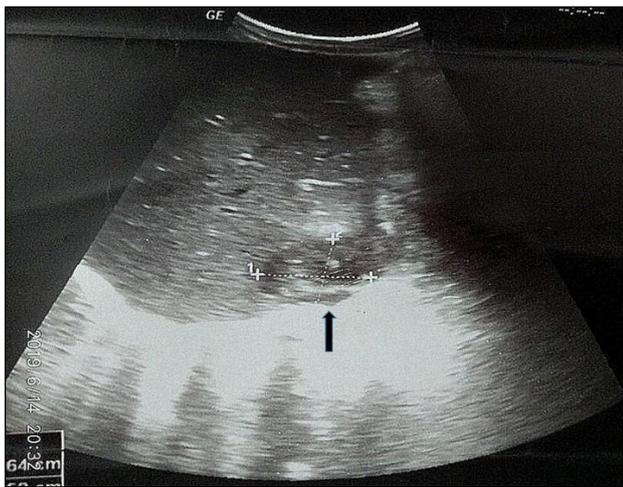
Here we present a 5 years female child with hepatic abscess caused by salmonella typhi with hepatitis-A coinfection. Although, enteric fever with hepatitis A coinfection is well known in Indian scenario due to similar mode of transmission, Salmonella Typhi liver abscess with hepatitis A co-infection in children is not well reported. This is the first report in literature of Salmonella Typhi liver abscess with hepatitis A co-infection in a child.

## CASE REPORT

A 5 year-old Indian female child presented to emergency department with complaints of fever for 10 days associated with yellowish discoloration of eyes and pain abdomen for 7 days. She was managed on outpatient basis as case of acute viral hepatitis (hepatitis-A IgM was positive), but in view of persistence of fever, she was admitted.

On examination, weight-16.8kg, height-105.8cm, HR-120/minutes, RR-27/min, temperature-101F, there was icterus but no pallor, lymphadenopathy and clubbing. On systemic examination, abdomen was soft, hepatomegaly (liver-3cm under RCM, soft, with regular margin).

On investigation, Hb-8.9g/dl, TLC-28400/mm<sup>3</sup>, with N-82%, L-11% and platelet count-3.13lac/mm<sup>3</sup>. Serum urea-22mg/dl, creatinine-0.3mg/dl, total bilirubin-11.3mg/dl, AST-78U/L, ALT-121U/L, ALP-383U/L, total protein-6.9g/dl, albumin-2.6 g/dl. In view of persistence of fever and pain abdomen, further investigations were carried out and Widal test was positive, blood culture grew Salmonella typhi sensitive to ceftriaxone, cefixime, ampicillin and norfloxacin.



**Figure 1: Ultrasound abdomen showing hypoechoic lesion measuring 3.6cm x 2.5cm in segment VI of liver.**

However, on day 2 of hospital stay, the abdominal pain worsened and on examination abdomen was tender in right hypochondrium. Possibility of liver abscess was considered, and ultrasound was ordered which showed

hepatomegaly with heterogeneously hypoechoic lesion measuring 3.6cm x 2.5cm with shaggy irregular margin causing diffusion enhancement in right lobe of liver suggestive of liver abscess (Fig.1). HIV serology was negative.

Abscess was drained by ultrasound guided aspiration and about 10 ml of brownish pus was aspirated. Pus culture grew salmonella typhi with same sensitivity pattern with that of blood culture. She was continued on ceftriaxone and became afebrile after 4 days and repeat ultrasound showed clearance of abscess.

## DISCUSSION

Hepatitis A and typhoid fever are endemic infectious diseases in many parts of the world including India and they share a common, simple mode of transmission the fecal oral route associated with poor hygiene.<sup>8</sup>

The mainstay of the diagnosis of typhoid fever is positive result of culture from the blood or other anatomic site and the diagnosis of hepatitis A infection is made by the presence of IgM antibodies to HAV (IgM anti-HAV).<sup>6,8</sup> In this case serum Anti-hepatitis-A IgM was positive and both blood culture as well as pus aspirate from the abscess were positive for salmonella typhi.

Hepatobiliary involvement in typhoid fever ranges from 1-26% and hepatic abscess is a rare complication and is associated with high mortality.<sup>4,9</sup> In typhoid fever, jaundice usually occurs at the peak of fever and persists after an appearance of jaundice.<sup>10</sup> Whereas, in viral hepatitis, fever subsides after appearance of jaundice and serum aminotransferase levels are markedly elevated (8-10 times normal) as compared to typhoid hepatitis.<sup>11</sup> In this case, jaundice developed on day 3 of fever and persisted beyond appearance of jaundice (day 10) and the serum aminotransferase were only mildly elevated (2-3 times normal). Serum with positive viral serological marker for hepatitis-A and growth of salmonella typhi from blood and pus culture suggesting

co-infection of salmonella typhi during the recovering phase of viral hepatitis.

Hepatic abscess is a rare complication of typhoid fever and associated with predisposing factors like, intravenous drug use, HIV, spread of a contiguous infectious process, hemoglobinopathies and pre-existing hepatobiliary diseases.<sup>4,9</sup> In this case, HIV was negative and hepatitis-A IgM was positive.

Therefore, liver impairment caused by hepatitis-A resulting in altered liver tissue could be the predisposition site for the capture of Salmonella typhi during its haematogenous spread. With the aspiration of abscess with adequate antibiotics, the child became afebrile on day 4 of antibiotics and repeat ultrasound showed clearance of abscess.

This is the first case report of hepatitis A and Salmonella typhi co-infection resulting in liver abscess formation. Possibility of liver abscess should be ruled out in cases of co-existing Typhoid fever and acute viral hepatitis in endemic countries like India.

## CONCLUSION

In conclusion, dual infection can pose diagnostic dilemma, resulting in morbidity and prolonged hospital stay especially in developing countries. Physician need to be aware about the co-existence of typhoid fever with viral hepatitis in case of unusual presentation and disease course in endemic countries like India. Complete diagnostic works up in addition to imaging studies will help in reaching early diagnosis and timely management. Improved sanitation, awareness and vaccination can prevent such infections and complications.

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## REFERENCES

1. Crump JA, Mintz ED. Global trends in typhoid and paratyphoid fever. Clin Infect Dis Off Publ Infect Dis Soc Am. 2010;50(2):241-6.
2. Mogasale V, Maskery B, Ochiai RL, Lee JS, Mogasale VV, Ramani E, et al. Burden of typhoid fever in low-income and middle-income countries: a systematic, literature-based update with risk-factor adjustment. Lancet Glob Health. 2014;2(10):e570-80.
3. Ochiai RL, Acosta CJ, Danovaro-Holliday MC, Baiqing D, Bhattacharya SK, Agtini MD, et al. A study of typhoid fever in five Asian countries: disease burden and implications for controls. Bull World Health Organ. 2008;86(4):260-8.
4. Huang DB, Herbert L Du Pont. Problem pathogens: extra-intestinal complications of Salmonella enterica serotype Typhi infection. Lancet Infect Dis. 2005;5(6):341-8.
5. WHO, 2003. Background Document: The Diagnosis, Treatment and Prevention of Typhoid Fever. Geneva: WHO/V&B/03.07. Available at: <https://www.glowm.com/pdf/WHO-diagnosis%20treatment%20prevention%20of%20typhoid%20fever-2003-CustomLicense.pdf>. Accessed on 9 June 2019.
6. Kliegman R, Behrman RE, Nelson WE. Nelson Textbook of Pediatrics. In: Kliegman R, Behrman RE, Nelson WE, editors. The nervous system, vol. 2. 20th Ed. Philadelphia: Elsevier; 2016:1390.
7. Britto C, Pollard AJ, Voysey M, Blohmke CJ. An Appraisal of the Clinical Features of Pediatric Enteric Fever: Systematic Review and Meta-analysis of the Age-Stratified Disease Occurrence. Clin Infect Dis Off Publ Infect Dis Soc Am. 2017;64(11):1604-11.
8. Luxemburger C, Dutta AK. Overlapping Epidemiologies of Hepatitis A and Typhoid Fever: the Needs of the Traveler. J Travel Med. 2005;12(Suppl. 1):S12-21.
9. Ronovito V, Bonanno CA. Salmonella hepatic abscess: An unusual complication of Salmonella carrier state? Am J Gastroenterol. 1982;77(5):338-9.
10. Jagadish K, Patwari AK, Sarin SK, Prakash C, Srivastava DK, Anand VK. Hepatic manifestations in typhoid fever. Indian Pediatr. 1994;31(7):807-11.
11. Mishra D, Chaturvedi D, Mantan M. Typhoid fever and viral hepatitis. Indian J Pediatr. 2008;75(5):509-10.

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