

Co-infection of Hepatitis A and E with Salmonella Infection; a Case Report

Deepak Bhat*¹, MD; Gurdeep Singh Dhooria¹, MD; Harmesh Singh Bains¹, MD

1. Department of Pediatrics, Dayanand Medical College & Hospital, Ludhiana, Punjab, India

Received: 14/05/08; Revised: 12/07/08; Accepted: 15/09/08

Abstract

Background: Ours is a developing country so infectious diseases contribute maximum to the morbidity and mortality. Among these, water borne diseases like diarrhea, typhoid, infectious hepatitis etc. are on rise. Sometimes more than one type of infection coexists which makes the diagnosis and management a challenging task. We report a case of Coinfection of *Salmonella typhi* with Hepatitis A and E.

Case Presentation: A 5 year old male child came to us with complaints of fever and jaundice for last 9 days. Blood culture of patient was positive for *Salmonella typhi*. Viral markers turned out to be positive for Hepatitis A and E. To the best of our knowledge coinfection of Hepatitis A and E with Salmonella has rarely been reported earlier.

Conclusion: In view of the restricted finances in our country vaccines against typhoid and Hepatitis A can not be incorporated in the national immunization schedule at present but these vaccines can be offered on an individual basis.

Key Words: Viral Hepatitis; Typhoid fever; Vaccination; *Salmonella typhi*; Hepatitis

Introduction

Concurrent Infections in Acute Febrile Illness can be challenging for a treating physician^[1]. Many of such infections can be water borne. Waterborne diseases are very common in developing countries like India due to inadequate sewage and water drainage systems. Multiple infections can occur with

contaminated water. Viral hepatitis and typhoid fever are endemic in India. Both are transmitted feco-orally and are associated with poor sanitation. Few studies have shown the co-existence of these two together, but still the diagnostic dilemma whether clinical manifestations are due to viral hepatitis or a feature of typhoid hepatitis, always challenge a clinician^[2,3]. Co infection of Hepatitis A with

* Corresponding author;

Address: C-95, UdhamSingh Nagar, Ludhiana. Punjab 141001 Ph: 91-161-2301401, 09876109401(M)

E-mail: dbhat14@yahoo.co.in

Salmonella species and Hepatitis E with Salmonella species have been reported earlier^[4, 5]. We report a case of co infection of Hepatitis A and E with Salmonella infection.

Case Presentation

A 5 year old male child came to us with complaints of high grade fever for last 9 days, yellow discoloration of eyes for last 5 days and swelling over eyes and feet for last 5 days and distension of abdomen for last 2 days. There was no past history of jaundice, blood transfusion or surgical procedures. On examination, the patient was febrile, had icterus, periorbital swelling with edema feet. Patient was fully conscious and had no evidence of bleeding from any site. Urinary output was adequate. Vitals were pulse rate of 100/min, respiratory rate 36/min, blood pressure 100/66 mmHg and temperature 38.2°C. On per abdomen examination there was abdominal distension, liver was palpable 5 cm below right costal margin with span of 12 cm. It was soft and tender.

There was no other organomegaly. Spleen was not palpable. There was evidence of free fluid in abdomen with shifting dullness present. On examination of chest, there was tachypnea, percussion note was dull in both axillary regions and breath sounds were also diminished in the same areas.

Investigations showed hemoglobin of 11.8gm%, total leucocyte count 15,000 cells/cumm with 60% polymorphs. Platelets were 1,40,000 /cumm. Peripheral blood film showed anisopoikilocytosis with few microcytes. Serum biochemistry showed- total bilirubin 11mg% with direct fraction of 7.6 mg %, AST 405 U/L, ALT 1196 U/L, alkaline phosphatase 270 U/L, albumin 2.5gm%, PTI of 14.2 sec with INR 1.01 . Renal functions and electrolytes were normal. Among viral markers IgM anti HAV and IgM anti HEV came out to be positive. HBsAg was negative. Blood culture isolated *Salmonella typhi*. Widal test was positive in high titers.

X-ray chest pa view showed bilateral pleural effusion. Ultrasound Abdomen showed hepatomegaly with ascites. Ascitic tap done showed 10 cells all lymphocytes total protein 2.2 gm%, albumin 1.2gm%, glucose 54mg%. Gram stain and culture was negative.

A diagnosis of Enteric fever with Hepatitis A & E was made and patient was started with intravenous Cefotaxime and supportive care. Patient became afebrile on day 5 of admission, oral intake improved, tachypnea resolved, icterus, edema and abdominal distension decreased. Repeat liver function tests showed improvement with serum bilirubin decreased to 7.57 mg%, AST 90 U/L, ALT 35 U/L. Patient was discharged on oral antibiotics. On follow up patient remained afebrile, with no evidence of edema or hepatomegaly, icterus was reduced. Patient was advised Vi-Poly-saccharide typhoid vaccine after 4 weeks.

Discussion

Enteric fever is endemic in India with more than 300,000 cases of enteric fever occurring each year^[6]. Although clinical hepatitis is unusual (probably fewer than 25% of all cases), liver involvement is present in almost all cases. Establishing a diagnosis of salmonella hepatitis may be difficult in developing countries, because the manifestations are similar to those of other forms of acute hepatitis, including viral hepatitis, leptospirosis and malaria^[7].

The clinical presentation of salmonella hepatitis resembles that of viral hepatitis, but certain features help in differentiation. In particular, high fever (often more than 40°C) and bradycardia (inappropriate response of heart rate to degree of fever) seem to be more common among patients with salmonella hepatitis. In addition, the biochemical profile is markedly different from that of viral hepatitis and suggests the presence of an infiltrative process rather than hepatitis^[7].

In a comparison of 27 cases of salmonella hepatitis, El- Newihi et al found that patients

with salmonella hepatitis were more likely to have a disproportionately increased serum alkaline phosphatase level and that serum aminotransferase values were far lower than with acute viral hepatitis^[8]. Also unlike viral hepatitis, salmonella hepatitis was associated with fever and a left shift of white blood cells. Jaundice is unusual, and many cases of salmonella hepatitis are anicteric. In untreated patients, jaundice may be delayed from the second to the fourth week of the illness. Jaundice was noticed in the second week of illness in our patient.

Our patient was initially diagnosed as enteric fever due to positive blood culture for salmonella typhi. Co-infection of hepatitis with enteric fever was suspected because of association of high grade fever with markedly raised liver enzymes.

Complications of pleural effusion and ascitis, known to be associated with Hepatitis A and E were also seen in our patient. Pleural effusion is a rare complication of acute viral hepatitis. The first case was reported in 1971, and thereafter 14 additional cases were reported. Among those, 5 were associated with hepatitis B and 2 had hepatitis A infection. The exact mechanism is unknown, though immune complexes have been cited as possible etiological factor. Pleural effusion is a possible benign and early complication of acute hepatitis A infection that resolves spontaneously regardless of illness outcome^[9]. Ascitis is also a known complication of Hepatitis A.

Conclusion

Coinfection should always be kept in mind while dealing with cases of enteric fever or viral hepatitis with atypical features. In order to reduce the burden of disease, vaccination against typhoid and Hepatitis A should be included in the immunization schedule.

Acknowledgements

We thank the doctors of microbiology department and residents of pediatric department for lending unconditional support during the formulation of our case report. There was no funding involved on this study.

References

1. Parker TM, Murray CK, Richards AL, et al. Concurrent Infections in Acute Febrile Illness Patients in Egypt. *Am J Trop Med Hyg.* 2007;77(2):390-2.
2. Schwartz E, Jenks NP, Shilm DR. Typhoid hepatitis or typhoid fever and acute viral hepatitis. *Trans R Soc Trop Med Hyg.* 1994;88(4):437-438.
3. Pandey CK, Singh N, Kumar V, et al. Typhoid, hepatitis E, or typhoid and hepatitis E: the cause of fulminant hepatic failure- a diagnostic dilemma. *Crit Care Med.* 2002;30(2):376-8.
4. Ohnishi S, Hatanaka K, Nakanishi M, et al. Acute Hepatitis With Salmonella paratyphi A and Hepatitis E Virus Coinfection. *J Clin Gastroenterol.* 2003;37(4):350-1.
5. Bendre SV, Bavdekar AR, Bhav SA, et al. Fulminant hepatic failure:etiology,viral markers and outcome. *Indian Pediatr.* 1999;36(11):1107-12.
6. Government of India. Health Information 1993. DGHS, New Delhi. 1994.
7. Gordon SC. Bacterial and systemic infections. In: Schiff ER, Somell MF, Maddreg WC(eds). *Schiff's Diseases of the Liver.* 9th ed. Philadelphia: Lippincott Williams and Wilkins. 2003; P:1529.
8. El-Newihi HM, Alamy ME, Reynolds TB. Salmonella Hepatitis: analysis of 27 cases and camparison with acute viral hepatitis. *Hepatology.* 1996;24(3):516-9.
9. Emre A, Dincer Y, Hancer Y, et al. Pleural effusion associated with acute hepatitis A infection. *Ped Inf Dis.* 1999;18(11):1111-2.