

Indian Tick Typhus – An Uncommon Cause of Hepatitis: A Case Report

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ABSTRACT

Although viruses remain the most common cause of hepatitis, other causes like rickettsial hepatitis are also well known. However, this aetiology has not been well recognized and it has been rarely reported in the Indian literature. Here, we are discussing a case of acute hepatitis, its clinical presentation, diagnosis and treatment, which was later found to be caused by Indian tick typhus (a spotted fever group rickettsia), which was diagnosed on the basis of serology and its clinical response to doxycycline. Further literature review has been done, to discuss various clinical presentations and prevalence of rickettsial infection in this part of the world.

Keywords: Hepatitis, Indian tick typhus, Weil-Felix test

CASE REPORT

A 42-year-old male patient who was from district Una, Himachal Pradesh, India, presented with a 5 days history of intermittent fever and right upper quadrant abdominal pain, which were preceded at the onset by loose stools and vomiting of 1 day duration. Fever was high-grade, intermittent and it was associated with chills, myalgia, headache, generalized weakness and which responded well to antipyretics. His past history showed that he was a known case of Gilbert's syndrome since 1995, who had multiple episodes of self resolving jaundice in past 15 years. Examination showed icterus and anaemia. Abdominal examination revealed tender hepatomegaly with a liver span of 17 cm and mild splenomegaly. On investigating, haemogram revealed haemoglobin of 11.5 gm% (normal 12-15 gm%) and a total leucocyte count of 18500 μl^{-1} (Reference range = 4000 – 11000 μl^{-1}), with predominance of polymorphonuclear leucocytes and an erythrocyte sedimentation rate (ESR) of 40 mm/first hour. Liver function tests (LFT) showed unconjugated hyperbilirubinaemia (total 5.6 mg%, conjugated 0.93 mg %) (Reference range 0-1.2 mg %), aspartate aminotransferase (AST) - 288 IU/L (Normal = 10-21 IU/L), alanine aminotransferase (ALT) - 322 IU/L (Normal=2-15 IU/L) and serum alkaline phosphatase - 27 KAU (N<13 KAU). Serum amylase and lipase values were normal. Cultures done from blood and urine were sterile. His peripheral blood film as well as Qdx test for malarial parasite showed negative results. Widal test showed negative results. His viral markers (Hepatitis A-E, CMV and HSV) and hemolytic work-up were negative. Ultrasound of abdomen showed features suggestive of acute hepatitis and cholecystitis. He empirically received antibiotics ciprofloxacin, metronidazole and cloxacillin initially and piperacillin plus tazobactam later, because of the little response in severity of fever. However, his Weil-Felix turned out to be positive, with OX 2 titre of 1:320 and subsequently, he was given doxycycline. Fever resolved within next 36 hours. The transaminases showed a decreasing trend, with normalization of LFT by next 4 weeks. Weil-Felix test was again repeated in convalescent sera, which showed a fourfold decrease in the titre (1:80).

DISCUSSION

Although viruses remain the most common cause of hepatitis, many nonviral causes of hepatitis, like typhoid fever, tuberculosis, leptospirosis and rickettsial infections are also known. Rickettsial hepatitis, though it is not uncommon, is less well recognized and has been reported in the Indian literature [1]. A case of rickettsial

fever who presented as acute hepatitis, and was later diagnosed as Indian tick typhus (a spotted fever group rickettsia) on the basis of serology and its clinical response to doxycycline, has been presented here. Spotted fever group *Rickettsia* are gram negative intracellular bacilli which are transmitted by arthropod vectors, mainly ticks. The list of *Rickettsial* species is growing and by now, almost 30 species of *Rickettsia* have been identified [2]. Though the Indian tick typhus is prevalent in India, only few case reports are there in Indian literature, due to lack of confirmatory laboratory methods like immuno-flourescence test and thus, the case reports and prevalent studies which have been reported in literature are based on the Weil-Felix test only [3].

Rickettsial fever group rickettsia were first discovered in the foothills of Himalayas, India, by Megaw, but later, many have been reported from all over India [3]. Among all spotted fever rickettsia groups of diseases, scrub typhus have been reported quite frequently from Himalayan regions of India, whose diagnosis is based on Weil-Felix test alone, due to lack of availability of confirmatory tests [4]. In the first community based study done in Tamil Nadu, India, on patients who presented with fever, 16% patients were found to show positivity for OX 2 titres that were specific for scrub typhus and 3.77% of patients tested positive for rickettsial infections other than scrub typhus, which showed the high prevalence of rickettsial infection in this part of the world [5]. Weil-Felix test with OX 2 titre positivity are seen in rickettsial fever group and in rickettsia other than Rocky Mountain Spotted Fever (RMSF) which is not seen in India. Though no cases of Indian tick typhus (ITT) have been reported from Indian population, which may be due to lack of confirmatory tests, this disease has been documented in travelers who come to India and it has been reported in their respective countries [2].

In present case, diagnosis was based on the Weil-Felix test, which showed very high titres during illness and which subsequently showed a fourfold decrease in titre after 4 weeks of receiving doxycycline. Unlike OX K positivity that is frequently reported, present patient had OX 2 positivity. Among "Spotted Fever Group rickettsia" which shows positivity for OX 2, only *R.conorii* (Indian Tick Typhus strain) has been found in India [1]. Rash and eschar are most common characteristics of the infection, which have been reported in literature. However, rash and eschar have rarely been found in India and they are less commonly observed in endemic areas with repeated infections [6-8]. A hepatic involvement, as was seen in present case, has been well documented in literature and

it varies from asymptomatic transamnitosis to acute liver failure [9-12]. *Rickettsiae* may infect the endothelial lining, the liver sinusoids, and the portal vasculature, but not hepatocytes and can lead to mild focal hepatitis and a periportal inflammation. In cases of fulminant RMSF, actively growing *rickettsiae* can result in vast destruction of hepatic vasculature, with or without significant vasculitis [10,13]. ITT presenting as acute cholecystitis has also been reported [12,14]. Present patient had clinical features which were suggestive of acute hepatitis and ultrasound findings showed features of both acute hepatitis and cholecystitis. Treatment with antibiotic, doxycycline is gold standard and it has been shown to produce complete remission of clinical symptoms, as well as biochemical abnormalities, as was observed in present patient, who showed complete recovery from illness, as well as normalization of biochemical parameters. Also, present case was unique in having underlying Gilbert's syndrome. A thorough literature search could not reveal any clinical association between Gilbert's syndrome and ITT. It may be that the present case represented a mere coincidental presence of two distinct entities in a single patient.

CONCLUSION

Rickettsial disease which presents as acute hepatic illness can be found and it must be looked into, while aetiology of acute hepatitis is evaluated, especially in regions where infection is endemic, owing to complete curable nature of disease.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **July 25, 2013**
Date of Peer Review: **Nov 30, 2013**
Date of Acceptance: **Mar 12, 2014**
Date of Publishing: **May 15, 2014**