

Hepatitis due to rickettsial fever: A case report

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ABSTRACT

Rickettsial infections are re-emerging. In India, they are now being reported from several areas where they were previously unknown. Hepatitis is its rare complication in the pediatric population. Hepatitis is an inflammation of the liver. It can be self-limiting or can progress to fibrosis, cirrhosis, or liver cancer. In hepatitis, viruses are the most common cause in the world but other infections, toxic substances (e.g., alcohol, certain drugs), and autoimmune diseases can also be the etiology. Here we discuss hepatitis as a rare complication to Rickettsial fever in a 7-year-old male child who was diagnosed based on the serology and its clinical response to doxycycline. This etiology has not been well recognized and has been rarely reported in the Indian Literature.

Key words: Acute hepatitis, High transaminases, India, Rickettsial fever, Scrub typhus

Rickettsia is obligate intracellular proteobacteria spread by eukaryotic vectors like ticks, mites, fleas, and lice. Diffuse endothelial infection (infective vasculitis) leading to microvascular leakage and vascular lumen obstruction are basic pathogenic mechanisms, which explain various clinical features of these infections [1]. Human beings are accidentally involved in the transmission chain between vectors (ticks/flea/mites) and animals (rodents/cats) [2]. Outbreaks in India have reported cases that are more prevalent in male gender [3-8]. Infection is most commonly found in children [3-5]. Jaundice is rarely seen in rickettsial fever, occurring mainly in fatal cases [3,9]. Jaundice is noted as an “unusual” feature of this disease [10-13].

CASE REPORT

Our patient, a 7-year-old male, well-nourished, vitally stable, developmentally normal, and fully immunized child, presented to the outpatient department (OPD) with acute high grade, intermittent fever for 5 days. Erythematous rash for 3 days which first appeared on the face then on limbs followed by palms and soles, blanching in nature, accompanied with itching. The patient had dull abdominal pain in the periumbilical region for 3 days. Mother of the patient also noticed yellowish discoloration of the sclera and body for 2 days. No history of outside food consumption and passing of pale stools. The patient lived in a rural area and had frequent contact with a variety of animals. The patient was not on any regular medications and denied using over-the-counter drugs or herbal medications.


At admission, the child had a temperature of 39.5°C, on physical examination, the child had pallor-deep scleral icterus, bilateral lymphadenopathy and there were no signs of chronic liver disease. On palpation of liver, tender hepatomegaly was present, 5 cm below the coastal margin with a span of 12-cm. Complete blood count showed neutrophilic leukocytosis, microcytic hypochromic cell but adequate platelet counts, and an increase in the acute-phase proteins C-reactive protein and erythrocyte sedimentation rate. Liver function test showed elevated aminotransferases (ALT 466 IU/L, AST 314 IU/L, with cholestasis (alkaline phosphatase 161 IU/L, total bilirubin 7.4 mg/dl (direct bilirubin -6.6mg/dl and indirect bilirubin -0.8 mg/dl) and no prolongation of prothrombin time. Several diseases with possible liver involvement with fever and rashes, such as dengue virus, malaria, tuberculosis, HIV, hepatitis A, B, C, E, *Salmonella*, *Leptospira*, and *Brucella*, were excluded as all of the above gave negative results and abdominal ultrasound showed hepatomegaly. Due to persistent fever and jaundice, the Weil-Felix test was done, which turned out to be positive, with OX 2 titer of 1:320 suggestive of, Scrub typhus (rickettsial infection). Subsequently, he was given doxycycline. Fever resolved within the next 36 h. The transaminases showed a decreasing trend, with normalization of LFT by the next 4 weeks. Weil-Felix test was again repeated in convalescent sera, which showed a fourfold decrease in the titer (1:80).

DISCUSSION

Rickettsial diseases pose multiple problems to clinicians [14]. It has been established that rickettsial diseases are a re-emerging zoonotic bacterial infection in the Indian subcontinent [15].

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Our patient was presented to the OPD with fever, erythematous rashes, and yellowish discoloration of sclera, abdominal pain, vomiting, and hepatomegaly. One of the pathognomonic signs of scrub typhus is eschar formation present in 50–80% cases [16-18]. However, in some outbreaks, no eschar was found in the cases [4,19-21]. There was no Eschar present in our case. Due to liver involvement with fever, differential diagnosis of infective etiology such as dengue virus, malaria, tuberculosis, hepatitis A, B, C, E, *Leptospira*, *Brucella*, *Salmonella*, and HIV were considered.

On detailed investigations, the Weil-Felix test had high titers, suggestive of rickettsial fever. It has the advantages of being inexpensive, easily available, not requiring expertise, and sophisticated instruments. It has lower sensitivity but better specificity [1]. The sensitivity is 43% and specificity is 98% of this test, as evaluated by some studies [22,23]. Although the Indian tick typhus is prevalent in India, only a few case reports are there in Indian literature, due to lack of confirmatory laboratory methods like immunofluorescence test and thus, the case reports and prevalent studies that have been reported in the literature are based on the Weil-Felix test only [15].

Common clinical features included fever (100%, average duration 11 days), nausea and vomiting (44%), and rash (36%); Eschar was rare. Complications included meningoencephalitis (28%), shock (10%), retinal vasculitis (10%), and purpura fulminans (7%) [24]. The complication of hepatitis has been rarely reported in Indian pediatrics population. Involvement of the liver in rickettsialpox has received scant attention. *Rickettsia* 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 Rocky Mountain spotted fever, actively growing *Rickettsia* can result in vast destruction of hepatic vasculature, with or without significant vasculitis [25-27].

Treatment must be initiated empirically in suspected cases without awaiting laboratory confirmation, as morbidity and mortality escalate rapidly with each day of treatment delay. Furthermore, treatment should not be discontinued solely based on a negative test result [28]. Doxycycline is the drug of choice. Use of doxycycline for treatment of rickettsial diseases in children of any age is no longer a matter of controversy [29,30]. The Weil-Felix test was again repeated in convalescent sera, which showed a fourfold decrease in the titer (1:80) and associated hepatitis features showed decrease in the levels of liver enzymes.

CONCLUSION

The infections caused by rickettsial species are emerging diseases, characterized by the possibility of liver involvement. Therefore, it is necessary to consider rickettsioses in the differential diagnoses of acute hepatitis, especially in regions where the infection is endemic, due to completely treatable cause of acute hepatitis.

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