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Case Report

A case of paediatric spotted fever presenting with acute hepatitis and encephalopathy

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ABSTRACT

Rickettsial infections caused by the spotted fever group Rickettsia remain an underrecognized cause of acute febrile illness in children, particularly in endemic regions. Although fever and rash constitute the classical presentation, atypical organ involvement may occur, leading to diagnostic delay. We report a rare presentation of pediatric spotted fever complicated by acute hepatitis and encephalopathy in a child from a rural agricultural background. The child initially presented with fever, anorexia, and malaise, followed by jaundice and altered sensorium. Extensive evaluation excluded common viral, bacterial, and parasitic etiologies. Serological testing supported the diagnosis of spotted fever, and prompt initiation of doxycycline resulted in rapid clinical and biochemical improvement. This case emphasizes the importance of maintaining a high index of suspicion for rickettsial infections in children presenting with unexplained hepatic and neurological involvement, even in the absence of rash or eschar. A child from a rural area developed an uncommon form of spotted fever affecting the liver and brain. Early recognition and treatment with doxycycline led to complete recovery, highlighting the need to consider rickettsial infections even when classical symptoms are absent.

Keywords: Spotted fever, Rickettsial infection, Paediatric hepatitis, Encephalopathy, Doxycycline

INTRODUCTION

Rickettsial diseases are vector-borne zoonotic infections caused by obligate intracellular gram-negative bacteria of the genus Rickettsia. They are increasingly recognized as an important cause of acute undifferentiated febrile illness in children living in tropical and subtropical regions, including India.[1] Spotted fever group rickettsioses are primarily transmitted by ticks and classically present with fever, rash, and systemic symptoms.[2]

However, several studies have reported atypical and severe presentations involving the liver, central nervous system, lungs, and kidneys, especially in children.[3-5] These manifestations often mimic viral hepatitis, sepsis, or metabolic encephalopathy, resulting in delayed diagnosis and increased morbidity.[6] The absence of rash or eschar further complicates early recognition.[7]

We describe a rare paediatric case of spotted fever presenting with acute hepatitis and encephalopathy, highlighting the diagnostic challenges and the importance of early empiric therapy in endemic regions.

CASE REPORT

A 7-year-old previously healthy boy from a rural farming community presented with a five-day history of fever, loss of appetite, and generalized weakness. The illness progressed to include abdominal pain, jaundice, and drowsiness one day prior to admission. There was a history of close contact with cattle, but no known tick bite.

On examination, the child was febrile and drowsy but arousable. Vital signs were stable. Icterus and mild hepatomegaly were noted. Neurological examination

revealed altered sensorium without focal deficits. No rash, eschar, or lymphadenopathy was observed.

Laboratory investigations revealed marked hepatocellular injury with aspartate aminotransferase of 2094 U/l and alanine aminotransferase of 4132 U/l. Total bilirubin was elevated at 8.3 mg/dl. Leukocytosis of 20,100/µl and elevated C-reactive protein of 7.8 mg/dl indicated a significant inflammatory response. Coagulation parameters were mildly deranged.

Serological tests for hepatitis A, B, and C viruses, dengue, malaria, leptospirosis, herpes simplex virus, and enteric fever were negative. Blood cultures were sterile. Given the epidemiological exposure, persistent fever, hepatic dysfunction, and encephalopathy, rickettsial infection was suspected. The Weil–Felix test demonstrated significantly elevated OX-2 and OX-19 titers, suggestive of spotted fever.

Diagnosis and management

The child was initially managed with empiric intravenous ceftriaxone and amikacin. Following serological confirmation, oral doxycycline was initiated at a dose of 2.2 mg/kg twice daily, in accordance with national and international pediatric guidelines.[18] Supportive management included hepatoprotective therapy, vitamin K, careful fluid management, and monitoring for hepatic encephalopathy.

Clinical course and outcome

Defervescence occurred within 48 hours of initiating doxycycline. The child's sensorium improved progressively, and liver enzyme levels began to decline. He was transferred from intensive monitoring to ward care and discharged on day ten with near normalization of liver function tests. At follow-up, he remained asymptomatic with complete biochemical recovery.

DISCUSSION

Spotted fever group rickettsiosis is increasingly reported in Indian children but remains underdiagnosed due to its nonspecific presentation.[4-6] Hepatic involvement in rickettsial infections is attributed to endothelial injury and vasculitis, leading to hepatocellular inflammation and cholestasis.[9] Studies by Rathi et al and Kumar et al have reported mild to moderate transaminase elevation in pediatric rickettsial infections; however, severe hepatitis, as seen in the present case, is uncommon.[10,11]

Neurological manifestations such as encephalopathy occur due to cerebral vasculitis and have been associated with delayed diagnosis and worse outcomes.[5,12] Unlike several reported cases where rash aided early recognition, the absence of rash in our patient mirrors findings from previous Indian studies where up to one-third of children lacked classical cutaneous signs.[7]

The Weil–Felix test, though limited by sensitivity and specificity, remains valuable in resource-limited settings when interpreted alongside clinical and epidemiological factors.[6,8] Early initiation of doxycycline has consistently been shown to reduce complications and mortality, even in children, with minimal risk of adverse effects.[18,19]

This case reinforces the need for early empiric doxycycline therapy in children with unexplained febrile illness and organ dysfunction in endemic areas, even before confirmatory testing.

Limitations of this study were the site of administration for the vaccine to be given was abdomen 91 (65.9%), buttocks 22 (15.9%), shoulder 18 (13.04%), thigh 2 (1.4%), don't know 5 (3.6%).

CONCLUSION

Paediatric spotted fever can present with severe hepatic and neurological involvement, mimicking other tropical infections. High clinical suspicion, early recognition, and prompt initiation of doxycycline are critical for favourable outcomes. Clinicians practicing in endemic regions should consider rickettsial infections in children presenting with acute hepatitis and encephalopathy, even in the absence of rash.

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