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PCR-CONFIRMED SEVERE LEPTOSPIROSIS PRESENTING WITH MULTIORGAN DYSFUNCTION SYNDROME IN A YOUNG SERVING SOLDIER: A CASE REPORT

Medicine

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ABSTRACT

Leptospirosis is a zoonotic spirochetal infection with a wide spectrum of clinical manifestations ranging from mild febrile illness to severe multiorgan dysfunction syndrome (MODS). Severe icteric leptospirosis, also known as Weil's disease, is characterized by hepatic dysfunction, acute kidney injury, thrombocytopenia, and systemic inflammatory response. Early diagnosis remains challenging because clinical presentation often mimics dengue, malaria, and viral hepatitis. **Case Presentation:** A 29-year-old serving soldier presented with acute febrile illness associated with severe myalgia, jaundice, generalized weakness, vomiting, burning micturition, and decreased oral intake following exposure to contaminated pond water in a rural setting. The patient had recently travelled by train from Kerala to Upper Assam prior to presentation. Laboratory evaluation revealed severe thrombocytopenia with platelet nadir of 22 $\times 10^3/\mu L$, hyperbilirubinemia, acute kidney injury, bicytopenia, and markedly elevated inflammatory markers. Renal function tests showed blood urea/serum creatinine values of 52/1.5 mg/dL progressing to 57/2.0 mg/dL before subsequent recovery. Total/direct bilirubin peaked at 12/9.4 mg/dL. Leptospira PCR DNA tested positive on 30/04/2026, confirming the diagnosis. Dengue serology, scrub typhus IgM, HAV IgM, and HEV IgM were negative. The patient was managed with intravenous ceftriaxone, doxycycline, aggressive fluid therapy, and supportive care. Serial investigations demonstrated progressive recovery of hepatic and renal parameters with complete clinical recovery. **Discussion:** Leptospirosis remains an important tropical zoonosis with variable clinical presentation and significant diagnostic challenges. Severe thrombocytopenia and jaundice may mimic dengue fever and acute viral hepatitis. PCR-based diagnosis facilitates early confirmation before seroconversion and enables timely institution of appropriate antimicrobial therapy. **Conclusion:** Leptospirosis should be considered in patients presenting with acute febrile illness, jaundice, thrombocytopenia, and acute kidney injury, especially in the presence of contaminated water exposure history. Early recognition and prompt antibiotic therapy can result in favorable outcomes even in severe disease.

KEYWORDS

Leptospirosis; Weil's disease; acute kidney injury; hyperbilirubinemia; thrombocytopenia; MODS; PCR-confirmed leptospirosis

INTRODUCTION

Leptospirosis is a globally prevalent zoonotic disease caused by pathogenic spirochetes belonging to the genus Leptospira. Human infection typically occurs through direct or indirect exposure to urine of infected animals, especially through contaminated water or soil.[1] The disease spectrum ranges from a mild self-limiting febrile illness to severe systemic disease involving hepatic, renal, pulmonary, neurological, and hematological systems.[2]

Severe leptospirosis, also referred to as Weil's disease, is characterized by jaundice, renal dysfunction, thrombocytopenia, and hemorrhagic manifestations, with significant associated morbidity and mortality.[3] Early diagnosis remains difficult because its clinical presentation overlaps with tropical infections such as dengue, malaria, scrub typhus, and viral hepatitis.[4]

Polymerase chain reaction (PCR)-based diagnostic techniques allow early diagnosis during the leptospiremic phase before antibodies become detectable and may significantly improve outcomes through early institution of appropriate therapy.[5]

We report a case of PCR-confirmed severe leptospirosis presenting with multiorgan dysfunction syndrome in a young serving soldier with complete recovery following timely treatment.

Case Presentation

A 29-year-old serving soldier with no known comorbidities presented with high-grade fever of acute onset associated with chills, severe generalized myalgia, malaise, vomiting, headache, burning micturition, yellowish discoloration of urine, anorexia, jaundice, and generalized weakness for 2–3 days duration.

The patient had recently travelled by train from Kerala to Upper Assam prior to presentation. During leave, he had also reported swimming in a village pond and catching fish, suggesting possible exposure to contaminated water.

On admission, the patient was febrile, icteric, and dehydrated. Systemic examination revealed hepatomegaly. Severe myalgia was present, and the patient required wheelchair assistance because of difficulty walking at the time of admission.

Initial hematological investigations revealed bicytopenia with hemoglobin 11.4 g/dL, total leukocyte count 6,720/μL, and platelet count 45 $\times 10^3/\mu L$ on 28/04/2026, which further declined to a nadir of 22 $\times 10^3/\mu L$ on 29/04/2026.

Inflammatory markers were markedly elevated with C-reactive protein (CRP) of 214 mg/L, erythrocyte sedimentation rate (ESR) of 82 mm/hour, and serum procalcitonin of 14.3 ng/mL.

Renal function tests demonstrated acute kidney injury. Blood urea/serum creatinine values were 52/1.5 mg/dL on 28/04/2026, 57/2.0 mg/dL on 29/04/2026, 56/1.4 mg/dL on 30/04/2026, and subsequently improved to 34/0.8 mg/dL on 01/05/2026 following treatment.

Liver function tests revealed marked conjugated hyperbilirubinemia suggestive of icteric leptospirosis. Total/direct bilirubin levels increased from 6.8/4.4 mg/dL on 28/04/2026 to 11/8.3 mg/dL on 29/04/2026 and peaked at 12/9.4 mg/dL on 30/04/2026. Bilirubin levels remained elevated at 11.5/9.2 mg/dL on 01/05/2026 before gradually improving to 5.0/3.8 mg/dL during recovery.

Transaminases showed moderate elevation with AST/ALT values of 255/126 U/L on admission, followed by 211/171 U/L and 221/165 U/L during hospital stay, with subsequent improvement to 110/114 U/L. Serum protein and albumin levels remained relatively preserved.

Investigations for other tropical febrile illnesses were negative, including dengue serology, scrub typhus IgM, HAV IgM, and HEV IgM. Leptospira PCR DNA returned positive on 30/04/2026, confirming the diagnosis of severe leptospirosis.

The patient was managed with intravenous ceftriaxone, oral

doxycycline, aggressive intravenous hydration, and supportive care. Serial monitoring demonstrated gradual recovery in platelet counts, renal function, and hepatic parameters. The patient showed progressive clinical improvement and was discharged in stable condition with advice regarding follow-up and convalescence.

DISCUSSION

Leptospirosis is an important but often underrecognized tropical zoonosis with significant diagnostic challenges due to its protean manifestations. [6] The disease is particularly prevalent in tropical and subtropical regions where exposure to contaminated water sources is common.[7]

This case demonstrates classical severe icteric leptospirosis with multiorgan dysfunction involving hepatic, renal, and hematological systems. The coexistence of severe thrombocytopenia, jaundice, and acute kidney injury initially raised differential diagnostic considerations including dengue fever, viral hepatitis, malaria, and scrub typhus.

The exposure history of swimming in a village pond and handling fish prior to illness provided an important epidemiological clue supporting leptospiral infection.

Acute kidney injury is among the most common complications of severe leptospirosis and is associated with increased morbidity and mortality.[8] Hyperbilirubinemia disproportionate to transaminase elevation is considered a characteristic feature of Weil's disease.[9]

Severe thrombocytopenia in leptospirosis may mimic dengue fever, especially in endemic tropical settings.[10] In the present case, negative dengue serology together with positive leptospira PCR enabled definitive diagnosis.

PCR-based diagnostic methods have substantially improved early detection of leptospirosis, particularly during the first week of illness when serological tests may still be negative.[5] Early institution of antimicrobial therapy using ceftriaxone or doxycycline has been shown to reduce disease severity and improve clinical outcomes.[11]

This case highlights the importance of considering leptospirosis in the differential diagnosis of acute febrile illness with jaundice, thrombocytopenia, and acute kidney injury, especially in patients with a history of contaminated water exposure.

CONCLUSION

Leptospirosis should be considered in all patients presenting with acute febrile illness associated with jaundice, thrombocytopenia, and acute kidney injury, particularly when there is a history of environmental or contaminated water exposure. Early PCR-based confirmation and prompt initiation of appropriate antibiotic therapy can result in favorable outcomes even in severe disease with multiorgan dysfunction.

Learning Points

- Severe leptospirosis may mimic dengue fever and viral hepatitis.
- Exposure history plays a critical role in diagnosis.
- PCR enables early diagnosis before serological positivity.
- Weil's disease can present with reversible multiorgan dysfunction syndrome.
- Early administration of ceftriaxone and doxycycline can be lifesaving.

Patient Perspective

The patient expressed satisfaction with the treatment received and acknowledged the importance of early medical evaluation for persistent fever and jaundice.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and associated clinical details.

Conflict of Interest: The authors declare no conflict of interest.
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