International Journal Research in Medicine and Health Sciences
ISSN (Online): 2208-2190
Volume 10 Issue 01 October 2025
DOI: https://doi.org/10.53555/mhs.v10i1.2479

LEPTOSPIROSIS MASQUERADING AS IMMUNE THROMBOCYTOPENIC PURPURA IN A 20-YEAR-OLD: A DIAGNOSTIC CHALLENGE

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Abstract
Leptospirosis is an infectious disease with highly variable clinical features. Thrombocytopenia is common but usually occurs alongside fever, jaundice, or renal involvement. Rarely, it may present as isolated thrombocytopenia resembling immune thrombocytopenic purpura (ITP).
We describe a 20-year-old healthy male who presented with mucocutaneous bleeding and isolated thrombocytopenia. He was initially treated as ITP with corticosteroids but failed to improve. Subsequent evaluation revealed leptospiral infection. After discontinuing steroids and starting antibiotics, the patient made a full recovery.
This case highlights how leptospirosis can mimic ITP and underscores the importance of considering infectious causes of isolated thrombocytopenia, especially in endemic regions.

Introduction

Leptospirosis is a zoonotic infection caused by Leptospira interorgan, transmitted through exposure to water or soil contaminated with the urine of infected animals. It is endemic in tropical countries and can range in severity from a mild flu-like illness to Weil's disease with jaundice, renal failure, and haemorrhagic manifestations.
Hematologic abnormalities are frequent in leptospirosis, with thrombocytopenia reported in 40–86% of cases [1,2]. The underlying mechanisms include immune-mediated destruction, endothelial activation, and platelet consumption [3,4]. However, leptospirosis presenting as isolated thrombocytopenia without classical features is uncommon and easily misdiagnosed as ITP.
In resource-limited and endemic settings, such diagnostic confusion can delay proper management. Here, we present a young adult who was initially treated for ITP but later diagnosed with leptospirosis.

Case Report

A 20-year-old college student from a rural village presented with gum bleeding and multiple reddish spots over his legs for three days. He denied high-grade fever, joint pain, jaundice, or recent drug intake. There was no prior history of bleeding or systemic illness.
On examination, he was afebrile, with normal pulse and blood pressure. Petechiae were scattered over his lower limbs and forearms. There was no icterus, lymphadenopathy, or hepatosplenomegaly. Systemic examination was unremarkable. Investigation was suggestive of thrombocytopenia. Sepsis markers were negative with autoimmune profile was normal as shown in table 1, furthermore anti platelet antibody test was not available. Bone marrow aspiration revealed normocellular marrow with increased megakaryocytes, consistent with immune thrombocytopenic purpura (ITP).

Table: Initial laboratory evaluation

Parameter	Result	Reference Range	Remarks
Hemoglobin	13.2 g/dL	12–16 g/Dl	Normal
Total leukocyte count	7,800 /mm³	4,000–11,000 /mm³	Normal
Platelet count	11,000 /mm³	150,000–400,000 /mm³	Severe thrombocytopenia
Peripheral smear	Normal red and white cell morphology, thrombocytopenia	—	Consistent with isolated thrombocytopenia
PT / INR	13.8 s / 1.1	12–14 s / 0.9–1.2	Normal coagulation profile
aPTT	34 s	25–35 s	Normal
ANA	Negative	-	-
C-Reactive protein	3mg/dl	< 5mg/dl	Negative
Bilirubin (Total / Direct)	1.8 / 0.8 mg/dL	0.3–1.0 mg/dL	Mild hyperbilirubinemia
AST / ALT	30/ 35 IU/L	< 40 IU/L	Normal
Serum creatinine	1.1 mg/dL	0.7–1.2 mg/dL	Normal

He was started on oral prednisolone (1 mg/kg/day) and observed for improvement. After five days, the platelet count remained persistently low (12,000/mm³), and he developed mild fever and fatigue. Repeat evaluation showed positive sepsis markers with rising transaminases (AST 140 IU/L, ALT 110 IU/L) and microscopic hematuria. This lack of steroid response raised suspicion of an alternative diagnosis. Further infective investigation was2positive for leptospirosis as shown in table 2 and 3.

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Investigation	Findings	Interpretation / Remarks
Leptospira IgM ELISA	Positive	Suggestive of recent or active *Leptospira* infection
Microscopic Agglutination Test (MAT)	1:1600	Diagnostic titre confirming acute leptospirosis (≥1:400 considered significant)
Dengue NS1 / IgM	Negative	Rules out dengue fever
Malaria antigen / smear	Negative	Rules out malarial infection
HIV, HBsAg, HCV serology	Negative	No evidence of viral co-infections
Scrub IgM	Negative	No evidence of scrub infection
Urinalysis	Trace protein, RBCs present	Indicates mild renal involvement (proteinuria, microscopic hematuria)
Chest X-ray	Mild basal haziness	Suggestive of mild pulmonary involvement or interstitial changes

Based on these findings, a diagnosis of leptospirosis presenting as isolated thrombocytopenia initially later having hepatic and pulmonary was made was made.
Steroids were discontinued, and intravenous crystalline penicillin (1.5 million units every 6 hours) was initiated. Supportive therapy included hydration, vitamin supplementation, and monitoring of renal and hepatic parameters.
By day 5 of antibiotic therapy, the platelet count rose to 75,000/mm³, and by day 10 it reached 250,000/mm³. The fever subsided, and liver function tests normalized. The patient was discharged after 12 days in good condition and remained asymptomatic at 1-month follow-up.

Discussion
Thrombocytopenia in leptospirosis is multifactorial. Endothelial injury caused by Leptospira leads to platelet adhesion and consumption [3]. Immune mechanisms may also play a role, with anti-platelet antibodies or immune complexes promoting platelet destruction [5,6]. Direct spirochete toxicity on platelets has also been demonstrated [7].
Although thrombocytopenia is common, isolated ITP-like presentation is rare. This case was initially mistaken for ITP because fever and jaundice were absent at presentation. The key clue was poor response to corticosteroids, which prompted further testing. Several authors have reported similar atypical hematologic presentations of leptospirosis: Kose et al. described a case mimicking thrombotic thrombocytopenic purpura (TTP) [8], while Gamage et al. reported a young adult with leptospirosis presenting with TTP and neurological involvement [9]. Daher et al. observed that thrombocytopenia does not necessarily indicate a worse prognosis but correlates with disease severity [10].
This case emphasizes the importance of ruling out infectious etiologies before diagnosing ITP or initiating steroid therapy, particularly in tropical regions where leptospirosis is endemic.

Conclusion
Leptospirosis can present as isolated thrombocytopenia and mimic ITP, especially in young adults. Early recognition and appropriate antibiotic therapy result in complete recovery. Clinicians should maintain a high index of suspicion in patients with unexplained thrombocytopenia, particularly when steroid response is poor or mild hepatic dysfunction is present.

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