

Weil's disease with cutaneous manifestation

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ABSTRACT

Leptospirosis can present with a wide range of clinical manifestations. Its severe form, called Weil's disease, can result in multiorgan dysfunction and death. Hence, an early diagnosis is very essential. The patient being reported had a fever with maculopapular rash, which was initially treated as viral fever. He was later diagnosed to have Weil's disease; which improved with penicillin therapy. Cutaneous manifestation in leptospirosis is uncommon, and awareness about this can help to prevent life-threatening complications.

Keywords: *Leptospirosis, Rash, Weil's disease.*

Globally, leptospirosis has become an important zoonotic disease. It is commonly seen in tropical and subtropical regions, probably because of poor hygiene and favourable climate. The organism is a spirochaete belonging to the genus *Leptospira*. The annual incidence rate is estimated to be more than 10 cases per 100,000 of the population in tropical regions, and 0.1–1 per 100,000 in temperate zones [1,2]. It can present with a wide spectrum of clinical manifestations; starting from asymptomatic disease or mild febrile episodes to multi-organ failure. The mortality rate is more than 40% [3].

Cutaneous manifestations in leptospirosis are uncommon and can be misdiagnosed for other infections. Hence, this case is aimed at creating awareness about skin presentations of leptospirosis in order to prevent life-threatening complications.

CASE REPORT

A 16-year-old male presented to the Medicine department with 4 days history of fever and myalgia. He developed multiple skin rashes over the face and limbs from the second day of fever. He initially consulted a local practitioner and was told to have a viral fever.

On presentation, he was conscious, oriented and febrile (100°F). His pulse rate was 100/minute and blood pressure 110/80 mmHg. He was mildly icteric. The liver was palpable. Other systemic examinations including ophthalmic were normal. He had non-pruritic maculopapular rashes over his face (Fig. 1a), hands and thighs and there were no mucosal lesions.

His blood investigations showed mild leucopenia (3200 cells/cmm with neutrophils 45%, lymphocytes 48%, eosinophils 7%), thrombocytopenia (72,000 cells/cmm), deranged renal (urea 92 mg/dL, creatinine 2.12 mg/dL) and liver functions (total bilirubin 52.59 µmol/L, direct bilirubin 9.68 µmol/L, serum glutamic oxaloacetic transaminase (SGOT) 101 IU/L, serum glutamic

pyruvic transaminase (SGPT) 197 IU/L, alkaline phosphatase 446 IU/L and albumin 30 g/L). Prothrombin time, International Normalized Ratio (INR), activated partial thromboplastin time, thyroid stimulating hormone and serum electrolytes were within the normal range. *Leptospira* IgM (ELISA) was positive; while malarial card test, Weil Felix test, and dengue serology were negative. Blood culture was sterile. Urine routine and microscopic examination showed the presence of 4–5 pus cells and 8–10 RBC. Ultrasound abdomen showed mild hepatomegaly. Chest X-ray was normal. Skin biopsy was not done (as the patient's parents were not willing).

As the diagnosis of leptospirosis was confirmed, he was started on intravenous crystalline penicillin (1.5 million units QID) along with intravenous fluids. On further probing, he gave a history of playing in rainwater. He had a score of 31 according to Modified Faine's criteria. On day 3 of admission, his rashes started regressing with improvement in platelet counts, renal and liver parameters. He was treated with crystalline penicillin for a total of 7 days and was discharged. On follow up after 1 week, he was asymptomatic; his skin lesions had disappeared (Fig. 1b) with investigations showing normal complete blood counts and renal and liver functions.



Figure 1: (a) Maculopapular rash over the left cheek; (b) Complete resolution of rash after treatment.

Table 1: Modified Faine's criteria (2012)

Clinical data (Part A)		Epidemiological factor (Part B)		Bacteriological & laboratory findings (Part C)	
Headache	2	Rainfall	5	ELISA IgM positive	15
Fever	2	Contact with contaminated environment	4	Slide agglutination test (SAT)—Positive	15
Temperature $\geq 39^{\circ}\text{C}$	2	Animal contact	1	Microscopic agglutination test (MAT) - Single high titer	15
Conjunctival suffusion + Meningism + Muscle pain	10			MAT - Rising titer/ sero conversion (paired sera)	25
Meningism	4			Isolation of leptospira in culture—Diagnosis certain, PCR	
Muscle pain	4				
Conjunctival suffusion	4				
Jaundice	1				
Albuminuria/ Nitrogen retention	2				
Hemoptysis/Dyspnea	2				

Total score:

Presumptive diagnosis of leptospirosis is made of:

Part A or Part A and Part B score : 26 or more

Parts A, B, C (Total) : 25 or more

A score between 20 and 25 suggests leptospirosis as a possible diagnosis

DISCUSSION

Leptospirosis is transmitted by direct contact with blood, urine or tissue of infected animals; with water being an important medium for transmission. Cuts or abrasions of the skin and mucous membranes, especially conjunctiva and oral mucosa, can act as portals of entry. Clinically, the disease has a biphasic nature - a leptospiremic phase with 3 to 10 days of fever and an immune phase characterized by resolution of symptoms and appearance of antibodies. Fever, headache, nausea, vomiting and conjunctival suffusion are the common symptoms. Patients may also complain of myalgia, mainly tenderness of the calf and back muscle. On examination, patients can have hepatomegaly, splenomegaly, and meningism. Acute respiratory distress syndrome, myocarditis, and pulmonary hemorrhage are the main complications. Weil's disease or severe leptospirosis is characterized by hemorrhage, jaundice and acute kidney injury [4].

There are several criteria which aid in the diagnosis of leptospirosis. The Faine's criteria, which came out in 1982, takes into account clinical data, epidemiological factors and bacteriological and lab findings. This criterion underwent certain modifications; the last being in 2012 (Table. 1). The confirmation of leptospirosis is done by laboratory testing. Definitive diagnosis is made by isolation of organism in culture, positive polymerase chain reaction, seroconversion or increase in antibody titer. Antibiotics like penicillin, ceftriaxone, amoxicillin, and doxycycline form the mainstay of treatment [4].

Malaria, typhoid, scrub typhus, and dengue fever are some of the differentials for leptospirosis. The differential diagnosis for fever with the maculopapular rash is vast. Infectious mononucleosis, typhus fever (epidemic, endemic, scrub), typhoid, dengue fever are a few examples. The cutaneous lesion in leptospirosis is uncommon. A retrospective study from Albania reported cutaneous rash, jaundice and intense pruritus in 58.8%, 62.6% and 5.6%

of patients, respectively [5]. Rash in leptospirosis can easily be mistaken for other diseases. Our patient presented with fever and maculopapular rash which was initially thought to be a viral fever. He later developed jaundice and acute kidney injury and was diagnosed to have Weil's disease. Early diagnosis of leptospirosis and antibiotic therapy can prevent life-threatening complications.

CONCLUSION

Leptospirosis is an illness with baffling manifestations. A maculopapular rash is an uncommon presentation and can easily be mistaken for other diseases like viral fever. Hence, fever with a maculopapular rash should raise the possibility of leptospirosis for early diagnosis and treatment, which in turn can prevent life-threatening complications.

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