CASE REPORT

JIACM 2020; 21(1-2): 74-76

A Rare Case of Weil's Disease with Empyema Thorax

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Abstract

Leptospirosis is a zoonotic disease caused by Leptospira interrogans, common in tropical countries during monsoon. Here we report a case of a rare form of leptospirosis with multiorgan failure called Weil's disease. This patient was having empyema thorax as a pulmonary component of Weil's disease.

Introduction

Leptospirosis is a zoonotic disease caused by pathogenic spirochetes of the genus Leptospira. It was first isolated in Japan by Inada and co-workers in 1915, nearly 30 years after Weil described the clinical disease in 1886.

Human infection by pathogenic *Leptospira* may present variable clinical manifestations ranging from subclinical infection with undifferentiated febrile illness to jaundice, renal failure, and potentially lethal pulmonary disease[1]. Leptospirosis is typically an anicteric illness, but a fulminant disease icterohaemorrhagic form (Weil´s Disease) can be found in 5 - 10% of all patients. Fatalities typically arise from renal, cardiac, or respiratory failure[2]. Most of the cases present with a febrile illness of sudden onset. Fever, chills, headache, severe myalgia, conjunctival suffusion, anorexia, nausea, vomiting, and prostration usually characterise acute leptospirosis.

Pulmonary involvement occurs in 20 to 70% of patients; the severe pulmonary manifestation is rare. This case is highly pertinent to the medical field as leptospirosis is an ever-growing problem and atypical pulmonary-related complication is an emerging manifestation of it. Therefore, early recognition and intervention is required to reduce the morbidity or mortality.

Case report

A 23-year-old male military recruit from a village of Maharashtra (India) presented with complaints of fever for 05 days, which was continuous, high grade, and associated with chills and rigors. He also had headache with repeated episodes of nonprojectile vomiting and diffuse pain in abdomen. There was generalised body ache.

His blood pressure was 100/70 mm of Hg and there was tachycardia (130/min) with tachypnoea (34/min). He was febrile (102.5° F). There was a conjunctival suffusion without purulent discharge (Fig. 1). He was having muscle tenderness most notable in the lumbar area. Hepatosplenomegaly was present and chest examination revealed decreased air entry in the right hemi-thorax .

Initial investigations revealed deranged hepatic functions (bilirubin - 5.4 mg/dl, aspartate aminotransferase (AST) - 40 IU/L, alanine aminotransferase (ALT) - 23 IU/L, and deranged renal function (creatinine - 1.7 mg/dl and S urea - 111 mg-dl). Haemogram revealed Hb 12.8 gm/dl and total leukocyte count - 20,900/dl with 86% polymorphs. USG abdomen showed mild hepatosplenomegaly. Coagulation profile was normal. The urine and blood culture were negative for bacterial growth. Serology for HIV, dengue, salmonella, malaria parasite, chickungunya

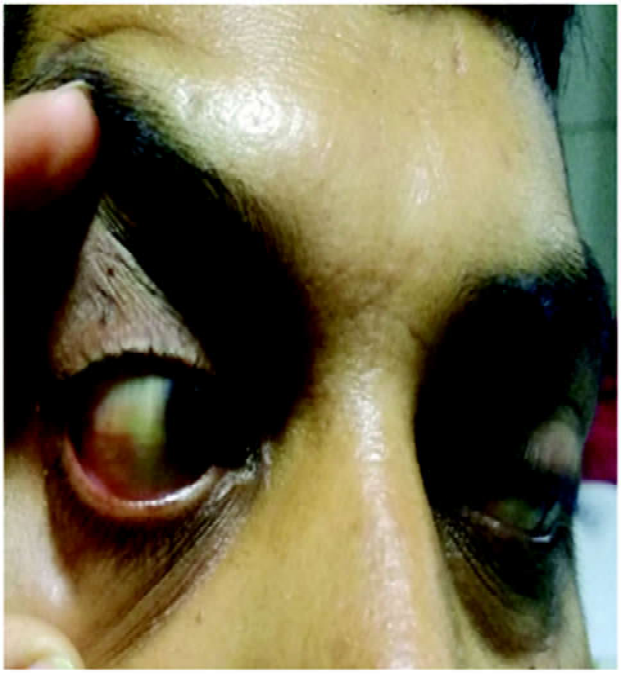

Fig. 1: *Conjunctival suffusion.*

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and hepatotrophic viruses was negative. The chest X-ray revealed a homogenous opacity in the right lower zone with concave inward margin (Fig. 2). Thick pus was aspirated on thoracocentesis. No acid-fast bacilli were detected in the sputum samples.

Leptospirosis was clinically suspected, which was further confirmed by the positive serum IgM-ELISA.

Patient was managed with antibiotic therapy and thoracotomy tube drainage. After two weeks of hospitalisation, the patient was asymptomatic and was discharged with bilirubin 1.3 mg/dl, aspartate aminotransferase (AST) - 36 IU/L, alanine aminotransferase (ALT) - 19 IU/L, and creatinine - 0.8 mg/dl and S urea - 27 mg/dl and total leukocyte count - 8,600/dl with 54% neutrophil.

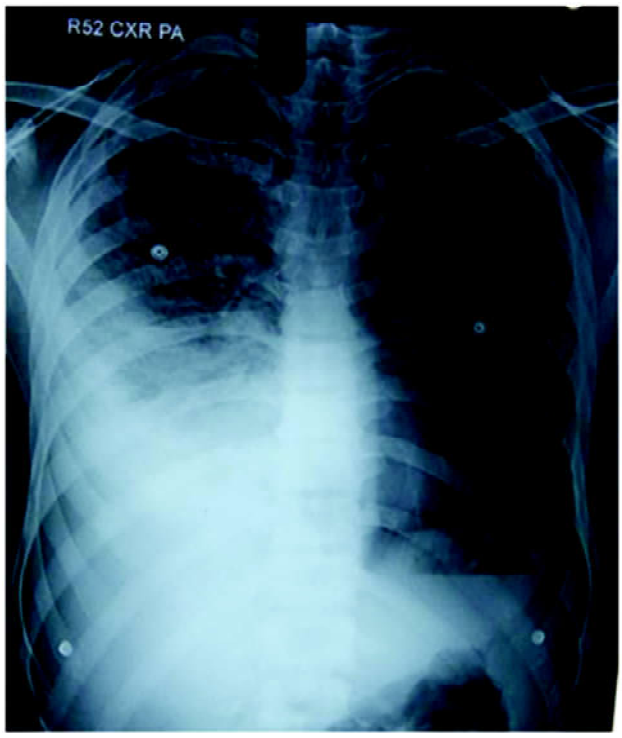

Fig. 2:

Discussion

Leptospirosis is the most widespread zoonosis in the world. Tropical countries and low socio-economic conditions with poor sanitation have particularly been identified as favourable for disease transmission. Human leptospiral infections result primarily from direct or indirect exposure to the urine of infected animals. Rats are the most common reservoir in India.

Leptospirosis is caused by the bacteria that belongs to the genus *Leptospira interrogans* which is pathogenic for humans. The genus can be separated into more than 200 serovars belonging to 23 serogroups. The median global incidence of endemic human leptospirosis, excluding cases due to outbreaks, is five cases/1,00,000 population, but in some areas the incidence is as high as 975 cases/1,00,000. The mean annual global incidence of epidemic leptospirosis, as reported in outbreak reports, is 14 cases/ 1,00,000 population. The main occupational groups at risk are farm workers, field agricultural workers, plumbers, sewer workers, sanitation workers, and military troops.

A retrospective study reported that in patients with leptospirosis, the common clinical features included fever (100%), headache (75%), myalgia (55%), arthralgia (45%), and vomiting (39%).

The severe form of leptospirosis is called Weil's disease. it is usually characterised by jaundice and renal dysfunction, can be fatal in up to 5 - 15% of cases.

Hepatic derangement does not seem to be due to hepatocellular damage, but seems to be more related to the cholestasis of sepsis. Renal insufficiency is due to acute tubular necrosis. Marked elevation of bilirubin with mild elevated transaminase are the characteristic feature of Weil's disease[3] associated with early acute onset renal failure in the form of deranged renal function.

The true incidence of pulmonary involvement in leptospirosis is unclear, but may range from 20% to 70%[4-6]. Pulmonary abnormality is due to exposure of circulating toxin produced by the pathogen at distant sites such as liver[1].

The present case was suspected for leptospirosis on clinical presentation, was and confirmed with laboratory findings. Fever with gastro-intestinal symptoms, nonpurulent conjunctival suffusion, and muscle pain with tenderness, are helpful in detecting the disease. Other pointers to leptospirosis in this present patient were deranged hepatic and renal function, along with pulmonary manifestations (Weil's disease). Patient was having marked elevation of bilirubin with mild elevated transaminase and acute onset renal failure. Our patient had classic Weil's disease with characteristic jaundice and kidney dysfunction.

Icteric leptospirosis has been differentiated from other fulminant viral hepatitis such as hepatitis A and E. The important differentiating features are the presence of renal failure very early, neutrophilic leucocytosis and continuation of fever even on appearance of jaundice which usually disappears in viral hepatitis.

The lungs are involved in leptospirosis in 20 to 70% of cases in different series and the frequency of such involvement has been on the rise and is becoming the main cause of death from the disease. Mortality rates for

severe lung involvement may be as high as 50%[7]. Pulmonary lesion is primarily haemorrhagic. Focal or diffuse areas containing alveoli filled with erythrocytes characterise the pulmonary involvement observed in leptospirosis.

To the best of my knowledge, leptospirosis complicated with empyema thorax has not been reported in India till date. Even lung abscess being one of the rarest manifestations of leptospirosis has been reported from other part of world in literature[8].

Conclusion

A common disease like leptospirosis can present with a rare complication as empyema thorax. High index of suspicion is required for early diagnosis and treatment to prove it non-fatal We wish to emphasise that leptospirosis should be considered as a differential diagnosis in tropical countries when a patient presents with multiorgan failure or fever of > 3 days duration.

Referrance

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