

An Unusual Presentation of Leptospirosis with the High Level of Liver Transaminases

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Abstract: *Leptospirosis is an infectious disease that is caused by spirochetes of leptospira. This infectious occurs over 850,000 cases each year. Leptospirosis presentation is from a mild illness to multi organ failure (Weil's disease). Severe form of leptospirosis can be presented with high fever, significant jaundice, renal failure, hepatic dysfunction, respiratory failure, rhabdomyolysis and myocarditis. Liver dysfunction in severe leptospirosis is accompanied by modest elevations in transaminases. Few studies have reported the high level of liver transaminases in leptospirosis. We reported a rare case of leptospirosis with this presentation. A previously healthy 45 year old woman presented to our emergency department due to high fever and progressive weakness for 3 days. She had a trip to Zanjan city- Iran 10 days prior to admission and a history of animal contact. The laboratory investigations showed serum creatinine 9.5mg/dL, liver transaminases more than 1000 U/L and total bilirubin: 6.5mg/dL. According to the initial presentations and a trip to an endemic area of leptospirosis, treated with intravenous ceftriaxone. The Microscopic agglutination test for leptospirosis confirmed it. By antibiotic therapy and early supportive cares the patient was cured completely. Weil's disease is a common cause of acute renal insufficiency, liver dysfunction and hyperbilirubinemia in endemic areas. Mortality rate of Weil's disease is 5 - 10%. Antimicrobial agents can reduce its severity and lead to a favorable outcome for this potentially fatal condition. Initiation of antibiotic may be precipitate a febrile reaction, named as the jarisch herxheimer reaction. The high level of liver transaminases has been reported as a bad prognostic factor for leptospirosis.*

Keywords: *Leptospirosis, Weil's disease, Microscopic agglutination test*

1. INTRODUCTION

Leptospirosis is an infectious disease that is caused by spirochete of leptospira. Human infection is acquired by exposure to the infected animals [1, 2, 3]. This infectious occurs over 850,000 cases each year [4].

Leptospirosis presentations are from asymptomatic forms to severe forms (5-15%) with multi organ failure (Weil's disease) [5]. Some patients are undiagnosed due to nonspecific presentation of this infectious [4]. Weil's disease is a common cause of renal and hyperbilirubinemia in endemic areas [3, 5]. Few studies have been reported the high level of liver transaminases in leptospirosis [6]. We reported a rare case of severe leptospirosis with the high level of liver transaminases.

2. CASE REPORT

A previously healthy 45 year old woman presented to our emergency department due to high fever, icterus, anorexia, generalized body pain and progressive weakness for 3 days. She noticed her urine had turned dark and then progressed to anuria. She had no history of blood transfusion, contact with sick person and significant past illness. She had a trip to endemic area of leptospirosis (Zanjan city) in Iran 10 days prior to admission and a history of animal contact. Physical examinations revealed conscious, well alert, deeply icteric, high temperature (39.5⁰ C), conjunctival congestion, pulse rate 84/ min, blood pressure 120/80 mm Hg, respiratory rate 22/ min and rest of examinations were unremarkable. The laboratory investigations showed serum creatinine 9.5mg/dL, aspartate transaminase 1320 U/L, alanine transaminase 1140 U/L, total bilirubin: 6.5mg/dL and creatine phospho kinase: 6600 units. Acute viral or autoimmune hepatitis, sepsis with organ failure and leptospirosis were in the list of differential diagnosis. The patient was managed in ICU with maintenance of nutrition, hydration with intravenous fluid and intravenous ceftriaxone 1gm q12 h. Hemodialysis was offered three times to the patient until the stabilization of renal function and then urine output. The serum creatinine was gradually normalized. Workup for viral and autoimmune hepatitis was negative and complement levels were normal. All these findings beside a trip to an endemic area were consistent with severe complicated leptospirosis. The Microscopic

agglutination test (MAT) was requested. The diagnosis was confirmed by the high titer of leptospirosis serology. She improved dramatically during hospitalization. Serum bilirubin had fallen slowly. Normal levels of renal function test and transaminases were achieved by the end of 4th week. There were no permanent sequel at a nine month follow-up.

3. DISCUSSION

Liver involvement is not the main target of leptospirosis. Liver dysfunction in severe leptospirosis is accompanied by modest elevations in transaminases (average 100-200). Total bilirubin range has been reported from normal limits to over 28 mg/dL in severe leptospirosis [6,7]. The severe form of leptospirosis maybe complicated by renal failure, hepatic necrosis, pulmonary hemorrhage, pancreatitis, myocarditis, rhabdomyolysis, and acute respiratory distress syndrome [3, 6, 8]. Diagnostic tests of leptospirosis are the MAT, indirect hemagglutination, and enzyme-linked immunosorbent assay [3]. A positive MAT includes at least four-fold increase in antibody titer or a conversion from seronegative to a titer of $\geq 1:100$ [9]. Mortality rate of leptospirosis is significantly increase in elderly with renal failure or high level bilirubin [4]. Peak levels for transaminases (aspartate transaminase/ alanine transaminase ratio >3) might be predicted the negative outcome of leptospirosis [6]. The early empirical treatments can improve its outcomes [4]. Although few studies have demonstrated the benefit of antibiotic therapy even in late stages of infectious [5]. The oral antibiotic treatment includes doxycycline 100mg q12h. Intravenous penicillin (1.5 million units q6h) or third-generation cephalosporin (ceftriaxone 1g q24h or cefotaxime 1g q6h) is prescribed for severe form of leptospirosis [3, 9]. Initiation of antibiotic may be precipitate a febrile reaction, named as the jarisch herxheimer reaction. This phenomenon is an acute inflammatory response due to clearance of spirochetes from the blood circulation [5]. Mortality rate of Weil's disease is 5 - 10% [7].

4. CONCLUSION

Patients with severe form of leptospirosis require supportive cares and careful management of multisystem complications beside antibiotic prescription. Antimicrobial agents can reduce its severity and lead to a favorable outcome for this potentially fatal condition. The high level of liver

transaminases has been reported as a bad prognostic factor for leptospirosis.

CONFLICT OF INTERESTS

No conflicts of interests to disclose.

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None.

CONSENT

Written informed consent was obtained from the patient for publication of this case report.

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