Teaching Case

Leptospirosis as a Zoonotic Infection

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ABSTRACT

Leptospirosis is a common zoonotic infection in human caused by spirochete Leptospira. The disease is often underdiagnosed because of the difficulties in its clinical diagnosis and lack of suitable confirmatory laboratory tests. In this case report, we describe a case which highlights the importance of considering leptospirosis as the diagnostic possibility with hepatic, renal, and hematologic system involvement particularly where diagnostic support and resource are limited.

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Introduction

Leptospirosis is a somewhat common zoonotic disease found worldwide, especially in tropical and temperate climate. It is generally transmitted through direct contact with infected animals' (such as rats, dogs cattle or pigs) urine through surface warts, moist soil or other wet environments (1, 2).

Clinical spectrum of disease could be ranged from an asymptomatic subclinical infection to fatal hepatorenal involvement (Weil syndrome) (3).

Case Report

A 55-year-old farmer man from a village of northern part of Iran referred from a local hospital to Imam Khomeini Hospital of Tehran University of Medical Sciences. He complained of progressive fatigue and low-grade fever for one month with associated jaundice, itching, eye injection, generalized body aches, episodes of headache and abdominal pain not responding to analgesics. Urine output had been decreased during last days before admission. There was no history of high-risk behavior, any recent travel or blood product transfusion. Drug history was negative except for occasional analgesics used for abovementioned pains. Obtained familial history was unremarkable.

On admission, his vital signs were as follow: blood pressure: 100/60 mmHg, pulse rate: 120

beat/minute, temperature: 38 °C, respiratory rate: 22 breathe per minute and oxygen saturation: 93%. Head and neck examination showed icterus sclera without lymphadenopathy or oral mucosal lesions. Thyroid exam was normal. Cardiopulmonary examination was unremarkable. The abdomen was soft with mild right upper quadrant tenderness. No organomegaly was evident and there was no evidence of edema, arthritis or skin rash. Neurologic examinations were normal.

Initial laboratory findings were as follow: white blood cells (WBC): 11500/µl (with 85% neutrophils), hemoglobin: 12 g/dl, platelet: 15000/µl, total bilirubin: 8.1 mg/dl (direct bilirubin fraction: 7.0 mg/dl), aspartate aminotransferase (AST): 133 IU/l, alanine aminotransferase (ALT):134 IU/l, alkaline phosphatase: 350 IU/l, serum albumin: 2.3 g/dl, creatinine: 3 mg/dl, and urea: 233 mg/dl. Coagulation profile was within normal ranges. Peripheral blood smear did not reveal any parasite, immature WBCs or abnormal red blood cell (RBC) morphology. Urine and blood culture were negative for bacterial growth. Chest-X-ray, abdominopelvic ultrasonography and echocardiography were normal. All other complementary laboratory tests results including anti-nuclear antibody, anti-double strand DNA, complements studies, cryoglobulins, anti-neutrophil cytoplasmic antibodies (ANCA), and anti-glomerular basement membrane (anti-GBM) antibody were within normal values. Serum serology [IgM- enzyme-linked immunosorbent assay (ELISA)] for leptospirosis, 1:400 was positive (normal value < 1:100).

After one week of treatment with oral doxycycline 100 mg every 12 hours and intravenous ceftriaxone 1 g every 12 hours, general condition showed marked improvement and hematological/biochemical abnormalities became normal. He was discharged then with good general condition.

Discussion

Leptospirosis is an infectious disease caused by a spirochete with various presentations from mild self-limiting disease to fatal multi-organ failure. As nonspecific abnormalities exist on routine laboratory tests, high clinical index of suspicion is needed during presentation with multi-organ dysfunction.

Definite diagnosis depends on isolation of the organism from involved organ culture. But, it takes weeks to grow the organism and therefore is not fully helpful in practical management (3). So, while waiting for confirmatory tests, the empiric treatment should be initiated as soon as possible if this is a likely diagnosis; delay in treatment could lead to a fatal outcome. Meanwhile, it is necessary to keep in mind the wide range of Leptospirosis differential diagnosis. These include other infectious (sepsis, malaria, influenza, typhoid fever, ehrlichiosis, viral hepatitis, dndocarditis and etc.) or non-infectious disease (thrombotic thrombocytopenic purpura, systemic lupus erythematosus, vasculitis and etc.).

Serology is now probably most used assay for diagnosis. Two most means are microscopic agglutination test (MAT) and ELISA. Although the MAT is assumed as gold standard serologic test, it is less available universally and not useful for practical management during acute setting of the disease (4). In conjunction with epidemiologic background of the patients, the ELISA is more available and could be useful (5-6). Dark field examination of urine and blood is now out of favor due to low accuracy of this test.

Conclusion

The leptospirosis is a disease with wide range of manifestations with non-specific initial presentations. So, for prompt management, high clinical index of suspicion with associated awareness of local epidemiology of disease is needed. In suspicious cases, while waiting for confirmatory tests, early appropriate antimicrobial treatment could be lifesaving.

Conflict of Interests

Authors have no conflict of interests.

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