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Case Report

Acute Leptosperosis Associated With Epstein - Barr virus: Case report.

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Abstract

Leptospirosis is an infectious disease of humans and animals; it is caused by corkscrew-shaped bacteria called Leptospira. Weil's disease is the classic form of severe leptospirosis, and it is characterized by liver damage (causing jaundice), kidney failure, and bleeding.

Leptospiral infection in humans causes signs and symptoms that can range from none to mild such as headaches, muscle pains, and fevers; too severe with bleeding from the lungs the most serious and life-threatening of all leptospirosis complications, additionally, the heart and brain can be affected ,meningitis of the outer layer of the brain, encephalitis of brain tissue. Most of the cases are mild leptospirosis, the rest experience severe disease.

We present an isolated case of Weil's disease and EBV in a 15-year-old girl, the girl was admitted to our department due to high fever, abdominal pain and vomiting, on evaluation she found to have jaundice, decreasing hemoglobin, increasing bilirubin with abnormal value of liver enzymes; other causes of disease were investigated and EBV infection and leptospirosis were determined by serologic tests. The patient's status improved after she was started on antibiotics.

Immunosuppression during active EBV infection has been reported previously, and therefore, this could have caused the severe symptoms after Leptospira infection in our case.

KEYWORDS: EBV, LEPTOSPIRA, WEIL'S DISEASE, IMMUNOSUPPRESION.

Introduction

Leptospirosis is a zoonotic disease caused by a leptospira and it is transmitted by the urine of an infected animal and is contagious as long as the urine is still moist, humans become infected through contact with water, food, or soil that contains urine from these infected animals [1, 2]. This may happen by swallowing contaminated food or water or through skin contact.

Occupations at risk include veterinarians, countryside rangers, slaughterhouse workers, farmers, sailors on rivers, sewer maintenance workers and people who work on derelict buildings [3].

The majority of patients with leptospirosis manifest a mild, anicteric febrile illness, but a minority of patients develops a severe form with multiorgan involvement called Weil's disease the classic form of severe leptospirosis. Weil's disease is characterized by high fever, liver damage causing jaundice, kidney failure, and bleeding [4-5]. Additionally, the heart and brain can be affected, meningitis of the outer layer of the brain, encephalitis of brain tissue with same signs and symptoms and pulmonary involvement considered as the most serious and life-threatening of all leptospirosis complications [5]. The infection is often incorrectly diagnosed due to the nonspecific symptoms.

Overall, Weil's syndrome has a mortality rate of 5% to 10%. Important causes of death include renal failure, cardiopulmonary failure and widespread hemorrhage [6].

Epstein-Barr virus (EBV) can induce immune responses in humans, which impair liver function. Weil's disease associated with active EBV infection was described only in a few cases in the literature [7-8].

Case Report

A 15 - years –old girl, with no medical history was admitted to our hospital with fever, general malaise, vomiting and abdominal pain, since 4 days. On admission, she had headache, vomiting, photophobia, abdominal pain, cervical lymphadenopathy, myalgia and arthralgia.

Assessment on admission revealed that before 10 days she swam in the River located at the north of the Golan in Israel. No other family members became ill in the recent past. In addition to her history, 2 days prior to her hospitalization the patient suffered from tonsillitis and was treated with antibiotic.

The patient was received in a stable hemodynamic and respiratory state with high fever, the patient's body temperature was 39°C, blood pressure was 100/70mmHg, heart rate was 110 beats per minute and respiratory rate was 20 cycles per minute. Physical examination showed no jaundice (although it had appeared later in her hospitalization), swallowed tonsils and uvula with white exudates, cervical and submandibular lymph nodes were enlarged and splenomegaly.

Initial laboratory evaluation showed

Complete Blood count showed- a leukocyte count of 16,000/mL with 15% atypical lymphocytes, a hemoglobin level of 10.5 g/dL, and a platelet count of 350,000/mL.

Blood test for liver enzymes- Serum aspartate aminotransferase level (AST) 366 IU/L, alanine aminotransferase level (ALT) was 455 IU/L, Alkaline phosphatase (ALP) 545 IU/L, direct bilirubin 1.7 mg/dL, γ-glutamyl transpeptidase was (GGT) 602 IU/L; Increased C-reactive protein was (CRP) 5.81 mg/dL; Amylase is normal.

Creatine was 1 mg/dl, serum urea 27gm/dl. coagulation factors within the normal range; Albumin is normal. Blood test for beta-HCG is negative. urine test showed erythrocyturia. Thyroid function within the normal range. Lipid profile was normal.

Serology for EBV was positive, and a negative Serology of Hepatitis and CMV. Investigation of PCR Infections for Mycoplasma was Negative. ECG- sinus rhythm without acute ischemia or conduction disorders, Troponin is negative. Abdominal sonography showed mild splenomegaly without other specific findings.

Due to the History of the patient, physical examination and the fact that the tests performed for hepatitis and other possible agents were negative, Leptosperosis was considered in the differential diagnosis, And further investigations was started. Antibiotic therapy of Doxycycline and Ceftriaxone was started.

During her hospitalization fever was observed 38.4 °C, repeated laboratory tests revealed worsening in liver enzymes - AST 276 IU/L , ALT 493 IU/L , Lactate dehy-

drogenase (LDH)749, total bilirubin 7 mg/dL Direct bilirubin 5 mg/dL; Also, the appearance of leukocytosis 11,079/ml (lymphocytosis). physical examination showed that her skin and sclera were icteric, pruritus, submandibular lymphadenopathy, on palpation Hepatosplenomegaly, liver about 3 cm below the rib cage.

Due to complaints of chest pain and nausea, a pediatric cardiologist examined her and systolic murmur 2/6 was observed, significant musculoskeletal sensitivity in the right epigastric region and the thorax; ECG, and echocardiography were normal cardiac problem was rule out.

Blood culture was negative. We made a diagnosis of leptospirosis by PCR, samples from the patient's serum and urine showed positive results of leptospirosis.

The patient was put on intravenous Doxycycline and glucose and salt solution infusions were administered. The treatment was continued for 10 days. 2 weeks following admission, she had made a complete recovery and was discharged.

Discussion

Leptospirosis is a re-emerging zoonotic disease with a worldwide distribution that affects humans and animals. It is caused by corkscrew-shaped bacteria called Leptospira [9]. In humans, it can cause a wide range of symptoms, some of which may be mistaken for other diseases. Some infected persons, however, may have no symptoms at all. It is increasingly being recognized in developing countries. Leptospirosis peaks during the monsoon and post monsoon months and occurs more commonly where poor sanitation and low hygienic conditions are prevalent [10].

Leptospirosis is transmitted by the urine of an infected animal and is contagious as long as the urine is still moist. Although Leptospira has been detected in reptiles and birds, only mammals are able to transmit the bacterium to humans and other animals [11]. Rats, mice, and moles are important primary hosts. Humans become infected through contact with water, food, or soil that contains urine from these infected animals. This may happen by swallowing contaminated food or water or through skin contact. The disease is not known to spread between humans, and bacterial dissemination in convalescence is extremely rare in humans.

Leptospirosis is a biphasic disease that begins with fever accompanied by myalgia headache, abdominal pain [2]. The symptoms appear after an incubation period of 7–12 days. The first phase ends after 3–7 days [12]. The disappearance of symptoms coincides with the appearance of antibodies against Leptospira and the disappearance of all the bacteria from the bloodstream. The patient is asymptomatic for 3–4 days until the second phase begins with another episode of fever. During this phase, aseptic meningitis, Acute Renal Injury (AKI) pulmonary hemorrhage and Acute Respiratory Distress Syndrome (ARDS) may occur. This most severe form of leptospirosis is the Weil's disease [13].

Diagnosis of leptospirosis is confirmed with tests such as ELISA and PCR. The MAT, a serological test, is considered the gold standard in diagnosing leptospirosis [15].

7- 14 days course of treatment is recommended, effective antibiotics include penicillin G, ampicillin, amoxicillin and doxycycline. In more severe cases cefotaxime or ceftriaxone should be preferred [14].

In our case Weil's disease caused by Leptospira may be attributable to immunosuppression caused by active EBV infection. It can be noted that EBV-mediated immunosuppression influences the severity of other infectious diseases.

Conclusion

Leptospirosis is not frequently reported in children and adolescents. Diagnosis of Leptospirosis is often a challenge as the presentations can be similar other common diseases. The history of the patient is very essential and it's a key to diagnose the disease, in our case immunosuppression during active EBV infection has been reported previously, and therefore, this could have caused the severe symptoms after Leptospira infection in our case.

Leptospirosis should be considered in all febrile patients particularly with a suggestive history like exposure to freshwater, recent flood, resident of endemic area or travel to such places, or other any risk factors. If the treatment is not applied Patients condition can deteriorate rapidly and can cause severe complications, in light of this antibiotic therapy should be initiated on the basis of clinical judgment as laboratory confirmation can be delayed.

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