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Case report
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A catastrophic leptospirosis case with multisystemic involvement

Multisistemik tutulumlu katastrofik leptospirozis vakası

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Abstract

Leptospirosis is a systemic infection with varying degree of clinical manifestations from mild to fatal disease. Clinical suspicion is very important to identify leptospirosis. A field worker patient was admitted to our clinic with emerging acute hepatitis and renal failure accompanying conjunctivitis, autoimmune hemolytic anemia, thrombocytopenia, pneumonia and epididymorchitis. During the follow-up the patient was transmitted to intensive care unit, and hemodialysis with plasma exchange was performed. Usually mild disease is treated in outpatient clinics because severe organ failure is experienced rarely. Alternative treatments such as plasma exchange and corticosteroids may also provide benefits especially in patients who were unresponsive to classical therapies.

Keywords: Leptospirosis, Acute Hepatitis, Plasmapheresis, Hemodialysis

Öz

Leptospirozis, hafif ile ölümcül hastalığa kadar değişen derecede klinik bulgulara sahip sistemik bir enfeksiyondur. Teşhis konusundaki en önemli vizyonun klinik şüpheniz olduğu düşünülmektedir. Kliniğimize, konjontivit, otoimmün hemolitik anemi, trombositopeni, pnömoni ve epididimo-orşitin eşlik ettiği akut hepatit ve böbrek yetmezliği tablosuyla başvuran ; takibinde yoğun bakım ünitesine alınıp plazma değişimi ve hemodiyaliz ile takip edilen tarlada çalışan bir işçiyi sunduk. Leptospiroziste genellikle hafif hastalık ayaktan tedavi edilirken, ciddi organ yetmezliği nadiren görülür. Plazma değişimi ve kortikosteroidler gibi alternatif tedaviler, özellikle klasik tedavilere yanıtsız kabul edilen hastalarda fayda sağlayabilir.

Anahtar kelimeler: Leptospirozis, Akut hepatit, Plazmaferez, Hemodiyaliz

Introduction

Leptospirosis is a well-known systemic infection caused by a zoonotic spirochete with varying degree of clinical manifestations [1,2]. Animals are usually infected by nearly 200 different serovars of leptospira nonetheless humans may also be infected by contaminated water either with urine from infected animals or direct contact [2]. The incidence is mainly modified by ecological conditions. Tropical climates, rural areas and low socioeconomic levels are thought to be associated with transmission. Although outbreaks are reported from different areas, determining incidence of sporadic events can be considered challenging. Clinical manifestations vary from mild to fatal disease [1-5]. The most important vision towards diagnosis should be clinical suspicion [6]. In this report, we want to draw attention to multi-systemic involvement of an overlooked spirochete infection.

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Case presentation

The patient, 65 years old male working as field worker with no known disease had examined and prescribed an antibiotic from a local clinic two days before admission to our service. He was complaining of fever accompanying nausea, vomiting, abdominal pain with occasional diarrhea, burning sense in urine, redness of eyes, cough and yellow sputum. Vital signs were as follow: temperature 39.1° C, blood pressure 125/75 mmHg, pulse 112 beats per minute. Physical examination revealed widespread pulmonary crackles and positive pre-tibial edema. On laboratory examination increased liver function tests, lactate dehydrogenase and creatine kinase; disrupted renal functions were present. Laboratory values on admission were as follows; Creatine kinase: 4086 U/L (26-140), hemoglobin: 16 gr/dl, hematocrit: 50%, platelet: $65x10^3$ / uL (110000-450000), white blood cell: 9660 (4000-11000), blood urea nitrogen: 61 mg/dl (8-25), aspartate transaminase: 3404 U/L (0-40), alanine transaminase: 1240 U/L (0-41), total bilirubin: 4.0 mg/dl (0-1), direct bilirubin: 2.6 mg/dl (0-0,2), lactate dehydrogenase: 2989 U/L (100-190), creatinine: 4.51 mg/dl (0.9-1.3), Aptt: 46.7 sn (22-34), Ptt: 27 sec (11-15), INR: 2.4. Stool analysis for infectious agents was negative. Post renal causes and major renal vascular diseases were excluded by renal ultrasound and color doppler flow imaging. Peripheral blood smear revealed blister cells, anisocytosis, and few spherocytes with single frequent thrombocytes additionally was negative for plasmodium. Hepatitis markers including hepatitis A and E serology showed no abnormality. The picture was involved conjunctivitis, hepatic and renal failure with respiratory problems likewise considering the history, it was compatible with leptospirosis. He was commenced on ceftriaxone 2gr. /day and metronidazole 1.5gr./day but transferred to intensive care unit by virtue of multi-systemic involvement as well as confusion with progressive dyspnea. Chest radiography revealed diffuse patchy infiltrates more on left lung compatible with pulmonary edema accompanying pneumonia (Figure 1).

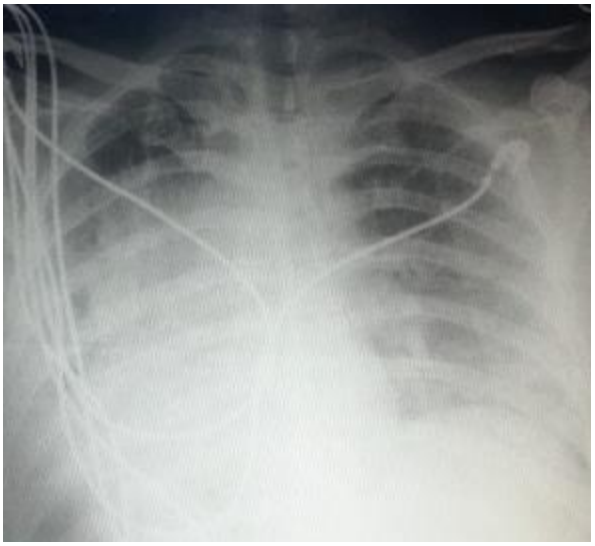

Figure 1: The Chest X-ray on admission

Noninvasive mechanic ventilation with CPAP was required for 10 hours. Blood cultures were sterile however the antibiotherapy was modified as tetracycline 1 gr/day with meropeneme 2 gr. /day due to persistent fever. Due to septic shock on 7th and 9th days of admission plasma exchange sessions with fresh frozen plasma and albumin combination were performed. Moreover inotropic support and hemodialysis for two times were required. Confusion and dyspnea were improved after plasma exchange and hemodialysis sessions. On 10th day clinical and biochemical responses were achieved. Testicular redness accompanied with pain revealed epididymoorchitis, what was confirmed with scrotal ultrasonography. The abnormal levels of bilirubin was thought to be secondary to septic biliary stasis and confirmed with abdominal ultrasonography that excluded biliary tract diseases. Liver enzymes and renal function tests had tendency to return to normal values. The control chest radiography on 20th day revealed significant regression (Figure 2).

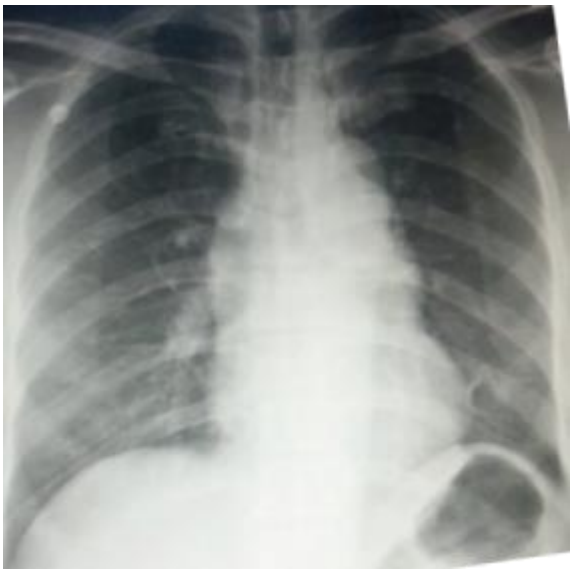

Figure 2: The Chest X-ray at discharge

Serology for leptospira IgM was positive and although micro-agglutination was planned, the test couldn't be studied due to absence of kit. The patient was discharged after a febrile periods with full renal recovery (Table 1). Written informed consent was obtained from patient who participated in this study.

Table 1: The course of laboratory levels from admission to discharge

Date of the test	AST/ALT (U/L)	Tbil/Dbil (Mg/dl)	LDH (U/L)	Htc/Plt (%/µL)	Cr (mg/dl)
October 25	3404/1240	4/2.6	2969	50.2/65	4.51
October 27	4511/3141	7.5/5.1	2989	41/91	8.41
October 30	775/213	9.6/6.6	361	37.8/31	9.4
November 1	203/91	17/10.2	323	35.9/61.5	12.5
November 4	137/100	28.4/18.1	333	36.8/144	6.71
November 12	69/39	11.5/6.2	212	30.1/323	1.94
November 21	58/34	6.7/3.2	166	36.7/538	1,6
November 24	50/29	4.1/1.9	172	35.3/422	0.91

Plasmapeheresis and hemodialysis performed every other day from 27.10.2012

AST: Aspartate transaminase, ALT: Alanine transaminase, Tbil: Total bilirubin, Dbil: Direct bilirubin, LDH: Lactate dehydrogenase, Htc: Hematocrit, Plt: Platelet, Cr: Creatinine

Discussion

Leptospirosis is defined as a disease which can be misdiagnosed at the onset and has a challenging diagnosis process. The agent can be cultured but diagnostic process includes mainly on serology moreover mimicking a lot of febrile

disease generates the challenging part [2,7-9]. Bacteria shed on kidneys and exports via urine thus transmission path is expected spread by infected animals' urine [10,11]. The picture is usually manifested as mild disease more than 90% of patients and can be confused with self-limited viral conditions. Rarely severe involvement of organs such as meningitis, acute renal failure, acute hepatitis, myocarditis and pulmonary hemorrhage can be experienced [11-14]. The mortality rate of severe disease is described within 5% - 40 % [15]. Possible risk factors are considered as traveling to tropical countries, water and soil occupations and low socioeconomic levels moreover tropical climates favors the survival of strains nearly for two months [2,3]. The diagnosis is usually performed based on clinical suspicion and confirmation of laboratory tests which antibodies are expected to be detect within 7 days. The serology has sensitivity of 90% and specificity of 94% moreover all serology tests should be confirmed with micro-agglutination test if positive sample detected. Therapies should include penicillin, cephalosporins, tetracycline or doxycycline according to the severity of disease [14]. Our patient who is a field worker and encountered from rural area was admitted to our clinic with emerging acute hepatitis and renal failure accompanying conjunctivitis, autoimmune hemolytic anemia, thrombocytopenia, pneumonia and epididymorchitis on follow-up. The antibiotherapy began for leptospirosis with clinical suspicion immediately until the serology has resulted. The serology was compatible with Leptospira whereas has resulted in one week. Micro-agglutination test was planned however technical requirements cannot be satisfied. It was the first case for us when we had to hospitalize the patient with leptospirosis. Previously we had treated leptospirosis only as outpatient therapy. We also experienced the effect of plasmapheresis and corticosteroids.

There are just few cases were reported about beneficial effects of plasma exchange, corticosteroids and intravenous immunoglobulin. That was the reason why we wanted to draw attention to early diagnosis and management of Leptospirosis. Such awareness of this disease will prevent probable catastrophic consequences of treatable fatal disease. Furthermore alternative treatments such as plasma exchange and corticosteroids may also provide benefits.

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