



## CASE REPORT

# LEPTOSPIROSIS IN A GERIATRIC PATIENT WHO FREQUENTLY WALKS BAREFOOT ON THE BEACH

## ABSTRACT

Leptospirosis, a worldwide zoonosis manifesting itself in various types, is difficult to diagnose because of non-specific symptoms. A ninety-two year-old geriatric male patient was admitted to GATA Haydarpaşa Training Hospital Emergency Department with complaints of high fever, sweating, fatigue, headache, muscle aches, nausea, vomiting and the inability to walk that continued for two days. In his anamnesis, he had been on vacation to Antalya, which is a coastal province on the southern coast of Turkey. Whilst on holiday, one of his activities was to walk on the beach for several hours barefoot. His complaints started 3 days on his return to Istanbul. Blood samples were sent to spirochete laboratory of Etlik Central Veterinary Control and Research Institute. He was discharged from the Institute on 100 mg of doxycycline and 500 mg of ciprofloxacin (bid, per oral). One week later, Institute reported that the antibodies for leptospira were positive. A microagglutination test confirmed the serovar *Leptospira icterohaemorrhagiae*, with the titers of 1:400. After two weeks of treatment, his physical examination and laboratory tests were found to be normal. In conclusion, a careful assessment of risk factors in the case history of the patient with non-specific symptoms such as high fever, frontal headache, myalgia and conjunctival hyperemia will assist the diagnosis of leptospirosis. Laboratory results such as neutrophilia, thrombocytopenia, high degree of creatine kinase also play an important role in the diagnosis of the disease. Early treatment should be started as soon as possible to prevent further aggravation of the disease.

**Key Words:** Leptospirosis; Weil Disease; Geriatrics.

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## OLGU SUNUMU

# PLAJDA ÇIPLAK AYAKLA YÜRÜME HİKAYESİ OLAN GERİATRİK BİR HASTADA GELİŞEN LEPTOSPIROZ

## Öz

Leptospiroz, tüm dünyada çeşitli tipleri ile yaygın olarak görülen bir zoonozdur. Ancak nonspesifik bulgularla prezente olması nedeniyle tanısı güç konulan bir hastalıktır. Doksan iki yaşında geriatric erkek hasta iki gündür devam eden yüksek ateş, baş ağrısı, halsizlik, bulantı, kusma, yürüyememe yakınmaları ile Gata Haydarpaşa Eğitim Hastanesi Acil Servisine yakınları tarafından getirildi. Anamnezinde, hastanın yaklaşık bir ay önce Antalya'ya tatil amacıyla gittiği ve bu burada kaldığı süre içerisinde kumsalda çıplak ayakla uzun süreli yürüyüşler yaptığı öğrenildi. Hastanın laboratuvar incelemesinde trombositopeni, hafif düzeyde transaminaz, LDH yüksekliği ve hiperbilirubinemi mevcuttu. Tatil dönüşünden 3-4 gün sonra başlayan yakınmalar, fizik muayene ve laboratuvar bulgular ışığında hastada 'Leptospiroz' olabileceği düşünülerek hastaya hospitalizasyon önerildi ancak hasta yakınları hospitalizasyonu kabul etmedi. Hastanın tedavi öncesi alınan serum örneği, Etlik Merkez Veteriner Kontrol ve Araştırma Enstitüsü Spiroket (*Leptospira*) Laboratuvarı'na gönderildi. Hastaya Doksisisiklin 100 mg (2 x 1 per oral) ve Siprofloksasin 500 mg (per oral 2x1) tedavileri verilerek acil servisten taburcu edildi. Hastanın tedavi öncesi alınan serum örneğinde, Etlik Merkez Veteriner Kontrol ve Araştırma Enstitüsü'nde yapılan mikroskopik aglütinasyon testi ile *Leptospira icterohaemorrhagiae* Wijnberg suşuna karşı 1/400 titrede pozitiflik saptandı. Kontrol muayenesi için 2 hafta sonra hastanemiz acil servisine başvuran hastanın tedavi sonrası fizik muayenesi tabii ve laboratuvar bulguları düzelmisti. Sonuç olarak yüksek ateş, frontal bölgede baş ağrısı, miyalji ve konjunktival hiperemi gibi semptom ve bulgular ile nötrofili, trombositopeni, kreatin kinaz yüksekliği gibi laboratuvar bulguları ile başvuran hastaların, anamnezinde risk faktörlerinin dikkatle sorgulanması, leptospiroz tanısını kolaylaştıracaktır. Erken dönemde başlanan tedavi hastalığın seyri açısından büyük önem taşımaktadır.

**Anahtar Sözcükler:** Leptospiroz; Weil Hastalığı; Geriatri.

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## INTRODUCTION

Leptospirosis, which is caused by *Leptospira* spirochetes, is an acute, febrile, and systemic zoonotic infection that is particularly common in tropical regions around the world. This disease can be seen as an asymptomatic infection and severe symptomatic infection which is characterized by multiorgan dysfunction and can be presented with high fever, significant jaundice, acute renal failure (ARF), hepatic necrosis, pulmonary involvement, cardiovascular collapse, neurologic changes, hemorrhagic diathesis (1). The majority (90%) of patients manifest a mild, anicteric febrile illness, but the minority (5-10%) of patients develop a severe form with multiorgan involvement, called Weil's disease (1,2).

Herein, we present a geriatric patient, who was admitted to our Emergency Department (ED) with non-specific complaints including fever, headache, malaise, nausea, vomiting, and inability to walk and was eventually diagnosed as having leptospirosis.

## CASE

A ninety-two year-old male patient was admitted to the ED of GATA Haydarpaşa Training Hospital on July 15, 2011 with complaints of high fever, sweating, loss of appetite, fatigue, headache, muscle aches, nausea, vomiting and inability to walk that continued for 2 days. The patient was inhabitant of Istanbul. On physical examination (PE), the patient was alert and oriented. His body temperature was 41,5 °C, heart rate 118 beats/min and arterial blood pressure was 150/90 mm Hg. He has conjunctival hyperemia. His skin was not jaundiced and his lungs were clear to auscultation bilaterally. The abdomen was soft and organomegaly was not determined. Lower extremity tenderness was noted and dorsal pedal pulses were present bilaterally. He had sinus tachycardia and widespread muscle aches. Initial laboratory study results were notable for leukocyte: 8,120/mm<sup>3</sup>, neutrophil: 85%, erythrocyte: 4.750.000/mm<sup>3</sup>, Hemoglobin: 14.8 g/dL, Hematocrit: 43.1%, thrombocyte: 96.700/mm<sup>3</sup>; Erythrocyte sedimentation rate (ESR): 56 mm/hour, protrombin time: 13.3 sec, C-Reactive Protein (CRP): 111 mg/L, Aspartate aminotransferase: 64 U/L, Alanine aminotransferase: 44 U/L, total bilirubin: 2.4 mg/dL, direct bilirubin: 0.8 mg/dL, Lactate dehydrogenase: 586 U/L, Creatine kinase: 84 U/L, BUN: 45 mg/dL, Creatinine: 1.29 mg/dL, Na: 136 mEq/L, K: 4.2 mEq/L, Ca: 8.1 mg/dL. In the urine analysis; protein: negative, bilirubin: negative, urobilinogens: normal and in

urine microscopy 4-5 red spheres were found. The patient's serological tests were negative for Salmonellosis and Brucellosis. Monotest for EBV was found to be negative. Chest radiography was normal. Electrocardiography showed normal sinus rhythm, ST depression on V2 and V6 derivations and T negativity on D1, and AVL derivations. As a result of the cardiology consultation, depending on metabolic requirement chronic ischemic disease was evaluated, therefore, secondary reasons such as infection investigation was recommended.

An infectious diseases consultation was requested. We suspected a bacterial infection due to high fever, neutrophil count, CRP and ESR levels. Yet, we could not reliably identify the source of infection. After detailed questioning, it became evident that although the patient was living in Istanbul, he had been to Antalya, a seaside city on the southern coast of Turkey, recently for vacation. He stayed there for one month and walked barefoot on the beach for long periods. His current complaints were started a few days (3 - 4 days) after returning to Istanbul.

Blood samples were sent to spirochete laboratory of Ertlik Central Veterinary Control and Research Institute (ECVCRI). The relatives of the patient refused for him to be hospitalized. He was discharged from the ED on 100 mg of doxycycline (bid, per oral) and 500 mg of ciprofloxacin (bid, per oral) and follow-up visits at infectious disease department were scheduled. One week later, ECVCRI reported the antibodies for leptospira as positive. A microagglutination test (MAT) confirmed the serovar *Leptospira icterohaemorrhagiae*, with the titers of 1:400. After two weeks of antibiotic treatment, the patient was clear of all previous symptoms. His PE and laboratory test results were normal.

## DISCUSSION

Leptospirosis is a zoonosis that shows a broad distribution throughout the world. Clinical presentation of leptospirosis varies from an asymptomatic infection to a severe symptomatic infection characterized by multiorgan dysfunction. The majority (90%) of patients manifest a mild anicteric febrile illness, while other patients develop a severe form that involves multiple organs and presents with high fever, jaundice, hemorrhagic diathesis, acute renal failure, hepatic necrosis, pulmonary involvement and cardiovascular collapse (1,2). This severe form is known as Weil's disease.

Leptospirosis is known to be more common amongst human and animals in coastal cities and rural regions (2).



*Leptospira* can remain in kidney tubules of many animals without causing any disease. These animals shed leptospire via their urine and continue to contaminate earth, water and nutrients for a very long time. This permanent source of leptospire hampers the effective control of the disease (1,3). Aslantaş et al. (4) reported that seropositivity rate for leptospirosis in street dogs is 44% in Ankara, Turkey.

The leptospirosis spreads to humans mainly by indirect contact with contaminated land, water and nutrients rather than direct contact with infected animals. It can be transmitted by direct contact but especially contact to the small scars of; farmers, hunters, veterinarians, sewer workers, military personnel, and sailors or by drinking of infected waters and eating of contaminated watered vegetables (1). Our patient's history did not include common routes of contact with leptospire, however; he had walked barefoot on the beach for long periods. He might have indirect contact with leptospire during walking on the beach. We suspected leptospirosis and started empirical treatment before laboratory confirmation of the diagnosis was obtained. The barrier function of the skin in older people is lost due to structural and functional changes such as thinning, dryness, coarseness, wrinkles, and decreased skin cell renewal rate. Considering the older age of our patient (92 years), age related skin changes could make him vulnerable to transmission of leptospire through skin while walking barefoot on the beach.

Humans typically become ill 7 to 12 days after exposure to leptospire. There are two stages after this incubation period. The first stage is called the septicemic phase (leptospiremic phase) because the bacteria may be isolated from blood cultures, cerebrospinal fluid (CSF) and many body tissues. This phase is characterized by a nonspecific flulike illness with sudden onset of high fever, headache, myalgia classically involving the paraspinal, calf and abdominal muscles. Our patient admitted to the hospital, with complaints of nonspecific symptoms such as fever, nausea, vomiting and weakness to walk. Therefore, we can say that our patient was also in the leptospiremic phase. The second stage (immune or leptospiruric period) lasts for 4 to 30 days. In anicteric leptospirosis, after an afebrile 1-2 day asymptomatic period, the fever and early signs of first stage continues. This stage occurs as a result of the body's immunologic response by producing immunoglobulin M antibodies. Leptospirosis can disappear from blood and CSF during this period. But it can be seen in kidney, urine and eye fluid (1,5). The primer lesion of leptospirosis, seen in liver, kidney, muscle and meninges is a vasculitis which is induced by leptospiral toxins, resulted by

ischemic damages according to injury on small blood vessels (1,6). During this stage specific organ damage can be observed. Aseptic meningitis is one of the most important clinical syndromes during the immune phase. Renal symptoms, such as uremia, azotemia, pyuria and hematuria may occur (7). Although pulmonary manifestations are usually benign, they can be potentially life threatening and can be presented as pulmonary hemorrhage or acute respiratory distress syndrome (ARDS). Pancreatitis, hepatomegaly and myocarditis may also occur. In a retrospectively evaluated trial conducted by Turgut et al. on 49 patients (8), they observed that 88% of cases have thrombocytopenia and a significant relation between the values of platelet counts and liver enzymes, bilirubin levels. Also in our case we observed that transaminase and bilirubin levels increased proportionally with thrombocytopenia. In addition, these results indicate the involvement of liver. Liver and kidney dysfunction, bleeding, severe mental disorders, and vascular collapse are complications of leptospirosis, which has mortality rates of 5%-10%. Addition to ARF, ARDS, disseminated intravascular coagulopathy (DIC) development, ECG abnormalities, cardiogenic shock and congestive heart failure may also occur (9). When our patient visited ED, ST depression on V2 and V6 derivations and T negativity on D1 and AVL derivations was detected in his electrocardiography due to this disease.

Influenza, infectious mononucleosis, brucellosis, malaria, dengue fever, typhoid fever and hepatitis of various etiologies should be considered in differential diagnosis of leptospirosis. In our case, rose bengal, salmonella tube agglutination test, monostest of the patient are found to be negative in laboratory of infectious disease department. In his peripheral blood smear there were 85% neutrophils, 12% lymphocytes, 3% monocytes and there were not any ring form seen in malaria. In addition, we wanted to hospitalize the patient to investigate further serological tests and blood culture, yet the relatives of the patient refused for him to be hospitalized.

Although it is difficult to diagnose without specific clinical signs, fever with thrombocytopenia and high levels of transaminase and CPK can be router to Leptospirosis. As well as the disease is a potential important health problem in Turkey as in many parts of the world, it's being hard to diagnose or asymptomatic. Reported case number is very low. Although, the clinical course is a router in diagnosis, MAT, ELISA, PCR tests and culture is in use (5). However the symptoms and PE findings with nonspecific laboratory findings when our patient admitted to ED gave hints, certain diagnose was made after MAT in ECVCL.



In conclusion, the differential diagnosis of patients with frontal headache, high fever, myalgia and fatigue; who also demonstrate any of the following findings: neutrophilia / lymphocytopenia, hyperbilirubinemia, increased transaminases and CPK, thrombocytopenia should include leptospirosis. Following the obtaining of samples, prompt empirical treatment should be started as soon as possible to prevent further aggravation of the disease.

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