Erciyes Med J 2018; 40(3): 166-8 • DOI: 10.5152/etd.2018.0004

Anicteric Leptospirosis: A Frequently Forgotten Disease

CASE REPORT

Cihan Bedel[1], Ertan Ararat[2]

ABSTRACT

Leptospirosis is a zoonotic infectious disease caused by pathogenic spirochetes of the genus *Leptospira*. It is frequently overlooked, and this is particularly the case with its anicteric form. However, an early diagnosis and treatment is crucial for the prognosis of the disease. In this report, we present a case of anicteric leptospirosis. A 35-year-old female presented to the emergency service complaining of fever, myalgia, and abdominal pain. Laboratory investigations revealed thrombocytopenia, elevated total bilirubin, high lactate dehydrogenase, and increased blood urea nitrogen (35 mg/dL) and creatinine (3.3 mg/dL) levels. Subsequently, it was thought that the illness might be leptospirosis according to the patient's clinical situation and laboratory findings. Also, it was found that the Leptospira microagglutination test was positive leading to the confirmation of leptospirosis. The patient responded well to ceftriaxone therapy. The disease has various clinical presentations ranging from a mild influenza-like form to a severe potentially fatal illness accompanied by multiorgan failure. We have presented a rare case of "Anicteric leptospirosis" and have observed the diagnosis and treatment methods in the light of the available literature.

Keywords: Leptospirosis, complication, renal failure

INTRODUCTION

Leptospirosis is a zoonotic disease occurring worldwide and is caused by the spirochete *Leptospira interrogans*. It can be contagious and be transmitted from an infected animal to a human (1). The bacteria infect humans by penetration through skin, mucous membrane, and conjunctivae. After an incubation period of 2-20 days, it may cause two clinical syndromes-anicteric and icteric leptospirosis (2-3). Clinically, it shows a broad spectrum of clinical manifestations ranging from subclinical infection and self-limited anicteric febrile illness (80%-90% of all cases) to icteric leptospirosis known as Weil's disease (mortality rate of 5%-10%) (3). Especially, the anicteric form is often forgotten, but an early diagnosis and treatment is important for the short duration of the illness and for the uncomplicated course (3-4). Here we present the case of leptospirosis with thrombocytopenia and renal failure, which is rarely encountered clinically.

CASE REPORT

A 35-year-old female presented to the emergency service complaining of fever, myalgia, and abdominal pain, which had begun 2 days prior. She was farmer and had a history of swimming in a rural area 5 days ago. The patient's past medical history was unremarkable. The patient was well nourished and in a good general condition. Upon admission, her body temperature was 38°C, heart rate was 120 beats/min, respiratory rate was 18 breaths/min, and blood pressure was 100/60 mmHg. Tenderness was present in the right lower quadrant. There was no organomegaly. Initial laboratory studies revealed a white blood cell (WBC) count of $3\times10^3/mm^3$ (normal range: 4.5×10^3–11×10^3), hematocrit level of 34.5%(normal range: 39.5-50.3%), and platelet count of $128\times10^3/mm^3$ (normal range: 159×10^3–388×10^3). The blood biochemical test results were as follows: blood urea nitrogen, 35 mgdL; creatinine, 3.3 mg/dL; aspartate aminotransferase, 1764 IU/L; alanine aminotransferase, 1562 IU/L; lactate dehydrogenase, 678 IU/L; total/direct bilirubin, 2.08/1.12 mg/dL; creatine kinase, 660 U/L; C-reactive protein, 8 mg/L; and amylase and lipase, within normal limits. The urinalysis revealed (++) proteinuria and no pyuria, billirubinuria, or hematuria. Chest radiography showed no significant finding. Minimal collection was present in the pelvic region on ultrasonography. Human immunodeficiency virus and hepatitis A, B, C, and E serologies showed no acute infection. Rubella IgM and cytomegalovirus IgM antibodies were negative; Gruber–Widal and Wright serologies were negative. Direct and indirect Coombs tests were negative. The patient was admitted to the intensive care unit with an initial diagnosis of leptospirosis and multiorgan failure. The patient was treated with

Cite this article as:
Bedel C, Ararat E. Anicteric Leptospirosis: A Frequently Forgotten Disease. Erciyes Med J 2018; 40(3): 166-8.

[1]Department of Emergency Medicine, Antalya Training and Research Hospital, Antalya, Turkey
[2]Department of Emergency Medicine, Uşak Training and Research Hospital, Uşak, Turkey

Submitted
05.02.2018

Accepted
07.03.2018

Available Online Date
03.09.2018

Correspondence
Cihan Bedel
Department of Emergency Medicine, Antalya Training and Research Hospital, Antalya, Turkey
Phone: +90 2422494400
e.mail: cihanbedel@hotmail.com

Table 1. Distribution of post-treatment biochemical parameters day by day

	Normal range	First day	Fourth day	Tenth day
BUN	820 mg/dL	35	20	11
Creatinine	0.66–1.09 mg/dL	3.3	1.63	1.01
AST	0–50 U/L	1764	1322	95
ALT	0–55 U/L	1562	1174	83
Total bilirubin	0.3–1.2 mg/dL	2.08	2	0.7
Direct bilirubin	0–0.2 mg/dL	1.12	0.78	0.18
Alkaline phosphate	30–120 U/L	226	152	124
LDH	0–248 mg/dL	2290	1419	384

BUN; Blood urea nitrogen, AST; Aspartate aminotransferase, ALT; Alanine aminotransferase, LDH; lactate dehydrogenase

ceftriaxone (intravenously 2 g/day for 10 days). Blood cultures and urine culture were negative for bacterial growth. Sputum and stool culture revealed no pathogen. Leptospira microagglutination titer to *L. australis var bratislava* was positive at 1:400. From the fourth day of treatment, the patient's general condition and laboratory findings improved considerably (Table 1). The patient was discharged without any complication after a 10-day treatment with ceftriaxone.

DISCUSSION

Leptospirosis is known worldwide as the most common zoonotic disease that is contagious and can be transmitted from an infected animal to human (1). Indirect contact with infected animals via water or soil contaminated with infected urine is a more common cause of human infection than direct animal contact. Occupational exposure (farmers and veterinarians) and recreational exposure (campers and swimmers) are common (5). In our case, the patient had a history of contact with soil in a rural area.

Leptospirosis is commonly systemic and infects the whole body. Generally, anicteric leptospirosis and icteric leptospirosis are the two types of infections that illustrate different signs and symptoms (5). Anicteric leptospirosis, the common milder form, is characterized by an abrupt onset with fever, headache, and severe muscle aches. Nausea, vomiting, and abdominal pain occur in combination in up to 95% of the patients (5). Our patient had similar complaints in the early days of the disease.

In anicteric leptospirosis, the total WBC count is normal or slightly elevated, but neutrophilia is seen in most cases (5). In our case, a decrease in the WBC count was detected.

Hematological symptoms are common in leptospirosis and thrombocytopenia is the most common (6-8). Thrombocytopenia unaccompanied by other symptoms of disseminated intravascular coagulation occurs in up to 50% of patients with leptospirosis and is closely associated with the existence of renal failure (9-10). In our case, the patient was anicteric and thrombocytopenia was present along with renal function impairment. However, the renal function was restored to normal.

The diagnosis of human leptospiral infection relies on either the isolation of the causative organism from body fluids or the demonstration of a rise in specific serum antibodies. Isolation is difficult and not always successful, and the detection of leptospires in body fluids using dark-field microscopy is limited owing to proteinaceous filaments (pseudoleptospires) (11). The microscopic agglutination test (MAT) is the reference test for diagnosis and detects antibodies at serovar levels (12). In our patient, we diagnosed leptospirosis using MAT.

Leptospirosis can be treated only if it is diagnosed early to avoid complication. An untreated patient condition can develop a more severe disease, and this can be potentially fatal. Treatment with antibiotics should be started before confirming whether a patient has leptospirosis. This is because the test results and subsequent diagnosis may take longer time to process, and the condition of the patient can become more serious. Several antibiotics are used to treat this disease, such as ampicillin, ceftriaxone, doxycycline, and penicillin (13).

CONCLUSION

Leptospirosis is a fatal disease. Antibiotics and supporting treatments should be used for the patients immediately. If the disease is not treated appropriately within the early days, it may progress in severity. It should be considered especially for the patients with fever; thrombocytopenia; elevations at transaminases, creatine kinase, and bilirubin; and/or impairment of kidney function tests. Early diagnosis and treatment can reduce mortality.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Conceived and designed the experiments or case: CB, EA. Performed the experiments or case: CB, EA. Analyzed the data: CB, EA. Wrote the paper: CB. All authors have read and approved the final manuscript.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

1. Lim VK. Leptospirosis: a re-emerging infection. Malaysian J Pathol 2011; 33(1): 1-5.
2. Farr RW. Leptospirosis. Clin Infect Dis 1995; 21(1): 1-6; quiz 7-8. [CrossRef]
3. Levett PN. Leptospirosis. Clin Microbiol Rev 2001;14(2): 296-326. [CrossRef]
4. Sambasiva RR, Naveen G, P B, Agarwal SK. Leptospirosis in India and the rest of the world. Braz J Infect Dis 2003; 7(3): 178-93.
5. Gwaltney J, Bisno A, Mandell G, Bennett J, Dolin R, editors. Principles and practice of infectious disease New York: 1995 Vol. 1, pp. 566-72.
6. Nicodemo AC, Del Negro G, Amato Neto V. Thrombocytopenia and leptospirosis. Rev Inst Med Trop Sao Paulo 1990; 32(4): 252-9. [CrossRef]

7. Davenport A, Rugman FP, Desmond MJ, Ganta R. Is thrombocytopenia seen in patients with leptospirosis immunologically mediated? J Clin Pathol 1989; 42(4): 439. [CrossRef]
8. Edwards CN, Nicholson GD, Everard CO. Thrombocytopenia in leptospirosis. Am J Trop Med Hyg 1982; 31(4): 827-9. [CrossRef]
9. Coursin DB, Updike SJ, Maki DG. Massive rhabdomyolysis and multiple organ dysfunction syndrome caused by leptospirosis. Intensive Care Med 2000; 26(6): 808-12. [CrossRef]
10. Higgins R. A minireview of the pathogenesis of acute leptospirosis. Can Vet J 1981; 22(9): 277.
11. Faine S, Adler B, Christopher W, Valentine R. Fatal congenital human leptospirosis. Zentralbl Bakteriol Mikrobiol Hyg A 1984; 257(4): 548. [CrossRef]
12. Cinco M, Balanzin D, Banfi E. Evaluation of an immunoenzimatic test (ELISA) for the diagnosis of leptospirosis in Italy. Euro J Epidemiol 1992; 8(5): 677-82. [CrossRef]
13. Phimda K, Hoontrakul S, Suttinont C, Chareonwat S, Losuwanaluk K, Chueasuwanchai S, et al. Doxycycline versus azithromycin for treatment of leptospirosis and scrub typhus. Antimicrob Agents Chemother 2007; 51(9): 3259-63.[CrossRef]