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A Rare Case Report of Leptospirosis Infection with Jaundice and Acute Kidney Injury Symptoms into the Intensive Care Unit

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Abstract

INTRODUCTION: Leptospirosis, often known as Weill' disease, is a zoonotic disease caused by spiral-shaped bacteria of the Leptospira genus. This disease is spread by direct or indirect contact with infected animals' urine, such as rats.

CASE REPORT: The case was a 49-year-old man came to Emergency Room DR. Moewardi Hospital Surakarta with symptoms of yellowing of the skin and eyes for 10 days before come to hospital. Patients who complain of fever, vomiting, and urine had changed to a brownish yellow like tea and pain all over the body. The patient brought laboratory results of leukocytosis, increase in transaminases, increase in urea and creatinine with clinical symptoms acute kidney injury with blood urea nitrogen 122.3 mg/dL, and serological examination of leptospira antibodies showed positive results.

CONCLUSION: This patient was treated in the intensive care unit room with treatment in the form of cito hemodialysis and administration of the antibiotic ceftriaxone 2 g/12 h. The patient went home after 5 days of treatment.

Introduction

Leptospirosis is an important zoonotic disease in the world and its frequency is high in tropical countries. The disease is caused by spirochetes of the genus Leptospira in humans exposed to urine from infected animals. The genus Leptospira is classified into 20 species categorized into over 300 serovars grouped into more than 24 serogroups [1], [2].

Based on reports of recent years, the global incidence of leptospirosis cases is estimated from 0.1–1/100,000/year in temperate climates and 10–100/100,000/year in the humid tropics. The incidence of this disease can reach more than 100/100,000/year in epidemic conditions and exposure is high in risk groups [3]. In the period 2009–2011, cases of leptospirosis in Indonesia increased. In 2012, cases decreased, namely, 222 cases and 28 deaths, but the mortality rate increased CFR 12.6% due to the increasing number of deaths in the city of Semarang. In 2013, it was reported that there were 640 cases with 60 deaths (CFR 9.37%) increasing the number of cases due to an outbreak in Sampang Madura Regency [3].

Leptospira was first identified as the cause of Weil's disease in Japan where the disease is common in coal miners [2]. Rodents and domestic mammals such as cattle, cats, pigs, and dogs are the main reservoirs [4]. Infection in humans comes from direct or indirect contact, directly to the urine of infected animals. Leptospirosis enters the circulatory system through wounds and abrasions to the skin or mucosa [2], [4].

Complaints in infected patients vary from mild, only flu such as syndrome, fever, myalgia and headache to severe, jaundice, impaired kidney function, hemorrhagic diathesis, or also known as Weil's disease, which is mainly caused by serovars Icterohemorrhagiae [1], [2]. Prompt and appropriate diagnosis is needed to provide adequate therapy.

This case report presents a case of leptospirosis infection in a 49-year-old man. From laboratory examination, leukocytes were 30.54 x 10^3/μL, SGOT 93 U/L, SGPT 72 U/L, BUN 122.3 mg/dL, creatinine 8.54 mg/dL, urea 262.6 mg/dL, and positive anti-leptospirosis IgM. This patient was treated in the form of cito hemodialysis and therapy antibiotic ceftriaxone 2 g/12 h.

Case Presentation

A male patient, 49 years old, came to the emergency room DR. Moewardi Hospital Surakarta with symptoms of yellowing of the skin and eyes for 10 days before come to hospital. It was said that the jaundice was not very visible, but then it got worse so that the patient and his family realized it. The complaint is also accompanied by a change in the color of the patient's urine. The patient said that the color of his urine had changed to a brownish yellow like tea. This complaint is not accompanied by pain when urinating. The patient also complained of fever for 2 days before come to hospital. Fever is said to appear suddenly, high, and persistent. The patient said that the fever was like a burning feeling throughout the body and did not decrease with the administration of fever-reducing drugs.

The patient also complained of weakness and pain all over his body for 2 days before come to hospital. Pain is said to be mainly in both legs so that it interferes with the patient's activities and does not improve with rest. The pain is stabbing and gets worse when pressed.

The patient also complained of vomiting for 8 h before come to hospital. The patient vomits with a frequency of 4 times as much as approximately one glass each time he vomits, yellowish in color containing the food consumed by the patient. Vomiting is accompanied by nausea. The patient denied the pain in the gut. The patient also said that he had not been able to urinate since this morning, defecation was said to be normal.

The patient is the head of a family who lives with his wife, two children, and his mother. The patient is a farmer who works in the fields every day. The patient said that he had a lot of rats in his house, especially in the kitchen. The patient denied history of traveling outside the city. The patient does not smoke and drink alcohol.

On general physical examination, the body weight was 70 kg, height 170 cm, general condition moderate pain, VAS 4/10, and axillary temperature 39.8°C, from the central nervous system, consciousness was obtained based on the Glasgow coma scale (GCS) E3V4M6. Special physical examination revealed positive jaundice and conjunctival injection in both eyes, respiratory system obtained 24 breaths/min with a vesicular type in both lung fields, without rhonchi and no wheezing, SpO_2 96%, from the cardiovascular system blood pressure was found to be 90/50 mmHg, with a pulse 97 beats/min. From the gastrohepatobiliary system, the liver and spleen are not palpable, and in the musculoskeletal system, there is tenderness in the gastrocnemius muscle.

On an EKG examination with the conclusion, pulse rate was 100 beats/min, sinus rhythm on blood chemistry examination is shown in Table 1. Serological examination of HbSAg was negative, chest X-ray showed no abnormalities. Then, the patient underwent serological examination of leptospira antibodies showed positive.

Table 1: Laboratory parameters of the patient

Laboratory	10.1.2022	11.1.2022	12.1.2022	13.1.2022
WBC (×10^3 mmc)	30,540	22,782	18,500	17,290
Hemoglobin (g/dL)	10.1	10.5	11.5	11.4
Hematocrit (%)	29	29	32	32
PLT (×10^3 mmc)	45,000	60,000	112,000	122,000
SGOT (U/L)	93	75	54	35
SGPT (U/L)	72	53	44	32
Creatinine (mg/dL)	8.54	6.4	1.1	1.2
Urea (mg/dL)	262.6	147.8	94	43
BUN (mg/dL)	122.3	68.8	43	20
Sodium (mmol/L)	125	127	131	133
Potassium (mmol/L)	6.4	5.3	3.9	3.5
Chloride (mmol/L)	97	97	99	98
Albumin (g/dL)	2.7	2.8	3.0	3.1

WBC: White blood cells, PLT: Platelets, SGOT: Serum glutamic oxaloacetic transaminase, SGPT: Serum glutamic pyruvic transferase, BUN: Blood urea nitrogen.

Hence, the patient was diagnosed with leptospirosis infection (weil disease, acute kidney injury [AKI] EC renal, and thrombocytopenia), AKIN Stage III dd acute on CKD, hypoalbumin, hyponatremia, and hyperkalemia. Then, the patient was treated with O2 non-rebreathing mask 10 liters/min, IVFD NaCl 0.9% 16 tpm micro, Inf. Renxamin 1fl/24 h, Vit K inj 10 mg/8 h, Omeprazole inj 40 mg/12 h, curcuma 3 × 1, VIP albumin 3 × 1, Tranexamic acid inj 3 × 500 mg IV, Ceftriaxone inj 2 g/12 h, D40% 50 cc with 10 units of rapid insulin IV, and urgent hemodialysis.

In the hospital, patients are monitored specifically in the Intensive Care Unit room. The patient underwent a second hemodialysis on January 11, 2022. From the management above, the last patient's condition after hemodialysis where subjectively the patient had no complaints, general status GCS E4V5M6, SpO_2 99% on nasal canul 3l pm, BP: 135/84 mmHg, RR: 16×/min, pulse: 81×/min, axillary temperature 36.3°C, VAS: 0, jaundice and conjunctival injection are still in both eyes, abdominal distension examination is absent, positive bowel sounds are normal, splenic liver is not palpable, gastrocnemius pain is gone. From the laboratory examination is shown in Table 1.

The patient was diagnosed with leptospirosis (improved) – Weil's disease and allowed for move from Intensive Care Unit. The patient went home after 5 days of treatment.

Discussion

This patient was diagnosed with leptospirosis (Weil disease) because the history and physical examination found signs and symptoms of leptospirosis with positive serological results for leptospirosis [5]. From the patient's history, it was found that there were signs pointing to leptospirosis (Weil's disease) because according to the theory, there were complaints of fever,

yellowing of the skin and eyes, pain all over the body, especially in both legs, nausea, and vomiting, unable to urinate since this morning [5], [6]. Moreover, the patient belongs to a high-risk group with a lot of rats in the patient's house and the patient's work as a farmer [1].

Leptospirosis infection on physical examination is generally found, fever, gastrocnemius muscle tenderness, and conjunctival injection. On examination of the patient's complete blood count according to the picture of leptospirosis, it was found that there was leukocytosis where if the leukocytes were subnormal with neutrophilia it would be very possible to have leptospirosis, in severe cases, thrombocytopenia could occur. In patients, there was an increase in SGOT and SGPT, followed by a decrease in albumin values, there was also an increase in total bilirubin according to the picture of leptospirosis. On renal physiology examination, it was found that the BUN, urea, and creatinine values were increased which indicated that kidney damage had occurred according to the patient's condition [2], [5].

In severe leptospirosis, cardiac abnormalities can be seen on the ECG, but in this patient, the ECG is normal. In leptospirosis, the chest X-ray can be normal, edema and bleeding may also occur, resulting in hemorrhagic lobar pneumonia [4], [6].

The definitive diagnosis of leptospirosis is confirmed by the discovery of bacteria in blood, urine, or cerebrospinal fluid cultures or by the discovery of antibodies to bacteria in the blood and serology [5], [6]. This patient had a positive anti-leptospirosis IgM serologic examination so that the patient could be diagnosed with leptospirosis infection. In Weil's disease, which is severe leptospirosis, jaundice is found, signs of renal impairment with thrombocytopenia and according to the patient's condition at the time of admission. Monitoring of patients with Weil's disease is very important because it can get worse. Therefore, it is necessary to check the complete blood count every day to see the improvement of platelets and Hb values. Checking BUN, urea, and creatinine every day because of the occurrence of kidney failure is the main cause of death in patients with leptospirosis [5], [6].

AKI EC renal is established when the increase in SCr 0.3 mg/dl (26.5 mol/l) within 48 h or an increase in SCr ≥ 1.5 times the normal value that occurs not more than 7 days or with a urine volume < 0.5 ml/kg/h in 6 h [5], [6].

Indications for cito hemodialysis refer to clinical criteria for poor general condition (uremic encephalopathy, uremic pericarditis, refractory pulmonary edema, fluid overload, anuria > 5 days) and laboratory criteria for metabolic acidosis (pH < 7.1), blood urea > 200 mg/dl, and hyperkalemia >7 mEq/L [5]. In this patient, urea levels were found to reach >200 mg/dl. Tranexamic acid is given to prevent fibrinolytics thereby reducing upper gastrointestinal bleeding [6], [7].

Ceftriaxone antibiotics 2 g/IV per day as initial therapy because antibiotics in leptospirosis need to be given quickly to prevent complications. The use of cephalosporins is used equally for the treatment of severe leptospirosis and ceftriaxone or cefotaxime has been approved although the use of penicillin is still recommended for severe cases [5], [6].

Conclusions

Cephalosporin antibiotics such as ceftriaxone need to be given immediately to prevent complications from leptospirosis. Handling in the form of cito hemodialysis immediately carried out because of the results of the laboratory urea > 200 mg/dL.

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