Diagnosis of Acute Pancreatitis as a Complication of Weil's Disease

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ABSTRACT

Weil's disease is a severe form of leptospirosis and caused by pathogenic strain of Leptospira. Weil's disease affects many organs including pancreas. Acute pancreatitis in leptospirosis is quite rare. Diagnosis of acute pancreatitis in Weil's disease is based on clinical features, biochemical, and radiologic examination. Sometimes histopathological examination is urged to confirm diagnosis. Management of acute pancreatitis in severe leptospirosis comprise of antibiotic for leptospirosis and supportive treatment for the acute pancreatitis. Early and appropriate treatment is mandated as it was studied to significantly decrease mortality risk

We reported a case of 42 year old man suffering Weil's disease with multi organ complications. Patient complained diffuse abdominal pain. Although the abdominal ultrasonography did not show any abnormalities of the pancreas, the amylase and lipase showed striking results. He recovered uneventfully. This case report demonstrated acute pancreatitis as one of severe leptospirosis complications.

Keywords: *acute pancreatitis, Weil's disease, severe leptospirosis*

ABSTRAK

Penyakit Weil merupakan suatu bentuk leptospirosis berat yang disebabkan oleh Leptospira galur patogenik. Penyakit Weil mengakibatkan komplikasi ke berbagai macam organ termasuk pankreas. Pankreatitis akut pada penyakit Weil merupakan penyulit yang jarang ditemukan. Diagnosis pankreatitis akut didasarkan pada gambaran klinis, laboratorium, dan radiologis. Kadang pemeriksaan histopatologis diperlukan untuk konfirmasi diagnosis. Tatalaksana pankreatitis akut pada leptospirosis yang berat terdiri atas antibiotik antileptospira dan terapi suportif untuk pankreatitis akut. Tatalaksana yang tepat dan dini amat direkomendasikan oleh berbagai studi, yang secara signifikan menunjukkan penurunan risiko mortalitas yang lebih besar.

Dilaporkan seorang laki-laki 42 tahun dengan penyakit Weil dan penyulit multi organ. Pasien mengeluh nyeri perut difus. Hasil ultrasonografi pankreas dalam batas normal, namun didapatkan hasil amilase dan lipase yang tinggi. Laporan kasus ini menunjukkan adanya pankreatitis akut sebagai salah satu penyulit penyakit Weil.

Kata kunci: *pankreatitis akut, penyakit Weil, leptospirosis berat*

INTRODUCTION

Leptospirosis is a worldwide health problem. It is the most wide spread zoonosis caused by spirochetes from genus *leptospira,* particularly in warm and humid tropical and subtropical areas. The problem is attributed not only to environmental and climatic

conditions but also with increased risk of contact with leptospira caused by agricultural practices and poor waste disposal. This disease is now regarded as one of the reemerging infectious diseases. Transmission of these bacteria occurs when humans come into direct or indirect contact with urine of infected animals.[1-11]

Annual incidence is estimated from 0.1 to 1 per 100,000 in temperate climates and 10 to 100 per 100,000 in humid tropics. When outbreak occurs, its incidence is more than 100 per 100,000.[4] The mortality rates exceeding 10%.[10]

The disease spectrum is very broad. It varies from subclinical infection, anicteric fever, to severe and fatal disease known as Weil's disease. Leptospirosis affects many organs such as central nervous system, eye, heart, lungs, liver, and kidney. This disease can also affect pancreas.[2,6,8]

Acute inflammation of pancreas represents rare manifestation of Weil's disease. The incidence is unknown. Few cases were reported in literature. Two cases were reported in World Journal of Gastroenterology.[13]

Symptoms and signs are similar to acute pancreatitis caused by other etiologies. The most common symptoms are fever, abdominal pain, nausea, vomiting, diarrhea, and loss of appetite.[12] Diagnosis of acute pancreatitis in Weil's disease is suspected clinically and requires biochemical and radiologic examination and sometimes histopathological evidence to confirm diagnosis.[13]

Management of acute pancreatitis in severe leptospirosis encompasses antibiotic for leptospirosis and supportive treatments for acute pancreatitis. Early and appropriate treatment is very important as it can decrease mortality risk.

CASE ILLUSTRATION

A 42 year old male was admitted to Cipto Mangunkusumo Hospital with decrease of consciousness since one day prior to admission. Three weeks before admission, there was a flood in patient's living environment. He had one week history of fever, decrease of appetite, diffuse abdominal pain and calves pain before hospital admission. In the last three days, his micturition frequency decreased and his urine color was tea-like appearance. Since one day before admission, his consciousness decreased. He cleaned up the garden daily.

On physical examination at admission, Glasgow Comma Scale was E3M6V4, and vital signs were within normal limits. Body weight was 55 kg, and height was 170 cm. He was icteric and there were cilliary injections. The fluid from naso gastric tube (NGT) was green. There was tenderness in all abdominal quadrants, especially in epigastric area. Bowel sounds was normal. Calves tenderness was positive bilaterally. Urine output was 4.54 mL/kg body weight/hour.

The laboratory result on admission showed hemoglobin (Hb) 12.3 g/dL, hematocrit (Ht) 33.5%, mean corpuscular volume (MCV) 81.2 fL, mean corpuscular hemoglobin (MCH) 29.9 pg, mean corpuscular hemoglobin concentration (MCHC) 36,9 g/dL, leukocyte 13,000/uL, thrombocyte 223,000/uL, basophil 0%, eosinophil 0%, stab neutrophil 2%, segmented neutrophil 77%, lymphocyte 13%, and monocyte 8%, uric acid 21.35 mg/dL, albumin 3.09 g/dL, total bilirubin 18.78 mg/dL, direct bilirubin 18.69 mg/dL, ureum 557.4 mg/dL, creatinine 6.6 mg/dL, ALT 70 u/L, AST 50 u/L. Potassium level 6.4 mEq/L, procalcitonin 1.08 ng/mL, amylase 224 u/L (normal value < 53 u/L) and lipase 376 u/L (normal value < 60 u/L). Urine analysis revealed protein +1, and abundant erythrocyte sediments. The result of anti Leptospira IgM was positive. Blood glucose, sodium, chloride, prothrombin time, and activated partial thromboplastin time were within normal limits. Hepatitis B and C seromarkers were negative. Abdominal ultrasonography showed chronic liver disease, chronic kidney disease, bilateral hydronephrosis, and bile sludge without any abnormalities in pancreas. The APACHE II score of this patient was 12 with predicted death rate 14.6%.

Diagnosis of acute pancreatitis in Weil's disease was made. Another problems in this patient are decrease of consciousness caused by suspected uremic encephalopathy, acute on chronic kidney disease with hyperkalemia and bilateral hydronephrosis. Intravenous fluid resuscitation was given. Patient was given antibiotic ceftriaxone 2 gram once daily intravena. Two days later, the value of amilase increased to 303 u/L and lipase increases to 433 u/L. Within 3 days of admission, patient was given enteral nutrition. Three days later, there was a decrease of amylase into 295 u/L and lipase into 401 u/L. Procalcitonin decreased to 0.59 ng/mL. Five days later the value of amylase decreased to 196 u/L and lipase decreased to 231 u/L.

Patient was hospitalized for 19 days and he recovered well. He regained his normal consciousness. Although the amylase and lipase were still high, he did not complain any abdominal pain nor nausea and vomiting. His appetite went back to normal. The latest laboratory

findings before discharge were Hb 10.1 g/dL, Ht 32.3%, leukocyte 3,860/uL, thrombocyte 381,000/uL, MCV 89.5 fL, MCH 28 pg, MCHC 31.3 g/dL, basophil 1.6%, eosinophil 7%, neutrophil 25.9%, lymphocyte 52.3%, monocyte 13.2%, total bilirubin 0.99 mg/dL, direct bilirubin 0.6 mg/dL, ALT 31 u/L, AST 28 u/L, sodium 135 mEq/L, potassium 4.42 mEq/L, chloride 102.1 mEq/L, ureum 48 mg/dL, creatinin 0.9 mg/dL and measured 24 hour creatinine clearance 90.56 mL/minutes/1.73 m^2. The value of amylase and lipase on 18th day of hospitalization was 221 u/L and 229 u/L. All laboratory parameters went back to normal except amylase and lipase. The discrepancy between clinical condition and the value of amylase and lipase needs further investigation, but it could not be done because the patient asked for early discharge.

DISCUSSION

Leptospirosis is caused by pathogenic spirochetes of the genus Leptospira.[6,8,10] Leptospires infect humans through the mucosa (usually conjuctival and possibly oral or tonsillar) or through macerated, punctured or abraded skin. The organisms resist human innate immunity, proliferate in bloodstream or extracellularly within organs and then disseminate hematogenously to all organs. Incubation period is between 5-14 days with range 2-30 days. It can be isolated from blood during 3-10 days of clinical illness.[14]

In this case, patient had history of flood in his living environment 3 weeks before admission and about 2 weeks before the onset of symptoms. The incubation period fits with the theory in the literature.

Pancreatitis has also been associated with leptospirosis which presents with hyperamylasemia in more than 60% patients. Pancreatitis is a secondary complication of the disease. Acute pancreatitis usually appears in immune phase of leptospirosis. Clinical and immunological aspects of pancreatic injury in leptospirosis are not fully clear and require further research.[15,16] The most consistent finding in leptospirosis induced acute pancreatitis is vasculitis of capillaries manifested by endothelial edema, necrosis, and lymphocytic infiltration. Capillary vasculitis is commonly found in pancreas. The resulting loss of red blood cells and fluid through enlarged junctions and fenestrate causes secondary tissue injury.[17] The small vessel vasculitis and ischemic injury leading to activation of proteolytic enzymes and autodigestion.[18]

The onset of acute pancreatitis in this patient is not clearly defined although patient had complained of diffuse abdominal pain one week before admission. In this case, it is uncertain whether the acute pancreatitis occured in leptospiremia or immune phase.

The symptoms and signs of leptospirosis are fever, chills, severe headache, nausea, vomiting, myalgia, muscle pain (especially the calves, back and abdomen), rash, sore throat, and abdominal pain. Mental confusion may be evident. The physical examination shows conjunctival suffusion, jaundice, muscle tenderness (especially calves tenderness), lymphadenopathy, pharyngeal injection, rash, hepatomegaly, and splenomegaly. The rash may be macular, maculopapular, erythematous, urticarial, and hemorrhage.[14,19]

Symptoms and signs of this patient does not fit with all the description above. He complained fever and calves pain. Based on clinical findings of fever, jaundice, calves tenderness and deterioration of kidney function, patient was suspected of having severe form of leptospirosis or Weil's disease. The result of anti leptospira IgM was positive and it confirmed the diagnosis. He also complained diffuse abdominal pain and the result of amylase and lipase increased over than 3 times upper normal limits. Based on Indonesian national consensus of acute pancreatitis, the diagnosis of acute pancreatitis needs minimal 2 from 3 criteria: typical abdominal pain, increase of amylase and/or lipase equal or more than three times upper normal limit, and typical appearance of acute pancreatitis on sonography or CT scan.[20] Patient was eventually diagnosed acute pancreatitis secondary to severe leptospirosis based on abdominal pain, increase of amilase and lipase over than three times upper normal limits, and confirmed severe leptospirosis diagnosis.

Various effective antibiotics are available for the treatment of leptospirosis. Penicillin is drug of choice especially for severe leptospirosis and effective if started within first four days of illness. Another choice was ceftriaxone.

This patient was given ceftriaxone intravenous 2 grams per daily for treatment of leptospirosis because its efficacy is not inferior compared to penicillin and supportive treatment for acute pancreatitis.

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