J Microbiol Immunol Infect
2003;36:285-287

Acute acalculous cholecystitis and pancreatitis in a patient with concomitant leptospirosis and scrub typhus

Ning-Chi Wang, Yuen-Hua Ni, Ming-Yieh Peng, Feng-Yee Chang

Division of Infectious Diseases and Tropical Medicine, Department of Internal Medicine, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan, ROC.

Received: January 19, 2003 Revised: March 4, 2003 Accepted: April 21, 2003

Concomitant leptospirosis and scrub typhus is rare. The spectrum of clinical severity for both scrub typhus and leptospirosis ranges from mild to fatal. Acute pancreatitis and cholecystitis are infrequent complications in adult patients with either leptospirosis or scrub typhus. We report a case of leptospirosis and scrub typhus coinfection in a 41-year-old man presenting with acute acalculous cholecystitis, pancreatitis and acute renal failure. Abdominal computed tomography revealed edematous change of the gallbladder without intrahepatic or pancreatic lesions. The patient was successfully treated with doxycycline and ceftriaxone, and supportive management.

Key words: Cholecystitis, leptospirosis, pancreatitis, scrub typhus

Leptospirosis is a worldwide anthropozoonosis characterized by a broad spectrum of clinical manifestations, which vary from a mild febrile illness of short duration to a severe infection with jaundice and renal failure. It is caused by many strains of *Leptospira*. Acute acalculous cholecystitis and acute pancreatitis have been reported as rare manifestations of leptospirosis [1-3].

Scrub typhus is an endemic zoonosis in Taiwan caused by *Orientia tsutsugamashi*. Reported severe complications of scrub typhus include pneumonitis, acute renal failure, acute respiratory distress syndrome, myocariditis, and septic shock [4-5]. However, acute pancreatitis and cholecystitis have not previously reported as complications of scrub typhus.

We report a case of coinfection with leptospirosis and scrub typhus in a 41-year-old man who presented with acute acalculous cholecystitis, pancreatitis, and acute renal failure.

Case Report

A 41-year-old man who was a commander in the military was admitted because of abdominal distension, myalgia, and yellowish skin discoloration for 1 week. He had no history of illness. Unfortunately, he had suffered from an insect bite while jogging in a campus in the mountain area of Taipei. Fever, chills, and abdominal distension developed later. Two days before admission, yellowish skin color change developed and fever and abdominal distension worsened. He visited a local hospital where jaundice and unstable hemodynamic status (blood pressure 90/60 mm Hg) were noted. He was referred to Tri-Service General Hospital under the impression of septic shock. On admission, he was in acute distress with body temperature of 36.7°C, pulse rate of 100 beats/min, respiratory rate of 36/min and blood pressure of 80/50 mm Hg. The sclerae were icteric with prominent subconjunctival suffusion. Diffuse erythema over the anterior chest and an eschar over the right inguinal region were seen. The abdomen was ovoid in shape and bowel sound was hypoactive. Tympany on percussion of the abdomen and tenderness over the right subcostal margin were found. The liver and spleen were not palpable.

The leukocyte count was 15 000 /mm^3, with 88% neutrophils and 10% lymphocytes. Hemoglobin was 12. 4 g/dL, hematocrit 35.7%, and platelet count 39 000 / mm^3. Prothrombin time (13.1/11.3 sec) and partial thromboplastin time (37.6/31.8 sec) were not prolonged. Serum sodium was 124 mmol/L (normal range, 136-146 mmol/L), blood urea nitrogen 42 mg/dL (normal range, 7-20mg/dL), creatinine 2.8 mg/dL (normal, 0.6-1.6 mg/dL), albumin 2.5 g/dL (normal, 3.8-5.1 g/dL), bicarbonate 20.7 mmol/L (normal, 24-28 mmol/L). Serum liver and pancreatic profiles were as follow: total bilirubin 12.5 mg/dL (normal, 0.2-1.3 mg/dL); alkaline phosphatase 601 U/L (normal, 64-306 U/L); aspartate

Corresponding author: Dr. Feng-Yee Chang, Division of Infectious Diseases and Tropical Medicine, Department of Internal Medicine, Tri-Service General Hospital, No. 325, Section 2, Cheng-Kung Road, Neihu, Taipei, Taiwan, 114, ROC. E-mail:fychang @ndmctsgh.edu.tw

aminotransferase 79 U/L (normal, 10-34 U/L); alanine aminotransferase 116 U/L (normal, 7-33 U/L); amylase 175 U/L (normal, 30-110 U/L) and lipase 920 U/L (normal, 23-300 U/L).

Chest radiograph and electrocardiogram (EKG) showed no abnormalities. Serologic tests for hepatitis A, B, and C disclosed positive IgG for hepatitis A and B, but seronegativity for anti-HCV. Weil-Felix test for scrub typhus was negative. Abdominal computed axial tomogram showed edematous change of the gallbladder wall (Fig.1). The pancreas and intrahepatic bile ducts were normal.

Based on suspicion of scrub typhus and clinical presentation of acute cholecystitis and pancreatitis, doxycycline 200 mg/day and cefriaxone 2 g/day were administered intravenously. Gastric decompression via nasogastric tube was also initiated on day 1 of hospitalization. On day 6, the patient's body temperature, renal function, white blood cell, and platelet count returned to normal. Pancreatic enzymes continued to rise with peak serum amylase of 210 U/L and lipase of 1531 U/L on the 7th hospital day. He was discharged after amylase had returned to 139 U/L and lipase to of 1203 U/L on day 19 of hospitalization. Leptospiral antibody examination and microscopic agglutination test (MAT) performed by the CDC revealed a titer of 1:400 for *L. interogans* serovar *bratislava*. The serology for scrub typhus revealed IgM titer ≥1:80.The diagnosis of concomitant scrub typhus and *L. interrogans* infection was established.

Discussion

Leptospirosis is an acute systemic disease characterized by diffuse vasculitis that affects many organs [3]. Icteric leptospirosis occurs in 5% to 10% of patients [6-7]. Leukocytosis with neutrophilia is usually seen in icteric leptospirosis [8] and thrombocytopenia occurs in 86% of patients with leptospirosis [9-10]. Laboratory data and leptospiral antibody examination were of great help in the diagnosis of leptospirosis in our patient. The characteristic eschar and serologic test of *O. tsutsugamushi* confirmed the diagnosis of scrub typhus.

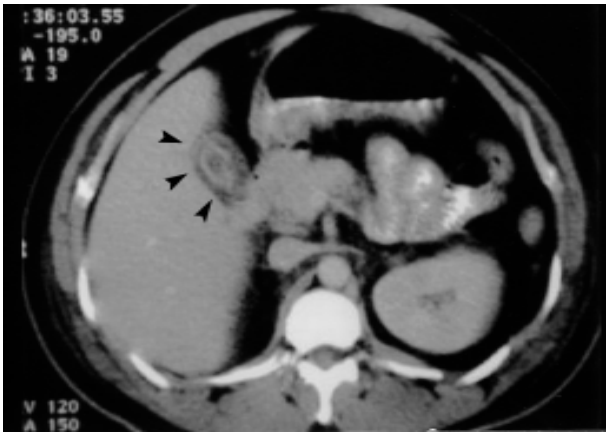

Fig. 1. Abdominal computed axial tomogram shows edematous change of the gallbladder wall.

Acute acalculous cholecystitis has been reported as a rare complication of leptospirosis in adults [1-2]. The mechanism responsible for development of acute cholecystitis may involve an intrinsic inflammatory process of the biliary tract, but the precise nature of this mechanism is not well known [3]. In our patient, abdominal computed tomography showed edematous change of the gallbladder wall but normal caliber of intrahepatic and common bile ducts. It is important to be aware of this manifestation of leptospirosis because surgical intervention under a presumptive diagnosis of obstructive jaundice may cause massive bleeding and even death [11]. Hyperbilirubinemia has been reported in scrub typhus [12] while cholecystitis has not been previously reported in scrub typhus.

Pancreatitis has been reported in leptospirosis as an infrequent complication [13,14]. Our patient had elevation of serum pancreatic enzymes, including amylase and lipase, indicating pancreatitis [15,16].

An association between renal failure and pancreatitis or elevation of serum amylase and lipase has been reported by Edward *et al* [13] and O'Brien *et a*l [14]. The diagnosis of pancreatitis in leptospirosis with renal failure is difficult. Lipase is known to have high specificity (97%-99%) for the diagnosis of pancreatitis [15,16] and is not significantly affected by change of glomerular filtration rate [17]. The increase of lipase is generally less than threefold the upper normal limit in nonpancreatic diseases [16]. Hyperamylasaemia and hyperlipasemia have been reported previously in a case of scrub typhus [5]. Pancreatitis without detectable change of pancreatic imaging is infrequent in patients with leptospirosis [2, 14,18].

Acute acalculous cholecystitis and pancreatitis are rare but important manifestations of leptospirosis. In a patient with acute acalculous cholecystitis, pancreatitis, and acute renal failure, physicians and surgeons should suspect the possibility of concomitant leptospirosis and scrub typhus. Appropriate antimicrobial treatment and supportive management can help the patient to overcome these severe infections.

References

1. Feigin RD, Anderson DC. Human leptospirosis. CRC Crit Rev Clin Lab Sci 1975;5:413-67.

2. Monno S, Mizushima Y. Leptospirosis with acute acalculous cholecystitis and pancreatitis. J Clin Gastroenterol 1993;16: 52-4.
3. Bell MJ, Ternberg JL, Feigin RD. Surgical complication of leptospirosis in children. J Pediatr Surg 1978;13:325-30.
4. Tsay RW, Chang FY. Serious complication in scrub typhus. J Microbiol Immunol Infect 1998;31:240-4.
5. Chi WC, Huang JJ, Sung JM, Lan RR, Ko WC, Chen FF. Scrub typhus associated with multiorgan failure: a case report. Scand J Infect Dis 1997;29:634-5.
6. Heath CW Jr, Alexander AD, Galton MM. Leptospirosis in the United States. N Engl J Med 1965;273:857-64.
7. Heath CW Jr, Alexander AD, Galton MM. Leptospirosis in the United States.Analysis of 483 cases in man, 1949,1961. N Engl J Med 1965;273:915-22.
8. Edwards GA, Domm BM. Human leptospirosis. Medicine 1960;39:117-56.
9. Nicodemo AC, Del Negro G, Amato Neto V. Thrombocytopenia and leptospirosis. Rev Inst Med Trop Sao Paulo 1990;32:252-9.
10. Nicodemo AC, Medeirps N, Del Negro G, Amato Neto V. Hematologic changes in leptospirosis. Rev Inst Med Trop Sao Paulo 1989;31:71-9.
11. Edwards GA, Weir TF. Leptospiral jaundice simulating common duct obstruction: report of a case. Am Surgeon 1964;30:619-22.
12. Yang CH, Hsu GJ, Peng MY, Young TG. Hepatic dysfunction in scrub typhus. J Formos Med Assoc 1995;94:101-5.
13. Edwards CN, Evarard CO. Hyperamylasemia and pancreatitis in leptospirosis. Am J Gastroenterol 1991;86:1665-8.
14. O'Brien MM, Vincent JM, Person DA, Cook BA. Leptospirosis and pancreatitis: a report of ten cases. Pediatr Infect Dis J 1998; 17:436-8.
15. Steinberg WM, Goldstein SS, Davis ND, Shamma'a J, Anderson K. Diagnostic assays in acute pancreatitis. A study of sensitivity and specificity. Ann Intern Med 1985;102:576-80.
16. Ventrucci M, Pezzilli R, Gullo L, Plate L, Sprovieri G, Barbara L. Role of serum pancreatic enzyme assays in diagnosis of pancreatic disease. Dig Dis Sci 1989;34:39-45.
17. Buchman AL, Ament ME, Moukarzel A. Total serum amylase but not lipase correlates with measured glomerular filtration rate. J Clin Gastroenterol 1993;16:204-6.
18. Casella G, Scatena LF. Mild pancreatitis in leptospirosis infection. Am J Gastroenterol 2000;95:1843-4.

ERRATUM

The possible role of electromagnetic fields in bacterial communication

Maxim V Trushin

Journal of Microbiology, Immunology and Infection vol.36 no. 3, pp.153-160.
The email address of the corresponding author, Dr. Maxim V Trushin, was inadvertedly printed as mtruhin@mail.ru. It should be mtrushin@mail.ru