Case Report

Acute Abdomen Caused by Brucellar Hepatic Abscess

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Brucellosis is a zoonotic infection that is transmitted from animals to humans by ingestion of infected food products, direct contact with an infected animal, or aerosol inhalation. The disease is endemic in many countries, including the Mediterranean basin, the Middle East, India, Mexico, Central and South America and, central and southwest Asia. Human brucellosis is a systemic infection with a wide clinical spectrum. Although hepatic involvement is very common during the course of chronic brucellosis, hepatic abscess is a very rare complication of Brucella infection. We present a case of hepatic abscess caused by Brucella, which resembled the clinical presentation of surgical acute abdomen. [Asian J Surg 2007;30(4):283–5]

Key Words: acute abdomen, Brucella, brucelloma, hepatic abscess, percutaneous drainage

Introduction

Brucellosis is a zoonotic infection transmitted from animals to humans by ingestion of infected food products, direct contact with an infected animal, or inhalation of aerosols.1 The disease remains endemic in many countries, mainly in the Mediterranean basin, the Middle East, India, Mexico, Central and South America and, currently, central and southwest Asia. Human brucellosis is a systemic infection with a wide clinical spectrum.1 Although hepatic involvement is very common during the course of chronic brucellosis, hepatic abscess is a very rare complication of Brucella infection, with only 42 previously reported cases in the medical literature.2,3 We present a case of hepatic abscess caused by Brucella, which resembled the clinical presentation of surgical acute abdomen.

Case report

A 48-year-old man, a farmer dealing with stockbreeding, was admitted to the emergency department with upper right quadrant abdominal pain, fatigue, nausea, vomiting and high fever. His symptoms began 2 days before admission. For the previous 2 weeks, he suffered from a slight evening fever and associated sweating. Physical examination revealed moderate splenomegaly, tenderness, abdominal guarding, and rebound tenderness in the right upper quadrant. The symptoms of peritoneal irritation in the right upper quadrant of the abdomen clinically suggested a surgical acute abdomen. He had a fever of 38.1°C. Abnormal laboratory findings were as follows: haemoglobin, 11.7 g/dL; elevated white blood cell count, 11,400/mm3 with 70% neutrophils; increased erythrocyte sedimentation rate, 53 mm after 1 hour, and 85 mm after 2 hours; elevated aspartate aminotransferase level, 87 U/L; elevated alanine aminotransferase level, 96 U/L; elevated C-reactive protein level, 18.5 mg/dL (normal range, 0–1 mg/dL); decreased total protein level, 5.4 g/dL; decreased albumin level, 1.6 g/dL. Abdominal ultrasonography (US) showed a hypoechoic mass in the right lobe of the liver, splenic enlargement, bilateral pleural effusion, and intraperitoneal free fluid. Computed tomography (CT) and magnetic resonance imaging (MRI) confirmed the sonographic findings (Figure 1). Indirect haemagglutination for hydatid...
disease was negative. Wright’s agglutination test was found to be positive at 1/320 titrations, and Coombs’ anti-brucella test was also positive at 1/1,280 titrations. Blood culture remained negative. Peritoneal fluid sampling revealed transudate ascites.

Although clinical findings suggested an acute abdomen which may require surgical intervention, diagnostic serology and imaging studies made us think about an emergency which could be managed in a nonsurgical way. The patient’s history, clinical evaluation, and diagnostic serology made us suspicious about a hepatic abscess caused by brucella. Purulent material was found in CT-guided percutaneous drainage of the abscess. *Brucella melitensis* was also isolated from the abscess material.

Antibiotic therapy including streptomycin (1,000 mg/day) and doxycycline (200 mg/day) was started immediately. The clinical symptoms regressed rapidly. CT on the 20th day of treatment with antibiotic administration and concomitant percutaneous drainage showed major regression of the hepatic abscess, regression of pleural effusion and intraperitoneal free fluid (Figure 2). After ceasing streptomycin, the patient was discharged with oral administration of doxycycline (200 mg/day) for another 2 months.

**Discussion**

Brucellosis is a worldwide zoonosis with a high degree of morbidity in human beings. The *Brucella* organism is transmitted most commonly through the ingestion of untreated milk or milk products and raw meat. Symptoms of brucellosis are nonspecific. The onset may be an abrupt acute febrile illness, chronic infection, or localized infection and patients may have gastrointestinal complaints. The diagnosis can be established according to the isolation of *Brucella* spp. in blood or any other body fluid or tissue sample, or the presence of a compatible clinical picture together with the demonstration of specific antibodies at significant titres or seroconversion. Significant titres are considered to be Wright’s seroagglutination ≥ 1/160 or a Coombs’ antibrucella test ≥ 1/320. Use of a CO2 detection system for blood culture provides more sensitive and rapid results than standard methods. Serum antibodies to *Brucella* can also be detected by enzyme-linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR). The yield of blood cultures in patients with uncomplicated acute brucellosis is very high (70–80%). However, in the literature it was reported that the yield of blood cultures and Wright’s seroagglutination in chronic hepatosplenic abscesses are very low adding to the diagnostic difficulty. Coombs’ antibrucella test, though, is much more sensitive, since it enables detection of non-agglutinant IgG antibodies, which appear in slower evolving infections and in cases of relapse of the disease.

According to this data, our case might be interpreted as an acute brucellar hepatic abscess. Hepatic and/or splenic involvement during the course of brucellosis is very common and presents with hepatomegaly and/or splenomegaly. Although in these cases, histopathologic examination reveals a nonspecific or granulomatous hepatitis, its clinical expression is usually mild, and responds rapidly to conventional treatment, so that they are not in fact considered true focal complications of the disease.
Hepatic abscess caused by brucella (or hepatic brucellosis) is a rare type of hepatic manifestation of Brucella, and it is noted only in 1.7% of patients with brucellosis.2,5 The clinical and pathological features of hepatosplenic abscesses of brucellar aetiology are not uniform. There is some confusion in the literature, since no clear distinction is made between small, multifocal abscesses which can be detected in the acute forms of the disease, and which have a very favourable prognosis with medical treatment, and other types of abscesses with an indolent course and a much worse prognosis, which represent true focal complications.1 Abdominal pain from hepatic abscesses may occur.3,5 The clinical manifestation can mimic malignant liver tumours or pyogenic liver abscess.1 The abscess can serve as a source of bacteraemic seeding.

There are several characteristic imaging features like central calcification and peripheral necrosis of brucellar hepatic abscesses which can be shown on US, CT, and MRI, but they are not specific.2,6 Brucella can rarely be isolated from the liver abscesses.7 There were also several case reports of spontaneous bacterial peritonitis secondary to brucellosis infection.8,9 Peritonitis is an uncommon complication in brucellosis.10 Although tenderness, guarding, and rebound tenderness in the upper right quadrant of the abdomen might be interpreted as peritonitis caused by Brucella, we were not able to prove this through laboratory examination of the peritoneal ascites fluid in our case. Absence of any disorder that could cause septic fever and pyogenic abscess, such as cholangitis, cholecystitis or appendicitis and negative blood cultures excluded the diagnosis of pyogenic liver abscess. Negative indirect haemagglutination test for hydatid disease also excluded the diagnosis of pyogenic liver abscess. Negative indirect haemagglutination test for hydatid disease also excluded the diagnosis of infected hydatid cyst of the liver. Isolation of Brucella melitensis from the abscess material, positive serological tests, history, imaging studies associated with the clinical picture of the patient, and complete response to antibiotic therapy and drainage confirmed the diagnosis of brucellar hepatic abscess.

The combination of doxycycline and an aminoglycoside for 4 weeks followed by the combination of doxycycline and rifampin for 4–8 weeks is the most effective regimen. Relatively short courses of treatment with antibiotic combinations have similarly been associated with high rates of relapse.4 Most patients with brucellosis recover completely without lasting sequelae. The relapse rate is approximately 10%. Even before the discovery of antibiotics, the mortality rate was < 2% and endocarditis was most frequently the cause of death. Although the prognosis is generally excellent, morbidity due to brucellosis remains significant, its severity depending on the infecting Brucella species (it is greatest with Brucella melitensis) and the complications.4

We conclude that hepatic abscess is a very rare and severe complication in brucellosis. Presentation of a brucellar hepatic abscess as an acute abdominal pathology is also rare. Therefore, the most appropriate therapeutic approach is unclear. Cases not responding to medical treatment need drainage of the brucellar hepatic abscess, either percutaneous or surgical. According to our case, we suggest initial percutaneous drainage of the large, solitary hepatic abscess in order to confirm the causative agent as Brucella, combined with antibiotic therapy to shorten the recovery period of the patient. Surgical drainage should be reserved for non-responding patients in whom percutaneous drainage has failed.

References