

A case of acalculous cholecystitis or *Brucella*-induced acute cholecystitis?

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Abstract

Brucella spp. is a microorganism that can cause febrile, systemic infection, especially in endemic areas. Although it causes a multisystemic involvement and creates various clinical symptoms, osteoarticular symptoms are the most common. However, *Brucella* spp. is known to be a great mimic and can cause rare, atypical presentations. In this case report, we aimed to present a 67-year-old Turkish female patient diagnosed with stony cholecystitis due to *Brucella* spp. Although rare, brucellosis can be encountered as a cause of acute cholecystitis. Although there are changes in the epidemiology of brucellosis, it is useful to keep in mind brucellosis in the differential diagnosis of many diseases, in endemic areas, especially in rural areas.

Keywords: Brucellosis, *Brucella*, Cholecystitis, Endemic, Atypical presentations

INTRODUCTION

Brucellosis is a febrile, systemic infectious disease caused by bacteria of the *Brucella* genus (1,2). Especially in underdeveloped countries, both humans and animals can be commonly affected by the disease and more than 500,000 new cases have been recorded each year (2). The *Brucella* genus has 10 subspecies, four of which are human pathogens (2). When a ranking is made in terms of pathogenicity; *B. melitensis* is the most pathogenic among human pathogens, followed by *B. suis*, and the least severe form is *B. abortus* (2).

Brucellosis is a multisystemic disease and may present with many different clinical symptoms. It is most commonly presented in focal forms and is characterized by osteoarticular symptoms at a rate of 30% (3). However, it can rarely cause biliary involvement in the form of acute cholecystitis (4).

In this report, a patient presenting with acute *Brucella* cholecystitis is presented.

CASE

A 67-year-old Turkish female presented with right upper abdominal pain, nausea and vomiting of two days duration. She was living in rural area and was a farmer. She had no history of fever or jaundice. Beginning in the epigastric region, the pain later concentrated in the right upper quadrant. She was sent to our academic medical facility out of worry about choledochal pathology owing to her ongoing discomfort. Upon physical examination, vital signs were all within normal range, the right upper quadrant of the abdomen was only mildly painful, and the Murphy's sign was positive.

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White blood cell (WBC) count was 9.70 K/ μ L (84 % neutrophils) (4-11.0 K/ μ L), alanine aminotransferase (ALT) was 140 U/L (7-45 U/L), aspartate aminotransferase (AST) was 89 U/L (8-33 U/L), total bilirubin was 4.2 mg/dL (0.3-1.0 mg/dL), alkaline phosphatase (ALP) was 171 U/L (44-147 U/L), C-reactive protein (CRP) was 10 mg/dL (0.3- 1.0 mg/dL) at the time of admission to the emergency department.

Abdominal ultrasonography performed in the emergency department revealed an increase in gallbladder size, thickening of the gallbladder wall (11 cm), biliary sludge, and a few moving stones in the gallbladder.

With these findings, the patient was admitted to the general surgery service with the diagnosis of acute calculous cholecystitis and empiric treatment with ceftriaxone 2 gr/day was started. On the third day of admission to the hospital, the patient's fever started, and therefore blood cultures were taken. The patient was questioned again and it was learned that although she was a farmer, she was also engaged in animal husbandry. Although she does not consume raw milk, it was learned that he did not fully boil the milk while making cheese. In addition, it was determined that she had low back pain and weakness but did not say this because it had been going on for a long time. *Brucella* serology was also sent from the patient in line with this information. *Brucella* Wright test titer in serum was 1/160 positive. *Brucella* spp. in blood cultures was not detected, but according to the blood results, the patient was serologically diagnosed as brucellosis.

The patient received orally combination therapy of doxycycline 100 mg twice daily and rifampin 600 mg daily. Her fever subsided, her complaints completely regressed, and she was discharged after five days of therapy. The patient's treatment was completed in six weeks and stopped. She did not show signs of recurrence within six months in the subsequent follow-ups.

DISCUSSION

Brucella spp. infections can affect many systems and present in different ways (3,5). Although patients most frequently apply to infectious diseases outpatient clinics with osteoarticular symptoms, gastrointestinal system symptoms can be seen alone or in addition to other symptoms. Non-specific gastrointestinal symptoms such as anorexia, nausea, vomiting, stomach pains, diarrhea and constipation can be seen in approximately 70 % of brucellosis patients (6-8). However, in addition to these symptoms, life-threatening gastrointestinal involvements can also be detected rarely. It is possible to evaluate pancreatitis, peritonitis, colitis, intestinal obstruction, liver involvement, spleen involvement and gallbladder involvement among these serious complications (6,7). It is rare for brucellosis to affect the bile ducts, and a limited number of *Brucella* cholecystitis cases dating back

to 1934 have been reported in the medical literature (3,4,9-13). In our case, the diagnosis of brucellosis could not be confirmed histologically or microbiologically, since the patient was not operated. However, the fact that our country is an endemic region and the patient lived in a rural area, was also engaged in animal husbandry, ate cheese made from unboiled milk, and had long-standing low back pain brought to mind brucellosis. Although it was thought to be calculous cholecystitis at first, fever despite antibiotics for calculous cholecystitis, positive brucella serological tests, and clinical response to brucellosis treatment suggest a case of cholecystitis caused by *Brucella* spp.

Brucellosis is typically transmitted by consuming raw or unpasteurized dairy products. The milk of diseased sheep, cows or goats can be contaminated with this microorganism, and if it is not pasteurized, it can be transmitted to people who eat these products (1). However, in recent years, the epidemiology of brucellosis has undergone a significant change with the spread of international travel as well as hygienic, social and political factors (14,15). The greatest significant source of contamination is still eating unpasteurized milk and dairy products, though. There is a history of consumption of unpasteurized dairy products in the cases of brucella-associated cholecystitis reported in the literature (13). There was no such history in our case, but brucellosis is an option that should always be kept in mind since we are in a brucella endemic country and the patient lives in a rural area.

Brucella spp. are located within the cell and this situation limits the antibiotic options that can be used in the treatment (1,2). Antibiotics that are active in acidic intracellular conditions are used in the treatment of brucellosis, and tetracyclines, aminoglycosides and rifampin are some of them (16). In addition to these, agents such as fluoroquinolones and trimethoprim/sulfamethoxazole can also be used as secondary options in the treatment of brucellosis (17). In studies, the most frequently used regimens in patients with a diagnosis of *Brucella* cholecystitis are doxycycline plus streptomycin or doxycycline plus rifampin, or tetracycline plus streptomycin, with treatment durations ranging from eight days to six months (3,4,9-13). Doxycycline and rifampin were used for six weeks in the treatment of our patient, and no signs of recurrence were encountered in the six-month follow-up after treatment.

CONCLUSION

In conclusion, although rare, brucellosis can be encountered as a cause of acute cholecyst. Although there are changes in the epidemiology of brucellosis, it is useful to keep in mind brucellosis in the differential diagnosis of many diseases, in endemic areas, especially in rural areas.

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Conflict of Interest

The authors declare that they have no conflict of interests regarding content of this article..

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Ethical Declaration

Informed consent was obtained from the participant and Helsinki Declaration rules were followed to conduct this study.

Authorship Contributions

Concept: FYU, SA, Design: FYU, SA, Supervising: SA, Financing: NONE, Equipment: SA, Data collection and entry: SA, Analysis and interpretation: FYU, Literature search: FYU, SS, SA, Writing: FYU, Critical review: SA, SS.

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