

- Unusual presentation of more common disease/injury

Multiple abscesses in brucellosis with Wright's test negativity

1. Luca Dutto¹,
2. Fulvio Pomero²,
3. Attilio Allione¹

1. ¹

S. Croce e Carle Hospital, Emergency Department, via Coppino 26, Cuneo, 12100, Italy

2. ²

S. Croce e Carle Hospital, Internal Medicine Department, via Coppino 26, Cuneo, 12100, Italy

1. lucadutto@yahoo.it

- Published 27 February 2009

Summary

We report a case of metastatic abscesses caused by a chronic form of brucellosis in a shepherd. When she was admitted the patient was cachectic with haematological signs of phlogosis. An abdominal computed tomography scan revealed the presence of multiple hepatic and renal abscesses with a fluid mass in the abdominal wall. The blood cultures, tuberculin skin test, and Wright reaction all gave negative results, but the brucellosis Coombs test for *Brucella* species was highly positive. Diagnosis was confirmed by a high titre of anti-Brucella IgM antibodies. The patient started antibiotic treatment with a progressive clinical improvement, but after discharge she was lost to follow-up and died 7 months later.

BACKGROUND

Simultaneous occurrence of hepatic, renal and cutaneous brucellomas is very rare, and is paradigmatic of the dissociation, typical in chronic brucellosis, of the different serologic tests.

CASE PRESENTATION

A 49-year-old woman was admitted to our department because of persistent fever, malaise and weight loss. She worked as a shepherd in a small mountain town in Piedmont, an inland region in the north-west of Italy. She was unmarried and lived alone in poor quality accommodation. She had been well until 3 years before, when she was admitted to another hospital for the same symptoms. An abdominal

computed tomography (CT) scan showed some round hepatic lesions. The biopsy revealed phlogistic tissue with fibrosis and necrosis. The Wright test was negative. After a course of antibiotic therapy, she refused further treatments and was discharged with a diagnosis of hepatic abscesses.

INVESTIGATIONS

When she was admitted to our hospital she was feverish, in a cachectic state and presenting with a tender abdominal mass on the left hypocondrial area. Her erythrocyte sedimentation rate (ESR) was 112 mm/h, C reactive protein 21 mg/dl, haemoglobin 11 g/dl, and the leucocyte count, creatinine and blood urea nitrogen (BUN) values were mildly increased. An electrocardiogram showed mild tachycardia and her chest x ray was normal. An abdominal CT scan showed multiple hypodense round shaped lesions with central calcification in the liver and kidneys (fig 1, black arrows) and a fluid mass in the abdominal wall (fig 1, white arrows). All these findings are compatible with multiple abscesses. The blood cultures, tuberculin skin test and Wright test were all negative. Pus was drained from the subcutaneous abscess and the specimen cultures were negative. As there was a strong clinical suspicion of brucellosis, the Coombs test for *Brucella* species was done and produced highly positive results (1:5120). The diagnosis was confirmed by a high titre of anti-Brucella IgM and IgG in the patient's serum.

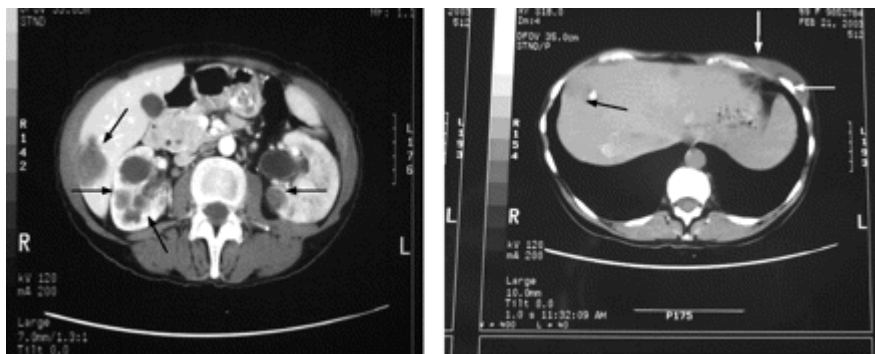


Figure 1

Multiple brucellomas revealed on computed tomography scanning.

TREATMENT

The patient was initially treated with a combined antibiotic regimen using doxycycline and streptomycin. The fever slowly disappeared and there was clinical and radiological partial improvement after 3 weeks of therapy. The patient was discharged and instructed to continue with the doxycycline therapy for a period of 6 weeks.

OUTCOME AND FOLLOW-UP

After discharge, the patient was lost to follow-up and she died 7 months later.

DISCUSSION

Brucellosis is a systemic granulomatous disease that may involve any organ system. It requires a prolonged and combined antibiotic treatment. A high prevalence of this disease is well recognised in certain geographical areas,

particularly in countries bordering the Mediterranean and the Persian Gulf, Mexico, Central America, and South America.¹ In industrialised countries, such as ours, brucellosis is largely an occupational disease that affects people who have direct contact with animals, such as veterinarians, dairy farmers, or shepherds. A common route of transmission of *Brucella* is through contact with infected animals or animal products, such as unpasteurised milk and cheese, and by direct inhalation of infected aerosolised particles. Brucellosis diagnosis is difficult because of its insidiously clinical presentation and its often inconclusive laboratory results. Fever is always present with other aspecific constitutional symptoms. Among the symptoms which should suggest a diagnosis of brucellosis, malodorous perspiration is almost pathognomonic. A common complication of brucellosis is osteoarticular disease which includes peripheral arthritis, sacroiliitis and spondylitis.²⁻⁴ Hepatic involvement in brucellosis is not rare and hepatomegaly may be documented in 15–20% of cases.¹ Liver abscesses are rare in acute brucellosis, but it is a possible complication of chronic brucellosis. The detection of calcium densities in the liver is a constant feature of the chronic nature of the disease.⁵ Other sites commonly affected are the genitourinary tract (leading to epididymitis or orchitis) and the central nervous system, but the kidneys and the skin are rarely affected. The genitourinary system is the second most common site of focal brucellosis, but renal involvement is exceptional. Only four cases of brucellar renal abscesses have been reported.⁶ Involvement of the skin is rare and only one case of liquefactive panniculitis has been described.⁶

The diagnosis of brucellosis is made by isolating the bacteria in blood or tissue, or by performing a serologic assay. Blood cultures have high specificity, but their sensitivity is quite low in the chronic forms of the disease (65%).⁷ Among the serologic methods to detect brucellosis, the serum agglutination test (Wright reaction) is the most commonly used. It detects antibodies against *Brucella* species and titres above 1:160 are considered diagnostic in conjunction with compatible clinical presentation. In endemic areas, titres of 1:320 are considered more specific for brucellosis diagnosis. Unfortunately, false negatives are common for several reasons. Lack of seroconversion may be attributed to the performance of the test in the early phase of the infection. Alternatively, it may be due to the presence of blocking antibodies or to the “prozone” phenomenon. The latter consists of the inhibition of agglutination at low dilution due to an excess of antibodies or to non-specific serum factors.⁸ In high clinical suspicion cases with a negative Wright reaction, as in our patient, it is mandatory to perform the Coombs test or the blocking antibody assay. In this case, human antiglobulins react against the blocking antibodies, allowing agglutination to be measured. An enzyme linked immunosorbent assay (ELISA) test for detection of *Brucella* antibodies is then necessary to exclude the presence of cross-reacting antibodies against other Gram negative bacteria, causing a false positive Coombs test.^{9,10} The ELISA test for *Brucella* has much more sensitivity and specificity than common agglutination tests. Among new agglutination methods, the so-called Brucellacapt (immunocapture-agglutination test) is very promising, as its sensitivity seems to be higher than the Coombs test.¹¹ Polymerase chain reaction (PCR) gives very promising results for

diagnosing brucellosis, especially in suppurative forms, but still lacks standardisation in extraction methods and set-up.¹²

In the suppurative forms of the disease the combination of medical treatment and pus drainage is required. The optimal treatment regimen for brucellosis is doxycycline for 6 weeks. The drainage of pus by means of a pigtail catheter has been reported to have a successful outcome in several cases of brucellar liver abscesses. This is why it is considered the standard method of treatment for pyogenic liver abscess.^{13,14} However, the evacuation of pus may be ineffective because of the thickness of the caseiform material that is usually found, and due to the presence of the central calcium nucleus responsible for the persistence of the infection.^{15,16} In two of the case reports concerning renal brucellomas the chosen treatments were radical nephrectomies.^{17,18} The extraordinary rarity of the simultaneous occurrence of hepatic, renal and cutaneous brucellomas, as in our case, is paradigmatic of the dissociation, typical in chronic brucellosis, of the different serologic tests.

LEARNING POINTS

- Brucellosis must always be considered as a possible cause of metastatic abscesses.
- Suppurative disease is a very infrequent form of brucellosis.
- A negative Wright reaction in the chronic form of brucellosis does not exclude the diagnosis, and the Coombs test or blocking antibody assay must be performed to confirm it.

Footnotes

- **Competing interests:** None.

REFERENCES

1. ↵
 1. Young EJ
. *An overview of human brucellosis. Clin Infect Dis* 1995; : 283–90.
2. ↵
 1. Bosilkovski M,
 2. Krteva L,
 3. Caparoska S,
 4. et al

. *Hip arthritis in brucellosis: a study of 33 cases in the Republic of macedonia (FYROM). Int J Clin Pract* 2004; : 1023–7.
3.
 1. Ariza J,
 2. Pujol M,
 3. Valverde J,
 4. et al

. *Brucellar sacroiliitis: findings in 63 episodes and current relevance. Clin Infect Dis* 1993; : 761–5.

4. ↵
 1. Solera J,
 2. Lozano E,
 3. Martinez-Alfaro E,
 4. et al

. *Brucellar spondylitis: review of 35 cases and literature survey. Clin Infect Dis 1999; : 1440–9.*
5. ↵
 1. Ariza J,
 2. Pigrau C,
 3. Canas C,
 4. et al

. *Current understanding and management of chronic hepatosplenic suppurative brucellosis. Clin Infect Dis 2001; : 1024–33.*
6. ↵
 1. Bartalot R,
 2. Garcia-Patos V,
 3. Repiso T,
 4. et al

. *Liquefactive panniculitis in the inguinal area as the first sign of chronic brucellosis. J Am Acad Dermatol 1996; : 339–41.*
7. ↵
 1. Memish Z,
 2. Mah MW,
 3. Al Mahmoud SA,
 4. et al

. *Brucella bacteraemia: clinical and laboratory observation in 160 patients. J Infect 2000; : 59–63.*
8. ↵
 1. Young EJ

. *Serologic diagnosis of human brucellosis: analysis of 214 cases by agglutination tests and review of the literature. Rev Infect Dis 1991; : 359–7.*
9. ↵
 1. Ariza J,
 2. Pellicer R,
 3. Pallares P,
 4. et al

. *Specific antibody profile in human brucellosis. Clin Infect Dis 1992; : 131–40.*
10. ↵
 1. Baldi PC,
 2. Miguel SE,
 3. Fossati CA,
 4. et al

. *Serological follow-up of human brucellosis by measuring IgG antibodies to lipopolysaccharide and cytoplasmic proteins of Brucella species. Clin Infect Dis 1996; : 446–55.*

11. [↵](#)
1. Mantecon MA,
 2. Gutierrez P,
 3. Del Pilar Zarzosa M,
 4. et al
- . *Utility of an immunocapture-agglutination test and an enzyme-linked osorbent assay test against cytosolyc proteins from Brucella melitensis B115 in the diagnosis and follow-up of human acute brucellosis. Diagn Microbiol Infect Dis 2006; : 27–35.*
12. [↵](#)
1. Navarro E,
 2. Casao MA,
 3. Solera J
- . *Diagnosis of human brucellosis using PCR. Expert Rev Mol Diagn 2004; : 115–23.*
13. [↵](#)
1. Vargas JA,
 2. Yebra M,
 3. Menedez JL,
 4. et al
- . *Abscesos hepaticos brucelares. Rev Esp Microbiol Clin 1986; : 193–4.*
14. [↵](#)
1. Vargas V,
 2. Comas P,
 3. et al
- . *Brucellar hepatic abscess. J Clin Gastroenterol 1991; : 477–8.*
15. [↵](#)
1. Canga E,
 2. Castro C,
 3. et al
- . *Abscesos hepaticos brucelares: curacion tras tratamiento medico. Gastroenterol Hepatol 1986; : 418–9.*
16. [↵](#)
1. Cuenca R,
 2. Josè San,
 3. bosch JA
- . *Absceso epatico brucelar. Enferm Infec Microbiol Clin 1987; : 317–8.*
17. [↵](#)
1. Onaran M,
 2. Sen I,
 3. Polat F
- . *Renal brucelloma: a rare infection of the kidney. Int J Urol 2005; : 1058–60.*
18. [↵](#)
1. Herrero Polo E,
 2. Andrei Garcia A,
 3. Alapont Alacreu JM
- . *Renal brucelloma: an exceptional pathology. Arch Esp Urol 2004; : 1130–3.*