

Case Report

Renal brucelloma: A rare infection of the kidney

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Abstract We report a case of renal abscess caused by brucellosis (renal brucelloma) which was treated by surgery. Renal parenchymal involvement of systemic brucellosis is a very rare condition and relapses after medical treatment, such as solid organ abscess including kidney, should be especially considered. In chronic cases, laboratory findings including polymerase chain-reaction examination is needed for definitive diagnosis.

Key words brucellosis, diagnosis, polymerase chain-reaction, renal abscess, treatment.

Introduction

Brucellosis, which is a zoonotic disease, is particularly common in many developing countries and has not yet been eradicated. It is seen mostly in farmers as an occupational disease, or in people who use unpasteurized dairy products. Diagnosis is based on history and serologic tests. Although brucellosis is a systemic disease, renal brucelloma (or renal abscess by brucellosis) is a very rare localization. We could find only three cases in the literature. Here we report a patient who developed a renal and perinephric abscess 3 months after diagnosis and treatment of brucellosis.

Case report

A 36-year-old male patient was referred to our clinic with a computed tomography (CT) finding of a localized perinephric soft tissue mass with necrotic and cystic areas. He had a history of diagnosis of brucellosis 3 months ago. Although the patient lived in the city, he regularly consumed dairy products, such as cottage cheese, from his home country, which may have been a cause of the disease. His initial symptoms were fever, arthralgias and back pain. Diagnosis was made on the basis of a Rose Bengal test and 2-mercaptoethanol positivity with a 1/80 titer. He was treated for 10 weeks with doxycycline and rifampicin. During the last month, night sweating, weight loss and subfebrile fever reoccurred, and abdominal ultrasonography and CT revealed a left perinephric abscess with a possible diagnosis of renal cell carcinoma or perforated renal cyst (Fig. 1a). On physical examination, he had light tenderness in the left flank area and subfebrile fever. His blood cultures and serological tests were negative for brucellosis or

other causes of renal abscess. A 46 mm × 48 mm cystic lesion on the upper pole of the kidney was seen by CT, and contrast injection showed necrotic areas extending to the perinephric soft tissue (Fig. 1b). When he was explored surgically, between Gerota's fascia and the kidney, we found purulent material and a fistula tract between a renal cystic lesion and the perinephric tissue. The cyst was excised with its capsule, and the frozen biopsy excluded malignancy (Fig. 2). The upper pole of the kidney was repaired with hemostatic agents and the operation was ended by placing a sump drain. The pathologic material was examined with Ziehl–Nielsen, Kinyon, light green PAS, Braun Bren and metaramin silver nitrate staining. Stain results were all non-specific, similar to chronic inflammatory changes. A Giemsa stain found foamy histiocytes filled with basophilic microorganism-like elements. Standard microbiological cultures were also negative. Because of the patient's history, polymerase chain reaction (PCR) examination from the resected tissue was done and the microorganism was confirmed as *Brucella* with a genus-specific PCR assay. In the postoperative period, he was discharged, without any complication, with a medication regimen of rifampicin 900 mg/day and doxycycline 200 mg/day for 6 weeks.

Discussion

Brucellosis is a systemic infection which can involve any organ or system of the body. The onset can be acute or insidious generally beginning within 2–4 weeks (sometimes up to 3 months) after inoculation.¹ Because it is necessary to treat patients for prolonged periods, relapses are not uncommon, especially if therapy is discontinued prematurely.² Most relapses occur within 3–6 months of discontinuing therapy. Chronic brucellosis is usually caused by persisting deep foci of infection such as bone, joint, liver, spleen or kidney.

Although it has generally non-specific symptoms such as fever, sweats, malaise, anorexia, headache and back pain,

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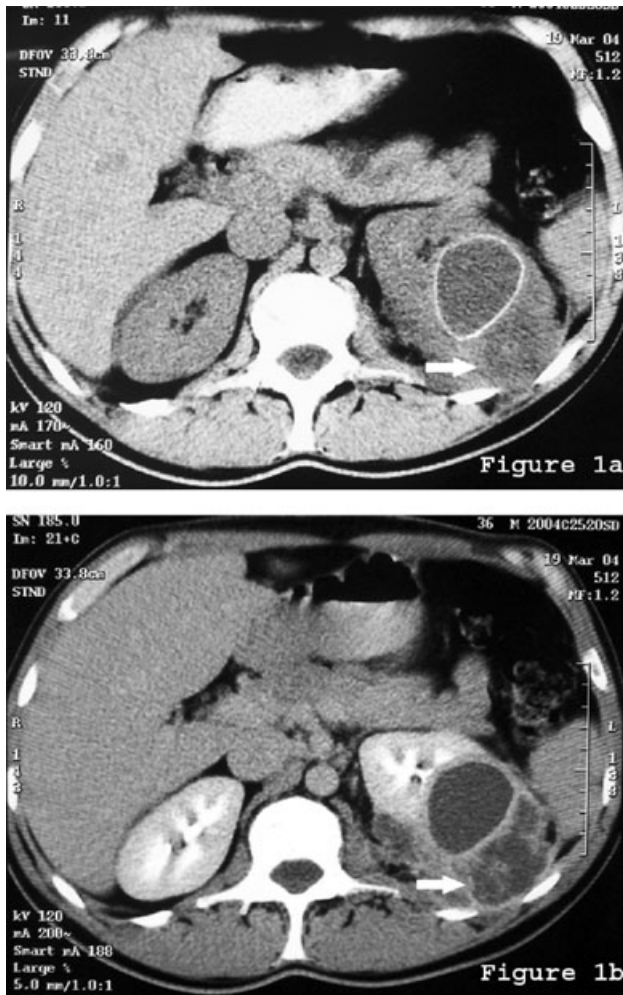


Fig. 1 Computed tomography of the patient (a) plain, and (b) contrast enhanced (arrows: upper pole of the left kidney with a cystic lesion and perinephric abscess formation).

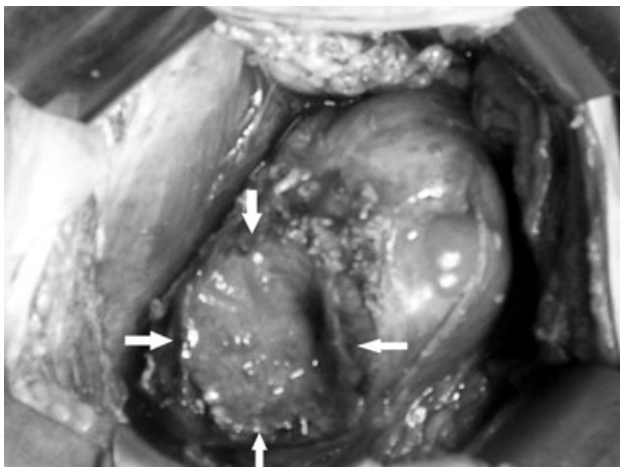


Fig. 2 Perioperative view of the kidney after emptying of the abscess formation and cyst. (arrows: borders of the excised lesion).

specific symptoms of cardiac, abdominal, neurological, ocular or osteoarticular involvement can be determined.¹

Renal brucellosis is a very rare manifestation of the disease. Although pyelonephritis, glomerulonephritis or IgA nephropathy with proteinuria can be seen, renal abscess is not common.³ In up to 20% of all cases, other genito-urinary tract involvement consists of orchitis or epididymitis.⁴⁻⁶ In solid organs brucellosis tends to form an abscess, especially in the liver and spleen, but the kidney is not a common place. In the literature we could find only three cases, of which one was an infected cyst and two others were renal abscesses caused by brucellosis.⁷⁻⁹

In renal or perinephric abscess, diagnosis is based firstly on clinical examination and then on laboratory tests. The etiologic agent can usually be determined after surgical exploration when the abscess is not related to the collecting system to give a positive microbiological test result. In our case, since the patient had a previous diagnosis of systemic brucellosis, we examined him for the reactivation of this disease in addition to other causes, but all tests were non-specific. So for both diagnosis and treatment, we decided to explore the patient surgically. The perioperative view was also non-specific other than a perinephric abscess originating from the upper pole of the kidney.

The diagnosis of brucellosis centers on a detailed history and isolation of the microorganism from the blood cultures in acute phase, during which the rate of isolation ranges from 15–70% depending on the method used. Serologically the Rose Bengal test is the most reliable test, with a low rate of false results when the titer is 1:160 or more. Other diagnostic tests are enzyme-linked immunosorbent assay (ELISA), PCR, serum agglutination test and western blot. Although in most cases standard tests are enough, especially in chronic, localized brucellosis, serum agglutination tests can be negative in the presence of IgA and IgG blocking antibodies which can cause difficulties, such as in our case. We were unable to isolate the microorganism from the blood, so the diagnosis was based on the result of the PCR test on the material taken during the surgical exploration. In most studies PCR seems to be effective for the diagnosis of brucellosis with a positive predictive value of 85%, and 100% sensitivity and specificity.¹⁰

Treatment of brucellosis is standardized by the World Health Organization as doxycycline (200 mg/day) in combination with rifampicin (600–900 mg/day) for 6 weeks.¹¹ Streptomycin, cotrimoxazole and ciprofloxacin are other drugs that have been found to be successful against brucellosis. Beside these medical treatments, in most cases with abscess formation, surgery is mandatory to cure the patient. In our case, although the suitable treatment had been begun previously, it was not enough for the renal abscess, which was unable to be diagnosed before, and which caused relapse not too long after the cessation of the medication.

In countries where brucellosis is still an endemic disease, early diagnosis, treatment for a sufficient period and awareness of its complications are vital. Especially in relapsing patients, solid organ abscess including kidney and other genito-urinary system organs like testes must be kept in mind.

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