# Conservative treatment for Brucella testicular abscesses: A case report and literature review

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## Abstract

Brucellosis is a multi-organ infectious disease that can cause genitourinary manifestations.<sup>1-4</sup> The most common genitourinary manifestation is orchitis;<sup>2,4</sup> however, intratesticular abscesses are a rare complication. Although surgery is the standard treatment for intratesticular abscesses, medical therapy alone can be successful. We report the case of a 36-year-old man with multiple testicular abscesses caused by relapse of systemic brucellosis. The patient presented after a history of treated systemic brucellosis with left testicular swelling and pain. An ultrasound showed multiple small testicular abscesses, and the repeat diluted brucella titer demonstrated the causative pathogen. The patient was successfully treated with 3 months of oral targeted antibiotics, with no need for drainage or orchiectomy.

### Introduction

Brucellosis is a multi-organ infectious disease that can cause genitourinary manifestations.<sup>1-4</sup> Testicular abscesses are a rare complication. Although surgery is the standard treatment, medical therapy alone can be successful. We report a case of a 36-year-old man with multiple testicular abscesses caused by relapse of systemic brucellosis, and provide a literature review.

## **Case report**

A 36-year-old man presented to the emergency department with left testicular pain of 6 weeks duration that increased in severity in the previous few days. His medical history was insignificant, except for systemic Brucella infection in the form of fever and rigors after ingestion of raw milk, treated 3 months ago.

On physical examination, the left hemi-scrotum was tender and swollen. No fever was documented. Laboratory studies, including complete blood count, kidney function tests, urine analysis and subsequent urine culture, were normal. The patient was suspected to have epididymo-orchitis. Consequently, scrotal ultrasound was performed, which revealed a swollen left testis with multiple parenchymal irregular anechoic cystic areas with thin internal septation. The overall vascularity of the left testis increased (Fig. 1). The right testis and both epididymides were normal. These radiological findings were suspicious for testicular abscesses.

In view of patient's history of Brucella, a possible relapse of Brucellosis in the form of testicular abscesses was proposed. While awaiting the opinion of the infectious team, the patient was administered ceftriaxone. Fine-needle aspiration was discussed with the radiology team, but was deemed unsuitable due to the multiplicity and small size of abscesses. We discussed with the patient the option of intraoperative drainage and possible partial orchiectomy, but he was reluctant. Accordingly, we started a trial of conservative therapy.

Further analysis, including blood culture, brucella titers and purified protein derivative (PPD) test for tuberculosis, were negative. However, because of the high index of suspicion of relapse of Brucellosis, a repeat of Brucella titer using a dilution of agglutination of Brucella was done. This was positive for brucella Melitensis, titer=1:320 (normal less than 1:80). Therefore, treatment changed to doxycycline 100 mg orally twice daily, ciprofloxacin 500 mg orally twice daily, and sulfamethoxazole and trimethoprim 960 mg orally twice daily for 2 weeks.

At the 1-week follow-up, the patient showed significant improvement clinically and some improvement sonographically. Hence, he was continued on the same treatment, and advised to follow-up after 2 weeks. At that time, the ultrasound was repeated and it showed marked reduction in the size of the abscesses as the largest one measured 4 mm in diameter (Fig. 2).

At the 6-week follow-up, the patient was doing well with complete resolution of his symptoms.



Fig. 1. An image showing the increase in the overall vascularity of the left testis.

#### Discussion

This case documents the diagnosis of multiple testicular abscesses caused by Brucella species. The patient presented after a history of treated systemic Brucellosis with left testicular swelling and pain. An ultrasound revealed multiple small testicular abscesses, and the repeat diluted Brucella titer showed the causative pathogen. The patient was successfully treated with 3 months of oral targeted antibiotics, with no need for drainage or orchiectomy.

Brucellosis is a multi-organ infectious disease that is considered endemic in Mediterranean,<sup>1,3,5-7</sup> the Arabian gulf, and parts of Mexico, Central and South America.<sup>7</sup> It is caused by 4 Brucella species; B. abortus, B. melitensis, B. uis, and B. canis.<sup>2</sup> Brucella melitensis is the most common one,<sup>3,4</sup> which is concordant with the pathogen in our case. Direct contact with infected animals or ingestion of contaminated animal products are the main routes of human transmission.<sup>1-3</sup> The most common clinical findings are fever and osteoarticular involvement.<sup>1</sup> Genitourinary involvement in endemic areas ranges between 1.6% and 20%.<sup>2-4</sup> The most common genitourinary manifestation is orchitis;<sup>2,4</sup> however, intratesticular abscess is a rare complication.

A literature review revealed 9 cases of testicular abscesses caused by Brucella, 6 of which ended with orchiectomy,<sup>3,4,8-11</sup> while 2 needed drainage.<sup>1,5</sup> Only 1 case was treated by medical therapy alone<sup>6</sup> (Table 1). In most cases, there was relevant history that guided the clinician to think of Brucella as the causative pathogen. Moreover, imaging played an essential role in the diagnosis.

In acute Brucellosis cases, positive blood cultures are obtained in only 10% to 30% of cases and positivity

decreases with increased duration of illness. Therefore, most cases are diagnosed by standard tube agglutination test. In chronic localized Brucellosis, standard tube agglutination test titers may be low due to prozone phenomenon which indicates the presence of immunoglobulin A and G blocking antibodies.<sup>3</sup> This happened in our case, so we relied on the dilution tests to confirm our suspicion. Brucella testicular abscesses can be diagnosed by the presence of related history, sonographic features of abscess, and serology.

In previously reported cases, orchiectomy was done either due to suspicion of tumour, or failed medical management. Even though the abscesses in those cases were larger than our case, we still think that medical treatment should be tried initially, particularly if the patient showed clinical improvement. The one patient treated by medical therapy alone also had a large abscess.<sup>6</sup> Although he improved clinically on subsequent follow-up, the abscess increased in size. Consequently, he was planned for orchiectomy, which he refused and returned 5 months later with regression of his abscess.<sup>6</sup>

Medical treatment is recommended for at least 6 weeks. Combined antibiotics, such as doxycycline, rifampicin, tetracycline, ciprofloxacin, and streptomycin, were described in the treatment of Brucella infections,<sup>1,3,6</sup> with rifampicin and deoxycycline being the preferred combination.<sup>6</sup> We used doxycycline, ciprofloxacin and bactrim since our patient was treated earlier with doxycycline and rifampicine for his systemic Brucellosis. Our patient showed marked improvement with antibiotic therapy, so we continued with oral therapy and avoided unnecessary orchiectomy.



Fig. 2. A repeat ultrasound showing a marked reduction in the size of the abscesses.

## Conclusion

Brucella as a case of testicular abscess/abscesses should be suspected in patients from endemic areas, or in patients with relevant history. Successful treatment can be achieved by medical therapy alone, if the patient shows improvement clinically and sonographically – avoiding drainage and orchiectomy. Competing interests: The authors all declare no competing financial or personal interests.

This paper has been peer-reviewed.

Table 1. Characteristics of the patients with Brucella testicular abscesses								
Reference	Age (yr)	Duration of symptoms	Clinical features	Relevant history	Brucella agglutinin titer	Blood culture	Ultrasound findings	Treatment
Kaya et al.1	23	2 months	Right testicular swelling	Recent ingestion of unpasteurized cheese	Positive	Negative	Thick-walled abscess measured 31 × 41 × 74 mm replacing the entire testis	D and S for 7 days; abscess size did not change; it was drained, followed by D and R for 6 weeks
Kocak et al.³	32	2 months	Left painless testicular mass	History of systemic brucellos-is 3 years earlier	positive	Not done	Hypoechoic heterogeneous intratesticular mass measured 63 × 42 × 38 mm	Orchiectomy as tumour was suspected, then C and D for 6 weeks
Akinci et al.4	ND	ND	ND	ND	positive	ND	Testicular abscess	Orchiectomy and antibiotic therapy for 6–8 weeks
Koc et al.⁵	42	6 weeks	Right testicular pain and swelling with fever and night sweats	Ingestion of unpasteurized cheese	Positive	Positive B. melitens-is	Thick walled abscess measured 55 × 50 × 40 mm	Abscess drained then treated with D and R for 4 months
Yemisen et al. <sup>6</sup>	42	2 weeks	Right testicular pain and swelling with fever	Works as a teacher in small Turkish village	Positive	negative	Hypoechoic cystic lesion measured 20 × 15 mm	D and R for 6 weeks
González Sánchez et al. <sup>7</sup>	ND	ND	Left testicular pain and swelling	History of systemic Brucellosis 4 months earlier	positive	ND	Diffuse enlargement of the left testis with several small abscesses	Antibiotics, but orchiectomy was done due to poor response to therapy
Castillo Soria et al. <sup>8</sup>	ND	ND	ND	ND	ND	ND	Large abscess causing complete destruction of testis	Double drug therapy, but orchiectomy was done due to complete destruction of the testis
Fernández Fernández et al.º	ND	ND	Testicular pain and swelling	Coexisting systemic Brucellosis	ND	ND	Increased testicular size with intratesticular abscess	Antibiotics, nut orciectomy was done due to progressive enlargement of the abscess
Bayram et al. <sup>10</sup>	ND	ND	ND	ND	positive	Positive B. melitensis from specimen culture	Focal hypoechoic lesion, mean size 23 mm	Orchiectomy as tumour was suspected, then D and R for 6–8 weeks
Our case	36	6 weeks	Left testicular pain	History of systemic Brucellosis 3 months earlier	Positive at repeat dilution of 1:320 titer	Negative	Multiple anechoic cystic areas with internal septation	D, C, and B for 3 months

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