



Inflammation and infection

Clinical insights: Brucellosis-induced febrile orchitis - A case report and treatment strategy

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ABSTRACT

Brucellosis, a systemic infection, can affect various organs, including the genitourinary system, causing epididymo-orchitis in 2%–20 % of cases. This report details a 34-year-old Thai male migrant worker with febrile orchitis. Initial gentamicin treatment failed, but serological tests confirmed brucellosis, likely from raw dairy consumption. The patient was successfully treated with gentamicin, doxycycline, and rifampicin, resulting in complete symptom resolution. Brucella orchitis, though rare, should be considered in patients from endemic areas. Conservative treatment with combined antibiotics is typically effective.

1. Introduction

Brucellosis is a systemic infection that can affect any organ or system in the body.¹ In men, various genitourinary infections, such as epididymo-orchitis, prostatitis, testicular abscess, and seminal vesiculitis, have been linked to brucellosis.² Epididymo-orchitis caused by Brucella is a localized complication of human brucellosis, observed in 2%–20 % of individuals diagnosed with the disease and can lead to severe complications like necrotizing orchitis.³ In Israel, a notable increase in the incidence of human brucellosis was reported in the last decade, escalating from 1.9 per 100,000 in 2009 to a peak of 7.3 per 100,000 in 2014.⁴ This increase was mainly noted in the Arab population.

This manuscript details a case study involving a 34-year-old male who presented with febrile orchitis and was subsequently diagnosed with brucellosis.

2. Case presentation

A 34-year-old migrant worker from Thailand sought medical care at the emergency department due to febrile orchitis. The patient denied having recent sexual intercourse. An ultrasound of the scrotum revealed an enlarged and heterogeneous right testicle with increased blood flow and minimal hydrocele. The right epididymis and left testicle appeared normal (Figs. 1 and 2). Blood analysis showed normal leukocyte count

with relative monocytosis (12.2 %, normal range: 2–11 %). Urinalysis yielded unremarkable results.

The initial treatment involved the administration of 320 mg of intravenous gentamicin once daily. However, after three days, no clinical improvement was observed. Subsequently, a repeat scrotal ultrasound was conducted to eliminate the possibility of an abscess, yielding results consistent with the initial ultrasound findings. Following consultation with the infectious disease unit, serology for brucellosis was conducted, and the results returned positive, with a positive Rose Bengal test and positive specific *Brucella* IgG and IgM. Blood and urine cultures, and first-void urine polymerase chain reaction (PCR) tests for *Neisseria gonorrhoea*, *Chlamydia trachomatis*, *Mycoplasma genitalium* and *Trichomonas vaginalis* were negative. Upon inquiry, the patient disclosed a history of consuming raw dairy.

Upon confirmation of the brucellosis diagnosis, the patient was treated with a one week combination of gentamicin and doxycycline and five additional weeks of rifampicin and doxycycline.

One month after the diagnosis, the patient underwent a follow-up at the urology outpatient clinic. The physical examination revealed no notable findings in the right testicle. A follow-up ultrasound revealed the resolution of the infectious process, with no notable findings.

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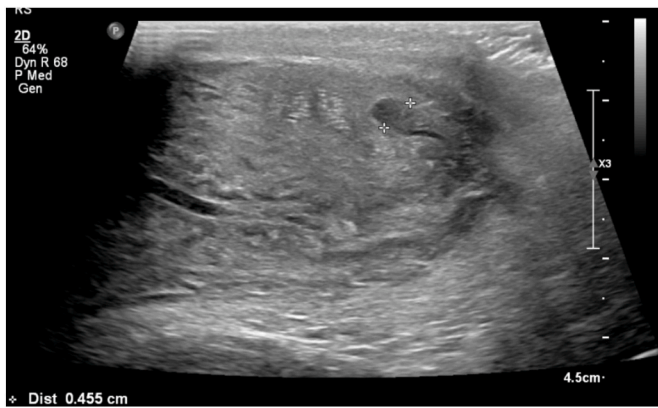


Fig. 1. Ultrasound finding of right testicle without doppler on presentation.

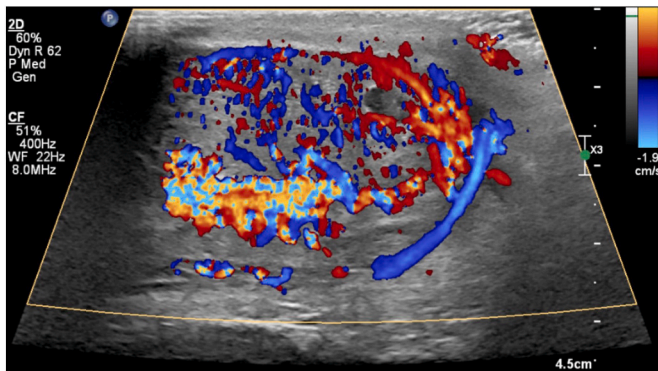


Fig. 2. Ultrasound finding of right testicle with doppler on presentation.

3. Discussion

Brucellosis, a zoonotic disease caused by Gram-negative coccobacilli known as *Brucella* spp., consists of non-spore and non-motile bacteria. Four *Brucella* species—*B. abortus*, *B. melitensis*, *B. suis*, and *B. canis*—are recognized for causing disease in humans. The primary modes of brucellosis transmission involve the consumption of unpasteurized dairy products, direct contact with livestock animals.⁵ Less common routes of transmission include breast feeding (mother to child), consumption of uncooked meat, and sexual contact.⁶ Infection can involve various organ systems, including the genitourinary system, presenting as epididymo-orchitis when complications arise. Epididymo-orchitis caused by *Brucella* is the second most prevalent manifestation of complicated brucellosis, impacting both adults and children. Individuals typically exhibit symptoms such as urinary issues, scrotal pain, and swelling.⁷ Diagnosing the condition can be challenging. Urinalysis tends to be non-specific. Colmenero et al. found that only 31 % of patients exhibited proteinuria, hematuria, pyuria, or a combination of these, with the observed changes being minimal in all cases.⁷ In our patient,

urinalysis was unremarkable. *Brucella* was diagnosed serologically, including specific *Brucella* IgM. Serological tests can remain positive years after infection, therefore, might not constituting a definite diagnosis in patients from endemic areas. Nevertheless, our patient showed complete response to antibiotic treatment targeting *Brucella*.

4. Conclusion

Diagnosing *Brucella* orchitis is uncommon but should be contemplated in patients, especially in endemic areas. Typically, a conservative approach involving combined antibiotic therapy proves sufficient for the management of brucellar orchitis.

Consent

Written informed consent was obtained from the patient for the publication of this case report.

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CRediT authorship contribution statement

Dor Golomb: Conceptualization, Data curation, Investigation, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Ido Bar:** Conceptualization, Data curation, Investigation. **Tal Brosh-Nissimov:** Writing – review & editing. **Daniel Leshin-Carmel:** Writing – review & editing. **Amir Cooper:** Writing – review & editing. **Orit Raz:** Writing – review & editing.

Declaration of competing interest

None.

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