



CASES WITH A MESSAGE

## Brucellosis as a rare cause of olecranon bursitis: case-based review

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### Abstract

A 51-year-old man shepherd presented with mild pain and swelling of the right posterior aspect of his right elbow. In ultrasonography, the affected bursal space had swelling and effusion. Moreover, the aspiration of the affected bursa revealed an inflammatory profile. *Brucella melitensis* was detected in aspirated fluid and blood cultures. The serum agglutination test (SAT) and 2-mercaptoethanol test for brucellosis were also positive. Therefore, the diagnosis of brucellar olecranon was confirmed. Treatment was initiated using gentamicin for the first 7 days and doxycycline plus rifampicin for 2 months. After treatment, all clinical signs and symptoms were resolved. No relapse was seen after 1 year of the completion of treatment. Clinicians should pay attention to the symptoms of olecranon brucellar bursitis that is similar to that of pyogenic bursitis.

**Keywords** Brucellosis · Bursitis · Olecranon

### Introduction

A bursa is a fluid-filled, saclike structure. In general, the deeper type ones allow the muscles to glide over all others and the bone. The superficial one, such as the olecranon, lies between the skin and the bone. Olecranon bursitis with an annual incidence of ten cases per 100,000 predominantly affects middle-aged men. Types of bursitis are the traumatic, the inflammatory non-septic, and the inflammatory septic bursitis. Traumatic bursitis occurs due to the trauma, such as a car accident. The patients who suffer from rheumatic diseases, rheumatoid arthritis, or crystalopathies, which affect the synovial membrane that encapsulate joints, may present with non-septic inflammatory bursitis. Septic bursitis occurs due to bacterial penetration of microtrauma or hematogenous seeding, and this type of bursitis may complicate the two latter types of bursitis. Brucellosis, as a widespread zoonotic disease, continues to be an important public health concern globally [1, 2]. It may affect several organ systems

which can lead to a wide spectrum of clinical features such as fever, sweating, malaise, and arthralgia [1]. The skeletal system is a common site of involvement and may present with peripheral arthritis, sacroiliitis, spondylitis, and rarely bursitis [3, 4]. However, several papers had been published regarding osteoarticular infection due to *Brucella* such as infections of the knee, ankle, and hip, but olecranon bursitis as the sole presentation of brucellosis is very rare [3]. In this paper, we report a case of brucellar olecranon bursitis as the sole presentation of brucellosis.

### Case presentation

A 51-year-old shepherd man presented to our clinic with low-grade fever, sweating, mild pain, and swelling in his right olecranon with the obvious collection in his bursal space. The swelling of olecranon was oval shape, soft, mobile, and without any redness (50×60 mm) that started 2 months before admission, which gradually increased in size (Fig. 1). On physical examination, no restriction of motion was detected on his elbow joint, and the elbow pain increased with joint flexion. He had mild local tenderness and mild warmth on the affected bursa. X-rays of the elbow did not show any evidence of osteomyelitis. Ultrasonography of the olecranon site showed a 60×72×35 mm homogeneous compressible collection with an echogenic center in the subcutaneous tissue,

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**Fig. 1** Olecranon bursitis with inflammation and swelling behind the right elbow

and under the probe guidance, the fluid was aspirated from the deeper site of the collection. Peripheral white blood cell count (WBC) was 8900 cells/mm<sup>3</sup>, hemoglobin (13.1 g/dL), erythrocyte sedimentation rate (ESR) was 76 mm/h, and C-reactive protein (CRP) was 65 mg/dL.

The analyses of the aspirated fluid were as follows: White blood cell count [3950 cells/mm<sup>3</sup> (32% polymorphonuclear, 68% lymphocyte)], sugar (68 mg/dL), PH (7.35), and protein (2.8 mg/dL), but the gram stain of the fluid was negative. We cultured the aspirated fluid and his blood in the Castaneda medium. Due to his profession, we performed either the serum agglutination test (SAT) or 2-mercaptoethanol (2-ME) test. The SAT was positive in 1:640 and 2-ME in 1:160. Brucellar olecranon bursitis was confirmed.

Treatment was initiated with gentamicin 4 mg/kg/day for the first 7 days plus doxycycline 100 mg twice a day plus rifampicin 600 mg every day for 2 months. Bursal fluid and blood culture were positive for *Brucella melitensis* after 3 weeks of incubation. At the end of 2 weeks, there was a considerable improvement in the symptoms of the patient. There were no clinical symptoms and signs at the end of treatment. No relapse was seen 1 year after the completion of therapy.

## Search strategy

The MEDLINE/PubMed database was retrospectively reviewed for literature published until 2019 using the keywords “olecranon bursitis” and “brucellosis”. Only articles

and abstracts in English were reviewed. Moreover, the full specifications of these articles were searched for additional references not identified in the primary review. After exclusion of irrelevant articles, we recognized two articles, which were included in the current review.

## Discussion

In this case report, we present a rare complication of brucellosis as olecranon bursitis due to *Brucella melitensis*. Bursitis may develop in any bursa in the body, such as prepatellar, suprapatellar, olecranon, subacromial, iliopsoas, and subdeltoid, but bursitis of the knee and olecranon are more common types. *Staphylococcus aureus* is the most common organism isolated from acute septic bursitis, followed by *Enterococcus*, *Escherichia coli*, and *Pseudomonas aeruginosa*. A chronic form of infectious bursitis was reported by *Brucella*, *atypical mycobacteria*, and fungi [5].

Fever, tenderness, erythema, and warmth are common findings in septic bursitis. Joint motion is usually unaffected in septic bursitis, but septic arthritis may be present. There is no apparent reason for changes in white blood cell (WBC) levels, but C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) usually rose [5, 6].

Differential diagnosis of olecranon bursitis is rheumatoid arthritis, gout, pseudogout, chondrocalcinosis, uremic bursitis, and pigmented villonodular synovitis that must be differentiated from septic bursitis.

Brucellar bursitis as a rare event is seen in 1–7% of bone and joint infection [1, 7], and prepatellar and olecranon bursitis are more common. This is due to kneeling during breast milking by hand or lies down in animals kept, and trauma during the handling of the animals. Since *Brucella* is seen in their reproductive systems of the infected animals, their urination causes contamination of the environment. The shepherd taking care of them also lies down on the infected ground and may acquire the infection. Another route of reaching organisms to the traumatized bursa is blood. Mousa et al. [8] reported bursitis and tenosynovitis in 1.2% of 169 patients with brucellosis. Tasova et al. [9] found bursitis in 5 (5.7%) of 87 cases who had osteoarticular involvement. In some studies, olecranon bursitis was seen in 3 out of 251 cases of brucellosis [10]. Almajid [11] reported a case of olecranon bursitis with negative serologic tests, but positive blood culture and aspirated fluid culture. A case of abscess of the iliopsoas muscle, olecranon bursitis, and sacroiliitis was reported by Turan et al. [12]. All of these reports have confirmed that any bursa may be involved. While the involvement of the isolated bursa without the involvement of other organs is very rare, we present in our case as the sole presentation of brucellosis.

In conclusion, clinicians should pay attention to the symptoms of brucellar bursitis of the olecranon that may be the sole presentation of brucellosis in the endemic regions.

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### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Informed consent** Written informed consent was obtained from the patient for publication of the current case report.

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