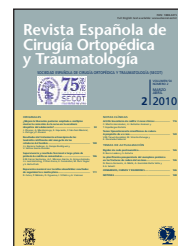


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## CASE REPORT

### Brucellar knee arthritis: Report on two cases

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#### KEYWORDS

*Brucella*;  
Brucellosis;  
Septic arthritis;  
Knee

#### Abstract

**Purpose:** We present 2 cases of septic arthritis caused by *brucella*. The purpose of the study is to post a warning about a condition that may be unusual and difficult to diagnose but which should not go unnoticed.

**Materials and methods:** In both cases we performed plain films and blood tests. In the first case, we performed an MRI, serological and biochemical tests and synovial fluid cultures, which returned a negative result. Final diagnosis was made by means of an arthroscopic synovial tissue culture. No additional tests were carried out in the second case because it presented as an instance of acute septic arthritis. Diagnosis was made on the basis of a synovial fluid culture. After diagnosis, antibiotic treatment was initiated with rifampicin (300 mg every 12 h) and doxycycline (100 mg every 12 h) for at least 6 weeks.

**Results:** Healing occurred in both cases.

**Conclusions:** Brucellar septic arthritis is currently rather unusual in Western European countries. However, Spain and other countries in the Mediterranean region are still characterized by endemic levels of the disease. Brucellosis should invariably be included in the differential diagnosis of knee arthritis.

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#### PALABRAS CLAVE

*Brucella*;  
Brucellosis;  
Artritis séptica;  
Rodilla

#### Artritis brucelósica de rodilla: 2 casos clínicos

#### Resumen

**Objetivo:** Se presentan 2 casos de artritis séptica por *Brucella*. El objetivo es llamar la atención sobre una enfermedad que por ser de diagnóstico a veces difícil y cada vez menos frecuente no debe pasar desapercibida.

**Material y método:** En ambos casos se realizó radiología simple y analítica hemática. En el primer caso se realizó resonancia magnética, serología, bioquímica y cultivos de líqui-

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do sinovial, que fueron negativos. El diagnóstico definitivo se realizó mediante cultivo del tejido sinovial obtenido por artroscopia. En el segundo caso no se realizaron más pruebas complementarias por su presentación como artritis séptica aguda, y se realizó el diagnóstico por cultivo de líquido sinovial. Tras el diagnóstico, se inició pauta antibiótica con rifampicina (300 mg cada 12 h) y doxiciclina (100 mg cada 12 h) durante un mínimo de 6 semanas.

**Resultados:** En ambos casos se obtuvo la curación.

**Conclusiones:** La artritis séptica por *Brucella* es actualmente poco frecuente en los países de Europa occidental. Sin embargo, España y otros países de la zona mediterránea continúan presentando tasas endémicas de la enfermedad. La brucelosis debe incluirse en el diagnóstico diferencial de toda monoartritis de rodilla.

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## Introduction

Brucellosis is a zoonosis caused by a gram-negative bacterium. This infection is endemic to the Mediterranean region and the Middle East. In Spain, 328 new cases were diagnosed during 2006.<sup>1</sup> The disease is transmitted to humans from infected animals, mainly bovines, sheep and goats, by conjunctival inoculation, inhalation, wounds or skin abrasions, or by ingestion of unpasteurized dairy products.<sup>2</sup> The symptoms are systemic, with a wide spectrum of clinical presentations, with monoarthritis appearing to be the only osteoarticular manifestation. The most commonly affected articulations are the sacroiliac joints and those of the inferior extremities, the hip and knee, and infections of prosthetic implants have also been described.<sup>2-4</sup> Brucellosis is diagnosed by isolation and identification of *Brucella* sp., but this method is only effective in 40 to 70% of cases,<sup>5</sup> necessitating serum antibody detection in order to confirm laboratory diagnosis.

Here we describe 2 cases of monoarticular knee damage caused by *Brucella melitensis*, in which arthroscopy was required due to an incomplete diagnosis. The objective of this paper is to draw attention to a disease that, due to a difficult diagnosis and ever-lower frequency, tends to pass unnoticed, for which it must be included in the differential diagnosis for monoarthritis, above all in patients from endemic regions.

## Clinical cases

### Case 1

Thirty-five year old male patient, construction worker, with mechanical pain in the right knee with 7 months evolution, with no antecedents of trauma, and accompanied by repeated effusion that had been treated by anti-inflammatories and multiple punctures in which a clear and viscous synovial fluid was removed; cultures were negative in all cases.

We took simple radiographs, in which no pathological findings were visible (fig. 1), and a magnetic resonance image (MRI), which indicated a severe synovitis with abundant articular fluid (fig. 2).

The laboratory analysis showed a leukocyte count at  $12.5 \times 10^9/l$ , with a C-reactive protein (CRP) level of 67mg/l and a globular sedimentation velocity (GSV) of 35mm/hr. The rheumatoid factor, antistreptolysin-O, and antinuclear antibodies and circulating immunocomplexes were negative; the Rosa Bengala test came back positive. Analysis of the synovial fluid showed a leukocyte count of  $12 \times 10^9/l$  (63% neutrophils and 37% lymphocytes). We decided to perform an arthroscopic diagnosis, in which a severe panarticular nodular synovitis was observed (fig. 3) with a full-thickness chondral lesion that affected the internal chondyle. Samples were also taken from the villi for anatomopathological and microbiological analyses, and a radiofrequency synovectomy followed.

The anatomopathological analysis showed a marked chronic inflammatory reaction with concomitant acute inflammatory activity, principally made up of lymphocyte and plasmatic cells with synoviocyte hyperplasia, deposits of fibrin on the surface of the villi and presence of neutrophils.

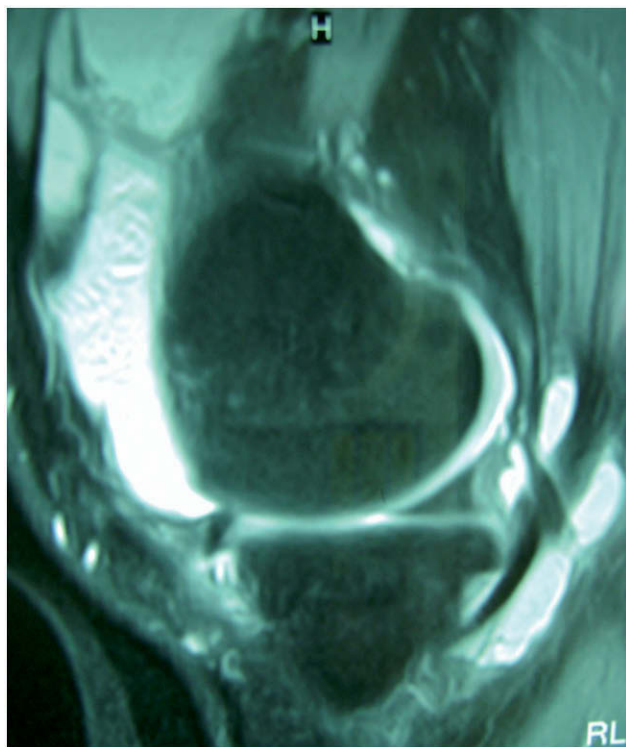
Cultures taken from the villi were positive for *B. melitensis* and the antibiotic regimen started with rifampicin (300 mg every 12 hrs) and doxycycline (100 mg every 12 hrs), which was maintained for 9 weeks until the haematological parameters returned to normal. The patient did not present any new hydrarthrosis episodes, but mechanical pain did persist in the internal compartment with a radiological advancement of osteoarthritis, for which the following year a proximal valgustibial osteotomy was required, terminating in a remission of the symptoms.

### Case 2

Forty-one-year-old male patient that entered through the emergency room. He had received an arthroscopic intervention for a tear of the internal meniscus in his right knee. The postoperative evaluation had been favourable during the first month, but then joint pain commenced with hydrarthrosis, signs of acute inflammation, and feverishness. The analysis showed leukocytosis ( $14 \times 10^9/l$ ) and elevated CRP and GSV levels. The simple radiographs showed no helpful findings. The same day that the patient was admitted to the hospital, we performed an arthroscopy that showed integrity of the ligamentous and chondral structures of the



**Figure 1** Simple radiograph of the affected knee in case number one.



**Figure 2** Magnetic resonance image, in which the abundant intra-articular fluid can be appreciated.



**Figure 3** Arthroscopic view displaying nodular synovitis.

knee, stable meniscal remnants from a previous meniscectomy, and severe nodular synovitis. Following an arthroscopic cleaning, samples were sent for anatomopathological and microbiological analysis. Cultures provided a positive diagnosis for *B. melitensis* infection, and an antibiotic regimen was started with doxycycline (100 mg every 12 hrs) and rifampicin (300 mg every 12 hrs), that was maintained until the symptoms disappeared and the CRP and GSV levels were normalized after 6 weeks, at which point the infection was considered cured.

## Discussion

Brucellosis is still an endemic disease in many parts of the world, namely the Near East, the Middle East, Latin America, and Mediterranean countries. The osteoarticular infection, whether localized or part of a systemic manifestation, is the second most common form of presentation of this disease.<sup>6</sup>

Brucellosis can be difficult to diagnose due to its ever-less frequent appearance and the often false-negative microbiological and serum test results.<sup>3,7</sup> As such, brucellosis must be considered as a differential diagnosis for patients with acute<sup>8</sup> and chronic monoarthritis, and above all in patients with pain and repeated effusions, in which other aetiologies (metabolic, mechanical, and rheumatic) have been discarded. In contrast with other bacterial arthritis, brucellar arthritis causes a typically lower leukocyte count in the synovial fluid at  $50 \times 10^9$  cells/l, with a predominance of lymphocytes.<sup>9</sup>

Simple radiographs of the affected joints supply little data for the diagnosis in incipient states of the disease, and other complementary tests, such as MRI and CT scans, are non-specific,<sup>10</sup> necessitating a diagnosis made on clinical suspicion for patients from endemic zones presenting with chronic monoarthritis and based on haemocultures or cultures from synovial fluid, even though these can often come back negative.<sup>9</sup>

The recommended treatment for joint brucellosis is not surgical, but through application of doxycycline combined

with rifampicin or streptomycin for 6 to 8 weeks.<sup>11</sup> In the two cases described here, we employed surgical procedures for lack of a correct diagnosis. In the first patient, this was due to the absence of results from the cultures, and in the second, due to suspicion of acute arthritis caused by infection by other microorganisms, based on the previous surgical procedure.

Brucellosis must be included in the differential diagnosis of all knee monoarthritis cases, above all in those patients from endemic zones, since its treatment with combined antibiotics is almost always effective and avoids more invasive procedures, such as draining or synovectomy, that, as seen in these two cases, can serve as indicators in the event that the diagnosis has not been exhaustive.

## Conflict of interest

The authors affirm that they have no conflicts of interest.

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