
CLINICAL NOTE

Brucellar spondylodiscitis in the emergency department

MARÍA FRANCO-HUERTA, FRANCISCO JAVIER MARTÍNEZ-MARCOS, CRISTINA BORRACHERO-GARRO, JOAQUINA RODRÍGUEZ-SÁNCHEZ, FRANCISCO JAVIER CARRASCO-SÁNCHEZ

Servicio de Medicina Interna. Hospital Juan Ramón Jiménez. Huelva, Spain.

CORRESPONDENCE:

Dr. F. J. Martínez-Marcos
Servicio de Medicina Interna
Hospital Juan Ramón Jiménez
Ronda Norte, s/n
21005 Huelva, Spain
E-mail: marifranki@hotmail.com

Low back pain is a key symptom of infectious spondylodiscitis, a condition that may be overlooked if attention is not focused on the patient's medical history and the initial set of tests. We report the cases of 2 patients diagnosed with spondylodiscitis due to *Brucella* species who came to the emergency department because of low back pain. We review the presenting symptoms of this complication and the diagnostic methods used, and pay particular attention to the treatment that should be initiated in the emergency department. [Emergencias 2009;21:386-388]

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None

Introduction

Low back pain is one of the more frequent reasons for visiting the emergency department. Almost 90% of cases are attributed to non-specific musculoskeletal mechanical alterations¹. However, in a small percentage of cases, it can be a symptom of a potentially serious systemic disease such as tumor or infection, which must be ruled out. Although uncommon, infectious spondylodiscitis should be considered in the differential diagnosis, especially when back pain is accompanied by fever, weight loss or fatigue². The most common causative agent is *Staphylococcus aureus*, followed by *Mycobacterium tuberculosis*, *Brucella* and *Pseudomonas aeruginosa*³. Although rare, spondylodiscitis due to *Brucella* is a possible complication of *Brucella* infection that can be diagnosed in the ED using a rapid and simple diagnostic method such as the Rose Bengal test⁴. Below, two cases are presented are two cases.

Case reports

The first patient was a 46-year-old diabetic man. In the months before he had worked in the country in contact with chickens and goats. Six

weeks before consulting, he suffered low back pain radiating to the right leg, for which he started analgesic treatment with slight improvement. In the following month he began to suffer marked asthenia and progressive pain, which became disabling. In the fortnight before consultation, he had predominantly evening fever. Physical examination showed fever of 38.5°C, otherwise was normal, except for atrophy of both quadriceps and pain on flexion and extension of the spine. Complete blood count showed discrete leucocytosis without left deviation. Spinal X-ray showed a slight narrowing of the L₅-S₁ intervertebral space. Rose Bengal test result was positive. Once hospitalized, the study was completed with Mantoux test, blood and urine cultures, which were negative. After 48 hours of treatment with rifampicin and doxycycline, the patient remained afebrile. Magnetic resonance imaging (MRI) showed spondylodiscitis at L₅-S₁ with paravertebral abscesses extending contiguously. During admission he had required transdermal opioid treatment and was attended by the department of rehabilitation. He was discharged ten days later with improvement of all his symptoms.

The second patient was a 79-year-old man with a history of chronic prostatitis. He was a retired butcher but still engaged in meat carving.

He visited the emergency department for back pain, interpreted as of mechanical origin and resistant to analgesic treatment. He also reported increased temperature and perspiration during one or two months and constitutional syndrome. Physical examination was unremarkable except for tenderness of the lower lumbar vertebrae. Of the complementary studies performed in the emergency department, only L₃-L₄ anterolisthesis was observed in the X-ray. Complete blood count was normal and Rose Bengal test negative. Once hospitalized, Mantoux test, blood and urine cultures were negative. Computed tomography (CT) scan of the abdomen and pelvis showed findings compatible with spondylodiscitis at L₃-L₄ with paravertebral lumbosacral abscesses; lower spinal MRI showed stage I spondylolisthesis at L₃-L₄, paravertebral spondylodiscitis at L₃-L₄ and multiple abscesses. Coombs anti-*Brucella* test was 1/10,240. Fine-needle aspiration yielded some purulent material, where *Brucella* was isolated. After starting treatment with doxycycline, rifampicin and streptomycin, the patient evolved favourably.

Discussion

Brucellosis is a worldwide disease produced by Gram-negative bacilli of the genus *Brucella*. In Spain, brucellosis has been a major zoonosis in past decades, and most isolates correspond to *Brucella melitensis*. The highest incidence is found in Extremadura, followed by Andalusia, Aragon and Castilla⁵.

Brucellosis is a systemic infection that can affect any organ or system. The symptoms are often nonspecific and appear approximately 2-3 weeks after exposure.

The disease course is usually insidious in most cases. It is characterized by a multitude of manifestations such as fever, sweating, anorexia or weight loss. Physical examination is usually unremarkable except for the presence of fever⁵.

The various manifestations of *Brucella* infection include osteoarticular involvement in 20-30% of cases; genitourinary symptoms, especially orchioepididimitis, which in some series reaches 40% of cases, liver abscess (1%); CNS involvement in the form of meningitis (1-2%), cardiovascular disorder and endocarditis (1%) and to a lesser extent myocarditis, pericarditis and aneurysm of cerebral vessels and the aorta⁶. Other rare complications include splenic or thyroid abscess, pneumonitis, empyema, etc.

Osteoarticular manifestations are the most frequently observed (25-85%), and include sacroiliitis, peripheral arthritis, spondylitis, osteomyelitis and bursitis. The type and location of such manifestations partly depend on patient age and the species responsible: spondylodiscitis is most common in the elderly, and sacroiliac involvement is more related to *B. melitensis* infection.

Spondylodiscitis affects 8-13% of cases, mostly with osteoarticular involvement⁶⁻⁸. It occurs more frequently in the lumbar region and is mostly caused by *B. melitensis*. It presents as axial pain that may be associated with inflammatory fever (may be intermittent), anorexia, asthenia, and manifestations arising from possible myeloradicular compromise⁹.

Diagnosis depends on a high degree of suspicion. The association of prolonged axial pain (with or without neurological involvement) and fever are the basis for initial suspected diagnosis of these cases. In the ED, there are tests available for the diagnosis of brucellar spondylodiscitis. Laboratory tests may show no significant changes: possibly discrete anaemia, moderate elevation of transaminases and elevated GGT and alkaline phosphatase with normal bilirubin. Plain X-ray may show different degrees of bone involvement and in more advanced cases signs suggestive of paravertebral abscess¹⁰. For alterations to be evident in plain radiography, as in the two cases presented here, a period of least two or three weeks of evolution is required.

The Rose Bengal test is a serological antibody agglutinating test that can be performed in the ED, allowing an approximate diagnosis in a few minutes. It has very high specificity and sensitivity, only exceptionally yielding false negatives in the acute phase of the infection, and infrequently in evolved or chronic illness. In the two cases presented, the test was performed in the ED and proved negative in the second case, probably due to the prolonged course of disease. Definitive diagnosis of brucellosis requires the isolation of *Brucella* in blood culture mainly, but occasionally can be isolated from other samples such as bone marrow or joint fluid, pus from abscesses or cerebrospinal fluid. Polymerase chain reaction (PCR) is also a highly sensitive and specific method for the detection of *Brucella* in blood and other organic samples, but not usually available in our clinical practise^{5,9}.

In cases without isolates, Brucellosis can be diagnosed by blood tests. The most commonly used are the Wright's serum agglutination and Rose Bengal tests for the detection of antibody

agglutination, and the Coombs test for quantification of non-agglutinating antibodies. Also used since years ago is the enzyme-linked immunoabsorbent assay (ELISA) with high sensitivity and specificity. Recently, a new test has been introduced in our field, called *Brucella-capt*¹¹, for the detection of total antibodies to *Brucella*.

The imaging techniques used to assess bone involvement and soft tissue in brucellosis range from plain X-ray, useful in advanced stages, to magnetic resonance imaging (MRI), which is the technique of choice for the diagnosis of spondylodiscitis.

Plain radiography may show different degrees of bone involvement as irregular articular surface of the vertebral bodies, intervertebral space narrowing, syndesmophytes or spondylolisthesis¹¹. CT offers greater sensitivity and specificity than plain radiography: and allows more accurate assessment of pus collection, vertebral destruction and other possible complications. It is particularly useful in CT-guided biopsies¹². MRI is the imaging technique of choice, with high sensitivity in detecting bone involvement and its extension, soft tissue involvement and even in the early stages of evolution, to appreciate abnormal intensities^{9,10}.

As for treatment, the tetracyclines are the most effective antibiotics, especially doxycycline, which is currently considered the treatment of choice, administered for six weeks plus streptomycin for two weeks. Another alternative is replacing streptomycin with rifampicin.

In spondylodiscitis, recommend treatment is with three drugs (rifampin, doxycycline and strep-

tomycin) during at least two months, with surgical drainage being required in some cases^{5,13}.

In conclusion, the presence of inflammatory back pain, fever and/or constitutional syndrome, abnormal X-ray and the epidemiological context leading to suspicion of brucellosis can be ruled out within minutes in the ED by using the Rose Bengal test.

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Diagnóstico de la espondilodiscitis brucelar en urgencias

Franco-Huerta M, Martínez-Marcos FJ, Borrachero-Garro C, Rodríguez-Sánchez J, Carrasco-Sánchez FJ

La lumbalgia es uno de los síntomas guía en la presentación de la espondilodiscitis infecciosa, que puede pasar desapercibida si no se tiene en cuenta la importancia de la anamnesis y las pruebas complementarias iniciales. Presentamos dos casos de espondilodiscitis por *Brucella* que consultaron por lumbalgia al servicio de urgencias. Revisamos la presentación clínica y los métodos diagnósticos de esta complicación, con especial atención al manejo que debe hacerse en urgencias. [*Emergencias* 2009;21:386-388]

Palabras clave: Lumbalgia. Brucelosis. Espondilodiscitis.