

## Case Report

# Brucellar Spondylitis

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The incidence of Brucellosis is increasing in Korea. Spondylitis is the most frequent complication, but it is difficult to diagnose because its clinical symptoms are non-specific. It should therefore be included in the differential diagnosis of back pain. We report three rare cases of brucellar spondylitis successfully treated by medical and surgical therapy.

**KEY WORDS :** Brucellosis · Spondylitis.

## INTRODUCTION

Brucellosis, a zoonosis with a worldwide distribution, is a systemic infection caused by facultative intracellular bacteria of the genus *Brucella*<sup>3,6</sup>. *Brucella* species are gram negative bacilli that are transmitted by direct contact with infected animals or by the consumption of products from infected animals<sup>1,8,10</sup>. The disease is a major public health problem in the Mediterranean region, the Middle East, and Latin America but is rare in Korea<sup>3,4,5,15</sup>. However, the incidence of Brucellosis is on the increase in Korea<sup>4</sup>. It may affect various body organs and systems including the musculoskeletal organ and the reticuloendothelial system. Osteoarticular manifestations are the most frequent and severe complications, but it is difficult to diagnose because its clinical symptoms are variable and non-specific<sup>5,12</sup>. It should therefore be included in the differential diagnosis of patients who have back pain and spinal neurological disorders. We describe three cases of brucellar spondylitis that were treated by surgical and medical therapy.

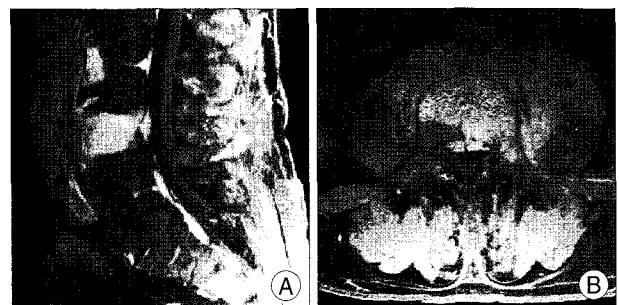
## CASE REPORT

### Case 1

A 67-year-old male cattle farmer presented with increasing lower back pain and the left leg pain for 3 months

prior. His pain was unresponsive to rest and pain killers. Also, he complained of night sweating. He had a history of contact with a *Brucella*-infected cow (delivery of her calf) a few months prior. A general physical examination was normal except for tenderness in the lower back area. Neurologically, he had paresthesia in L4,5 dermatomes of the left leg. Laboratory studies revealed an erythrocyte sedimentation rate (ESR) of 20 mm/hr, and a C-reactive protein (CRP) level of 16.6 mg/dL. The lumbar spine MRI showed osteomyelitis of L4 vertebral body with a prevertebral abscess (Fig. 1). We performed a percutaneous biopsy and attempted microbiological culture of the abscess lesion but the result was negative. He was transferred to another hospital and the diagnosis of brucellosis was confirmed by a positive blood culture for *B. abortus*. He underwent operation to remove the abscess and antibiotics (streptomycin, doxycy-clin) were administered. His symptoms improved thereafter.

- Received : July 4, 2008 • Accepted : September 17, 2008
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**Fig. 1.** Magnetic resonance images of the lumbar spine showing strong enhancement in the L3, L4 vertebral body (A). Prevertebral and epidural soft tissue masses in the L3, L4 levels are showing on T1-enhanced images (A and B).

**Case 2**

A 66-year-old male cattle farmer presented with high fever, nausea, vomiting, and lower back pain. He had a history of contact with a *Brucella*-infected cow a few months prior. On physical and neurological examination, his body temperature was 37.8°C and lumbar spinal movements were restricted and painful. Routine laboratory tests revealed an erythrocyte sedimentation rate (ESR) of 126 mm/hr, C-reactive protein (CRP) of 52.6 mg/dL, and white blood cell count of 5230/μL with 58.3% neutrophils and 31.2% lymphocytes. A standard tube agglutinin test, which measures serum immunoglobulin G levels against *Brucella* antigen, was positive at a titer of 1/1140. Lumbar spine magnetic resonance image (MRI) revealed osteomyelitis of T12, L1 vertebral body with a small epidural abscess (Fig. 2). The patient was treated with doxycyclin combined with rifampin for 2 months. Three weeks after starting antibiotics, his ESR and CRP fell to 46 mm/hr and 2.8 mg/dL, respectively. The patient's back pain was progressively reduced during the course of medical treatment.

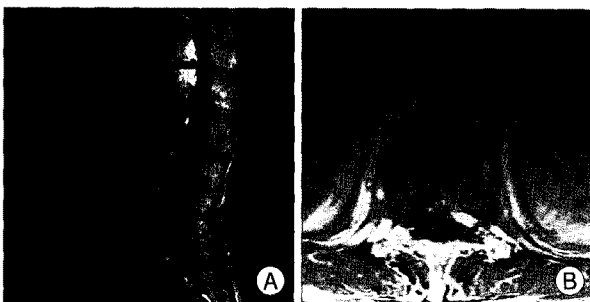
**Case 3**

A 60-year-old male farmer visited our hospital because of neck pain and mild numbness in both arms for 2 weeks. He had no other general problems or fever. No neurological deficits other than mild numbness in both arms were

revealed by a neurological examination. Cervical spine MRI revealed C5-6 cervical intervertebral disc herniation (Fig. 3), and therefore an operation (corpectomy with anterior interbody fusion at the level of C5-6) was performed. During the operation, pus was found, and the infective spondylitis was diagnosed. Laboratory studies revealed an erythrocyte sedimentation rate (ESR) of 79 mm/hr, and C-reactive protein (CRP) of 138 mg/dL. After a few weeks. Brucellosis was diagnosed with a positive culture of the pus obtained during the operation and a positive standard tube agglutinin test (a titer of 1/1035). He was started on doxycyclin and his symptoms improved.

**DISCUSSION**

*Brucella* species are small gram-negative bacilli that are transmitted to humans either by the consumption of unpasteurized milk or other products from infected animals or by direct contact with infected animals<sup>8-10</sup>. Symptoms are non-specific and can include fever, headache, back pain, myalgias, and fatigue<sup>5,12</sup>. Because of the non-specific symptoms of this disease and difficulty in distinguishing this disease from other infectious spondylitis diseases on MRI, suspicious patients with a history of direct contact with infected animals or consumption of their products is important for early diagnosis and treatment<sup>1,13</sup>. Brucellosis may affect various body organs, but spondylitis is the most frequent and significant complication of brucellosis and the reported incidence varies from 2%-60%<sup>1,5,10,12</sup>. Lumbar vertebrae are the most frequently involved regions followed by thoracic and cervical segments<sup>1,3,10</sup>. *Brucella* species that cause human brucellosis are *B.melitensis*, *B.abortus*, *B.suis*, and *B.canis*<sup>1,5</sup>. *B.abortus* is the most common in Korea<sup>4</sup>. Definite diagnosis of brucellosis is established by clinical manifestations and the isolation of *Brucella* species from blood or bone marrow cultures<sup>1,5,9</sup>. In the absence of bacteriologic confirmation, a positive serology for *Brucella* (titer over 1 : 160 in a standard tube agglutination test or a 4-fold increase in the *Brucella*-antibody titer) is needed for definite diagnosis<sup>1,5,7</sup>. Elevated ESR is found in most cases and is a useful measure for assessing response to therapy<sup>1</sup>. MRI plays an important role in the diagnosis, assessment, and management of patient with brucellar spondylitis. The lesion may be unifocal or multifocal on MRI<sup>14</sup>. This disease has a predilection for the lower lumbar spine, and intact vertebral architecture and diffuse vertebral osteomyelitis, disc space involvement, minimal paraspinal soft tissue involvement, and absence of gibbus deformity are features that suggest brucellar spondylitis over other pyogenic spondylitis and Tuberculous spondylitis<sup>11,14</sup>. There is no



**Fig. 2.** Magnetic resonance images of the lumbar spine showing patchy enhancement in the T12, L1 vertebral body (A). Epidural thick enhancing lesion in the T12 level is showing on T1-enhance images (B).



**Fig. 3.** Magnetic resonance images of the cervical spine showing signal changes in the C5, 6 vertebral body (A). An epidural soft tissue mass is showing on axial scan (B).

standard recommended treatment regimen and various combinations of antibiotics can be used to treat spinal brucellosis, however SDR combination therapy (streptomycin +doxycyclin +rifampin =>1 g/day intramuscularly for 15 days +100×2 mg/day per oral for 45 days +15 mg/kg (600-900 mg/day)×1 per oral for 45 days) is the most effective regimen for reducing failure and relapse rates in brucellar spondylitis<sup>2,13</sup>.

## CONCLUSION

Brucellar spondylitis should be included in the differential diagnosis of back pain. It is difficult to diagnose because its symptoms and signs are non-specific. Therefore, MRI, blood cultures, tissue biopsy and cultures are recommended in suspected cases.

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