

Spinal stenosis caused by epidural and paraspinal abscess due to brucella infection

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Abstract

Human brucellosis is a common zoonotic infectious disease in the world. Spinal epidural abscess development in brucellosis is a rare but serious complication. We aimed to discuss the clinical, radiological and serological findings of the spinal stenosis caused by epidural and paraspinal abscess due to brucella infection. Treatment of the abscess usually consists of surgical drainage, decompression and antibiotherapy. In our case, since the Brucellar spinal epidural abscess was diagnosed in the early period, it was improved with medical treatment without any surgical intervention. In the early diagnosis of the disease, serology and culture as well as magnetic resonance imaging are extremely important.

Keywords: Brucella, spinal epidural abscess, spinal stenosis.

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Introduction

Human brucellosis is common all over the world and that indicates the involvement of many organs and systems. It is common in our country and in developing countries. It is an important public health problem due to economic losses and its direct impact on food safety.¹⁻³ It is an endemic disease in the Mediterranean region including Turkey.² Human brucellosis is closely linked to poor animal husbandry methods, feeding habits, and hygiene standards. The disease is transmitted to people by direct contact with the infected animals or by consumption of unpasteurized milk and dairy products.³ The disease affects many organs, especially the musculoskeletal system.⁴

Osteoarticular involvement is one of the complication of brucellosis. It can be mixed with any disease involving the

spine. It can rarely cause spinal epidural abscess. The incidence of spinal involvement in brucellosis is 2% to 65%. There is no specific sign or symptom of the disease. Osteoarticular involvement can cause neurological and vascular complications and is difficult to diagnose.^{4,5} Diagnosis of musculoskeletal involvement may be difficult because of non specific clinical symptoms. imaging of musculoskeletal system may be helpful in the diagnosis of the disease.⁵

Spinal epidural abscess development in brucellosis is a rare but serious complication. Brucellar spinal epidural abscess can be improved with medical treatment especially if it is diagnosed in early periods. Otherwise, patients with spinal epidural abscess may undergo surgical approaches and develop serious complications leading to death.^{4,5}

The purpose of this study is to present magnetic resonance imaging (MRI) findings of the spinal stenosis caused by epidural and paraspinal abscess due to brucella infection. This will draw attention on rarely but treatable pathology that needs early diagnosis to prevent neurological damage.

Case Report

A 55-year-old, male patient was admitted to the neurology department of Süleyman Demirel University Medical Faculty Hospital in January 2016 with complaints of fatigue, fever, weakness, loss of appetite, low back pain, leg pain causing difficulty in walking since three weeks. Laboratory examination revealed white blood cell count, erythrocyte sedimentation rate and C-reactive protein values as 5700 mm³, 33 mm/h, 31.3 mg/dL respectively. A Rose Bengal test for brucellosis was positive and the standard tube agglutination test confirmed this finding with a titre of 1/320 positive. The patient was also directed to spinal MRI. All the MRI images were reviewed retrospectively. Epidural abscess was evaluated by signal intensity, location, extent, and enhancement pattern. The compression of spinal cord, vertebral bodies, and paraspinal soft tissues were assessed. The vertebral bodies and intervertebral discs were normal. The epidural abscess, which extends from

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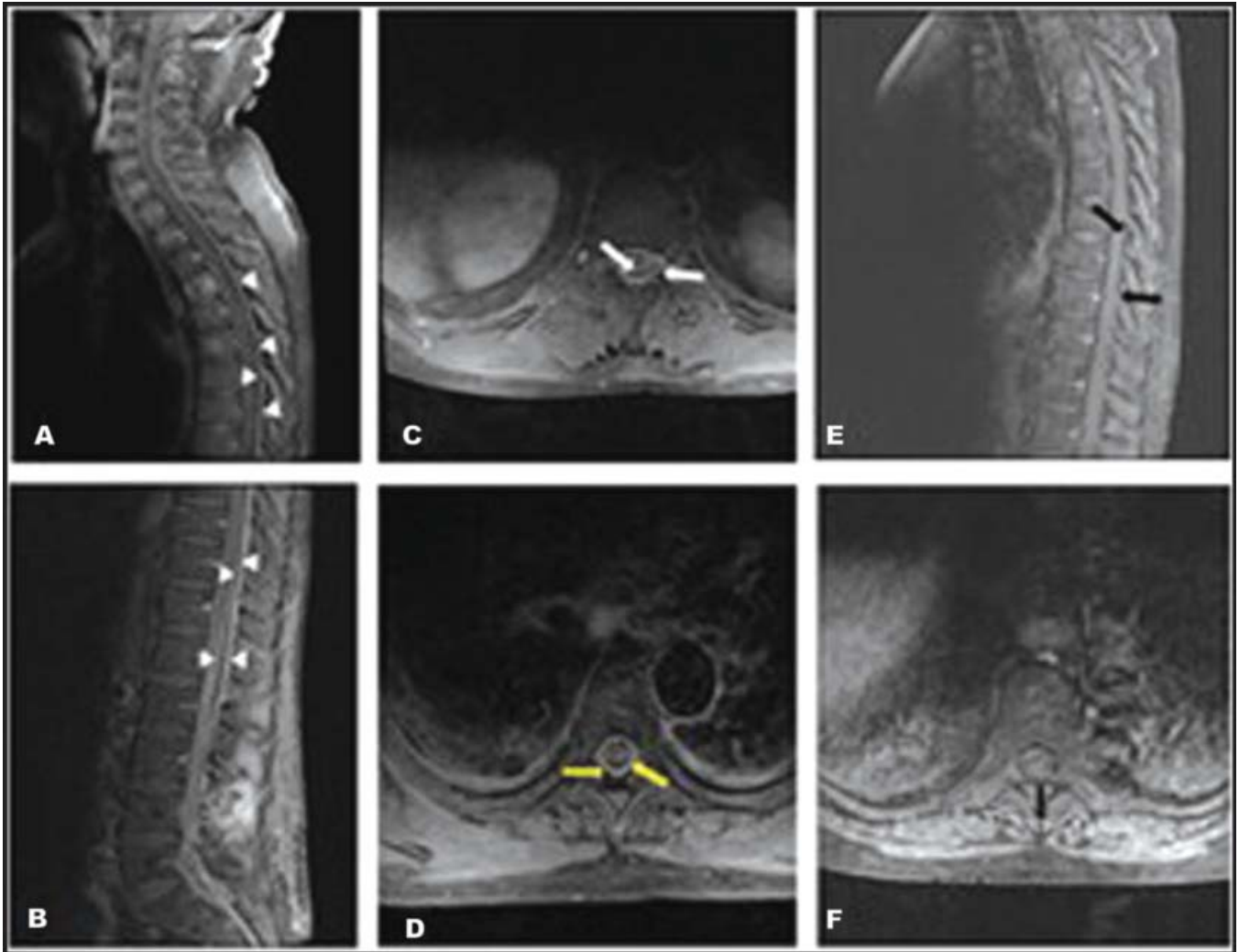


Figure-1: MRI of the thoracic and lumbosacral spine (sagittal and axial view).

Fat suppressed sagittal and axial T1 weighted MRI of thoracic (A, C) and lumbosacral (B, D) spine with contrast enhanced showing extending dorsolateral epidural abscess with thickening meninges (white arrows heads) and spinal cord compression (white arrows). After one month, post gadolinium contrast medium, sagittal (E) and axial (F) T1 weighted with fat suppressed spinal MR demonstrating complete recovery of epidural abscess with only medical therapy (black arrow).

T2 to L2 was causing spinal cord compression. The T1 - weighted (T1-W) images showed the epidural abscess to be hypointense relative to the spinal cord and isointense with cerebrospinal fluid. On the T2-weighted (T2-W) images, the epidural abscess was hyperintense relative to the spinal cord and isointense with cerebrospinal fluid. The epidural abscess was located posterior to spinal canal. After intravenous gadopentetate dimeglumine with fat suppressed serials showed marked peripheral enhancement of epidural abscess and dural thickness near abscess formation. At the level of lumbosacral junction, left paraspinal soft tissue abscess formation was measured 3x2x6 cm (Anteroposterior x transverse x craniocaudal). It was hypointense on the T1-W images

and hyperintense on the T2-W images. After intravenous gadopentetate dimeglumine injection, peripheral contrast enhancement and relationship with the epidural abscess were demonstrated (Figure-1). Medical treatment was started for Brucellar spinal epidural abscess which was diagnosed in the early period. Four drug regimens including doxycycline (200 mg/day), gentamicin (240 mg/day), intravenous ciprofloxacin (800 mg/day), and trimethoprim/ sulfamethoxazole (2400/480 mg/day) were administered. After three months of medical therapy, post gadolinium contrast medium, sagittal and axial T1-W with fat suppressed spinal MR demonstrated complete recovery of epidural and soft tissue abscess formation. The patient recovered

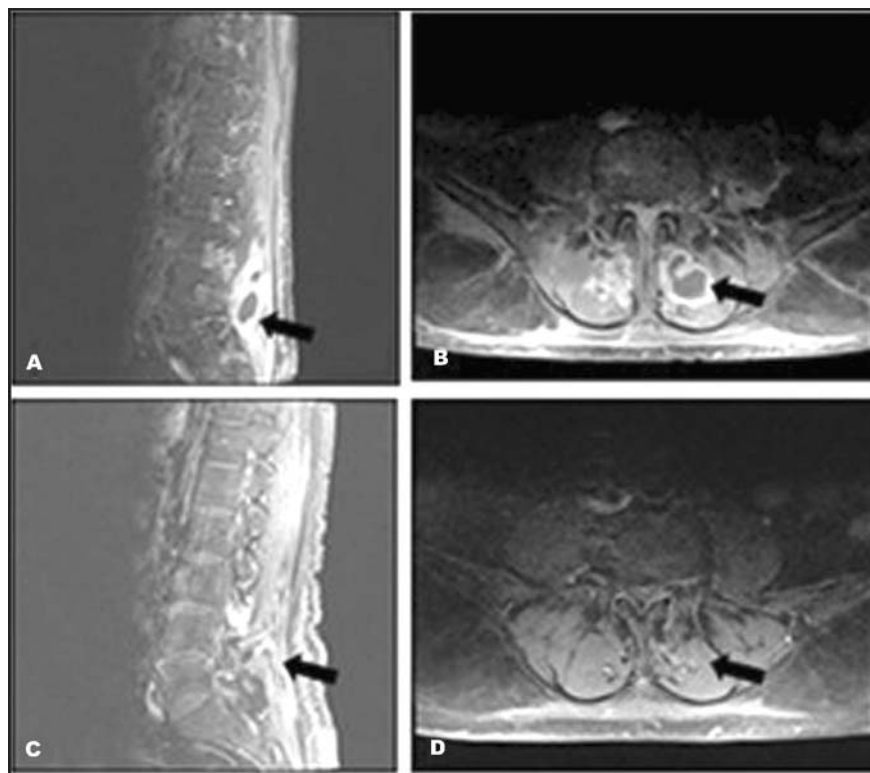


Figure-2: MRI of the lumbosacral spine (sagittal and axial view).

Fat suppressed sagittal (A) and axial (B) T1 weighted MRI of lumbosacral spine with contrast enhanced showing peripheral enhancement mass with compatible paraspinal abscess (white arrow). It is more pronounced on the left and associated with epidural abscess. After one month, post gadolinium contrast medium, sagittal (C) and axial (D) T1 weighted with fat suppressed spinal MR demonstrating complete recovery of paraspinal abscess with only medical therapy (black arrow).

with medical treatment without any surgical approach (Figure-2).

Discussion

Human brucellosis is one of the most common zoonotic infectious diseases.^{1,3} Although it is controlled in developed countries, but a major public health problem in Turkey.³ The most commonly localized form of human brucellosis is osteoarticular form which affects up to 85% of patients.⁴ Spondylitic lesions mainly affect lumbar spine and followed by cervical and thoracic spine. It is an important entity because of its high prevalence, associated functional sequel and the main cause of morbidity in brucellosis.^{4,5} Sacroilitis, spondylitis, peripheral arthritis and osteomyelitis are the most common complications of brucellosis-induced osteoarticular complications. Nevertheless, spinal epidural abscess due to brucellosis is usually a rare complication of spondylitis.⁵ In our case, spondylitis was not present. Spinal epidural abscess is rare but a serious

medical condition. If it is not treated it can cause permanent neurological deficits, or even death. The incidence of spinal epidural abscesses is 0.01-0.02% cases in hospital admissions.^{6,7} The most frequent etiology is *Staphylococcus aureus* but other bacterias may also occasionally be involved such as *Brucella*. Well-recognised predisposing factors of the spinal epidural abscesses are immunosuppression, diabetes, alcoholism and addiction to intravenous drugs.^{8,9} In our case, Diabetes Mellitus was the predisposing factor. The most common location of epidural abscess is the dorsolumbar vertebra.¹⁰ In our case the epidural abscess, which extends from T2 to L2 was causing spinal cord compression. Treatment usually consists of surgical drainage and decompression plus intensive antibiotherapy.^{11,12} In our case, since the Brucellar spinal epidural abscess was diagnosed in the early course of the disease, it was improved with medical treatment. No surgical intervention was required.

Direct radiological graphs, bone scintigraphy and computed tomography can be used for the diagnosis of brucellosis,⁵ but magnetic

resonance imaging is the most reliable diagnostic test for this disease.⁷

The spondylodiscitis, root compression and the relationship of infection or abscess formation with environmental structures may be revealed correctly with MRI. Epidural abscesses may be seen as a mass lesion that is compressing the adjacent structures or extending to paraspinal spaces. The contrast-enhanced MRI examination is the most appropriate radiological tool for the diagnosis of epidural abscess.² In our case, increased intervertebral disc space signal and linear contrast enhancement in end plates confirmed discostebral infection. Soft mass lesion in anterior epidural adipose tissue is the suggestion of abscess formation. The recognition of spinal epidural abscesses is difficult due to various non-specific presentations.⁴ There is no specific finding in MRI for spinal infections due to brucellosis.² In endemic areas, brucellosis should be considered in patients suffering from low back pain and should be ruled

out by serological testing. Diagnosis of brucellosis is made via serological tests of blood and cerebrospinal fluid.^{4,7} Therefore, performing the Wright test in endemic areas for brucellosis is of great importance.⁵ MRI images help to minimize misdiagnosis. It can be used in combination with detailed medical history, epidemiological and laboratory data to confirm the diagnosis.^{7,10-12}

Conclusion

When investigating the etiology of Spinal epidural abscess in a country like Turkey, brucellar epidural abscess should be kept in mind. Early diagnosis and treatment are very important to avoid serious surgical intervention and complications. In the diagnosis of the disease, serology and culture as well as MRI are extremely important. In cases of *Brucella* spinal epidural abscess, close conservative treatment may be sufficient without surgery.

Informed Consent: Informed and written consent was taken from the patient to publish the case report.

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Conflict of Interest: None to declare.

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