CASE REPORT

Cervical Spondylitis and Epidural Abscess Caused by Brucellosis: a Case Report and Literature Review

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Brucellosis is a zoonotic disease widely seen in endemic regions and that can lead to systemic involvement. The musculoskeletal system is frequently affected, and the disease can exhibit clinical involvements such as arthritis, spondylitis, spondylodiscitis, osteomyelitis, tenosynovitis and bursitis. Spondylitis and spondylodiscitis, common complications of brucellosis, predominantly affect the lumbar and thoracic vertebrae.

Epidural abscess may occur as a rare complication of spondylitis. Spinal brucellosis and development of epidural abscess in the cervical region are rare. Development of epidural abscess affects the duration and success of treatment. Spinal brucellosis should be considered in patients presenting with fever and lower back-neck pain in endemic regions, and treatment must be initiated with early diagnosis in order to prevent potential complications.

INTRODUCTION

Brucellosis is transmitted through direct contact with infected animals or the consumption of infected milk products. The principal symptoms are fever, myalgia and arthralgia.^{1,2} The disease can lead to systemic involvement, and the most common complications are seen in the musculoskeletal system. Musculoskeletal complications, such as arthritis, bursitis, tenosynovitis, sacroiliitis, spondylodiscitis and osteomyelitis have an adverse impact on quality of life.³ In the case of vertebral column involvement, however, the lumbar level is frequently affected.⁴ Involvement of the cervical vertebrae and epidural abscess are quite rare phenomena.^{5,6} We report herein a case of cervical spondylitis and epidural abscess (CEA) developing secondary to brucellosis, which

was managed by antibiotherapy without resorting to surgery.

CASE REPORT

A 44-year-old man presented with a 15-day history of fever, cervical pain and restricted neck movements. The patient worked in animal husbandry, and had a history of consuming unpasteurized milk products. Examination findings were sensitivity in the para-vertebral muscles, decreased cervical lordosis and restricted neck movements. No neurological deficit was determined. Laboratory test results for hemoglobin was 11.4 g/dl, for the sedimentation rate 60 mm/h and for CRP 7.02 mg/L. The Rose Bengal and tube agglutination tests were positive, and Brucella spp. grew in blood cultures. At magnetic resonance

Figure 1. (a). Sagittal STIR sequence shows hyperintensity in C5-C6 vertebral bodies. (b) Sagittal image shows contrast enhancement in C5 and C6 vertebral bodies as well as enhancing abscess formation in epidural area.

imaging (MRI), hypointense signal changes on T1-weighted sequence and hyperintense signal changes at T2-weighted and STIR sequences were observed in C5 and C6 vertebrae (**Fig. 1**). Epidural abscess formation with a craniocaudal length of 3.5 cm at this level was observed. Decreased spinal canal diameter and minimal spinal cord compression were present secondary to the epidural abscess. *Brucella* spondylitis was diagnosed. The patient was started on doxycycline, rifampicin and streptomycin, and the symptoms resolved rapidly.

DISCUSSION

Brucella-related musculoskeletal involvement is a most common manifestation of systemic brucellosis reported in 10-80% of cases.^{7,8} Lumbar spine is frequently affected but involvement of cervical spine is very rare.⁹ Colmenero and Solera reported cervical involvement at levels of 1.2% and 2.1%, respectively, in patients under monitoring for brucellosis.¹⁰ The clinical significance of cases of cervical spondylitis and epidural abscess is that the increased neurological complications in such patients have an adverse effect on prognosis. Due to its rich blood supply, the superior end plate is affected first in spinal brucellosis, and inflammation spreads to the vertebral body and disk.

It is difficult to diagnose *brucella* spondylitis and epidural abscess which cause non specific symptoms such as lower back and neck pain, fever and lethargy.¹¹ Serological tests and radiological images are important, together with medical history, in the diagnosis of spinal brucellosis. The most valuable radiological technique in the diagnosis of spinal brucellosis and spinal epidural abscess is MRI due to its high resolution power and ability to char-

acterize tissues.¹² In our case, widespread signal increase in the bodies of the C5 and C6 vertebrae and enhancing abscess formation in the epidural area were detected at MRI. The subarachnoid space was obliterated in association with the epidural abscess, and mild cord compression was present. There was no pathological signal or contrast in the intervertebral disk. *Brucella* infection is diagnosed with laboratory tube agglutination tests above 1/160 and agent growth in blood culture.¹ We confirmed the diagnosis of brucellosis in our case with the tube agglutination test and blood culture.

Infectious or tumoral causes and complications secondary to trauma may be considered at differential diagnosis. Tuberculous spondylitis should be primarily considered among infectious causes. Radiological changes in tuberculous spondylitis resemble brucellosis. However, in contrast to brucellosis which frequently involves the lumbar column, it causes tuberculous midthoracic involvement.¹³ Changes in affected vertebra begin earlier and are more aggressive, with the emergence of severe destruction, collapse, large paraspinal abscesses and Gibbus deformity. Additionally, vertebral metastases, degenerative changes, hematoma and trauma should also be considered at differential diagnosis.^{12,13}

There is no standard therapy for *brucella* spondylitis. Treatment options include antibiotic therapy and surgical drainage. Treatment of spinal brucellosis requires more time than that needed for systemic brucellosis. The aim of long-term treatment is to prevent relapses, and to plan the treatment process according to clinical features. The rate of surgical drainage ranges from 7.6% to 33% in spinal brucella.¹⁴ Surgical treatment is preferred in some cases such as progressive neurological deficit, spinal instability, vertebral collapse and insufficient effectiveness of antibiotic therapy. The combinations of tetracycline, rifampicin, aminoglycosides, trimethoprim sulfamethoxazole and quinolone are used for antibiotherapy. Standard treatment regimens are not indicated. The most common regimen is the combination of rifampin (600-900 mg/day) and doxycycline (200 mg/day). The decision what drugs to use and how long treatment should take varies from researcher to researcher.^{15,16} A standard therapy for osteoarticular brucellosis has not been reported, but treatment duration of at least 3 to 6 months is recommended.¹⁷ We applied a triple combination of doxycycline, rifampicin and streptomycin and achieved a good response. No surgical procedure was required since our patient had no neurological

deficit and responded well to drug therapy. Similarly, Solera et al. reported treating patients with brucella-related cervical epidural abscess and spinal cord compression using combined antibiotics without surgery.¹⁸ Pina et al. reported four cases of cervical epidural abscess and reported administering surgical treatment due to worsening neurological findings in three of these cases.¹⁹ Kaptan et al. reported a study in which 2 out of 19 CEA patients required surgical intervention to manage their disorders.¹⁴

In conclusion, abscess is a serious complication of spinal brucellosis and can result in permanent damage by causing neurological deficits. Early diagnosis is important in patients with symptoms such as fever, paravertebral spasm, and lower back and neck pain. Treatment must be planned depending on severity of disease, the patient's clinical condition and response to treatment. In conditions where infection does not resolve with antibiotic therapy, when neurological deficits occur and are progressive, priority should be given to surgical treatment.

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Цервикальный спондилит и эпидуральный абсцесс, причиненные в результате бруцеллёза: описание случая и обзор литературы

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Бруцеллез представляет собой зоонозную инфекцию, которая часто встречается в эндемических районах и может привести к систематическим повреждениям. Болезнь часто распространяется на опорно-двигательный аппарат и может проявиться в виде таких клинических повреждений, как артрит, спондилит, спондилодисцит, остеомиелит, теносиновит и бурсит. Спондилит и спондилодисцит являются часто встречающимися осложнениями в результате бруцеллеза и преимущественно оказывают влияние на грудные и люмбальные (поясничные) позвонки.

Эпидуральный абсцесс может появиться как редкое осложнение в результате спондилита. Спинальный бруцеллез и развитие эпидурального абсцесса в районе цервикса встречаются редко. Развитие эпидурального абсцесса оказывает влияние на продолжительность и успешный исход лечения. Наличие спинального бруцеллеза следует иметь в виду в эндемических районах у пациентов с повышенной температурой и болях в нижней части поясницы/шеи, а лечение следует начинать с момента ранней диагностики, в целях предотвращения возможных осложнений.