

Spinal cord compression caused by brucellar spondylodiscitis

Brahim El Mostarchid, Naama Okacha, Ali Akhddar, Miloudi Gazzaz, Mohamed Boucetta

Abstract

Background: Brucellosis is a zoonosis which is endemic in the Mediterranean Basin, the Arabian Peninsula and South America. Spondylitis is a late complication of brucellosis and appears in 5 - 10% of cases. A case of spinal cord compression caused by a brucellar spondylodiscitis is reported.

Case Report: A 42-year-old soldier was admitted with paraparesis. Six months previously he had presented with symptoms suggesting systemic brucellosis with fever and weight loss (12 kg) and continuous lumbosacral pain. He was given amoxicilline and acid clavulanic for 10 days, with subsequent regression of fever. Five months later the patient presented with paraparesis. Diagnosis was established by history and a compatible clinical picture, together with standard tube agglutination (titre of > 160 of antibodies) for brucellosis. Lumbar CT and MRI scans showed spondylodiscitis at L1 level with sacroiliite. Bone technetium scintigraphy revealed a multiple fixation compatible with chronic brucellosis. The patient was operated with decompression and fixation by pedicle fixation system, and prescribed oral doxycycline for 5 months. Complete recovery was found at six month follow-up.

Conclusion: An early diagnosis of brucella spondylitis is difficult. In endemic areas, brucella spondylodiscitis should always be considered in the differential diagnosis of other aetiologies of spondylodiscitis. Surgery is indicated when major neurological deficits are present. If antibiotic treatment is chosen as initial therapy, the possibility of sudden neurological deterioration must be borne in mind. (p102-104)

Keys words: Brucella, cord compression, epidural involvement and surgery

Introduction

Brucellosis is a zoonosis with worldwide distribution caused by gram-negative, aerobic bacilli of the genus brucella.^{1,5,8} Brucella melitensis account for most cases in many studies, but cases caused by brucella abortus and brucella suis are also frequently encountered.⁵

Brucellosis is a systemic infection that can involve many organs and tissues. Osteoarticular involvement is the most common complication of brucellosis. Spondylitis is the most prevalent and important clinical form of osteoarticular involvement in adults. Spinal cord compression (SCC) due

to spondylodiscitis is very rare.⁶ Rarely, compression is due to brucellar epidural abscess.^{2,5,7}

Spinal brucellosis usually starts in the superior endplate, an area with a rich blood supply, but occasionally the inferior endplate may also be involved. The subsequent progress of the infection depends on the size of the initial inoculum, the virulence of the organism, and the immunity of the host, so the infection may either regress and resolve or progress to involve the entire vertebral body and disc space, and subsequently the adjacent vertebra.² Brucellar spondylitis occurs most frequently in the lumbar region, followed by cervical and thoracic locations.⁵

Case Report

A 42 year-old soldier was referred to our department with paraparesis. Six months prior he had complained of fever, myalgia, vomiting and weight loss (12 kg) and continuous lumbosacral pain. He was given empiric antibiotherapy with subsequent regression of fever. One month ago the patient presented with difficulty in walking and urinary incontinence. On admission, neurological examination found paraparesis, with impaired sensation at L1 level, and loss of sphincter control. Somatic examination showed

Neurosurgery Department
Mohamed V, Military Teaching Hospital
Rabat
Morocco.

Correspondence:

Dr. Brahim El Mostarchid
Neurosurgery Department
Mohamed V, Military Teaching Hospital
Rabat
Morocco
Fax : (212 3) 768 3440
Email: mostarchid@yahoo.fr

lumbar stiffness and severe pain on mobilization and percussion of the lumbar spine was noted.

Lumbar computed tomography (CT) scan showed a lytic lesion at L1 and left sacroiliitis (Fig. 1). Spinal magnetic resonance imaging (MRI) showed hypointense lesion on T1-weighted image and enhanced with intravenous infusion of contrast. Lesion showed hypointense signal on T2-weighted images. Bone scintigraphy with Tc99 showed multiple fixations at L1 lumbar vertebra, sacroiliac bone, shoulder, and sternum. Red cell count was 12,000 per 3 mm. Erythrocyte sedimentation rate was 50 mm in the first

hour, C-reacting protein was 12, skin intradermo-reaction to 10% tuberculin was negative. The brucella seroagglutination was positive (titre 1:640). The patient underwent surgery and after L1 laminectomy a reddish, yellowish epidural lesion was removed, with good decompression (Figs. 2, 3 and 4). Procedure was concluded with plate system used for stabilization. Histological examination of the specimen revealed chronic granulation tissue formation. Postoperative outcome was marked by rapid recovery of neurological deficit. He was treated with 200 mg doxycycline for 5 months. Complete recovery was found at six month follow-up.

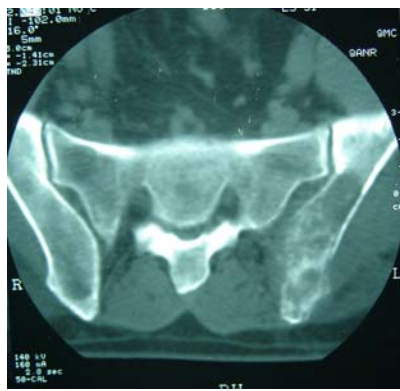
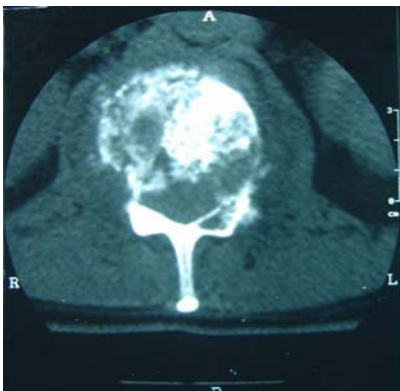


Figure 1 - Lumbar CT scan on axial view showing involvement of L1 vertebra body with spinal cord compression and (a) prevertebral involvement (b) left sacroiliitis on bone window



Figure 2 →↑ Lumbar MRI on T1-weighted image on sagittal section after intravenous infusion of contrast, showing L1 epidural abscess with signs of spondylodiscitis and prevertebral involvement

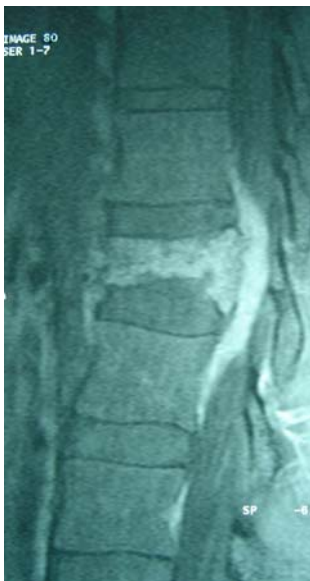


Figure 3 →↓ Lumbar MRI on T2-weighted image on sagittal sections showing L1 vertebral epidural abscess presenting as hypointense signal, with spinal cord compression signs and spondylodiscitis

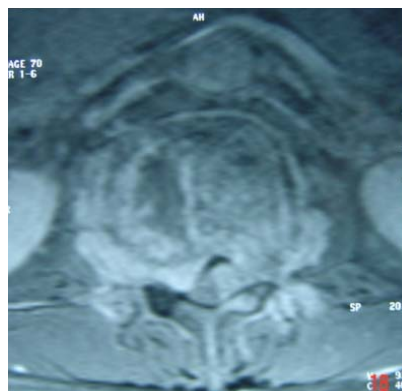
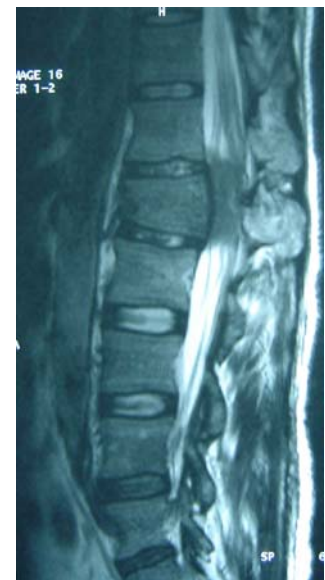


Figure 4 - Lumbar MRI on density protonic image on (a) sagittal and (b) axial sections, showing L1 vertebral epidural abscess presenting as hyperintense signal with spinal cord compression and spondylodiscitis



Discussion

Brucellosis is a zoonosis which is endemic in the Mediterranean Basin, the Arabian Peninsula and South America. It is transmitted to humans either by direct contact or by the ingestion of unpasteurized milk and dairy products.^{1,8} After phagocytosis, the bacilli multiply intracellularly and then spread via the blood stream and in organs rich in reticulo endothelial tissue.

Bone involvement is reported in approximately 10% of cases, with the spine, and especially the lumbosacral region, most commonly affected. Usually, spinal infection presents as spondylodiscitis with no specific clinical or radiologic findings.^{5,6}

Neurological complications of brucella has ranged from 0 to 17.8%, with the majority being around 2 - 5%.⁸ The spondylitis is a late complication of brucellosis appearing in 5 - 10% of cases. Only 15% of spondylitis cases will complicate with epidural abscess.

Our patient presented with spondylodiscitis and sacroiliitis. The medical history showed that our patient with risk factors for brucellosis had presented with misdiagnosed systemic brucellosis. The fever had been treated by an empiric antibiotic without any exploration.

The major obstacle to establishing a clinical diagnosis of spondylitis early in the course of brucellosis is the nonspecific and subtle nature of the symptoms and signs.

The finding of brucella organisms in blood cultures is diagnostic and several specimens for culture should be taken. Spondylitis is a late complication of systemic brucellosis. The presumptive diagnosis of brucellar spondylodiscitis can be made serologically. Positive results (titres of antibodies to brucella of > 1: 160 [standard tube agglutination test] or > 1: 320 [Coombs' test] are common.^{5,7,8}

Magnetic resonance imaging is important in the diagnostic assessment and management of a patient with spondylodiscitis. Brucellar spondylodiscitis may be unifocal or multifocal. Predilection for the lower lumbar spine, intact vertebral architecture despite evidence of diffuse vertebral osteomyelitis, and minimal associated paraspinal soft-tissue involvement are all features that suggest brucellar infection over other infectious diseases, including granulomatous diseases such as tuberculosis.⁵ T1-weighted MRI typically shows low signal intensity in the vertebral body that reflects increased extracellular fluid within the marrow. Contrast medium causes enhancement of the affected bone. T2-weighted MRI shows high signal intensity in the vertebral body, as was the case in our patient.

The most widely used antibiotic combination for therapy is doxycycline and aminoglycoside. This combination provides sustained improvement in the conditions of 60 – 90% of patients. Rifamin, trimetoprim sulfamethoxazole (TMP/SMX) doxycycline and ceftriaxone achieve high levels in the CSF. A combination of doxycycline plus rifampin and or / TMP/SMX for a duration of six weeks to one year was most often used in others studies for the treatment of neurobrucellosis.

Conclusion

Management of brucellar spondylodiscitis remains controversial with regard to the selection of antibiotics, the duration of treatment, and the role of surgery. Our patient was treated for 5 months with doxycyclines with total recovery. Patients with spinal neurobrucellosis generally respond well to treatment and recover completely from neurological deficit/s but in some patients residual, permanent deficits may remain. Early diagnosis is mandatory. Some authors in endemic areas have reported cases of brucellar epidural abscess with neurological deficit/s treated only with pharmacological treatment. We believe and agree with recent experience that surgery is indicated when major neurological deficits are present.^{7,8} If antibiotic treatment is chosen as initial therapy, the possibility of sudden neurological deterioration must be taken into account. The most important prognostic factor in recovery is the preoperative neurological status. Contrary to the high morbidity and mortality rates reported in the pyogenic or tuberculosis spondylodiscitis, brucella spondylodiscitis has a good prognosis with early diagnosis and appropriate management.^{2,7}

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