

CASE REPORT

Brucellosis with cervical vertebrae and pulmonary involvement: A rare case

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ABSTRACT

The spine is the most common site of musculoskeletal involvement of brucellosis. However, there is no case report presented in the literature of both cervical vertebrae spondylodiscitis and pulmonary involvement of brucella.

We reported a 52-year-old woman complaining for one month of fever with rigors, fatigue, malaise, pain on the neck and arm, and sweating. The Wright agglutination test for brucella was positive at titers of 1/640. MRI of the cervical vertebrae was consistent with spondylodiscitis and paravertebral and epidural abscesses.

Ground glass opacity was seen in the left upper lobe on CT scanning of the chest. Percutaneous image-guided biopsy was performed and *Brucella melitensis* was isolated. The patient was treated with streptomycin for 3 weeks, plus doxycycline and rifampicin for 3 months. We recommend tissue culture for brucella patients with lung lesions. Isolation of the microorganism from a biopsy material provides conclusive evidence. *J Microbiol Infect Dis* 2015;5(4): 173-175

Key words: Bacterial infection, brucellosis, cervical vertebrae, pulmonary involvement, spondylodiscitis

Servikal vertebra ve akciğer tutulumu ile seyreden bruselloz: Nadir bir olgu

ÖZET

Brusellozun yaygın görülen bir komplikasyonu olan kas-iskelet sisteminde vertebra tutulumu siktir. Literatürde servikal spondilodiskit ve pulmoner tutulumun birlikte olduğu vaka tespit edilmemiştir.

Bu çalışmada bir aydır titreme ile yükselen ateş, halsizlik, iştahsızlık, boyun ve kolda ağrı ve terleme şikayetleri ile gelen hasta sunulmuştur. Brusella aglütinasyon testi 1/640, servikal vertebra görüntülemesi spondilodiskit paravertebral ve epidural apse ile uyumlu idi. Akciğer tomografisinde sol üst lobda buzlu cam görünümü mevcut idi. Perkütan biyopsi ile alınan örnekten *Brucella melitensis* izole edildi. Hasta streptomisin, rifampisin ve doksisisiklin ile tedavi edildi. Biyopsi materyalinden mikroorganizmanın izole edilmesi kesin tanı koydurduğu için, akciğer lezyonu olan brusella hastalarında doku kültürü alınmasını öneriyoruz.

Anahtar kelimeler: Bakteriyel enfeksiyon, bruselloz, servikal vertebra, pulmoner tutulum, spondilodiskit

INTRODUCTION

Brucellosis is a zoonotic systemic infection caused by aerobic, non-motile, Gram-negative, facultative intracellular bacteria of the genus *Brucella*. Distributed worldwide, brucellosis continues to be a major public health problem in some countries, especially in the Mediterranean region. The disease often causes complications, the osteoarticular complication being the most common. Vertebral involvement in brucellosis is reported in 6-12% of cases.¹ The spinal column can be affected at any joint; the lumbar spine was the most frequently involved vertebral

region, followed by the thoracic, sacral and cervical spines. In most large studies of patients with brucellosis, pulmonary involvement is reported <1%–5%.^{2,3} We aimed to review a rare case of brucellosis with cervical vertebrae and pulmonary involvement that responded well to medical treatment.

CASE REPORT

A 52-year-old female farmer was admitted to the hospital with complaints for one month of fever with rigors, fatigue, malaise, pain on the neck and right arm, and sweating (especially at night). There was

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no significant predisposing underlying disease or factor in history except consumption of unpasteurized dairy products. On physical examination, her temperature was 37.8°C, and spinal tenderness was detected but there was no neurological abnormality. The laboratory tests included white blood cell count, 5600/mm³; erythrocyte sedimentation rate, 51 mm/h; C-reactive protein, 0.3 mg/L [normal, 0 to 0.8 mg/L]; and a normal blood biochemistry profile. The Rose Bengal test was positive, and the Wright agglutination test for brucella was positive at titers of 1/640. Magnetic resonance imaging (MRI) of the cervical vertebrae showed loss of height in the intra-

vertebral disks of C 6-7, signal abnormality in vertebral end plates, and corpus and intervertebral disks consistent with spondylodiscitis. Small epidural and paravertebral abscesses were identified (Figure 1 A). Chest radiograph revealed non-specific interstitial changes, and ground glass opacity was seen in the left upper lobe in the lingula by computerized tomography (CT) scanning of the chest (Figure 1 B). A tuberculin skin test was negative at 72 h. Percutaneous image guided biopsy was performed for a definite diagnosis. *Brucella melitensis* has been identified from the biopsy material by the automated VITEK 2 system (bioMerieux, France).

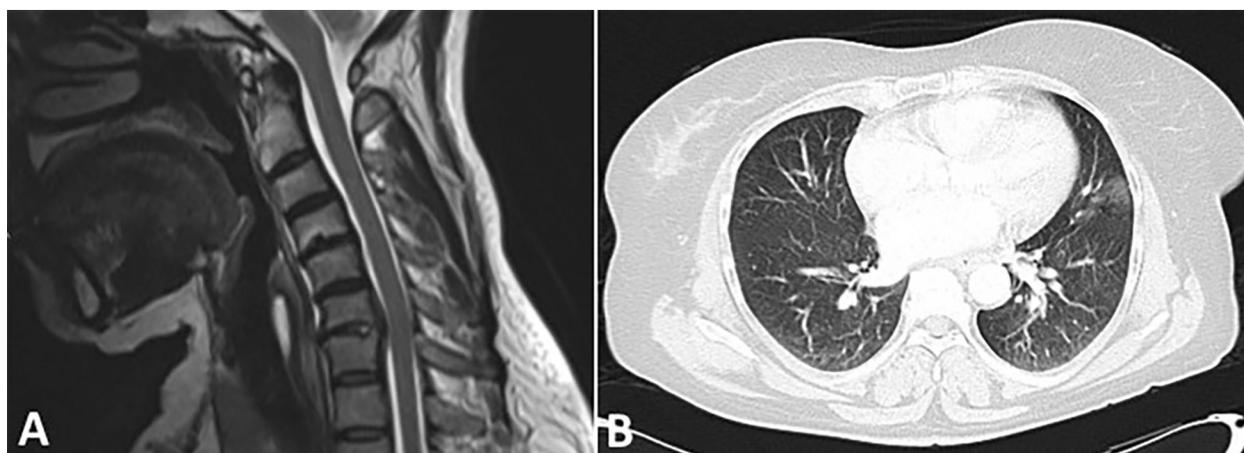


Figure 1. A) Spondylodiscitis at the level of C6-C7 in sagittal T1 MRI image. Abnormal low signal in the vertebral bodies, destruction of disk space with the adjacent endplate and vertebral body of C6 and C7. There is also paravertebral and epidural abscesses at the same level. **B)** Computed tomography scan in the axial plane shows focal pure ground glass opacity at the inferior lingular segment of the left upper lobe of the lung. There is no mediastinal lymph node enlargement.

The patient was started on streptomycin 1g/day for 3 weeks, and doxycycline 200 mg/d plus rifampicin 600 mg/d for 3 months. The symptoms were reduced progressively and the paravertebral and epidural abscesses disappeared. No relapse has been seen.

DISCUSSION

Brucellosis is an infectious disease transmitted by direct or indirect contact with infected animals or their products. Early diagnosis of brucellosis is important because this is a destructive disease that can cause serious morbidity if the diagnosis is delayed. The diagnosis is based on clinical, laboratory and radiological findings, and sometimes it can be difficult to make. The common reported symptoms are neck or back pain but these may be absent in

up to 15% of patients. Fever occurs in only about half of patients. Neurological deficits can be seen in a third of cases and are usually associated with epidural abscess, delayed diagnosis, cervical lesions and tuberculosis. The commonest sign detected on examination is spinal tenderness, which has been reported in 78–97% of cases.⁴ Standard brucella tube agglutination (Wright) test is the primary test and should be performed as a first step in the differential diagnosis of spondylodiscitis.⁵ Nevertheless, it should be kept in mind that there are seronegative cases and false positive results have also been reported in the literature. The most sensitive imaging method for the radiological diagnosis of spondylodiscitis is MRI. Its sensitivity has been reported to be 96%.⁶ It is used not only for early diagnosis but also in the follow-up of treatment response, because MRI is better than CT in imaging neural tis-

sue and abscesses; CT is currently mostly used for the radiological guidance of spinal biopsy.^{7,8} In our patient, a fluoroscopy-guided percutaneous biopsy was performed to make a definite microbiological diagnosis. The reported results of comparisons between CT-guided and fluoroscopic-guided spinal biopsy are the same.⁹⁻¹¹ Because it is difficult to diagnose and differentiate brucellosis from diseases caused by other microbiological agents, namely tuberculosis, a tissue sample is necessary. A definite diagnosis and treatment of spondylodiscitis with appropriate antibiotic relies on the isolation of bacteria from blood or tissue cultures. The pathogenesis of pulmonary involvement is not known in detail. Inhalation of contaminated aerosols and hematogenous spread are the most probable routes of transmission.¹²

Pulmonary involvement of brucellosis may appear only as a non-specific chest radiograph abnormality or lower respiratory tract symptoms such as cough, dyspnea, productive sputum, pleuritic chest pain, fever, and crackles.^{3,12} Although consolidation, hilar lymphadenopathy, pleural effusion, pneumothorax, abscess, and parenchymal nodules have all been documented^{2,3,13}, interstitial changes, such as the ones seen in our patient, are the most significant radiologic finding.²

In our case Wright agglutination test for was positive at titers of 1/640 and MRI of the cervical vertebrae showed loss of height in the intravertebral disks of C6-7, signal abnormality in vertebral end plates, and corpus and intervertebral disks consistent with spondylodiscitis. Millimetric epidural and paravertebral abscesses were also identified. Ozden et al. observed similar MRI findings to ours and also they claimed that MRI is more sensitive imaging method.¹⁴ In a retrospective study spinal involvement was observed in 20% of 96 patients and MRI was recommended for early diagnosis of spinal involvement.¹⁵

As a conclusion, there is no case report in the literature of cervical vertebrae brucellosis with pulmonary involvement. It should be kept in mind that pulmonary involvement of brucellosis can appear only as a chest radiograph abnormality. Percuta-

neous biopsy is considered the best procedure of choice for the musculoskeletal lesions of the spine since there are many difficulties in the diagnosis of brucellosis, namely in differentiating its features from tuberculosis. Isolation of *Brucella melitensis* from a biopsy material provides conclusive evidence.

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