

Clinical Study

Spinal brucellosis in South of Tunisia: review of 32 cases

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Abstract

BACKGROUND CONTEXT: Brucellosis remains an important economic and public health problem in some parts of the world. The spine is the most common site of musculoskeletal involvement of brucellosis.

PURPOSE: Assess the clinical, laboratory, radiological findings, and outcomes of vertebral involvement in brucellosis.

STUDY DESIGN: A retrospective study.

PATIENT SAMPLE: Thirty-two patients with spinal brucellosis during a period of 21 years (1990–2010) were included.

OUTCOME MEASURES: Clinical and radiological improvement.

METHODS: Diagnosis made on clinical presentation, laboratory findings, radiographic evidence, and the Brucellar etiology was considered when seroagglutination tests were positive at a titer of 1/160 or higher, and/or *Brucella* spp were isolated in the blood or sample cultures.

RESULTS: The mean age of patients was 51 ± 15.85 years (23 males, 9 females; age range, 19–74 years). The median diagnostic delay was 3 months. Back or neck pain (100% of patients), fever (78%), and sweats (68.6%) were the most common symptoms. Cultures of blood specimens from five patients (15.6%) were positive for *Brucella melitensis*. Four patients (12.5%) had motor weakness or paralysis. Magnetic resonance imaging was performed in 24 (75%) cases. Paravertebral masses, epidural masses, and psoas abscesses were detected in 65.6%, 59.4%, and 28.1% of patients, respectively. The lumbar vertebra was the most frequently involved region with the rate of 68.7%, followed by thoracal (18.7%), cervical (6.3%), lumbosacral (6.3%), and thoracolumbar (3.1%) segments. The duration of antimicrobial therapy of brucellosis (median, 6 months; range, 3–13 months) varied according to clinical response and the presence of epidural and paravertebral masses. There were no deaths or severe sequelae in this study.

CONCLUSIONS: Brucellar spondylitis should be considered in patients with back pain and fever in endemic areas. A high index of suspicion and clinical, laboratory, and radiological examinations help to confirm the diagnosis of vertebral involvement. © 2014 Elsevier Inc. All rights reserved.

Keywords:

Brucellosis; Brucellar spondylitis; Antibiotic therapy; Magnetic resonance imaging; Computed tomography

FDA device/drug status: Not applicable.

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Introduction

Brucellosis is an endemic zoonotic disease, especially in the Mediterranean and Middle East regions. It is a systemic disease in which a variety of tissues and organs can be affected [1]. Although brucellosis has been an occupational disease in developed countries, it is a major health problem in the other countries owing to consumption of nonpasteurized milk or milk products from infected animals [2]. Osteoarticular involvement is the most common

complication, and spondylodiscitis is the most prevalent clinical form in the elderly [3]. Spinal brucellosis is defined as involvement of the vertebral column, interspinous spaces, and/or paraspinal areas. Routine clinical and laboratory assessments are not always sufficient to diagnose vertebral involvement during the course of brucellosis. Therefore, more expensive imaging techniques such as bone scintigraphy, computed tomography (CT), or magnetic resonance imaging (MRI) are required to show vertebral involvement [4]. In the present study, we describe the clinical and laboratory findings, diagnostic evaluations, and treatment of 32 patients with spinal brucellosis.

Patients and methods

Of 145 patients with brucellosis, who had been followed in the Department of Infectious Diseases in Sfax (South of Tunisia) between 1990 and 2010, 32 patients (22%) were diagnosed to have spinal brucellosis.

There were no evidence of tuberculosis disease. The diagnosis of brucellosis was made by isolating *Brucella* species from blood or other body fluid or tissue specimens and/or by standard tube agglutination testing, revealing a titer of antibodies to *Brucella* of $\geq 1/160$ in addition to compatible clinical findings. Blood samples were cultured by an automated culture system and incubated for at least 10 days. Conventional methods were used to identify *Brucella* species [5,6]. Spinal MRI was performed in 24 cases, whereas 18 patients were evaluated with a CT scan. The response to therapy was evaluated by performing radiographic, clinical, and laboratory examinations before and after therapy.

Results

Of the 145 patients with brucellosis, 32 (22%) were diagnosed with spinal brucellosis. The mean age of patients was 51 ± 15.8 years (23 males, 9 females; age range, 19–74 years). All the cases were from the south of Tunisia. The symptoms and clinical findings are shown in Table 1. The time from onset of symptoms to diagnosis of spondylodiscitis was 21 to 330 days (median, 90 days). Eight patients (25%) received antibiotics before and at the time of diagnosis. Twelve patients (37.5%) had an occupational exposure. Twenty-eight patients (87.5%) lived in rural areas. The ingestion of nonpasteurized milk or milk products of infected cows (31 cases, 96.9%) and contact with infected animals (29 cases, 90.6%) are the main risk factors of human brucellosis in this study.

Laboratory data

Erythrocyte sedimentation rate was measured for 31 patients, which ranged from 6 to 120 mm/h (mean, 61 ± 27 mm/h). C-reactive protein levels were measured in 21

EVIDENCE & METHODS

Context

Brucellosis remains a problem worldwide and the spine is the most common site of musculoskeletal involvement. The authors present their experience.

Contribution

In this case series report, back pain, fever, and sweats were the most common symptoms and, in endemic areas, should alert physicians to the possible diagnosis.

Implications

The value of case series reports often lies in the characterization of uncommon diseases and the manner in which they might be treated. For such problems, case series reports are often the best available evidence.

—The Editors

patients (median, 60.2 mg/L; range, 5–199 mg/L). Anemia (hemoglobin concentration < 12 g/dL in males and females) was found in eight patients (25%). Leukopenia (< 4000 WBCs/mm³) was found in three patients (9.4%). No thrombocytopenia was found. All patients were positive for the Rose Bengal test. Standard tube agglutination testing of initial samples (before the onset of treatment) from the 32 patients (100%) was positive for antibodies to *Brucella* (titer, $\geq 1/160$) (Table 2). Blood cultures were positive for five patients for whom these titers were $> 1/160$. Disco-vertebral needle biopsy was performed in eight (25%) of 32 cases. Only one specimen (12.5%) showed a brucellian granuloma. All CT-guided needle biopsy cultures were negative.

Radiologic findings

Twenty-four patients (75%) underwent MRI at least once. Spinal CT scans were performed in 18 (56.3%) cases. Twenty-eight patients (87.5%) had involvement of only a single spinal region. Two of these 28 patients had contiguous involvement at multiple levels (> 2 vertebral bodies).

Table 1
Clinical features at presentation of 32 patients with brucellar spondylitis

Symptoms and clinical findings	n (%)
Back pain	32 (100)
Fever $\geq 38.5^\circ\text{C}$	28 (87.5)
Sweating	22 (68.8)
Weakness or fatigue	15 (46.9)
Weight loss	13 (40.6)
Arthralgia	12 (37.5)
Myalgia	6 (18.8)
Splenomegaly	4 (12.5)
Motor weakness	4 (12.5)
Hepatomegaly	2 (6.3)
Testicular pain	1 (3.1)

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