

# A Rare Osteoarticular Brucellosis in Gonabad City, Iran: A Case Report

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**Introduction:** Species of bacteria brucellosis, which can infect humans, are *Brucella abortus*, *B melitensis*, *B. suis* and rarely *B. canis*.

**Case Presentation:** A 71-year-old woman with severe pain in the limbs, especially the left pelvic pain was admitted to 22-Bahman hospital in Gonabad, Iran. The patient's Erythrocyte Sedimentation Rate (ESR) was 100 and C-reactive protein (CRP) had positive finding. Urea-creatinine, liver enzymes, U/A and U/C had normal results. A signal change in the soft tissue adjacent to the posterior surface of the vertebral body L4-L5 was observed. According to Wright and 2 Mercaptoethanol (ME) negative results, patient was re-introduced to neurosurgeon. Due to severe bone pain, radiotherapy was stopped and she was referred for treatment with bone tuberculosis diagnosis to a health center in Gonabad city, Iran. Daily streptomycin was started for patient and after 10 days, she referred to health center with a good general health status and without pelvic pain.

**Conclusions:** Prominent musculoskeletal complaints (especially back pain) accompanied by constitutional symptoms such as fever, malaise and weight loss may be consistent with brucellosis.

**Keywords:** Diagnosis; brucellosis; case report; Iran

## 1. Introduction

We reported here a woman with brucellar spin arthritis who had only joint complaints without any other systemic symptoms. Spin arthritis can occur in Brucellosis, but there are a few studies and case reports about this subject. *Brucella* is a Gram-negative, *Coco bacillus*, small and non-spore Bacterium. Species that can infect humans are *Brucella abortus*, *B. melitensis*, *B. suis* and rarely *B. canis*. Brucellosis is one of the most serious health and economic problems in most parts of the world (1, 2).

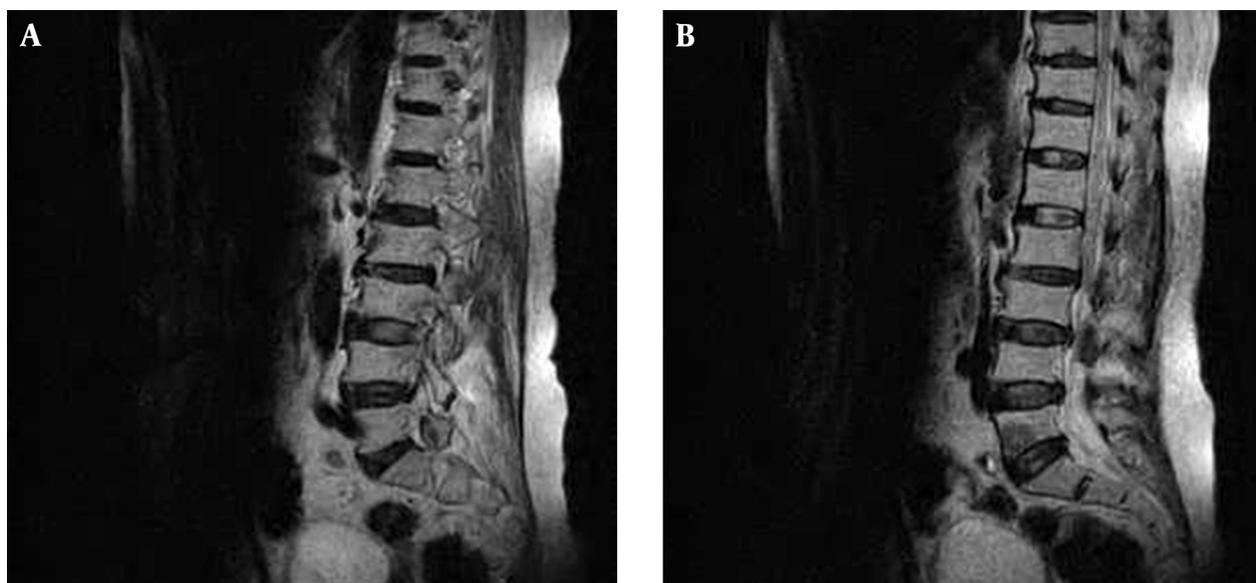
*Brucella* can infect every organ system of humans, including endocardium, meninges, epididymis, testes, liver, bones, spleen, etc. (3). Humans as accidental hosts can be infected with *Brucella*. Another name for brucellosis in cattle is contagious abortion or the Bang's disease. In Iran, the first Gram-negative bacteria were isolated in 1932 from a patient's blood. Among strains of causative agent of brucellosis, *Brucella melitensis* biovar 1 strains are the most common strains of human brucellosis. *Melitensis* has been isolated from goats and sheep. *Brucella* can infect many organs and tissues in the human body. Incidence of brucellosis is low in developed countries, but it has been seen sporadic in occupational groups such as farmers, veterinarians, laboratories and abattoirs workers. It is native to Iran.

Genital brucellosis, a localized complex brucellosis contains 2 - 20% of human *Brucella* (4). *Brucella* species were first described as a cause of granulomatous orchitis in humans by Bardy in 1928 (5). Diagnosis of human brucel-

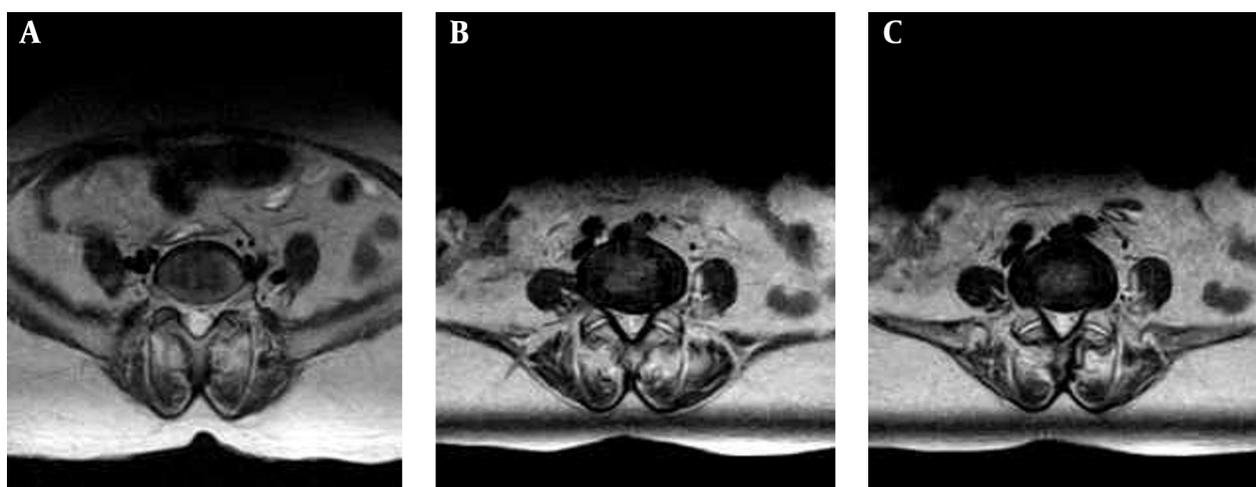
losis relies on serological tests such as Standard Agglutination Test (SAT), Enzyme-Linked immunosorbent Assay (ELISA) and Combs Test (2).

## 2. Case Presentation

A 71-year-old woman with severe pain in the limbs, especially the left pelvic was admitted to 22-Bahman hospital in Gonabad, Iran. Discomfort started 15 days prior to admission with fever, musculoskeletal pain and anorexia. The patient's medical history did not have any specific drug use or disease. In general examination, the patient was febrile and complained of severe pain in the pelvic area, which did not respond to usual narcotic medicine. The laboratory results of were white blood cell count of 9700 per cubic milliliter, 90% neutrophils, 6% lymphocytes, hemoglobin 8.1 and hematocrit 6.27, respectively. ESR was 100 and CRP (C-reactive protein) 2 plus, also Wright, Coombs Wright and 2 ME had negative results. Urea creatinine and liver enzymes had normal findings. U/A and U/C were in the normal range. Chest X-ray (CXR) showed diffuse nodular opacities in both lungs. MRI showed a reduction of signals in the vertebral discs because of degeneration changes. A signal change was observed in the soft tissue adjacent to the posterior surface of the vertebral body at L4-L5 (Figure 1). Due to negative results of Wright and 2 ME, the patient was referred back to the neurosurgeon. The second MRI revealed degenerative



**Figure 1.** Signal Increase in the Posterior L4 and L5 and S1 Spinal Fluid Can Represent Infectious Process of Brucellosis



**Figure 2.** Change of Signal in Sagittal Sections of Sequence T2 IR-TSE Caused by Infectious Spondylitis Shows Diffuse Increased Signal Intensity in the Lumbar 4 and Paravertebral Soft Tissues of the Spine 3-5

changes in spine, L4 and L5 (Figure 2). A bone biopsy was performed for the patient, and by diagnosis of bone tumors, she completed 10 radiotherapy sessions. However, due to remaining severe bone pain, especially pelvic joint, the patient referred to an orthopedic specialist in Mashhad by diagnosis of bone tuberculosis, radiotherapy was stopped and the patient was referred to the health center in Gonabad, Iran to continue treatment. In a review of medical records of the patient by a specialist in infectious diseases (the corresponding author of this article), it was observed that brucellosis tests of the patient in 12/3/2012 showed positive results for Wright as 1/80, 2 ME 1/40 and Coombs Wright 1/80. Therefore, treatment began with Rifampin 600 mg, Doxycycline and Streptomycin daily. Af-

ter 10 days, the patient referred to the health center with a good general health status and without pelvic pain.

### 3. Conclusions

This was the first report of brucellosis bone in Gonabad city. Brucellosis is endemic in Mediterranean countries and West Asia. Thus, the disease in most provinces of Iran is a native disease (5). In Gonabad, located in Khorasan Razavi province, the incidence of brucellosis was 113 cases per 100000 populations in 2012, while it was 19 cases per 100000 persons in the country. This higher incidence might be due to the abundant livestock in the villages and non-vaccinated animals entering city that spread

brucellosis in livestock, particularly sheep, leading to abortion in them (6).

Skeletal brucellosis is the most widespread brucellosis seen in approximately 85% of patients. Three forms of musculoskeletal brucellosis are sacroiliitis, spondylitis and peripheral arthritis. The skeleton is a dynamic physical system, being renovated constantly. These steps include coordinating the efforts of osteoblasts and osteoclasts. The performances of the two cells together represent stability and strength of bone (7).

In 10 - 25% of patients, the symptom of *Brucella* infection is arthritis. The most commonly sites of arthritis are knee (25%), hip (18%), spine (8%) and sacroiliac joint (26%). Osteoarticular brucellosis was documented by Marston in 1861 at the time when this disease had not even existed as a separate entity (8). Peripheral arthritis had been described as the commonest form of osteoarticular complications in acute brucellosis (9).

In the study of 104 cases of brucellosis in Saudi Arabia and 1288 cases in the United States, the most common symptoms reported were arthritis, lymphadenopathy, weakness, fever, backache, chills, malaise, sweating, headache and splenomegaly (10).

In another report analysis of joint fluid, *B. Melitensis* was isolated from a 49-year-old farmer with knee pain for 20 years who had not been under any treatment. Antimicrobial therapy with Doxycycline, Rifampin and Ciprofloxacin was performed for six months and he was treated (3).

In other study, researchers reported and treated a patient with multifocal osteomyelitis who was diagnosed as chronic brucellosis for 14 years (3). In a similar study, a 10-year-old boy from a village in southeastern Turkey was admitted with painful limited motion of right lower limb for two weeks. There was no history of trauma and no family history of inflammatory joint disease. The laboratory results showed erythrocyte sedimentation rate (ESR) as 72 mm/h (millimeters per hour), (CRP): 18 mg/L leukocyte count of 8.500/mm<sup>3</sup>, negative antinuclear antibody, antistreptolysin (ASO) and rheumatoid factor within the normal limits, blood urea levels, creatinine levels and liver function tests as normal. Coombs Wright was performed twice with an interval of three days. The results were positive with titers of 1/320 and 1/640 (11).

Although nonspecific clinical signs and symptoms (such as fever or arthralgias) often make the clinical diagnosis difficult, the frequency and characteristic patterns of localized disease should heighten clinicians' index of

suspicion and lower the threshold for a serologic investigation. Prominent musculoskeletal complaints (especially back pain) accompanied by constitutional symptoms such as fever, malaise and weight loss may be consistent with brucellosis.

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## Authors' Contributions

Hamed Ramezani Awal Riabi: study concept and design; Reza Ahmadi, analysis and interpretation.

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