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## CASE REPORT

# Brucellar Spinal Epidural Abscess – A very rare entity

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### ABSTRACT

We present a very rare mode of presentation of brucellosis. A patient who presented with history of left sciatica followed by features of acute cauda equina compression was found to have brucellar spinal epidural abscess. The case report and review of literature is presented.

**Key words:** Brucellosis, spinal, epidural abscess

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### CASE SUMMARY

A 43 years male, Egyptian, a farmer by occupation, presented with backache for one month, pain and weakness of both legs for one week. There was history of night sweats and aches and pains in the body for 3 to 4 months. There was no history of trauma, diabetes mellitus or hypertension. There was history of drinking un-boiled camel & goat milk quite frequently.

On examination, straight leg raising (SLR) was 60 degrees on left side and 90 degrees on the right side. He had hypoesthesia bilaterally at L4 onwards and bilateral foot drop while weakness of planter flexion was grade 2/5 bilaterally. Ankle jerks were absent while knee jerks were normal.

His ESR was 55 and X-rays lumbar spine showed reduced disc space at L4/5 and large "bird-beak" osteophyte at the same level on the left side. Myelography & Mylo-CT of lumbar spine showed partial block in the contrast column at L4/5 and filling defect against the body of L5 vertebra. The diagnosis was lumbar disc disease with prolapsed / ruptured intervertebral disc at L4-L5, significantly indenting the thecal sac and migrated disc fragments downwards. MRI could not be done as the patient had metallic implant for fracture femur.

**Surgery:** Laminectomy of L4 and L5 revealed an epidural abscess (3-4 cc pus) with thick granulation tissue against the body of L5 vertebra and a small diffuse intervertebral disc bulge at L4/5 (not ruptured). The abscess was drained, biopsy of the granulation tissue taken and dural sac decompressed.

Pus for C/S showed no growth while Gram stain and ZN stain showed no organisms. Histopathology of the granulation tissue showed non-specific

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inflammation and Brucella titer came out to be strongly positive (1:320).

Post-op. course was smooth. The patient was started on Tab. Trimethoprim- Sulphamethoxazole, Cap. Doxycyclin and Tab. Rifampicin. These antibiotics were continued for 3 months. The patient responded very well. The weakness of legs improved markedly and his general condition also improved. His brucella titer showed gradual improvement.

We concluded that the diagnosis of neurobrucellosis should be considered in patients presenting with backache and/or sciatica who have the history of exposure to the carriers of brucella and are from endemic areas of brucellosis.

### INTRODUCTION-BRUCELLOSIS

**Etiologic agent:** Brucellosis (also known as Malta fever, Mediterranean fever, Gibraltar fever, Cyprus fever, undulant fever and bang disease) is basically a disease of the wild and domestic animals. It is caused by the bacteria of the genus *Brucella*, usually *B. melitensis* from goats, sheep and camels, *B. abortus* from cattle, *B. suis* (pigs) and rarely *B. canis* (dogs).<sup>1,2,3,4,5, 6,7,8</sup>

*Brucellae* are killed by boiling or pasteurization of milk and milk products. They survive for up to 8 weeks in unpasteurized, white, soft cheese made from goat's milk and are not killed by freezing. The organisms remain viable for up to 40 days in dried soil contaminated with infected-animal urine, stool, vaginal discharge and products of conception and for longer periods in damp soil.<sup>8</sup>

**Incidence:** Brucellosis is specially prevalent in countries that do not have good standardized and effective public health and domestic animal health programs. Men are affected more often than women due to a higher rate of occupational exposure, with ratios of 5:2-5:3 in endemic areas. Persons in their third to fifth decades of life are most commonly affected.<sup>3,5,8,9</sup>

**Transmission:** Zoonotic; Humans are generally infected in one of three ways: eating or drinking something that is contaminated with *Brucella*, breathing in the organism (inhalation) or having the

bacteria enter the body through intact or abraded skin. The most common way to be infected is by eating or drinking infected milk products.<sup>1,3,5,6,7,8,9,10</sup>

Direct person-to-person spread of brucellosis is extremely rare. Transplacental transmission of infection from mother to fetus may occur as well as breast-feeding to their infants. Sexual transmission in humans similar to that in animals has also been reported. Major risk groups are abattoir workers, meat inspectors, animal handlers, farmers, veterinarians and laboratorians<sup>5,6,7,8,9,10,13</sup>.

**Clinical features:** The usual incubation period is from 1 to 3 weeks, depending upon the size of the inoculum and host resistance. Brucellosis has multisystemic involvement and can present in a variety of ways. The infection can vary from acute illness to a chronic disease or even to a symptomless carrier state<sup>1,3,4,5,6,7,8,9</sup>.

It can cause a wide range of symptoms including polyarthralgia, fever, malaise, easy fatigue, night sweats, back and leg pain, anorexia, headache, weight loss, myalgia, inattention and depression. It may also cause lymphadenopathy, granulomatous hepatitis, spondylitis, anemia, leukopenia, thrombocytopenia, meningitis, uveitis, optic neuritis, papilloedema and endocarditis<sup>1,3,5,6,7,8,10</sup>.

Physical examination often reveals no abnormalities and patients can look deceptively well while some patients are acutely ill with fully developed signs of the disease<sup>8</sup>.

Osteoarticular manifestations are the most common complication of brucellosis occurring in 20% to 60% of cases. Sacroiliitis is found in most patients who complain of low back pain<sup>5,8</sup>. Of those patients with spinal involvement, approximately 12% have some degree of cord compromise. Psoas abscesses are found in 12% of patients. Bone involvement, most frequently the spine, occurs in 20% to 30% of patients. The lumbar spine, particularly L4, is the most frequently involved spinal segment<sup>3,6,8,9</sup>.

Cardiovascular complications may include endocarditis, myocarditis, pericarditis, aortic root abscess, mycotic aneurysms, thrombophlebitis and pulmonary embolism. Respiratory complications are common but mild, like a 'flu-like' illness with sore throat and mild dry cough. Gastrointestinal complications are usually mild. The liver is probably always involved in brucellosis but hepatomegaly is present in only 20% to 30% of cases<sup>5,7,8</sup>.

Neurobrucellosis is an uncommon but serious complication. Direct CNS involvement occurs in less than 5% of patients. The neurologic syndromes reported in brucellosis include meningitis, encephalitis, multiple brain abscesses, ruptured mycotic aneurysms, cranial nerve lesions, TIAs, hemiplegia, radiculoneuritis, myelitis, peripheral

neuropathy, Guillain-Barre syndrome, multiple sclerosis-like picture, sciatica, myositis, and rhabdomyolysis<sup>2,5,6,8</sup>.

The patient may develop genitourinary and dermatological complications as well. The eyes may be involved through direct splashing of live vaccine or by neuro-ophthalmic complications. These may include conjunctivitis, keratitis, uveitis, retinopathy, papilloedema, papillitis, optic atrophy or ophthalmoplegia. Thyroiditis, adrenal insufficiency and the SIADH have also been reported<sup>6,8</sup>.

**Diagnosis:** The combination of potential exposure, consistent clinical features and raised levels of brucella agglutinin (with or without positive appropriate cultures) confirms the diagnosis of brucellosis<sup>3,4,6,7,8,10</sup>. Monocytosis may sometimes be found. Pancytopenia can be observed in as many as 20% of patients. ESR may be normal or raised. In patients with neurobrucellosis, CSF pressure is usually raised, there is mild-to-modest lymphocytic pleocytosis (in 88-98% of cases), proteins are raised in conjunction with a normal glucose<sup>1,5,6,8</sup>.

**Cultures:** Isolation of the organism in culture is the definitive diagnostic procedure. It can be cultured from the blood during a bacteremic episode (positive in 50 to 70% of patients), and from involved lymph nodes or granulomas later in the course of the disease. As special culture media are necessary for culture of brucella, if clinically suspected, the laboratory personnel have to be notified of the concern for brucellosis so that proper specimen processing occurs, because in case of brucellosis, culture should continue for at least 3 weeks, preferably up to 6 weeks. Newer radiometric blood culturing techniques have decreased isolation time from 30 days to less than 10 days. Sensitivity of blood culture ranges from 17-85%, depending on the strain involved.<sup>4,6,8</sup>

Bone marrow cultures typically are more sensitive than blood cultures while bone marrow biopsy can reveal granuloma formation. Sputum cultures are rarely positive. Synovial fluid is positive in 50% of patients. Urine culture may be positive in up to 50% of cases of genitourinary tract infection. CSF culture may be positive, although rare<sup>5,6,8</sup>.

Serum tube agglutination test is the most commonly used test for the diagnosis of brucellosis. It is quite reliable and about 97% of infected individuals will become positive within 3 weeks of exposure.<sup>3,7</sup> The serum tube agglutination test and the tray agglutination test (TAT) detect both IgG and IgM antibodies. Results are considered positive when titers are greater than or equal to 1:160. A decrease in titer is observed with patient recovery.<sup>1,5,6,7,8,9</sup>

Enzyme-linked immunoassay (ELISA) is the most sensitive of all available tests. ELISA is especially

useful for the diagnosis of neurobrucellosis by CSF evaluation.<sup>5,7</sup>

**Imaging Studies:** Active pulmonary involvement may show hilar and paratracheal lymphadenopathy, pulmonary nodules, pleural thickening, and pleural effusion. Sacroiliitis may cause blurring of articular margins and widening of the sacroiliac spaces. Spondylitis-related abnormalities are similar to but less severe than those seen in tuberculosis. Radionuclide scintigraphy is more sensitive for detecting skeletal abnormalities, especially early in the disease when standard x-rays usually are normal. If cord compromise is suspected, CT scan, myelography or MRI should be done to determine the exact location and extent of the compression.<sup>3,6,8</sup>

**Treatment:** Brucellosis is a completely curable infection. Tetracycline is the most common first-line drug.<sup>5,8,10</sup> A combination of a tetracycline and an aminoglycoside remains the most effective regimen because of its synergistic effect. This combination therapy should continue for at least one month, followed by tetracycline and rifampicin for a further 1-2 months. Pregnant women should be treated with the combination of cotrimoxazole and rifampicin for 2-3 months. In patients with brucella endocarditis and meningitis, rifampicin should be added to the combination therapy for the whole duration of treatment. A brief course of adjunctive corticosteroid therapy has been used to control the inflammatory process. Urgent cardiac surgery may be required if the patient develops cardiac failure or aortic root abscess.<sup>3,5,6,7,8</sup>

If there is spinal involvement but surgical intervention is not required, the spine should be protected by bed rest and by brace wear.<sup>3</sup> Treated patients whose infections are apparently cured should be followed up clinically and serologically, with repeat blood cultures, every 3 to 6 months for 2 years<sup>8</sup>.

**Surgical Care:** Surgical intervention is not usually required. Indications for surgical treatment are the same as for tubercular spinal infections. Neurologic improvement after radical decompression and fusion is frequent. Surgery may also be required for patients with endocarditis or drainage of focal abscesses.<sup>3</sup>

**Prevention:** Brucellosis is a preventable disease. Pasteurization of milk, antibiotic treatment of animals and hygienic measures by veterinary surgeons and animal herdsman has decreased the incidence markedly. Immunization with attenuated strains is effective in animals but there is no vaccine available for humans.<sup>1,5,7,8</sup>

**Prognosis:** The prognosis of brucellosis is generally good. With appropriate treatment, most patients with

brucellosis recover within weeks to months. Patients with CNS or cardiac involvement represent a subset of patients for whom treatment is difficult, gravely affecting the outcome. Mortality is low (<2%) and is usually associated with endocarditis.<sup>5,8</sup>

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