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# Chronic Brucellosis with Multi-system Involvement (Epidimyitis, Cutaneus, Spondylodiscitis): A case report

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***Abstract:*** **Brucellosis is a zoonotic infection that contaminates humans from animals with the infection by digestion of food products or by contact with tissue or fluids. It is the most common bacterial zoonosis globally. Brucellosis is a multisystem infection with a broad spectrum of clinical manifestations. Nonetheless, neurological system and cardiovascular association is very rare. Brucellosis is still a main public health problem and is prevalent in many countries, particularly in Mediterranean areas, parts of south and Central America, and East and Western Africa. It may affect any organ system. No cases were shared in the journals to describe chronic brucellosis with multisystem involvement, including epidimyitis, cutaneus, spondylodiscitis.**

**In this case report, it was aimed to share with the literature, a case of chronic brucellosis with multisystem involvement (epidimyitis, cutaneus, sponylodiscitis).**

**As overall, it is considered wise to think about brucellosis when dealing with patients with multi-system involvement of unknown etiology, particularly in regions where there is a high prevalence of brucellosis. In similar cases, patients should be carefully monitored for any evidence of complications such as multi-system involvement. In addition to other systems such as central-nervous and cardiovascular systems.**

**The treating physician must keep suspicion of any complication that can occur. High and meticulously look for all possible complications should be done in advance, because once they occur, quick decision taking should be done in order to save patients' life.**

***Keywords:*** **chronic brucellosis, zoonotic infection, cardiovascular systems.**

## 1. INTRODUCTION

Brucellosis is a zoonotic infection that contaminates humans from animals with the infection by digestion of food products or by contact with tissue or fluids. It is the most common bacterial zoonosis globally. Other names of the infection include Malta fever, Mediterranean fever, and undulant fever. Brucellosis has been an evolving disease since Sir David Bruce discovered *Brucella melitensis* in the year 1887. About 500,000 cases are stated yearly globally. [1]

Brucellae are gram negative coccobacilli. Four species of Brucellae organisms are identified in causing human infection (*B. melitensis*, *B. abortus*, *B. suis*, *B. canis*), the most common being *Brucella melitensis*. [1]

Brucellosis is a multisystem infection with a broad spectrum of clinical manifestations. Nonetheless, neurological system and cardiovascular association is very rare. [2]

Brucellosis is still a main public health problem and is prevalent in many countries, particularly in Mediterranean areas, parts of south and Central America, and East and Western Africa. It may affect any organ system. [3]

The disease can spread to humans from animals through the consumption of raw dairy products, the ingestion of infected meat from domestic livestock (sheep, goats, cattle, water buffalo, pigs and camels) and direct interaction with their carcasses and secretions. The main symptoms of brucellosis include high fever, myalgia, and arthralgia of the large joints. It typically causes abortion and sterility in animals, while in humans; it may lead to numerous clinical presentations, such as fever and septicemia, and even multiple organ involvement. [4]

Neuro-brucellosis can take place in 5%–10% of patients with brucellosis, with the most common clinical appearance being meningo-encephalitis. Mass lesions in the brain are rare, however, intra-cerebral granuloma associated with brucellosis had been described in a community-acquired infection. [5]

Therefore, this case report was done to describe a 43 years-old male solider, who was diagnosed with chronic brucellosis with multisystem involvement (epidimyitis, cutaneus, spondylodiscitis).

## 2. CASE PRESENTATION

A 43 years-old male solider not known to have any medical illness presented with history of fever, back pain, joint pain, weight loss and fatigability for 2 months prior to admission. He denied any history of headache, loss of consciousness, convulsions, blurred vision or hearing loss. There was no sensory or motor loss. There was no history of cough, hemoptysis or shortness of breath. He stated that there was no chest pain, orthopnea, PND, palpitation or leg swelling. There was no history of jaundice, dysphagia, vomiting, abdominal pain or change in bowel habits. No history of polyuria, polydipsia, polyphagia or oral ulcers was reported. There was a history of frequency, urgency, right scrotal and pain swelling, associated with skin rash in right shoulder.

There was no family history of similar condition. Social history revealed that he was married, smoker (one packet/day for 30 years). He used to drink raw camel milk every 2 to 3 weeks. There was no history of drinking alcohol, drug abuse, sexual history, blood transfusion, recent travelling abroad, or history of contact with ill patients. He had no history of long-term medication and he was allergy to dextromethorphan.

The patient was admitted 2 years prior to the recent admission with right epididymitis based on history, clinical examination and US of testes. Brucella titer was 1:320. Abdomen and pelvis CT was normal. The patient was started on Rifampicin, Doxycycline, analgesics and hydration. He was discharged to complete the course of treatment for 6 weeks with follow up in OPD. Epidimyitis was cured, however, the back pain persisted with intermittent fever and fatigability. MRI of Lumbo-Sacral spine was done and showed features of infectious spondylodiscitis at L5,S1 level. The patient was started again on Doxycycline, Rifampicin for 12 weeks.

Then, the patient was admitted due to COVID-19. He still had back pain, with fever and joint pain. During the admission, he was started on Gentamycin, Rifampicin, Doxycycline based on symptoms and brucella titer. After he recovered from COVID-19, he was discharged on Rifampicin, Doxycycline for 12 weeks.

On admission, the patient was vitally stable. He was conscious, oriented to time and place, slim, with no respiratory distress. There was no tonsillar exudate, nor cervical lymphadenopathy. Cardiovascular, pulmonary, neurological, joint and gastrointestinal examinations were insignificant. He had skin rash macules, reddish in color, not itchy, with no signs of inflammation on his upper extremity. Back examination revealed tenderness in the lower back.

## 3. LAB ANALYSIS

| Investigations | Finding |
|---|---|
| **Hemoglobin** | 14.3 |
| **White blood cell (WBC)** | $8 \times 10^9$/L |
| **Platelet count** | $345 \times 10^9$/L |
| **Creatinine** | 81 |
| **Blood Urea Nitrogen (BUN)** | 5.2 |
| **Total bilirubin** | 9 |
| **Direct bilirubin** | 21 |
| **Na+** | 142 |

| | |
|---|---|
| **K+** | 4.3 |
| **Mg** | 0.82 |
| **Calicum** | 2.11 |
| **Albumin** | 32 |
| **PTT** | 28 |
| **INR** | 1.03 |
| **AST** | 19 |
| **ALT** | 18 |
| **ALP** | 89 |
| **CRP** | 30 |
| **ESR** | 25 then 15 |
| **Brucella titer** | 1:320 |
| **Brucella ELISA IgG** | Positive |
| **Brucella ELISA IgM** | Negative |
| **Blood, sputum and urine culture** | Negative |
| **VBG, ECG** | Unremarkable |
| **Viral serology** | Unremarkable |

The patient then developed bilateral lower limb pain associated with limping. MRI of Pelvis and Sacroilliac joint was unremarkable. MRI of both Hips was unremarkable as well. MRI of Lumbosacral Spine showed L5,S1 intervertebral disc enhancement associated with multi-located collections, with peripheral thick enhanced walls and edematous surrounding soft tissue extended from lower aspect of L3 till upper sacrum, seen mainly at paraspinal space and anterior prevertebral space, with extension to Right Psoas muscle, as well as extension to upper sacrum bone and within epidural space at L5,S1. TST was done and it was 20 mm. Brucella ElISA was positive.

**Therapeutic Intervention and Treatment:**

He was started on Gentamycin, Rifampicin and Doxycycline. IR consultation for aspiration of the collection was done to be sent for TB PCR culture; however, it was impossible to do aspiration in that area. During the admission, the patient improved clinically. The pain and limping resolved and no more symptoms appeared. He was discharged to complete the course of treatment. There were no symptoms during the follow up in OPD.

## 4. DISCUSSION

In this case report, it was aimed to share with the literature, a case of chronic brucellosis with multisystem involvement (epidimyitis, cutaneus, spondylodiscitis).

Intracellular Gram negative bacteria called *Brucella* is the cause of brucellosis. It is major zoonotic disease in Saudi Arabia. [5]

The mortality rate of human brucellosis is considered low with <5% morality rate, mainly due to endocarditis. Nevertheless, it may cause severe chronic disease with high mortality. [2]

Brucellosis has numerous complications that can occur, one of them is when the infection involves one or more focal body sites. The commonest form of focal brucellosis is an osteoarticular disease, followed by genitourinary disease. Another complications are the involvement of the nervous system (neuro-brucellosis), cardiovascular system, gastrointestinal, respiratory, hepatobiliary system, skin, and eyes. A study was conducted by Bosilkovski et al. on 550 patients with brucellosis reported focal brucellosis in 66 % and osteoarticular disease in 54% of patients. [1]

Osteoarticular diseases include sacroiliitis, spondylitis, and peripheral arthritis. Spondylitis is a severe complication of brucellosis. Lumbar vertebrae are most commonly involved, followed by thoracic vertebrae. Cervical vertebrae are rarely involved in spinal brucellosis. Multiple vertebral body involvement was reported to be around 9%-30 % [6,7]. Bacteremia was found in around 41%-56 % of cases of spinal brucellosis [6].

Another study was carried out by Colmenero et al. in 530 patients with brucellosis. The study that 31.9% of patients showed focal brucellosis or complications and osteo-articular disease being the most common one. [1]

The diagnostic criteria for brucellosis in endemic regions are a titer ≥ 1:320 in STAT and/or a titer ≥ 1:160 in 2-ME. The definite diagnosis of brucellosis necessitates isolation of the bacterium from blood or tissue samples. [3]

## 5. CONCLUSION

This case is reported to highlight the complications that can occur due to chronic brucellosis.

As overall, it is considered wise to think about brucellosis when dealing with patients with multi-system involvement of unknown etiology, particularly in regions where there is a high prevalence of brucellosis.

In similar cases, patients should be carefully monitored for any evidence of complications such as multi-system involvement (for example: epidimyitis, cutaneus, spondylodiscitis). In addition to other systems such as central-nervous and cardiovascular systems.

Patients should be informed about the possible complications that can occur due to chronic brucellosis, and complications of brucellosis as overall.

In cases of chronic brucellosis with multisystem involvement such as the presented case, the treating physician must keep suspicion of any complication that can occur. High and meticulously look for all possible complications should be done in advance, because once they occur, quick decision taking should be done in order to save patients' life.

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