*Case Report*

International Journal of Neurology and Neurosurgery
Volume 13 Number 2, April– June 2021
DOI: http://dx.doi.org/10.21088/ijnns.0975.0223.13221.2

# Brucellosis Spondylodiscitis

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**How to cite this article:**
Mukesh Patel, Himanshu Raval, Ritesh Shah, et al./Case Report: Brucellosis spondylodiscitis/Int J Neurol Neurosurg. 2021; 13(2):17–20.

**Abstract**

Brucellosis is neglected but important zoonotic disease when it comes about spondylodiscitis. Here, we are presenting rare case of 54 years old male with brucellosis spondylodiscitis which is diagnosed by serum agglutinin test and had undergone L5-S1 Level discectomy with L5 Partial coprpectomy with L4-L5-S1 Screw and rod fixation for the same. Postoperative period was uneventful and he was discharged on fourth postoperative day with complete neurological recovery. Due to atypical presentation and prevalence of spinal tuberculosis, diagnosis of brucellosis is challenging but with proper investigation battery and right treatment, patient can be saved from greater morbidity.

**Keywords:** Brucellosis; Spondylodiscitis; Zoonotic disease.

## Introduction

Brucellosis is still an important zoonosis of both public health and economic significance in many developing countries. Each year, half a million new cases are reported worldwide, but according to the World Health Organization (WHO), these numbers greatly under-estimate the true incidence of human disease (1). In this era of advanced medicine, brucellosis spondylodiscitis has become anuncommon presentation that we have come across.

### *Case Report*

A 54 years male patient, farmer by occupation, without history of recent animals/birds contacts, consuming unpasteurized milk known case of diabetes and ischemic heart disease, was brought with chief complain of fever (low grade,1 episode) lasted for whole days 3 months back, relieved on its own without any treatment. 5 days after fever patient developed complaint of low back pain, aggravating on sneezing, forward bending that later radiated to lateral aspect of thigh & then to calf up to ankle joint.

Since last 2 months patient had developed complain of bilateral lower limb weakness. Initially patient was any how able to walk with walker , which in next 10-15 days progressed such that he needed 2 persons support to walk, then was bed ridden for next 15-20 days. MRI and other routine investigations were done. So thinking it to be pott's spine he was started on AKT. But there was no improvement. His serum agglutination test for brucellosis came positive and treatment with doxycycline was started. On clinical examination, there was paraparesis and atrophy of left thigh muscle with depressed left ankle reflex. So clinical picture suggestive of neurological disorder but on MRI there was compressive radiculopathy on

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L4-L5 and L5-S1 level with changes of spondylodiscitis with (10mmX6mm) epidural collection at L5 level.

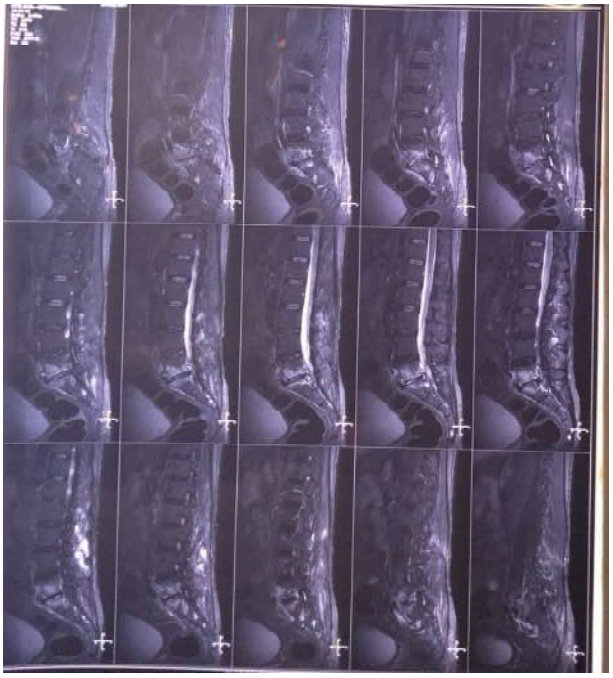

**Fig. 1:** STIR images (sagittal plane) showing collection at L5 level with changes of spondylodiscitis at L5-S1 level.

**Fig. 2:** T2WI (axial cuts) showing collection at L5 level and compressive radiculopathy of traversing root at L5-S1 level and impingement at L4-L5 level.

Patient's symptoms were resolving but there was persistent back pain which radiates to left for which operative intervention was planned. He was undergone L5-S1 Level discectomy with l5 partial coprpectomy with L4-L5-S1 screw and rod fixation.

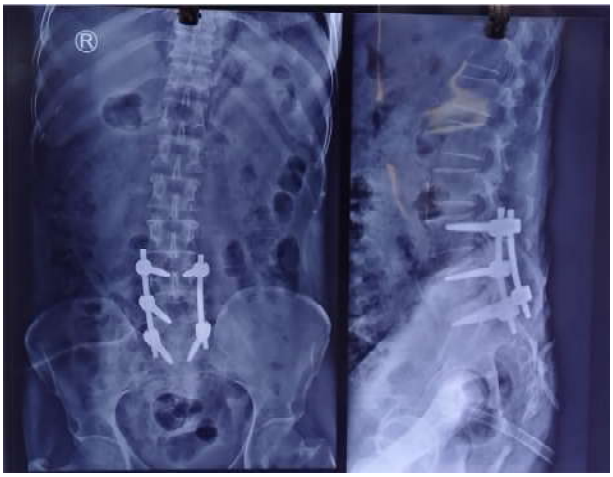

**Fig. 4:** Post-operative X-ray showing L4-L5-S1 screw and rod fixation.

Intraoperative there was minimal pus and necrotic changes involving L5-S1 disc and L5 vertebra which was removed and sent for culture and histopathological examination.

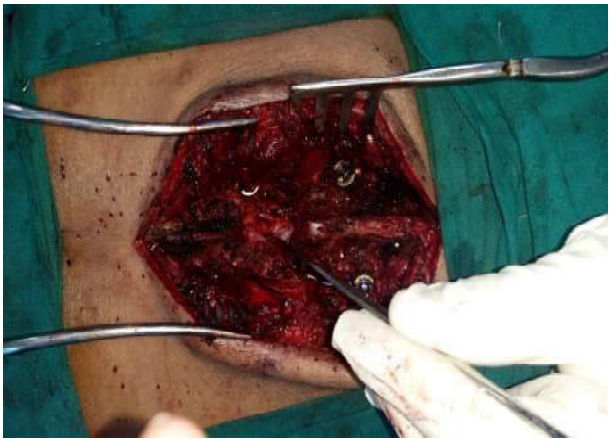

**Fig. 3:** Intraoperative picture with retracted spinal cord showing origin of left L5 root.

Histopathological report was suggestive of chronic inflammatory changes involving disc and vertebra and culture was negative for tuberculosis. Patient was discharged on fourth post-operative day with normal neurological examination.

## Discussion

Human brucellosis, caused by small Gram negative, aerobic coccobacilli of the genus Brucella is a zoonotic infection and is transmitted most commonly through the ingestion of unpasteurized milk products

(especially cheese) or raw liver, or by direct contact with infected animals (direct inoculation through cuts and skin abrasions, especially from handling animal carcasses, placentas, or contact with animal vaginal secretions, via the conjunctiva or inhalation of aerosols)[2]. After entering the human body and being taken up by local tissue lymphocytes, Brucellae are transferred through regional lymph nodes into the circulation and are subsequently seeded throughout the body, with tropism for the reticuloendothelial system [3].

Patients with brucellosis also commonly present with musculoskeletal symptoms. The most common complications are peripheral arthritis, sacroilliitis and spondylodiscitis. Osteoarticular involvement ranges from 20% to 60%, and spondylitis is seen in 8% to 13%[4]. These osteoarticular complications are sometimes linked to a genetic predisposition, with recent data suggesting an association with HLA-B39[5]. Among the musculoskeletal involvements of brucellosis, vertebral involvement is the most difficult one to diagnose and treat. It can cause neurological complications and abnormal posture through vertebral destruction. A thorough clinical examination could have given important diagnostic clues. In the differential diagnose of himanshu back pain the examiner should also take into account that the disease has its most important prevalence in certain areas of the world but is also emerging in non-endemic areas due to importation through international travel or infected food products.

In patients who stayed in certain endemic areas tuberculosis or Brucella infections of the spine can be confused. Both are caused by intracellular pathogens which are difficult to isolate or identify in a short period. Since vertebral involvement is more frequent in chronic brucellosis, it is less likely that micro-organisms are isolated in the blood or bone marrow (which is the gold standard for confirming acute brucellosis because of the relatively high concentration of Brucella in the reticuloendothelial system). Differential diagnosis between spinal brucellosis and vertebral tuberculosis is usually made on the basis of clinical and routine laboratory and radiological findings.[4]

Routine laboratory data reported in most studies have been of little diagnostic value. Haemogram and ESR are not useful indicators for the diagnosis of brucellar spondylitis. CRP can be normal[6]. Leucocyte count and ESR are relatively lower in brucellar spondylitis than in tuberculous or pyogenic spondylitis [4].

Plain radiographs can show various degrees of bone involvement, with narrowing of the intervertebral disc space, gross destruction, patchy sclerosis of the vertebral end plate, syndesmophytes with or without paravertebral noncalcified soft tissue swelling, or displacement of the vertebral axis (4).As the earliest appearances of the destructive changes visible on plain radiographs begin approximately 3 months after the onset of symptoms, magnetic resonance imaging, which is more sensitive to demonstrate early bone infection, should be considered.

As mentioned above in our case, Brucella spondylitis may also be confused with spinal tuberculosis (Pott disease). Characteristic features of tuberculous spondylitis include involvement of a single vertebra or disc, predilection for the midthoracic region, severe vertebra body collapse, and extensiveassociated paraspinal abscess and gibbus deformity. In contrast to spinal involvement in brucellosis, tuberculous spondylitis is commonly seen in younger patients[6]. Distinguishing specific features of brucellar spondylitis included end-plate defects simulating Schmorl's nodules, obliteration of muscle-fat borders, a moderate amount of paraspinal granulation tissue, and disc gas [7]. A small collection of air is entrapped between the disc and the affected superior end plate, also known as the "peripheral vacuum phenomenon" (up to 18%, this is probably due to longstanding ischemia and avascular necrosis of the disc adjacent to the infected endplate)[8]. In this case serological tests and culture of Brucella were necessary to establish the diagnosis of brucellosis.

There are two broad categories of serological methods for diagnosing brucellosis: those based on antibody production against lipopolysaccharide and those based on antibody production against other bacterial antigens.

The serum agglutination test developed by Bruce remains the most popular diagnostic tool for brucellosis. These serum agglutination tests are also not suitable for patient follow-up, since titers can remain high for a prolonged period [9]. Another test is indirect enzyme-linked immunosorbent assay (ELISA). It uses cytoplasmic proteins as antigens. ELISA measures immunoglobulins class M, G, and A, which allows for a better interpretation of the clinical situation and overcomes some of the shortcomings of the serum agglutination tests. A comparison with the serum agglutination test yields higher sensitivity and specificity. The development of a specific polymerase chain reaction (PCR) is a recent advance. PCR is fast, can be performed on any body tissue, and can yield positive results as soon as 10 days after inoculation. PCR ELISA is a new promising variation. Although PCR offers new

possibilities for the future in diagnosing brucellosis, standardization of extraction methods and set-up is lacking, and a better understanding of the clinical significance of the results is still needed [10].

Brucella coccobacilli have a long doubling time (2.5 to 3.5h) and concentrations of circulating bacteria in the blood of infected patients are relatively low. Therefore, the recovery time of Brucellae can take up to 30 days using the classic Castaneda blood culture method. Automated blood culture systems have reduced the growth time of Brucella spp. The time to detection is now possible within 4 days but a positive culture depends on a variety of factors. The isolation of the organism from blood cultures is more difficult in patients with chronic brucellosis[11,12].

## Conclusion

On the one hand, this case report illustrates an atypical presentation of Brucella spondylodiscitis which focused the neuro physician's attention at the mayopathy at First. On the other hand we emphasized the difficultiesto differentiate brucellosis from tuberculosis. Radiology techniques can point out some specific features, but serological tests and, if possible, cultures and PCR are helpful.

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