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**Manuscript type Case Report**

**Chronic Brucellosis with Sacroiliitis: A Case Report**

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# Statement of Contribution

1. Bibek Shrestha: Conceptualization; Writing-original draft; writing- review and editing
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# Disclosure

None

# Data availability statement

None

# Funding statement

None

# Conflict of interest

None

# Patient consent statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images, complying with the requirements as mentioned in Wiley’s CCR Consent Form.

**Chronic Brucellosis with Sacroiliitis: A Case Report**

# ABSTRACT

Brucella exploits host immune defences to establish chronic infections and affects multiple organs. It is an endemic zoonotic disease which affects different organs of human and osteoarticular manifestation is rare. This case report presents a 41-year-old Female married, presented with fever, low back pain and other multiple joint pain for 4 months with a history of Goat farming. Sacroiliitis was documented by positive results from serological tests (ELISA). Radiological findings suggested of right sacroiliitis and fracture line on the right sacral ala though had no history of trauma. Treatment consisted of non-steroidal anti-inflammatory drugs (NSAIDs), doxycycline, rifampicin, and gentamicin. To properly treat this infection, a detailed history and physical examination along with complete pathology, radiographic findings, and any necessary work-up is needed.

KEY CLINICAL MESSAGE

Brucellosis and its consequence, sacroiliitis, are uncommon and difficult to diagnose, but they should be considered in a case presenting with prolonged fever, joint pain, and back pain. The diagnosis requires a combination of history, serological examinations, and radiographic studies. When the condition is detected and treated early, the prognosis is good.

KEYWORDS

Spine, Brucella, spinal brucellosis, infection, spondylodiscitis.

# Introduction

Brucellosis is an endemic zoonotic disease that affects wildlife and its transmission to humans occurs through direct contact with infected animals or contaminated animal products. Brucella exploits host immune defences to establish chronic infections which eventually leads to clinical manifestation running from fever, fatigue, joint pain to more severe complications such as endocarditis and neurological disorders. 1 Human brucellosis is a complex illness that affects many different organs and has a wide variety of symptoms, from mild to severe. This intricacy tends to result in incorrect diagnosis. If left untreated, it could progress to the chronic stage and raise the possibility of disability.2

In the axial skeleton, brucellosis of the spine manifests itself in a variety of ways, including spondylitis, spondylodiscitis, pure discitis, sacroiliitis, and even facet joint infection. 3 Early diagnosis and its prompt treatment is essential for Spinal involvement to prevent further permanent neurological deficit. The infection might be mild, or severe and it rarely leads to chronic disease. Untreated infections can lead to serious complications which involves different organs and even death.4 In this, we will discuss a case of 41-year-old Female diagnosed with Brucellosis which complicated to right sacroiliitis which is a rare complication.

# Case History/ Examination

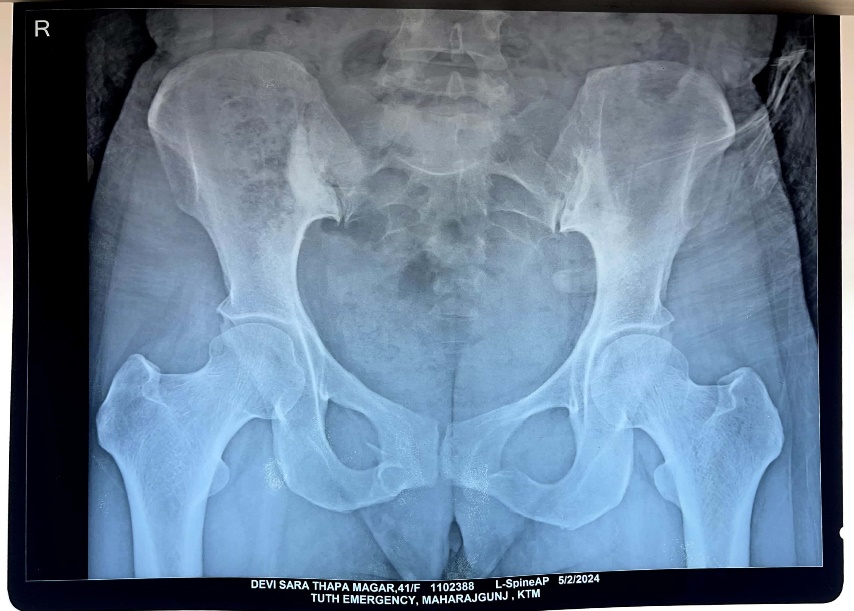
A 41-year-old Female married, goat farming by occupation presented to our hospital with chief complaints of fever, low back pain and other multiple joint pain for 4 months. She started having a fever which was intermittent with the maximum temperature documented 102° Fahrenheit, febrile episodes lasted 1-2 days followed by patients being afebrile for days to a week and used to get relieved by Paracetamol. She had a low back pain along with involvement of other joints including bilateral shoulder, elbow, wrist, and knee region. Morning stiffness was present for half a to one hour and joint pain was relieved by activities. She had no history of trauma or injury.

On examination she was afebrile, blood pressure was normal (110/70 mmHg), pulse rate was normal (78 beats per minute), and SPO2 was adequate (96%) which suggests stable vitals. A neurological examination was performed as was found to be normal. Fabers’ test and Sacroiliac Compression test of the right sacroiliac side were positive.

# Methods

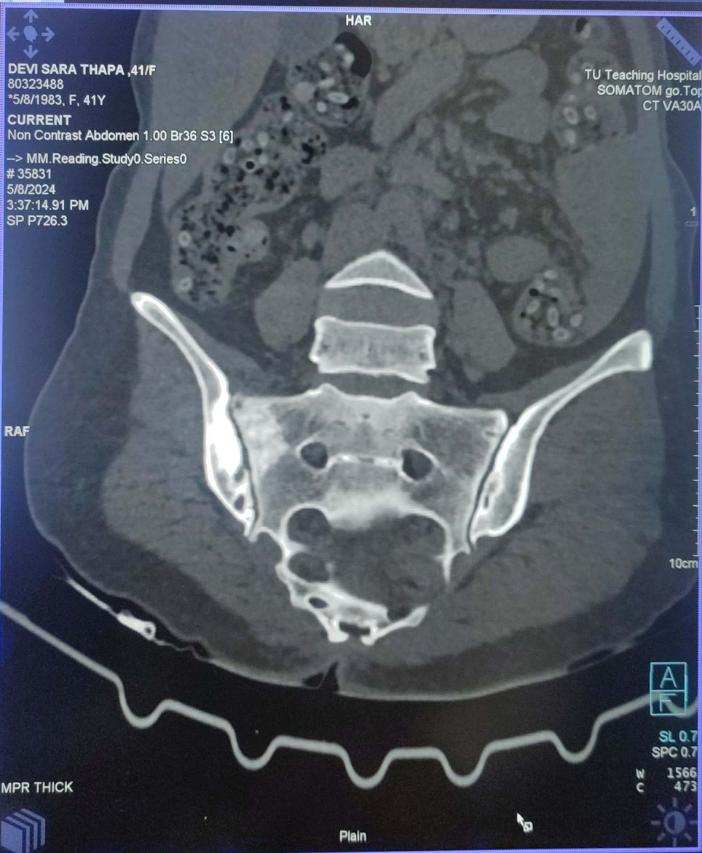
Upon investigation, her White Blood Count was 5800/cmm [ Normal 4000-11000], Haemoglobin was 11.3 gm% [Normal: 12-18 gm%], PCV was 33.9% [Normal: 37.5-45%], Platelets were 2,68,000/cumm [Normal: 150000-400000], ESR was 42 mm/hr [Normal: 0-20 mm/hr], HsCRP was 10.69 [>3 is high risk], vitamin B12 was 481 pg/ml. This interprets as Serological tests (ELISA for detecting anti-Brucella antibodies) were positive and were 1:160. The patient also underwent other serological tests of ANA, RA Factor, HLAB27 typing, all of which turned negative. Further, the Mantoux test showed induration of 4 mm which indicates a negative result. The Urinalysis and stool culture were normal. Her ultrasonography of the abdomen and pelvis was found to be normal.

Figure: 1 X ray of pelvis and lower spine. Sclerosis around right sacroiliac joint suggesting of Right sacroiliitis



X ray of pelvis and lower spine (Figure 1) revealed sclerosis around right sacroiliac joint suggestive of Right Sacroiliitis. Computed Tomography Scan of chest and abdomen revealed predominantly sclerotic changes in articular surface of right sacroiliac joint suggestive of right sacroiliitis associated with a hypodense fracture line in the adjacent sacral ala. Axial bone window CT scan (Figure 2) revealed sclerosis and erosion around right sacroiliac joint. Sacroiliac joint in post-contrast images of MRI Spine shows a subchondral low signal in right iliac surface (likely sclerosis) and subchondral marrow enhancement in both sacral and iliac surface of right sacroiliac joint, enhancement of the adjacent tissue was also seen, also patchy subchondral marrow oedema at the sacral aspect of left sacroiliac joint.

Figure: 2 Axial bone window CT scan showing Sacroiliitis of Right Sacroiliac Joint



# Conclusion and results

Diagnosis was made following correlation of Clinical history, examination, serology and radiological investigation. Her treatment was arranged in the form of a combination of doxycycline (100 mg; twice a day) and rifampicin (600 mg; once a day) and Gentamicin (320 mg; IV). Following the treatment, the patient was closely observed. Her joint pain and low back pain was slowly decreased, and fever was also subsided. She was discharged on the 18th day of her stay from hospital. She had follow up appointment at the outpatient department after 4 weeks of discharge and no fresh issues were identified.

# Discussion

Brucellosis is a common endemic zoonotic disease which affects people worldwide. It’s mode of transmission is by consuming unpasteurized milk, touching affected animal products or taking raw meat without proper cooking. 5 The symptoms include non-specific and mild, which makes difficult to diagnose brucellosis in its early course so can be progressed to spinal brucellosis. Though clinical features and imaging modality provide a thorough assessment about the illness, but the diagnosis of brucellosis can be confirmed only by if isolated from blood, bone marrow or other tissues. 6 One of the studies found skeletal involvement in 21.8% of acute cases, 34.7% of subacute cases 25.7% of chronic cases, and 27.3% of relapsed cases, for a total of 25.3%.7 This study suggests that osteoarticular involvement is more in subacute, chronic and relapsed case rather than acute case. In our case, patient had chronic course and had history of fever, back pain for more than 5 months.

Brucella in an acute phase presents with nonspecific and vague symptoms such as undulating fever, weight loss, and weariness whereas in chronic phase presents years after initial exposure with involvement of musculoskeletal system with a symptom of back pain, arthralgias and sweating. 4 In our case, patient had a symptom of fever, low back pain and other multiple joint pain for 6 months suggestive of chronic brucellosis with spinal involvement. Clinical history, examination and investigation findings are important and need to be correlated for the proper diagnosis of brucellosis. If brucella involves axial skeletal then it will manifest in variety of ways which includes spondylitis, spondylodiscitis, pure discitis, sacroiliitis and even facet joint involvement. 3 Typically, Brucellosis presents with mild anaemia, thrombocytopenia, relative lymphocytosis, along with leukopenia raised ESR and CRP level in routine laboratory test of blood. 8 Laboratory findings of this case included elevated ESR, CRP level and mild anaemia which suggests being chronic infection.

Isolation and identification of the cause is necessary for the definitive diagnosis of brucellosis whereas it is time consuming, requires trained and specialized staff and possess a risk. Considering all these factors, serological testing is recommended generally. 9 Serological testing for diagnosing brucellosis are divided into two types based on whether antibody is produced against lipopolysaccharides or other bacterial antigens. 10 Significant titres for diagnosis brucellosis in Serological Agglutination Test is over 1:160 whereas in endemic areas, above 1:320. 11 In this case, patient had serological agglutination profile test for two times at an interval of 4 weeks and the titre was 1:160 which is significant and consistent for the diagnosis of Brucellosis.

Radiological assessment, such as computed tomography (CT), and magnetic resonance imaging (MRI) can aid to identify spinal brucellosis. They can identify the damaged areas. The CT scan allows for exact determination of disease characteristics such as vertebral degeneration and sclerosis. MRI is sensitive and helpful to look over pathology such as the breakdown of vertebral body bone, intervertebral discs, and abscesses within spinal canal as well as outside the spinal canal.12 In this case, predominantly sclerotic changes suggestive of pathology in articular surface of right sacroiliac joint was found in CT scan. MRI whole spine was done and suggested loss of cervical lordosis, disc desiccation at multiple levels, mild disc bulge at C5-C6. The patient should be the primary consideration when selecting a suitable antibiotic combination. The WHO-recommended triple regimen of doxycycline (100 mg twice a day), rifampicin (600 mg/day), and streptomycin (1 g/day IM, 21 days) over six months is more successful for the therapy.13-14 However in this case, the patient was under combination of doxycycline (100 mg; twice a day) , rifampicin (600 mg; once a day) and Gentamicin (320 mg; IV )

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# Images

1. Figure: 1 X ray of pelvis and lower spine. Sclerosis around right sacroiliac joint suggesting of Right sacroiliitis
2. Figure: 2 Axial bone window CT scan showing Sacroiliitis of Right Sacroiliac Joint

# Declerations

1. Ethics approval and consent to participate: The Institutional Review Board of the Institute of Medicine, Nepal, does not mandate ethical approval for the writing or publication of case reports, and patient consent was obtained. Informed written consent was obtained from the patient before writing this case report.
2. Consent for publication: Informed written consent was obtained from the patient for the publication of this case report in a scientific journal.
3. Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.
4. Competing interests: None
5. Funding: None
6. Acknowledgements: None