

Human Brucellosis Presenting with Rheumatic Manifestations: An Underdiagnosed Condition in Eastern India

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Abstract

Human brucellosis is a chronic systemic infection mostly presenting as afebrile illness with musculoskeletal complaints with organomegaly and diagnosis is based on serology. The diagnostic tests are sparsely available in India and even less prescribed. We report six cases of human of brucellosis presenting as fever with rheumatic manifestation along with their outcome.

Keywords: Eastern India, human brucellosis, outcome, relapse, rheumatic

INTRODUCTION

India has a high agrarian population living in close proximity to animals. Due to a high serological prevalence of animal brucellosis, a higher number of reported human cases is expected. However, lack of extensive data on human brucellosis in India indicates it to be a neglected tropical disease.^[1] It is also considered re-emerging tropical disease.^[2] In India, *Brucella melitensis* and *Brucella abortus* are the main causative agent of human brucellosis.^[3] The pyrexia of unknown origin (PUO) is an important and common presentation where testing for brucellosis becomes critical. The common causes of polyarthritis in our country include rheumatoid arthritis, crystalopathy, reactive arthritis, lupus, adult onset stills diseases, and brucellosis.^[3] This is the most common clinical syndrome for human brucellosis. Hence, other common causes need to be excluded before testing for brucellosis. It is an underestimated differential for fever with arthritis in our country and we report six cases of brucellosis presenting as fever with musculoskeletal complaint along with their outcome.

CASE REPORT

All the cases of diagnosed human brucellosis with rheumatological manifestation at our center in 2016–2017 were included in this case series. All these cases were diagnosed by immunoglobulin M (IgM) and IgG enzyme-linked

immunosorbent assay (ELISA) brucella. Other diagnostic tests include rheumatoid factor, cyclic citrullinated peptide (anti-CCP), human leukocyte antigen (HLA)-B27, uric acid, antinuclear antibodies (ANA), two-dimensional echocardiography, bone marrow and lymph node aspirates for fungal and mycobacterial cultures, and radiological investigations. All patients were given the WHO standard treatment protocol in the form of tablet rifampicin 600 mg once daily with injection of streptomycin 1 g OD for 2 weeks or tablet doxycycline 100 mg BD for 6 weeks. One case with infective endocarditis was treated with a combination of rifampicin, streptomycin, and ciprofloxacin for 12 weeks.

A total of six cases were included in the study. There were four females and two patients had risk factors for brucellosis in the form of raw milk consumption and close living with animals. The age group ranged between 17 and 50 years. The mean duration of illness at presentation is about 20 weeks with three patients with more than 6 months of symptoms. Clinical features included fever, myalgia, arthralgia, backache, and

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arthritis in all cases. Fever was daily in three cases and episodic in rest. It was associated with sweating in four cases, especially with long duration. Arthritis was predominantly of large joints, especially the knee. Sacroiliitis was demonstrable in three cases. Extra rheumatic features included splenomegaly (2), pneumonitis (1), meningismus (1), lymphadenopathy (3), and endocarditis (1). Magnetic resonance imaging (MRI) showed sacroiliitis in four cases and arthritis of joints in four cases. One of the patients who had no demonstrable arthritis or sacroiliitis had early sacroiliitis in MRI findings.

The laboratory investigations are demonstrated in Table 1. Anemia was present in three cases and leukocytosis was seen in one case. All patients had elevated inflammatory markers with a maximum of 110 mm 1st h. Four patients had sacroiliitis in MRI [Figure 1] and one patient was HLA-B27 positive. The first patient was case of acute brucellosis with IgM titer of 1:640 and the rest had chronic brucellosis with IgM titers of 1:160–1:320 and IgG titer of 1:320. The duration of complete response from therapy ranged from 10 to 18 days with the median being 10 days. There was one case of relapse on follow-up till 1 year.

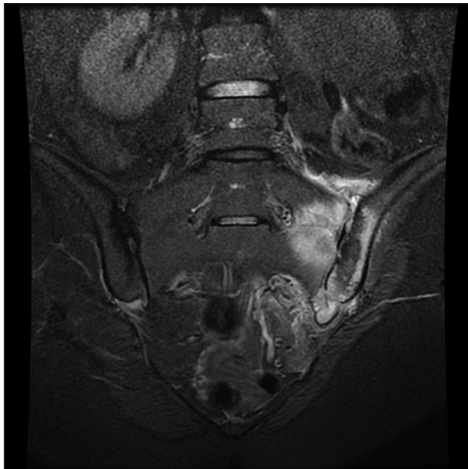


Figure 1: Magnetic Resonance Image showing bilateral sacroiliitis

DISCUSSION

Brucella covers the whole length of the country but seroprevalence differs among regions with a reported range of 4.20–8.5.^[4] A large series shows fever to be the most common presentation. Joint pain and low back pain next most common symptoms. General constitutional symptoms commonly accompany. Hepatosplenomegaly or either of them is an important clinical finding. Joint swelling is uncommon.^[5] In the present series, 100% of patients had fever with arthralgia and about 84% had arthritis and frank myalgia. Night sweats and weight loss were in 50% of patients. 33.3% had lymphadenopathy and 16.3% had splenomegaly.

Complications depend upon the site of infection and include joint and musculoskeletal followed by epididymo-orchitis, neurobrucellosis, abortions in pregnant females, chronic liver disease, pneumonia, and endocarditis.^[6] Endocarditis is the most important cause of death. Our series had meningism and mild pneumonitis as a complication of brucellosis in single patients and both responded to treatment. PUO is the most common presentation according to the Indian review.^[4]

Laboratory diagnosis remains as the cornerstone for the diagnosis of brucellosis. Diagnosis is greatly influenced by the method used. Slide agglutination test remains the most commonly used test. In the endemic region, a titer of 1:320 and in nonendemic region 1:160 is considered diagnostic. Other tests with high sensitivity and specificity being commonly used are ELISA and polymerase chain reaction.^[6] A study showed that a combination of both serum tube agglutination test and rose bengal plate test (RBPT) yields the highest sensitivity followed by the diagnosis of nonagglutinating antibodies through the ELISA test yields the highest specificity.^[7]

Preferred treatment according to the WHO guidelines includes rifampicin, doxycycline, or streptomycin with or without ciprofloxacin for all cases and additional trimethoprim and sulfamethoxazole in cases of endocarditis and neurobrucellosis.^[8] The duration of treatment for injectable streptomycin is 2 weeks and 6 weeks for oral drugs.

Table 1: Important investigation parameters of the patients

Indices	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
CRP (ng/dL)	23	35	45	65	84	55
ESR (mm 1 st h)	71	45	100	110	98	68
TLC (cells/mm ³)	8200	6500	6000	15,000	9000	7800
IgM <i>Brucella</i> titers	1:640	Negative	1:160	1:160	1:160	Negative
IgG <i>Brucella</i> titers	1:160	1:320	1:320	1:320	1:320	1:320
Findings of MRI of joint	Arthritis of ankle, wrist, and elbow joint	B/L sacroiliitis	Right-sided sacroiliitis	B/L sacroiliitis, periarticular soft-tissue changes	Knee joint effusion	Right-sided sacroiliitis, B/L knee effusion
Other findings	HLA-B 27 positive	Mitral valve prolapse with mitral regurgitation with vegetation	None	None	None	None
Duration to complete response (days)	14	18	14	14	10	10

MSK: Musculoskeletal system, TLC: Total leukocyte count, ESR: Erythrocyte sedimentation rate, CRP: C reactive protein, MRI: Magnetic resonance imaging, B/L: Bilateral (sacroiliac joint)

Eastern India lacks clinical study on brucellosis among adults and only published recent literature is in pediatric population by Dutta *et al.*^[9] This shows lack of awareness among physician regarding brucellosis as differential diagnosis, especially in case of PUO and osteoarticular complaints despite availability of testing. Therefore, among PUO cases, brucella testing should be done and all osteoarticular inflammatory lesions should be subjected to brucella testing (after ruling out common causes).

CONCLUSION

Brucellosis should be considered an important etiology in a patient with fever of longer duration with musculoskeletal complaints even in absence of classical risk factors of exposure. Appropriate treatment results in complete cure of the disease and close follow-up of patients should be done to diagnose relapse.

Research quality and ethics statement

The authors followed applicable EQUATOR Network (www.equator-network.org/) guidelines, notably the CARE guideline, during the conduct of this report.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Mantur BG, Amarnath SK. Brucellosis in India – A review. *J Biosci* 2008;33:539-47.
2. Godfroid J, Cloeckaert A, Liautard JP, Kohler S, Fretin D, Walravens K, *et al.* From the discovery of the Malta fever's agent to the discovery of a marine mammal reservoir, brucellosis has continuously been a re-emerging zoonosis. *Vet Res* 2005;36:313-26.
3. Alpay-Kanitez N, Çelik S, Bes C. Polyarthritis and its differential diagnosis. *Eur J Rheumatol* 2019;6:167-73.
4. Upadhyay AK, Singh MP, Nagpal A. Epidemiology of brucellosis in India: A review. *Pantnagar J Res* 2019;17:199-205.
5. Mantur BG, Amarnath SK, Shinde RS. Review of clinical and laboratory features of human brucellosis. *Indian J Med Microbiol* 2007;25:188-202.
6. Mantur BG, Biradar MS, Bidri RC, Mulimani MS, Veerappa K, Kariholu P, *et al.* Protean clinical manifestations and diagnostic challenges of human brucellosis in adults: 16 years' experience in an endemic area. *J Med Microbiol* 2006;55:897-903.
7. Satadal D, Kuila P, Dutta D, Chakrabarty U, Chatterjee D. Comparison of serological tests and PCR for diagnosis of human brucellosis suffering from fever. *Asian J Pharm Clin Res* 2017;10:109-11.
8. World Health Organization. FAO/WHO Report. Joint FAO/WHO Expert Committee on Brucellosis; Technical Report Series No. 740. Geneva: World Health Organization; 1986. Available from: <https://www.who.int/news-room/fact-sheets/detail/brucellosis#:~:text=The%20incubation%20period%20of%20the,g%20daily%20for%2015%20days.> [Last accessed on 2021 Dec 06].
9. Dutta D, Sen A, Gupta D, Kuila P, Chatterjee D, Sanyal S, *et al.* Childhood brucellosis in Eastern India. *Indian J Pediatr* 2018;85:266-71.