Study of Profile of Patients of Osteoarticular Brucellosis in a Rheumatology Clinic of a Tertiary Hospital

Bijit Kumar Kundu[1], Deepak Rath[2]

ABSTRACT

Introduction: Brucellosis is a worldwide zoonosis, caused by a small gram-negative coccobacillus and comprising of 10 species, all of which do not cause disease in humans. This study aimed to highlight the spectrum of clinical manifestations and laboratory and imaging parameters of cases diagnosed as osteoarticular brucellosis in a Rheumatology Clinic of a tertiary hospital.

Material and Methods: Records of patients diagnosed as osteoarticular brucellosis based on antibody detection by complement fixation test or by ELISA were included in this study. All patients who had positive tests as mentioned above were incorporated into the study.

Results: Patients of osteoarticular brucellosis were mostly young individuals with no sex preponderance. They neither recalled having fever or exposure to livestock, nor did they belong to the high-risk category like animal handlers, veterinarians, etc. Their presenting features mimicked Spondyloarthritis (SpA). These patients have some common features which may help in distinguishing them from true SpA.

Conclusion: It is very difficult to distinguish osteoarticular brucellosis from Spondyloarthritis. Apart from high index of suspicion, few clinical and laboratory features may be helpful as indicators for further evaluation.

Keywords: Brucellosis, Spondyloarthritis, Osteo-articular Brucellosis, Sacroiliitis

INTRODUCTION

Brucellosis is endemic in the Mediterranean, Gulf, Latin America and the Indian subcontinent. In India, it has been reported from all states.[1,2] The true incidence is unknown as there is lack of data. The estimated incidence may be at least 25 times higher than the reported incidence, mostly due to misdiagnosis and underreporting.[3]

Manifestations of brucellosis are myriad and hence remain under the radar of the clinician. The manifestations differ from stage to stage too, with differing clinical and laboratory features in each.[4]

Upto 47% of patients of brucellosis may experience osteoarticular complications at any time during the course of illness or at any stage of the disease[5], with peripheral large joint arthritis with or without effusions, sacroilitis, most frequently unilateral and spondylitis being the three major manifestations of osteoarticular brucellosis.[6] These features overlap with those of spondyloarthritis and hence present to the rheumatology clinic resulting in erroneous diagnosis and hence treatment. Data regarding osteoarticular brucellosis in the Indian setting is lacking and characterisation of patients of osteoarticular brucellosis has not been done in India, though a study from south India characterises the profile of human patients of brucellosis[7] but not osteoarticular brucellosis.

Our study aimed to highlight the spectrum of clinical manifestations and laboratory parameters of cases diagnosed as osteoarticular brucellosis in Rheumatology Clinic of Dr RML Hospital.

MATERIAL AND METHODS

The study was conducted at Rheumatology Clinic, Post Graduate Institute of Medical Education and Research, Dr Ram Manohar Lohia Hospital, New Delhi -110001. It was a retrospective observational study and clearance was granted by the Institutional Ethics Committee. A retrospective analysis of records of the patients attending Rheumatology Clinic of Dr RML Hospital were studied and 30 case records were identified as having been diagnosed as osteoarticular brucellosis and treated accordingly. The cases were diagnosed as brucellosis on the basis of positive ELISA test and/or a serum agglutination test of at least 1:80 titre. The demographic details along with clinical, laboratory, and radiological features of patients as documented in the records are listed underneath and were analysed.

RESULTS

All the cases belonged to the age group between 17 years to 40 years with the median age being 34 years. One patient was a 75 years lady. Male to female ratio was 3:2 with 18 males and 12 females. None of them belonged to high risk occupation and none remembered any likely exposure during their lifetime. Only one patient remembered having fever prior to onset of articular symptoms. None of the patients had concurrent fever. A macular rash was present in 2 patients. One patient tested positive for cryoglobulinaemia, while another patient had concurrent Behcet's disease. Tuberculin skin test was negative in all patients. The other clinical and

[1]Associate Professor, Department of Medicine, PGIMER and Dr Ram Manohar Lohia Hospital, New Delhi, [2]Ex-DM Resident, Department of Rheumatology, IPGME&R and SSKM Hospital, Kolkata, India

Corresponding author: Dr Deepak Rath, Ex-DM Resident, Department of Rheumatology, IPGME&R and SSKM Hospital, Kolkata, India.

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Sl No	Clinical and laboratory features	Prevalence (n = 30)	Percentage
1	Peripheral Arthritis	20	66
2	Inflammatory low back pain	16	50
3	Colitis	0	0
4	Dactylitis	8	25
5	Elevated ESR / CRP	15	50
6	Family history	0	0
7	Inadequate response to NSAIDs	30	100
8	HLA B27 negative	28	93
9	Enthesitis	7	25
10	Sacroilitis	24	80
11	Asymmetrical sacroilitis (out of 24)	24	100
12	Uveitis	0	0
13	Tenosynovitis	18	60
14	Discitis	2	7
15	Psoriasis	0	0
16	Agglutination test for Brucella: Positive	21	70
17	ELISA Test for Brucella: Positive	9	30

Table-1: Clinical and laboratory findings of the cohort of Osteoarticular Brucellosis

Sl No	Month/ Year	Number of cases diagnosed	Cumulative
1	09/2014- 08/2015	2	2
2	09/2015- 08/2016	8	10
3	09/2016- 08/2017	10	20
4	09/2017- 08/2018	10	30

Table-2: Frequency of detection of Osteoarticular brucellosis

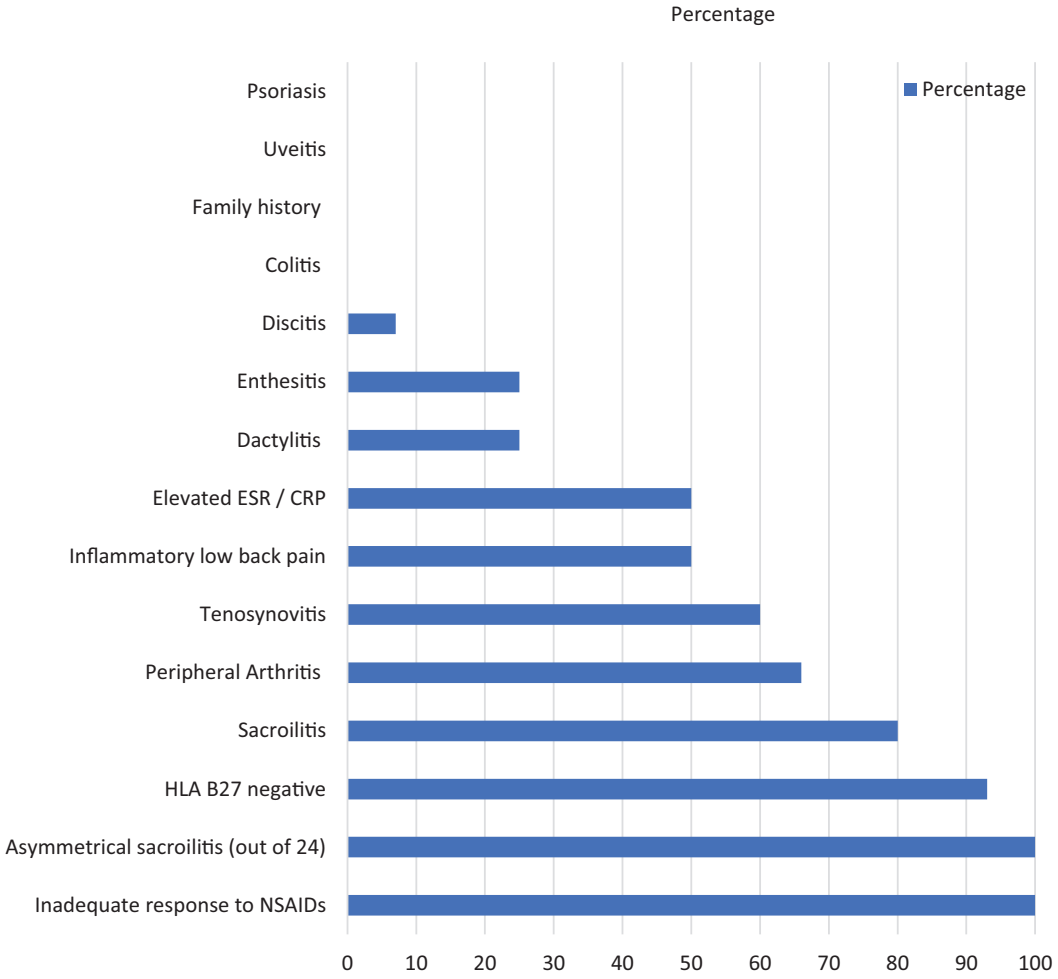

Figure-1: Characteristic of osteoarticular patients vis-a vis SpA features

laboratory findings are tabulated in table 1.

DISCUSSION

Brucellosis, though endemic in India is underreported. Its manifestations vary according to the stage of presentation to the physician. In the acute stage it presents like a PUO, while in the sub acute stage it behaves like Tuberculosis.[8] Chronic brucellosis with its osteoarticular manifestations and without fever presents to the Rheumatologist as Spondyloarthritis. The most common clinical manifestations of sacroilitis, peripheral arthritis and spondylitis makes it extremely difficult for the Rheumatologist to distinguish it from the Spondyloarthritis.[2,5,9,10]

The first case in our clinic was diagnosed in 2014. Subsequently the number of cases diagnosed has increased in frequency. The year wise distribution of number of cases diagnosed as osteoarticular brucellosis is given in the table 2. The increase in number of cases diagnosed points in all likelihood to the increased awareness of the clinician to the entity and investigating for brucellosis in patients having one or more of the characteristics.

Analysis of the frequency of symptomatology in patients of osteoarticular brucellosis vis-à-vis that of spondyloarthritis features throws up interesting observations (Figure 1). First and foremost is that, none of the patients diagnosed as brucellosis had satisfactory response to NSAIDs as previously defined in ASAS classification criteria. Secondly, 28 out of the 30 cases (93%) were negative for HLA B27. Thirdly, while sacroilitis was present in 24 out of 30 cases (80%), all of them were asymmetrical or unilateral.

Our series of patients has three characteristics in common, i.e. inadequate response to NSAIDs, negativity for HLA B27 and asymmetric or unilateral sacroilitis if present. The converses of these three characters are components of spondyloarthritis features for diagnosis of spondyloarthritis in the Amor criteria for spondyloarthritis[11] as well as the Assessment of Spondyloarthritis international Society (ASAS) criteria for axial spondyloarthritis[12]; namely good response to NSAIDs, HLA B27 positivity and bilateral sacroilitis.

Hence, the above three distinguishing features have helped us increase our suspicion towards diagnosing osteo-articular brucellosis and in the first four months of 2019, we have already diagnosed and treated nine cases of osteoarticular brucellosis.

Serologic diagnosis of brucellosis is done by either ELISA or by serum agglutination technique. However, for a patient to bear the charges of these tests which are not available in the hospital itself, adds to a financial burden. Hence, in our cohort maximum of the patients preferred for a test with lower cost input (serum agglutination test) than patients who received financial support from the government or medical insurance and hence chose the ELISA test.

A recent study compared twenty two patients of Brucellosis who fulfilled the ASAS criteria of Spondyloarthritis with clinical characteristics and laboratory and imaging examinations[13] and found that the patients of brucellosis had shorter disease duration, had myalgia and fever, the low back pain (LBP) improved less with exercise, all were negative for HLA B27 and all patients with axial brucellosis had bone marrow oedema on MRI. This study differs from our study in that more than half of the patients had positive history of exposure to livestock, adjacent muscle involvement was present in 80% of the patients, and it doesn't specify whether the sacroilitis was symmetrical or not. However, the findings of HLA B27 negativity (100%), and the low back pain not improving with exercise are in consonance with our study (93% HLA B27 negative and LBP not improving with NSAIDs). In addition, all the sacroilitis in our patients were found to be either unilateral or asymmetrical.

As our study shows, clinical manifestations of osteoarticular brucellosis are similar to that of spondyloarthritis. It is neither economically feasible to test every patient of spondyloarthritis for Brucella, nor are the tests widely available. Thus, a gap exists in the screening and diagnosis of osteoarticular brucellosis. In this scenario, the common characteristics of the patients of osteoarticular brucellosis identified in our study can serve as indicators in deciding the subset of patients who would need to be further evaluated for osteoarticular brucellosis. The three characteristics identified in our study includes clinical, laboratory and imaging characteristics and can thus serve as a sort of screening criteria for evaluation. Our study can thus fill this gap.

Our study had its limitations. First is that this is a retrospective study. The clinical case documents may have recorded only relevant data and possibility of some data being missed cannot be ruled out. Secondly, all cases did not have both the serum agglutination and serology done, which might have been due to the cost to patients as serum agglutination test is cheaper. Thirdly, all patients having spondyloarthritic pattern of joint affection were not tested for Brucellosis and thus an observer's bias can't be ruled out especially while diagnosing unilateral or bilateral or asymmetric sacroilitis especially as MRI of SI joints had not been carried out in all patients.

CONCLUSION

We conclude that manifestations of osteoarticular brucellosis resemble that of SpA and hence the diagnosis is missed. However, they have inadequate response to NSAIDs, are usually HLA B27 negative and sacroilitis if present is usually asymmetrical or unilateral. The clinician needs to be aware of the entity and should evaluate for brucellosis in a patient presenting as spondyloarthritis but having any of the three criteria mentioned above. More studies will be required in order to formulate criteria for diagnosis of osteoarticular brucellosis.

REFERENCES

1. Hofer E, Revilla-Fernández S, Al Dahouk S, Riehm JM, Nöckler K, Zygmunt MS, et al. A potential novel Brucella species isolated from mandibular lymph nodes of red foxes in Austria. Vet Microbiol. 2012; 12:23-30.
2. Smits HL, Kadri SM. Brucellosis in India: A deceptive infectious disease. Indian J Med Res. 2005;122:375–84.
3. Kumar A. Brucellosis: Need of Public Health

Intervention in Rural India. Contrib Sec Biol Med Sci. 2010;219:231–219.
4. Maurice E, Salvana T SRA. Brucellosis. In: Goldman L SAI, editor. Goldman's Cecil Medicine, (Indian reprint). 25th Ed. Philadelphia: Elsevier/Saunders; 2016. p. 1979–82.
5. Turan H, Serefhanoglu K, Karadeli E, Togan T, Arslan H. Osteoarticular involvement among 202 brucellosis cases identified in Central Anatolia region of Turkey. Intern Med 2011;50:421–8.
6. CN R. Bacterial infections: osteoarticular brucellosis. Baillieres Clin Rheumatol 1995;9:161–77.
7. Sathyanarayanan V, Razak A, Saravu K, Ananthakrishna SB, Mukhyprana Prabhu M, Vandana KE. Clinical profile of brucellosis from a tertiary care center in southern India. Asian Pac J Trop Med. 2011;4:397–400.
8. Mantur B, Amarnath S, Shinde R. Review of clinical and laboratory features of human Brucellosis. Indian J Med Microbiol. 2009;25:188-90.
9. Geyik MF, Gür A, Nas K, Çevik R, Saraç J, Dikici B, et al. Musculoskeletal involvement in brucellosis in different age groups: A study of 195 cases. Swiss Med Wkly. 2002;132:98–104.
10. Bosilkovski M, Krteva L, Caparoska S, Dimzova M. Osteoarticular involvement in brucellosis: study of 196 cases in the Republic of Macedonia. Croat Med J 2004;45:727–33.
11. Amor B1, Dougados M MM. Criteria of the classification of spondylarthropathies. Rev Rhum Mal Osteoartic. 1990;57:85–9.
12. Rudwaleit M, Van Der Heijde D, Landewé R, Listing J, Akkoc N, Brandt J, et al. The development of Assessment of SpondyloArthritis international Society classification criteria for axial spondyloarthritis (part II): Validation and final selection. Ann Rheum Dis. 2009;68:777–83.
13. Wang Y, Gao D, Ji X, Zhang J, Wang X, Jin J, Zhao Z, Deng X, Yang C, Zhu J, Zhang J, Huang F. When brucellosis met the Assessment of Spondylo Arthritis international Society classification criteria for spondyloarthritis: a comparative study. Clin Rheumatol. 2019;38:1873–80.

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