Case Report

Brucellosis - A major differential for juvenile idiopathic arthritis

Arvind K Mishra[1], Rohit Anand[2], Kamlesh K Gupta[3], Rohin Saini[4]

From [1]Professor, [2]Senior Resident, [3]Assistant Professor, [4]Resident, Department of Internal Medicine, King George Medical University, Lucknow, Uttar Pradesh, India

Correspondence to: Arvind K Mishra, 1/94, Viram Khand, Gomti Nagar, Lucknow, Uttar Pradesh, India.
E-mail: anuarvindmisra@yahoo.com

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ABSTRACT

Brucellosis is a Gram-negative, aerobic zoonotic infection acquired by *Brucella* species and transmitted from animals to humans through the ingestion of infected food products, direct contact with an infected animal, or inhalation of aerosols. Usually, the disease remains undiagnosed due to lack of awareness and inadequate reporting and is a challenging health problem in tropical countries. We report a case of 16-year-old male presenting to us with chronic inflammatory symmetric polyarthritis misdiagnosed as juvenile idiopathic arthritis but later found to be suffering from brucellosis on reevaluation. Through this case report, we would like to highlight the possibility and advantage of the high degree of suspicion for an infectious etiology responsible for arthritis in the background of autoimmunity and would also like to emphasize on the possibility of *Brucella* inducing a false-positive response for young patients presenting with arthritis.

Key words: *Arthritis, Brucella, Hip, Knee involvement*

Brucellosis is a zoonotic illness caused by genus *Brucella* and the species that cause human infection are *Brucella suis*, *Brucella canis*, *Brucella melitensis,* and *Brucella abortus* [1]. It commonly presents as pyrexia of unknown origin and can involve multiple systems, musculoskeletal being one of them, where it commonly presents as arthritis. It is transmitted from animals to humans through the ingestion of infected food products, direct contact with an infected animal, or inhalation of aerosols.

Brucellosis is reported as the world's most common bacterial zoonosis, with an incidence of over half a million cases annually. The prevalence rate in some countries exceeds ten cases per 100,000 population [2-4] and is higher in people working in organized farms. Despite being endemic in many developing countries, brucellosis is underdiagnosed and underreported in our country, which is mainly due to the ambiguous nature of the disease. The clinical presentation of brucellosis may resemble with various conditions, a major differential being juvenile idiopathic arthritis. Juvenile idiopathic arthritis, a clinically heterogeneous disorder with an unknown cause, is an enigma to the clinicians characterized by inflammatory changes within the joint in patients younger than the age of 16 years. It is responsible for acute and chronic disabilities in young children. It is considered as a diagnosis of exclusion and a common cause of arthritis in young patients [4].

Here, we report a case of a 16-year-old male presenting to us with chronic inflammatory symmetric polyarthritis misdiagnosed as juvenile idiopathic arthritis but later found to be suffering from brucellosis on reevaluation.

CASE REPORT

A 16-year-old male presented to our outpatient department with a complaint of the pain of right ankle and ball of the right foot for 4 months. The pain was of dull aching nature, gradual onset, non-radiating, and non-traumatic. Slowly, the pain progressed to the right knee and then the right shoulder and did not get relieved with ibuprofen medication. 2 months later, he developed pain in left shoulder and left ankle with eventual involvement of bilateral hip and sacroiliac joint and restriction of movements due to pain. There was no history of redness of eyes, burning micturition, and diarrhea.

Clinical examination of the joint showed no external signs of inflammation and swelling. His small joints, cervical spine, and temporomandibular joints were unaffected. His nails were normal, and no evidence of infection or pitting was present. Signs of skin scaling were absent.

X-rays of all joints did not reveal erosive changes. Laboratory investigations revealed normal total leukocytes with normal renal and liver profile, an erythrocyte sedimentation rate (ESR) of 6 mm/h, and c-reactive protein of 40 mg/L. Antistreptolysin O titers were negative with non-reactive enzyme-linked immunosorbent assay for immunoglobulin M (IgM), Epstein–Barr, rubella, and coxsackie virus. His urine was negative for casts and pus cells along with negative for human leukocyte antigen b27 marker. He was also negative for rheumatoid factor and anti-citrullinated cyclic polypeptide. An antinuclear antibody (ANA) profile done was 2+ with a negative extractable nuclear antigen profile and negative anti ds-DNA. He was treated as a

case of idiopathic juvenile inflammatory arthritis and was started on steroids with which his pain and fever flared up.

Further investigation for infectious disease panel revealed IgM dengue negative and IgM Chikungunya negative. The sera was tested for Brucellosis using standard agglutination test, and a positive titer for IgM *Brucella* more than 1:40 (positive at >1:160) was observed in the patient. He was started on rifampicin 600 mg/day and doxycycline 100 mg twice a day and continued for 6 weeks. The patient improved and made full recovery in due course of therapy.

DISCUSSION

Brucella infection associated with arthritis is seen in 10.25% of patients. The most commonly affected joints are the sacroiliac joint (26%), knee (25%), followed by hips (18%) and spine (8%) [5]. The disease frequently presents with non-specific clinical manifestations such as fever, profuse sweating, polyarthralgia, and weight loss [6]. Systemic involvement of the disease often indicates brucellosis, and diagnosis can be made based on blood testing for brucellosis. In the localized form of the disease, systemic symptoms may be absent [5].

Brucellosis is a systemic infection which presents with wide clinical spectrum, ranging from an asymptomatic form of the disease to severe form causing death [7]. Arthritis may usually present in association with acute or undulant systemic disease. A polyarticular joint involvement, as seen in our patient with hip arthritis and without constitutional symptoms, is an unusual condition in brucellosis. Due to indolent presentation and moderate local signs of inflammation, the diagnosis of localized *Brucella* arthritis is difficult. The joint fluid examination is helpful in the diagnosis of *Brucella* arthritis, but the isolation of *Brucella* from synovial fluid is difficult due to the relative paucity of organisms present in specimens [8]. The standard agglutination test is the most widely used serological procedure, with a titer of >1/160. We have done standard agglutination test for *Brucella* which was found to be positive. There were a variety of serological tests, but at least two serological tests have to be combined to avoid false-negative results. Usually, the serum agglutination test is used for the first screening, and Coombs test confirms its results [9]. In the present case, articular manifestations were the only symptoms of brucellosis, and systemic symptoms did not develop during the follow-up period.

Clinicians should not overlook the possibility of *Brucella* infection in children with arthritis. The diagnostic delay of *Brucella* arthritis can cause several complications such as dislocation and avascular necrosis of the hip [1,10,11]. Brucellosis should be considered in the differential diagnosis of arthritis in children, especially who comes from an area endemic for the disease. A detailed history of animal contact or the ingestion of unpasteurized milk or other products is required, and appropriate serological tests should be done.

CONCLUSION

After excluding most possible causes of inflammatory joint arthritis, we postulated that ANA-positive patients should be worked up for infective causes of arthritis even if there is an absence of fever. In tropical countries, this can aid in earlier detection of treatable causes of idiopathic arthritis of inflammatory origin along with special emphasis on Brucellosis which is frequently misdiagnosed and should always be considered as a differential when patients do not respond to standard therapy.

REFERENCES

1. Taşova Y, Saltoğlu N, Sahin G, Aksu HS. Osteoarthricular involvement of brucellosis in turkey. Clin Rheumatol 1999;18:214-9.
2. Pappas G. The changing *Brucella* ecology: Novel reservoirs, new threats. Int J Antimicrob Agent 2010;36 Suppl 1:S8-11.
3. Perkins SD, Smither SJ, Atkins HS. Towards a *Brucella* vaccine for humans. FEMS Microbiol Rev 2010;34:379-94.
4. Ariza J, Gudiol F, Valverde J, Pallares R, Fernandez-Viladrich P, Rufi G, *et al*. *Brucellar* spondylitis: A detailed analysis based on current findings. Rev Infect Dis 1985;7:656-64.
5. Kochar DK, Gupta BK, Gupta A, Kalla A, Nayak KC, Purohit SK. 2007 Hospital-based case series of 175 cases of serologically confirmed brucellosis in Bikaner. J Assoc Physicians India 2008;55:271-5.
6. Ozgocmen S, Ardicoglu A, Kocakoc E, Kiris A, Ardicoglu O. Paravertebral abscess formation due to *Brucellosis* in a patient with ankylosing spondylitis. Joint Bone Spine 2001;68:521-4.
7. Colmenero JD, Reguera JM, Martos F, Sanchez-De Mora D, Delgado M, Causse M, *et al*. Complications associated with *Brucella melitensis* infection: A study of 530 cases. Medicine (Baltimore) 1996;75:195-211.
8. McDermott M, O'Connell B, Mulvihill TE, Sweeney EC. Chronic *Brucella* infection of the supra-patellar bursa with sinus formation. J Clin Pathol 1994;47:764-6.
9. Al Dahouk S, Tomaso H, Nockler K, Neubauer H. Laboratory based diagnosis of brucellosis-a review of the literature. Part II: Serological tests for brucellosis. Clin Lab 2003;49:577-89.
10. Franco MP, Mulder M, Gilman RH, Smits HL. Human brucellosis. Lancet Infect Dis 2007;7:775-86.
11. Chadda VS, Soni PK, Gupta A, Gupta BK, Chadda S, Nayak KC. Incidence of brucellosis in arthritis and chronic low back pain in high risk group. J Assoc Physicians India 2004;52:338.

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