Acute parvovirus B19 infection presenting as rheumatoid arthritis mimic

Vijay Alexander¹, Sohini Das¹, Austin Saju Mangan¹, Ramya Iyadurai¹

¹Department of Medicine, Christian Medical College, Vellore, Tamil Nadu, India

Abstract

Acute parvovirus B19 infection can cause acute symmetric polyarthritis indistinguishable from polyarticular rheumatoid arthritis. Most cases of acute arthritis due to parvovirus B19 are self-limiting and resolve with symptomatic treatment. We present a 65-year-old lady from Southern India who presented with history of fever and joint pain for 10 days. Clinical examination revealed symmetric inflammatory arthritis involving the appendicular skeleton with predominant involvement of bilateral metacarpophalangeal joints. Laboratory investigations revealed elevated inflammatory markers with negative serology for rheumatoid arthritis. Parvovirus B19 IgM antibody tested positive. She was initiated on nonsteroidal anti-inflammatory drugs with which her symptoms resolved completely.

Keywords: Arthritis, parvovirus B19, rheumatoid arthritis

Introduction

Parvovirus B19 is known to cause clinical syndromes such as erythema infectiosum, aplastic crisis, and arthropathy. However, most infections in adults are subclinical. Here, we report a patient with fever and symmetric polyarthritis, later identified as acute polyarthritis due to parvovirus B19.

Case Presentation

A 65-year-old lady from Southern India presented with high-grade fever and joint pain with early morning stiffness for 10 days. She developed pain and swelling in metacarpophalangeal and proximal interphalangeal joints of both hands on day 4 of illness with sparing of distal interphalangeal joints. On day 5, she developed swelling and pain of bilateral knees followed by similar symptoms in both ankles on day 7, in an additive fashion. She denied history of backache, breathlessness, uveitis, diarrhea, dysuria, rashes, weight loss, and consumption of unpasteurized milk. There was no history suggestive of connective tissue disorder or similar episodes in the past. She was febrile and tachycardic at admission (temperature: 102 F; pulse rate: 112/min). Arthritis involving bilateral proximal interphalangeal and metacarpophalangeal joints was present. The right knee and left mid-foot joints were swollen. Tender joint count was 21. Swollen joint count was 18. Examination of the abdomen, cardiovascular, and respiratory systems were unremarkable.

We made a syndromic diagnosis of acute febrile illness with symmetric polyarthritis. Differential diagnoses considered were noninfectious causes such as index presentation of rheumatoid arthritis, reactive arthritis, and mixed connective tissue disorder. Infectious etiologies such as viral arthritis (chikungunya/parvovirus B19 arthritis), Ponceet's disease, and disseminated Brucella/Staphylococcus infections were also considered.

Investigations revealed leucocytosis with elevated inflammatory markers [Table 1]. Blood chemistries (electrolytes, liver, and renal...
function tests) were normal. X-rays of affected joints revealed effusion without chondrocalcinosis or erosions.

Serology for rheumatoid arthritis, chikungunya (IgM), and Brucella (IgM) was negative. Serial blood cultures revealed no growth. Parvovirus B19 IgM ELISA sent during her evaluation tested positive.

She was initiated on nonsteroidal anti-inflammatory drugs. Fever resolved in 5 days followed by resolution of joint symptoms over the next 5 days. At 3-month follow-up visit, she was well, with nodeformities or restriction of joint mobility.

**Discussion**

Clinical manifestations of parvovirus B19 include hydrops fetalis, erythema infectiosum in children, and aplastic crisis in those with hemolytic anemia/lymphoproliferative disorders.[2-8] Clinical features may vary across different regions. Table 2 highlights the clinical profile of acute parvovirus infections in India.

Although usually asymptomatic in adults, parvovirus B19 infection can occasionally result in symmetric polyarthritis.[9] Differential diagnoses to be entertained include rheumatoid arthritis, systemic lupus erythematosus, and polymyalgia rheumatica.[10] Joint symptoms are immunologically mediated and associated with appearance of antibodies. In a review of patients with acute undifferentiated arthropathy, parvovirus B19 IgM positivity was 14%.[7,8]

Parvovirus arthritis involves the metacarpophalangeal joints (75%), knees (65%), wrists (55%), and ankles (40%) and is nonerosive.[9]

Distinction between acute parvovirus arthritis and index presentation of rheumatoid arthritis is imperative for prognostication and initiation of appropriate therapy [Table 3].

Serum IgM antibody is recommended in the diagnosis of acute parvovirus B19 infection in immunocompetent hosts. This test has a sensitivity of 89% and specificity of 99%.[10] IgG antibody testing is used for predicting progression of acute infection to chronic arthropathy.[11] Demonstration of viral DNA is important for diagnosis in immunocompromised hosts.[12,13]

Primary care physicians are the first medical contact for most patients with such a presentation. At primary care level, physicians should generate a syndromic diagnosis followed by stepwise evaluation of differential diagnoses. The nonavailability of advanced diagnostic tests can be challenging in primary care settings. In such instances, resolution with symptomatic therapy prior to initiation of disease-modifying antirheumatic drugs would indicate viral arthritis.
This case highlights the uncommon presentation of acute parvovirus B19 infection mimicking rheumatoid arthritis. Although an exception rather than the rule, a high index of suspicion is crucial in making a timely diagnosis and avoiding untoward outcomes.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/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.

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