Case Report

Parvovirus B19: Another Agent Associated with Remitting Seronegative Symmetrical Synovitis with Pitting Edema (RS_3PE)?

CARLOS E. PERANDONES, INES COLMEGNA, and ROBERTO M. ARANA

ABSTRACT. A number of conditions have been associated with remitting seronegative symmetrical synovitis with pitting edema (RS_3PE) and the controversy of whether this should be considered a syndrome rather than a disease continues. There are few reports on the role of infectious agents in the etiology of RS_3PE, and human parvovirus B19 has not previously been linked to this syndrome. We describe a patient with RS_3PE syndrome in association with positive serology and viremia for parvovirus B19. A 9-year followup failed to uncover another cause for RS_3PE. (J Rheumatol 2005;32:389–90)

Key Indexing Terms:
REMITTING SERONEGATIVE SYMMETRICAL SYNOVITIS WITH PITTING EDEMA
McCARTY SYNDROME PARVOVIRUS B19 VIRAL ARTHRITIS

The acronym for remitting seronegative symmetrical synovitis with pitting edema, RS_3PE, is used to describe an acute onset, bilateral, symmetrical synovitis predominantly involving the wrist, small hand joints, and the flexor digitorum sheaths, associated with marked pitting edema of the dorsum of the hands (boxing-glove hand). McCarty and coworkers first described the syndrome in 1985[1]. The patients were predominantly older men who showed elevated acute phase reactants but were persistently seronegative for rheumatoid factor[1,2]. The edema responded to small doses of corticosteroids and the disease remained in remission after withdrawal of therapy. Further, there was no radiological evidence of joint destruction. Subsequent magnetic resonance imaging studies showed that inflammation of the tenosynovial sheaths is the hallmark of this condition and the hand extensor tendon apparatus is the anatomical structure usually involved[3].

The heterogeneity of conditions associated with the onset and outcome of RS_3PE[4] raised the question of whether this should be considered a syndrome rather than a disease[5,6]. There are few reports on the association between RS_3PE and infectious agents[7,8], and to our knowledge this is the first report of a virus infection associated with RS_3PE.

CASE REPORT

A 36-year-old single Caucasian woman with no relevant medical history, who worked in a maternity hospital as a secretary, was first seen in our clinic in January 1995. She had a 7-day history of bilateral pain and swelling of her hands and feet and a rash. She also had fever (38°C) during the initial 2 days of her illness. Physical examination showed marked distal extremity swelling with pitting edema of the dorsum of both hands and feet, and tenderness of the wrists and metacarpophalangeal joints. A fine erythematous maculopapular rash covered her torso and the extensor surface of the upper and lower limbs. Routine laboratory investigations only revealed mild anemia (hemoglobin 11 g/dl). Rheumatoid factor (latex, Rose-Ragan, ELISA) and antinuclear, anti-dsDNA, and anti-ENA antibodies were negative. Serological tests (i.e., capture ELISA) were positive for IgM and IgG antibodies specific for parvovirus B19. In addition, B19 viremia was detected by polymerase chain reaction (PCR). Radiographs of the hands and feet showed soft tissue swelling but no bone erosions. Antiinflammatory therapy with diclofenac sodium was started, with resolution of the arthritis within 1 week. The followup serum analysis 5 months later showed the absence of viremia and IgM, and the persistence of IgG-specific antibodies. In 9 years of followup, her disease has never relapsed and she remains healthy.

DISCUSSION

Following McCarty's first description[1], Olivé, *et al* proposed the following criteria for the diagnosis of RS_3PE: (1) bilateral pitting edema of both hands; (2) sudden onset of polyarthritis; (3) age > 50 years; and (4) seronegative for rheumatoid factor[9]. The same authors pointed out that although the syndrome is more prevalent in men and among the elderly, there are occasional reports in young people[9,10].

RS_3PE is not a specific entity but rather a syndrome associated with a still growing number of different conditions (Table 1).

Parvovirus B19 is a small virus with a single-stranded DNA genome that has been shown to cause several distinct clinical disorders[11]. Arthralgia and arthritis are the most common manifestations of B19 infection in adults, predominantly in women. Cutaneous involvement, however, is less

From the Division of Rheumatology and Immunology, Department of Internal Medicine, CEMIC, Buenos Aires, Argentina.
C.E. Perandones, MD; I. Colmegna, MD; R.M. Arana, MD, Head, Division of Rheumatology and Immunology.
Address reprint requests to Dr. C.E. Perandones, Peña 2034 (Apt. A1) 1126, Buenos Aires, Argentina. E-mail: cperandones@cemic.edu.ar
Submitted May 17, 2004; revision accepted September 15, 2004.

Table 1. RS_3PE associated conditions.

Neurologic disorders	Stroke
Malignancies[14,15]	Endometrial, gastric, prostatic, colonic, hepatocellular, and pancreatic carcinomas; lymphoma, leukemia, myelodysplastic syndromes
Rheumatic conditions[5, 6, 15]	Spondyloarthritis, crystal-associated arthritis, connective tissue diseases, vasculitis
Systemic diseases[15]	Sarcoidosis
Infectious agents[7, 8]	*Streptobacillus moniliformis, Escherichia coli, Campylobacter jejuni,* bacillus Calmette-Guerin

frequent and uncharacteristic in adults[12]. The arthritis is self-limited, symmetric, and involves predominantly the small joints of the hands, wrists and knees[13]. The arthropathy coincides with the appearance of specific antibodies that are the cornerstone for diagnosis[11]. Interestingly, pitting edema has never been associated with B19 infection.

In our patient, the epidemiological background, presence of rash, and detection of antibodies by a specific test along with viremia identified by PCR confirm that B19 was associated with RS_3PE.

Our case revives the question of whether RS_3PE is a distinct syndrome or a clinical feature associated with different diseases[5,6]. Although the pathogenesis of RS_3PE is unknown, different environmental, infectious, and genetic factors are probably involved. Our observation of parvovirus B19 infection in association with RS_3PE indicates that, in the appropriate clinical and serological setting, identification of this agent as a potential cause of some cases of RS_3PE should be considered.

REFERENCES

1. McCarty DJ, O'Duffy JD, Pearson L, Hunter JB. Remitting seronegative symmetrical synovitis with pitting edema. RS_3PE syndrome. JAMA 1985;254:2763-7.
2. Russell EB, Hunter JB, Pearson L, McCarty DJ. Remitting, seronegative, symmetrical synovitis with pitting edema — 13 additional cases. J Rheumatol 1990;17:633-9.
3. Cantini F, Salvarani C, Olivieri I, et al. Remitting seronegative symmetrical synovitis with pitting oedema (RS_3PE) syndrome: a prospective follow up and magnetic resonance imaging study. Ann Rheum Dis 1999;58:230-6.
4. Olivieri I, Salvarani C, Cantini F. RS_3PE syndrome: An overview. Clin Exp Rheumatol 2000;18 Suppl:S53-5.
5. Schaeverbeke T, Fatout E, Marcé S, et al. Remitting seronegative symmetrical synovitis with pitting edema: disease or syndrome? Ann Rheum Dis 1995;54:681-4.
6. Olivieri I, Salvarani C, Cantini F. Remitting distal extremity swelling with pitting edema: a distinct syndrome or a clinical feature of different inflammatory rheumatic diseases? J Rheumatol 1997;24:249-52.
7. Torres A, Cuende E, De Pablos M, Lezaun MJ, Michaus L, Vesga JC. Remitting seronegative symmetrical synovitis with pitting edema associated with subcutaneous Streptobacillus moniliformis abscess. J Rheumatol 2001;28:1696-8.
8. Mouly S, Berenbaum F, Kaplan G. Remitting seronegative symmetrical synovitis with pitting edema following intravesical bacillus Calmette-Guérin instillation. J Rheumatol 2001;28:1699-701.
9. Olive A, del Blanco J, Pons M, Vaquero M, Tena X. The clinical spectrum of remitting seronegative symmetrical synovitis with pitting edema. J Rheumatol 1997;24:333-6.
10. Sattar MA. Remitting seronegative symmetrical synovitis with pitting oedema in young adults: a subset of rheumatoid arthritis or a distinct syndrome?. Br J Rheumatol 1990;29:479-81.
11. Young NS, Brown KE. Parvovirus B19. N Engl J Med 2004;350:586-97.
12. Reid DM, Reid TMS, Brown T, Rennie JAN. Human parvovirus-associated arthritis: a clinical and laboratory description. Lancet 1985;1:422-5.
13. Naides SJ, Scharosch LL, Foto F, Howard EJ. Rheumatologic manifestations of human parvovirus B19 infection in adults. Initial two-year clinical experience. Arthritis Rheum 1990;33:1297-309.
14. Sibilia J, Friess S, Schaeverbeke T, et al. Remitting seronegative symmetrical synovitis with pitting edema (RS_3PE): a form of paraneoplastic polyarthritis? J Rheumatol 1999;26:115-20.
15. Paira S, Graf C, Roverano S, Rossini J. Remitting seronegative symmetrical synovitis with pitting oedema: a study of 12 cases. Clin Rheumatol 2002;21:146-9.