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Secondary syphilis presenting as SAPHO syndrome features

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ABSTRACT

The SAPHO syndrome may evolve following low virulent infections. This report describes a patient who developed a clinical syndrome that complied with the formal diagnostic criteria of the SAPHO following an infection with syphilis. His clinical manifestations gradually resolved following antibiotic therapy.

This interesting association underlines the pathogenic circumstances linking infections and various rheumatic conditions. It is less evident whether resolution of the symptoms was ascribed to the eradication of the bacteria or perhaps due to cessation of the autoinflammatory reaction to the infection induced. In our description we suggest a correlation between infection with Treponema pallidum and the induction of SAPHO syndrome.

Introduction

The SAPHO (Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis) syndrome was first proposed in 1987 as a unifying concept to describe the association between hyperostosis of bone of the anterior chest wall, and dermatologic conditions such as palmoplantar pustulosis, acne conglobata, acne fulminans, hidradenitis suppurativa and dissecting cellulitis of the scalp, all of which are characterized histopathologically by neutrophilic pseudoabscesses (1). The skeletal lesions are most frequently found in the sternocostoclavicular area, yet vertebrae and the axial skeleton are often involved as well (2). The etiopathogenesis of the SAPHO syndrome remains largely obscure, but several reports suggests that an infectious or post-infectious state may contribute to the pathogenesis of this disorder. The low-virulent skin corynebacterium *Propionibacterium acnes*, known primarily due its involvement in the pathogenesis of acne, palmoplantar pustulosis and pyoderma gangrenosum, has been implicated (3). This pathogen has been recovered in osteoarticular lesions of the anterior chest wall, spine, and the appendicular skeleton (4).

This report describes an unusual case of a patient who presented with the features of the SAPHO syndrome that evolved from prior infection with *Treponema pallidum,* suggesting that an infection with Treponema may contribute to the pathogenesis of the SAPHO syndrome.

Case report

A thirty-six-year-old healthy male, with no previous medical history and no known autoimmune conditions, presented with a two-week right anterior chest pain that spread downwards to the left side of the pelvis. The pain worsened at rest and did not respond to analgesics. He denied antecedent trauma or injury. In addition, he reported recent night sweats, a sensation of fever and weight loss of 2 kg.

Initially his examination was unremarkable except for localized tenderness of the anterior chest wall, the sternum and the left iliac crest. Laboratory studies (blood counts, chemistry analysis) and basic x-ray were normal. He underwent ^{99m}Tc bone scintigraphy which revealed enhanced uptake at the left iliac crest, sixth right rib, lower sternum and the acromion of the right shoulder (Fig. 1a).

A revised physical examination demonstrated a macular rash with hyperkeratotic and vesicular lesions over his palms and soles with concomitant mild generalized lymphadenopathy and no urogenital findings. Elevated erythrocyte sedimentation rate (70 mm/hr), an increased C-reactive protein and increased globulin concentrations were observed.

A bone biopsy taken from the tender region in the left iliac crest revealed areas of fibrous dysplasia and several loci of new bone formation without evidence of infection. All serologic tests were negative except the venereal disease research laboratory (VDRL) and *Treponema pallidum* hemoagglutination test (TPHA). Testing for HIV was negative.

Upon direct questioning he admitted recent unprotected promiscuous heterosexual activity. A diagnosis of secondary syphilis was made and he was treated with weekly intramuscular benzathine penicillin G, 2.4 million units for three consecutive weeks. Complete resolution of all complaints and physical findings were noted. A year later, a

repeated bone scintigraphy demonstrated increased and diffuse isotope uptake along the right sternal border and along both sacroiliac joints (Fig. 1b).

Discussion

The SAPHO syndrome has been proposed to designate collectively a group of bone and joint abnormalities associated with skin lesions, probably related to the psoriatic spondyloarthropathies. This syndrome is characterized by distinctive skin lesions (particularly palmar/plantar pustulosis and severe acne), hyperostotic skeletal lesions, aseptic osteitis and a chronic clinical course. The most frequently encountered skeletal lesions are sterno-costo-clavicular hyperostosis, chronic recurrent multifocal osteomyelitis and pustulotic arthroosteitis (5).

Suei *et al*. (6) have proposed that the premier site of bone involvement is the periosteum, where cytokines are produced creating a local proinflammatory activity. Their synthesis may interfere with the normal osteoblastic-osteoclastic equilibrium, promoting both periosteal bone formation and cortical bone resorption.

Periostitis has also reported to be an unusual initial manifestation of either primary or secondary syphilis. Mindel *et al*. (7) described only two cases of periostitis in 854 patients with early acquired syphilis. Several previous reports have demonstrated that bone scintigraphy has an added value in detecting early periosteal bone lesions prior to their appearance on roentgenograms. Veerapen *et al*. (8) described patients who had normal or minimal findings on radiographs but extensive uptake of isotope on a bone scan. All the patients described with syphilis induced periostitis have shown a prompt response to parenteral penicillin and a concomitant resolution of their bone scan findings (7, 8). In the described case, the lack of resolution of the bone findings further suggests that the bone involvement does not arise from syphilitic periostitis but from another source.

In this report, we raise the possible association between secondary syphilis and the evolution of the SAPHO syndrome. Early syphilis is often a subacute infection with an immunodominance of Th1 lymphocytes producing high levels of cytokines such as IL-2, interferon, tumor necrosis factor, IL-12 and low concentrations of IL-6 and IL-10 (9). These traits are similar to the over-expression of TNF that has been noted in the foci of osteitis in patients with SAPHO and support for this findings is underscored by the clinical benefit from anti-TNF therapy for patients with the SAPHO syndrome (10).

Benhamou *et al*. (11) proposed clinical criteria by which the diagnosis of the SAPHO syndrome may be established. Of the features that may coexist with the SAPHO syndrome the presence of low virulent bacterial infections is mentioned. It is not clear in this case whether the SAPHO syndrome was triggered by the infection or whether the syphilitic periostitis mimicked the SAPHO syndrome. However, this association should be considered particularly among patients who do not demonstrate the classical stigmata of syphilis.

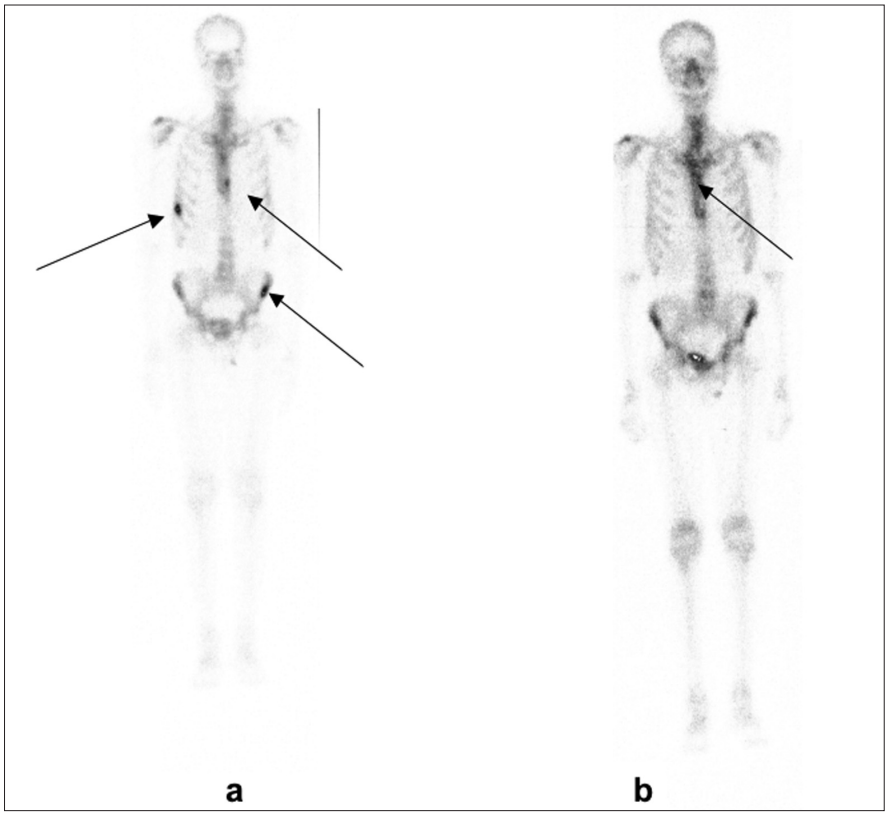

Fig. 1a. Bone scintigraphy which shows increased uptake at the left iliac crest, sixth right rib, lower sternum and the acromion on the right shoulder at time of diagnosis.

Fig. 1b. A year after resolution from of all clinical symptoms residual diffuse isotope uptake is seen along the right sternal border and over both sacroiliac joints. Arrows indicate zones of increased isotope uptake.

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