

Synovitis, Acne, Pustulosis, Hyperostosis and Osteitis (SAPHO) Syndrome: A Brief Review of a Rare Condition

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Abstract

Synovitis, Acne, Pustulosis, Hyperostosis and Osteitis (SAPHO) syndrome is an osteoarticular-skin syndrome characterised by sterile inflammatory arthro-osteitis of the anterior chest wall. It is associated with various skin conditions including palmoplantar pustulosis, severe acnes and pustular psoriasis. A link between SAPHO syndrome and seronegative spondyloarthropathies has been suggested over the last 10 years. SAPHO syndrome mainly affects young and middle-aged adults. Treatment of SAPHO syndrome remains empirical as the underlying aetiopathogenesis is unclear.

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Introduction

The acronym SAPHO refers to a syndrome characterised by synovitis, acne, pustulosis, hyperostosis and osteitis. In 1961, a link between acne conglobata and arthritis was first described by Windom et al.¹ In the subsequent 16 years, associations between clavicular osteomyelitis and palmoplantar pustulosis were reported by Sasaki² in Japan, Bergdahl et al³ and Bjorksten et al⁴ in Scandinavia. The term “sternocostoclavicular hyperostosis” was first used by Kohler et al⁵ in Germany to describe patients with anterior-chest wall involvement but without skin lesion. It was not until 1979 that Sonozaki et al⁶ first described the simultaneous occurrence of sacroiliitis with arthro-osteitis of the chest wall and palmoplantar pustulosis. Subsequently, similar bone lesions were reported in patients with severe acne⁷ and those with positive HLA-B27.⁸ The term SAPHO syndrome was first coined by Chamot et al⁹ in 1987 to embrace these unusual osteoarticular and skin manifestations.

Epidemiology

The true incidence of SAPHO syndrome is unknown. Most cases were reported in Japan, Northern and Western Europe with few cases from the United States, Canada and Britain. It is still unclear whether this geographic distribution is due to immunogenetic differences between the different ethnic groups. Young and middle-aged adults are commonly affected with no particular gender preponderance.

Aetiopathogenesis

The aetiopathogenesis of SAPHO syndrome is unknown. Indirect evidence seems to suggest genetic predisposition and environmental factors do play a role in the pathogenesis of SAPHO syndrome.

There are conflicting reports as to whether organisms of low infectivity do play a pathogenetic role in SAPHO syndrome. Although *Propionibacterium Acnes* have been found occasionally in the osteoarticular lesions^{10,11} and intra-articular injections of this organism could elicit erosive arthritis in rats,¹² this “infective theory” was not supported by others¹³ as cultures of the involved areas were often sterile and antibiotics have not been proven to eradicate the pathologic lesions. The presence of antichlamydial antibodies in chronic palmoplantar pustulosis suggests either alive or dead antigens may also play the role of “cofactor” in eliciting SAPHO syndrome.¹⁴

Genetic susceptibility has also been implicated in the pathogenesis of SAPHO syndrome as higher prevalence of HLA B27 has been reported in patients with SAPHO syndrome compared to normal population.^{9,15}

Clinical Features

Cutaneous Manifestation

Although skin manifestation is a common feature of SAPHO syndrome, it may be absent in some patients. Cutaneous manifestations include severe acne, palmoplantar pustulosis and pustular psoriasis. It re-

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mains unclear whether the latter two entities are similar. Occasionally, SAPHO syndrome can be associated with psoriasis vulgaris. The skin lesions may precede, occur concurrently or after the onset of skeletal complaints.¹⁶

Skeletal Manifestation

Osteoarticular manifestations include characteristic anterior chest wall involvement,^{16,17} spondyloarthropathy and sacroiliitis. The costoclavicular ligament, costoclavicular joint, sternoclavicular, manubriosternal joint and costochondral joint are common sites of involvement. Clinically, patients present with localised pain and swelling with impaired chest wall movement. Occasionally, the ligaments can be ossified resulting in further reduction of chest wall movement.

In the early stages, the bone and joints appear normal on radiographs. Later, hyperostotic bony lesions occur which may be patchy or generalised with involvement of the entire clavicle, sternum or manubrium.¹⁸ The involved areas often appear sclerotic, enlarged with areas of osteolysis, accompanied occasionally by periosteal reaction. The radiographic findings often mimic that of Paget's disease. Sternoclavicular, manubriosternal, costomanubrial and costochondral joints may also appear widened or fused. Limitation of thoracic movement is further enhanced by ossification of ligaments around the joints.

Pseudopagetic changes with enlargement and sclerosis of bone are occasionally found in flat bones such as ilium, mandible and pubic bones.¹⁹

Osteitis often involves the sacroiliac joint and spine which include spondylitis and spondylodiscitis.^{6,8,18} Although the thoracic spine is most frequently involved, any part of the spine can be affected. Usually two or four adjacent vertebrae are involved.¹⁸ The clinical presentation and radiographic findings resemble those in seronegative spondyloarthropathies. Disc erosion can co-exist with syndesmophytes. Early changes are often visible with the technetium bone scan. Isolated sacroiliitis may occur in the absence of spinal involvement. Majority of the cases are unilateral. Radiographically, erosions and sclerosis of the sacroiliac joint are similar to that of ankylosing spondylitis.

Peripheral arthritis may or may not accompany the chest wall lesions. Metacarpo-phalangeal and proximal interphalangeal joints of the fingers, elbows and knees are often affected. In contrast to psoriatic arthritis, distal interphalangeal joints are rarely involved. Majority of the cases are mono- or oligoarthritic, non-erosive, acute in onset with monocyclic pattern that usually resolves within two months.¹⁸ Radiographic changes are often minimal with soft tissue swellings. Synovial fluid often shows a pseudoinfectious picture with predominant polymorphonuclear neutrophils.²⁰ Cultures of the synovial fluid are sterile.

Systemic Manifestations

Unlike other seronegative spondyloarthropathies, patients with SAPHO syndrome do not have extra-articular manifestations in the eyes and genitourinary tracts. However, ulcerative colitis and Crohn's disease have been anecdotally reported to be associated with SAPHO syndrome.²¹

Diagnosis

There are no diagnostic tests for SAPHO syndrome. Full blood count is usually normal. As in other inflammatory conditions, the erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are moderately elevated during the inflammatory phase. With the exception of *Propionibacterium acnes*, cultures from open biopsies of patients with pustulosis often do not yield positive results. Biopsies of sclerotic bone lesions often reveal non-specific changes with polymorphonuclear cells interspersed with osteoclasts and osteoblasts in the early phases and predominantly mononuclear cells in later phases.⁹

Differential Diagnosis

In the absence of skin lesion, the skeletal abnormalities can mimic bacterial osteomyelitis, Paget's disease and bone tumour such as Ewing's sarcoma. These lesions often can be differentiated histologically. Paget's disease can also be differentiated from SAPHO syndrome by the raised alkaline phosphatase.

Treatment

There is no universally accepted standard treatment regime for SAPHO syndrome. Treatment is symptomatic. Most patients respond to non-steroidal anti-inflammatory drugs but the response to treatment may be inconsistent or incomplete. Other medications such as corticosteroids,⁴ colchicine²² and sulfasalazine¹¹ have been shown anecdotally to be effective in some patients. Antibiotics are generally ineffective in patients with SAPHO syndrome.^{9,23}

Prognosis

The disease course is characterised by intermittent flares and remissions. Prognosis is good as most of the patients do not experience serious disability.

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