—Report on Experiments and Clinical Cases—

A Case Report of Synovitis Acne Pustulosis Hyperostosis and Osteitis Syndrome Presenting with Spondylodiscitis

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Abstract

SAPHO syndrome stands for synovitis, acne, pustulosis, hyperostosis and osteitis. The common site of skeletal lesions in this syndrome is the sternocostoclavicular area. Spondylodiscitis is rarely described in published studies. In general, skin lesions develop before the onset of skeletal lesions. We report a case of SAPHO syndrome in which spondylodiscitis developed more than 1 year before the onset of pustulosis. (J Nippon Med Sch 2000; 67: 191—197)

Key words: SAPHO syndrome, spondylodiscitis, pustulosis, sternoclavicular arthritis

Introduction

Pustular lesions have been linked to a variety of skeletal abnormalities SAPHO is an acronym for a syndrome of 5 frequently linked clinical and radiological manifestations (synovitis, acne, pustulosis, hyperostosis and osteitis). The common site of skeletal lesions in SAPHO syndrome is the sternocostoclavicular area. The axial skeletons such as the spine and sacroiliac joint are also occasionally involved. Syndesmophytes, hyperostosis and erosion of the vertebral bodies are commonly observed in radiographs. Spondylodiscitis is rarely described in published studies. Moreover in general, skin lesions develop before the onset of skeletal lesions. We report a case of SAPHO syndrome in which spondylodiscitis developed more than 1 year before the onset of pustulosis.

Case Report

A 38-year-old female consulted a chest surgeon complaining of anterior chest pain in November 1997. She was diagnosed as having Tietze's disease, and was treated with nonsteroidal anti-inflammatory drugs (NSAIDs). In March 1998, she began to have low back pain and presented to our outpatient clinic.

She was 171 cm tall and weighed 59 kg. Family and past histories were noncontributory. The pain was intensified by motion, but there were no abnormal neurological findings in the lower extremities. X-ray examination revealed disc space narrowing of L 3/4 associated with apophyseal separation of the vertebral body (**Fig. 1**). Magnetic resonance imaging (MRI) demonstrated an abnormal signal intensity in the antero-superior portion of the L 4 vertebral body (low signal intensity in T 1 weighted image, high signal intensity in T 2* weighted image) that suggested an inflammatory lesion (**Fig. 2**). Because her general condition was good and the results of blood examinations including white blood cell count (WBC), C reactive protein (CRP) and erthrocyte sedimentation rate (ESR) were all normal, she was diagnosed as having lumbar discopathy and was treated with NSAIDs and a brace.

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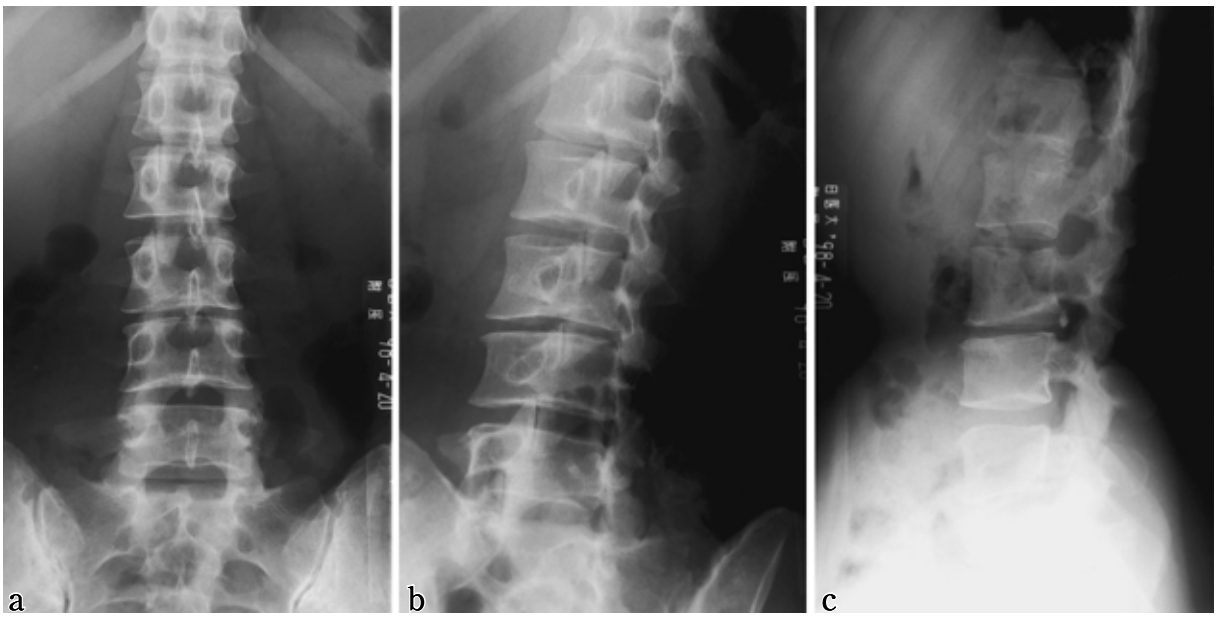

Fig. 1 Radiographs at first visit to our hospital (March 1998). X-ray examination reveals disc space narrowing of L 3/4 associated with appophyseal separation of the vertebral body. Fig. 1-a: AP view, Fig. 1-b: Oblique view, Fig. 1-c: Lateral view

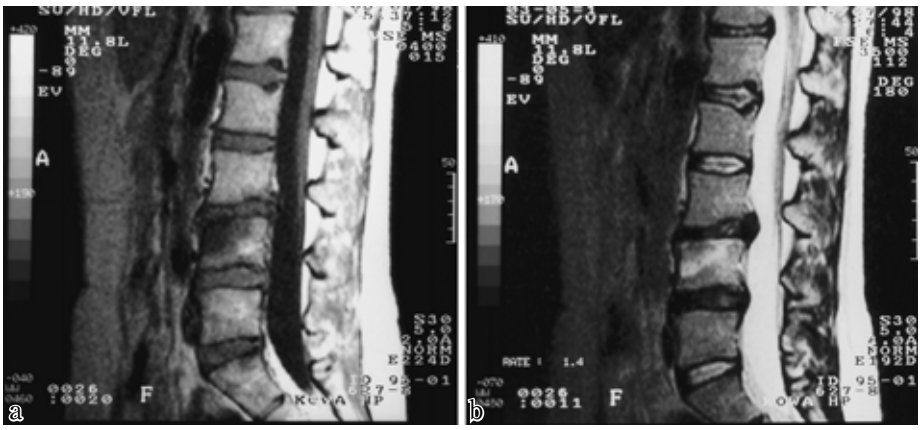

Fig. 2 MRI at first visit to our hospital. MRI demonstrates abnormal signal intensity in antero-superior portion of L 4 vertebral body (low signal intensity in T 1 weighted image, high signal intensity in T 2* weighted image) suggesting inflammatory lesion
Fig. 2 - a : T 1-weighted image, Fig. 2-b: T 2*-weighted image

However low back pain was subsequently aggravated. She was admitted to our hospital in September 1998. She had a fever of 37.3℃ with restricted motion of the lumbar spine and a tenderness over the L 3－4 spinous processes and the right paraspinal muscles. Swelling and tenderness were also observed over the sterno-costal joint at the level of the third rib. There was no skin lesion. X-ray examination revealed advanced disc space narrowing of the L 3/4 and destructive changes in the antero-superior portion of the L 4 vertebral body (**Fig. 3**). CT scan demonstrated destructive changes in the sternocostal joint which was not observed on X-ray examination (**Fig. 4**). MRI showed low signal intensity on T 1 weighted image and high signal intensity on T 2* weighted image in the entire L 4 body, suggesting marked expansion of the inflammatory lesions. The signal abnormalities of the sternocostal joints were moderately enhanced by gadolinium on MRI, suggestive of arthritis. But there were no MR findings indicative of abscess (**Fig. 5**).

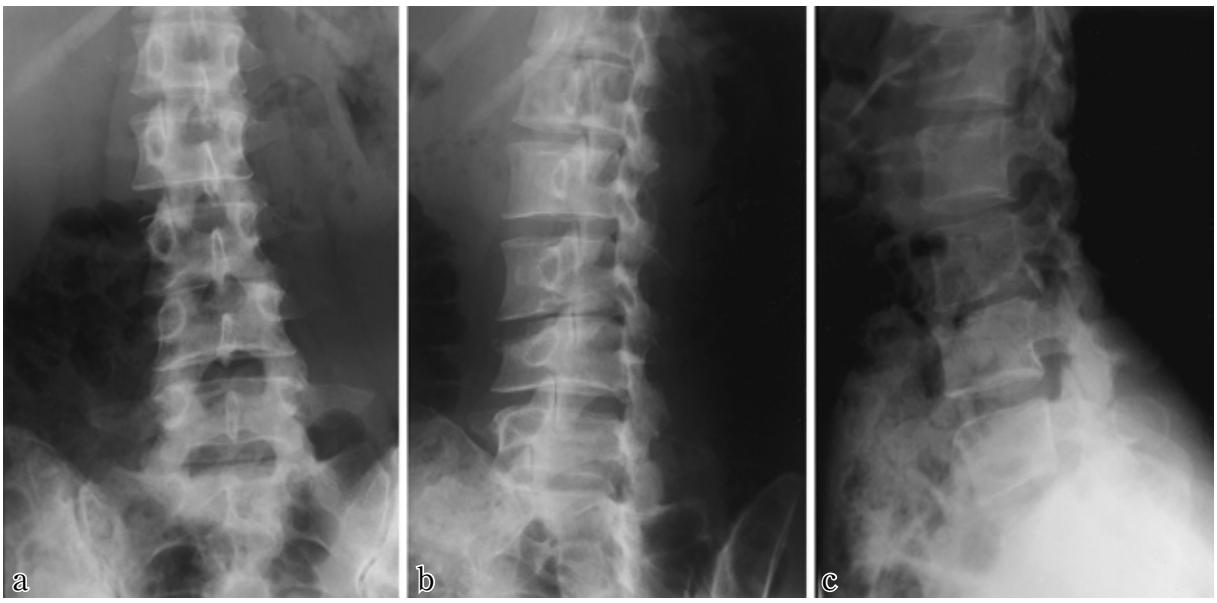

Fig. 3 Radiographs at admission to our hospital (September 1998). X-ray examination reveals advanced disc space narrowing of L 3/4 and destructive changes in antero-superior portion of L 4 vertebral body. Fig. 3-a: AP view, Fig. 3-b: Oblique view, Fig. 3-c: Lateral view

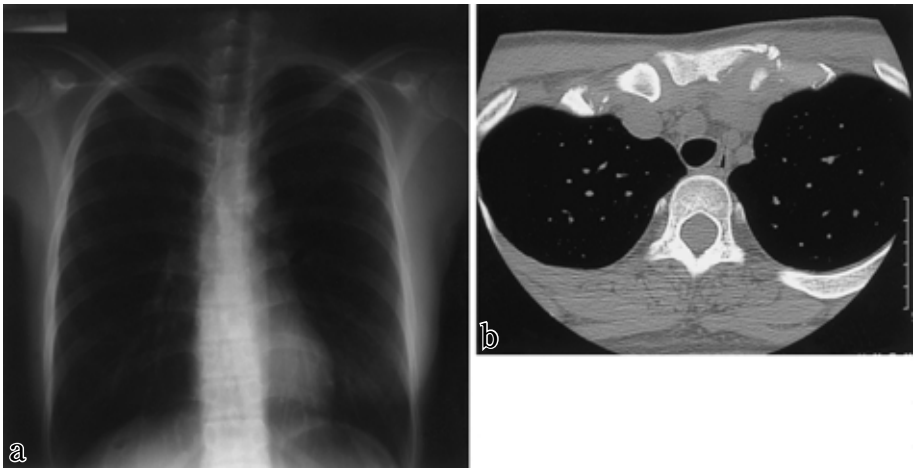

Fig. 4 Radiograph and CT at admission to our hospital (September 1998). CT scan demonstrates destructive changes in sternocoastal joint which an not observed on plain X-ray examination. Fig. 4-a: Chest radiograph, Fig. 4-b: CT of sternocostal joint

Technetium bone scintigram showed hot uptake in the L 3－4 vertebral bodies and the upper end of the sternum (**Fig. 6**). Although blood examinations including WBC, ESR, CRP and alkaline phosphatase were all normal, tuberculin skin test at 48 hours was positive with a 14-mm area of erythema and a 12-mm area of induration. The patient had a presumptive diagnosis of tuberculosis and was treated with anti-tubercular drugs. However she had little relief of symptoms during 2 months of treatment. In December 1998, to make a definitive diagnosis, a percutaneous biopsy of the L 3/L 4 vertebral disc and an open biopsy of the sternoclavicular joint were performed. Histology of the two biopsy sites showed the same findings of chronic inflammation of bone and soft tissue with an infiltration of lymphocytes and marked fibrosis (**Fig. 7**). A culture for organisms was negative. A diagnosis of aseptic chronic spondylodiscitis of L 3/L 4 and arthritis of the sternoclavicular joint was made. The patient was treated conservatively with rest and

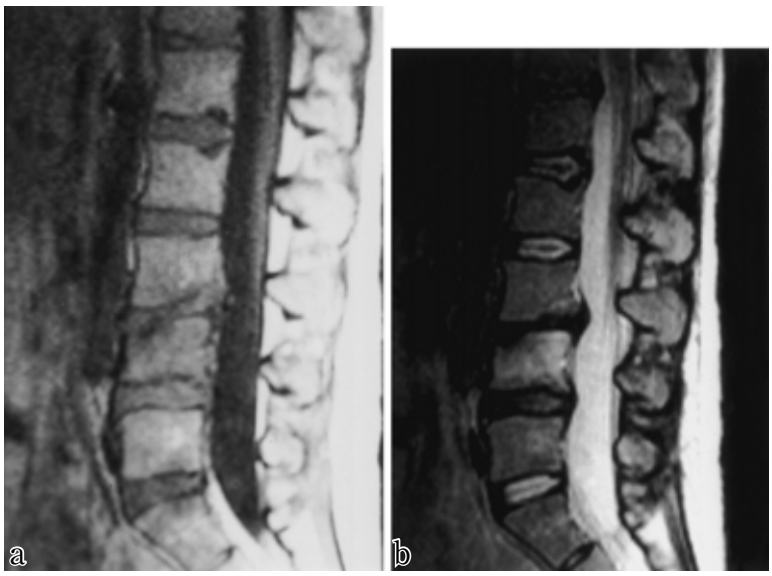

Fig. 5 MRI at admission to our hospital (September 1998). MRI shows low signal intensity on T 1 weighted image and high signal intensity on T 2* weighted image in the entire L 4 body, suggesting inflammatory lesions. Fig. 5-a: T 1-weighted image, Fig. 5-b: T 2*-weighted image

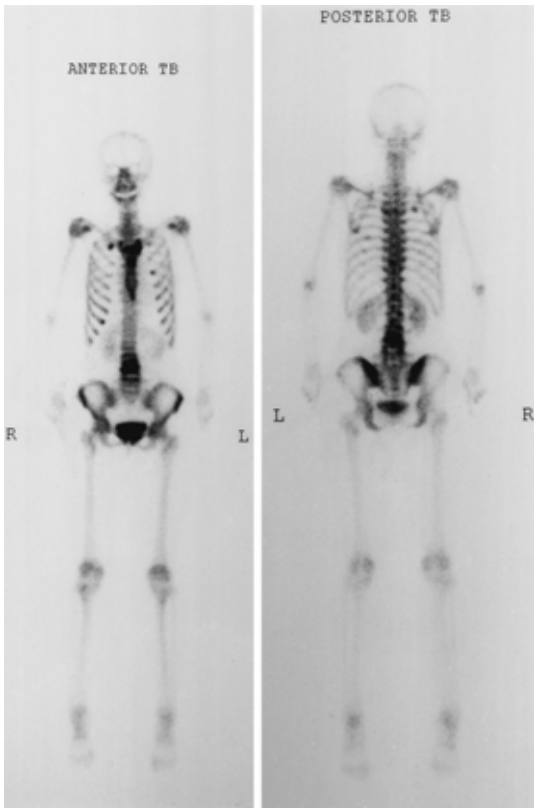

Fig. 6 Bone scintigram. Technetium bone scintigram shows increased uptake in L 3－4 vertebral bodies and upper end of sternum

NSAIDs and was discharged. She had a relief of the low back pain 6 months after treatment, and had little difficulty in daily activities. There was an improvement in X-ray examination, MRI and bone scintigram findings (**Fig. 8**). However in October 1999, she had pustulosis on the soles of the feet, and was conclusively diagnosed as having SAPHO syndrome (**Fig. 9**).

Discussion

In 1987, Chamot et al.[1] first proposed the term SAPHO syndrome to designate collectively a group of bone and joint abnormalities associated with skin lesions. This syndrome has following clinical and histopathological features: distinctive skin lesions, especially pustulosis and severe acne; unique skeletal abnormalities; characteristic target site of skeletal lesions; aseptic inflammatory findings on histology and a chronic clinical course. The most important skeletal lesions are sterno-costo-clavicular hyperostosis, chronic recurrent multifocal osteomyelitis and pustulotic arthro-osteitis. The etiologies of SAPHO syndrome remain unclear. Hematogenous spread of a skin infection is unlikely to be a cause of skeletal lesions, because no pathogens are cultured from blood, bones or joints in most patients. The most compelling hypothesis for the mechanism of this syndrome is an autoimmune response triggered by a bacterial or viral pathogen[2].

As for intervals from the onset of skin lesions to

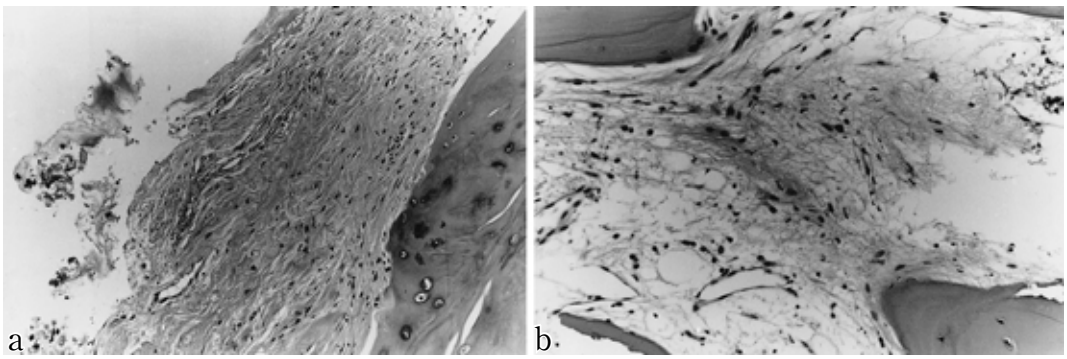

Fig. 7 Histological findings. Histology shows chronic inflammation of bone and soft tissue with an infiltration of lymphocytes and marked fibrosis. Fig. 7-a: L 3/L 4 vertebral disc, Fig. 7-b: sternoclavicular joint

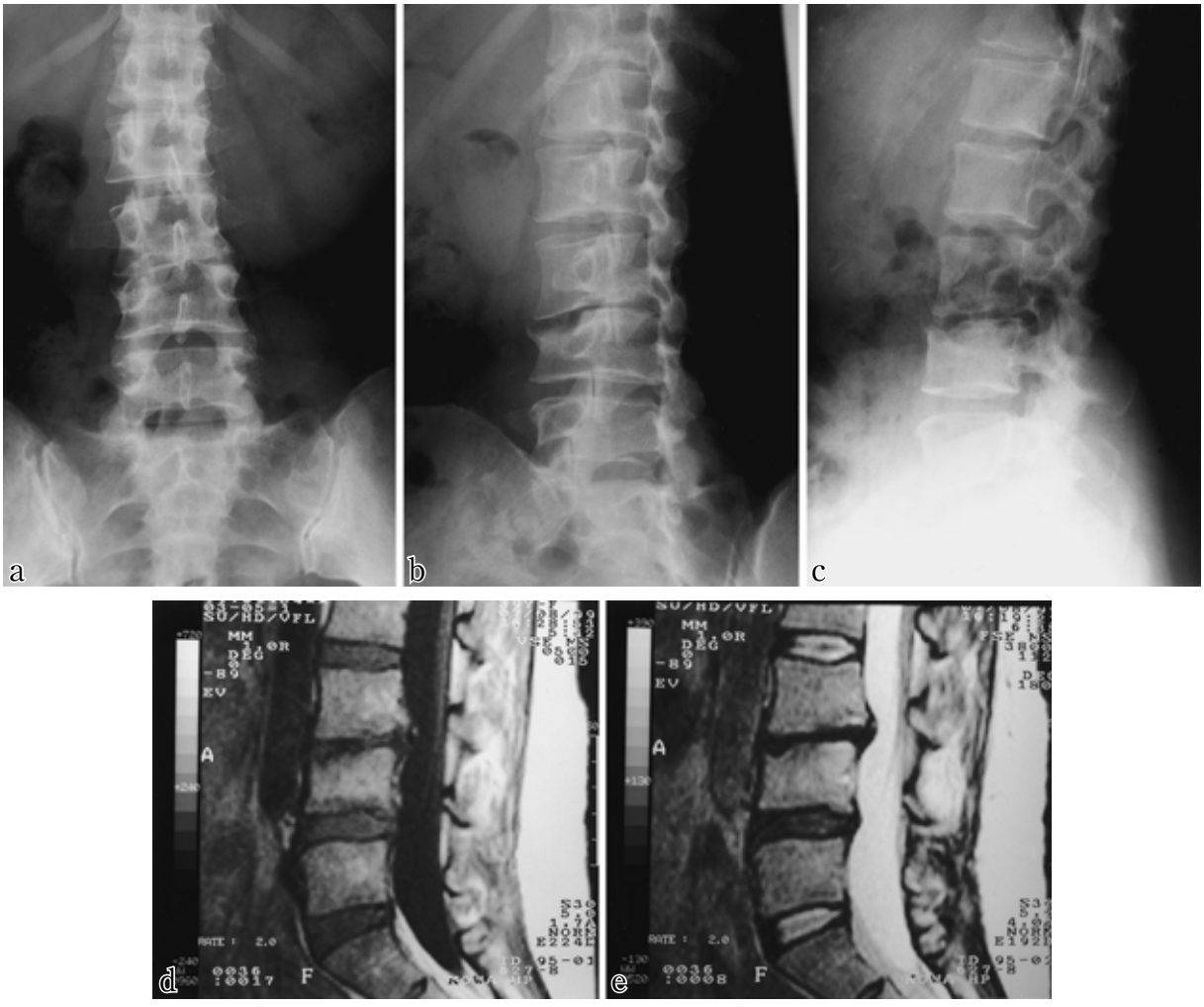

Fig. 8 Radiographs and MRI (July 1999). There was an improvement in X-ray examination, MRI and bone scintigram findings. Fig. 8-a: AP view. Fig. 8-b: Oblique view, Fig. 8-c: Lateral view, Fig. 8-d: MRI T 1-weighted image, Fig. 8-e: MRI T 2*-weighted image.

skeletal lesions, most patients have skin lesions before the onset of skeletal lesions. Sonozaki et al[3]. noted that skin eruptions begin before skeletal lesions in more than 70% of their cases. However in some patients, the interval between these 2 lesions could be long. Kahn et al.[4] reported 2 cases in which sternoclavicular osteitis occurred more than 20 years after the onset of palmoplantar pustulosis.

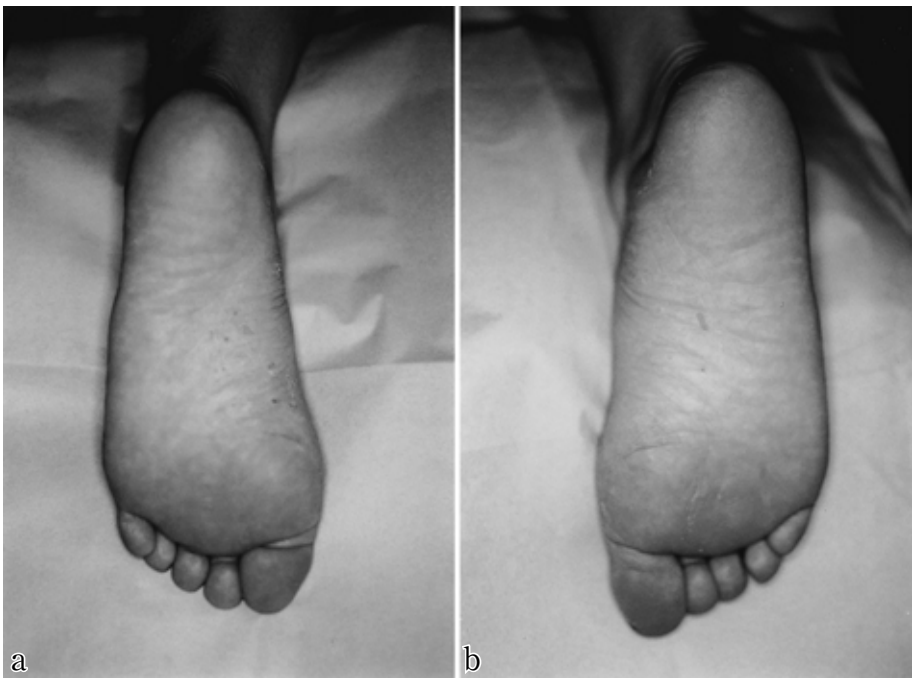

Fig. 9 Photographys of the pustulosis on her feet. Pustulosis developed on the soles of her feet more than one year after onset of spondylodiscitis. Fig. 9-a, Fig. 9-b.

Skeletal involvement is mainly limited to the sternocostoclavicular area, and combines arthritis, aseptic osteomyelitis and hyperostosis. The other site of skeletal lesions are peripheral as well as axial. The frequency of spondylodiscitis as axial skeletal lesions has been reported to be 0～21%[3,6-8]. Le Loet et al.[5] found no spondylodiscitis in their series of 15 cases.

SAPHO syndrome should be differentiated from some rheumatic diseases, especially from ankylosing spondylitis. Spondylodiscitis observed in SAPHO syndrome is very similar to ankylosing spondylitis, and is difficult to differentiate. Erosive and destructive changes in the discovertebral region are known to occur in some patients with ankylosing spondylitis. However severe destructive changes are relatively uncommon in ankylosing spondylitis, while other changes like syndesmophytes, osteoporosis, apophyseal joint sclerosis are often observed. Moreover the high frequency of anterior chest wall symptoms and low frequency of sacroiliitis in SAPHO syndrome is in contrast to ankylosing spondylitis.

Another important differential diagnosis is infectious spondylodiscitis. The radiological findings are the same in the inflammatory spondylodiscitis of SAPHO syndrome and infectious spondylodiscitis. Multiple foci of spondylodiscitis are unusual in infection, whereas no abscess is observed in SAPHO syndrome. However to rule out infection, a biopsies for bacteriology and histology are often needed.

The clinical course of this syndrome is characterized by deteriorations and remissions for many years. In general, NSAIDs often provide mild to moderate pain relief, whereas antibiotics are less effective. Corticosteroids have been used to treat flares in symptoms with occasional success. Goupille et al.[9] suggested that NSAIDs should be used first in the treatment of SAPHO syndrome, followed by disease-modifying antirheumatic drugs, if necessary. Some authors reported a favorable effect of cytotoxic agents, interferon, calcitonin and vitamin D derivates.

As for surgical treatment, tonsillectomy has resulted in improvement of the anterior chest symptoms and the skin lesions. Baba et al.[10] reported that in 4 patients with spondylodiscitis, vertebral body fusion with curettage of the affected the bone resulted in bone healing as well as complete relief of the pustulosis. They also suggested that surgery treatment may be indicated in spondylodiscitis patients with spinal instability or neural impairment. In contrast, Miyagawa et al.[11] stated that surgical procedures such as curet-

tage or resection of skeletal lesions are of limited use for this syndrome.

In summary we report a case of SAPHO syndrome in which spondylodiscitis developed more than 1 year before the onset of pustuosis. Awareness of this syndrome is important because this syndrome has to be differentiated from other entities such as ankylosing spondylitis and infectious spondylodiscitis, which have similar clinical and radiological findings but have very different treatments and prognosis. The skin and skeletal manifestations are not always present at the same time in some patients. The possibility of SAPHO syndrome must be considered in patients with spondylodiscitis, even in the absence of any skin lesion.

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