Psoriatic Arthritis Complicating Lung Cancer
Shinichi Ishioka, Akihiro Maeda, Yasuyo Jougasaki, Keiko Hiyama and Michio Yamakido

Abstract

Psoriatic arthritis is an inflammatory arthritis associated with psoriasis. While an elevated incidence of lung cancer has been observed in patients with RA or psoriasis, there has been no report of psoriatic arthritis associated with lung cancer. We here report the first case of psoriatic arthritis which developed lung cancer. In this case, it was suspected that a combination of cigarette smoking, pulmonary fibrosis, and low-dose methotrexate therapy might have promoted the development of lung cancer.

(Key words: psoriasis, methotrexate (MTX), smoking, pulmonary fibrosis)

Introduction

Psoriatic arthritis is an inflammatory arthritis associated with psoriasis. Although it is still controversial, it is now considered to be a distinct entity rather than a variant of rheumatoid arthritis (1). The exact etiology of psoriatic arthritis is unclear. Genetic, immunologic, and environmental elements are thought to play a role in the perpetuation of the inflammatory process.

Interestingly, increased risks for lung cancer have been epidemiologically reported in both rheumatoid arthritis (2–4) and psoriasis vulgaris (5). However, there is no report of a high incidence of malignant tumors including lung cancer in patients with psoriatic arthritis. Here, we report a case of psoriatic arthritis complicated with lung cancer during methotrexate (MTX) therapy. This is the first report of psoriatic arthritis complicating primary bronchogenic cancer.

Case Report

A 69-year-old man was admitted to our hospital because of right side massive pleural effusion with right chest pain and dyspnea. He was a heavy smoker (50 packyear) and had been diagnosed and treated for rheumatoid arthritis (RA) and psoriasis for thirty-three years. Although reticulonodular shadows in both lower lung fields were recognized on chest X-ray, low-dose (5 mg/week) MTX therapy for RA and psoriasis was started 5 years previously. MTX was effective for controlling both inflammatory arthritis and psoriasis. However, the therapy was sometimes canceled because of liver dysfunction which was an adverse effect of MTX.

Two months before the detection of right-pleural effusion, he complained of exertional dyspnea, and arterial blood gas analysis in room air revealed PaO$_2$ of 72.6 mmHg and PaCO$_2$ 28.7 mmHg. Pitting edema in bilateral legs was found on physical examination and diuresis had been administered in another hospital. Right chest pain appeared several days before admission. The clinical examination on admission revealed right massive pleural effusion, a tumor mass invading the diaphragm pleura of the right lung (Fig. 2A), opacities with emphysematous changes in noncancerous region (Fig. 2B), and multiple lymph node swelling in the mediastinum. Thoracocentesis revealed a bloody pleural effusion and adenocarcinoma cells were detected by cytology analysis of the pleural effusion. Transbronchial lung biopsy from right B9a revealed poorly differentiated adenocarcinoma. The levels of serum carcinoembryonic antigen (CEA: 3.17 ng/ml) and squamous cell carcinoma antigen (SCC: 12.6 ng/ml) were elevated. Bone scintigram showed multiple regions of abnormal uptake in the cervical, thoracic and lumbar vertebræ indicating bone metastasis from primary bronchogenic carcinoma, although a possibility that some were due to spondyloarthitis remained. Finally, he was diagnosed as primary lung cancer in stage IV (T4N2M1).

A pulmonary function test indicated restricted impairment (%VC 52.1%) and decreased CO dilution (%DL CO 25.5%). These findings were compatible with complicated pulmonary fibrosis possibly associated with psoriatic arthritis. The arthritis involved the small joints of the hands and feet including distal interphalangeal (DIP) joints and large joints, including knees, ankles, wrists, elbows, and spines (Fig. 3). Radial deviation at the metacarpophalangeal joints and juxta-articular erosions and subluxations of several small joints in the hands and feet were evident. Although rheumatoid factor was posi-
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tive (139 IU/ml) and no information of HLA was obtained, involvement of DIP joints and presence of spondyloarthropathy (Fig. 3) in conjunction with the psoriasis vulgaris pattern of skin lesions were compatible with psoriatic arthritis.

After the removal of 1,300 ml pleural effusion by thoracentesis, his dyspnea improved remarkably. To control the pleural effusion, an anti-cancer agent, 10 U of OK-432, was administered into the pleural space. Although the pleural effusion was controlled with regular thoracentesis and OK-432 administration, his general condition became poorer and chronic respiratory failure progressed. Finally, he died about two and half months after admission.

Discussion

Psoriatic arthritis differs from rheumatoid arthritis in the lack of gender preference, the frequent involvement of DIP joints, the tendency to asymmetry, the absence of rheumatoid factor, the presence of spondyloarthropathy, the association with HLA-B27, and the presence of extra-articular features common to the spondyloarthropathy (1). There are no diagnostic or classification criteria for psoriatic arthritis. The rheumatoid factor is usually seronegative in this disease, but some patients can also be seropositive. Thus, the diagnosis is made just when a patient with psoriasis presents features of inflammatory arthritis (1). Under this concept, he was diagnosed having psoriatic arthritis with asymmetric distribution of arthritis, involvement of DIP joints, and the presence of inflammatory features, in conjunction with the psoriasis vulgaris pattern of skin lesions.

An elevated incidence of lung cancer was observed in patients with RA (2–4) and there is epidemiologic evidence that psoriasis itself and its treatment may cause increased incidence of lung cancer (5, 6). If psoriatic arthritis is a variant form of RA or psoriasis, it can be assumed that its presence might further elevate the risk of lung cancer. However, until now there has been no report of lung cancer developing in a patient with psoriatic arthritis. This may be further evidence that psoriatic arthritis is distinct from rheumatoid arthritis or psoriasis.

Nevertheless, a lung cancer developed in the present case with psoriatic arthritis, indicating the three important factors, cigarette smoking, pulmonary fibrosis, and low-dose MTX...
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therapy. It is known that cigarette smoking is related to the development of lung cancer, not only squamous cell or undifferentiated cell carcinomas but also adenocarcinomas (7), and a high incidence of lung cancer has been observed in idiopathic pulmonary fibrosis (8, 9). It was reported that lung cancers associated with diffuse fibrosis are located mainly in the lower lobe where the most advanced fibrosis occurs (9), as was in our case. In addition, MTX might have an oncogenic potential (10). In the present patient, these three factors coexisted simultaneously and this combination might have induced the development of lung cancer, whereas it is rare in general in patients with psoriatic arthritis.

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References

Figure 3. Cervical (A), thoracic (B), and lumbar (C) spine X-rays on admission demonstrating spondylitis and bilateral sacroiliitis.