Ankylosing Spondylitis Successfully Treated with Methotrexate

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A 37-year-old man with ankylosing spondylitis (AS) and psoriasis who was successfully treated with methotrexate (MTX) is reported. In 1980, he had low back pain, limited motion in the lumbar spine, radiological findings of bilateral sacroiliitis, and HLA-B27 positivity. In January 1991, he developed psoriasis and he had difficulty in performing desk work in spite of treatment with antirheumatic drugs. In May 1991, MTX 7.5 mg/week per os was started. Joint symptoms, psoriasis, and acute phase reactants improved within 1 month after the treatment and this improvement continued for more than 6 months after the treatment. After discharge he was able to return to his job.

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Key words: psoriasis, psoriatic arthritis

Introduction

Ankylosing spondylitis (AS) is defined as the formation of a stiff joint by consolidation of the articulating surfaces and inflammation of the vertebral column; the most characteristic lesion in AS is sacroiliitis (1). The majority of patients with AS have chronic discomfort over many years and they are refractory to treatment with various antiinflammatory drugs although it is in relatively few patients that the disease progresses to severe and total ankylosis (2). We report a patient with AS whose quality of average daily living was so disturbed that he could not perform desk work, however he was able to return to his job after successful treatment with methotrexate (MTX).

Case Report

In April 1991, a 37-year-old male patient was admitted to Tsukuba University Hospital because of difficulty in performing his desk work. In November 1980, he developed pain in the low back, both shoulder joints, both knee joints, and both ankle joints. In 1985, he was admitted for the first time to Tsukuba University Hospital. There was no family history of rheumatic diseases including AS or psoriasis. He had no past history of bacterial diarrhea or urethritis. Physical examination revealed tenderness and mild limitation of motion in the lumbar spine and enthesopathy along the heels. No abnormalities of the peripheral joints or “sausage digits” were present. No evidence of uveitis or aortic valvular disease was noted. Erythrocyte sedimentation rate (ESR) was 62 mm/hr, C-reactive protein (CRP) was 5+, rheumatoid factor was negative, and HLA typing revealed HLA-B27 positivity. Complete blood count, chemistry, urinalysis, immunological studies including antinuclear antibodies were negative. Roentgenogram (Fig. 1) showed mild irregularities and sclerotic changes in the sacroiliac joints. No abnormalities were noted in the plain films of the spine or peripheral joints. Bone and joint scintigraphy (Fig. 2) revealed uptake of technetium 99m in the sacroiliac joints and lumbar spine indicating the presence of bilateral sacroiliitis and spondylitis. He was diagnosed to have AS according to New York clinical criteria for AS (3) and was treated with various nonsteroidal antiinflammatory drugs (NSAIDs), low doses of prednisolone, auranofin, and sulfasalazine without remarkable benefits.

He gradually became unable to perform his desk work and was readmitted in April 1991. From January 1991, he had noticed mild infiltrative skin lesions in the occiput, right buttock, and left foot, the biopsy of which was diagnosed as psoriasis. Cervical and inguinal lymph nodes were enlarged at the time of readmission. This lymphadenopathy was considered to be associated with psoriasis since it appeared after the onset of psoriasis. There was tenderness in the cervical and lumbar spine, both shoulder joints,
both sacroiliac joints, and both knee joints. Motion of the entire spine was markedly limited.

He assumed a leaning posture and was unable to keep an upright posture or to rise from bed. There was marked generalized muscle atrophy. Hemoglobin was 9.4 g/dl, platelet counts were $58 \times 10^4$ /$\mu l$, ESR was 78 mm/hr, CRP was 9.2 mg/dl.

Figure 3 shows the clinical course of the patient. He was refractory to various treatments. As low doses of MTX have recently been used with a great beneficial effect for the treatment of rheumatoid arthritis (RA), we considered that MTX may also be beneficial for the treatment of AS. With informed consent, MTX therapy was began at a dosage of 7.5 mg/week, orally. Joint symptoms, especially pain in the lumbar spine and limitation of motion of the lumbar spine, improved 1 month after the initiation of MTX therapy. ESR and CRP also improved with decreasing values. Clinical improvement continued for more than 6 months after the start of treatment. After discharge from the hospital he was able to return to his previous job. Table 1 shows the improvement of motion of the spine at 7 weeks after the start of treatment with MTX. The occipit to wall distance decreased from 6 cm to 1.5 cm and finger to floor distance decreased from 68 cm to 35 cm. Chest expansion increased.
Ankylosing Spondylitis and Methotrexate

**Table 1. Improvement of Motion of the Spine after the Start of Treatment with Methotrexate (MTX)**

<table>
<thead>
<tr>
<th></th>
<th>Before MTX</th>
<th>4 weeks after MTX</th>
<th>6 weeks after MTX</th>
<th>7 weeks after MTX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occipit to wall distance (cm)</td>
<td>6</td>
<td>4.5</td>
<td>3.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Finger to floor distance (cm)</td>
<td>68</td>
<td>36</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Chest expansion (cm)</td>
<td>3.0</td>
<td>3.0</td>
<td>3.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Modified Schober test (cm)</td>
<td>10.3</td>
<td>11.2</td>
<td>11.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Lateral extension (cm)</td>
<td>0.5</td>
<td>2.5</td>
<td>2.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

from 3 cm to 4 cm. The modified Schober test increased from 10.3 cm to 11.0 cm. Lateral extension of the trunk increased from 0.5 cm to 3.0 cm. Changes of these parameters indicate marked improvement of motion of the spine.

The skin lesions of psoriasis also resolved 21 days after the start of MTX treatment, slightly earlier than improvement of the joint symptoms.

**Discussion**

Our patient was diagnosed as having AS according to the New York clinical criteria for AS (3). However, since the patient had psoriasis as well, the differential diagnosis of arthritides associated with psoriasis was imperative. Psoriatic arthritis is diagnosed by the presence of psoriasis and a seronegative peripheral arthritis, with or without axial skeletal involvement (4). The clinical characteristics suggestive of psoriatic arthritis (5) are listed in Table 2. The present patient had only 2 out of 8 characteristics of psoriatic arthritis, namely, 1) absence of rheumatoid factor and subcutaneous nodules and 2) axial radiographs showing sacroiliitis. In fact, both of these characteristics are common to those of AS. The present patient had no peripheral arthropathy characteristic of psoriatic arthritis. Taken together, we consider that our patient had AS coexisting with psoriasis. Thus, the sacroiliitis seen in our patient may be due to AS. That spinal arthropathy preceded the development of psoriasis by 11 years may also favor the diagnosis of AS coexisting with psoriasis, although in some cases of psoriatic arthritis, up to 15 to 20 percent, psoriasis may follow arthritis (4). Thus we cannot exclude the possibility that our patient had psoriatic spondylitis concomitant with AS, since 1) current clinical problems appeared concurrently with the onset of psoriasis, and 2) peripheral arthropathy is not common in psoriatic spondylitis.

NSAIDs represent the mainstay of treatment in AS. However, NSAIDs are frequently discontinued primarily because of adverse reactions or lack of efficacy (6). The search for more effective disease-modifying agents in AS has continued. Few studies are available showing the results of trials of the older slow-acting agents in AS. Gold has not been effective and the effect of auranofin remains to be elucidated. Penicillamine failed to produce significant improvement in one 6-month placebo-controlled study (7). Sulfasalazine has been suggested to be effective (8–11).

We treated our patient with auranofin and sulfasalazine and these drugs showed no effect. Finally MTX was used with a dramatic beneficial effect. Recently, favorable results using MTX in the treatment of patients with AS have been reported (12, 13). This is the first report of a Japanese patient with AS who showed a favorable response to MTX treatment. In the treatment of RA, it has been postulated that the quick clinical response after MTX therapy and the return of clinical activity after discontinuation of MTX are more consistent with the antiinflammatory action than immunosuppression (14). The observations of the clinical course of the present patient seem to support this notion.

Since our patient had AS coexisting with psoriasis and

**Table 2. Clinical Characteristics Suggestive of Psoriatic Arthritis**

1) Involvement of DIP joints in absence of primary osteoarthritis
2) Asymmetric joint involvement
3) Absence of rheumatoid factor and subcutaneous nodules
4) Flexor tenosynovitis and “sausage” digits
5) A family history of psoriatic arthritis
6) Significant nail pitting (>20 pits)
7) Axial radiographs showing one or more of the following: (1) sacroiliitis, (2) syndesmophytes (often “atypical”), and (3) paravertebral ossification
8) Peripheral radiographs showing an erosive arthritis with a relative lack of osteopenia; in particular DIP erosions with expansion of the base of the terminal phalanx and terminal phalangeal osteolysis

From Bennett (5).
the fact that one of three psoriatic arthritis patients reported by Handler (12) had psoriatic arthritis showed an excellent response to MTX treatment, it is conceivable that the joint symptoms of AS improved because of the coexistence of AS and psoriasis.

References