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Clinical History:

A 31-year-old man presented with a long history of low back pain and multiple painful joints. Radiographs of the sacroiliac joints (**Figure 1**) and both feet (**Figure 2**) were taken.

Figure 1: Frontal radiograph of the sacroiliac joints



Figure 2: Anteroposterior view of both forefeet



Answer
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What is the diagnosis?

- a) Ankylosing spondylitis
- b) Gouty arthritis
- c) Psoriatic arthropathy
- d) Systemic lupus erythematosus
- c) Rheumatoid arthritis

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Answer:

c) Psoriatic arthropathy

Radiological findings

The frontal radiograph of the sacroiliac joints (Figure 3) shows erosions of the articular margins with subarticular sclerosis, typical of bilateral sacroiliitis. Joint spaces are not narrowed. The lower lumbar spine included in the radiograph is normal.

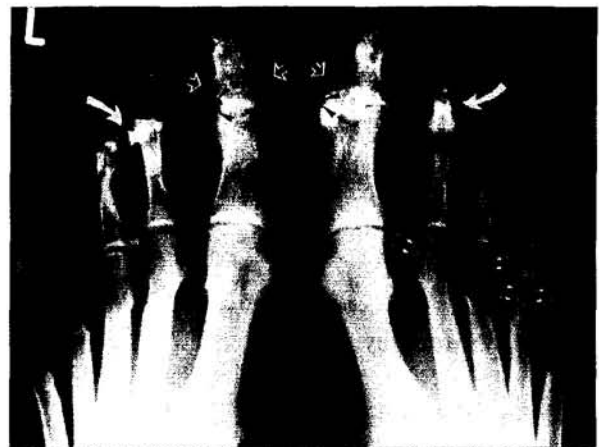
The anteroposterior radiograph of the forefeet (Figure 4) shows bilateral asymmetrical erosions, with associated bony proliferation, of the interphalangeal joints (IP) of both great toes, and "cup-and-pencil" erosions at the right second distal interphalangeal (DIP) and left third DIP joints. Periarticular erosions are also present at the right second to fourth metatarsophalangeal (MTP) joints. Fusiform soft tissue swelling is observed around these affected joints. No periarticular osteoporosis or soft tissue calcification is seen.

The combination of bilateral symmetrical sacroiliitis together with asymmetrical erosive arthropathy involving the digits of both feet are consistent with the joint changes of psoriatic arthropathy.

Figure 3: Same radiograph as Figure 1. Bilateral subarticular sclerosis is arrowed. There are multiple articular erosions (arrowheads)



Figure 4: Same radiograph as Figure 2. Peripheral erosions (black arrowheads) with osseous proliferation (open arrowheads) at the interphalangeal joints of both big toes are present. There is a "cup-and-pencil" appearance at the right second DIP joint and the left third DIP joint (curved arrows). Multiple erosions are seen at the right metatarsophalangeal joints (small arrows)



Discussion

Ankylosing spondylitis

Ankylosing spondylitis is an inflammatory arthritis affecting synovial and cartilaginous joints, with associated enthesopathy. The disease usually initially affects the sacroiliac joints, manifesting as a bilateral symmetrical sacroiliitis. This involvement is followed by thoracolumbar spine disease with syndesmophyte formation and eventual ankylosis (bamboo spine). The posterior elements are also affected. Peripheral articular manifestations are usually mild, and are initially seen in 10-20% of patients, and eventually up to 50%.¹ Asymmetrical involvement of a few large joints, mainly hips and shoulders, would be the most frequently encountered pattern. The joints of the extremities are rarely affected. The absence of lumbar spine involvement and of changes in the small joints of the feet are against the diagnosis of ankylosing spondylitis.

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Gouty arthritis

Gouty arthritis is an erosive arthropathy due to raised serum uric acid level which results in monosodium urate monohydrate or uric acid crystal deposition. Gouty arthritis usually presents with mono- or oligoarthritis. There is a predilection for the joints of the lower extremities, particularly the first metatarsophalangeal joint. Intertarsal joints as well as larger joints, such as the ankles and knees, may also be affected. In chronic gout, bony erosions are produced by tophaceous deposits and may be associated with a soft tissue mass. The finding of para-articular erosions with overhanging lips are strongly suggestive of the condition.² The axial skeleton, including the sacroiliac joint, is rarely affected. The radiographic features in our patient do not fit those of gouty arthritis.

Psoriatic arthropathy

Arthropathy is found in 5% of all psoriatics and may develop before the skin changes.³ Five different clinical and radiological patterns can be identified: polyarthritis with predominant DIP joint involvement, seronegative polyarthritis simulating rheumatoid arthritis, monoarthritis or asymmetrical oligoarthritis (most common pattern in 70% of cases),⁴ spondyloarthritis which mimics ankylosing spondylitis and arthritis mutilans. Periarticular osteoporosis is not a feature as bone density is preserved. Bilateral symmetrical sacroiliitis is seen in 30-50% of patients with arthropathy, features of which include erosions and joint space narrowing. Peripheral erosions of the IP joints with bony proliferation, and progressing to the "cup-and-pencil" appearance, are typical radiographic findings in psoriatic arthropathy. Involvement of joints in the hand and feet is characteristically asymmetrical. Clinical findings of psoriatic skin lesions would help to confirm the diagnosis.

Systemic lupus erythematosus

Systemic lupus erythematosus is an autoimmune disease with multi-organ involvement, which

predominantly affects young females. It is a non-erosive arthropathy of the fingers and thumbs, with reducible finger deformities. Radiographs typically do not reveal an obvious abnormality except for soft tissue swelling and periarticular osteoporosis.⁵ Joint involvement is characteristically bilateral and symmetrical. Sacroiliitis is not a feature of the disease. None of these features of systemic lupus erythematosus were present in our patient.

Rheumatoid arthritis

Rheumatoid arthritis is a multi-organ disorder in which joint involvement is usually associated with systemic manifestations. The classical pattern of joint disease is that of asymmetrical erosive arthritis of the synovial joints. The metacarpophalangeal and proximal interphalangeal joints of the hands and feet are most frequently affected. Wrists, knees, ankles, elbows, shoulders and hips are also commonly involved. The usual radiographic findings are periarticular erosions with subchondral cyst formation. Periarticular osteoporosis is an important feature and is one of the earliest radiographic signs. Capsular and ligamentous laxity may lead to subluxation or even dislocation. The synovial joints of the axial skeleton, especially the apophyseal and atlantoaxial joints of the cervical spine, may also be affected. Sacroiliitis is rarely encountered and if present, is usually of a mild form. The pattern and distribution of joint involvement in our patient do not fit those of rheumatoid arthritis. ■

References

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