Ankylosing Spondylitis: Radiographic Abnormalities of the Hand and Wrist

John Hogikyan, MD, Fred Hankin, MD, and Ethan Braunstein, MD
Ann Arbor, Michigan

Ankylosing spondylitis was described by Strumpell[1] in 1897 as a "chronic arthritis limited to the spine and hip joints." While ankylosing spondylitis most commonly affects the axial skeleton, this chronic inflammatory disease can also manifest itself in the appendicular skeleton as well as in several organ systems. Peripheral musculoskeletal manifestations of this enthesopathic disorder can include calcaneal periostitis and associated Achilles tendinitis and plantar spurs and fasciitis.[2,3] Clinically, the hand is infrequently involved but can manifest asymmetric dactylitis. This study was undertaken to clarify and quantify further the radiographic abnormalities and associated symptoms in the hands of patients with ankylosing spondylitis.

METHODS

The clinical charts and radiographs of the 151 patients with a presumptive diagnosis of ankylosing spondylitis treated at the University of Michigan between 1976 and 1986 were reviewed. Twenty-two of the patients were subsequently found to have other primary diagnoses, such as ulcerative colitis or psoriatic arthritis, and were excluded from this review.[4] The remaining 129 patients had radiographic evidence of bilateral, symmetric sacroiliitis of variable severity and laboratory studies consistent with a primary diagnosis of ankylosing spondylitis. Of these 129 patients with ankylosing spondylitis, 23 patients (19 male, four female) had hand and wrist radiographs taken as part of their routine rheumatology evaluation. Twenty-two patients had bilateral radiographs, and the remaining patient had a unilateral study. Thus, 45 radiographs of hands and wrists in patients with documented ankylosing spondylitis were available for analysis. These films were independently read by a skeletal radiologist and an orthopedic hand surgeon. Radiographic abnormalities were recorded, reviewed, and correlated with information obtained from the patient's hospital record.

RESULTS

Radiographic changes were noted in only two of the 23 patients in this study. One was a man with a 15-year duration of ankylosing spondylitis, and one was a woman with disease duration of 20 years. As the radiographic findings were unilateral, only two of 45, or 4 percent, of the radiographs demonstrated abnormalities that could be attributed to ankylosing spondylitis. Both patients were human leukocyte antigen B-27 positive. The dominant hand was involved in both cases, and neither patient had a history of trauma to the upper extremity.

The radiographic abnormalities present in these two patients included bony erosions, periosteal reaction (Figure 1), and cyst formation (Figure 2). Joint space narrowing was also evident, primarily involving the wrist. All radiographic abnormalities were unilateral. Ankylosis of joints of the hands and ossification of soft tissue structures were not evident.

Clinically, only one patient was symptomatic in the region of the radiographic changes. The generalized aching of his wrist was probably related to the joint space narrowing noted in Figure 1. The hospital charts of the other 106 patients in the original study group failed to reveal documentation of significant clinical complaints involving the hands and wrists.

DISCUSSION

Peripheral arthritis has been reported in as many as 60 percent of patients with documented ankylosing spondylitis.[3,5,6] While the hips and shoulders are most com-

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From the Section of Orthopaedic Surgery, and the Department of Radiology, University of Michigan, Ann Arbor, Michigan. Requests for reprints should be addressed to Dr. John Hogikyan, University Hospitals (TC2912), 1500 East Medical Center Dr, Ann Arbor, MI 48109-0328.

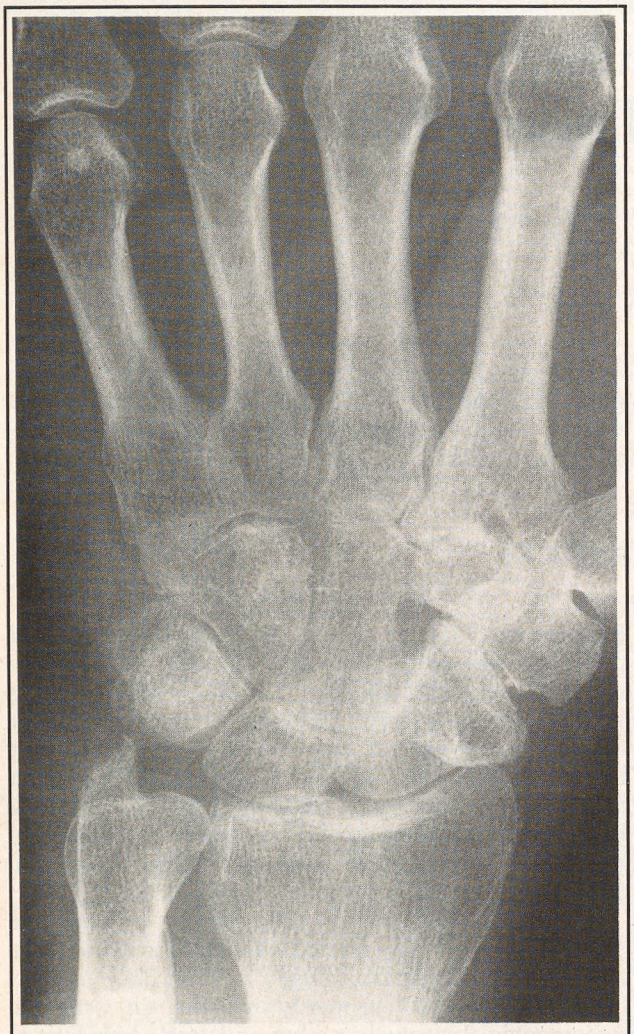

Figure 1. A radiograph of a 67-year-old man with ankylosing spondylitis diagnosed 15 years earlier, showing a single bony erosion on the ulnar styloid, and periosteal reaction on distal ulna and base of second metacarpal. Cartilage spaces of radiocarpal and intercarpal joints are narrowed

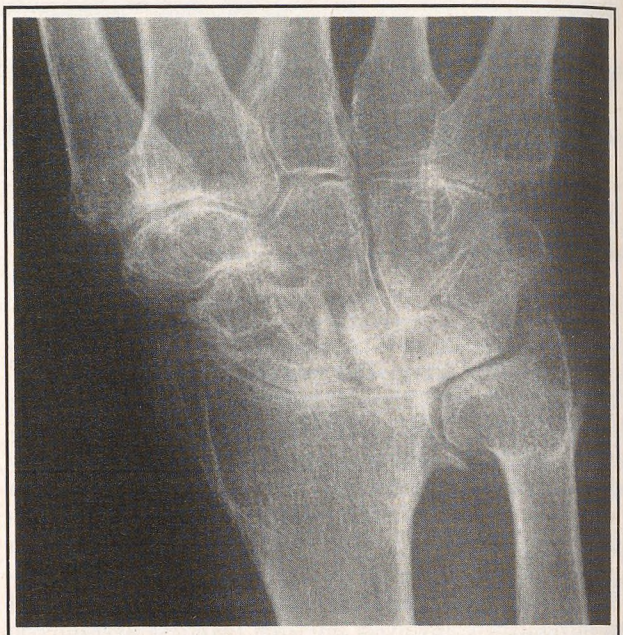

Figure 2. A radiograph of a 54-year-old woman with a 20-year history of ankylosing spondylitis, showing cystic changes in the carpus, and hypertrophic changes in the distal radioulnar joint. Cartilage loss is also evident in intercarpal and radiocarpal articulations. Reprinted with permission from Braunstein E, Martel W, Moyded R: Ankylosing spondylitis in men and women: A clinical and radiographic comparison. Radiology 1982; 144:91–94

monly involved, the more distal joints may also be symptomatic.

In this series, positive radiographic findings in the hand and wrist were found in 9 percent of patients (4 percent of radiographs) with documented ankylosing spondylitis. This frequency is consistent with the previously published findings of Braunstein et al,[7] 11 percent, but considerably lower than the 28 percent incidence reported by Resnick.[8] Many interesting clinical and radiographic studies comparing male and female patients with ankylosing spondylitis have been published[7,9]; however, this sample size was too small to comment on any sex differences.

In Resnick's prospective radiographic study of 25 consecutive patients with ankylosing spondylitis, multiple erosions were noted in seven cases.[8] Bilateral involvement was also noted in seven patients. Four of the seven patients with radiographic abnormalities in the hands and wrists in Resnick's series did have asymmetric radiographic involvement of their hands and wrists. In this current report, all lesions were unilateral, and a single erosion was noted in only one of the two patients.

The clinician's natural tendency is to attribute all observed abnormalities to one disease process, which may, in part, account for the paucity of reported cases of coexisting rheumatoid arthritis and ankylosing spondylitis.[10] As the individual radiographic features of both diseases can include marginal articular erosions, joint space narrowing, and periarticular demineralizations, the pattern of radiographic features combined with corroborating clinical and laboratory data will help establish the appropriate diagnosis.[3,11–15] The diagnosis of coexistent rheu-

matoid arthritis should be entertained in any patient with ankylosing spondylitis who has an erosive arthropathy of the hands that is extensive, bilateral, and symmetric. Asymmetric or unilateral involvement, in fact, is one of the radiographic features in distinguishing ankylosing spondylitis from rheumatoid arthritis.[10]

Radiographic abnormalities of the hands and wrists occur infrequently in ankylosing spondylitis. Clinical involvement of these peripheral joints also appears uncommon. If extensive bilateral disease is noted on plain radiographs or if the patient is severely symptomatic in the hands and wrists, a coexistent diagnosis should be considered.

References

1. Strumpell A: The classic observations on chronic-ankylosing inflammation of the vertebrae and hip joints. Clin Orthop 1971; 74: 4–6
2. Sigler J, Bluhm G, Duncan H, Ensign D: Clinical features of ankylosing spondylitis. Clin Orthop 1971; 74:14–19
3. Vinje O, Dale K, Moller P: Radiographic evaluation of patients with Bechterew's syndrome (ankylosing spondylitis). Scand J Rheumatol 1985; 14:279–288
4. McEwen C, DiTabata D, Lingg C, et al: Ankylosing spondylitis and spondylitis accompanying ulcerative colitis, regional enteritis, psoriasis and Reiter's disease. Arthritis Rheum 1971; 14:291–318
5. Cohen MD, Ginsburg WW: Late-onset peripheral joint disease in ankylosing spondylitis. Ann Rheum Dis 1982; 41:574–578
6. Ginsburg WW, Cohen MD: Peripheral arthritis in ankylosing spondylitis. Mayo Clin Proc 1983; 58:593–596
7. Braunstein EM, Martel W, Moidel K: Ankylosing spondylitis in men and women: A clinical and radiographic comparison. Radiology 1982; 144:91–94
8. Resnick D: Patterns of peripheral joint disease in ankylosing spondylitis. Radiology 1984; 110:523–532
9. Gran JT, Husby G, Hordvik M, et al: Radiological changes in men and women with ankylosing spondylitis. Ann Rheum Dis 1984; 43:570–575
10. Major P, Resnick D, Dalinka M, Kline P: Coexisting rheumatoid arthritis and ankylosing spondylitis. Am J Roentgenol 1980; 34: 1076–1079
11. Ball J: Enthesopathy of rheumatoid and ankylosing spondylitis. Ann Rheum Dis 1971; 30:213–233
12. Cruichkshank B: Pathology of ankylosing spondylitis. Clin Orthop 1971; 74:43–58
13. Espinoza L, Dove F, Osterland C: Coexistence of ankylosing spondylitis and rheumatoid arthritis in a single family, letter. Arthritis Rheum 1979; 22:203–204
14. Good AE, Hyla JF, Rapp R: Ankylosing spondylitis with rheumatoid arthritis and subcutaneous nodule, letter. Arthritis Rheum 1977; 20:1434–1437
15. Luthra HS, Ferguson RN, Conn DL: Coexistence of ankylosing spondylitis and rheumatoid arthritis. Arthritis Rheum 1976; 19: 111–114