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Rheumatoid Arthritis Hand Imaging

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Overview

Overview

Radiography

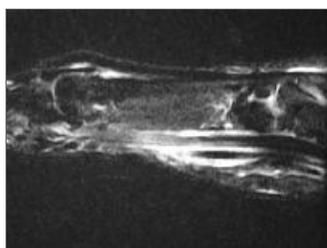
Rheumatoid arthritis (RA) is a systemic inflammatory disease that results in cartilage and bone destruction. RA is characterized by a typical pattern and distribution of synovial joint involvement. Disorganization of the joint leads to deformities and loss of function. See the images below.



Soft-tissue swelling and early erosions in the proximal interphalangeal joints in a patient with rheumatoid arthritis of the hands.

Computed Tomography

Magnetic Resonance Imaging



Sagittal fat-saturated T2-weighted magnetic resonance image (MRI) scan of the ring finger shows fluid with high signal intensity around the flexor tendons resulting from tenosynovitis in a patient with rheumatoid arthritis of the hands.

Ultrasonography

Nuclear Imaging

Angiography

Intervention

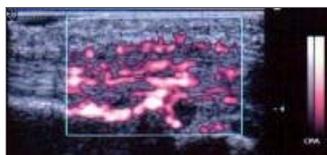
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References



Sagittal T1-weighted MRI shows erosive changes in the lunate, capitate, and metacarpal bases in a patient with rheumatoid arthritis of the hands. Courtesy of J. Tehranzadeh, University of California at Irvine.



Power Doppler image shows hyperemic blood flow in the flexor tendon sheath in a patient with rheumatoid arthritis of the hands.

In the hands, the metacarpophalangeal (MCP), proximal interphalangeal (PIP),

and thumb interphalangeal (IP) joints are most frequently involved. The distal interphalangeal (DIP) joints are involved only in the presence of a coexisting MCP or PIP disease. Tenosynovitis of the flexor tendons causes a reduction in finger flexion and grip strength. Nodular thickening in the tendon sheath may also produce a trigger finger.

In the wrist, the early stages of RA cause tenosynovitis of the extensor tendons, causing swelling over the distal wrist. The ulnar styloid may become tender, which indicates inflammatory synovitis. The distal end of the ulna tends to sublux dorsally, and the carpal bones sublux anteriorly to the distal radius and ulna. Bony erosions and ankylosis of the carpal bones are also seen and appear to be prominent features in Asian patients.

The primary effect of RA is in joint deformity and fusion, which occurs in the advanced stages.

Although occasional flares of joint pain occur throughout the course of the disease, these can usually be controlled with the use of anti-inflammatory medication, especially early in their course. When joint subluxations and deformity take place, performing basic daily tasks (eg, writing and holding utensils) can become a problem. Some patients resort to the use of custom-designed writing instruments or utensils to overcome this difficulty. Permanent disability occurs in approximately 10-20% of patients.

Preferred examination

Radiography remains the first choice in imaging RA. Magnetic resonance imaging (MRI) provides a more accurate assessment, as well as earlier detection of lesions. Ultrasonography of specific joints based on radiographs may have a role as well.^[1, 2]

Limitations of techniques

The mainstay of imaging RA in the hands is radiography. Radiography is cheap, is easily reproducible, and allows easy serial comparison for assessment of disease progression. The main disadvantage is the absence of specific radiographic findings in early disease, since visualization of erosions may only be seen later.^[3]

MRI continues to develop as a treatment tool, with the main thrust being detection of early disease at a stage at which disease-modifying drugs can be used; however, the cost of the examination and the small size of the joints involved limit widespread use. With further experience and cheaper scans, MRI scanning for the treatment of RA may gain acceptance in the future.

RA may occur as part of a mixed connective tissue disease in which clinical and radiologic appearances are not typical of one particular disease.

[Next Section: Radiography](#) >

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