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What is the classic distribution of disease for rheumatoid arthritis?

Rheumatoid arthritis is classically bilateral and symmetric with a proximal distribution and polyarticular involvement. Uniform bilateral symmetric joint space narrowing with marginal erosions are classic. Note that hand and wrist involvement is essentially universally present with rheumatoid arthritis, with involvement of the proximal interphalangeal and metacarpophalangeal joints. Erosive changes of the triquetrum and uniform radiocarpal joint narrowing are common and are considered an indicator of an inflammatory arthropathy such as rheumatoid arthritis. Ulnar styloid process involvement may also be seen. Unlike erosive osteoarthritis, rheumatoid arthritis spares the distal interphalangeal joints.

What are key radiographic manifestations of rheumatoid arthritis?

Key radiographic manifestations of rheumatoid arthritis include symmetric, uniform joint space narrowing, marginal erosions most classic at the radial aspect of the metacarpophalangeal joints, juxta-articular or generalized osteoporosis and periarticular fusiform soft tissue swelling. Later disease findings include ulnar deviation at the metacarpophalangeal joints, classic boutonniere and swan neck deformities, subchondral cyst formation, scapholunate dissociation, and, similar to psoriatic arthritis, a pencil-in-cup deformity. Ulnar styloid process erosions may be seen due to extensor carpi ulnaris tenosynovitis.

Outside of the hands, classic radiographic features of rheumatoid arthritis include feet involvement with proximal joint involvement most characteristically involving the 4th and 5th metatarsophalangeal and proximal interphalangeal joints. Distal clavicular erosions can be seen. “High riding shoulder” due to subacromial-subdeltoid bursitis.

What are classic risk factors for development of rheumatoid arthritis?

Rheumatoid arthritis is more common in females compared to males. Rheumatoid arthritis is also more common in smokers. Obesity is also considered a risk factor for development of rheumatoid arthritis.

What is the classic triad associated with Felty syndrome?

Rheumatoid arthritis, splenomegaly and leukopenia.

True or false: Rheumatoid arthritis is associated with new bone formation on imaging?

False. Rheumatoid arthritis classically does not have new bone formation/bone proliferative changes. This is an important distinction that can help separate rheumatoid arthritis from other entities to include psoriatic arthritis that is associated with new bone formation.

True or false: Rheumatoid arthritis is associated with osteoporosis:

True.

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What are classic imaging features of rheumatoid arthritis in the lower extremities?

Hip: Axial narrowing, with possible acetabular protrusion. No osteophyte formation. No subchondral sclerosis. Note that osteoarthritis has superior hip narrowing and rheumatoid arthritis has axial narrowing. The difference is important. Axial narrowing is described as concentric joint space loss with acetabular protrusion and superior narrowing in selective joint space narrowing superiorly.

Knee: Tricompartmental joint space narrowing with no bone proliferative changes/osteophyte formation and no subchondral sclerosis.

Feet: Calcaneal erosions with retrocalcaneal bursitis and erosions, most classically and often first involving the lateral aspect of the 4th and 5th distal metatarsophalangeal joint.

What are classic imaging features of rheumatoid arthritis in the spine?

Cervical spine disease in rheumatoid arthritis can manifest with classic features such as atlantoaxial subluxation and dens erosion. Other findings such as spinous process erosion and erosion and fusion of facet and uncovertebral joints may be seen.

Besides rheumatoid arthritis, what are some other arthritic processes that can present with a metacarpophalangeal joint predominant pattern?

Other arthritic processes that can prominently involve the MCP joint include pyrophosphate arthropathy, hemochromatosis, and juvenile idiopathic arthritis.

True or false: Iliopsoas bursitis can result from rheumatoid arthritis?

True. Three classic causes of iliopsoas bursitis include overuse injuries, rheumatoid arthritis, and acute trauma. Remember that musculoskeletal findings of rheumatoid arthritis include involvement of synovial joints and tissue, tendons, and bursae.

Besides bone abnormalities we have already discussed above, what additional features of rheumatoid arthritis of the joints can be seen on MRI?

Joint effusions, synovial hyperemia and hyperplasia with so called rice bodies which are intra-articular loose bodies, cartilage loss, subchondral cyst formation, and pannus formation which is formation of so called pannus tissue which is an inflammatory thickening and excessive proliferation of joint synovial tissue that infiltrates joint spaces.

Bonus: Here are a few key features that can help differentiate rheumatoid arthritis from other arthritic processes:

RA versus degenerative osteoarthritis: Unlike RA, with degenerative osteoarthritis you classically have distal interphalangeal joint involvement with osteophyte formation and no erosions.

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RA versus psoriatic arthritis: Unlike RA, with psoriatic arthritis you will see bone proliferative changes and a PIP/DIP predominant distribution. Both can have erosions and both can have pencil-in-cup deformity.

RA versus erosive osteoarthritis: Unlike RA, with erosive osteoarthritis you have DIP/PIP predominant distribution with classic history of acute onset in a postmenopausal woman and central rather than peripheral predominant erosions.

RA versus calcium pyrophosphate dihydrate (CPPD) arthropathy: Unlike RA, you can have osteophytes, chondrocalcinosis and no erosions with CPPD arthropathy.