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CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 60 year old man comes in with an 8 week history of swelling and pain in his hands and wrist. The patient is 5' 8" tall and weighs 226 lbs. His temperature is 98.2, pulse 84, respirations 20, and blood pressure 134/94. Ongoing issues include allergic rhinitis, asthma, gastroesophageal reflux disease, and hypothyroidism.

Which of the following statements regarding imaging studies in patients with polyarthritis is *incorrect*?

(a) imaging studies are not routinely required in the evaluation of polyarticular pain
(b) plain film examination is sensitive to the early findings of rheumatoid arthritis
(c) ultrasound (US) examination is sensitive to the early findings of rheumatoid arthritis
(d) magnetic resonance (MR) is sensitive to the early findings of rheumatoid arthritis

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

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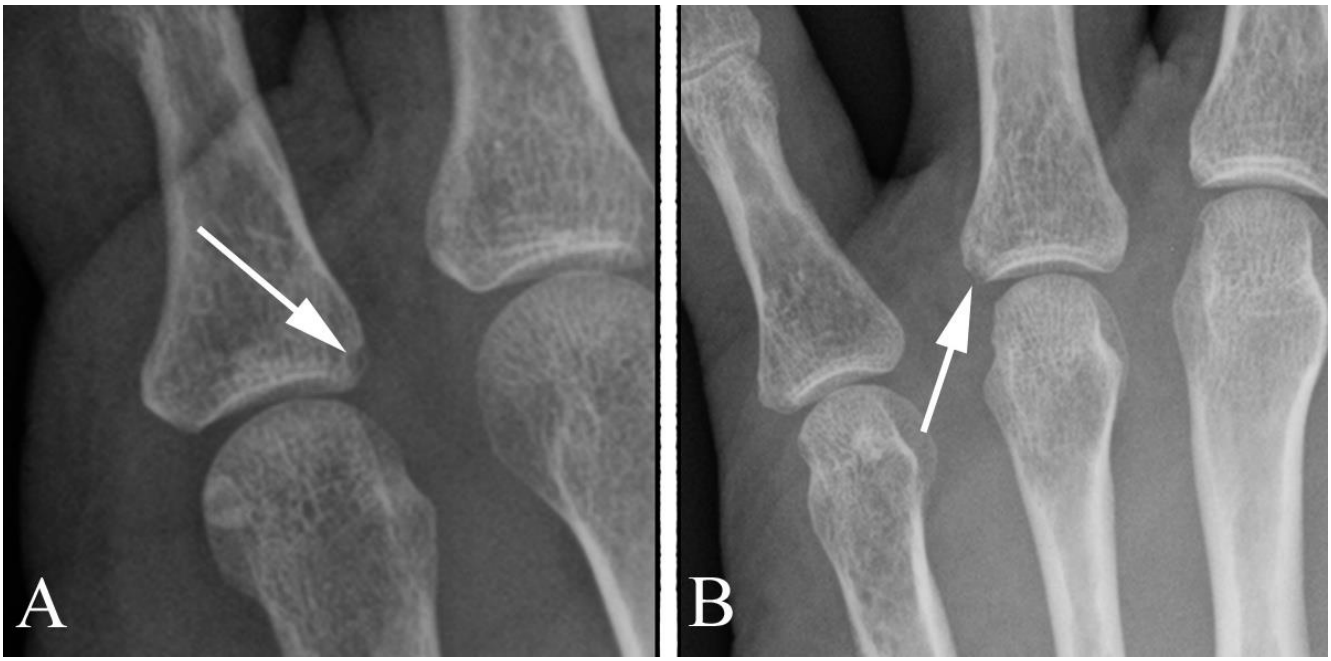
Regarding imaging studies and patients with polyarthritis, imaging studies are not routinely required in the evaluation of polyarticular pain (a), ultrasound examination is sensitive to the early findings of rheumatoid arthritis (c), and MR is sensitive to the early findings of rheumatoid arthritis (d). Since these statements are correct, they are not the answer to the question.

Plain film examination is *not* sensitive to the early findings of rheumatoid arthritis. Indeed, while the American College of Radiology's 1987 criteria for rheumatoid arthritis included plain film findings of erosion as a diagnostic criteria, revised criteria drawn up in 2010 excluded plain film findings of erosions because it was increasingly recognized that plain film findings of erosions are *not* an early finding of the disease and that plain film examination is not sensitive to the early findings of rheumatoid arthritis. These early findings include pannus, synovitis, and bone marrow edema.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP

The patient was referred to a rheumatologist. In patients such as this one, the American College of Rheumatology in general recommends that a complete history and physical examination be performed, with the goal to determine whether the patient has synovitis or not, and whether the patient has tender points typical of fibromyalgia. With regard to morning stiffness which improves during the day (the historical feature typical of synovitis), the patient's responses to questioning were equivocal: he did report morning stiffness, but stated that it did not obviously get better through the day. The patient had this equivocal synovitis for approximately 8 weeks duration at the time of presentation. He did not have any tender points to suggest fibromyalgia. Further laboratory testing was performed, with the following results: rheumatoid factor was 21 (normal less than 20), erythrocyte sedimentation rate 11, Lyme ELISA negative, cyclic citrullinated peptide negative, ANA profile negative, ANA titer positive at 1:80, and ANA pattern speckled. C-reactive protein was negative. Early rheumatoid arthritis was in the differential diagnosis, and an MR of the hands was planned but the patient had undergone remote ear surgery with metallic implants, an absolute contraindication to MR examination. Ultrasound including power Doppler imaging of both hands was performed which did not demonstrate obvious extensive hyperemic synovial proliferative change. Plain films showed two questionable small erosions.



60 year old man with hand pain, swelling, and equivocal morning stiffness. Oblique image of the left small finger (A) and AP image of the ring finger (B) suggest possible equivocal erosions.

SUMMARY

Presenting symptoms: The patient has polyarthritis of approximately 8 weeks duration with possible morning stiffness suggesting synovitis.

Imaging work-up: Imaging studies are not routinely required in evaluation of patients with polyarticular pain.

Establishing the diagnosis: The exact diagnosis in patients with polyarthritis typically relies on a constellation of signs and symptoms rather than a single diagnostic test. Criteria for multiple diagnoses (rheumatoid arthritis, fibromyalgia, gout, etc.) are presented at www.rheumatology.org. The ability to accurately characterize patients with early inflammatory arthritis remains challenging, and 30-40% of patients with early synovitis have a disease that remains unclassified.

Take-home message: In patients with polyarthritis and pain in the hands, imaging is not routinely required. Plain films may demonstrate characteristic features in patients who have longstanding disease. However, early in the disease process, plain films are many times normal or lack characteristic features and may not be helpful. Ordering other, additional imaging studies (for example, ultrasound, computed tomography, or magnetic resonance imaging) in patients with polyarthropathy is generally best left to rheumatologists.

FURTHER READING

El-Gabalawy HS, Duray P, Goldbach-Mansky R. Evaluating patients with arthritis of recent onset: studies in pathogeneiss and prognosis. JAMA 2000;284:2368-2372.

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