

Evidence Discussion (MS 15.1)

Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by persistent inflammation and joint damage. Clinical and laboratory assessment of RA remains the cornerstone of diagnosis and response to treatment.² Imaging modalities such as plain radiographs serve as important adjuncts to examination and laboratory findings in the evaluation of suspected inflammatory arthritis. Plain radiographs should be obtained first, and inconclusive or non-diagnostic imaging results can be further evaluated with advanced imaging.¹ They have a low sensitivity compared with CT, MRI, or Ultrasound (US) in detecting erosions and multiple views are often needed but location and distribution of erosions are usually adequate for diagnosis.¹ MRI allows assessment of all structures as well as bone edema and baseline bone edema on low and high field MRI in patients with early RA is predictive of future radiographic damage.³ Joints and bones in the hand are often affected in RA and assessing changes in these joints can help in therapy monitoring.⁴ MRI and US play important roles in detecting subclinical disease in patients with inflammatory arthritis. These modalities have higher sensitivity in detecting subclinical synovitis, tenosynovitis, osteitis, and early erosive disease compared with physical exam and xray, therefore useful in early diagnosis and evaluating response to treatment.⁵

References

1. Subhas N, Wu F, Fox MG, et al. ACR Appropriateness Criteria® Chronic Extremity Joint Pain-Suspected Inflammatory Arthritis, Crystalline Arthritis, or Erosive Osteoarthritis: 2022 Update. *J Am Coll Radiol* 2023;20:S20-S32.
2. Kgoebane K, Ally MMTM, Duim-Beytell MC, Suleman FE. The role of imaging in rheumatoid arthritis. *S Afr J Rad.* 2018; 22(1), a1316. <https://doi.org/10.4102/sajr.v22i1.1316>
3. Cohen SB, Potter H, Deodhar A, et al. Extremity magnetic resonance imaging in rheumatoid arthritis: updated literature review. *Arthritis Care & Research.* 2011;63(5):660-665. doi:10.1002/acr.20413.
4. Schleich C, Buchbender C, Sewerin P, Miese F, Aissa J, Brinks R, Evaluation of a simplified version of the Rheumatoid Arthritis Magnetic Resonance Imaging Score (RAMRIS) comprising 5 joints (RAMRIS) *Clin Exp Rheumatol.* 2015; 33(2): 209-215.
5. Teslev L, Ostergaard M. doi: 10.2147/JIR.S284405. Rheumatoid_Arthritis Relapse and Remission - Advancing Our Predictive Capability Using Modern Imaging. *eCollection J Inflamm Res.* 2021 Jun 16:14:2547-2555.