The Role of Magnetic Resonance Imaging in Peripheral Psoriatic Arthritis

UKC MARIBOR | Univerzitetni klinični center Maribor

Eva Bošnjak[1], Milka Kljaić Dujić[2], Mitja Rupreht[2,3]

[1] Department of Radiology, General Hospital Murska Sobota
[2] Department of Radiology, University Medical Centre Maribor
[3] Faculty of Medicine, University of Maribor

Intruduction

Psoriatic arthritis is a chronic inflammatory joint disease that occurs in connection to skin psoriasis (1). Among imaging modalities used in imaging of patients with peripheral psoriatic arthritis, highly sensitive magnetic resonance imaging (MRI) can accurately show inflammatory and structural changes. Our aim is to emphasize the role of standard MRI and novel MRI techniques in peripheral psoriatic arthritis.

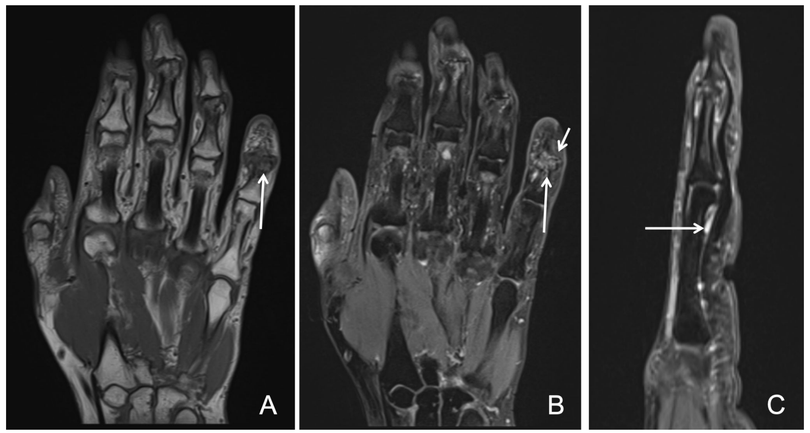

Figure 1. MRI of the left hand. On coronal T1 weighted sequence (A) and PD sequence (B), especially in the distal interphalangeal joints of the second to fifth digit, thinning of articular cartilage, predominantly to bone is seen. It is also showing a signal of moderate bone edema (long arrows), which is low on the T1 sequence and high on the PD sequence and is reflecting osteitis. Larger bony proliferations can be observed (short arrow). On the sagittal plane (C) a thin layer of fluid is visible along the tendons of the flexors of the third finger (horizontal arrow), reflecting tenosynovitis.

Radiographic MRI findings and recommended sequence

Inflammatory and structural changes observed in patients with peripheral psoriatic arthritis include enthesitis, tenosynovitis, synovitis, bone marrow edema, bone erosions and new bone proliferation (2). The recommended MRI protocols are T1-weighted sequences in two planes that are accompanied by a T2-weighted, fat-suppressed sequence or short tau inversion recovery (STIR) sequence. To evaluate tissue inflammation in peripheral joints more accurately, T1- weighted sequence after injection of intravenous contrast gadolinium, with or without fat suppression, can be used as well (3).

Novel MRI techniques

In recent years, novel MRI techniques have emerged that are being used in the research of psoriatic arthritis like whole- body MRI (WB-MRI) and dynamic, contrast-enhanced MRI (DCE-MRI) (4). To assess the inflammatory and structural changes of peripheral arthritis in hands, the Psoriatic arthritis magnetic resonance image score (PsAMRIS) has also been developed (5).

Figure 2. MRI of the right hand. Coronal (A), sagittal (B) and axial (C) proton density sequences (PD) are showing dactylitis of the second digit. Fluid within the flexor tendon sheets (dashed arrow) represents flexor tenosynovitis. Synovitis of the PIP joint of second digit (long arrow) can also be observed. Signal of higher intensity within sok issues (short arrows) is indicative of subcutaneous tissue inflammation.

Conclusion

MRI plays a significant role in establishing the correct diagnosis, prognostication and monitoring of disease activity in patients with peripheral psoriatic arthritis. The rapid development of technology in the field of MRI diagnostics provides an even better assessment of the extent of inflammatory and structural changes.

References:

1. Felbo SK, Terslev L, Østergaard M. Imaging in peripheral and axial psoriatic arthritis: contributions to diagnosis, follow-up, prognosis and knowledge of pathogenesis. Clin Exp Rheumatol. 2018 Sep-Oct;36 Suppl 114(5):24-34.

2. Aydin SZ, Mathew AJ, Koppikar S, Eder L, Østergaard M. Imaging in the diagnosis and management of peripheral psoriatic arthritis. Best Pract Res Clin Rheumatol. 2020 Dec;34(6):101594.

3. Østergaard M, McQueen F, Wiell C, et al. The OMERACT psoriatic arthritis magnetic resonance imaging scoring system (PsAMRIS): definitions of key pathologies, suggested MRI sequences, and preliminary scoring system for PsA Hands [published correction appears in J Rheumatol. 2010 Oct;37(10):2198]. J Rheumatol. 2009;36(8):1816-1824. doi:10.3899/jrheum.090352

4. Østergaard M, Eder L, Christiansen SN, Kaeley GS. Imaging in the diagnosis and management of peripheral psoriatic arthritis-The clinical utility of magnetic resonance imaging and ultrasonography. Best Pract Res Clin Rheumatol. 2016 Aug;30(4):624-637

5. Poggenborg RP, Sørensen IJ, Pedersen SJ, Østergaard M. Magnetic resonance imaging for diagnosing, monitoring and prognostication in psoriatic arthritis. Clin Exp Rheumatol. 2015 Sep-Oct;33(5 Suppl 93):S66-9.