

Techniques

Imaging Techniques: Options for the Diagnosis and Monitoring of Treatment of Enthesitis in Psoriatic Arthritis

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The Journal of Rheumatology July 2020; DOI: <https://doi.org/10.3899/jrheum.190512>

Psoriatic arthritis (PsA) is a chronic inflammatory disease that affects up to 30% of patients with psoriasis. Manifestations of PsA include peripheral arthritis, axial disease, psoriasis, nail psoriasis, dactylitis, and enthesitis. Enthesitis, which develops in 60% to 80% of patients, is associated with joint damage, and early detection and treatment are essential to management of the disease.

Enthesitis is defined as the inflammation of the entheses, the area where tendons, ligaments, or joint capsules insert into bone. It is one of the first signs of PsA and has been proposed to be the primary lesion of the disease. Identifying enthesitis is greatly important, as it can lead to early diagnosis and treatment initiation in patients with PsA, before irreversible structural damage occurs. This review describes imaging techniques used to detect enthesitis and discusses ways in which standardized definitions and validated scoring systems allow for a more accurate assessment of treatment.

Historically, enthesitis has been assessed using a combination of clinical examination and conventional radiography, which are noninvasive, inexpensive, and relatively fast. However, they do not provide complete information on the extent of enthesal involvement or the presence of subclinical enthesitis, which are better assessed using techniques like ultrasound and MRI.

Ultrasound is inexpensive, nonionizing, and noninvasive and produces real-time images at the point of care. It can detect both acute and chronic inflammation or changes, but there is currently a lack of guidelines regarding Doppler settings, and standardization of settings on different machines is challenging.

MRI can be used to evaluate axial or peripheral entheses and can provide high-resolution evidence of soft tissue abnormalities, but it is more expensive and time-consuming than ultrasound. New imaging techniques are also being developed and validated, including dual-energy CT iodine mapping, PET-CT using fluorodeoxyglucose, and immunoscintigraphy.

Of these, ultrasound is the most widely used modality to assess enthesitis, and 2 main ultrasound scoring systems, the OMERACT and GRAPPA scoring systems, have now been developed. In this short video, I will demonstrate how to examine the entheses of the Achilles and show you what features we typically look for.

As you have seen, imaging modalities allow for direct visualization of the entheses and related structures and offer the potential to systematically assess enthesitis earlier in the disease course, possibly leading to improved patient outcomes. Despite this progress, there is currently no gold standard imaging technique to detect enthesitis. Ongoing studies, such as the phase 3 ACHILLES and ULTIMATE studies, are evaluating the utility of ultrasound and MRI for the monitoring of enthesitis in PsA. Additional clinical trials that focus on treatment of enthesitis and use imaging as a way to monitor the effects of treatment will allow the efficacy of new therapeutics to be assessed and compared.