

How to Use Imaging in Clinical Practice

Conventional radiography has long been used to track changes and diagnose RA, AS, and OA. Though still valuable, conventional radiography cannot detect soft tissue changes or early RA bone damage. Magnetic resonance imaging (MRI) and ultrasonography (US) allow direct visualization of early inflammatory changes in the joint. MRI measurements/scores for erosion, bone edema, and synovitis have been developed for the hand, wrist, and foot. Prof. Mikkel Østergaard, Copenhagen University Hospitals at Herlev and Hvidovre, Denmark, discussed the advantages of using MRI and US for the diagnosis and follow-up of RA and other inflammatory diseases, delineating the following clinical situations where using MRI or US would be beneficial: suspected inflammatory joint disease to determine the presence or absence of synovitis, erosions, etc; clinically difficult RA, for prognostication and establishing baseline values in early RA (MRI only); and to guide aspirations and injections of joints, bursae or tendon sheaths (US only).



Prof. Mikkel Østergaard

MRI discriminates better than x-ray between efficient and inefficient therapy, as well as baseline erosive progression. In clinical studies, baseline MRI findings predicted unilateral wrist and metacarpophalangeal joint erosions after 12 weeks versus 24 weeks with radiography. It is also possible to improve diagnoses of sacroiliitis accompanying AS using MRI versus radiography. MRI reveals early cartilage changes and bone marrow edema associated with AS and picks up an additional 75% of early cases not diagnosed by radiography.

Prof. Østergaard concluded by saying “MRI could be a useful element in future diagnostic criteria in early RA. High baseline combined scores of wrist joint MRI erosions and synovitis was the best predictor (OR 3.59) of severe radiological erosive progression 10 years later.” (*Ann Rheum Dis.* 2005;64:1280-7; 64 Suppl 1:i23-47; *J Rheum* 1996;23:2107-15; *Skeletal Radiol* 1998;27:311-20; *Arthritis Rheum.* 2004;50:2622-32).

Highlights from the
European League
Against Rheumatism
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Meeting

The main extraspinal manifestations of AS, peripheral enthesitis and arthritis, are usually diagnosed clinically, but ultrasound and MRI may be helpful. Dr. Xenophaon Baraliakos, Rheumazentrum Ruhrgebiet, Ruhr-University Bochum, Germany, stated that “despite limitations, scintigraphy of the sacroiliac joint (SIJ) is a useful screening method for detecting bony or enthesal inflammation.” The overall sensitivity for the detection of active sacroiliitis is 95% to 100% for MRI, 48% to 71% for scintigraphy, and 19% to 33% for conventional radiography. Conventional radiography is still the most common method employed for the diagnosis of AS, as well as AS related structural spinal changes, such as syndesmophytes and ankylosis. Dr. Baraliakos presented data showing that examination of the spine with MRI is useful in assessing inflammatory changes or for diagnosis of early and active stages of the disease. MRI sequences useful for assessing active disease are the STIR (short *tau* inversion recovery), the T2-fat saturated, and the T1 post-contrast MRI sequence. The thoracic spine is the most commonly affected area in AS. For assessment of structural changes in this area, the T1-weighted MRI sequence is used (*Ann Rheum Dis.* 2005;64:1462-6; 2004;63:1046-55; *Arthritis Rheum.* 2005;52:1756-65; 52(4):1216-23; *Magn Reson Imaging.* 1999; 42:695-703).

Dr. Philip Lang, Department of Radiology, Harvard Medical School, Cambridge, MA, believes MRI has the potential to detect signal and morphological changes in the cartilage associated with OA if used with targeted visual scoring methods and targeted quantitative techniques. “By using a scoring system designed to capture entire spectrums of cartilage disease, not only late disease,



Philip Lang, MD

scoring subsegments within each compartment, and using a focal assessment targeted to the disease area, we can maximize the scoring system sensitivity to change.” said Dr Lang. (*Arthritis Rheum.* 2002;46:2065-72).

Prof. Philip Conaghan, University of Leeds, Leeds, UK, and Prof. Desiree Van der Heijde of the University Hospital Maastricht, Netherlands, session Co-Chairs, closed by expressing the opinion that diagnosis and management of inflammatory disease is going through exciting changes, in part due to the advances in diagnostic and imaging techniques.

Clinical Aspect of Ankylosing Spondylitis

According to Dr. Robert Landewé, University Hospital Maastricht, Netherlands, “In ankylosing spondylitis (AS), unlike in RA, the relationship between clinical disease activity and signs of the disease as shown by imaging tools, is still very unclear. We expect that inflammation of the spine as measured by clinical tools is associated with inflammation as seen on MRI and leads to the formation of syndesmophytes, however the evidence for that is pretty scarce.” Recent work by Dr. Landewé and colleagues suggests that short *tau* inversion recovery (STIR) MRI imaging of inflammatory lesions in the spine provides on average the same information as gadolinium-enhanced T1-weighted imaging with fat saturation. Dr. Landewé recommends doing STIR and saving T1/gad for non-typical cases.

Two Studies Highlight Key Aspects

Dr. Désirée van der Heijde University Hospital, Maastricht, Netherlands, presented the results of a an open-label, long-term extension study