## Ask the Expert

# Advances in Osteoarthritis Imaging

BY LEENA SHARMA, M.D.

Early detection and treatment of osteoarthritis can lead to improved outcomes. However, clinicians are limited in their ability to detect early signs of the characteristic cartilage degeneration that ultimately leads to joint damage, pain, and disability. X-rays of affected joints are standard practice, but by the time there are visible radiographic changes, damage has already occurred. Additionally, radiographic changes are not a sensitive predictor of pain or disability. Some patients may have severe symptoms without apparent x-ray changes, while others may have x-ray changes with few symptoms.

Magnetic resonance imaging, which is more sensitive than plain film radiography for identifying the early changes of osteoarthritis, offers the advantage of being able to examine the whole joint directly, including articular cartilage, synovium, menisci, and other important intraarticular structures. However, as with x-ray, the use of conventional MRI in osteoarthritis still focuses on identifying gross tissue change, indicating damage that has already occurred.

To better predict the onset and progression of osteoarthritis, as well as assess response to treatment, investigators are racing to develop more sensitive and valid imaging methods. In recent years, there have been significant developments in improving the speed and resolution of MRI for evaluating cartilage morphology. There also have been novel developments in identifying MRI markers for cartilage biochemistry in osteoarthritis, including T2-mapping, delayed gadolinium enhanced MRI of cartilage (dGEMRIC), T1rho imaging, and sodium imaging. In early studies, these new techniques have shown potential in their ability to detect collagen matrix changes that occur before structural changes seen with either conventional radiography MRI.

In this month's column, Dr. Leena Sharma of Northwestern University in Chicago discusses the potential clinical value of some of these new technologies. An investigator focusing on the natural history of knee osteoarthritis, Dr. Sharma is involved in studies that look at the potential clinical applications of novel cartilage imaging techniques, including dGEMRIC, which assesses the quality of cartilage by measuring the levels of proteoglycans, a major component of cartilage.

**Rheumatology News:** In your opinion, what are some of the most exciting advances in the MRI arena with respect to understanding disease pathology as well as planning and monitoring treatment for osteoarthritis?

**Dr. Sharma:** Our ongoing studies incorporate MRI modalities that may ultimately prove effective as imaging biomarkers. For example, by measuring the loss of proteoglycan using the dGEMRIC technique, we may be able to identify early on—well ahead of the time it would take for radiographic change to be evident—knees that are likely to progress. Early findings suggest that these imaging biomarkers may ultimately be powerful clinical tools and, in fact, may be superior to body fluid biomarkers.

**RN:** What information do these technologies provide above and beyond standard MRI or conventional radiography?

**Dr. Sharma:** Standard MRI and radiography show macroscopic change or pathology in the tissue anatomy. From radiography, much of what we gain regarding the knee tissues is inferred from bone changes, which is clearly a limited approach. The newer MRI approaches afford an opportunity to determine tissue function and constituents of cartilage.

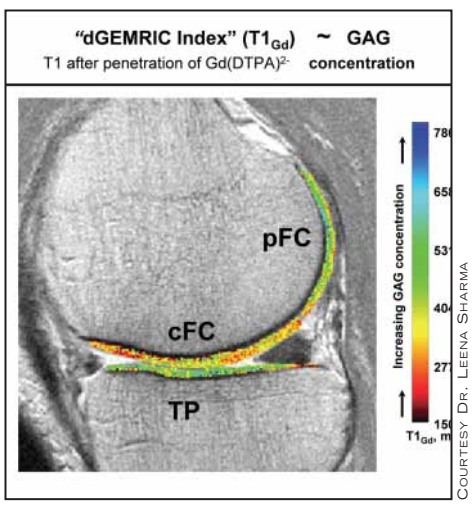
**RN:** How might the clinical management of osteoarthritis change with the availability of these new technologies?

**Dr. Sharma:** With such promising methods, one could envision a range of clinical applications, including identifying persons at greater risk for disease progression, identifying those who should receive emerging disease-modifying therapy, or characterizing response to such therapy.

**RN:** Are these technologies currently available or likely to become available in the near future?

**Dr. Sharma:** These modalities are not yet at a stage to apply in the clinic. They are still being evaluated. ■

Dr. Sharma *is a professor in the division of rheumatology at Northwestern University Medical School in Chicago.*




Courtesy Dr. Leena Sharma

**dGEMRIC imaging provides a detailed view of cartilage in knee osteoarthritis.**

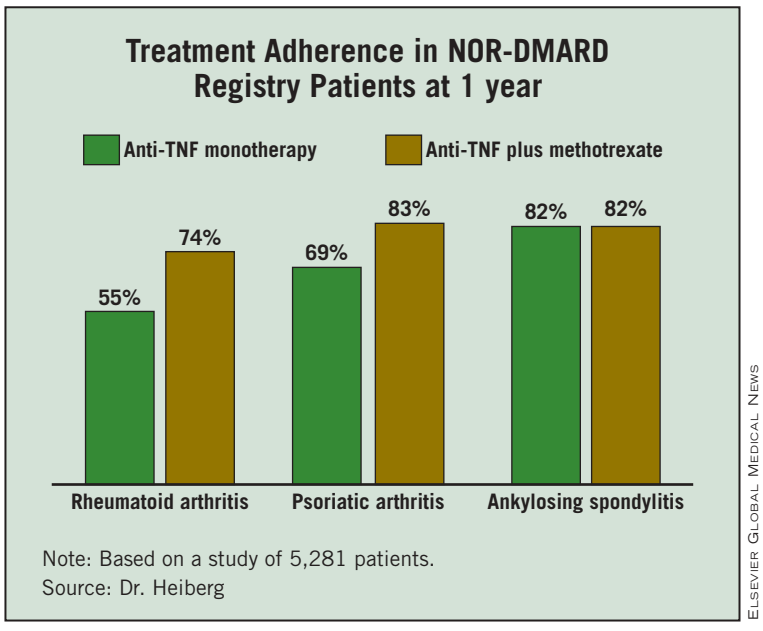
# Comparative Real-World Adherence to Anti-TNF Therapies

BY BRUCE JANCIN
*Denver Bureau*

Amsterdam — The rate of 1-year adherence to tumor necrosis factor–inhibitor therapy was significantly better among patients with ankylosing spondylitis than in those with either rheumatoid arthritis or psoriatic arthritis, judging from the findngs of a large observational registry, Dr. Marte S. Heiberg reported at the annual European Congress of Rheumatology.

Among rheumatoid arthritis patients—and among psoriatic arthritis patients—rates of adherence to anti–tumor necrosis factor (TNF) therapy were significantly greater in those on concomitant methotrexate than with TNF-blocker monotherapy (see chart).

Ankylosing spondylitis patients, however, were different.




Note: Based on a study of 5,281 patients.
Source: Dr. Heiberg

Elsevier Global Medical News

Rate of adherence to anti-TNF therapy among patients with ankylosing spondylitis were identically good regardless of whether the treatment was administered as monotherapy or given in combination with methotrexate, noted Dr. Heiberg of the University of Oslo.

She presented an update from the Norwegian Disease-Modifying Anti-Rheumatic Drug (NOR-DMARD) study, a longitudinal observational study that includes consecutive patients with inflammatory arthropathies placed on DMARD therapy in any of five Norwegian rheumatology departments.

NOR-DMARD is designed to provide comparative information regarding the real-world performance of DMARDs outside the restrictive randomized trial setting.

To date 5,281 patients have been enrolled. During her presentation, Dr. Heiberg focused on 1-year treatment adherence rates among patients with ankylosing spondylitis, rheumatoid arthritis, or psoriatic arthritis placed on etanercept, infliximab, or adalimumab.

Unadjusted 1-year adherence to anti-TNF therapy was 82% in ankylosing spondylitis patients, 78% in those with psoriatic arthritis, and 67% in rheumatoid arthritis patients.

Female gender and older age were associated with lower treatment adherence, in a Cox multivariate regression analysis. Concomitant methotrexate was associated with increased adherence—except among patients with ankylosing spondylitis.

One-year adherence wasn't significantly influenced by which TNF inhibitor a patient was being treated with.

The adjusted relative risk of anti-TNF treatment discontinuation for any reason within the first year was 37% less in ankylosing spondylitis patients and 21% less in psoriatic arthritis patients than in those with rheumatoid arthritis.

Women were 63% more likely to stop therapy than were men. Patients on concomitant methotrexate had a 44% reduction in treatment termination.

Psoriatic arthritis patients were more likely than others to discontinue anti-TNF therapy due to adverse events and least likely to do so because of lack of efficacy, Dr. Heiberg noted at the congress sponsored by the European League Against Rheumatism. ■