Panel Proposes MRI Role in Knee OA Diagnosis

BY MITCHEL L. ZOLER

FROM THE WORLD CONGRESS ON OSTEOARTHRITIS

BRUSSELS – The use of magnetic resonance imaging may enable earlier recognition of knee osteoarthritis, and should be incorporated into recommended diagnostic criteria, a panel of 16 osteoarthritis experts concluded.

Using MRI to define knee osteoarthritis (OA) may allow detection of the disease before radiographic changes occur. But despite a growing body of literature on the role of MRI in OA, little uniformity exists for its diagnostic application, perhaps because of the absence of criteria for an MRI-based structural diagnosis of OA, the group said.

The Osteoarthritis Research Society International (OARSI) organized the 16-member panel, the OA Imaging Working Group, to develop an MRI-based definition of structural OA. The working group sought to identify structural changes on MRI that defined a structural diagnosis of knee OA, Dr. David J. Hunter and the other members of the working group wrote in a poster presented at the congress, which was organized by OARSI.

The working group began with a literature review through April 2009, a process that yielded 25 studies that met the group's inclusion criteria and evaluated MRI diagnostic performance. Through a multiphase process of discussion and voting, the group agreed on a set of nine propositions and two OA definitions based on MRI criteria. (See boxes.) These constitute "statements of preamble and context setting." The two definitions "offer an opportunity for formal testing against other diagnostic constructs," said Dr. Hunter, a rheumatologist and professor of medicine at the University of Sydney and his associates in the working group.

The working group noted that the American College of Rheumatology in 1986 first released the current standard criteria for diagnosing OA, which deal only with radiographic imaging (Arthritis Rheum. 1986;29:1039-49). The European League Against Rheumatism published more current recommendations this year, but focused on a clinical diagnosis that did not involve imaging (Ann. Rheum. Dis. 2010;69:483-9).

The working group aimed to "include MRI as a means to define the disease with the intent that one may be able to identify early, preradiographic disease, thus enabling recruitment of study populations where structure modification (or structure maintenance) may be realistic in a more preventive manner."

The group cautioned that prior to using the definitions, "it is important that their validity and diagnostic performance be adequately tested." They also stressed that "the propositions have been developed for structural OA, not for a clinical diagnosis, not for early OA, and not to facilitate staging of the disease."

An osteoarthritis specialist who was not involved with the working group cautioned that waiting for MRI structural changes that are specific for OA may still miss a truly early diagnosis, before irreversible pathology occurred.

"There are early changes [seen with MRI] that are not picked up on radiographs, but we don't yet have a standardized, validated definition of an earlier stage" on MRI, Dr. Tuhina Neogi, a rheumatologist at Boston University, said in an interview.

Dr. Hunter said that he has received research support from AstraZeneca, DJO Inc. (DonJoy), Eli Lilly & Co., Merck & Co., Pfizer Inc., Stryker Corp., and Wyeth. Eight of the other members of the working group also provided disclosures, whereas the remaining seven members said they had no disclosures. Dr. Neogi had no disclosures. ■

The Panel's MRI-Based Definition of OA

The two definitions of MRI findings diagnostic of knee OA are:

1. Tibiofemoral OA should have either both features from group A (below), or one feature from group A and at least two from group B. Examination of the patient must also rule out joint trauma in the past 6 months (by history) and inflammatory arthritis (by radiographs, history, and lab findings).
   - ► Group A features: Definite osteophyte formation; full-thickness cartilage loss.
   - ► Group B features: Subchondral bone marrow lesion or cyst not associated with meniscal or ligamentous attachments; meniscal subluxation, maceration, or degenerative (horizontal) tear; partial-thickness cartilage loss (without full-thickness loss).
2. Patellofemoral OA requires both of the following features involving the patella, anterior femur, or both:
   - ► Definite osteophyte formation.
   - ► Partial- or full-thickness cartilage loss.

Source: Osteoarthritis Imaging Working Group, organized by the OARSI

The Panel's Propositions

Here are the nine propositions on MRI diagnosis of knee OA:

1. MRI changes of OA may occur in the absence of radiographic findings of OA.
2. MRI may add to the diagnosis of OA and should be incorporated into the ACR diagnostic criteria including x-ray, clinical, and lab parameters.
3. MRI may be used for inclusion in clinical studies, but should not be a primary diagnostic tool in a clinical setting.
4. Certain MRI changes that occur in isolation are not diagnostic of OA, including cartilage loss; change in cartilage composition; cystic change and development of bone marrow lesions; and ligamentous, tendinous, and meniscal damage.
5. No single finding is diagnostic of knee OA.
6. MRI findings indicative of knee OA may include abnormalities in all tissues of the joint (bone, cartilage, meniscus, synovium, ligament, and capsule).
7. Given the multiple tissue abnormalities detected by MRI in OA, diagnostic criteria are likely to involve combinations of features.
8. Definite osteophyte production is indicative of OA.
9. Joint space narrowing as assessed by MRI cannot be used as a diagnostic criterion.

Source: Osteoarthritis Imaging Working Group, organized by the OARSI

Statin Use Linked to 57% Reduction in Knee OA Incidence

BY MITCHEL L. ZOLER

FROM THE WORLD CONGRESS ON OSTEOARTHRITIS

BRUSSELS – Statin therapy may exert yet another beneficial clinical effect – preventing the development of knee osteoarthritis and slowing its progression – based on an analysis of more than 3,000 people who were enrolled in a prospective cohort study.

In an analysis of people in the Rotterdam Study, statin use was linked with a more-than-50% reduced rate of knee osteoarthritis (OA) incidence, and a more-than-50% reduced rate of knee OA progression after adjustment for baseline risk factors, Dr. Stefan Clockaerts said at the congress. In contrast, statin use had no impact on hip OA.

The findings suggest knee OA may be at least partly a metabolic disease, said Dr. Clockaerts of the orthopedics department at Erasmus University, Rotterdam, the Netherlands, and at the University of Antwerp (Belgium).

"We think that there is a difference in the pathogenesis of hip and knee osteoarthritis, and that several systemic factors – such as cholesterol, body mass index, and diabetes – appear to influence knee osteoarthritis" but not deterioration of the hip, Dr. Clockaerts said in an interview.

Another hypothesis is that vascular pathology may contribute to the OA disease process, and that statins' benefits on atherosclerosis may also link statins and knee OA. The anti-inflammatory effect of statins most likely also plays a role.

The Rotterdam Study began in 1990 and enrolled 7,983 men and women aged 55 years or older into a longitudinal cohort study. The analysis by Dr. Clockaerts and his associates focused on participants with knee and hip x-rays that were available from baseline and follow-up and were evaluable for scoring on the Kellgren-Lawrence (KL) scale.

Information on statin use came from computerized pharmacy records. The analysis considered anyone to be a statin user who received a statin prescription for at least 100 days for at least 50% of the drug's recommended daily dosage.

Among 3,056 people who were evaluable for incident knee OA, statin users had a significant, 57% reduced rate of knee OA, vs. nonusers, after adjustment for baseline age, diabetes, BMI, total cholesterol:HDL cholesterol ratio, and bone mineral density (BMD), said Dr. Clockaerts at the congress, which was presented by the Osteoarthritis Research Society International. (See box.)

Progression of knee OA among 1,412 people with a baseline KL score of 1-3 occurred 53% less often in the statin users, compared with nonusers after adjustment for age, BMI, and BMD, which was a significant difference.

Dr. Clockaerts said that he had no disclosures. ■