Medical Xpress

MRI techniques can detect early osteoarthritis

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Researchers from NYU Langone Medical Center's Departments of Orthopaedic Surgery and Radiology found that advanced MRI techniques can be used to detect subtle changes in joint cartilage microstructure – and provide physicians a diagnostic tool for finding key markers of early osteoarthritis (OA). By using these techniques during patient exams to identify OA earlier, clinicians can shift the management of the disease from eventual joint reconstruction to long-term preservation. The study was published in the July issue of the *Journal of the American Academy of Orthopaedic Surgeons*.

"Imaging technology is now sensitive and powerful enough to enable detection of subtle changes in the intricate balance of water, chondrocytes and the collagen fibers and protein molecules that make up our joint cartilage – which we now know can point to future osteoarthritis," says Laith Jazrawi, MD, associate professor of orthopaedic surgery and lead author of the paper. "With an active and aging baby boomer population beginning to experience joint pain associated with age, we think there is great potential for bringing these imaging techniques from the lab to the benefit of patients."

The clinical practice standard is to use conventional MRI imaging to assess the quality of cartilage in patients with joint pain, or known arthritis, which focuses on the morphological integrity of the cartilage. In the lab, however, radiologists, orthopedic surgeons, and rheumatologists working as a team have used advances in MRI technology and biochemical imaging techniques to assess cartilage

damaged by osteoarthritis. Damaged cartilage shows distinct changes in the concentration of water and collagen molecules, the micro- and macrostructure of collagen, and the concentrations of particular proteins, glycosoaminoglycans. The findings support the use of these MRI techniques in the evaluation of younger patients with joint pain to identify the beginnings of OA – allowing for earlier treatment to halt the progression of the disease.

"The development and optimization of these innovative MR techniques has opened up a new window into the understanding and possible treatment of arthritis before irreversible structural and morphological changes has occurred," said Michael P. Recht, MD, Louise Marx professor of radiology and chairman of the Department of Radiology.

More information: The full study can be found at www.jaaos.org/cgi/content/full/19/7/420

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