

# New test to diagnose osteoarthritis early

August 20 2008

---

A newly developed medical imaging technology may provide doctors with a long-awaited test for early diagnosis of osteoarthritis (OA), scientists from New York reported today at the 236th National Meeting of the American Chemical Society. By far the most common form of arthritis, OA is a bane of the Baby Boom generation, causing joint pain and disability for more than half of those over 65 – nearly 21 million people in the United States.

Current diagnostic methods usually do not catch the disease until OA is in advanced stages when joint damage may already have occurred. A method for early diagnosis could open a window of opportunity for preventing or reducing permanent damage — especially with evidence that dietary supplements like glucosamine and chondroitin can halt further joint degeneration, says Alexej Jerschow, Ph.D., who reported on the research jointly with Ravinder R. Regatte, Ph.D.

"Our methods have the potential of providing early warning signs for cartilage disorders like osteoarthritis, thus potentially avoiding surgery and physical therapy later on," states Jerschow. "Also, the effectiveness of early preventative drug therapies can be better assessed with these methods."

Especially common in the knee and hip, osteoarthritis damages cartilage, the tough, elastic material that cushions moving parts of joints. OA is the most common reason for total hip and total knee replacement surgery. "It has all these painful consequences and makes it difficult to move – it results in a severe loss of quality of life for those who are affected by it,"

says Regatte.

The new method uses a modified form of magnetic resonance imaging to determine the concentration of a polymer known as glycosaminoglycan (GAG) that holds lots of water and gives cartilage its tough, elastic properties. GAG also is a recognized biomarker for both osteoarthritis and degenerative disc disease — a common cause of back pain.

According to Jerschow, a low concentration of GAG is known to correlate with the onset of osteoarthritis and other cartilage disorders.

The diagnostic "tags" the hydrogen atoms attached to the GAGs in a way that makes them emit a signal that can be picked up by an MRI machine to determine the concentration of GAG and assess cartilage health.

Advanced OA is very easy to diagnose, Regatte points out. By then, however, joint replacement may be the only option. With early detection, physicians could prescribe dietary supplements, medication or other measures to ward off further cartilage damage.

"Given the lack of knowledge about OA, I think any method that is noninvasive and relatively easy to apply will be quite valuable. Not only do you address diagnosis, but you address how we can understand OA's mechanism," says Jerschow.

The test could also be used to improve existing cartilage-boosting drugs, Regatte says. Currently, it's difficult to gauge the efficacy of these drugs without a diagnostic tool to measure their effects on cartilage.

"There are drugs on the market for OA treatment, but no one really knows how effective they are. After having done the research, we got a lot of calls from pharmaceutical companies wanting to show that their drugs work," says Jerschow.

The cost and time it takes for the cartilage test is practically the same as a normal MRI, states Regatte. Diagnosis could be given on a same day basis.

"I really hope it will develop into the gold standard technique," says Jerschow. "I'm pretty confident in saying that its one of the better methods out there for testing cartilage health."

Source: American Chemical Society

Citation: New test to diagnose osteoarthritis early (2008, August 20) retrieved 25 April 2024 from <https://phys.org/news/2008-08-osteoarthritis-early.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.