Expert Group Selects Best Markers for OA Progression

By Lois Wingerson [2]

(OARSI2015) First results are now in for a large collaborative project whose goal is to rationalize OA research by finding the best imaging and biochemical measures of progression. 

Source: Rheumatology Network

As any rheumatologist knows, there are no disease-modifying drugs for osteoarthritis (OA). Interventions other than surgery are palliative. This is a “global unmet need” and solving it should be an “international medical priority,” osteoarthritis specialists have said. And they are now doing something about it.

The first results are now in for a large collaborative project whose goal is to rationalize osteoarthritis research by identifying, developing, and validating specific markers of OA progression in two categories: structural (imaging protocols) and biochemical measures.

Members of the project announced the chosen candidate markers at the start of the Osteoarthritis Research Society International (OARSI) meeting in Seattle. Look for these disease markers to predominate in reports about osteoarthritis in the future, and for at least some of them eventually to form the basis of diagnostic criteria.

The project is sponsored by the Foundation for the National Institutes of Health (FNIH), OARSI, the FNIH Biomarkers Consortium, and the Osteoarthritis Initiative, with funding from the US Arthritis Foundation and 9 commercial sponsors.

It is supported through the collaborative efforts of the FNIH Biomarkers Consortium, OARSI, and the Osteoarthritis Initiative (a longitudinal data and imaging repository including nearly 5,000 people with or at high risk for knee OA).

The FNIH Osteoarthritis Biomarkers Consortium Project launched as a 2½ year, $3-million case-cohort study involving data from 600 OA patients, used to define rigorously the characteristics of various biomarkers and select those most useful for identifying progression in knees with mild to moderate OA.

Chief investigators are David Hunter PhD of the University of Sydney, Australia, and Virginia Byers-Kraus MD PhD of Duke University.

Imaging measures initially chosen for the project are:

Radiographic:
• minimum joint space width
• joint space area
• indicators of bone trabecular integrity

MRI:
• quantitative cartilage measures including volume, thickness, denuded surface area
• quantitative bone measures including curvature, bone/cartilage interface, area covered by cartilage, and volume of osteophytes
• qualitative MRI scoring using the MOAKS (MRI OA Knee Score) system
• cartilage and meniscus volume

Biochemical measures chosen for further development (and the phenomena they measure) are:
• Serum CTXI (collagen type-1 c-telopeptide; measures bone resorption)
• Serum NTXI (collagen type 1 N-terminal telopeptide; measures bone resorption)
• Serum HA (hyaluronic acid; measures inflammation)
• Serum PIIANP (type IIA procollagen amino terminal propeptide; measures cartilage synthesis)
• Urine CTXII (collagen type-2 c-telopeptide; measures cartilage degradation)

It was gratifying to see that the analysis showed the catabolic biomarkers CTXII, CTX-I, and NTX-I
predictive of OA progression, while the anabolic biomarker PIIANP was negatively associated with OA progression, Byers Kraus told Rheumatology Network. Hyaluronic acid was not significantly predictive on its own but added to the predictive power of the other four markers combined.

Although two of the markers (CTXI and NTXI) are FDA-approved tests for osteoporosis diagnosis, none of them is yet approved to diagnose OA. All of these biomarkers are being proposed for use in clinical trials, stressed Steven Hoffman, scientific program manager for inflammation and autoimmunity at FNIH, but they won’t all necessarily be recommended to the FDA as diagnostics for OA.

Funding and scientific expertise for the project come from the US Arthritis Foundation, the National Institutes of Health (NIH), and 10 commercial sponsors.

Analysis of data, all of which is publicly available, is carried out at an independent data center at Brigham & Women's Hospital in Boston.

References:
doi:10.1016/j.berh.2014.01

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