Glucocorticoid treatment may prevent long-term damage to joints

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Joint injury can result in irreversible damage of cartilage which, despite treatment and surgery, often eventually leads to osteoarthritis (OA) in later life. New research published in BioMed Central's open access journal *Arthritis Research & Therapy* demonstrates that short term treatment of damaged cartilage with glucocorticoids can reduce long term degenerative changes and may provide hope for prevention of OA after injury.

A normal joint is covered by a layer of cartilage containing proteoglycans such as aggrecan and lubricating fluid containing glycosaminoglycans (GAG) such as hyaluronic acid. In a double whammy, after injury proteoglycans and other molecules in cartilage begin to break down and the synthesis of these proteoglycans within cartilage is reduced. Additionally proinflammatory cytokines such as TNFα, IL-1β, and IL-6 are released into the synovial fluid after injury and further increase GAG loss from cartilage.

Using a 'worst-case scenario' system in which cartilage was subjected to mechanical injury and bombarded with immune system-stimulating bio-molecules (TNFα and IL-6) the glucocorticoid dexamethasone (DEX) was able to reduce GAG loss and restore proteoglycan synthesis levels to normal.

Prof Alan Grodzinsky from the MIT Center for Biomedical Engineering said, "Glucocorticoid injections are sometimes used to relieve the pain of established osteoarthritis, but there are concerns about long-term use.

Our results suggest that short-term glucocorticoid treatment after joint injury may help restore components of cartilage to preinjury levels and consequently may prevent the long term changes which lead to osteoarthritis."

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