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Posttraumatic osteoarthritis: Pathogenesis and earlyIntervention

steoarthritis (OA) is the most common form of joint disease and the major cause of physical disability in both military and civilian populations. Posttraumatic OA (PTOA) arises from joint injury, which accounts for a fraction of all patients with OA. Articular cartilage breakdown can occur soon or years after a joint injury. Even with the best current care for joint injuries, such as anatomic reduction and rigid fixation of intra-articular fractures, timely repair of damaged articular cartilage or meniscus, and reconstruction of ruptured ligaments, the risk of PTOA after joint injuries ranges from 20% to more than 50%. The severity of the initial damage to articular tissue may affect the pathologic process of PTOA. However, the time course for the progression of PTOA is highly variable and risk of PTOA increases with age of patients, suggesting that biologic factors may be involved in the progression of PTOA. Current therapeutic options are limited due largely to the lack of information on the mechanisms underlying the progression of PTOA. This lecture summarizes the current studies on the pathogenetic mechanisms of PTOA and novel strategies for surgical and biological interventions. Recent studies have revealed that mechanical damage to articular tissues may lead to changes in gene expression and cartilage metabolism, which could trigger a cascade of events leading to degradation of articular cartilage and pathologic changes in other joint tissues. Understanding the mechanobiologic, molecular, and cellular changes that lead to continued cartilage degradation in the relatively early phases after joint injury may open up new opportunities for early clinical intervention to haltor slow the initiation or progression of PTOA.

Biography

Dr. Jinxi Wang is the Harrington Distinguished Professor of Orthopedics and Director of the Harrington Laboratory for Molecular Orthopedics at the University of Kansas Medical Center. His major research interests are: (1) molecular regulation of chondrocyte function and articular cartilage regeneration, (2) pathogenetic mechanisms and novel therapeutics for osteoarthritis, and (3) regulatory mechanisms of osteoblast differentiation and bone regeneration. He is an editorial board member and manuscript reviewer for several orthopedic and biomedical research journals. He also serves as a reviewer of grant applications for the National Institutes of Health (NIH, USA) and other national and international research funding agencies.

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