Chedo M. Bagi, Rheumatology 2017, 7:1(Suppl)
http://dx.doi.org/10.4172/2161-1149.C1.015

Osteoarthritis - Opportunities for nonsurgical therapies

Chedo M. Bagi
Global Science & Technology, USA

Objective: The aim of this study was to determine the ability of undenatured native chicken type II collagen (UC-II) to prevent excessive articular cartilage deterioration in a rat model of osteoarthritis (OA).

Methods: Twenty male Lewis rats were subjected to partial medial meniscectomy tear (PMMT) surgery to induce OA. Immediately after the surgery rats received vehicle or oral daily dose of UC-II at 0.66 mg/kg for a period of 8 weeks. Ten naïve rats were used as an intact control and another 10 rats received sham surgery. Study endpoints included an assessment of weight-bearing capacity of the operated extremity with a dynamic weight bearing (DWB) system, bone and cartilage metabolism with serum biomarkers, the subchondral bone at the medial tibial plateau and the cancellous bone at the tibial metaphysis with Micro Computed Tomography (μCT) and cartilage pathology at the medial tibial plateau with various histological methods.

Results: Partial medial meniscectomy surgery produced moderate OA at the medial tibial plateau. Specifically, the deterioration of articular cartilage negatively impacted the weight bearing capacity of the operated limb. Immediate treatment with the UC-II preserved the weight-bearing capacity of the injured leg, preserved integrity of the cancellous bone at tibial metaphysis and limited the excessive osteophyte formation and deterioration of articular cartilage.

Conclusion: Our results demonstrate that a clinically relevant daily dose of UC-II when applied immediately after injury can improve the mechanical function of the injured knee and prevent excessive deterioration of articular cartilage. Additional studies are warranted to elucidate the mechanism of action and to determine if there is efficacy in established disease models figure shows Safranin O-stained sections of articular cartilage in rat. The PMMT-associated loss of the articular cartilage was partially prevented by UC-II. Red lines indicate the outer border (osteophyte side), and blue lines indicate the inner border (normal cartilage). Solid arrows indicate the total cartilage degeneration width; dotted arrows indicate significant cartilage degeneration width; yellow arrowheads inμdicate fibrillated cartilage and debris, which were primarily evident in the PMMT rats given no UC-II.

Biography

Chedo M. Bagi, MD, Ph.D. is a highest ranked (Senior Research Fellow) scientist at Worldwide Science & Technology group at Pfizer Inc., with over 25 years of research experience in academic and pharmaceutical research organizations. Current research focuses on the OA and RA, metabolic diseases, immunological disorders and bone cancers. Dr. Bagi's responsibilities include implementation of translational disease animal models and diverse technologies to provide preclinical efficacy and safety data and enable rapid translation of novel medicines to clinic, and ultimately to patients. Accomplishments of past work include patents, numerous publications, book chapters, presentations and memberships in professional organizations.

chedo.bagi@pfizer.com

Notes: