MedicalXpress

Researchers identify new signaling pathway thought to play role in rheumatoid arthritis

October 21 2014

A new study by researchers at Hospital for Special Surgery (HSS) identifies a new signaling pathway that contributes to the development and progression of inflammatory bone erosion, which occurs in patients with rheumatoid arthritis (RA). Rheumatoid arthritis is a systemic inflammatory autoimmune disease that affects millions of adults worldwide. Bone erosion in joints is a major cause of disability in RA patients.

The study, titled "RBP-J imposes a requirement for ITAM-mediated costimulation of osteoclastogenesis," was published online in the *Journal of Clinical Investigation* on October 20. Baohong Zhao, PhD, lead investigator and assistant scientist in the Arthritis and Tissue Degeneration Program at HSS, and colleagues uncovered a novel signaling pathway and elucidated the underlying mechanisms that could contribute to bone destruction in RA. Recently, other scientists conducted a genome-wide association study to identify genes linked to RA development. They discovered that a certain variant in a gene called RBP-J was associated with the development of RA, but its specific role was unknown.

"We found for the first time that the expression level of this risk gene in RA patients is significantly lower than the level in healthy controls, thus providing important evidence of the link between this risk gene and RA disease," explained Dr. Zhao.

The scientists also elucidated mechanisms by which the RBP-J protein

controlled excessive bone erosion through a newly identified signaling pathway. "We are very excited about our results, because this newly identified RBP-J-controlled signaling pathway will provide potential novel therapeutic targets for the prevention and treatment of RA, thus opening a new avenue for both basic research and clinical care," said Dr. Zhao.

The scientists used powerful high-tech next generation whole transcriptome sequencing, which can provide information on the expression level of each single gene among thousands of human genes. "This technology enabled us to unravel key components of this new signaling pathway," said Dr. Zhao.

Provided by Hospital for Special Surgery