

Researchers discover potential treatment for bone death in the hip from osteonecrosis

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Researchers at Mount Sinai School of Medicine have found a potential new treatment for osteonecrosis, or the death of bone tissue, in people who are treated with steroids for several common medical conditions. There are currently no treatment options for people with this debilitating disease. The research is published in the April 27 issue of *Proceedings of the National Academy of Sciences*.

Glucocorticoids are a class of steroids used to treat several common diseases, including asthma, ulcerative colitis, kidney diseases, and rheumatologic disorders. These steroids cause [bone loss](#), and can eventually cause severe osteoporosis and fracture, as well as osteonecrosis. The Mount Sinai team, led by Mone Zaidi, MD, PhD, FRCP, Professor of Medicine and Physiology and Director of The Mount Sinai Bone Program at Mount Sinai School of Medicine, discovered that injecting the naturally-produced hormone adrenocorticotrophic hormone (ACTH) in rabbits with osteonecrosis caused by treatment with glucocorticoids significantly reduced bone death in the hip.

"Osteonecrosis is a very painful condition that has the potential to affect hundreds of thousands of Americans who are treated with steroids, with no treatment option until now except [hip replacement](#)," said Dr. Zaidi. "Our research is the first to show the therapeutic benefit of ACTH in experimental osteonecrosis, providing the first treatment option for these patients."

Glucocorticoids cause reduced blood flow to bone cells in the hip, resulting in cell death, and ACTH reduces these devastating side effects. However, research indicates that osteonecrosis is not significant in people in which steroid levels are high in the blood. Dr. Zaidi's team knew that these tumors produce excess ACTH, and this spurred the team to evaluate the ACTH's potential therapeutic effect.

The researchers injected one group of rabbits with depomedrol, a type of steroid, and another group with depomedrol plus ACTH. Osteonecrosis was dramatically reduced in the rabbits that were treated with ACTH. Dr. Zaidi's team found that ACTH stimulates the vascular endothelial growth factor (VEGF), a protein that signals for the growth of new blood vessels. The stimulation of VEGF results in increased blood flow to the bone cells, preventing cell death.

"The results confirm that ACTH may be of value as a drug to prevent osteonecrosis," said Dr. Zaidi. "While more research is required, we hope to someday evaluate the efficacy of ACTH in treating osteoporosis as well."

Provided by The Mount Sinai Hospital

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