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Researchers find relief for chronic pain

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Researchers in the Department of Medicine and Department of Neurosciences at Mount Sinai School of Medicine have discovered that chronic pain can be successfully treated with novel targeted gene therapy. In an effort to find a more effective treatment for chronic pain, researchers at Mount Sinai developed a gene therapy technique that simulates the pain-killing effect of opiate drugs.

In the new study “Sensory neuron targeting by self-complementary AAV8 via lumbar puncture for chronic pain” published in the January 22, 2008 issue of the *Proceedings of the National Academy of Sciences*, researchers suggest that gene therapy for pain might in the future become a treatment alternative for patients with severe chronic pain.

“Fifty million Americans suffer from chronic pain. Chronic pain patients often do not experience satisfactory pain relief from available treatments due to poor efficacy or intolerable side effects like extreme sleepiness, mental clouding, and hallucinations,” said Dr. Andreas Beutler, MD, principal investigator of the study and Assistant Professor of Medicine/ Hematology And Medical Oncology at Mount Sinai School of Medicine.

Mount Sinai researchers designed a viral vector to carry the prepro-b-endorphin gene into primary sensory neurons in order to activate opiate receptors selectively, in a rat model. The agents were delivered directly into the spinal fluid of rats via a lumbar puncture, or spinal tap with only one injection. Results showed that the rats remained symptom-free for an extended period of time.

“Our research found that treating chronic pain with Adeno-Associated Virus vector-based gene therapy allows for pain relief for more than three months after a single injection, targeting selectively the pain gate. The technique worked successfully with opioid- and non-opioid therapeutic genes,” said Dr. Beutler. “Targeted gene therapy will likely avoid the unwanted side effects associated with opioid painkillers such as morphine. Based on our findings, this targeted gene therapy via lumbar puncture appears to be a promising candidate for bench-to-bedside research that might ultimately be tested in patients with intractable chronic pain, e.g., to help patients suffering from severe pain due to advanced cancer.”

Source: The Mount Sinai Hospital