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ACUPUNCTURE WITH ELECTRICAL STIMULATION MAY TREAT MUSCLE ATROPHY CAUSED BY KIDNEY DISEASE

Technique improved muscle regeneration in mice

Highlights

- An acupuncture technique called low-frequency electrical stimulation improved muscle regeneration in mice with muscle atrophy due to kidney disease.
- This unique acupuncture treatment stimulated cells that had anti-inflammatory effects.

Muscle atrophy is common in patients with chronic kidney disease.

Washington, DC (August 14, 2014) — Acupuncture may help treat muscle wasting that can occur as a result of kidney and other diseases, according to a study appearing in an upcoming issue of the *Journal of the American Society of Nephrology* (JASN). The technique may be an attractive non-drug strategy that could help many patients.

Muscle atrophy is a serious consequence of spinal cord injuries and other traumas as well as diseases such as heart failure, chronic kidney disease (CKD), cancer, and diabetes. While there are several drug-related strategies to help prevent or treat muscle atrophy, there are no simple and effective treatments.

Xiaonan Wang, MD, Li Hu, MD (Emory University), and their colleagues looked to see if electrical stimulation delivered through acupuncture, which any physician can learn to perform with as little as 3 months of training, might lessen muscle atrophy associated with CKD. The investigators treated CKD mice and healthy control mice with the technique, which mimics resistance exercise by inducing muscle contraction, for 15 days.

The researchers found that the treatment improved muscle regeneration in mice by activating M2 macrophages, which are specialized immune cells that stimulate an anti-inflammatory response. Activation of M2 macrophages stimulates the insulin-like growth factor-1 signaling pathway, which promotes increased muscle protein synthesis and new muscle cell growth. “Our study explains how acupuncture is able to produce positive effects against muscle atrophy,” said Dr. Wang. “Patients with severe disease are frequently unable to withstand routine daily physical activity, let alone therapeutic

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exercise. This treatment is an alternate way to achieve the benefits of exercise," she added.

The researchers noted that more work is needed to determine the optimal timing and intensity of LFES as a possible treatment for muscle atrophy.

Study co-authors include Janet D. Klein, PhD, Faten Hassounah, MS, Hui Cai, MD, Cong Zhang, MD, PhD, and Ping Xu, MD.

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The article, entitled Low-Frequency Electrical Stimulation Attenuates Muscle Atrophy in CKD—A Potential Treatment Strategy," will appear online at <http://jasn.asnjournals.org/> on August 14, 2014.

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