Stem Cells Could Be the Answer for Treating Fecal Incontinence After Injury or Disease

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Durham, NC (PRWEB) May 05, 2014 -- A new study released today in STEM CELLS Translational Medicine demonstrates the regenerative effects of mesenchymal stem cells (MSC) on the anal sphincter. The work could have implications for the 11 percent of the population suffering fecal incontinence due to an injury or disease.

Massarat Zutshi, M.D., and Levilester Salcedo, M.D., led the research team made up of their colleagues at the Cleveland Clinic (Cleveland, Ohio) as well as those from Summa Cardiovascular Institute and Northeast Ohio Medical University (Akron, Ohio).

None of the current therapies for treating fecal incontinence “are efficacious in the long-term or without complications related to the surgery or the device,” Dr. Zutshi said. However, she added, adipose tissue, muscle and mesenchymal stem cells (MSC) have been shown to improve functioning of the heart and the urinary sphincter in animal models, leading researchers to test their effects in regenerating the anal sphincter, too.

In this most recent study the Zutshi/Salcedo team wanted to see how a single intramuscular (IM) injection of MSCs compared to a series of intravenous (IV) treatments. They used rats that had undergone an excision of 25 percent of their anal sphincter complex. Twenty-four hours after injury, one group received a single IM injection of stem cells directly into their anal sphincters. A second group began a series of six consecutive daily treatments delivered by IV through their tail veins, as did a group of non-injured animals. Another group of injured animals received no stem cells.

Anal pressures were recorded prior to injury, then again at 10 days and five weeks after treatment. Ten days after the IM treatment, resting and peak pressures were significantly increased in the injured groups compared to the control group that received no treatment. At five weeks, the anal pressures of the two groups of injured rats receiving treatments were almost on par with the non-injured group.

“Both IM and IV MSC treatment after injury cause increase in anal pressures sustained at five weeks even though fewer cells were injected IM,” Dr. Zutshi concluded. “The MSC-treated groups showed less scarring than PBS treatment, with the IV infusion group showing the least scarring.

“Since MSC delivered IM or IV both resulted in functional recovery, the IM route may be preferable as fewer cells seem to be needed.”

This research demonstrates the regenerative effects of mesenchymal stem cells on the injured anal sphincter and, because fewer cells were needed for intramuscular injections, may direct the course of future clinical trials, said Anthony Atala, M.D., editor of STEM CELLS Translational Medicine and director of the Wake Forest Institute for Regenerative Medicine.

The full article, “Functional outcome after anal sphincter injury and treatment with mesenchymal stem cells,”

About STEM CELLS Translational Medicine: STEM CELLS TRANSLATIONAL MEDICINE (SCTM), published by AlphaMed Press, is a monthly peer-reviewed publication dedicated to significantly advancing the clinical utilization of stem cell molecular and cellular biology. By bridging stem cell research and clinical trials, SCTM will help move applications of these critical investigations closer to accepted best practices.

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Contact Information
Sharon Lee
Stem Cells Translational Medicine
http://www.StemCellsTM.com
+1 (919) 680-0011

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