



Trends in
Medical Research

ISSN 1819-3587



Academic
Journals Inc.

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Stem Cell Therapy: A Future Treatment for Lower Back Pain?

Lower back pain affects many people and may be caused by degeneration of the discs between the vertebrae. Treatment for the condition using stem cells may be an alternative to today's surgical procedures. This is the conclusion of a thesis presented at the University of Gothenburg, Sweden.

The cells in a degenerated intervertebral disc (which are mainly made of cartilage) no longer work normally. This leads to the disc drying out, which impairs its function and leads to lower back pain.

"It is generally believed that cartilage has no, or very little, capacity to heal, and knowledge about how cell division takes place in intervertebral discs is limited," says scientist Helena Barreto-Henriksson of the Institute of Clinical Sciences and the Institute of Biomedicine at the Sahlgrenska Academy.

The thesis describes "how the scientists have studied cell division in the disc, and the possibility of influencing the disc through cell transplantation?" In animal studies and in studies of human discs removed during surgery, they have identified areas in the periphery of the disc in which the cells have properties similar to those of stem cells. The cells probably contribute to the growth of new cells, and provide the disc, with a certain capacity to self-heal.

The scientists have also investigated the possibility of transplanting cells to a disc by injecting human stem cells into damaged discs in an animal model.

"Images taken by MRI showed that the transplanted stem cells survived, that they developed into cells that had a function similar to that of disc cells, and there was a certain degree of healing in the disc," says Helena Barreto-Henriksson.

The results will stimulate further studies about whether it is possible to restore an intervertebral disc, or prevent its further degeneration, using biological treatments. One possible strategy is to stimulate the existing stem cells in the neighbourhood, while another is to develop methods for cell transplantation in patients, using the patient's own stem cells from the bone marrow.

"The advantage of such treatment over today's surgical approaches is that it would be a much simpler and less serious procedure for the patient," points out Helena Barreto-Henriksson.

Disc Degeneration

Disc degeneration is a change in the properties of intervertebral discs (which are mainly made of cartilage) that leads to the risk of them becoming too thin. The condition is common among older people and may lead to the displacement of a vertebra and contribute to a constriction in the spinal cord, known as "spinal stenosis". It may also arise in younger people and in the middle-aged, and is then considered to be a significant underlying cause of severe and chronic lower back pain.

Editor's Note: This article is not intended to provide medical advice, diagnosis or treatment.