

**A GUIDE FOR PATIENTS**

# **LITERATURE**

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## ❖ Spinal Cord Injury

### ➤ Phase I-II Clinical Trial Assessing Safety and Efficacy of Umbilical Cord Blood Mononuclear Cell Transplant Therapy of Chronic Complete Spinal Cord Injury

Umbilical cord blood-derived mononuclear cell (UCB-MNC) transplants improve recovery in animal spinal cord injury (SCI) models. We transplanted UCB-MNCs into 28 patients with chronic complete SCI in Hong Kong (HK) and Kunming (KM). Stemcyte Inc. donated UCB-MNCs isolated from human leukocyte antigen (HLA  $\geq 4:6$ )-matched UCB units. In HK, four patients received four 4- $\mu$ l injections (1.6 million cells) into dorsal entry zones above and below the injury site, and another four received 8- $\mu$ l injections (3.2 million cells).



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### ➤ A comparison of autologous and allogenic bone marrow-derived mesenchymal stem cell transplantation in canine spinal cord injury

The purpose of this study is to compare the therapeutic effects between autologous and allogenic bone-marrow-derived mesenchymal stem cell (MSC) transplantation in experimentally-induced spinal cord injury (SCI) of dogs. Thirty adult Beagle dogs (control group=10, autologous group=10, and allogenic group=10) were used in this study. Prelabeled MSCs were intrathecally transplanted through the lumbar spinal cord into the injured lesion at a density of  $1 \times 10^7$  cells 7 days after SCI.

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### ➤ **Clinical analysis of the treatment of spinal cord injury with umbilical cord mesenchymal stem cells**

The purpose of this study was to observe the clinical effect and safety of umbilical cord mesenchymal stem cells (UC-MSCs) in treating spinal cord injury (SCI) by intrathecal injection.

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### ➤ **Mesenchymal stem cell for prevention and management of intervertebral disc degeneration**

Intervertebral disc degeneration (IVD) is a frequent pathological condition. Conservative management often fails, and patients with IVD degeneration may require surgical intervention. Several treatment strategies have been proposed, although only surgical discectomy and arthrodesis have been proven to be predictably effective. The aim of biological strategies is to prevent and manage IVD degeneration, improve function, the anabolic and reparative capabilities of the nucleus pulposus and annulus fibrosus cells, and inhibit matrix degradation. At present, clinical applications are still in their infancy. Further studies are required to clarify the role of mesenchymal stem cells and gene therapy in the prevention and treatment of IVD degeneration.

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## ➤ Treatment of spinal cord injury with mesenchymal stem cells

Spinal cord injury (SCI) is the damage to the spinal cord that can lead to temporary or permanent loss of function due to injury to the nerve. The SCI patients are often associated with poor quality of life.

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## ➤ Stem cell therapy for Spinal Cord Injury

Traumatic spinal cord injury (SCI) results in direct and indirect damage to neural tissues, which results in motor and sensory dysfunction, dystonia, and pathological reflex that ultimately lead to paraplegia or tetraplegia. A loss of cells, axon regeneration failure, and time-sensitive pathophysiology make tissue repair difficult. Despite various medical developments, there are currently no effective regenerative treatments. Stem cell therapy is a promising treatment for SCI due to its multiple targets and reactivity benefits.

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## ➤ Progress in Stem cell therapy for Spinal Cord Injury

Background. Spinal cord injury (SCI) is one of the serious neurological diseases that occur in young people with high morbidity and disability. However, there is still a lack of effective treatments for it. Stem cell (SC) treatment of SCI has gradually become a new research hotspot over the past decades. This article is aimed at reviewing the research progress of SC therapy for SCI. Methods. Review the literature and summarize the effects, strategies, related mechanisms, safety, and clinical application of different SC types and new approaches in combination with SC in SCI treatment. Results.

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## ➤ Stem Cell-Based Therapy For Spinal Cord Injury

Spinal cord injury (SCI) results in the loss of nervous tissue and consequently loss of motor and sensory function. There is no treatment available that restores the injury-induced loss of function to a degree that an independent life can be guaranteed. Transplantation of stem cells or progenitors may support spinal cord repair. Stem cells are characterized by self-renewal and their ability to become any cell in an organism. Promising results have been obtained in experimental models of SCI. Stem cells can be directed to differentiate into neurons or glia in vitro, which can be used for the replacement of neural cells lost after SCI. Neuroprotective and axon regeneration-promoting effects have also been credited to transplanted stem cells.

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## ➤ Stem Cell Therapy For Spinal Cord Injury: An Overview Of Clinical Trials

Spinal cord injury (SCI) is a traumatic lesion that causes disability with temporary or permanent sensory and/or motor deficits. The pharmacological approach still in use for the treatment of SCI involves the employment of corticosteroid drugs. However, SCI remains a very complex disorder that needs future studies to find effective pharmacological treatments. SCI activates a strong inflammatory response that induces a loss of neurons followed by a cascade of events that lead to further spinal cord damage. Many experimental studies demonstrate the therapeutic effect of stem cells in SCI due to their capacity to differentiate into neuronal cells and release neurotrophic factors.

Therefore, they appear to be a valid strategy to use in the field of regenerative medicine.

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### ➤ **Advances in the repair of spinal cord injury by transplantation of marrow mesenchymal stem cells**

To review the advances in the repair of spinal cord injury by transplantation of marrow mesenchymal stem cells (MSCs).

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### ➤ **Stem cell transplantation for treating spinal cord injury**

To identify global research trends of stem cell transplantation for treating spinal cord injury using a bibliometric analysis of the Web of Science.

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