

Patients treated with own olfactory ensheathing cells realize neurologic improvement

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A team of researchers in Poland who treated three of six paraplegics with spinal cord injury using transplanted olfactory ensheathing cells found that the three treated patients showed neurological improvement and no adverse effects while the three control patients who did not receive transplants saw no improvement.

The study appears as an early e-publication for the journal *Cell Transplantation*.

"Most accepted treatments for spinal cord injury focus on techniques of early neuro-protection aimed at maximum prevention of secondary spinal cord injury and methods to stimulate plasticity in the [central nervous system](#)," said study corresponding author Dr. Pawel Tabakow of the Department of Neurosurgery, Wroclaw Medical University in Wroclaw, Poland. "These measures have helped patients with incomplete spinal injury, but results in patients with complete spinal injury remained limited."

According to the researchers, among the various kinds of neurotrophic cells being tested for transplantation to treat spinal cord injury, OECs deserve "special attention" because they are unique in their natural ability to stimulate regrowth of lesioned [axons](#) and "evoke long-distance axon regeneration and subsequent recovery of locomotion in paralyzed limbs."

The researchers noted specifically several laboratory studies using animals modeled with spinal cord injury where OECs derived from the olfactory mucosa have been found to stimulate the regrowth of neural nerves when transplanted into [laboratory rats](#) with paralyzed limbs. In those studies they found evidence of restored breathing, locomotion and climbing behavior in the animals.

In a phase one of this non-randomized controlled study, the team of researchers treated the three patients with transplanted self-donated (autologous) OECs and [fibroblasts](#) isolated from olfactory mucosa combined with "intense" neuro-rehabilitation. They found the treatment "safe and feasible" one year after transplantation. There was no evidence of neurological deterioration, neuropathic pain, neuroinfection or tumor growth, wrote the researchers.

"Neurophysiological examinations showed improvement in spinal cord transmission and activity of lower extremity muscles in the surgically treated patients, but not in patients receiving only neuro-rehabilitation," they said.

"We consider that the transplantation of OECs was the main factor contributing to the neurologic improvements in the three transplanted patients," said Dr. Tabakow. "Among the possible mechanisms for improvement is that the transplanted OECs may have mediated some restitution along white matter tracts in these patients."

The researchers added that the modest improvements in neurological function occurred against a "background of intense neuro-rehabilitation, which is probably needed for the improvements, although the experience of the control patients indicated that this in itself is not sufficient."

More information: www.ingentaconnect.com/content/ingenta/ct0799tabakow

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