Transplants Could Benefit Kids With Cerebral Palsy

A unique cell type that supports and surrounds (ensheathes) neurons within the nose (olfactory system) known as olfactory ensheathing cells (OECs), possess the ability to regenerate, are relatively easy to obtain, and have become prime candidates for transplantation to repair a number of lesions in the central nervous system (CNS).

Transplanted OECs, known to retain exceptional plasticity and promote olfactory blood vessel growth while offering neuron-protection, have been demonstrated to be potentially useful for a number of neurological disorders, including multiple sclerosis, spinal cord injury and amyotrophc lateral sclerosis (ALS).

A group of Chinese researchers hypothesized that OECs might also hold promise for treating cerebral palsy (CP), a neurological disorder appearing in infancy or early childhood and characterized by its permanent effects on muscle movement. The study has been published in *Cell Transplantation* and is now available on-line at http://www.ingentaconnect.com/content/cog/ct/.

“CP is a class of brain lesion in children with a wide variety of causes, from abnormal brain development to peri-natal injuries, and manifesting in progressive physical dysfunction,” said corresponding author Dr. Hongyun Huang of the Beijing Rehabilitation Center. “We conducted a randomized, controlled clinical trial with 33 volunteers, 14 of whom completed the six-month study, to determine if transplanted OECs were effective in treating children and adolescents with CP, given that CP shares many of the same features of other degenerative diseases.”

According to the researchers, 83 percent of the children with CP that they examined had abnormal radiological findings, with white matter damage being the most common abnormality. Tissue loss, inadequate or delayed myelination, glial scars and shrunken white matter of the brain were also encountered. The white matter is made up of nerve fibers communicating between brain areas.

The research team's hypothesis and protocol was developed with prior knowledge of a key location in the brain's frontal lobes for injecting OECs and that the injected OECs would produce Schwann cell-like myelin sheaths around demyelinated axons.

Results were measured by both the Gross Motor Function Measure (GMFM-66) and the Caregiver Questionnaire Scale.

“This trial, albeit small in sample size, indicates that OEC KPNNR transplantation may be effective for functional improvement in children and adolescents with CP,” said Dr. Huang. “Our results showed that transplanting OECs into CP patients could

improve the neurological function of the patients and did not cause significant side effects. The procedure may be a plausible method to treat this as yet incurable disorder."

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