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Researchers find brain cell transplants help repair neural damage

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A Swiss research team has found that using an animal's own brain cells (autologous transplant) to replace degenerated neurons in select brain areas of donor primates with simulated but asymptomatic Parkinson's disease and previously in a motor cortex lesion model, provides a degree of brain protection and may be useful in repairing brain lesions and restoring function.

"We aimed at determining whether autografted cells derived from cortical gray matter, cultured for one month and re-implanted in the caudate nucleus of dopamine depleted primates, effectively survived and migrated," said Dr. Jean-Francoise Brunet who, along with colleagues, published their study in *Cell Transplantation* (18:7), now freely available on-line. "The autologous, re-implanted cells survived at an impressively high rate of 50 percent for four months post-implantation."

While the use of neural grafts to restore function after lesions or degeneration of the central nervous system has been widely reported, the objective of this study was to replace depleted neurons to a restricted brain area and to avoid both the ethical controversies accompanying fetal cell transplants as well as immune rejection.

Researchers found that the cultured cells migrated, re-implanted into the right caudate nucleus, and migrated through the corpus callosum to the contralateral striatum. Most of the cells were found in the most dopamine depleted region of the caudate nucleus. This study replicated in primates the success the research team had previously reported using

laboratory mice.

According to the researchers, the cultured cells exhibited neural progenitor characteristics that could make them useful for brain repair.

"Our results confirm that adult brain cells can be obtained, cryopreserved and kept in culture before being re-implanted in the donor where they survive in vivo for at least four months," concluded Dr. Brunet and colleagues.

The study has drawn considerable interest in the transplantation community.

"This is an extremely important finding because although we have known for many years that fetal cells can be used to replace damaged neurons their limited availability has prevented widespread use in clinical settings," commented Section Editor Dr. John Sladek, professor of pediatrics and neuroscience at the University of Colorado School of Medicine.

Source: Cell Transplantation Center of Excellence for Aging and Brain Repair