Safety of Human Neural Stem Cell Transplantation in Chronic Spinal Cord Injury.

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Public Summary:
The spinal cord injury (SCI) microenvironment undergoes dynamic changes over time, which could potentially affect survival or differentiation of cells in early versus delayed transplantation study designs. Accordingly, assessment of safety parameters, including cell survival, migration, fate, sensory fiber sprouting, and behavioral measures of pain sensitivity in animals receiving transplants during the chronic postinjury period is required for establishing a potential therapeutic window. The goal of the study was assessment of safety parameters for delayed transplantation of human central nervous system-derived neural stem cells (hCNS-SCns) by comparing hCNS-SCns transplantation in the subacute period, 9 days postinjury (DPI), versus the chronic period, 60 DPI, in contusion-injured athymic nude rats. Although the number of surviving human cells after chronic transplantation was lower, no changes in cell migration were detected between the 9 and 60 DPI cohorts; however, the data suggest chronic transplantation may have enhanced the generation of mature oligodendrocytes. The timing of transplantation did not induce changes in allodynia or hyperalgesia measures. Together, these data support the safety of hCNS-SCns transplantation in the chronic period post-SCI.

Scientific Abstract:
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