Repairing spinal cord injury with manipulated neural stem cells

August 16 2010

One of the most common causes of disability in young adults is spinal cord injury. Currently, there is no proven reparative treatment. Hope that neural stem cells (NSCs) might be of benefit to individuals with severe spinal cord injury has now been provided by the work of a team of researchers, led by Kinichi Nakashima, at Nara Institute of Science and Technology, Japan, in a mouse model of this devastating condition.

In the study, mice with severe spinal cord injury were transplanted with NSCs and administered a drug known as valproic acid, which is used in the treatment of epilepsy. The valproic acid promoted the transplanted NSCs to generate nerve cells, rather than other brain cell types, and the combination therapy resulted in impressive restoration of hind limb function. The authors hope that this approach, whereby the fate of transplanted NSCs is manipulated, for example by administration of valproic acid, could be developed as an effective treatment for severe spinal cord injury.

In an accompanying commentary, Tamir Ben-Hur, at Hadassah Hebrew University Medical School, Israel, highlights the impressive functional recovery attained using this approach but cautions that further work is needed before it can be determined whether this approach will work in human patients.

Provided by Journal of Clinical Investigation