

Spinal Cord repair

Neurological | Umbilical Cord Blood



There are an estimated 13,500,000 neurons in the human spine, with 31 pairs of nerves covering a 70cm spinal column. A spinal cord length of 43cm to 45cm (sex dependent) has 318 cervical segments. Injury to any part of this can cause motor impairment and disruption to normal bodily functions. In the UK, £500 million is spent on caring for people with spinal cord injury every year. 40,000 people in the UK live with paralysis.

Falls and road traffic accidents account for over 78% of spinal injury. The age range for sufferers has historically been predominantly males aged between 15 and 40, but is now being skewed towards older people. This may be due to higher survival rates after accidents or differences in reporting injuries.

Due to the age at which these accidents occur, the morbidity and economic impact is substantial. Over 21% of sufferers are unable to return to their own home, and are housed in institutionalised accommodation. Only 1% of people suffering spinal injury experience complete neurological recovery.

Clinical Trials

To date, single patient treatments have shown success in repairing injury to tissue at a specific site using cord blood or bone marrow-derived haematopoietic stem cells. The efficacy of the treatment in these individual cases has not been curative, but has promoted neurological transmission to tissue that was previously deprived of sensation or motion. In some clinical and animal work it has been shown that the shorter the time between injury and treatment, the better the outcome.

Currently, there are three clinical trials underway to investigate the use of cord blood as a treatment option for patients with spinal injuries. Some of these are aimed at understanding how the repair is affected, while others are looking at dose and mechanism.

Patient Studies

There is one published case of cord blood being transfused to a patient with spinal injury that resulted in improved sensory perception and mobility in the hip and thigh regions. This was supported by MRI and CT data showing regeneration at the injury site.

References

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