

## **Transplantation of Canine Umbilical Cord Blood-derived Multipotent Stem Cells in Dogs with Severe Spinal Cord Injury**

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**Introduction:** Transplantation of canine umbilical cord blood (UCB)-derived multipotent stem cells was investigated for its potential use in severe spinal cord injury in dogs.

**Materials and methods:** Two dogs with thoracolumbar vertebral fracture and two with acute intervertebral disc herniation in thoracolumbar intervertebral space were included in this study. Multipotent stem cells were isolated for culture from canine cord blood of fetuses during caesarean section and prepared as 10<sup>6</sup> canine stem cells in 150 ul of saline solution for the injection. Stem cells were directly injected into injured spinal cord after laminectomy. A 14-point Olby score was used to evaluate the neurologic status. Computed tomography (CT) or Magnetic resonance imaging (MRI) and somatosensory evoked potential (SEP) measurements were performed before and at 1, 4, 16 or 32 weeks after the injection of the stem cells.

**Results:** Three of 4 dogs showed improvement of Olby score. Nerve conduction velocities calculated from SEP revealed favorable outcome for all dogs. However, MR images did not show any signs of regeneration of the spinal cord at the injured site..

**Clinical relevance:** Canine UCB-derived multipotent stem cells applied to the injured site may have capability to enhance the nerve conduction and can be used as a treatment for the severe spinal cord injury in dogs.

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