

Proceedings of the Annual Symposium on Regenerative Medicine(PASRM)

Autologous Stem Cell Injection for Spinal Cord Injury - A Clinical Study from India

Ravikumar R^{*1}, Narayanan S¹, Baskar S², Senthil Nagarajan R², Abraham S^{2,3}.

¹ Lifeline Institute of Stem Cells Research, Chennai, India

² Nichi-In Centre for Regenerative Medicine, Chennai, India,

³ Yamanashi University, Tamaho, Japan

* Dr. R. Ravikumar MD, Consultant Cardiologist (Stem Cell therapy co-ordinator), Lifeline Multispeciality Hospital, 5/639, Old Mahabalipuram Road, Kandanchavadi, Perungudi, Chennai, India. E.Mail: ravi63_in@yahoo.com

Published online on 14 Nov 2007

Abstract:

We studied 100 patients with Spinal Cord injury (SCI) after Autologous Stem cell Injection in the Spinal fluid with a Follow up of 6 months post Stem cell injection. There were 69 males and 31 females; age ranging from 8 years to 55 years. Time after Spinal Injury ranged from 11 years - 3 months (Average: 4.5 years). The Level of Injury ranged from Upper Thoracic (T1-T7) - 34 pts, Lower thoracic (T7-T12) -45 pts, Lumbar -12, Cervical-9 pts. All patients had an MRI Scan, urodynamic study and SSEP (somatosensory Evoked Potential) tests before and 3 months after Stem cell Injection.

80% of patients had Grade 0 power in the Lower limbs and rest had grade 1-2 power before stem cell injections. 70% of cases had complete lack of Bladder control and 95% had reduced detrusor function.

We Extracted CD34 and CD 133 marked Stem cells from 100 ml of Bone marrow Aspirate using Ficoll Gradient method with Cell counting done using flowcytometry.15 ml

of the Stem cell concentrate was injected into the Lumbar spinal fluid in aseptic conditions. The CD 34/CD45 counts ranged from 120-400 million cells in the total volume.

6 months after Injection, 8 patients had more than 2 grades of Motor power improvement, 3 are able to walk with support. 1 patient with T12/L1 injury was able to walk without support. 12 had sensory tactile and Pain perception improvement and 8 had objective improvement in bladder control and Bladder Muscle contractility. A total of 18 patients had reported or observed improvement in Neurological status. 85% of patients who had motor Improvement had Lesions below T8. MRI, SSEP and Urodynamic Study data are gathered at regular intervals.

Conclusion:

This study shows that Quantitative and qualitative Improvement in the Neurological status of paralyzed patients after Spinal cord injury is possible after autologous bone marrow Stem cell Injections in select patients.

There was no report of Allodynia indicating the safety of the procedure. Further studies to (i) quantify the neurological and vascular damage and to standardize the dosage, (ii) Identify Mechanism of action of each group of Stem cells (*HSCs, MSCs, Naive cells, Purified subsets etc*) on Nerve Tissue both In-vivo and *In-vitro* will be necessary to Confirm Above results.

JSRM
www.pubstemcell.com