

Autologous Stem Cell Transplantation is reported effective in patients with Chronic traumatic Spinal Cord Injury (N=162)

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Introduction

Recently, Autologous Stem Cells from bone marrow have been shown to display some potential for tissue reconstruction in various neurodegenerative and muscle degenerative diseases. These cells are easily accessible from patients and can be expanded on a therapeutic scale¹. Although the mechanisms are not yet fully understood, some small open clinical trials with chronic Spinal Cord Injury (SCI) patients have demonstrated a positive effect of Autologous Stem Cells on their use and proved to be safe²⁻⁴.

Methods

184 patients with chronic traumatic Spinal Cord Injury were treated with Autologous Stem Cells, derived from the bone marrow. After completing standard ASIA Scores, bone marrow derived stem cells samples were separated by centrifugation techniques, their quality assessed and injected intrathecally by lumbar puncture. The patients were evaluated using a Post Treatment Survey 4 to 6 months after treatment. They were asked to return a standard ASIA score form, filled out by their treating medical specialist.

Results

From the 184 treated patients with Spinal Cord Injury 162 patients (more than 88%) returned the post treatment questionnaires. Clinical Improvements were reported in 56.8% of the patients. (Figure 1) Improved bladder and bowel function was reported in 37.7% and 35.7% respectively of the improved patients. In these patients, also neurogenic pain and muscle spasm improved 52.7% and 50.7% respectively. (Figure 2)

In 2 patients, the Baclofen® pump for treatment of spasm could be removed permanently after treatment.

Completed pre- and post-treatment ASIA Score forms could be collected in 25% of the patients (46 cases). After treatment, the mean ASIA motor score increased significantly ($p < 0.001$) with 6.0 points, and the mean ASIA sensory score with more than 11 points ($p < 0.001$).

In 4 cases, there was a change in ASIA classification: ASIA-A (complete motor /sensory loss below SCI) to -B (complete motor loss) in 3 cases, and ASIA-C (major motor loss) to -D (minor motor loss) in 1 case. None of these 46 patients did deteriorate during the study. (Figure 3)

Conclusions

Autologous Stem Cell Transplantation seems to offer a powerful potential treatment for patients with a Chronic traumatic Spinal Cord Injury. The reported improvements are relevant to enhance the individual independency of the patients, to improve their quality of life, and to reduce their morbidity⁵. The stem cell treatment was very well tolerated.

References

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