

Autologous Stem Cell Transplantation in patients with Amyotrophic Lateral Sclerosis

(N=32)

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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 Amyotrophic Lateral Sclerosis (ALS) patients have demonstrated a positive effect of Autologous Stem Cells on their use and proved to be safe²⁻³.

Methods

XCell-Center treated ALS Patients with Autologous Stem Cells derived from the bone marrow. After preparation of stem cells by centrifugation techniques and quality assessment of the stem cell suspension, the cell product was injected by lumbar puncture. The patients were evaluated using a Post Treatment Survey 10 days after the treatment and 3 to 4 months after treatment with our follow up questionnaire. The results of the surveys of 32 patients were evaluated and presented.

Results

A total number of 32 patients with ALS were treated and returned the post treatment questionnaires. Figure 1 presents the general information about the cohort of patients. The mean age of patients at the time before treatment was almost 58 years. Time between treatment and follow up moment was around 4 months. Patients reported the first effects seen after stem cell treatment between 7 and 8 weeks. We have treated 20 male and 12 female patients.

Improvements were reported in 50% of the patients (Figure 2). Figure 3 and 4 present the reported improvements in more detail. Most patients reported improvements in muscle strength (56,3%), sensory function (37,5%) and motor function (30,4%). Also more than 25% of the patients reported better fine motoric skills. Furthermore, our patients reported improvements in speech (25%), eating (25%), bladder/bowel control (12,5%), mental state (18,8%), breathing (12,5%), and weight control (25%).

Conclusions

Autologous Stem Cell Transplantation seems a potential treatment for patients with ALS. The reported improvements are relevant to enhance the individual independency of the patients, improve their quality of life, reduce their morbidity and enhance their life expectancy. The stem cell treatment was very well tolerated. The results although preliminary are very encouraging.

References

1. Papadreas ST, et al. Advances in stem cell research for Amyotrophic Lateral Sclerosis. *Current opinion in Biotechnology* 20 (2009) 545-551.
2. Mazzini, et al. Mesenchymal stem cell transplantation in amyotrophic lateral sclerosis: A Phase I clinical trial. *Experimental Neurology* 223 (2010) 229-237.
3. Mazzini, et al. Stem cell treatment in Amyotrophic Lateral Sclerosis. *Journal of Neurological Sciences* 265 (2008) 78-83.

General information ALS patients (N=32)

Table: General information cohort of 32 ALS patients

	Age of patients at treatment (years)	Follow-up in months (time between treatment and survey)	First effects seen in weeks
Mean	57,88 years	4,03 months	7,50 weeks
Median	57 years	4 months	7,0 weeks
Standard deviation	10,99 years	2,44 months	3,88 weeks
Minimum	40 years	3 months	3 weeks
Maximum	81 years	13 months	12 weeks

Figure 1

ALS - Results of Stem Cell Treatment (N=32)

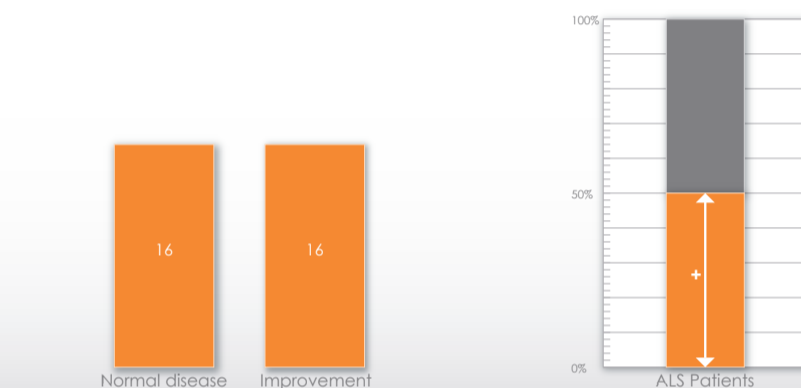


Figure 2

Type of improvements ALS (n=16/N=32)

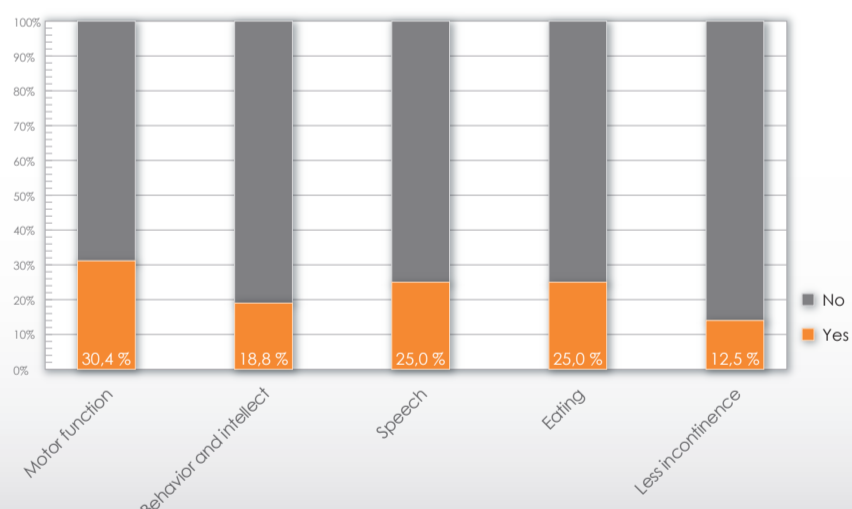


Figure 3

Type of improvements ALS (n=16/N=32)

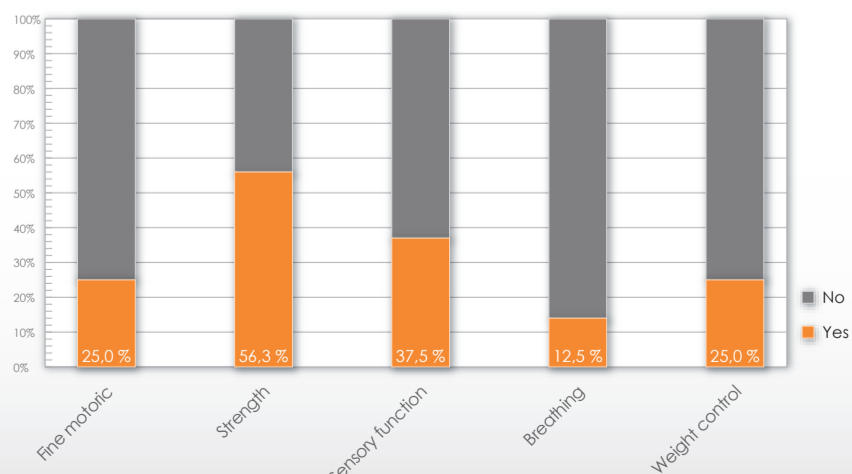


Figure 4