

Autologous Stem Cell Transplantation in patients with Multiple Sclerosis (N=50)

De Munter, J.P.J.M. | Tamaschke, U.K. | Elisis, A. | Haberland, N. | Happich, D. | Kleinbloesem, C.H.

Introduction

Multiple sclerosis (MS) is an autoimmune condition in which the immune system attacks the central nervous system (CNS), leading to demyelination. It may cause numerous physical and mental symptoms and MS often progresses to physical and cognitive disability. Disease onset usually occurs in young adults and is more common in women¹.

Because Autologous Stem Cells from bone marrow are easily accessible for patients, Autologous Stem Cells can be expanded on a therapeutic scale, they have attracted attention for cell-based therapy. Although the mechanisms are not yet completely understood, some small clinical trials with MS patients have demonstrated a positive effect on their use and proved that the use of Autologous Stem Cells is safe^{2,3,4}.

Methods

As of yet, XCell-Center treated 50 MS patients with adult autologous stem cells derived from the bone marrow. After collecting and preparing these cells – conform to GMP standards – the cell product was injected intrathecally 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.

Results

A total number of 50 patients (14 men and 36 women) with MS were treated and returned the post treatment questionnaires. The mean age of patients at the time before treatment was almost 48 years. Mean time between treatment and follow up moment was around 5 months. Improvements were reported in 25 patients, no change in 18 patients and natural progress of the disease in 7 patients. (Figure 1)

Figure 2 and 3 present the reported improvements in more detail. Most patients reported improvements in muscle strength (68.8%), spasticity of the limbs (78.9%) and better coordination of the limbs (55.6%). The ability to stand alone and walk better without help was reported in respectively 50.0% and 25.0% of the patients with improvements. Improved vision acuity was reported in 57.1% of the patients with improvements. Enhanced bladder control and bowel control was reported in respectively 47.1% and 28.6%. Adverse events, other than those normally expected in lumbar puncture were not reported.

Conclusions

Autologous Stem Cell Transplantation seems a powerful potential treatment for patients with MS. 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 and show the need to conduct further research to prove efficacy in more detail.

References

1. Saresella M, Marventano I, Longhi R, Lissoni F, Trabattoni D, Mendozzi, L, Caputo D, Clerici M: CD4+CD25+FoxP3+PD1- regulatory T cells in acute and stable relapsing-remitting multiple sclerosis and their modulation by therapy. *FASEB J* 2008, 22:3500-3508.
2. Burt RK, Loh Y, Cohen B, et al; Autologous non-myeloablative haemopoietic stem cell transplantation in relapsing-remitting multiple sclerosis: a phase I/II study; *Lancet Neur* 2009;8:pp244-53.
3. Barzilay R, Yossef S, Levy PHD, et al; Adult stem cells for neuronal repair; *Stem Cell research*, IMAJ 2006 Vol 8:pp 61-66.
4. Einstein O, Ben Hur T; The changing face of neural stem cell therapy in neurologic diseases; *Arch Neurol* 2008; 65 (4):pp452-456.

