

Exploring Stem Cell Therapy as a Treatment Option for Multiple Sclerosis

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Received: March 21, 2023; **Accepted:** April 13, 2023; **Published:** April 20, 2023

Citation: Sanvi S. Exploring Stem Cell Therapy as a Treatment Option for Multiple Sclerosis. J Stem Cells Dev. 2023;1(1):14-16.

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INTRODUCTION

The importance of sperm genetic health

Multiple sclerosis (MS) is an autoimmune disorder characterized by the immune system attacking the myelin sheath covering nerve fibers in the brain and spinal cord. This attack disrupts nerve signals and leads to various symptoms, such as numbness and weakness. Current treatments for MS focus on reducing relapses and slowing disease progression. However, stem cell therapies offer potential advantages by inducing long-term remission and repairing damage caused by the disease. This article explores the risks, benefits, and research behind two types of stem cell treatments used or investigated for MS: autologous hematopoietic stem cell transplant and mesenchymal stem cell transplant [1-3].

What is Stem Cell Therapy for MS?

Stem cell therapy involves using stem cells to treat or alleviate medical conditions. Stem cells are unique cells capable of dividing and differentiating into specialized cell types, including nerve and blood cells.

Autologous Hematopoietic Stem Cell Transplant (aHSCT)

Autologous hematopoietic stem cell transplant (aHSCT) is a type of bone marrow transplant that utilizes

the patient's own blood-forming stem cells to reset the immune system.

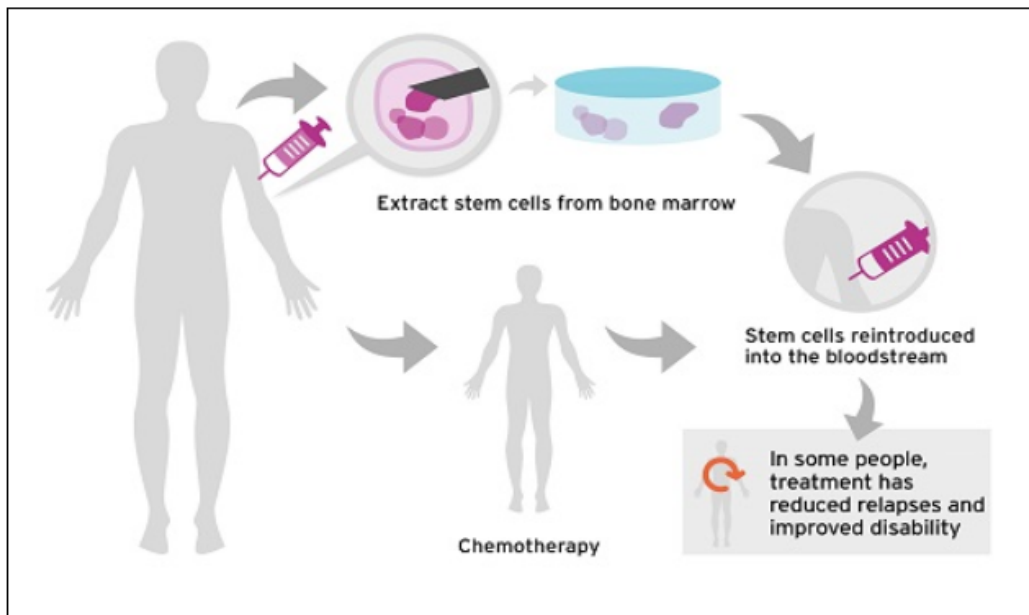


Figure 1: Stem cell therapies offer promising avenues for treating MS by resetting the immune system and promoting tissue repair

Hematopoietic stem cells have the ability to produce red blood cells, white blood cells, and platelets. In aHSCT, the goal is to replace the patient's hyperactive immune system with a healthy one. This treatment is particularly effective for patients with aggressive relapsing-remitting MS.

The procedure involves several steps, including stem cell collection, immune system suppression with chemotherapy, and stem cell transplantation to rebuild the immune system.

Mesenchymal Stem Cell Transplant

Mesenchymal stem cells, found in various body tissues such as bone marrow and adipose tissue, have regenerative properties and can aid in tissue repair and inflammation reduction. Mesenchymal stem cell transplant involves isolating stem cells from the patient's tissues, replicating or treating them in a lab, and reintroducing them into the body through different methods. These cells can help regulate the immune system and promote the repair of damaged myelin in the brain and spinal cord.

Benefits and Risks

Autologous hematopoietic stem cell transplantation has shown effectiveness in clinical trials, with a significant proportion of patients experiencing remission and reduced disease activity. However, the procedure carries risks of severe infections and requires hospitalization and chemotherapy [4,5].

Mesenchymal stem cell transplantation research is promising but still in early stages. Preliminary studies suggest safety and potential benefits, such as improved mobility and cognitive function, but larger and longer-term studies are needed to confirm these findings.

CONCLUSION

Stem cell therapies offer promising avenues for treating MS by resetting the immune system and promoting tissue repair. While aHSCT has shown efficacy in clinical trials, mesenchymal stem cell transplantation research is ongoing, with potential benefits for patients with progressive MS. Further research and clinical trials are needed to fully evaluate the safety and effectiveness of these treatments.

REFERENCES

1. <https://www.verywellhealth.com/stem-cell-treatment-for-multiple-sclerosis-5209506>
2. Sormani MP, Muraro PA, Schiavetti I, Signori A, Laroni A, Saccardi R, et al. Autologous hematopoietic stem cell transplantation in multiple sclerosis: A meta-analysis. *Neurology*. 2017;88(22):2115-2122.
3. Boffa G, Massacesi L, Inglese M, Mariottini A, Capobianco M. Long-term clinical outcome of hematopoietic stem cell transplantation in multiple sclerosis. *Neurology*. 2021;10.1212/WNL.0000000000011461.
4. Bejargafshe MJ, Hedayati M, Zahabiasli S, Tahmasbpour E, Rahmanzadeh S, Nejad-Moghaddam A. Safety and efficacy of stem cell therapy for treatment of neural damage in patients with multiple sclerosis. *Stem Cell Investig*. 2019;6:44.
5. Shroff G. A review on stem cell therapy for multiple sclerosis: Special focus on human embryonic stem cells. *Stem Cells Cloning*. 2018;11:1-11.