OPEN ACCESS Freely available online

Journal of Cell Science & Therapy

Commentary

Assessing the Effects of Autologous Stem Cells in Patients with Cerebral Palsy

Jean Batutta*

Department of Transplantation Surgery, Mohamed Ben Abdallah University, Fes, Morocco

DESCRIPTION

The most prevalent cause of severe neurological dysfunction in children is Cerebral Palsy (CP). The overall prevalence is 2-3 per 1000 live births, and it has risen significantly in recent years. This is because low-birth-weight infants have a lower mortality rate, but survivors have a higher rate of cerebral palsy. CP refers to a collection of abnormalities that affect the development of movement and posture and impair one's ability to do things. Cerebral palsy is frequently accompanied by sensory, perceptual, cognition, communication, and behaviour impairments, as well as epilepsy and secondary musculoskeletal problems.

Physical and behavioral therapy, pharmacologic and surgical therapies, mechanical aids, and care of concomitant medical diseases are all part of CP treatment programs. While several of these treatments are beneficial, none of them aid in the rehabilitation of a brain that has been injured. Recent advancements in stem cell therapy offer hope for more successful therapies in the treatment of CP. Bone marrow-derived cells have been found to grow into neural tissue in studies. Adult rat and human bone marrow stromal cells differentiate into neurons, according to scientists. In animal models and individuals with various degenerative neurological illnesses like stroke and demyelination, stem cell transplantation has been shown to be helpful.

Traditional therapy has yet to produce satisfactory results in the treatment of CP. CP is a complex illness that necessitates a series of therapies and effective therapy procedures. Extensive research into stem cell treatments has given hope to those with illnesses like CP. We give proof of the feasibility and efficacy of BMMNC transplantation in CP patients by doing this study. The results clearly reveal that the patient's neurological abilities have improved without causing any severe side effects. Damaged neurons, glia, and vasculature can be replaced with the donated cells. The study's key findings are the patient's remarkable motor, cognitive, and sensory improvements.

The first dose of BMMNCs was transplanted through lumbar puncture immediately after enrichment, followed by two infusions separated by seven days, a fourth infusion after six months, and a fifth infusion after one year. The potential of a significant number of BMMNCs "homing" to the site of injury increases with repeated lumbar puncture infusions of CSF. The postulated mechanism could be that the initial infusion is used up to neutralize the poisonous product or the inflammatory reaction cascade. Transplanted cells also produce trophic factors and extracellular matrix, which produce a favorable environment (neuroprotection) for further cell infusion. The use of LP to deliver second BMMNCs leads in efficient "homing" to the injured site. Furthermore, giving two extra BMMNC infusions at a seven-day gap boosted engraftment efficiency, possibly compensating for cell loss.

Thus, the synthesis of neurotrophic/growth factors to support cell function and prevent an ongoing inflammatory cascade, (ii) prevention of cell death in the neuronal population, (iii) establishment of vasculature, (iv) cell differentiation and integration, and (v) establishment of neuronal circuits and synaptic connectivity can all contribute to the functional outcome of BMMNCs transplantation. Researchers recently revealed that grafting mouse bone marrow cells into an ischemic rat brain improved function. Another study on irradiated animals found that bone marrow stem cells can penetrate the blood-brain barrier and transdifferentiate into microglia. Murine MSC differentiation has previously been studied *in vivo* . Murine MSC transplantation resulted in the formation of neurons and astrocytes. Adult human bone marrow cells have been demonstrated to enter the brain and create neurons, a feature that could be used to prevent the formation or progression of neurodegenerative illnesses, as well as to repair tissue destroyed by infarction or trauma.

CONCLUSION

Our understanding of the underlying process of stem cells in improving cerebral palsy impairments is still in its early stages. Nonetheless, the current research convincingly establishes the feasibility and efficacy of intrathecal stem cell transplantation. There were no side effects, immunological reactions, or ethical concerns because autologous BMMNCs were employed. The patient's considerable improvements indicate that cell transplantation as a therapy for cerebral palsy holds a lot of promise.

Correspondence to: Jean Batutta, Department of Transplantation Surgery, Mohamed Ben Abdallah University, Fes, Morocco, E-mail: jbat23@yahoo.com

Received: 15-Jul-2022, Manuscript No. JCEST-22-16397; **Editor assigned:** 20-Jul-2022, PreQC No. JCEST-22-16397 (PQ); **Reviewed:** 03-Aug-2022, QC No. JCEST-22-16397; **Revised:** 10-Aug-2022, Manuscript No. JCEST-22-16397 (R); **Published:** 17-Aug-2022, DOI: 10.35248/2157-7013.22.S14.389.

Citation: Batutta J (2022) Assessing the Effects of Autologous Stem Cells in Petients with Cerebral Palsy. J Cell Sci Therapy. S14:389.