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Induced pluripotent stem cell therapy in Parkinson's disease

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Cell therapy, along with developing technology and science is now a source of hope for most of the diseases. Even if cell therapy does not see the opportunity it deserves in the world at the moment, it is believed that over time there will be more investment in this field. Cell therapy is mainly based on transferring cells to the patient to repair damaged tissues or cells. However, stem cell therapy has gained great importance as the stem cells are capable of differentiating into specialised cell types. Currently, degenerative diseases are being studied to be treated with stem cells as there is no cure for them and many existing medications are less effective. An example of a degenerative disease is Parkinson’s disease, which is a long-term degenerative disorder of the central nervous system where the motor system gets affected mainly. To treat Parkinson’s disease, stem cell-derived neural grafting could be employed. The goal here is to regain the functions that the patient has lost through the stem cell-based approach. The process involves the stem cells procurement from the patient’s cells; these cells are reprogrammed as induced pluripotent stem cells (iPSCs) and the neural grafting product thus obtained is transplanted into the patient's brain. Parkinson's disease is caused by dopamine deficiency, which means that it is associated with impaired function of brain cells that produce dopamine. The iPSCs derived in this manner can be differentiated into dopaminergic neurons and could be useful as a cell-based treatment for Parkinson’s disease. The transplantation of iPSCs into the brain of a person suffering from Parkinson's disease has been reported in 2020 as the first in human clinical trial. Therefore, it holds a great promise for Parkinson’s disease treatment in the short-term future.

Keywords: Induced pluripotent stem cell, Stem cell, Parkinson's disease, Dopamine, Cell therapy

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