

NEW HOPE IN PARKINSON'S DISEASE MANAGEMENT

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Parkinson's disease (PD) is the second most common neurodegenerative disorder worldwide, projected to affect at least 12 million people worldwide by 2040. The Hoehn and Yahr Scale stages 4 or 5 are referred to as advanced Parkinson's disease (PD), which is characterized by significant motor deficits, a high risk of falling, extremely limited independence in terms of mobility, and cognitive and psychotic disorders. Motor fluctuations and dyskinesias frequently affect persons living with advanced PD, in which dyskinesia develops within 5.81 years from diagnosis, and motor fluctuations within 10 years. Continuous monitoring is necessary when motor fluctuations first appear to decide when to start an advanced treatment. Consequently, there is a vast need for improved treatments to address these motor symptoms. Deep brain stimulation, apomorphine subcutaneous infusion, levodopa-carbidopa intestinal gel infusion, and magnetic resonance-guided high-intensity focused ultrasound (FUS) are four device-aided therapies that provide new hope for treating PD in its advanced stages. The selection of device-assisted therapies is now mostly driven by the motor profile of the patient, with non-motor symptoms having a minimal impact on the decision-making process for the delivery and maintenance of successful therapy. In preliminary human trials, passive and active anti-protein α -synuclein vaccinations are being investigated. Monoclonal antibodies (mAbs) like prasinezumab that target the aggregates of α -synuclein can reduce the levels of free α -synuclein in serum by 97% by passive vaccination. The use of α -synuclein fragments or equivalent epitopes in active vaccination to stimulate an immune response is also being investigated. Although cell-based regeneration therapies utilizing fetal brain cells are successful in a small number of cases, this treatment is not practical due to the lack of fetal tissue. A sustainable source of dopamine-producing cells, such as stem cells, dopaminergic progenitors obtained from induced pluripotent stem cells (iPSCs), or cells derived from embryonic stem cells (ESCs), is currently being researched.

Keywords: Parkinson's disease, Deep brain stimulation, apomorphine subcutaneous infusion, magnetic resonance-guided high-intensity focused ultrasound

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