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Short Report AENSI Publications

CAN DEEP BRAIN STIMULATION BE A THERAPEUTIC OPTION FOR DEMENTIA FROM PARKINSON'S DISEASE?

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ABSTRACT: Parkinson's disease is a brain ailment that results in unintentional or uncontrollable movements, such as shaking, rigidity, and problems with balance and coordination. The objective of this report to review of the clinical outcomes of deep brain stimulation in Parkinson's disease dementia patients, and discuss if deep brain stimulation could be a treatment alternative in these people. After surgery, all patients' motor symptoms improved significantly, as did some non-motor symptoms. However, in four patients, the motor gains lasted only 2 or 3 years before the patients deteriorated with the appearance of end-stage difficulties, despite the fact that there were more continuous benefits that could not have been attained with medical treatment. The surviving patient had a great response till the final follow-up, 7 years following surgery.

Keywords: Parkinson's disease, clinical outcomes, medical treatment

INTRODUCTION

Parkinson's disease (PD) is a brain ailment that results in unintentional or uncontrollable movements, such as shaking, rigidity, and problems with balance and coordination. There is a slow onset of symptoms that intensify with time. As the disease develops, patients may find it difficult to walk and talk. Mental and behavioral changes, sleep issues, sadness, memory issues, and exhaustion may also be present in those who are aging. Basal ganglia, the brain region that controls movement, becomes damaged and/or dies as a primary sign and symptom of Parkinson's disease (PD). Dopamine is a neurotransmitter that is normally produced by neurons in the brain. Dopamine production decreases as neurons die or are damaged, resulting in movement difficulties. Despite decades of research, scientists still don't know why neurons die.

Clinicians and researchers have long considered Parkinson disease (PD) to be a neurodegenerative disorder with variable presentations and progression, suggesting that multiple pathophysiologic mechanisms lead to a similar phenotype that we call PD (ADOLFO RZ, 2022). Its clinical and demographic heterogeneity suggests that if we were able to accurately identify different "types" of the disease (WEINER WJ, 2008).

Age when symptoms begin commonly is used to subdivide patients into those who experience late- or early-onset Pd (GOETZ CG,1988). Cutoffs are inconsistent among studies, yet most evidence suggests that late-onset PD is linked to more severe tremor, axial symptoms, a lesser motor response to dopaminergic treatment, a greater risk of psychosis, and a substantial tendency for medication adverse effects (ADOLFO RZ, 2022). Response to advanced therapies has been questioned; reports suggest that patients who are older at time of deep brain stimulation have an increased risk of perioperative delirium and less benefit in quality of life (DAFSARI HS, 2018).

Although dementia is considered a contraindication to deep brain stimulation in patients with Parkinson's disease, there are patients with dementia from Parkinson's disease who may benefit motorily from deep brain stimulation.

OBJECTIVE

To review the clinical outcome of deep brain stimulation in patients with Parkinson's disease dementia and discuss whether deep brain stimulation may be a therapeutic option in these patients.

METHOD

The research was carried out at the Hospital Movement Disorders Center of Seoul National University, Seoul, Korea, between 2005 and 2006, and published in the text referenced at the end of this essay. In the research, it was reported that five patients undergoing bilateral bilateral subthalamic brain stimulation, despite the presence of dementia in the preoperative evaluations, due to the presence of clinically intractable motor and non-motor symptoms, could be relieved by deep brain stimulation.

RESULT

After surgery, motor symptoms improved greatly and some non-motor symptoms also improved in all patients. However, in four patients, the motor improvements only lasted 2 or 3 years, and then the patients deteriorated with the emergence of end-stage problems, despite there being more ongoing benefits that could not have been achieved by medical treatment. The remaining patient had an excellent response until the last follow-up, 7 years after surgery.

DISCUSSION

Deep brain stimulation provides some benefit not provided by medical treatment alone to patients with Parkinson's disease dementia, although its benefits do not last as long as in non-dementia patients. However, this benefit does not necessarily mean that deep brain stimulation can be performed in patients with Parkinson's disease dementia. More discussion is needed on whether deep brain stimulation in Parkinson's disease dementia can be justified and in which patients it should be performed.

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The authors confirm no conflict of interest.

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