Epidemiological Profile and Satisfaction Assessment of Patients with Parkinson’s Disease After Implantation of DBS

Perfil Epidemiológico e Avaliação da Satisfação dos Pacientes com Doença de Parkinson Submetidos a Implante de DBS

Marcela F. Cordellini
Daniel Benzecry de Almeida
Murilo Sousa de Meneses

ABSTRACT

Introduction: Parkinson's disease is a neurodegenerative disorder characterized mainly by motor impairment, with sensory, autonomic cognitive-behavioral and sleep-related symptoms. Dopaminergic medications can alleviate a subset of these symptoms. Deep Brain Stimulation (DBS) improves motor symptoms and quality of life in Parkinson's disease with the most important advantage of maintenance of a constant level of stimulation throughout the day. Objective: To determine the profile and perception of results of patients who underwent implantation of DBS for Parkinson's disease in a tertiary neurological hospital. Methods: Patients who had a diagnosis of Parkinson's disease and were submitted to implantation of DBS between May 2010 and December 2013, in our service, were included in a retrospective analysis. Medical records were reviewed and, via telephone contact, they responded to a questionnaire on their perception of the procedure and its results. Results: Twenty-one procedures were performed for implantation of DBS in patients with Parkinson's disease. All patients were evaluated at least one year after the procedure. Average age at implantation was 64.42 years (29% female, 71% male). Seventeen patients could be contacted of the 21 selected patients (1 patient was deceased and 3 were not possible to reach). Seventy-one percent would agree to be submitted to the procedure again and 76% would recommend it to someone else. Discussion: DBS of the subthalamic nucleus (STN) relieves motor fluctuations and dyskinesias associated with Parkinson's disease, with sustained benefit. Treatment with DBS has good outcome in most patients and is a good therapeutic option to be considered in selected cases. Further researches with larger samples can aid in the improvement of the treatment offered to patients with Parkinson's disease for a better quality of life.

Key words: Parkinson’s disease, Subthalamic nucleus, Deep Brain Stimulation (DBS)

RESUMO

Introdução: A doença de Parkinson é uma doença neurodegenerativa caracterizada principalmente por sintomas motores, com sintomas sensoriais, cognitivo-comportamentais, autonômicos e do sono. Medicamentos dopaminérgicos podem aliviar um subconjunto destes sintomas. Estimulação cerebral profunda (DBS) melhora os sintomas motores e qualidade de vida, sendo sua vantagem mais importante a da manutenção de um nível constante de estimulação durante todo o dia. Objetivo: Determinar o perfil e a percepção dos resultados de pacientes submetidos à implante de DBS para a doença de Parkinson em um hospital neurológico terciário. Métodos: Vinte e um pacientes diagnosticados com doença de Parkinson e submetidos a implante de DBS entre maio de 2010 e dezembro de 2013, no Instituto de Neurologia de Curitiba, foram incluídos em uma análise retrospectiva, com revisão de seus registros médicos. Através de contato telefônico responderam a um questionário sobre sua percepção do procedimento e seus resultados. Resultados: Todos os pacientes foram avaliados pelo menos um ano após o procedimento. Idade média na implantação foi 64,42 anos (29% mulheres e 71% homens). Dos 21 pacientes selecionados, somente 17 puderam ser contatados (1 paciente havia falecido e 3 não foram encontrados). Setenta e um por cento se submeteriam ao procedimento novamente e 76% que recomendaria para outra pessoa. Discussão: DBS do núcleo subtalâmico (STN) alivia flutuações motoras e discinesias associadas à doença de Parkinson, com benefício prolongado. Tratamento com DBS tem bom resultado na maioria dos pacientes e é uma boa opção terapêutica a ser considerada em casos selecionados. Novas pesquisas com amostras maiores podem auxiliar no aperfeiçoamento do tratamento oferecido aos pacientes portadores de doença de Parkinson visando uma melhor qualidade de vida.

Palavras-chave: Doença de Parkinson, Núcleo subtalâmico, Estimulação cerebral profunda

1MD, Neurology Department, Instituto de Neurologia de Curitiba
2MD, MSc, Neurosurgery Department, Instituto de Neurologia de Curitiba
3MD, PhD, Chief of Neurosurgery Department, Instituto de Neurologia de Curitiba

Received Apr 13, 2015. Accepted May 13, 2015
**INTRODUCTION**

Parkinson’s disease is a neurodegenerative disorder characterized mainly by motor impairment, with sensory, autonomic cognitive-behavioural and sleep-related symptoms. While dopaminergic medications alleviate a subset of these symptoms, their efficacy can wane over time. Deep Brain Stimulation (DBS) improves motor symptoms and quality of life in Parkinson’s disease. The most important advantage of DBS, in contrast to drug therapy, is that a constant level of stimulation can be maintained throughout the day.

Our aim was to determine the profile and perception of results of patients who underwent implantation of DBS for Parkinson’s disease in a tertiary neurological hospital, the Instituto de Neurologia de Curitiba, Brazil.

**METHODS**

Patients who had a diagnosis of Parkinson’s disease and were submitted to implantation of DBS from May 2010 to December 2013, in our service, were included in a retrospective analysis with review of their medical records and, via telephone contact, asked to respond to a questionnaire on their perception of the procedure and its results, as shown in Table.

All patients underwent stereotactic surgery at our facilities with the neurosurgery staff. The targets were subthalamic nucleus, thalamus and internal globus pallidum. Under sedation and local anesthesia, the stereotactic apparatus is attached to the patient’s head. Intraoperative MRI is performed to determine the coordinates and to allow a precise approach. For the subthalamic nucleus, three methods were used: direct visualization of target, indirect measurement with coordinates of anterior and posterior commissures and lateral ventricle and distance to the red nucleus. For the thalamus and internal globus pallidum, indirect measures and direct visualization in MRI are used. After physiological confirmation of the position by checking the impedance and electrical stimulation, the generator is implanted, under general anesthesia, in an infraclavicular position and is turned on one week later.

**RESULTS**

In the interval investigated, 21 procedures were performed for implantation of DBS in patients with Parkinson’s disease. All patients were evaluated at least one year after the procedure. The results are shown as percentage of total of patients.

In 15 patients the target was the subthalamic nucleus, 7 of them being bilateral, and in 6 the target was the thalamus. The average age at implantation was 64.42 years (range 45-74 years old), and gender ratio was 29% female and 71% male.

Interview was performed through telephone, it was possible to contact 17 of the 21 selected patients (1 patient was deceased and 3 were not possible to reach). The results are shown as percentage of total of patients. In Figure 1, we describe the response to the questions regarding to their expectations.

Only 2 patients (12%) reported no perceived symptom improvement; 71% would be submitted to the procedure again and 76% would recommend it to someone else. Concerning to the complications reported they were clarified after reviewing of medical records. One patient reported peroneal nerve injury (secondary to cellulitis in his left leg before the procedure), one patient reported surgical site infection (hypertensive crisis presented before the procedure and surgical site infection unrelated to the material; a new implantation was performed, and had good results). Another patient reported intra-procedure respiratory arrest (hypoxia secondary to use of sedatives for anxiety) and another one reported airway infection with prolonged hospital stay after the procedure.

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Table 1. Questionnaire applied

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>RESPONSES</th>
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<tr>
<td>1) Regarding to your expectations for the procedure, they were:</td>
<td></td>
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<tr>
<td>a) Reached</td>
<td></td>
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<tr>
<td>b) Exceeded</td>
<td></td>
</tr>
<tr>
<td>c) Not reached</td>
<td></td>
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<td>2) Do you think the symptom’s improvement obtained was significant?</td>
<td></td>
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<tr>
<td>a) Yes</td>
<td></td>
</tr>
<tr>
<td>b) No</td>
<td></td>
</tr>
<tr>
<td>3) If needed, would you be submitted to the procedure again?</td>
<td></td>
</tr>
<tr>
<td>a) Yes</td>
<td></td>
</tr>
<tr>
<td>b) No</td>
<td></td>
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<tr>
<td>4) Would you recommend this procedure to others?</td>
<td></td>
</tr>
<tr>
<td>a) Yes</td>
<td></td>
</tr>
<tr>
<td>b) No</td>
<td></td>
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<td>5) Were there any complications pre-or postoperatively?</td>
<td></td>
</tr>
<tr>
<td>a) Yes, which:</td>
<td></td>
</tr>
<tr>
<td>b) No</td>
<td></td>
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</table>
Deep brain stimulation of the subthalamic nucleus (STN) has been found to be efficacious in relieving motor fluctuations and dyskinesias associated with Parkinson’s disease, with sustained benefit. Odekerken et al. presented an improvement of 45% in motor symptoms. Patients who undergo the procedure have hopes and wishes regarding its successful outcome, and they do not simply depend on motor improvement. In our sample, from the group of patients who reported not having their expectations reached, only two did not have significant improvement of their symptoms.

Following a previous study in our service, we sought to obtain a qualitative analysis of patient’s perception of the procedure’s results.

Even though we had a small sample of patients, the data shows that treatment with DBS has good outcome in most patients and is a good therapeutic option to be considered in selected cases. Except in one case, the complications reported were not debilitating or related to the procedure itself. Further researches with larger samples can aid in the improvement of the treatment offered to patients with Parkinson’s disease for a better quality of life.

REFERENCES


CORRESPONDING AUTHOR

Marcela Ferreira Cordellini
Rua Jeremias Maciel Perretto, 300
Department of Neurology
Instituto de Neurologia de Curitiba
Curitiba – Brazil
macordellini@gmail.com