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DISEASE AND MOVEMENT DISORDERS



International Parkinson and
Movement Disorder Society



FINAL PROGRAM

1202

MER vs. MRI guidance in placement of DBS electrodes for Parkinson's disease

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Objective: To obtain pilot data comparing the safety and efficacy of deep brain stimulator (DBS) electrode implantation using MRI guidance to micro-electrode recording (MER) guidance in patients with Parkinson's disease (PD).

Background: New technology allows for accurate placement of DBS electrodes with image guidance, but the relative safety and efficacy of this technique compared to traditional MER-guidance has not been studied.

Methods: Patients with PD considered by consensus opinion to be candidates for DBS placement in the subthalamic nucleus (STN) or pallidum (GPi) were randomized to MER- vs MRI-guided procedures. Pre-operative motor score off medications was compared to post-operative on DBS/off medication score at ≥ 6 months. Pre- and post-operative neuropsychological assessments, number of MER tracts or stylet passes, incidence of radiologically-apparent hemorrhage, and surgical complications were also compared. Post-operative neurology and neuropsychology raters were blinded to treatment assignment.

Results: 8 subjects (5M) were randomized: 5 bilateral STN, 2 bilateral GPi, and 1 unilateral GPi. In the MRI group (n=3, 5 electrodes), one stylet pass per implanted electrode was used compared to a mean of 2.3 tracts (range 2-4) per electrode in the MER group (n=5, 10 electrodes). In the MRI group, electrodes were implanted with a mean radial error of 0.6mm +/- 0.3mm, compared to 1.1 +/- 0.3mm in the MER group. No radiologically-apparent hemorrhages or surgical adverse events were recorded. 6 post-operative side effects related to DBS placement were reported in 4 MER subjects, vs. only 1 in the MRI group. 4/5 MER compared to 1/3 MRI subjects subjectively experienced a microlesion effect. 6 subjects (5M) completed some or all follow-up assessments (4 bilateral STN, 1 bilateral GPi, and 1 unilateral GPi). Baseline motor scores improved by 43.7 +/- 32.3% in the MRI group (n=2) and 33.7% in the MER group (n=2). Neuropsychological assessment (n=5) did not reveal any significant differences between groups before or after surgery on cognitive screening or verbal fluency measures. No significant differences in depression or anxiety scores were revealed between groups.

Conclusions: This pilot study suggests MRI guidance for DBS electrode placement in patients with PD may be associated with fewer electrode passes and fewer post-operative side effects. Further study is warranted to verify these findings in a larger cohort of patients.

1203

Investigation of deep brain stimulation surgery early term results of gait characteristics on Parkinson's disease: Case report

E. Kavlak, F. Altug, M. Pekesen, A. Ünal, Ö. Çeliker, U. Cavlak (Denizli, Turkey)

Objective: This study was carried out to examine the effect of the Subthalamic nucleus deep brain stimulation (STN-DBS) surgery on the characteristics of the gait.

Background: Deep brain stimulation (DBS) is an effective technique for treating Parkinson's disease (PD) and other movement disorders (essential tremor, etc.). The STN is the most common target for clinical treatment using DBS (1,2). STN-DBS has been established as a safe and has acquired a relevant role in the treatment of PD in the middle and advanced stages (1,2,3).

Methods: This study was conducted on 67 year-old man 3 years with Parkinson's disease and STN-DBS surgery. The gait parameters were evaluated by using foot print method. 6 Meter Walking Test was used to evaluate for walking speed rate. All assessments were made after surgery, before the battery is turned on and the battery is turned on after 12 hours.

Results: After opening the battery step length and stride length increased, the patient has been walking the same distance with less number of steps. The step length was 34.5 cm before the battery opening, after the battery opening increased to 45.5 cm.

Table I. Changes in Gait Parameters Before and After Surgery

Variables	Opened Battery		Battery		Battery	
	Before Operation	Opened Battery (after 12 hours)	Before Operation	Opened (after 12 hours)	Before Operation	Opened (after 12 hours)

	First Step	First Step	Fourth Step	Fourth Step	Last Step	Last Step
Step length	34.5	45.5	33.5	46	46	30
Double step length	66.5	87	87	66.5	75	64.5
Step width	10	11	11	6	11	4

The step width didn't change unlike the first assessment. The number of steps per minute and cadence were reduced. 6- m walking speed test was 5.57 seconds at the before opening the battery, 6 .98 seconds was recorded at after the opening.

Table II. Changes in Speed, Cadence and 6 M Walk Test Results Before and After Surgery

Variables	Before Operation	Battery Opened (after 12 hours)
Speed (m/s)	0.99	1.27
Cadence (steps/second)	1.12	0.91
6 m walk test(s)	5.95	7.63

Conclusions: Surgical treatment of Parkinson's disease, which STN-DBS is an effective treatment to improve gait ability.

1204

The effect of bilateral subthalamic nucleus deep brain stimulation on excessive sweating in Parkinson's disease

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Objective: To evaluate subjective improvement on sweating disturbances reported by the patients with Parkinson's disease (PD) and its relation between motor improvement and dopaminergic treatment doses on the sixth month after subthalamic nucleus (STN) deep brain stimulation (DBS).

Background: Autonomic dysfunction and particularly sweating disturbances are common in patients with PD. Improvement on sweating disturbances may occur as a result of the motor improvement after STN DBS indirectly and/or of a direct effect of DBS on STN and adjacent structures which affecting the autonomic functions.

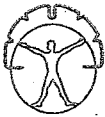
Methods: In this prospective study 59 patients diagnosed with idiopathic PD (32 male, 54.2%) according the UK Brain Bank criteria were evaluated with a semi-structured sweating questionnaire before STN DBS and also on the sixth month of the stimulation. Subjective improvement of excessive sweating reported by the patients after STN DBS were noted. The severity of clinical symptoms were measured using Unified Parkinson's disease Rating Scale (UPDRS) II and III; and dopaminergic treatment dosage calculated as levodopa equivalent dose (LED).

Results: The mean age was 53.93 ± 10.06 and the mean disease duration was 14.09 ± 6.88 years. Fifty-one patients (86.4%) and 19 patients (32.2%) reported excessive sweating before STN DBS and on the sixth month of the stimulation respectively. Mean 64.41% improvement on excessive sweating reported by the patients after STN DBS. Preoperative UPDRS part II and III scores were 23.51 ± 7.39 and 31.42 ± 9.82 ; post-operative UPDRS part II and III scores were 10.54 ± 5.71 and 13.34 ± 7 . Preoperative LED was 1321.02 ± 512.25 mg. while postoperative LED was 660.25 ± 327.78 mg. Mean 55.15%; 57.55%; and 50.02% reduction found on UPDRS part II; III scores and LED respectively.

Conclusions: Our findings indicated that notable improvement reported by the PD patients on excessive sweating after STN DBS. We thought that this effect of STN DBS on sweating disturbances related with motor improvement affecting by STN DBS and the reduction of LED all together.

1205

Perceived clinical and adjustment needs related to deep brain stimulation for movement disorders: A metasynthesis



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