

Authors: E. Finazzi Agrò, A. Peppe, A. D'Amico, F. Petta, P. Mazzone, P. Stanzione, G. Vespasiani, C. Caltagirone
Institution: Dept. of Urology and of Neurology, "Tor Vergata" University; Neuro-surgery Unit, CTO Hospital and IRCCS S. Lucia
Title: EFFECTS OF SUBTHALAMIC NUCLEUS STIMULATION ON URODYNAMIC FINDINGS IN PARKINSON'S DISEASE

Aims of Study

Although the effects of subthalamic nucleus (STN) stimulation on the control of motor symptoms in Parkinson's disease (PD) patients have been demonstrated by several studies, there are no data, to our knowledge, on effects of this treatment on micturition. Aim of our study was to evaluate differences in urodynamic findings in PD patients in on and off STN stimulation status.

Methods

We evaluated 5 patients (3 males; 2 females) with PD. Mean age was $63\pm 3,7$ years. Mean disease duration was $15\pm 9,5$ years. All patients had undergone surgical procedure of bilateral implantation of STN electrodes 4 to 9 months before our observation. Mean disease severity, evaluated by Hoehn and Yahr scale, was 4,5 in off and 2,5 in on STN stimulation status. Urodynamic evaluation was constituted by a cystometry followed by a pressure/flow study with perineal floor EMG. Urodynamic evaluation was performed during chronic STN stimulation and 20 minutes after switching off the stimulators. The following parameters were evaluated: bladder compliance and capacity, first desire to void volume, bladder volume of appearance (reflex volume) and amplitude of detrusor hyperreflexic contractions, maximum flow (Qmax), detrusor pressure at maximum flow (Pdet@Qmax), detrusor-sphincter coordination. Results were compared statistically.

Results

We found statistically significant differences between urodynamic data obtained in on and off STN stimulation status. In particular we have noticed that bladder capacity and reflex volume were increased in on status (332 ± 85 vs. 182 ± 70 ml, $p=0,015$; 284 ± 111 vs. 97 ± 30 ml, $p=0,028$). Amplitude of detrusor hyperreflexic contractions was reduced in on status ($28,2\pm 12$ vs. 53 ± 25 cmH₂O), but difference was not significant ($p=0,186$). No differences were noticed in the other urodynamic parameters considered during the filling phase (bladder compliance and first desire to void volume) and the voiding phase (Qmax, Pdet@Qmax, detrusor-sphincter coordination).

Conclusions

Our preliminary experience shows that stimulation of STN seems to be effective in reducing detrusor hyperreflexia in PD patients. This finding confirms a role of basal ganglia in micturition control.

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