

## EFFECTS OF DEEP BRAIN STIMULATION ON URODYNAMIC FINDINGS IN PATIENTS WITH PARKINSON'S DISEASE

### Hypothesis / aims of study

Although the effects of subthalamic nucleus (STN) stimulation on the control of motor symptoms in patients with Parkinson's disease have been demonstrated, to our knowledge there is little data on the effects of this treatment on voiding<sup>1, 2</sup>. We evaluated differences in urodynamic findings in patients with Parkinson's disease before and after a chronic stimulating electrode were placed on the STN and evaluated how the subjective symptoms and bladder functions changed.

### Study design, materials and methods

We evaluated 10 patients (5 males and 5 females). The mean age of patients was 64 years (from 44 to 70 years). We conducted International Prostate Symptom Score (IPSS) and a Pressure Flow Study (PFS) on the patients before and after a chronic stimulating electrode was placed on the STN and evaluated how the subjective symptoms and bladder functions changed. The PFS was conducted according to the International Continence Society. The bladder was filled until the patients reported a strong desire to void and was emptied by a syringe between measurements. All patients gave their informed consent. Statistical analysis between different classifications was by Wilcoxon signed rank test for paired connections with a significance level of  $p$  value less than 0.05.

### Results

As a result, the IPSS total, involuntary detrusor contraction threshold volume and maximum bladder capacity were all found to significantly improve ( $P < 0.05$ ). The mean IPSS total decreased from 11.4 to 7.9. The mean involuntary detrusor contraction threshold volume increased from 99 to 208.7 mL. The mean maximal bladder capacity increased from 121.5 to 213.3 mL.

### Interpretation of results

It has been reported that electrical stimulation of the STN effectively improves motor symptoms in severe Parkinson's disease cases through functional inhibition of the STN. In fact, STN hyperactivity seems to have an important role in the pathophysiology of Parkinson's disease. On the other hand, there are sparse data on the effects of electrical stimulation of the STN and even less regarding the basal ganglia on voiding. These findings suggest that the STN positively contributes to an improvement in urinary function.

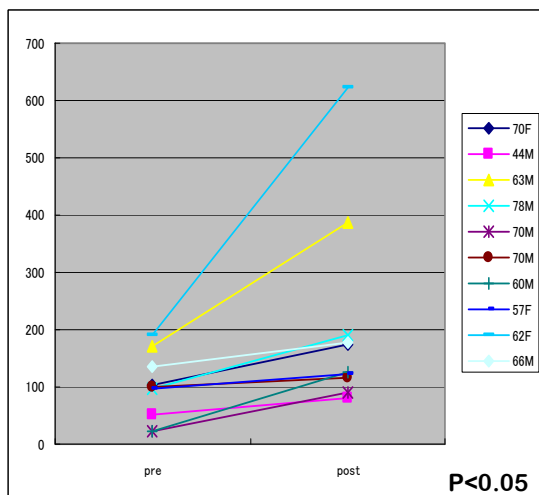
### Concluding message

Our experience shows that STN stimulation seems to be effective for decreasing detrusor hyperreflexia in Parkinson's disease cases. This finding confirms a role for basal ganglia in voiding control.

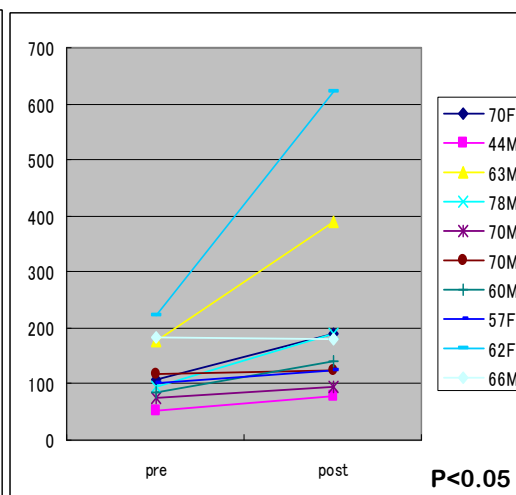
### References

- 1 J Urol (2003) 169; 1388-1391.
- 2 Ann Neurol (2004) 55; 118-120.

**involuntary detrusor contraction threshold**



**maximum bladder capacity**



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**CLINICAL TRIAL REGISTRATION:** This clinical trial has not yet been registered in a public clinical trials registry.

**HUMAN SUBJECTS:** This study was approved by the This study was approved by the Ethical Committee of by Kinki University School of Medicine and followed the Declaration of Helsinki Informed consent was obtained from the patients. and followed the Declaration of Helsinki Informed consent was obtained from the patients.