

EFFECT OF L-DOPA ON LOWER URINARY TRACT BEHAVIOR IN PARKINSON'S DISEASE PATIENTS

Aims of Study

The effects of L-DOPA (LD) on motor symptoms in Parkinson's disease (PD) patients are well known, but there are few data on its effects on micturition. Yoshimura et al. (1) showed that subcutaneous injections of quinpirole, a dopamine D2 receptor agonist, and apomorphine, a dopamine D1 and D2 receptor agonist, significantly reduce the volume threshold of the bladder for the micturition reflex in monkeys with 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) induced parkinsonism. More recently, Seki et al. (2) showed that quinpirole decrease bladder capacity and micturition volumes in conscious rats. Few data are reported on human: Uchiyama et al. (3) found that LD decrease bladder capacity and augment detrusor contractility. Aim of our study was to evaluate differences in urodynamic findings in PD patients treated with LD, in on and off status (patients assuming/not assuming LD).

Methods

We evaluated 7 patients (4 males; 3 females) with PD. Mean age was 65,1±5,9 years. Mean disease duration was 14±9 years. All patients were been treated with L-Dopa since at least 12 months. Mean disease severity, evaluated by Hoehn and Yahr scale, was 2,5. All patients presented with urgency and frequency; 4/7 were suffering for urge incontinence episodes. Urodynamic evaluation was constituted by a cystometry followed by a pressure/flow study with perineal floor EMG, performed following the indications of ICS. Urodynamic evaluation was performed during on status (patient assuming therapy, with last dose taken 30-60 minutes before the evaluation) and in off status (patient not having assumed therapy since at least 12 hours). The following urodynamic parameters were evaluated: detrusor hyperreflexic contractions (DHC) threshold and amplitude, bladder capacity, maximum flow (Qmax), detrusor pressure at maximum flow (Pdet@Qmax), post-void residual urine, presence of detrusor/sphincter pseudodyssynergia. Results were statistically compared.

Results

Results are reported in table.

Patients: 7	On	Off	p-value
DHC threshold (ml)	123	178	0,132
DHC amplitude (cmH2O)	81	74	0,319
Bladder capacity (ml)	208	290	0,02
Qmax (ml/s)	12,8	12,9	0,913
Pdet@Qmax (cmH2O)	33,7	32,4	0,744
Residual urine (ml)	0	20	0,165

Detrusor hyperreflexia was present in 6/7 patients in on status and in 5/7 patients in off status; detrusor/sphincter pseudodyssynergia was present in 2/7 patients both in on and of status.

Conclusions

Our results confirm the finding reported by Uchiyama et al.: LD seems to worsen detrusor hyperreflexia and decrease bladder capacity (3). On the other hand, we failed to demonstrate any clear effect of LD on detrusor contractility and detrusor/sphincter pseudodyssynergia. Anyway these findings confirm that basal ganglia and, in particular, dopamine receptors play an important role in regulating the activity of micturition reflex.

References

- 1: Yoshimura N, Mizuta E, Kuno S, Sasa M, Yoshida O.: The dopamine D1 receptor agonist SKF 38393 suppresses detrusor hyperreflexia in the monkey with parkinsonism induced by 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP). *Neuropharmacology*. 1993 Apr;32(4):315-21.
- 2: Seki S, Igawa Y, Kaidoh K, Ishizuka O, Nishizawa O, Andersson KE.: Role of dopamine D1 and D2 receptors in the micturition reflex in conscious rats. *Neurourol Urodyn*. 2001;20(1):105-13.
- 3: Uchiyama T, Sakakibara L et al: An effect of L-DOPA on micturition disturbance in patients with Parkinson's disease; a comparison of on and off periods. *Neurourol Urodyn*. 2000; 19(4): 540.

