

OBJECTIVE

To assess the safety and efficacy of intradetrusor onabotulinum toxin A injections for the treatment of overactive bladder (OAB) in patients with Parkinson's disease (PD).

METHODS

- All PD patients who underwent intradetrusor injections of onabotulinum toxin A (BoNT-A) for storage symptoms between 2010 and 2017 were included in a retrospective study.
- A 100 U dose of BoNT-A (Botox®, Allergan Irvine, CA) was used for the first injection in all patients.
- The primary endpoint was clinical success defined as any subjective improvement in OAB symptoms self-assessed by the patients four weeks after the injections.

RESULTS

- Out of 24 patients analyzed, 19 reported improvement of their OAB symptoms four weeks after the first injection (79.2%) with complete resolution of urgency urinary incontinence in 7 patients (29.1%; $p < 0.001$).
- The average post-void residual (PVR) increased significantly after the first injection from 17.6 to 125.3 ml ($p < 0.001$).
- Three of the patients had to start clean intermittent catheterization (CIC) after the first injection (12.5%).
- Out of 49 injections in total, only five caused incomplete bladder emptying requiring the use of CIC (10.2%).
- Higher pre-injection PVR was significantly associated with both a lower chance of symptomatic improvement ($p = 0.04$) and a higher risk of incomplete bladder emptying with institution of CIC ($p = 0.047$).

	Study Subjects N=24
Mean age (years)	77.2 (± 7.5)
Gender	
Male	17 (70.8%)
Female	7 (29.2%)
Mean duration from neurological disease onset (years)	9.8 (± 5.7)
Median UPDRS (/199) [IQR]	56.5 [39.25-88.5]
Median Hoehn and Yahr Staging (/5) [IQR]	2.5 [2-3.75]
Schwab and England ADL (%)	58.6 (± 20.3)
Levodopa Equivalent Daily Dose (mg)	603.1 [± 516.2]
Body Mass Index(kg/m ²)	26.1 (± 3.8)
Previous medical OAB treatment	
Anticholinergics	20 (83.3%)
Mirabegron	19 (79.2%)
Number of different anticholinergics tried prior toxin injections	
0	4 (16.7%)
1	12 (50%)
2	4 (16.7%)
3	4 (16.7%)

	Onabotulinum toxin A injections	4 weeks after injections	p-value
Mean maximum urinary flow rate	11.3 \pm 5.4	NA	NA
Median number of pads per day	3 [1-5]	0 [0-4]	0.016*
Urinary Incontinence			
Yes	24 (100%)	17(70.8%)	< 0.001*
No	0	7 (29.1%)	
Self-Assessment			
Improved	NA	19(79.2%)	NA
Unchanged		3 (12.5%)	
Worsened		2 (8.3%)	
Post Void Residual Volume (ml)	17.6 \pm 30.3	125.3 \pm 16 1.5	< 0.001*
Clean-Intermittent Catheterization			
Yes	0	3 (12.5%)	< 0.001*
No	24 (100%)	21(87.5%)	

CONCLUSIONS

Botox appeared effective in PD patients with a relatively low rate of retention requiring CIC. Higher preoperative PVR was the stronger predictor of both treatment failure and postoperative urinary retention requiring CIC while urodynamic obstruction was also associated with treatment failure in male patients. Intradetrusor injections of BoNT-A 100 U appeared as a safe and effective option in PD patients with OAB symptoms and a low PVR before the injection.