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Adding Antimuscarinic or Mirabegron Increases the Therapeutic Effect in Overactive Bladder Patients Treated with 100U OnabotulinumtoxinA



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Hypothesis/aims of study: To test the hypothesis that combining antimuscarinic or mirabegron can increase the therapeutic effect after overactive bladder (OAB) patients receiving intradetrusor onabotulinumtoxinA injection.

Materials and Methods: The Institutional Review Board and Ethics Committee of our hospital approved this study. Thirty-three OAB patients, who received intravesical 100U onabotulinumtoxinA injection one month ago, were consecutively invited to a prospective, randomized, open-label study. They were randomly treated with solifenacin 5mg QD in 11 patients (group 1), mirabegron 50mg QD in 11 patients (group 2) and without medication in 11 patients (group 3). All enrolled patients were asked to complete 3-day voiding diary, the Overactive Bladder Symptom Score (OABSS), Urgency Severity Scale (USS) questionnaires, and uroflowmetry at baseline and 3-month. Videourodynamic study was performed before intravesical onabotulinumtoxinA injection. The primary endpoint was changes of Global Response Assessment (GRA) at 3-month. The secondary endpoint included changes of OABSS, USS and the parameters of voiding diary.

Results: The mean patients' age was 73.9±9.8, 66.9±13.4 and 71.2±10.2 (p=0.35) in group 1,2,3 respectively. The baseline data were comparable in three groups. Compared with baseline, OABSS in group 1 and 2 was significantly decreased at 3-month but not in group 3. At 3-month, GRA in group 1 and 2 was significantly higher than group 3 (1.3 ± 0.7, 1.8 ± 1.0 versus 0.1 ± 1.6, p=0.04) (Table 1). The differences of OABSS, functional bladder capacity and nocturia episodes between baseline and 3-month in group 1 and 2 were also significantly different from those in group 3.

Table 1. Comparison of the therapeutic effects of solifenacin, mirabegron, and no treatment after OAB patients receiving intradetrusor onabotulinumtoxinA injection

Group	Solifenacin	Mirabegron	None	p-value
OABSS BL	12.8±1.7	12.6±2.7	10.7±3.3	
3M	9.8±3.7	6.2±4.3	9.0±4.7	
	P=0.02	P=0.02	p=0.37	
▲OABSS	3.4±2.8	6.0±1.8	1.3±2.5	0.01
USS BL	3.8±0.6	3.9±0.3	3.6±0.8	
3M	3.0±1.5	2.3±1.9	2.9±1.6	
	P=0.11	P=0.01	P=0.18	
▲USS	0.75 ± 1.0	1.5 ± 1.6	0.85 ± 1.6	0.59
UUI BL	6.3±7	6.3±9.1	4.3±6.2	
3M	1.6±2	0.6±0.9	5.6±8.4	
	P=0.08	P=0.15	P=0.7	
▲UUI	4.9 ± 8.8	2.0 ± 1.7	-1.4 ± 2.2	0.13
Freq BL	11.1±5.3	12.3±6.8	9.5±5.1	
3M	8±3.4	8.1±4	12.2±4.5	
	P=0.15	P=0.18	P=0.28	
▲Freq	3.2 ± 4.0	4.0 ± 3.8	-3.0 ± 7.4	0.05
Nocturia BL	3.9±2.8	3.1±1.3	2.7±1.7	
3M	3.1±2.7	1.5±0.8	2.7±1.3	
	P=0.53	P=0.01	P=0.96	
▲Nocturia	0.49 ± 1.55	1.67 ± 1.53	-0.41 ± 0.45	0.03
Urgency BL	12.1±5.5	10.2±8.0	8.2±6.8	
3M	8.2±4.6	2.3±2.6	3.8±5.7	
	P=0.11	P=0.03	P=0.2	
▲Urgency	4.3 ± 6.9	5.5 ± 4.5	1.9 ± 3.6	0.5
FBC BL	224.6±109.1	280.1±194.9	320.7±164.9	
3M	247.5±111	413.3±246.3	157.8±138.3	
	P=0.66	P=0.23	P=0.05	
▲FBC	6 ± 108	-152 ± 133	171 ± 205	0.006
Qmax BL	15.8±14.1	12.3±7.8	15.1±7.0	
3M	12.2±7.3	15.4±9.2	12.9±7.5	
	P=0.51	P=0.48	P=0.54	
▲Qmax	5.6 ± 15.0	-3.4 ± 9.0	4.1 ± 9.1	0.36
Vol BL	149.6±75	120.6±92.4	207.1±117.3	
3M	112.4±54	207.3±102.3	135.5±106.2	
	P=0.25	P=0.09	P=0.23	
▲Vol	36 ± 53	-77 ± 131	63 ± 118	0.06
PVR BL	47.2±46.8	9.1±13.9	29.6±37.6	
3M	70.9±62.9	160.7±75.9	72.9±43.2	
	P=0.36	P=0.00	P=0.04	
▲PVR	22 ± 29	-97 ± 73	42 ± 45	0.03
GRA	1.3 ± 0.7	1.8 ± 1.0	0.1 ± 1.6	0.04

Interpretation of results: AUA/SUFA OAB guideline suggests that specialists may offer intradetrusor onabotulinumtoxinA (100U) as third-line treatment in patients refractory to first- and second-line OAB treatments. This suggestion implies that no pharmacological therapy is needed after patients received intradetrusor onabotulinumtoxinA injection. However, our study showed patients resuming antimuscarinics or beta-3 agonist after intravesical onabotulinumtoxinA injection had better therapeutic effects than those without any medication. Due to the different mechanisms involving OAB pathophysiology, combined the second-line and third-line treatment might be another choice for refractory OAB patients.

Concluding message: Adding antimuscarinic or beta-3 agonist can increase the therapeutic effect in patients after receiving intradetrusor onabotulinumtoxinA injection.