Predictors of Poor Response Parameters to Intradetrusor Botulinum Toxin-A Injections in Patients with Idiopathic Overactive Bladder

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INTRODUCTION

Onabotulinum toxin-A intradetrusor injection (BTX-A) has been proven to be an effective and safe therapy for treating overactive bladder (OAB) refractory to anticholinergics.

Given that poor response to BTX-A therapy is uncommon but still exist, we aimed to identify whether **primary non-responders** could be **predicted** based on baseline clinical, demographic or urodynamic parameters.

METHODS

- This is a retrospective review of 65 patients with refractory idiopathic Overactive Bladder (I-OAB) who underwent intradetrusor injection of Onabotulinum toxin-A 100 units from 2005 to 2015.
- Response to treatment was evaluated by urodynamics, and validated questionnaires (OABSS, ICIQ-SF, IIQ-7) before and at 12 weeks after the first Botox injection.
- Response to treatment defined as an increase in **maximum cystometric bladder capacity** (MCBC) of more than 30%[1].

RESULTS

Table 1: Comparison of responders and non-responders in patients with I-OAB: demographic and urodynamic data

Parameter (units)	Non-responders (Mean ± SD)	Responders (Mean ± SD)	Overall	P-value
N	24	41	65	
Age	70.6 ±14.97	70.9 ±15.85	70.8 ±15.41	0.8329¶
Gender (M, F)	3 : 21	10 : 31	13: 52	0.5123†
OAB-Dry	2	7	9	0.6159†
OAB-Wet	22	34	56	
Body mass index	29.7± 4.52	29.3± 4.92	29.6 ± 4.34	0.9064#
First Desire to Void (mL)	141.2 ± 73.32	107.8 ± 52.84	120.1 ± 62.78	**0.0373*#**
Bladder Compliance (ml/cm H2O)	18.8 ± 15.08	13.3 ± 9.38	15.3 ± 11.94	0.0887¶
Maximal Detrusor Pressure (cmH2O)	29.7 ± 16.53	26.9 ± 13.91	28 ± 14.83	0.4869#
Maximal Vesical Pressure (cmH2O)	51.9 ± 22.19	47.3 ± 15.58	49 ± 18.20	0.3337#
PVR (mL)	50.1 ± 38.72	26.2 ± 26.41	34.9 ± 33.24	**0.0218*¶**
IIQ-7	68.2 ± 25.53	52.3 ± 29.86	57.9 ± 29.14	0.0891#
OABSS	22.2 ± 4.13	22 ± 3.75	22.1 ± 3.85	0.9014#
ICIQ-SF	15.2 ± 4.18	12.4 ± 6.34	13.4 ± 5.80	0.1693¶

† Chi square; ¶ Mann-Whitney test; # two-tailed paired t-test; * p<0.05 to show significance

Table 2:Urodynamic data for responders over study period

Parameter (units)	Baseline (Mean ± SD)	12 Weeks (Mean ± SD)	P-value
Maximum cystometric bladder capacity (MCBC) (mL)	168.0 ± 94.52	339.4 ± 148.04	0.0001*#
First Desire to Void (mL)	108.8 ± 53.92	229.2 ± 121.81	0.0001*#
Bladder Compliance (ml/cm H2O)	13.3 ± 9.50	27.0 ± 15.56	0.0001*#
Maximal Detrusor Pressure (cmH2O)	27.2 ± 14.03	20.2 ± 11.14	0.0314*#
Maximal Vesical Pressure (cmH2O)	47.8 ± 15.79	37.5 ± 16.63	0.0062*¶
PVR (mL)	26.3 ± 27.02	120.7 ± 100.87	0.0001*#
IIQ-7	52.3 ± 29.86	45.2 ± 27.75	0.2990¶
OABSS	22.0 ± 3.75	18.6 ± 6.48	0.0701#
ICIQ-SF	12.4 ± 6.34	10.0 ± 6.42	0.0852¶

Mann-Whitney test; ¶ two-tailed paired t-test; * p<0.05 to show significance

DISCUSSION

- 24 patients (37%) qualified as non-responders. While 63% (41/65) of the patients showed significant treatment response pertaining to subjective symptoms, and urodynamic variables.
- Poor responders to BTX-A had a significant higher **FDV** and **PVR** pre-treatment value.
- In a multivariate logistic regression model, no significant predictors for response could be recognized.

CONCLUSIONS

- High Baseline FDV and PVR are associated with a poor response to treatment with 100 U of BTX-A among patients with refractory I-OAB.
- This suggests an impairment of nociceptive afferent sensory fibers, which might have resulted in poor response to this therapy.

REFERENCES

1.S. G, P. B, B. B, et al. Five years follow-up study and failures analysis of Botulinum toxin repeated injections to treat neurogenic detrusor overactivity. *Progrès en urologie.* 2012;22:1064-1070.