Clinical and Urodynamic changes post Onabotulinum Toxin-A treatment in adults with Spina Bifida

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BACKGROUND

The use of onabotulinum toxin-A in neurogenic bladder management has been extensively studied[i]. Only a small number of studies have been published regarding the efficacy of intra-detrusor injections of onabotulinum toxin-A in children with spina bifida. To date there is minimal data specific to its use in adult spina bifida for management of neurogenic bladder.

OBJECTIVE

To evaluate the clinical and urodynamic improvement in adult spina bifida patients with neurogenic bladder treated with intra-detrusor injections of onabotulinum toxin-A.

MATERIAL & METHODS

Data was prospectively collected on 19 adults with neurogenic bladder secondary to spina bifida treated with intradetrusor injections of onabotulinum toxin-A at a single centre between 2011-2017. All patients had initial fluoroscopic urodynamics and a subsequent study after treatment with 200 units of onabotulinum toxin-A. Urodynamic parameters and efficacy based on clinical responses were evaluated including urge incontinence episodes, urinary tract infections, and validated pre- and post-procedure questionnaires (Urogenital Distress Inventory Short Form UG DI-1; Incontinence Impact Questionnaire IIQ-7; Patient Global

RESULTS

We were able to show urodynamic improvement in all 17 adult spina bifida patients by decreasing detrusor pressure and increasing bladder capacity.

Dose escalation was required in 5 patients to 300 units due to an inadequate urodynamic response as demonstrated by worse bladder compliance in 2 patients (86cmH2O, 55cmH2O), decreased bladder capacity in 1, no improvement in 1, and resolution of severe detrusor overactivity that unmasked poor compliance (62cmH2O) in another patient.

Prior to treatment, 13 patients had unsafe bladder pressures due to poor compliance at capacity (>40cmH2O). After treatment, 10 patients had safe maximum detrusor pressures, however 7 patients had persistent poor compliance (>40cmH2O) that required the addition of anti-cholinergic therapy.

Clinical improvements included resolution of urge incontinence episodes, reduction in symptomatic urinary tract infections, and improvement in quality of life scores.

Patients reported a 'Much Better' improvement in their symptoms (PGI-I mean 2.3) and described the severity of their condition as 'Normal/Mild' (PGI-S mean 1.5). Patients reported a clinically meaningful reduction in both their distress (UG-DI 6 pre-treatment mean 9.5, post-treatment mean 3.7) and incontinence impact (IIQ-7 pre-treatment mean 11.4, post-treatment mean 3.13).

DEMOGRAPHICS

PATIENTS	19
GENDER • MALE • FEMALE	 5 (26%) 14 (74%)
AGE	24 (17-58)
CLINICAL • AUGMENTATION CYSTOPLASTY • URGE INCONTINENCE • UTI	 2(10.5%) 13 (68.4%) 8 (42.1%)
COMPLETE DATA SET	17 (89.5%)
IMPROVEMENT ≥1 PARAMETER • RESPONDED TO BOTOX 200U • RESPONDED TO BOTOX 300U	17 (100%) 12 (70.6%) 5 (29.4%)

RESULTS

	PRE-BOTOX	POST-BOTOX	CHANGE (AVE)
CAPACITY (ml)	431 (50-900)	532 (260 -1100)	+54.2% P=0.25*
COMPLIANCE AT PRE-BOTOX CAPACITY (cmH2O)	55.6 (25-124)	23.8 (3-45)	-51.4% P=0.0001*
COMPLIANCE AT POST BOTOX CAPACITY (cmH2O)	55.6 (25-124)	38.1 (4-86)	-28.5% P=0.047*
URGE INCONTINENCE	13 (68.4%)	1 (5.3%)	-63.1%
UTIs	8 (42.1%)	3 (15.8%)	-26.3%

*Mann-Whitney U Test

CONCLUSION

To our knowledge, this is the first study demonstrating meaningful clinical and urodynamic improvements in adult patients with spina bifida who were treated with intra-detrusor injections of onabotulinum toxin-A. In nearly all of these patients, poor bladder compliance was unmasked by the onabotulinum toxin-A treatment, and remained at unsafe levels in 41% of the patients, requiring the addition of anti-cholinergic therapy. This study reinforces the need for close urodynamic assessment post-injection in patients with spina bifida.

REFERENCES: i. Cruz F *et al.* Eur Urol. 2011 Oct;60(4):742-50; ii. Ginsberg D *et al*. 2012 Jun;187(6):2131-9; iii. Hascoet J *et al.* 2017 Mar;36(3):557-564.