

## CLINICAL AND URODYNAMIC CHANGES POST ONABOTULINUM TOXIN-A TREATMENT IN ADULTS WITH SPINA BIFIDA.

### Hypothesis / aims of study

The use of onabotulinum toxin-A in neurogenic bladder management has been extensively studied(1,2). 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(3). To date there is minimal data specific to its use in adult spina bifida for management of neurogenic bladder.

The aim of our study was to evaluate the clinical and urodynamic improvement in adult spina bifida patients with neurogenic bladder treated with intra-detrusor injections of onabotulinum toxin-A.

### Study design, materials and 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 Impression of Improvement PGI-I; Patient Global Impression of Severity PGI-S).

### Results

19 patients, including 14 females and 5 males, with a mean age of 29 were studied. 2 patients had previous ileal augmentation cystoplasty. Prior to treatment, the mean maximum detrusor pressure was 56cmH<sub>2</sub>O, and 13 patients reported urge incontinence. Improvement in at least one urodynamic parameter was seen in all 17 patients who had post treatment fluoroscopic urodynamics. 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 (86cmH<sub>2</sub>O, 55cmH<sub>2</sub>O), decreased bladder capacity in 1, no improvement in 1, and resolution of severe detrusor overactivity that unmasked poor compliance (62cmH<sub>2</sub>O) in another patient.

Bladder capacity increased by 54% and maximum detrusor pressure decreased by 28.5%. Detrusor overactivity incontinence resolved in 12 patients (92.3%). Bladder compliance normalised (<10cmH<sub>2</sub>O) in only 2 patients. Prior to treatment, 13 patients had unsafe bladder pressures due to poor compliance at capacity (>40cmH<sub>2</sub>O). After treatment, 10 patients had safe maximum detrusor pressures, however 7 patients had persistent poor compliance (>40cmH<sub>2</sub>O) that required the addition of anti-cholinergic therapy.

Urge incontinence resolved in 12 of 13 patients (92.3%) and symptomatic urinary tract infections resolved in 5 of 8 patients (62.5%). 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).

### Interpretation of Results

We were able to show urodynamic improvement in all adult spina bifida patients (with neurogenic bladders) treated with intra-detrusor injections of onabotulinum toxin-A, by decreasing detrusor pressure and increasing bladder capacity. Clinical improvements seen included resolution of urge incontinence episodes, reduction in symptomatic urinary tract infections, and improvement in quality of life scores. Post-treatment urodynamic assessment was crucial, as bladder compliance remained impaired in most patients, despite impressive clinical improvements. In some patients, dose escalation and/or additional anti-cholinergic therapy was necessary if they had persistent unsafe bladder compliance after treatment.

### Concluding message

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 dose escalation or the addition of anti-cholinergic therapy. This study reinforces the need for close urodynamic assessment post-injection in patients with spina bifida.

### References

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Disclosures

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