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LESS IS MORE – A NEW INTRADETRUSOR ONABOTULINUMTOXIN A INJECTION TECHNIQUE FOR NEUROGENIC AND IDIOPATHIC DETRUSOR OVERACTIVITY

Hypothesis / aims of study

Intradetrusor onabotulinumtoxin A (BTX-A) injection is an established treatment option for medically refractory neurogenic detrusor overactivity (NDO) and idiopathic detrusor overactivity (IDO). Administration typically involves 15-30 evenly spaced injections of 100 - 300 units (u) of BTX-A into the posterior bladder wall. Published "standard" technique efficacy, duration of effect and infection rates are 35-65%, 12-39 weeks and 2-32%, respectively. We sought to determine if a fewer number of larger volume injections would provide similar efficacy and duration with a decreased complication rate when compared to the "standard" technique.

Study design, materials and methods

A retrospective chart review was performed on all BTX-A naïve patients with urodynamic studies confirmed NDO or IDO treated with intradetrusor BTX-A injections from January 2013 to January 2015. Patients underwent cystoscopic BTX-A injection under intravenous sedation or local anesthesia. NDO patients were injected in two or three sites with either 160 or 300u of BTX-A dependent on their desire to retain the ability to volitionally void. IDO patients were injected with 100-160u via one or two injection sites. Dilution utilized was 100u of BTX-A per 5mL of normal saline. Prior to the initial injection all patients completed the modified International Consultation on Incontinence Questionnaire (ICIQ). A post-injection ICIQ was completed at the first follow up clinic visit two to four weeks later. Objective success was defined as an ICIQ score improvement of $\geq$ 6 points. Subjective success was described as a > 50% improvement in patient reported urinary complaints. Injection complications, side effects, post void residual (PVR) urine volume (when applicable) and efficacy duration were also recorded.

Results

A total of 48 patients (25 IDO and 23 NDO) were included in the study (table 1). Mild hematuria that resolved within 48 hours was noted in three (6%) patients. Symptomatic post-injection urinary tract infections were reported in three (6%) patients – two IDO and one NDO patient. No participants experienced any systemic BTX-A adverse events. Mean post-injection PVR urine volume for patients that volitionally voided was 62.4 mL (range 0-371). During the accrual period, 19 patients returned for repeat BTX-A injection and reported a mean efficacy duration of 27 weeks (range 13 – 59).

Table 1 – Mean BTX-A efficacy outcomes following "new" injection technique

	ICIQ Improvement	**Objective Success***	**Patient Perceived Subjective Success**
NDO (n = 23)	10.9 (0 to 19)	87% (20/23)	78% (18/23)
IDO (n = 25)	6.3 (-1 to 19)	56% (14/25)	56% (14/25)
Total (n = 48)	8.5 (-1 to 19)	71% (34/48)	67% (32/48)

* Objective Success based on ICIQ score improvement of ≥ 6 points

Interpretation of results

We have noted that injecting the same amount of BTX-A (100-300 units) via a smaller number of larger volume injections (2-3 as opposed to the "standard" 10-30) provides similar efficacy to the "standard" technique with an equal or decreased complication rate. This is consistent with the findings of Karsenty et al who found similar efficacy between 10 and 30 injections of 300 units of BTX-A (1), although our technique allows for even fewer injections. The larger injection volume appears to result in the spread of BTX-A throughout the bladder wall as demonstrated by Coelho et al in a guinea pig model (2), and thus avoids the need for a large number of injection sites.

Concluding message

Our revised BTX-A injection technique may allow patients to undergo a quicker and less complicated procedure with equal efficacy. A prospective comparative study is currently being performed to validate this technique.

References

1. Karsenty G, et al. Botulinum toxin-A (BTA) in the treatment of neurogenic detrusor overactivity incontinence (NDOI) - a prospective randomized study to compare 30 vs 10 injection sites. Neurourol Urodyn. 2005;24(5-6):547-548 (abstract 93).
2. Coelho A, et al. Spread of onabotulinumtoxinA after bladder injection. Experimental study using the distribution of cleaved SNAP-25 as the marker of the toxin action. Eur Urol. 2012;61(6):1178-1184.

Disclosures

Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** MCW IRB **Helsinki:** Yes **Informed Consent:** No