616

Gutiérrez P[1], Virseda M[2], Esteban M[3], Salinas J[3], Méndez S[4], Menéndez P[4]
1. *Virgen de la salud Hospital Toledo Spain,* ***2.*** *Paraplejic´s Hospital Toledo Spain,* ***3.*** *Paraplejic's Hospital Toledo Spain,* ***4.*** *Paraplejic's Hospital. Toledo Spain*

PROGNOSTIC FACTORS OF URODYNAMIC RESULTS IN THE TREATMENT OF NEUROGENIC DETRUSOR OVERACTIVITY BY BOTULINUM TOXIN TYPE A

Hypothesis / aims of study

Neurogenic detrusor overactivity (NDO) is a common dysfunction among patients with spinal cord injury (SCI). The intradetrusor injection of botulinic toxin type A (A-BTX) has been proposed as an alternative treatment for these patients with NDO who either do not improve or cannot tolerate the oral medication. The A-BTX has shown clinical and urodynamic efficacy in patients who did not respond to oral treatment with antimuscarinics [1], but its efficacy is not similar in all patients. To our knowledge no study has analyzed the prognostic factors of A-BTX therapy in patients with NDO.

The hypothesis of our study is that there are clinical factors which influence the urodynamic results of treatment of NDO with A-BTX. Our main objective is to determine these clinical factors. As secondary objectives we propose to confirm the urodynamic efficacy of A-BTX and the length of time of its therapeutic effects in these patients.

Study design, materials and methods

We performed a retrospective study over a cohort of 70 patients with spinal injury, that have been treated with intradetrusor injection of A-BTX to treat the NDO.

The criteria to inject the A-BTX were either the lack of success to treat the neurogenic overactivity, shown by urodynamic result, with anticolinergic oral treatment (oxibutinin 15 mg/day, 55 cases) or the intolerance to the oral treatment due to side effects (15 cases).

The injection of A-BTX was administered for the first time in all the patients and we maintained the anticolinergics oral if previous treatment.

Apart from the oral therapy, 33 patients were using intermittent bladder catheter and 22 had to carry it permanently.

An informed consent was signed by all patients. Since the A-BTX has been authorized on a compassionate basis for neurogenic hyperactivity, and our study was not a clinical trial, ethics committee approval was not required.

The patients that were included in our study underwent a thorough medical history in which the level and severity of the spinal injury, as well as its clinical evolution were determined. They also hadunderwent an urodynamic study performed by a Solar Gold (MMS, Enschede, Netherlands), according to the specifications of the ICS, and Good Urodynamic Practice guidelines.

The injection of the botulinic toxin was performed with a single dose of 300 IU of A-BTX (Botox ® Allergan, INc., Irving, CA, USA) spread over 30 locations, apart from the trigone.

Patients were assessed by a second review 6 ± 4,3 months after the injection of A-BTX . Subsequently the patients were followed up with new urodynamics studies, to assess the improvement, during a mean of 16 ± 12,2 months.

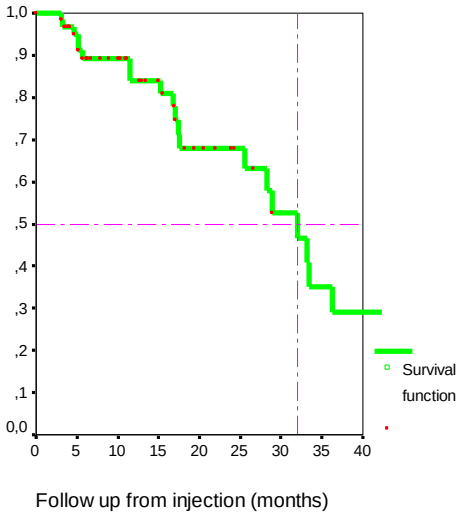
The results were stored in an Access database and exported to the statistical program SPSS ® to be analyzed. Statistical analysis consisted in applying the Fisher exact test for dichotomous variables, Student's t test (both independent and paired) for comparison of means of parametric variables, the Pearson correlation coefficient, and survival analysis according to the method of Kaplan-Meier. The significance level was set at a two-sided alpha of 0.05, with a trend toward significance noted at a two-sided alpha of 0.10. Values are expressed as mean ± standard deviation

Results

After the injection of A-BTx, we observed a significant increase of the cystometric capacity, the capacity at the first involuntary detrusor contractions and the post void residual, and a trend toward significance of the maximum flow rate and the maximum detrusor voiding pressure. The BTX-A did not significantly change bladder compliance and the bladder outlet obstruction index.

The assessment of the influence of clinical parameters on the cystometric capacity after the injection of A-BTX, Age, gender, progression time of SCI and anticholinergic treatment showed no influence over increasing bladder capacity. The presence of an indwelling catheter was the only statistically significant negative factor. Survival analysis showed that the median regarding the needed time the cystometric capacity to return to baseline, was 32 months (Figure 1).

Figure 1. Survival function of time needed the cystometric bladder capacity to return to baseline.



Interpretation of results

Our study confirms the urodynamic action mechanism of A-BTX, which affects to detrusor contraction, without modifying urethral function during voiding.

In our study, the only prognostic factor of the outcome of treatment with A-BTX regarding cystometric capacity was the presence of a permanent bladder catheter. This issue has not been evaluated in other studies because, in the majority of them, the need for patients to either perform or accept to perform intermittent bladder catheterization is considered as a criterion for inclusion.

Our study shows that the effect of A-BTX on bladder capacity is maintained up to 32 months, in 50% of the patients. Many studies focus on monitoring the effectiveness of treatment in repeated doses, but a few analyze the duration of a single dosis. Schurch et al. (2) calculated that the time after treatment in which the bladder capacity remains above the control group exceeds 24 weeks (6 months), and Grise et al. (3) estimate that the median interval for the recurrence of urinary incontinence in patients who had achieved continence after treatment with BTX-A is 168 days (approximately 6 months). It is possible that the urodynamic effect of A-BTX can exceeds its clinical effect.

Concluding message

The urodynamic effect of BTX-A is maintained for a considerable time periodl. Indwelling catheters present a negative influence on the treatment outcome.

References

1. Nambiar A, Lucas M. Chapter 4: Guidelines for the diagnosis and treatment of overactive bladder (OAB) and neurogenic detrusor overactivity (NDO). Neurourol Urodyn. 2014;33 Suppl 3:S21-5.
2. Schurch B, de Sèze M, Denys P, Chartier-Kastler E, Haab F, Everaert K, Plante P, Perrouin-Verbe B, Kumar C, Fraczek S, Brin MF; Botox Detrusor Hyperreflexia Study Team. Botulinum toxin type a is a safe and effective treatment for neurogenic urinary incontinence: results of a single treatment, randomized, placebo controlled.6-month study. J Urol. 2005;174(1):196-200.
3. Grise P, Ruffion A, Denys P, Egon G, Chartier Kastler E. Efficacy and tolerability of botulinum toxin type A in patients with neurogenic detrusor overactivity and without concomitant anticholinergic therapy: comparison of two doses. Eur Urol. 2010;58(5):759-66

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** Since the A-BTX has been authorized on a compassionate basis for neurogenic hyperactivity, and our study was not a clinical trial, ethics committee approval was not required. **Helsinki:** Yes **Informed Consent:** Yes