

## NEUROGENIC BLADDER RESISTANT TO BLADDER INJECTIONS OF BOTULINUM TOXIN TYPE A: IS THE NEW TOXIN INCOBOTULINUM EFFECTIVE IN SUCH CASES?

### Hypothesis / aims of study

About 25% of patients with neurogenic bladder dysfunctions develop immunological resistance to botulinum toxin type A (BTX-A) injected in the bladder, becoming unresponsive to this therapy (1). Aim of our study was to test the effectiveness of a new BTX-A free from complexing proteins (Incobotulinum, Merz Pharmaceuticals) in nonresponders to Onabotulinum (ONA) and Abobotulinum (ABO), prior verification of their resistance against the neurotoxin.

### Study design, materials and methods

Four thoracic spinal cord injured patients - 3 males and 1 female, mean age 53 years - were enrolled from June to December 2012. They became unresponsive to bladder injections of the usual BTX-A after a mean of 2.5 treatments (range 2-4).

To detect BTX-A resistance they were submitted to the Eextensor digitorum brevis (EDB) test: 3 compound muscle action potentials (CMAPs) were determined by surface electromyography of the EDB muscle by transcutaneous electrical peroneal nerve stimulation at the head of the fibula before and 3 weeks after injection of 20 units of ONA into the muscle. Peak-to-peak amplitudes of the CMAPs were measured, and the maximum response of any trial was chosen (2).

Urodynamic examination was performed before and after bladder injections of Incobotulinum (INC) 200 UI.

### Results

At basal urodynamics all the patients had urinary incontinence caused by detrusor overactivity in a picture of detrusor-sphincter dyssinergia; the mean value of detrusor overactivity was 70 cm H<sub>2</sub>O (range 60-75) with a mean reflex bladder capacity of 280 cc (range 230-310).

The EDB test showed decrease in CMAP amplitude in 1 patient (responder to BTX-A) and CMAP amplitude unchanged in 3 (unresponder to BTX-A).

About 15 days post-INC injections 3 patients were unchanged clinically and instrumentally. The fourth patient, the responder to BTX-A at the EDB test, improved clinically and at urodynamics (detrusor overactivity decreased to 40 cm H<sub>2</sub>O from 70 and the reflex bladder capacity increased to 400 cc against the previous 250 cc).

### Interpretation of results

Resistance to BTX-A is a great problem in patients with neurogenic bladder dysfunctions. We tested the new toxin INC - free from complexing proteins - and observed a good therapeutic response in 1 out of 4 patients, the unique not-resistant to BTX-A at the EDB test. Therefore EDB test proved to be reliable to detect the immunological resistance to BTX-A and, furthermore, in some cases the resistance could depend on antibodies against the complexing protein of ABO and ONA rather than from antibodies against the neurotoxin itself (3).

### Concluding message

INC could be a viable option in patients with neurogenic bladder unresponsive to ONA and ABO. In our brief experience 1 out of 4 patients, the only without resistance to BTX-A at EDB test, improved his neurogenic incontinence thanks to INC.

EDB test confirms to be reliable to detect the comparison of resistance to BTX-A

### References

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### Disclosures

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