

EXPERIENCE FOR BOTULINUM-A TOXIN INJECTION IN BLADDER WALL OR URETHRA TO TREAT DETRUSOR OVERACTIVITY OR DETRUSOR-SPHINCTER DYSSYNERGIA IN PATIENTS WITH NEUROGENIC BLADDER.

Hypothesis / aims of study

To detail our 4-years experience using botulinum toxin A (BTX-A) injection in the bladder wall or urethra to treat detrusor overactivity (DOA) and/or detrusor-sphincter dyssynergia (DSD) in 96 patients with neurogenic bladder.

Study design, materials and methods

A total of 96 patients with neurogenic bladder (66 men and 20 women, age range 21 to 78 years) received injections of BTX-A into the bladder wall (n = 76) or urethra (n = 20). Eighty-one of 96 patients were with spinal cord injury (SCI), 6 cerebrovascular accident (CVA), 5 brain injured (BI), and 4 Parkinson's disease (PD). Video-urodynamic investigation showed that neurogenic lower urinary dysfunction included DOA and/or DSD, bladder neck obstruction (BNO), and residual urine (RU). Under light sedation in most cases, patients were treated with either 200 U of BTX-A in 4 mL divided in equal doses into the four quadrants of the external sphincter or by injection into 30 different points in bladder wall using 300 U of BTX-A diluted in 15 mL of sterile saline. At last follow-up, 26 patients had received additional injections (up to four) at intervals of 6 months or longer.

Results

All patients who underwent BTX-A injection had preoperative evidence of DOA and DSD during urodynamic testing. After the first BTX-A injection in bladder wall, 76 patients were observed an improvement within 5 – 14 days. After 3 weeks of BTX-A injection, the mean incontinence events decreased from 14.6 to 2.2 times per day, intermittent catheterization (IC) reduced to 4 times per day, the mean urine volume for IC increased from 134 ml to 478 ml. Urodynamic data showed that mean cystometric capacity increased from 123 ml to 465 ml, mean maximum storage detrusor pressure decreased from 61.1 cmH₂O to 18.9 cmH₂O. Maximal efficacy occurred between 10 and 25 days and lasted for mean 6 months, and 20 patients had received additional injections (2 - 4 times). After the first BTX-A injection in urethra, 20 patients were observed an improvement within 6 – 13 days. After 3 weeks of BTX-A injection, the mean residue urine volume decreased from 267 ml to 81ml, detrusor leak point pressure (DLPP) decreased from 65.2 cmH₂O to 21.1 cmH₂O. Maximal efficacy occurred between 7 and 21 days and lasted for mean 3.8 months, and 6 patients had received additional injections (2 - 3 times). No side effects were observed during the follow-up.

Interpretation of results

BTX-A injection in the bladder wall can increase the bladder storage volume, decrease bladder storage pressure. Combined with intermittent catheterization, it can be used for the bladder management in neurogenic bladder patients who want to maintain continence, for the protection for the upper urinary tract function and the improvement for the life quality. BTX-A injection in the urethra can decrease urethra resistance, and reduce residual urine volume. Combined with devices for urine collection, it can be used to protect the upper urinary tract function, and to prevent the infection of urinary tract. These procedures were effective in an interval, and needed repeated injections.

Concluding message

BTX-A injection either in bladder wall or in urethra is an effective, safe, repeated, promising treatment modality for a variety of neurogenic lower urinary tract dysfunctions for both skeletal and smooth muscle dysfunction. In our institute, the patients with neurogenic bladder prefer this procedure due to its minimal invasion and reversibility.

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HUMAN SUBJECTS: This study did not need ethical approval because this is a clinical treatment that has been used widely. but followed the Declaration of Helsinki Informed consent was obtained from the patients.