

Case Report

Botulinum Toxin in voiding Dysfunction

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Summary

A 42-year-old patient was followed in urology clinic, complaining of recurrent LUTS (lower urinary tract symptoms) after being subjected to TUIP (transurethral incision of the prostate) at 38 years of age due to bladder neck hypertrophy.

Urodynamic study was performed, and showed detrusor hypocontractility with an obstructive flow pattern and urethral hypertonicity.

He was subjected to chemical sphincterotomy with botulinum toxin type-A (BTX-A), under cystoscopic control.

After BTX-A, the patient reported improvement of the dynamic voiding pattern with frank improvement of the urodynamic parameters.

Background

This actually represents an occasional form of refractory LUTS in the young male, most of the time, after many treatments have already been preformed, and in which a recent an simple approach can lead to good practical results with improvement of QoL.

Case Presentation

A 42-year-old patient was followed in urology clinic, complaining of recurrent LUTS (lower urinary tract symptoms) after being subjected to TUIP (transurethral incision of the prostate) at 38 years of age due to bladder neck hyperthrophy.

Investigations

At the time, there was no evidence of hypertrophy or tightness of the bladder neck on cystoscopy. He performed an urodynamic study (Figures 1 and 2), whose results were consistent with detrusor hypocontractility with obstructive pattern and urethral hypertonicity.

Treatment

He was subjected to chemical sphincterotomy with BTX-A injection (250U/dysport*) under cystoscopic control, at 3,6,9 and 12 o'clock at 1-1,5cm deep.

Outcome and Follow Up

After BTX-A, the patient reported an improvement of his voiding complaints, mainly bladder emptying, although he still uses abdominal effort to urinate (Figure 3). Improvement of urethral pressure profile was evidenced by perfilometry (Figure 4). The patient is currently satisfied with his clinical situation, even admitting the possibility of new chemical Sphincterotomy.

Discussion

The urethral injection of BTX-A has been demonstrated as an alternative therapy in bladder dysfunction. Through paresis of striated sphincter urethral muscle and by reducing urethral resistance, patients with incomplete urination or urinary retention are able to resume spontaneous voiding with or without abdominal effort [1-7].

Since its initial application in patients with sphincter-dyssynergia, it was demonstrated, that injection of BTX-A in striated urethral sphincter, reduces urethral pressure, residual volume, voiding pressure,



Figure 1: Filing Cistometry: Bladder capacity: 704 ml; Compliance: 35,2ml/cm H2O; detrusor overactivity: NO; bladder contraction: NO



detrusor contraction time and detrusor leak point pressure, thereby reducing the risk of high urinary tract injury, a factor that increases mortality and morbidity in these patients, and allowing urination without the aid of catheterization [8,9,10].

Making use of this clinical effect, it was possible to use BTX-A in bladder outlet obstruction (BOO) in various ways, including its use in patients with sphincter hypertonicity (non-relaxing urethral mecanism), as in cauda equina syndrome, peripheral neuropathy and particularly in patients with detrusor acontractility or hypocontractility, in order to promote bladder emptying with Valsalva or Credé maneuver [11,12,13].

Although the cause of refractory LUTS tends to be multifactorial, the role of the bladder neck and striated sphincter seems to be a factor to take into account, particularly in young patients with no evidence of BOO on urodynamics, or LUTS without evidence of BPH [14].

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Figure 4: Urethral perfilometry: urethral pressures at the borderline, with normal functional length and prostatic plateau (significant improvement of the pressure profile after BTX-A).

The injection of BTX-A in the bladder neck and striated sphincter, has proven to be a promising approach, with improvement of clinical and urodynamic parameters in voiding dysfunction [15].

The diagnosis of BOO in patients with low flow/low pressure syndrome, is particularly difficult, as well as in patients with evidence of BPH but with detrusor hypocontractility, and it seems to be in these patients, refractory to conventional therapy, that will benefit the most with BTX-A injection [16,17].

Its recent application in Urology, limits the availability of literature and evidence based medicine, not only about the scientific basis that justifies its therapeutic use, but also regarding a proper application technique. This fact, coupled with a lack of standardization of the procedure and randomized studies, leads to a disagreement of results that may jeopardize the success of this new therapy. It seems to be consensual, in a way, that BTX-A should be injected into urethral sphincter by cystoscopy or through transperineal approach, under electromyography control [18]. In the above case, it was performed under cystoscopic control, with injection of BTX-A (250 U/Dysport[®]) at 3,6,9 and 12 o ´clock, about 1-1.5 cm deep in urethral striated sphincter. Although in this case, this has not been performed, there seems to be some evidence that repeating the procedure three weeks after, enhances therapeutic effect, by the cumulative effect that characterizes this drug.

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The potential of BTX-A in clinical practice, including urology, are a reality and an asset today.

Learning Points/Take Home Messages

Consider bladder neck and striated sphincter as a cause of LUTS in young patients

Urodynamic is of particular interest in this situations Botulinum toxin type A is a recent and minimally invasive approach with good results in these situations

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