

SUBTRIGONAL BOTULINUM TOXIN-A (BONT-A) THERAPY FOR FEMALE PATIENTS WITH OAB COMBINED WITH URETHRAL INSTABILITY - RESULTS OF A PILOT STUDY

Hypothesis / aims of study

In this initial report we present the results of a pilot study performed in 5 female patients with overactive bladder symptoms (OAB), combined with urethral instability, whom we treated with subtrigonal Botulinum toxin-A (BoNT-A) injections. The underlying etiology of OAB is often unknown. Urodynamic evaluation is often performed to learn more of the underlying etiology. During filling cystometry, detrusor overactivity (DO) is observed in part of the patients. Urethral pressure variations - referred to as urethral instability (UI) can also be observed and are a possible own entity within OAB, although the clinical relevance has yet to be established. In 2008, Groenendijk et al concluded that patients suffering from OAB with UI seemed to have a possible benefit over patients with baseline DO when treated with sacral nerve stimulation (SNM)¹. In the past, surgical bladder denervation has been performed as a treatment modality for OAB^{2,3}. The surgical procedures were preceded by subtrigonal injections with local anesthetics. When urge urinary incontinence clinically improved after these injections, patients underwent bladder denervation. Combining this knowledge and the experience that partial bladder denervation improved urge urinary incontinence in the past, we hypothesized that patients with OAB symptoms and UI could benefit from chemical denervation by subtrigonal BoNT-A injections.

Study design, materials and methods

This is a retrospective description of the pilot study we performed in 5 female patients. Four patients had a long history of refractory idiopathic OAB symptoms, in one patient the main complaint was painful bladder. In all patients urethral pressure variations were demonstrated during filling cystometry of urodynamic evaluation. In the past, improvement of OAB after subtrigonal injections with local anesthetics were a positive predictive factor for success of surgical denervation. Therefore we started treatment with subtrigonal injections of 10cc lidocaine 1%. If OAB symptoms improved with more 50% after injections with lidocaine, treatment was continued with subtrigonal injections BoNT-A, 100IE in 10ml solution of NaCl 0,9%

Results

Urodynamic results are shown in tabel 1. Four out of the five patients had an improvement of more than 50% after BoNT-A injections. One patient - the one with painful bladder as main complaint- reported improvement after subtrigonal injection with lidocaine, but had a negative effect of BoNT-A. In this patient, the procedure was complicated by urinary tract infection (UTI). This might mask the results, since treatment was performed recently. UI disappeared in one patient after treatment. In three other patients, the maximum amplitude of the urethral pressure variations decreased from more than 40cmH₂O up to a maximum of 20cm H₂O

TABLE 1 URODYNAMIC RESULTS

| | Capacity (ml) | FSF (ml) | DO | UI | Effect BoNT-A |
|---|---------------|-------------|----------|---|---------------|
| Patient 1 Pre BoNT-A Post BoNT-A | 216 478 | N.a 278 | No No | >40 cm H ₂ O No | Positive |
| Patient 2 Pre BoNT-A Post BoNT-A | 407 687 | 199 613 | No No | >40 cm H ₂ O max 20 cm H ₂ O | Positive |
| Patient 3 Pre BoNT-A Post BoNT-A | 329 363 | 64 200 | No No | >40 cm H ₂ O max 20 cm H ₂ O | Positive |
| Patient 4 Pre BoNT-A Post BoNT-A | 337 n.a. | 116 n.a. | No No | >40 cm H ₂ O | Positive |
| Patient 5 Pre BoNT-A Post BoNT-A | 730 n.a. | 113 n.a. | No No | >40 cm H ₂ O | Negative |
| Average Pre BoNT-A (pt 1-5) Post BoNT-A (pt 1-3) | 403 509 | 123 363 | | | |

Interpretation of results

Chemical denervation by subtrigonal BoNT-A injections resulted in improvement of refractory OAB symptoms in four out of five patients in this pilot study. In the patient with a negative response, the main complaint was bladder pain. The most remarkable change was the improvement of first sensation of filling (FSF) from average 123 ml pre treatment to 363 ml after BoNT-A treatment. This implies that treatment with subtrigonal BoNT-A probably reduces the sensory afferent input.

Concluding message

This is the first study that explores and describes the urodynamic and clinical effects of subtrigonal BoNT-A injections in patients with OAB combined with urethral instability. Chemical denervation by subtrigonal BoNT-A injections resulted in improvement of refractory OAB symptoms in all patients with refractory OAB as main complaint in this pilot study. Further research is necessary to define the condition of UI in patient with OAB and to explore new treatment modalities like chemical denervation with subtrigonal BoNT-A injection

References

1. Urethral instability and sacral nerve stimulation - a better parameter to predict efficacy? Groenendijk PM, Heesakkers JP, Lycklama A Nijeholt AA. J Urol. 2007 Aug;178(2):568-72; discussion 572
2. Partial denervation of the bladder, a new operation for the treatment of urge incontinence and similar conditions in women. Ingelman-Sundberg A. Acta Obstet Gynecol Scand. 1959;38:487-502
3. Modified Ingelman-Sundberg bladder denervation procedure for intractable urge incontinence. Cespedes RD, Cross CA, McGuire EJ J Urol. 1996 Nov;156(5):1744-7

Disclosures

Funding: none **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** it was a pilot study to explore applicability of a modification of an existing treatment as a new treatment possibility in patients with OAB, prior to a prospective trial. **Helsinki:** Yes **Informed Consent:** Yes