

INTRAVESICAL RESINIFERATOXIN VERSUS BOTULINUM-A TOXIN INJECTIONS FOR THE TREATMENT OF NEUROGENIC DETRUSOR OVERACTIVITY

Aims of Study

Intravesical resiniferatoxin (RTX) and botulinum-A toxin injections into the detrusor muscle have been introduced as treatments for refractory detrusor hyperreflexia in patients with neurogenic disease. Preliminary results have shown a significant increase in bladder capacity and in urinary continence with both treatments. However, there are no clinical studies comparing intravesical RTX with botulinum-A toxin injections. We investigated the effectiveness and safety of intravesical RTX and of botulinum-A toxin, comparing their clinical and urodynamic effects over long term follow up in patients with detrusor hyperreflexia due to neurogenic disease.

Methods

Twenty-five spinal cord injured patients were randomly assigned to receive (a) intravesical administrations of RTX 0.6 microM in 50 ml of 0.9% NaCl over 45 min (n=13), or (b) injections of 300 units of botulinum-A toxin diluted in 30 ml 0.9% NaCl into the detrusor muscle under cystoscopic control (n=12). RTX and botulinum-A toxin treatments were repeated when there was recurrence of urinary symptoms and/or urodynamic worsening. Frequency of daily incontinence episodes, uninhibited detrusor contractions (UDC) threshold and maximum pressure, and maximum cystometric bladder capacity were measured at baseline and during follow up. Local and/or systemic side effects were noted.

Results

In the RTX arm, mean follow up was 14.8 ± 3 months; the number of instillations/patient was 8.6 ± 1.9 and the mean time between two consecutive instillations was 51.6 ± 8.2 days. Mean UDC threshold increased from 205.5 ± 69.7 ml at baseline, to 288.7 ± 83.7 at 6 months, to 285.5 ± 85.6 at 12 months and to 273.7 ± 75.8 at 18 months follow up (between baseline and 6 months: $p < 0.01$). Maximum bladder capacity increased from 223.3 ± 68.1 ml at baseline, to 329 ± 72.3 at 6 mos, to 338 ± 63.7 at 12 months and to 330 ± 62.6 at 18 months follow up (between baseline and 6 mos: $p < 0.01$). The frequency of incontinent episodes was significantly reduced.

In the botulinum-A toxin arm, mean follow up was 14.2 ± 3.9 months; the number of treatments/ patient was 2.1 ± 0.7 and the mean time between two consecutive injections was 6.8 ± 1.5 months. Mean UDC threshold increased from 190 ± 48.6 ml at baseline, to 326.3 ± 80.9 at 6 months, to 361 ± 62.7 at 12 months and to 383.8 ± 41.7 at 18 months follow up (between baseline and 6 months: $p < 0.01$). Maximum bladder capacity increased from 211.9 ± 49.7 ml at baseline, to 370 ± 79.6 at 6 months, to 415 ± 75 at 12 months, and to 445.3 ± 51.2 at 18 months follow up (between baseline and 6 mos: $p < 0.01$). Six patients were completely continent.

We did not observe any local or systemic side effects in both arms.

There was a significant increase in UDC threshold ($p < 0.02$) and in maximum bladder capacity ($p < 0.01$) in botulinum-A toxin arm, as compared to RTX at 6, 12 and 18 months follow up.

Conclusions

Under the conditions imposed in this study, botulinum-A toxin injection into the detrusor muscle is superior to intravesical resiniferatoxin in terms of urodynamic results and clinical benefits in patients with neurogenic detrusor hyperreflexia in a long term follow up. While the efferent parasympathetic innervation to the detrusor is adequately blocked by 300 units botulinum-A toxin, the afferent nervous transmission is not completely controlled by the present dose of intravesical RTX.

