

EVALUATING THE USE OF BOTULINUM TOXIN FOR THE TREATMENT OF DETRUSOR OVERACTIVITY IN OLDER PATIENTS.

Hypothesis / aims of study

Despite the accepted efficacy of intradetrusor injection of OnabotulinumtoxinA for detrusor overactivity (DO), most research studies exclude patient recruitment at 70 years of age [1,2]. To date, the outcomes and side-effect profile of intradetrusor botulinum toxin injection for the treatment of DO in patients over the age of 70 years has not yet been examined. The objective of our study was to evaluate the outcomes of patients aged ≥ 70 who have received intradetrusor botulinum toxin injection for the treatment of DO as compared with patients < 70 .

Study design, materials and methods

A retrospective chart review of patients ≥ 18 years of age who received OnabotulinumtoxinA detrusor injections between January 1, 2008 and January 31, 2013, for the treatment of DO was conducted. Eighty-seven charts were reviewed: 36 patients ≥ 70 years, and 51 patients between the ages of 18 and 69. The impact of age ≥ 70 on rate of urinary tract infection (UTI), urinary retention and subjective improvement rates were examined with three models: 1) looking at the effect of age ≥ 70 years as the sole predictor; 2) controlling for pelvic organ prolapse (POP), catheter use, type 2 diabetes (T2DM), neurogenic bladder (NGB) and injection number (when applicable); and 3) controlling for statistically significant variables only (including interactions with age). The three models were analyzed using patient data for a single injection (first in the study), as well as using patient data across repeated injections. Single injection data was analyzed using logistic regression with 'stats' package in R¹. Repeated injections data was analyzed using a mixed model with 'lmer' package in R. Statistical significance was set to 0.05.

Results

UTI: When we isolate a single injection we see that age ≥ 70 years is not associated with UTI risk when considered alone or with the control variables. When we consider repeated injections we see that increasing number of injections affects odds of UTI differently for those ≥ 70 than those < 70 ($P = 0.03$). In those ≥ 70 , the odds of UTI increase by 32 times (95% CI [1.3 759]; $P = 0.03$) for each additional injection. For those patients < 70 years of age, the odds of UTI do not change with subsequent injections (Odds = 0.95; 95% CI [0.60, 1.49]; $P = 0.82$).

Retention: When we isolate a single injection we see that age ≥ 70 years is not associated with risk of retention when considered alone or with the control variables. When we consider repeated injections we see that the interaction between POP and age approaches statistical significance ($P = 0.061$). In this study, we saw that the presence of POP in patients < 70 (after controlling for NGB) increases odds of retention by 7 times (95% CI [0.86, 59.0]; $P = 0.069$) compared to those < 70 without POP. For those patients ≥ 70 with POP (controlling for NGB), the odds of retention are 0.22 (95% CI [0.01, 3.47]; $P = 0.28$).

Improvement: When we isolate a single injection, patients ≥ 70 are less likely to report subjective symptom improvement ($P = 0.012$) when looking at age as the sole predictor. The odds of no subjective improvement for those ≥ 70 years are 4.84 times higher than those < 70 (95% CI [1.4, 16.6]). After controlling for prior catheter use, POP, NGB and T2DM this association remains significant ($P = 0.014$). Considering repeated injections, age ≥ 70 years, used as the sole predictor, is significantly associated with no subjective improvement ($P = 0.02$), with odds 3.8 times higher in those ≥ 70 than those < 70 (95% CI [1.2, 12.4]). After controlling for POP, prior catheter use, NGB, T2DM and injection number this association remains significant ($P = 0.02$). Controlling for T2DM and injection number, we see that catheter use affects odds of subjective improvement differently in patients ≥ 70 versus < 70 ($P = 0.047$). In patients < 70 who used a catheter (controlling for T2DM and injection number), the odds of subjective improvement increased by 25 times ($P = 0.051$; 95% CI [0.98, 643]) compared to those < 70 who did not use a catheter. In patients ≥ 70 who used a catheter, the odds of subjective improvement are 0.37 ($P = 0.40$; 95% CI [0.04, 3.78]).

Interpretation of results

Patients ≥ 70 are less likely to report subjective improvement of their DO symptoms after intradetrusor Onabotulinum A toxin injection. This association persisted despite multiple statistical analyses considering different variables and multiple treatments. The presence of POP in patients < 70 years of age may increase risk of retention. Increasing number of injections significantly increases the risk of UTI in those ≥ 70 , but not in those < 70 .

Concluding message

Our findings shed important light on a frequently treated population of patients about which little is known. We hope that these findings allow for improved counseling of patients 70 years and older regarding their associated treatment risks and likelihood of symptom improvement.

References

1. Mahajan ST, Brubaker L. "Botulinum Toxin: From Life-Threatening Disease to Novel Medical Therapy." AJOG 196:7-15, 2007.
2. Brubaker L, Richter HE, Visco A, et al. "Refractory Idiopathic Urge Urinary Incontinence and Botulinum A Injection", J Urol 180: 217-222, July 2008.

Disclosures

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