

Video-urodynamic Predictive Factors of Successful OnabotulinumtoxinA Urethral Sphincter Injection for Neurogenic or Non-neurogenic Detrusor Underactivity

Chun-Hou Liao¹, Yuan-Hong Jiang², Hann-Chorng Kuo²

¹ Division of Urology, Department of Urology, Cardinal Tien Hospital and School of Medicine, Fu-Jen Catholic University

² Department of Urology, Buddhist Tzu Chi General Hospital and Tzu Chi University, Hualien, Taiwan



INTRODUCTION & OBJECTIVES

Although onabotulinumtoxinA urethral sphincter injection seems effective in treating voiding dysfunction due to detrusor underactivity (DU), not all patients have successful treatment results. Therefore, this study analyzed the treatment outcomes and identify videourodynamic predictive factors for successful outcome in patients with neurogenic and non-neurogenic DU.

MATERIALS AND METHODS

A total of 60 patients including 27 with non-neurogenic and 33 with neurogenic DU were treated with injections of total 100U of onabotulinumtoxinA into the urethral sphincter. Treatment outcomes were assessed 1 month after treatment using the Global Response Assessment. The treatment outcome was analyzed by the baseline videourodynamic characteristics.

RESULTS

Overall, good outcomes were reported in 36 (60%) patients of DU. The treatment outcome was significantly better in patients with non-neurogenic DU than neurogenic DU (74.1% VS 48.5%, $p=0.039$)(Table 1). However, a good treatment outcome was not related to age, gender, or any videourodynamic variables except for the condition of bladder neck during voiding (the rate of good outcome, open 94.3% vs tight 12.0%, $p<0.0001$). In the patients who had good treatment outcome after onabotulinumtoxinA treatment, the IPSS, Qmax, voided volume and PVR all improved in neurogenic or non-neurogenic DU (Table 2). However, the changes of measured parameters from baseline to post-treatment between groups showed no significant difference. A total of 12 patients (20%) reported de novo urinary incontinence after urethral onabotulinumtoxinA injection, including 4 developed stress urinary incontinence and 8 had exacerbated urgency urinary incontinence.

Table 1 Treatment outcomes according to patients' characteristics at baseline

	Good outcome (n= 36)	Poor outcome (n= 24)	Univariate P value	Multivariate P value
Age	63.7 ± 15.6	63.1 ± 15.5	0.887	
Sex (M/F)	11/25	6/18	0.434	
Non-neurogenic	20 (74.1%)	7 (25.9%)	0.039	
Neurogenic	16 (48.5%)	17 (51.5%)		
BN open	33 (94.3%)	2 (5.7%)	<0.0001	<0.001
tight	3 (12.0%)	22 (88.0%)		
FSF (ml)	173.3 ± 89.5	211.1 ± 87.6	0.111	
CBC (ml)	379.6 ± 130.8	408.1 ± 138.2	0.423	
Pdet (cmH2O)	7.06 ± 8.33	4.08 ± 5.69	0.133	
Pabd (cmH2O)	53.5 ± 40.2	59.0 ± 39.3	0.604	
Qmax (ml/s)	4.61 ± 5.03	3.88 ± 3.52	0.536	
PVR (ml)	265.9 ± 157.4	312.3 ± 165.5	0.278	

BN: bladder neck, DU: detrusor underactivity, FSF: first sensation of filling, CBC: cystometric bladder capacity, Pdet: detrusor pressure, Pabd: abdominal pressure, Qmax: maximum flow rate, PVR: post-void residual

Table 2 The changes of symptoms and uroflowmetry parameters in DU patients with good treatment outcomes after urethral sphincter onabotulinumtoxinA injection

	Good outcome (n= 36)	Poor outcome (n= 24)	Univariate P value	Multivariate P value
Age	63.7 ± 15.6	63.1 ± 15.5	0.887	
Sex (M/F)	11/25	6/18	0.434	
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CONCLUSION

OnabotulinumtoxinA urethral sphincter injection is effective in 60% of patients with voiding dysfunction due to neurogenic or non-neurogenic DU. Careful videourodynamic interpretation of bladder neck opening enables urologists to select appropriate candidates for onabotulinumtoxinA treatment.

Disclosures Statement: The authors declare no conflicts of interest.