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Kuo Y[1], Jhang J[2], Wu S[2], Tian J[2], Kuo H[2]
1. *Department of Urology, Yangming Branch of Taipei City Hospital, Taipei, Taiwan,* ***2.*** *Department of Urology, Buddhist Tzu Chi General Hospital and Tzu Chi University, Hualien, Taiwan*

ADVERSE EVENTS OF INTRAVESICAL ONABOTULINUMTOXINA INJECTION BETWEEN PATIENTS WITH OVERACTIVE BLADDER AND INTERSTITIAL CYSTITIS – DIFFERENT MECHANISM OF ACTION OF BOTOX ON BLADDER DYSFUNCTION

Hypothesis / aims of study
Intravesical onabotulinumtoxinA (BoNT-A) injection has been proposed to treat both overactive bladder (OAB) and interstitial cystitis/bladder pain syndrome (IC/BPS) in patients with refractory conditions. We compared adverse events (AEs) after BoNT-A treatment between IC/BPS and OAB in women.

Study design, materials and methods
IC/BPS patients who failed conventional treatments were enrolled to receive suburothelial injection of BoNT-A (100 U) followed by hydrodistention. Age matched OAB female patients refractory to antimuscarinic agents underwent BoNT-A (100 U) injection. The bladder capacity, maximum flow rate (Qmax), post-void residual (PVR), and voiding efficiency (VE) at baseline, 3 and 6 months, and the post-treatment AEs were analyzed between groups.

Results
Finally, 89 IC/BPS and 72 OAB women were included. In OAB group, the bladder capacity and PVR increased, and VE decreased significantly at 3 and 6 months after BoNT-A treatment. In IC/BPS group, the Qmax increased significantly at 6 months. There were significant differences in changes of capacity, Qmax, PVR and VE between the two groups. Moreover, OAB patients suffered more frequently from events of hematuria, UTI, and large PVR (>200 mL), but less frequently from event of straining to void.

Interpretation of results
To our knowledge, this is the first study to compare the BoNT-A injection related AEs between OAB and IC/BPS patients. Our data demonstrated that by injecting 100 U of BoNT-A into the suburothelial space, the volume of bladder capacity and PVR increased, and the VE decreased significantly in women with OAB than those with IC/BPS within 6-month follow-up period. These results imply that the contractility of bladder in OAB patients might be more susceptible to BoNT-A injection than that in IC/BPS, which might reflect the different mechanism of action of BoNT-A on bladder dysfunction. Further investigations to compare the changes of sensory or motor proteins in the OAB and IC/BPS bladder at baseline and after BoNT-A treatment might provide evidence for this speculation.

Concluding message
In conclusion, OAB women had higher PVR volume and lower VE than those in IC/BPS after BoNT-A injection. These results imply that the bladder contractility of OAB patients are more susceptible to BoNT-A, which might reflect the different mechanism of action of Botox on bladder dysfunction.

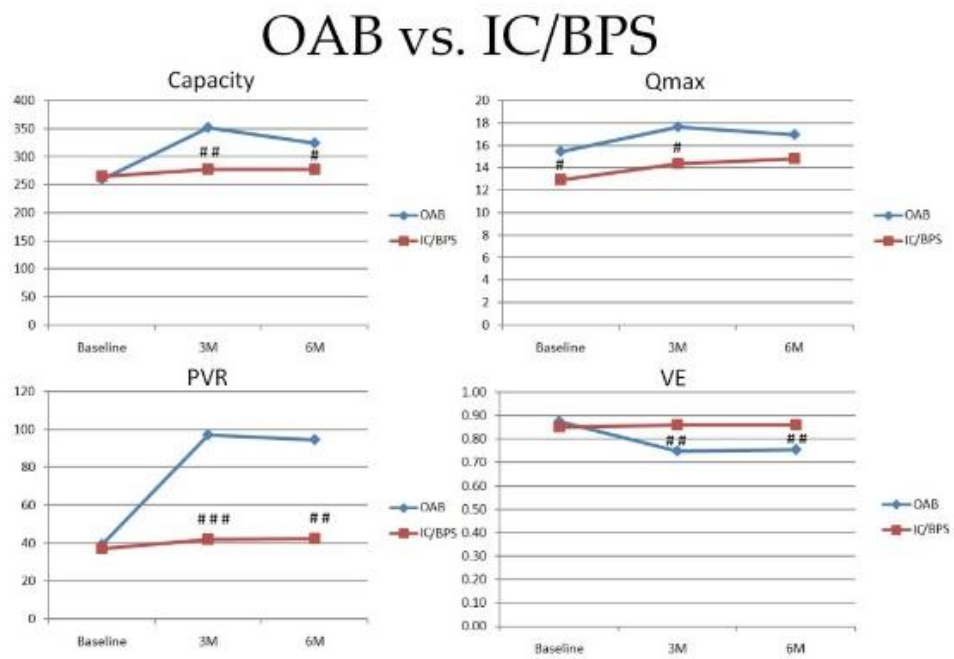

Fig. 1. The changes of bladder capacity, maximum flow rate (Qmax), postvoid residual (PVR), and voiding efficiency (VE) at time-points after onabotulinumtoxinA injection between patients with overactive bladder (OAB) and interstitial cystitis/bladder pain syndrome (IC/BPS).

Table 1. Characteristics of study patients

Group	OAB (N=72)	IC/BPS (N=89)	p
Age (years)	49.15±10.85	48.81±11.81	0.777
Functional bladder capacity (mL)	351.43±135.21	124.72±76.91	0.000[1]
Daytime frequency (times/day)	34.05±14.56	15.64±7.88	0.000[1]
Nocturia (times/night)	8.05±2.99	4.90±4.93	0.009[1]
Urgency (times/24 h)	33.00±17.87	-	
Urge urinary incontinence (times/24 h)	10.57±12.98	-	
Visual analogue scale	-	5.43±2.24	
Maximum flow rate (Qmax) (mL/s)	15.73±9.69	12.62±5.48	0.012[1]
Voided volume (mL)	224.86±122.24	244.41±112.12	0.364
Postvoid residual (mL)	39.19±100.28	38.01±93.26	0.916
Total bladder capacity (mL)	260.93±143.25	266.19±117.15	0.800
Voiding efficiency	0.88±0.20	0.85±0.30	0.577
First sensation of filling (mL)	112.14±68.90	117.33±53.28	0.744
Strong desire to void (mL)	210.86±120.41	197.45±87.74	0.597
Cystometric bladder capacity (mL)	264.61±145.28	274.72±109.92	0.714
Detrusor pressure at Qmax (cmH_2O)	27.49±13.60	19.19±10.65	0.000 [1]

1p<0.05. Independent t test.

Table 2. The adverse events in patients with overactive bladder and interstitial cystitis/bladder pain syndrome

Adverse Events	OAB (%)	IC/BPS (%)	p
Hematuria	7 (9.7)	0 (0)	0.003[1]
UTI	20 (27. 8)	6 (6.7)	0.000[1]
Straining to void	6 (8.3)	27 (30.3)	0.001[1]
PVR > 200 mL	23 (31.9)	6 (6.7)	0.000[1]
AUR	1 (1.4)	0 (0)	0.265
Any	42 (58.3)	38 (42.7)	0.048[2]

[1] Pearson Chi-square with Fisher exact correction. [2] Pearson Chi-square test.
UTI: urinary tract infection. PVR: postvoid residual. AUR: acute urinary retention.

Disclosures
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