604

Kuo Y[1], Lai M[1], Kuo H[2]

1. *Department of Urology, Taipei City Hospital, New Taipei City, Taiwan,* ***2.*** *Department of Urology, Buddhist Tzu Chi General Hospital and Tzu Chi University, Hualien, Taiwan*

PREDICTIVE FACTORS FOR SUCCESSFUL BOTULINUM TOXIN A INJECTIONS FOR REFRACTORY INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME.

Hypothesis / aims of study

Although intravesical injection of botulinum toxin A (BoNT-A) has been proved to be promising in treating patients with interstitial cystitis/painful bladder syndrome (IC/PBS), what kind of patients may benefit from this treatment modality remains unclear. We conducted this study and try to find out the predictors for a successful treatment outcome.

Study design, materials and methods

Patients with IC/PBS who failed conventional treatments were prospectively enrolled. They underwent intravesical injection of 100 U of BoNT-A immediately followed by cystoscopic hydrodistention under intravenous general anaesthesia. The same treatment was repeated at an interval of 6 months for up to 4 times. In each time of therapy, variables such as O'Leary-Sant symptom and problem indexes (ICSI and ICPI), bladder pain visual analogue scale (VAS), functional bladder capacity (FBC), daily urinary frequency, nocturia and urodynamic parameters were measured at baseline and 6 months after every treatment. Global response assessment (GRA) was obtained to evaluate the treatment outcome 6 months after each time of therapy. GRA $\geqq 2$ was defined as successful result. Univariate and multivariate logistic regression analyses were used to identify variables predicting treatment success at 6 months after one and four times of BoNT-A injection.

Results

A total of 94 patients (13 men and 81 women) who aged 48.1±12.4 years were enrolled in this study. Among them, 83, 63, 44 and 32 patients completed 1st, 2nd, 3rd and 4th times of BoNT-A injection, while 68, 40, 35 and 30 patients completed the follow-up, respectively. As the number of treatment increased from one to four times, the IC/PBS symptom score, pain VAS and FBC significantly improved. When BoNT-A injection was repeated up to four times, volumes at first sensation of filling, first desire to void and cystometric capacity significantly increased (Table 1). In addition, the success rate at 6 months after the first and fourth BoNT-A injection were 44% (30/68) and 63% (19/30) respectively (p=0.024). Univariate and multivariate logistic regression analyses revealed that a lower baseline ICSI was the only independent predictor for treatment success at 6 months after single BoNT-A injection (Table 2). However, a lower baseline ICSI and a larger baseline MBC were found to be independent prognostic predictors at 6 months after four times of BoNT-A injection

Interpretation of results

Baseline ICSI represents the independent predictor for both short term and long term use of BoNT-A injection in treating refractory IC/PBS. More severe neurogenic inflammation involving the bladder, prostate and pelvic cavity may account for a unfavorable treatment outcome. Baseline MBC was found to be an independent predictor for treatment success after long term use of BoNT-A injections. Long term inflammation and destruction of bladder tissue may cause fibrotic change, reduce bladder capacity and thus limit the treatment efficacy of BoNT-A. These results suggest patients with IC/PBS should be diagnosed and treated as early as possible.

Concluding message

The baseline ICSI is an independent predictor for single BoNT-A injection while the baseline ICSI and MBC are predictive factors for long term repeated BoNT-A injections in treating patients with refractory IC/PBS.

Table 1. Treatment results after one to four BoNT-A injections.

Success rate at 6 months after 1 to 4 BoNT-A injections.				
	Successful	Failed	Total	%
BoNT-A X1	30	38	68	44
BoNT-A X2	18	22	40	45
BoNT-A X3	23	12	35	66
BoNT-A X4	19	11	30	63
				P=0.084

Definition of success: GRA$\geqq$2

Table 2. Univariate and multivariate logistic regression of treatment outcome at 6 months after 1st and 4th BoNT-A injection.

Variables at baseline	Univariate		Multivariate	
	OR (95% CI)	p value	OR (95% CI)	p value

BoNT-A x1				
ICSI	0.790 (0.658-0.950)	0.012	0.776 (0.618-0.973)	0.028
FBC	1.007 (1.000-1.014)	0.041	1.005 (0.997-1.013)	0.246
FD	1.007 (0.999-1.016)	0.084	1.002 (0.993-1.012)	0.644
BoNT-A x4				
ICSI	0.650 (0.454-0.929)	0.018	0.508 (0.285-0.903)	0.021
FBC	1.017 (1.002-1.032)	0.023	1.019 (0.998-1.039)	0.077
MBC	1.006 (1.001-1.012)	0.029	1.008 (1.001-1.016)	0.018

ICSI: O'Leary-Sant symptom indexes, FBC: functional bladder capacity, FD: first desire to void, MBC: maximal anaesthetic bladder capacity.

Disclosures
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