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EFFICACY AND SAFETY OF REPEATED INTRAVESICAL ONABOTULINUMTOXIN-A INJECTIONS FOR INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME: LONG-TERM FOLLOW-UP

Hypothesis / aims of study

Intravesical Onabotulinumtoxin-A (BoNT-A) injection is considered to be a safe and effective therapeutic option for interstitial cystitis/ bladder pain syndrome (IC/ BPS), though its sustainability after only one single injection remains unsatisfactory. The purpose of this study was to evaluate the long-term efficacy and safety of repeated Intravesical BoNT-A injections in the treatment of IC/ BPS.

Study design, materials and methods

100 U of BoNT-A was injected intravesically every 6 months for up to 4 times in 104 IC/ BPS patients who failed conventional therapy. At 6 months after the initial injection, patients could decide to remain in or quit study based on their subjective therapeutic effects. Those who received only one injection served as active controls. A 7-point centered scale was implied to access their bladder symptoms in comparison with baseline. Additional parameters included O'Leary-Sant symptom indexes (ICSI) and problem indexes (ICPI), visual analogue score (VAS), voiding diary variables, urodynamic parameters, maximal bladder capacity under anaesthesia, glomerulation grade, global response assessment (GRA) and adverse events were recorded. Long-term successful rates among groups were analyzed by using Kaplan-Meier estimator.

Results

Among 104 patients, 14 received single, 18 received two, 13 received three, and 59 received four injections, respectively. The mean (± SD) of ICSI, ICPI, total scores, VAS, functional bladder capacity, and daytime frequency all showed significant improvement after repeated BoNT-A treatment with different injections (Table 1). The occurrence of adverse events did not increase with increasing number of BoNT-A injections (Table 2). Kaplan-Meier survival curves revealed better success rate in the patients whom received repeated injections (Fig. 1).

Interpretation of results

The results of this study demonstrated that repeated intravesical injections of BoNT-A increased FBC and provided long-term pain relief in patients with IC/PBS who were refractory to conventional treatment. The long-term success rates of 3 or 4 repeated intravesical BoNT-A injections were better than a single or two injections. The incidence of adverse effects did not increase after repeat BoNT-A injections. Previous studies showed intravesical injections of BoNT-A have anti-inflammatory effect on IC/BPS, and current study also implies repeated BoNT-A injections might achieve long-term control of bladder inflammation.

Concluding message

Repeated intravesical BoNT-A injections are safe and effective for pain relief and can increase bladder capacity and provide a better long-term success rate than a single injection for treatment of IC/PBS.

Table 1. Changes of baseline parameters before each time-point of BoNT-A injection

BTX-A(4) (N=59)	BTX(1) Baseline	BTX(2) Baseline	BTX(3) Baseline	BTX(4) Baseline	P value
ICSI	12.6±3.5	8.9±4.5	8.7±3.9	8.3±4.2	<0.0001
CPI	11.9±2.9	8.2±4.6	7.9±4.3	6.8±4.9	<0.0001
OSS	24.6±6.1	17.1±8.8	16.5±8.1	15.2±8.9	<0.0001
VAS	5.4±2.2	3.6±2.2	3.3±2.4	2.9±2.3	<0.0001
FBC	133.5±74.0	172.2±83.8	205.8±93.9	226.9±108.8	<0.0001
Frequency	15.2±7.1	10.8±5.6	10.9±5.8	10.3±5.3	<0.0001
Noturia	4.1±2.9	3.3±2.8	2.9±2.2	3.2±2.5	0.044
Qmax	13.9±4.7	13.3±6.0	13.2±4.8	12.9±5.5	0.830
Volume	260.3±101.6	277.2±119.9	293.7±127.8	282.1±147.7	0.401
PVR	17.1±38.1	42.4±77.9	47.8±84.7	64.1±114.2	0.015
CBC	272.9±110.7	316.0±107.1	334.3±109.4	345.2±149.4	0.006

MBC	677.7±217.4	745.0±205.9	728.6±222.2	756.4±192.2	0.013
GRA	0	1.3±1.1	1.5±0.9	1.8±1.1	<0.0001
Gr	1.7±1.0	1.5±0.9	1.3±0.9	1.3±0.9	0.006

BoNT-A: botulinum toxin type A, CBC: cystometric bladder capacity, FBC: functional bladder capacity, GRA: global response assessment, ICPI: interstitial cystitis problem indexes, ICSI: interstitial cystitis symptom indexes, MBC: maximal bladder capacity, OSS: O'Leary-Sant symptom score, PVR: postvoid residual, Qmax: maximum flow rate, VAS: visual analog scale.

Table 2. Adverse events occurred after repeated BoNT-A injections. There was no significant difference among each injection groups

	None	UTI	Dysuria	CISC	AUR	Hematuria	Total
BoNT-Ax1	62 (59.6%)	6 (5.8%)	34 (32.7%)	0	0	2 (1.9%)	104
BoNT-Ax2	44 (48.9%)	7 (7.8%)	37 (41.1%)	0	1 (1.1%)	1 (1.1%)	90
BoNT-Ax3	30 (41.7%)	10 (13.9%)	30 (41.7%)	1 (1.4%)	1 (1.4%)	0	72
BoNT-Ax4	32 (54.2%)	7 (11.9%)	20 (33.9%)	0	0	0	59

AUR: acute urinary retention, CISC: clean intermittent self-catheterization, UTI: urinary tract infection

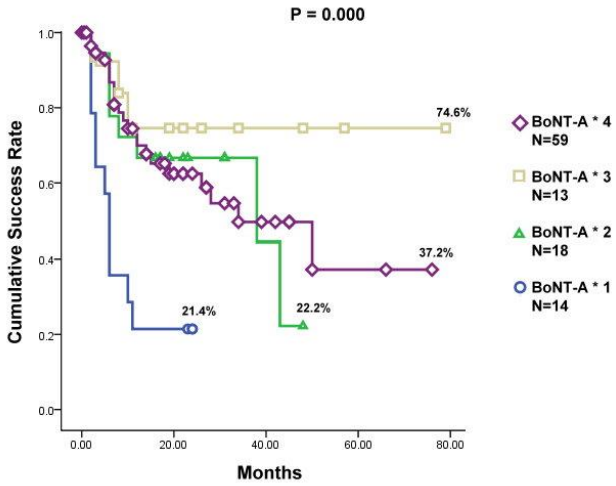

Fig. 1. The cumulative success rates of the 104 patients receiving single injection or different numbers of repeated onabotulinumtoxin-A (BoNT-A) injections.

Disclosures
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