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INTRA-DETRUSOR BOTULINUM NEURO-TOXIN A INJECTION PREVENTS RAT BLADDER FIBROSIS SECONDARY TO BLADDER OUTLET OBSTRUCTION

Hypothesis / aims of study

The effect of BONT-A on PUO-induced detrusor over-activity and histo-morphological changes is not known. We evaluated effects of BONT-A injections on bladder function and histo-morphology in a male-rat-overactive-bladder model, created by PUO.

Study design, materials and methods

A total of 45 male Sprague-Dawley rats were separated into 5 groups. PUO was created in all rats except the control group (1). At the 6th week after PUO, 50 µl of saline (2 sham groups) or 50 µl BONT-A (2 treatment groups) was injected in 5 divided doses of total 50 U (50 µl) in the anterior, posterior, left and right lateral walls and dome of the bladder (2). Treatment and sham groups were studied 5 and 30 days after injection and neuro-pharmacological and histo-morphological findings on bladder tissues were compared to the control group (figure1).

Results

Bladder muscle hypertrophy and connective tissue increase were detected in saline groups at 5th and more prominent at 30th day after injection.

At 5th day after saline injection, isometric tension studies revealed significantly increased contractile response to electrical field stimulation (EFS) and carbachol compared to control group. This bladder tissue hyperactivity in saline group disappeared at 30th day. There was no statistically significant difference between control and BONT-A groups in terms of contractile responses to EFS and carbachol, both at 5th and 30th days.

There was no difference in terms of relaxation responses to EFS and isoproterenol in pre-contracted bladder tissues from all groups although relaxation responses in BONT-A group appeared to be weaker at 5th day after injection (not reaching statistical significance).

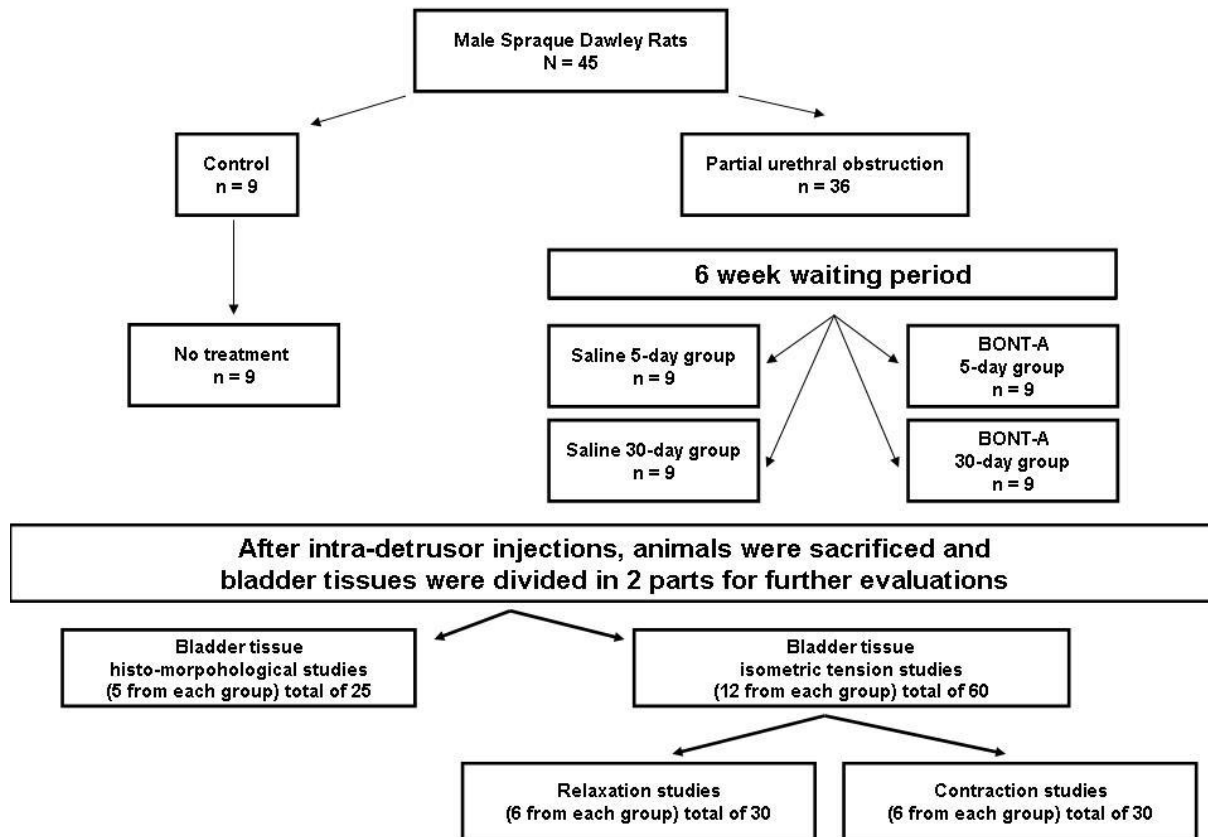
Interpretation of results

BONT-A significantly prevented PUO-induced histological changes in the bladder tissues compared to saline groups, both at 5th and 30th day after injection.

Concluding message

PUO induces bladder tissue hyperactivity and intra-detrusor BONT-A injection decreases PUO-induced bladder tissue hyperactivity at 5 days after injection. As the unique finding of this study, intra-detrusor BONT-A injections also appear to prevent bladder fibrosis secondary to PUO.

Figure 1: Study planning



References

1. 1. Melman A, Tar M, Boczko J, Christ G, Leung AC, Zhao W, Russell RG. Evaluation of two techniques of partial urethral obstruction in the male rat model of bladder outlet obstruction. Urology 2005; 66(5): 1127-33
2. 2. Smith CP, Franks ME, McNeil BK, et al. Effect of Botulinum toxin A on the autonomic nervous system of the rat lower urinary tract. J Urol 2003; 169: 1896-900

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Is this a clinical trial?	No
What were the subjects in the study?	ANIMAL
Were guidelines for care and use of laboratory animals followed or ethical committee approval obtained?	Yes
Name of ethics committee	Marmara University School of Medicine Institutional Ethics Committee for the Care and Use of Experimental Animals