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THE PREVENTABLE EFFECT OF DIURESIS ON THE CONTRACTILE DYSFUNCTION OF RAT DETRUSOR SMOOTH MUSCLE SECONDARY TO BLADDER OUTLET OBSTRUCTION

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Aims of Study : Our previous study showed that inducing diuresis in normal rats or rabbits results in a significant increase in bladder mass and strengthens detrusor smooth muscle contractility in response to various stimuli. The aim of the present study was to investigate how diuresis acts on the contractile ability of rat detrusor smooth muscle with bladder outlet obstruction.

Methods : Forty male S-D rats were divided into following four groups. Group 1 and 3 were fed with normal water. Group 2 and 4 were supplied with 5% sucrose to induce chronic diuresis. Three weeks later, partial outlet obstructions were created in both group 3 and 4. After 4 weeks of obstruction, bladders in all groups were rapidly excised and cut into longitudinal muscle strips. Each strip was mounted in an isolated bath for contractile studies.

Results : Outlet obstruction stimulated significant increase in bladder mass (weight) and resulted in a significant decrease in bladder muscle contractility. Sucrose-induced diuresis also caused a significant increase in bladder mass, but significantly potentiated a bladder muscle contractility in both rats with and without bladder outlet obstruction. After 3 weeks of diuresis, outlet obstruction did not result in decrease in vitro contractile responses to field stimulation (32Hz), carbachol (22 μ M), and KCl (120mM).

Conclusions : Diuresis showed the preventable effect on the bladder contractile dysfunction secondary to outlet obstruction inducing an increase in bladder mass and potentiating a contractile strength.

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