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EFFECTS OF CHRONIC TREATMENT WITH CILOSTAZOL, A PHOSPHODIESTERASE 3 INHIBITOR, ON THE RAT BLADDER WITH PARTIAL BLADDER OUTLET OBSTRUCTION

Hypothesis / aims of study
To investigate whether bladder dysfunction after bladder outlet obstruction (BOO) could be altered by treatment with cilostazol, a phosphodiesterase 3 inhibitor (PDE3i), which is an antiplatelet agent and has been used to improve perfusion of the heart and brain.

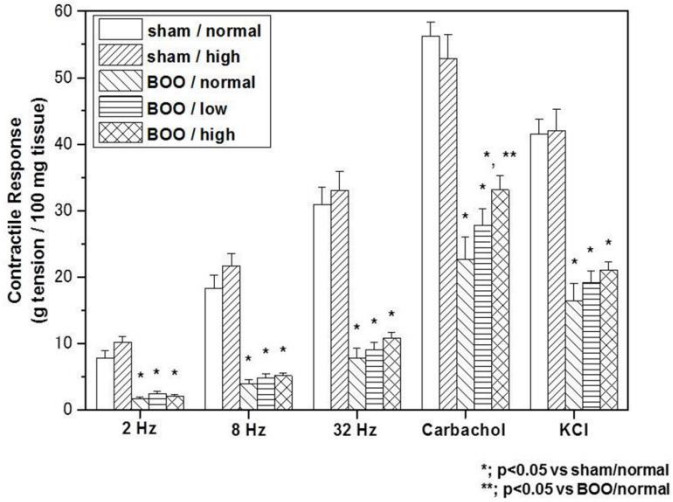
Study design, materials and methods
Twelve-week-old female SD rats were divided into five groups; group 1 and 2, sham operated rats (4 rats in each); group 3-5, BOO rats (6 rats in each). Group 1 and 3 rats were given normal diet, and group 2 and 5 rats were given high dose PDE3i diet, and group 4 rats were given low dose PDE3i diet. PDE3i was given within diet from the day of surgery. At 4 weeks after creation of BOO, the bladder was excised and dissected into four longitudinal strips for isometric organ-bath assay. Contractile responses of bladder strips to electrical field stimulation (EFS; 2, 8, 32 Hz), carbachol (20 □M) and KCl (120 mM) were determined for each group.

Results
BOO induced a significant increase in bladder weight in group 3 to 5 compared with group 1 and 2. Bladder weights of the rats treated with PDE3i were not significantly different from those of the corresponding rats treated with vehicle. The contractile forces in response to EFS, carbachol and KCl in group 3 were significantly reduced and about 20-40 % of those in group 1. PDE3i treatment in BOO groups recovered the reduced contractile force of the bladder strips in dose-dependent manner.

Interpretation of results
PDE3i has a small but significant protective effect on the contractile dysfunction induced by 4-week BOO in rats, although the increase in bladder weight was not altered. PDE3i could be a useful protection against contractile dysfunction of the obstructed bladder.

Concluding message
The results obtained in this study suggest that cilostazol, PDE3i could improve reduced blood flow in BOO possibly through their antiplatelet and vasodilating actions and, as a result, could ameliorate deterioration of bladder function associated with BOO. Furthermore, the effect of PDE3i is almost similar to PDE5i, indicating a potential use of PDE family in protecting bladder function by selective use.

Figure



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Disclosures
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