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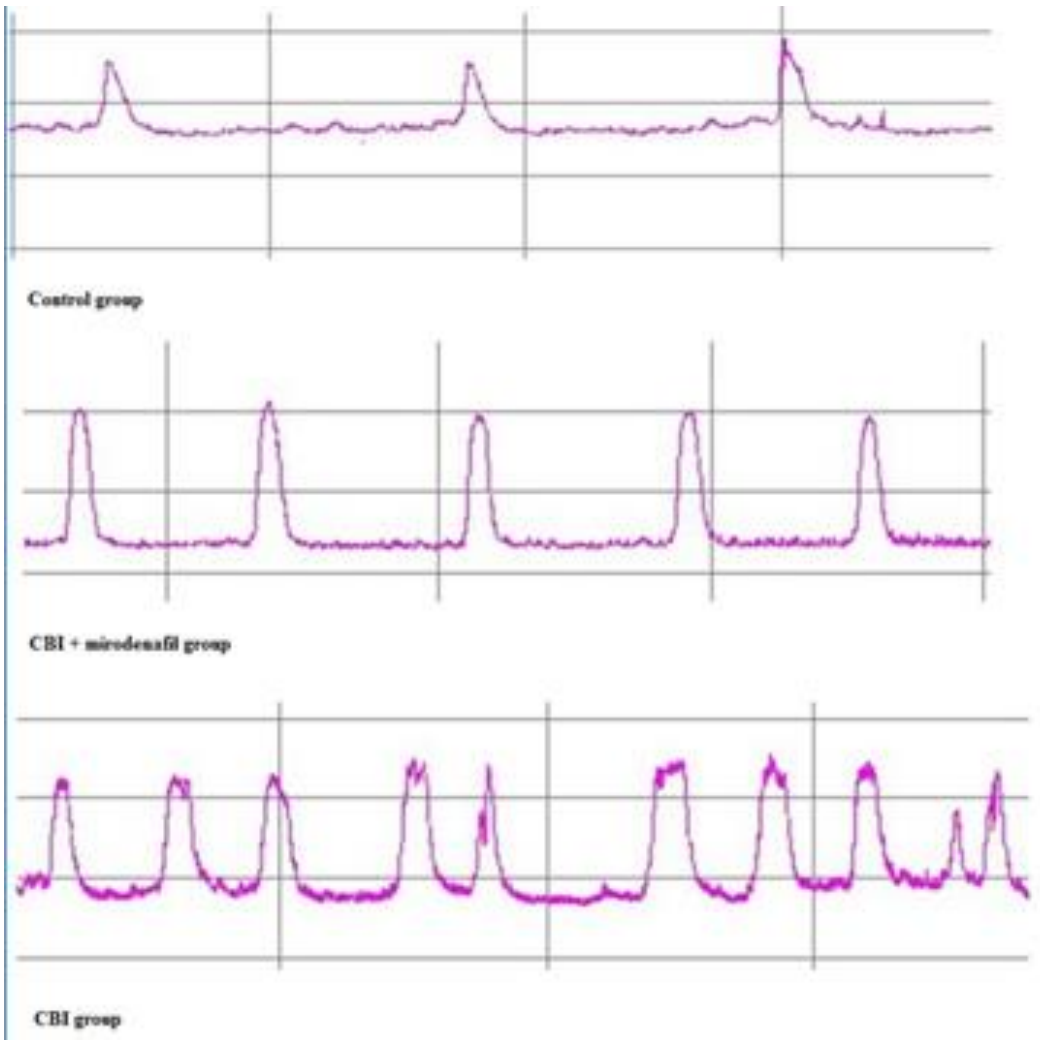
Bae J H[1], Choi H[1], Shim J S[1], Oh M M[1], Lee J G[1]
1. *Dept. of Urology, Korea Universtiy*

EFFECT OF MIRODENAFIL IN PROTECTING BLADDER FUNCTION IN CHRONIC BLADDER ISCHEMIA RAT MODEL

Hypothesis / aims of study
To investigate the protective effect of mirodenafil on bladder function in a rat model of chronic bladder ischemia (CBI).

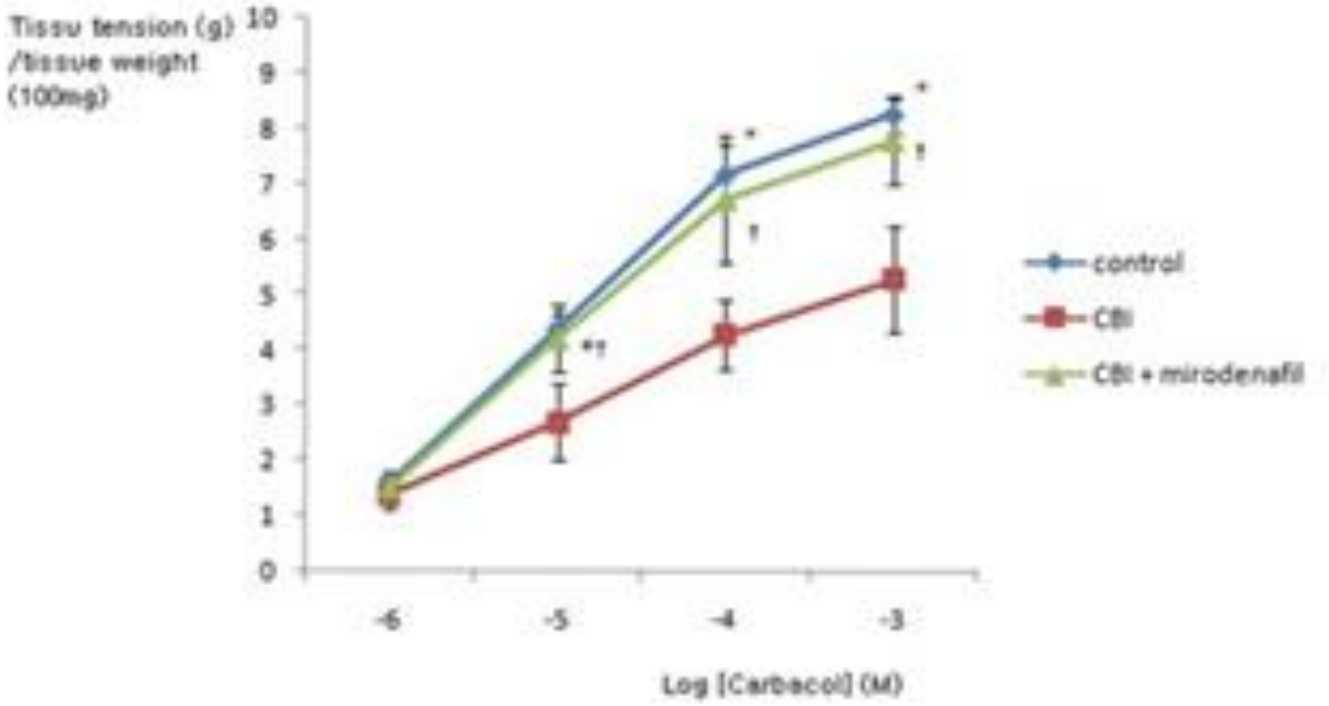
Study design, materials and methods
Twenty-four Sprague-Dawley rats were randomized to three groups: untreated, sham operated rats (control group); untreated, CBI model rats (CBI group); and CBI rats treated daily with 4 mg/kg mirodenafil (CBI+mirodenafil group). The CBI and CBI+mirodenafil groups underwent endothelial injury to the iliac arteries and were fed a 2% cholesterol diet after injury.
Four weeks after surgery, the CBI+mirodenafil group started daily treatment with mirodenafil for four weeks. Eight weeks after surgery, continuous in vivo cystometry and in vitro organ bath studies of detrusor muscle strips were performed.

Results
Results of cystometric parameters, showing a decrease in ICI, Bcap, and Bcom in the CBI group



Parameter	Control(n=8)	CBI (n=8)	CBI+mirodenafil(n=8)
BP(mmHg)	3.4±0.8	3.6±0.5	3.3±0.3
TP(mmHg)	10.8±1.5	11.8±0.6	10.9±0.8
MP(mmHg)	28.2±2.5	27.2±0.4	29.2±1.0
TP–BP(mmHg)	7.4±1.3	8.2±0.9	7.6±0.5
ICI(min)	5.3±1.2*	2.1±0.5	4.2±1.0†
Bcap (mL)	1.1±0.06*	0.4±0.03	0.9±0.04†
Bcom (mL/mmHg)	0.15±0.02*	0.05±0.04	0.12±0.03†

Carbachol-induced contraction in the detrusor muscle strip



Interpretation of results

In vivo cystometry revealed that the rats in the CBI group had a significantly higher micturition frequency, lowerbladder capacity, and lower compliance than the rats in the control and CBI+mirodenafil groups. The detrusor muscle strip study showed that the magnitude of the carbachol-induced contractile response was significantly lower in the CBI group compared to either the control or CBI+mirodenafil group. Addition of daily mirodenafil after induction of CBI decreased the contractile response, compared to untreated CBI rats. CBI induced submucosal fibrosis and degenerative changes in bladder walls, which was reversed by the addition of mirodenafil.

Concluding message

Daily treatment with mirodenafil showed protective effects against bladder dysfunction resulting from CBI in rats.

References

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Disclosures

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