

NITROSATIVE STRESS ON THE RABBIT URINARY BLADDER INDUCES C-FIBER-MEDIATED DETRUSOR OVER ACTIVITY AND AN UP-REGULATION OF RHO KINASE I AND CPI-17

Hypothesis / aims of study

This study investigated the effects of nitrosative stress on the bladder sensory function and on the expression of Rho-kinase and smooth muscle regulatory protein CPI-17 in rabbit detrusor.

Study design, materials and methods

Nitrosative stress of the bladder was induced on male New Zealand rabbits by intravesical instillation of N-morpholinonydronimine (SIN-1), a peroxydinitrite donor, for 2 hours. The study consisted of two groups: group 1(N=6) received normal saline instillation, group 2(N=6) received SIN-1 instillation. Before and after instillation, cystometry was performed. Bladder tissues from bladder body were obtained following the instillation. Expressions of nitrotyrosine, Rho kinase I, Rho kinase II and CPI-17 in the detrusor were determined with western blotting. To determine the role of C-fiber in SIN-1-induced sensory changes, capsaicin was given subcutaneously prior to SIN-1 instillation in a separate group of animals.

Results

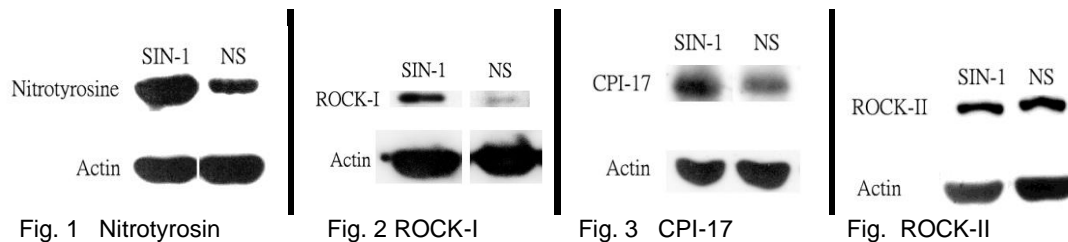
(1) Comparing with normal saline group, instillation of SIN-1 significantly reduced the cystometric bladder capacity and inter-contraction interval (ICI). In the animals pre-treated with capsaicin, bladder capacity and ICI were not changed by SIN-1 instillation. (2) The results of western blot showed that following SIN-1 instillation, there is an increase in nitrotyrosine expression, which is associated with an up-regulation of Rho kinase I and CPI-17 expression. However, Rho kinase II expression was not changed by SIN-1 instillation.(figures 1-4)

Interpretation of results

Nitrosative stress on the rabbit urinary bladder induced c-fiber-mediated detrusor over activity and an up-regulation of rho kinase I and CPI-17.

Concluding message

Nitrosative stress on the bladder induced detrusor overactivity, which might be secondary to C-fiber activation and an up-regulation of Rho kinase I and CPI-17.



Specify source of funding or grant	Taiwan National Science Counsel
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	IRB of Animal Research of Taipei Veterans General Hospital