

EXPRESSION OF M2, M3, AND NACHR (-7 SUBUNIT RECEPTORS IN HUMAN BLADDER MUCOSA FROM WOMEN WITH MIXED URINARY INCONTINENCE

Hypothesis / aims of study

Previous studies reported indirect evidence for urothelial synthesis and release of acetylcholine (ACh). They also showed the expression and layer-specific distribution of multiple cholinergic receptors in human urothelium. Taken together, these results suggest that human urothelial function may be under the cholinergic regulation and **may be** disturbed in patients with bladder overactivity. Thus, here we have measured the mRNA and protein contents of muscarinic receptor type 2 (M2R), M3R and ionotropic nicotinic receptor (nAChR) α -subunit 7 in mucosa from patients with mixed urinary incontinence (MI) compared with age-matched control women.

Study design, materials and methods

Twenty patients were included in our study. With cold cup biopsy forceps, bladder mucosa have been obtained from patients with MI and then frozen immediately in liquid nitrogen for RNA and protein measurements using reverse-transcription polymerase chain reaction and western blot analysis, respectively. For control tissue specimen, bladder biopsies were taken from 10 asymptomatic female patients.

Results

Expressions of M2R and M3R mRNA in bladder mucosa from MI patients were significantly lower than those from the control. Protein content of M2R was also down regulated in MI patients. The expression of nACh7 α -subunit mRNA and protein were significantly less in mucosa from MI patients than from age-matched controls.

Interpretation of results

These results show that predominantly expressed cholinergic receptors were down regulated in mucosa from patients with MI than from age- and gender-matched controls.

Concluding message

The clinical significance of alterations of these cholinergic receptors in urothelium is unknown at present and elucidation of role of these receptors might provide understand the pathogenesis of overactive bladder.

References

1. Chess-Williams R. Potential therapeutic targets for the treatment of detrusor overactivity. *Expert Opin Ther Targets* 2004;8:95-106
2. Nakamura T, Kimura J, Yamaguchi O. muscarinic M2 receptors inhibit Ca²⁺-activated K⁺ channels in rat bladder smooth muscle. *Int J Urol* 2002;9:689-96

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<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Daegu Catholic Univeristy Medical Center IRB
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes