

SINGLE NUCLEOTIDE POLYMORPHISM OF ALPHA1A- AND BETA3-ADRENOCEPTORS IN UROLOGICAL PATIENTS WITH AND WITHOUT MICTURITION SYMPTOMS. - POSSIBLE MECHANISM FOR HYPERACTIVITY OF ADRENERGIC NERVE AND TAILOR-MADE MEDICINE.

Aims of Study

The roles of alpha 1a-adrenoceptor in the prostatic obstruction, and beta3-adrenoceptor in storage function of urinary bladder detrusor have recently been known. The expression of mRNAs and in vitro function of these receptors have been extensively studied. However, little is known regarding urological implication of genetic polymorphism of these receptors. Now, single nuclear polymorphism (SNP) is one of ideal tools to investigate tailor-made treatment in many fields of medicine, and SNP in beta3-adrenoceptor, cytosine-to-thymidine mutation that result in the replacement of tryptophan by arginine at position 64 (Trp64Arg) has been widely studied in non-insulin dependent diabetes mellitus patients. SNP in alpha 1a-adrenoceptor has rarely been studied except for the substitution of cytosine for thymidine at nucleotide 1441 thereby Arg492 to Cys492 transition in normal and BPH patients. The objective of the present study is to explore the difference in SNP of these 2 receptor genes between patients with and without micturition symptoms.

Methods

Forty-four patients, thirty one female and thirteen male were included. Mean age was 60.25 (6-85) years old. Seventeen patients did not reveal micturition symptoms (Sx (-)), and the other 27 patients revealed micturition symptoms (Sx (+)) including 16 neurogenic bladder patients and 7 BPH patients. Genetic polymorphism were evaluated using genomic PCR and restriction fragment length polymorphism (RFLP) of PCR products using Pst and Bst OI for beta3-adrenoceptor, and alpha 1a-adrenoceptor, respectively.

Results

The frequency of mutation in alpha 1a-adrenoceptor was higher in Sx (-) (0.412) group than in Sx(+) group (0.296). The frequency of mutation in beta3-adrenoceptor was higher in Sx (+) group (0.333) than in Sx(-) group (0.284). There was no difference in the allele frequency between C and T in either alpha 1a-, or beta3-adrenoceptor.

Conclusions

SNP of adrenergic receptor gene may one of keys for developing tailor-made medicine in patients with urinary symptoms.

References

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