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THE EXPRESSION LEVEL OF ALPHA1-ADRENORECEPTOR SUBTYPE IN PROSRTATIC HYPERTROPHY

Hypothesis / aims of study
Of the alpha1-adrenoceptor(-AR) subtypes in the prostate, the alpha1A-AR subtype has been said to be predominant. However, there has been reported to be a difference the therapeutic effect of tamusulosin(high alpha1a selectivity) and naftopidil(high alpha1d selectivity) with the patient and symptom. Assuming that there might be differences in expression level of alpha1-AR subtype eith the individual based on the genetic background of the patient between patients, we measured the expression level of each alpha1-AR subtype in prostatic hypertrophy tissue using quantitative RT- polymerase chain reaction.

Study design, materials and methods
The subjects were 35 patients (67.9±6.9-year-old average age) histologically diagnosed with benign prostatic hypertrophy who had voiding disorders as chief complaints. None of the patients had been administered an alpha-blocker before the biopsy. The estimated prostatic volume was 33.6±13.8ml(average±S.D.). After obtaining approval from our ethics committee and informed consent from the patient, we measured the alpha1-AR subtype mRNA quantity from the prostatic tissue obtained in a biopsy by quantitative RT- polymerase chain reaction (ABI7700 sequence detector).

Results
The mean expression level of each subtype was 2.15±2.45, 0.53±0.74 and 2.43±2.56copy/beta-actin for alpha1a, alpha1b and alpha1d respectively. The ratio of the mean expression was 41.2%, 9.8% and 49.1% for alpha1a, alpha1b and alpha1d respectively. The alpha1d expression level tended to be elavated. All alpha-AR subtype expression levels tended to increase, as the prostate volume increased, and there was a correlation between the density of alpha1a and alpha1d-AR.

Interpretation of results
There were found to be patient with a subtype predominantly alphaA-AR and those predominantly alpha1D-AR, although the alpha1A-AR was predominant in the prostatic glandular tissue. The expression level was suggested to correlate with prostatic volume and age.

Concluding message
This may explain the difference in the therapeutic effect of each alpha1-blocker for prostatic hypertrophy, tamusulosin and naftopidil due to the difference in affinity for the alpha1-AR. These results suggest the need of selection and development of drugs in proportion to the expression ratio of the alpha1-AR subtype.