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ROLE OF ALPHA-1D ADRENOCEPTOR IN STORAGE SYMPTOMS OF THE BENIGN PROSTATIC HYPERTROPHY PATIENTS

Hypothesis / aims of study

We have been reported that there is the individual difference in expression level of alpha-1a adrenoceptor(α 1a-AR) subtype and alpha-1d adrenoceptor(α 1d-AR) subtype in the prostatic hypertrophy tissue and the effect of the selective alpha-1 blocker for a lower urinary tract symptom is controlled by the expression level. There are some reports recently that storage symptoms of benign prostatic hypertrophy(BPH) patients are improved by naftopidil that has a higher affinity for the α 1d-AR than for the α 1a- and α 1b-AR subtype. We examined whether improvement of the storage symptoms was related to expression level of the α 1d-AR subtype in prostatic tissue.

Study design, materials and methods

Four transperitoneal ultrasound prostate biopsy specimens were obtained from the transition zone in each 28 men aged 50 to 82(mean; 67.9 \pm 6.9 years) with untreated BPH. Taqman quantitative reverse transcription polymerase chain reaction was performed using these samples to estimate the expression level of α 1-AR subtype. The patients were administered 50mg naftopidil daily for 12 weeks, and the efficacy of the treatment was evaluated by measuring 13 items including 7 individual symptoms of the international prostate symptom score(IPSS), voiding and storage subscale scores, total IPSS, quality of life(QOL) index.

The patients were classed to following two groups. Group A(n=8); the patient that storage symptoms improved (IPSS storage items; post/pre<0.75) and voiding symptoms did not improve (IPSS voiding items; post/pre>0.75). Group B(n=5); the patient that storage symptoms did not improved (IPSS storage items; post/pre>0.75) and voiding symptoms did not improve (IPSS voiding items; post/pre>0.75). In these patients, correlation between the expression level of mRNAs for α 1a- and α 1d-AR subtype and the efficacy of naftopidil were examined.

Results

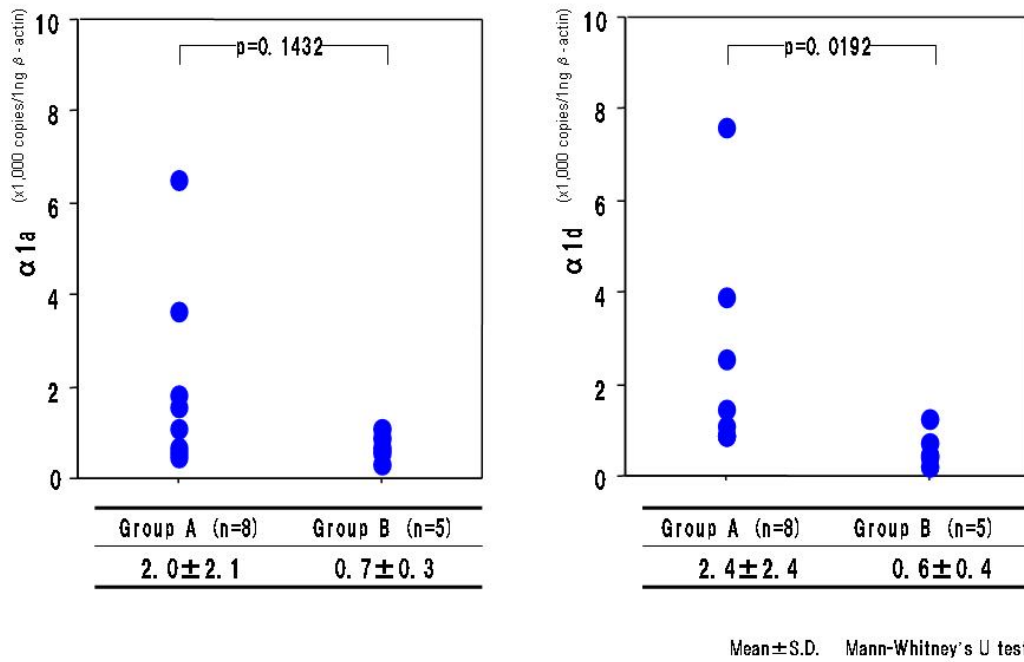
Table 1 shows the efficacy of 28 cases in IPSS.

Table 1

	IPSS storage items; post/pre<0.75	IPSS storage items; post/pre>0.75	total
IPSS voiding items; post/pre>0.75	11 cases	5 cases	16 cases
IPSS voiding items; post/pre>0.75	8 cases	4 cases	1 2 cases
total	19 cases	9 cases	28 cases

Fig 1

Distribution of α -AR subtype



Interpretation of results

The expression level of $\alpha 1a$ -AR did not have the significant difference in group A ($2.0 \pm 2.1 \times 1,000$ copies/1ng β -actin) and B ($0.7 \pm 0.3 \times 1,000$ copies/1ng β -actin). However, the expression level of $\alpha 1d$ -AR was significantly high in group A ($2.4 \pm 2.4 \times 1,000$ copies/1ng β -actin) than group B ($0.6 \pm 0.4 \times 1,000$ copies/1ng β -actin). (fig 1)

Concluding message

It is suggested that $\alpha 1d$ -AR is related to improvement of storage symptoms in BPH patients.