

CORRELATION OF URINARY NERVE GROWTH FACTOR LEVEL WITH THE RESPONSE OF ANTIMUSCARINIC THERAPY IN PATIENTS WITH OVERACTIVE BLADDER

Hypothesis / aims of study

Overactive bladder (OAB) is a syndrome based on self-reported symptoms of urgency with or without urgency incontinence. Nerve growth factor (NGF) levels in urine were reported to increase in patients with OAB.¹ It is demonstrated that too much expression of NGF may induce bladder hyperactivity. In this study, we explored the correlation the level of urinary NGF with response after antimuscarinic therapy in female patients with OAB.

Study design, materials and methods

Urinary NGF levels were measured in 30 female patients (69.8±11.3 years old) with OAB. Patients were treated with tolterodine 4 mg once a daily. Urine samples were collected before, 1 and 3 months after treatment. Evaluations included International Prostate Symptom Score (IPSS), QOL index and Overactive Bladder Symptom Score (OABSS) before and 1, 3 months after treatment. Effects on bladder function and other subjective symptom were evaluated before and 3 months after treatment by filling cystometry and Overactive Bladder Questionnaire (OAB-q). Urinary NGF levels were measured by enzyme-linked immunosorbent assay technique and the results were normalized based on creatinine (Cr) concentration. A p value of less than 0.05 was considered statistically significant.

Twenty years or older male or female patients who had urgency (more than 1 episode per 24

Results

Urinary NGF levels significantly decreased from 1.54 pg/ml Cr at baseline to 1.06 pg/ml Cr at 1 month (p=0.0342), and 0.93 pg/ml Cr at 3 months (p=0.0170) after treatment. Average IPSS, QOL index, OABSS were significantly improved from 14.4, 5.2, and 10.4 at baseline to 10.2, 3.5, and 6.9 at 1 month, to 8.9, 3.4, and 6.5 at 3 months after treatment (Table 1). As to cystometric findings, volume of first desire to void and maximum cystometric capacity significantly increased from 114±41.7ml, 279±95.0 ml at baseline to 151±38.9 ml, 316±79.7 ml at 3 months, respectively. The total health-related quality of life of OAB-q was also significantly improved from 62.4 to 75.9 after treatment.

Table 1. The urinary NGF/Cr levels in the female OAB patients at baseline and after antimuscarinics treatment

| | Baseline | 1 month | 3 months | |
|-------------|-----------|----------|-----------|-----------|
| NGF/ Cr | 1.54±1.4 | 1.06±1.1 | 0.93±1.0 | |
| IPSS | 14.4±6.0 | 10.2±5.1 | 8.88±4.9 | |
| QOL | 5.2±0.9 | 3.5±1.6 | | 3.4±1.4 |
| OABSS | 10.4±2.7 | 6.87±3.5 | 6.52±3.4 | |
| OAB-q | 62.4±21.3 | | | 75.9±20.5 |
| FDV (ml) | 114±41.7 | | 151±38.9 | |
| MCC (ml) | 279±95.0 | | 316±79.7 | |
| Qmax (ml/s) | 18.5±8.9 | | 21.0±10.2 | |
| PVR (ml) | 2.8±6.4 | 3.6±8.7 | 9.7±11.8 | |

Interpretation of results

Tolterodine treatment was subjectively and objectively effective for female OAB patients. The urinary NGF levels significantly decreased after antimuscarinic therapy with tolterodine. The changes of urinary NGF levels were associated with those of IPSS and OABSS after treatment.

Concluding message

These data suggest that urinary NGF levels could serve as a basis for evaluating therapeutic results of antimuscarinic therapy for OAB.

References

1. Yokoyama T et al, *Neurourol Urodynam* 27:417-420, 2008

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| Specify source of funding or grant | none |
| Is this a clinical trial? | Yes |
| Is this study registered in a public clinical trials registry? | No |
| Is this a Randomised Controlled Trial (RCT)? | No |
| What were the subjects in the study? | HUMAN |
| Was this study approved by an ethics committee? | Yes |
| Specify Name of Ethics Committee | Institutional Review Board (Kawasaki Medical School) |
| Was the Declaration of Helsinki followed? | Yes |
| Was informed consent obtained from the patients? | Yes |