

DETECTION OF URINARY BRAIN DERIVED NEUROTROPHIC FACTOR IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA AFTER SURGICAL TREATMENT AND ITS CORRELATION WITH THE CHANGE OF OVERACTIVE BLADDER SYMPTOM

Hypothesis / aims of study

Brain derived neurotrophic factor (BDNF) in the urinary bladder can be affected by the pathologic conditions in bladder, and this change can be detected in the urine. This study was performed to investigate the change of urinary BDNF in patients with benign prostatic hyperplasia (BPH) after surgical treatment. Additionally, we described correlation between the changes of urinary BDNF and overactive bladder (OAB) symptom.

Study design, materials and methods

The study group included 48 male patients who accepted the surgical treatment for BPH. 20 healthy male volunteers were enrolled as controls. Preoperative evaluations included history-taking, urinalysis, International Prostate Symptom Score (IPSS), Overactive Bladder Symptom Score (OABSS) and urodynamic study. Evaluations at the 1st and 6th month after operation included urinalysis, IPSS, OABSS and free uroflowmetry. The urine samples were collected and stored in -80°C freezer. BDNF levels in urine were analyzed by enzyme linked immunosorbent assay and normalized by urinary creatinine levels (BDNF/Cr).

Results

The urinary BDNF/Cr level was very low in normal controls with a mean of 5.598 ng/mg. Patients with BPH had significantly higher urinary BDNF/Cr with a mean of 29.36 ng/mg ($p < 0.05$). According to OABSS, the BPH patients were subdivided into OAB symptom negative group (26 patients) and OAB symptom positive group (22 patients), whose urinary BDNF/Cr levels were 24.79 ng/mg and 34.76 ng/mg respectively ($p < 0.05$). No significant differences of urinary BDNF/Cr were found between detrusor overactive patients and no detrusor overactive patients (34.24 vs 35.86, $p=0.60$). Moreover, the BDNF/Cr level didn't decreased significantly one month after operation. However, the BDNF/Cr level at the 6th month after operation were reduced to a mean of 17.54ng/mg ($p < 0.05$ compared with baseline). The change of urinary BDNF/Cr level was correlated with the change of OABSS in the patients with OAB symptom ($r=0.445$, $p < 0.05$).

Interpretation of results

The urinary BDNF/Cr level in BPH patients was increased. The BPH patients with OAB symptom had higher urinary BDNF/Cr level compared with BPH patients without OAB symptom. Surgical treatment of BPH could reduce the urinary BDNF/Cr level after 6 months, which was correlated with change of the severity of OAB symptoms.

Concluding message

These results suggest urinary BDNF/Cr could be a potential biomarker for BPH with OAB symptom.

Disclosures

Funding: This project (RDB2011-11) was supported by Peking University People's Hospital Research and Development Funds
Clinical Trial: Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Peking University People's Hospital **Helsinki:** Yes **Informed Consent:** Yes