675

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EXPRESSION OF URINARY BDNF IN BPH PATIENTS WITH OAB SYMPTOMS AND ITS CORRELATION WITH OAB SYMPTOMS

Hypothesis / aims of study

To investigate the expression of urinary brainderived neurotrophic factor (BDNF) in benign prostatic hyperplasia (BPH) patients with overactive bladder (OAB) symptoms and its correlation with the severity of OAB symptoms.

Study design, materials and methods

According to inclusion and exclusion criteria, a total of 178 men with BPH who would undergo transurethral resection of prostate (TURP) were enrolled in this study. All the patients had accepted basic preoperative evaluations, as well as an assessment of their International Prostate Symptom Score (IPSS) and Overactive Bladder Symptom Score (OABSS). Patients who had been scheduled for surgery must take the urodynamic assessment. Urinary BDNF levels were measured by the Enzyme-Linked Immunosorbent Assay (ELISA) and the results were further normalized to the concentration of urinary creatinine (BDNF/Cr pg/umol).

Results

Urinary BDNF/Cr levels of patients with moderate and severe lower urinary tract symptoms (LUTS) were 1.189±0.753 and 1.817±1.110 ($p < 0.001$). Urinary BDNF/Cr levels of patients with Grade III-VI obstruction were 1.382±0.945, 1.435±0.938, 1.640 ±1.104 and 1.653±1.019 respectively ($p > 0.05$). There was no correlation between urinary BDNF/Cr levels and the severity of obstruction ($r=0.103$, $p=0.173$). The urinary BDNF/Cr levels in patients with and without OAB symptoms were 1.913±0.843 and 0.297±0.183 ($p < 0.001$). The urinary BDNF/Cr levels in patients with mild, moderate and severe OAB symptoms were 1.501±0.543, 1.806±0.703 and 2.560±0.979 respectively ($p < 0.05$). There was a correlation between urinary BDNF/Cr levels and the severity of OAB symptoms ($r=0.743$, $p < 0.001$). The urinary BDNF/Cr levels in patients with urodynamic detrusor overativity (DO) were significantly higher than those without DO (1.194±1.013 and 1.917±0.866, $p < 0.001$).

Interpretation of results

In order to exclude the effect of obstruction on the expression of BDNF, we examined the urinary BDNF levels of BPH patients with different severities of obstruction. The results showed there was no correlation between urinary BDNF/Cr levels and the severity of obstruction. Therefore, we can infer the elevated BDNF/Cr in BPH patients was caused by the OAB symptoms.

Concluding message

There was no correlation between urinary BDNF and severity of obstruction in BPH patients with moderate and severe LUTS. The urinary BDNF levels in patients with OAB symptoms were elevated compared to patients without OAB symptoms, and were correlated with the severity of OAB symptoms.

Table 1- Baseline characteristics

BPH patients (n=178)	Mean ± SD
Age (years)	72.4 ± 7.3
Prostate volume (ml)	51.8 ± 21.4
PVR(ml)	90.1 ± 100.2
IPSS	22.4 ± 7.2
QOL score	4.0 ± 1.3
OABSS	9.6 ± 3.1
Urodynamics	
Free-Qmax (ml/s)	5.5 ± 2.9
pdet.Qmax (cmH_2O)	81.5 ± 31.5
Qmax (ml/s)	4.6 ± 2.7
Maximum bladder capacity (ml)	271.5 ± 95.2

Table 2 The urinary BDNF/Cr level of the patients with BPH

BPH patients	Cases (n)	BDNF/Cr (Mean±SD, pg/umol)	P value
All	178	1.531±1.011	
IPSS			
Moderate	81	1.189±0.753	
Severe	97	1.817±1.110	＜0.001 vs. Moderate
BOO Grade			
III	23	1.382±0.945	
IV	67	1.435±0.938	0.815 vs. III
V	66	1.640±1.104	0.251 vs. IV
VI	22	1.653±1.019	0.961 vs. V
OABSS			
Non-OAB	42	0.297±0.183	
OAB	136	1.913±0.843	＜0.001 vs. Non-OAB
Mild	39	1.501±0.543	＜0.001 vs. Non-OAB
Moderate	62	1.806±0.703	0.023 vs. Mild
Severe	35	2.560±0.979	＜0.001 vs. Moderate
DO			
DO+	83	1.917±0.866	
DO-	95	1.194±1.013	＜0.001 vs. DO+

Figure1 The urinary BDNF/Cr levels according to the severity of obstruction in BPH patients

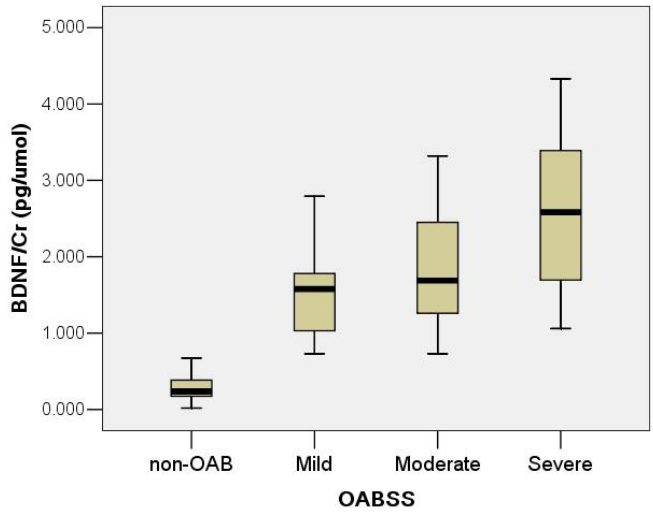
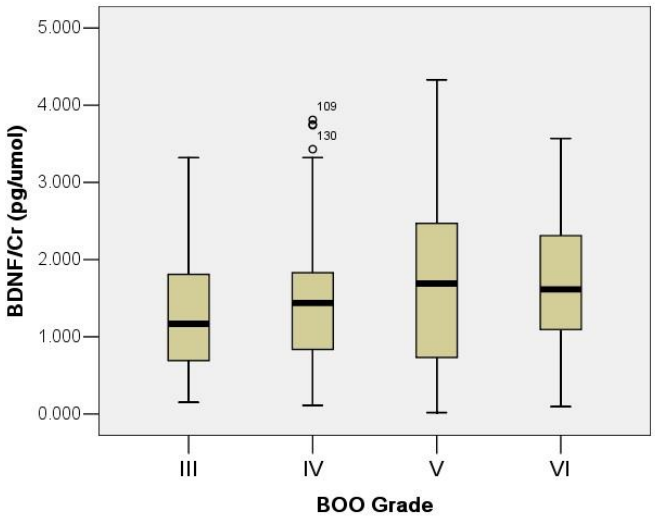


Figure2 The urinary BDNF/Cr levels according to the severity of OAB symptoms in BPH patients



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