248

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CORRELATION OF URINARY NERVE GROWTH FACTOR LEVEL WITH BLADDER OUTLET OBSTRUCTION.

Hypothesis / aims of study

Urinary nerve growth factor (NGF) level is known to be increased in patients with overactive bladder (OAB) and detrusor overactivity (DO) (1). It is also increased in patients with bladder outlet obstruction (BOO) with OAB or DO (2). However, there were no studies to compare in large group. This study was conducted to compare the urinary NGF level between BOO and non-BOO groups, and between DO and non-DO groups in men with lower urinary tract symptoms (LUTS).

Study design, materials and methods

We prospectively evaluated male patients who had LUTS between August 2008 and December 2010. Exclusion criteria were LUTS resulted from urinary tract cancers, neurogenic causes, urinary tract infection, bladder stone. All of enrolled patients were completely performed with urodynamic study, Iinternational prostate symptom score (IPSS), the international continence society (ICS) male questionnaire short form, serum PSA, urine analysis, urine NGF, urinary creatinine. The patients were divided into two groups; BOO or non-BOO. Urodynamic study was perfomed including filling cystometry and pressure flow study. Definition of BOO was considered the bladder outlet obstruction index (BOOI) [where BOOI = P_{det} @Q_{max} − 2(Q_{max})], over 40 in pressure flow study. Urinary NGF levels were measured by enzyme-linked immunosorbent assay technique (ELISA) and the results were normalized by urinary creatinine concentration. Statistical Analysis was performed using PASW statistics 18^{R} with Mann-Whitney test.

Results

A total 257 (BOO; 89, non-BOO; 168) patients were enrolled. A median age was 66 years (range 50 - 89)(p=0.232). The prostate glands volumes, serum PSA between groups were significantly different (Table). The urinary NGF level was 1.37±1.62 pg/ml in non-BOO group and 1.52±2.25 pg/ml in BOO group (p=0.350). The level was also similar between non-DO and DO group (1.26±1.56 *vs* 1.65±2.19, p=0.237). Among non-BOO group, NGF level was not significantly different between DO and non-DO patients (1.24±1.44 *vs* 1.61±1.84, p=0.240). Also, in BOO group, NGF level did not differ between DO and non-DO patients (1.27±1.85 *vs* 1.73±2.54, p=0.720) (Figure). IPSS was not different, sub score also not different between non-BOO and BOO group. However, in ICS male questionnaire, storage sum was different between two groups(p=0.010).

Interpretation of results

NGF/Cr. level was not different between non-BOO and BOO patients. In non-DO and DO patients, NGF/Cr. was not significantly different. Also in BOO group, there was no difference in NGF/Cr. level between DO and non-DO group.

Table. Characteristics of groups

	BOO(-)	BOO(+)	p-value
Age	65.5 ± 7.2	66.7 ± 7.7	0.232
PSA(ng/dl)	1.5 ± 1.0	3.1 ± 10.4	<0.001
Prostate volume(cm^3)	30.1 ± 14.3	56.5 ± 38.1	<0.001
Maximum flow rate(ml/sec)	12.7 ± 5.3	8.9 ± 3.8	<0.001
Post voiding residual(ml)	57.5 ± 83.1	98.9 ± 97.1	<0.001
NGF/Cr.(pg/ml Cr)	1.3 ± 1.6	1.5 ± 2.2	0.350
IPSS	22.3 ± 7.1	22.8 ± 6.7	0.757
voiding symptom	12.9 ± 5.3	13.0 ± 5.1	0.757
storage symptom	9.3 ± 3.1	9.7 ± 3.2	0.607
Quality of Life	4.6 ± 0.9	4.3 ± 1.1	0.018
ICS male questionnaire short form			
voiding sum	10.5 ± 4.7	10.9 ± 4.7	0.330
storage sum	3.2 ± 3.2	4.0 ± 3.4	0.010

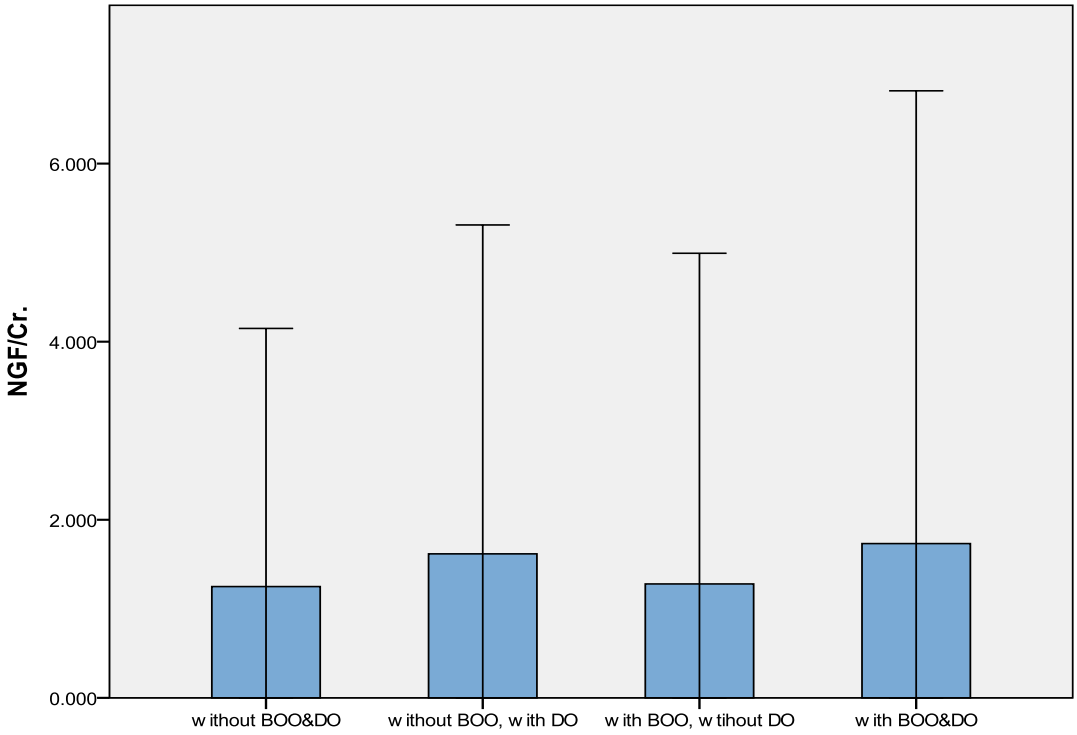

Figure. Box plot presentation of NGF/Cr. in each groups

Concluding message

In our study, the urinary NGF/Cr. levels could not serve as a biomarker for BOO and non-BOO. In this study, we did not considered about periods about BOO. In LUTS patients, NGF/Cr. level of patients with chronic BOO may be different with acute or subacute BOO. Further study is needed to find the relation about NGF/Cr. level and symptom period of LUTS.

References

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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**