

CAN NERVE GROWTH FACTOR IN THE URINE BE A BIOMARKER OF ACUTE LOWER URINARY TRACT SYMPTOMS AFTER BRACHYTHERAPY FOR PROSTATE CANCER

Hypothesis / aims of study

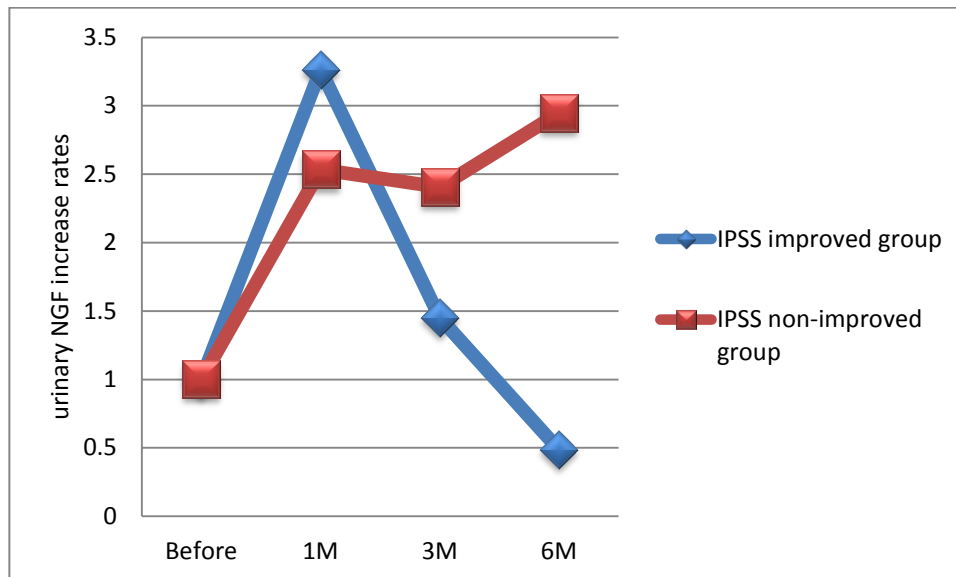
It has been reported that nerve growth factor (NGF) level in the urine in patients with interstitial cystitis and overactive bladder and have risen. This fact tends to lead us to examine its usefulness as a biomarker of lower urinary tract symptoms (LUTS). In the current study, we measured NGF level in the urine to assess if there is an association between LUTS and NGF level in the urine in the patients after brachytherapy (BT) for prostate cancer.

Study design, materials and methods

From February 2010 to July 2011, 36 consecutive patients who were planned for BT as curative therapy of prostate cancer were enrolled in this study. Of 36 patients, NGF level was measured in 30 patients. Of these patients, 2 patients were excluded from the study because international prostate symptoms score (IPSS) was not recorded. In final, 28 patients were evaluated for the study. Of these 28 patients, 10 patients received BT only and 18 patients received BT and external beam radiation therapy (EBRT). Urinary NGF level was measured and IPSS was recorded before and 1, 3 and 6 months after BT, and the relation between urinary NGF level and IPSS was assessed.

Results

Both voiding symptoms score and storage symptoms reached at their peak at 3 months after BT, thereafter both of the scores decreased at 6 months post treatment. These 28 cases were divided into 2 groups; 16 cases who showed their IPSS less than 5 points increase at 6 months when compared to pre-treatment score (IPSS improved group) and 12 cases who showed their IPSS more than 6 points increase (IPSS non-improved group). Urinary NGF level of non-improved IPSS group showed significantly higher than that of improved IPSS group ($p < 0.05$).



When compared the amount of change in urinary NGF levels and IPSS between pre-treatment and 6 months after BT, positive correlations were seen between urinary NGF levels and IPSS total, voiding, storage or QOL scores.

Interpretation of results

According to the previous reports, it has been revealed that NGF could be deeply involved in the pathogenesis of storage symptoms in overactive bladder. When the bladder stimulated, NGF is produced and secreted from bladder epithelium, which stimulates the bladder sensory nerves, enhanced signal of the storage symptoms is sent to the central nervous system. As a result, through the pelvic nerve system, the storage symptoms such as urinary urgency and urinary frequency may be caused. However, it is considered that BT caused inflammatory change in the prostate and urethra, therefore, bladder involvement is assumed to be relatively minor. Thus, the prostate and urethral epithelium is supposed to be involved in the production and release of NGF in the urine, which could contribute LUTS after BT.

Concluding message

This study showed that there was a relatively high urinary NGF levels in patients with relatively prolonged LUTS after BT. Urinary NGF could be a possible biomarker for LUTS which occurs after BT

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** this was non-intervention study and conducted retrospectively. All the patients gave their informed consent agreeing that all the biospecimen from the patients can be investigated for research use. **Helsinki:** Yes **Informed Consent:** Yes