

## IS BLADDER BASE ELEVATION A SIGN FOR PELVIC FLOOR HYPERTONICITY IN WOMEN WITH LOWER URINARY TRACT SYMPTOMS?

### Hypothesis / aims of study

To determine whether the bladder base elevation in the cinefluoroscopy is associated with pelvic floor hypertonicity or bladder outlet obstruction in women.

### Study design, materials and methods

We reviewed the videourodynamic reports and charts of the female patients who were referred to our videourodynamic laboratory for assessment of voiding dysfunction that was refractory to initial medical treatment or difficult diagnosis. A total of 31 female patients with bladder base elevation found in the cinefluoroscopy during the filling phase were collected. The other 31 female patients without bladder base elevation during videourodynamic study for their LUTS were selected as control group respectively. The selection criteria for the control group were according to the principle of afterward consecutively examination sequence with similar age and without neurogenic bladder. The clinical symptoms, urodynamic parameters and videourodynamic characteristics were compared between the two groups. All urodynamic parameters were expressed in mean  $\pm$  standard deviation. Comparison of the urodynamic parameters among each group of patients was done by Students' t test. Chi-square test was used for statistical analysis of the symptoms and videourodynamic characteristics. A p value of  $<0.05$  was regarded as statistically significant.

### Results

The age of the bladder base elevation patients ranged from 18 to 84 ( mean,  $62.4 \pm 16.1$  ) years old and in the patients without bladder base elevation ranged from 38 to 89 ( mean,  $64.9 \pm 14.1$  ) years old(  $p > 0.05$ ). Frequency and urgency were the most common symptoms in each group. There was a trend that difficult urination was more prevalent in the patients with bladder base elevation than those without bladder base elevation (51.6% v 25.8%,  $p = 0.0370$ ). However, there was no significant difference in the other symptoms between the two groups. The mean Pdet.Qmax and PVR were significantly higher, and Qmax and voided volume were significantly lower in the bladder base elevation group. When a Pdet.Qmax of 35 cmH<sub>2</sub>O combined with a Qmax 15 ml/s in pressure flow study was used to analyze bladder outlet obstruction (BOO) in our patients, there were significantly more BOO in the bladder base elevation group ( 51.6% v 9.7%,  $p = 0.0003$ ). Pelvic floor muscle EMG was dyscoordinated during the voiding phase in 18 ( 58.06 % ) and 9 ( 29.03 % ) of the patients with and without bladder base elevation, respectively (  $p = 0.0212$  ).

### Interpretation of results

Difficult urination was not an absolute symptom for pelvic floor hypertonicity. Although difficult urination was not the most common symptom in each group, the incidence of difficult urination was significantly higher in the patients with bladder base elevation than those without bladder base elevation. In this series of patients, the urodynamic parameters of Pdet.Qmax and residual urine were significantly higher, and Qmax and voided volume were significantly lower in the bladder base elevation group, suggesting that women with bladder base elevation tend to have functional BOO. The presences of dyscoordination of the pelvic floor muscle EMG activities during voiding were significantly more common in the patients with bladder base elevation, suggesting that pelvic floor hypertonicity might be the cause for the voiding dysfunction. Thus, it is likely that there are strongly correlation between the bladder base elevation and pelvic floor hypertonicity.

### Concluding message

The presence of the bladder base elevation in women with LUTS is strongly associated with pelvic floor hypertonicity and functional BOO.

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**HUMAN SUBJECTS: This study did not need ethical approval because retrospective study but followed the Declaration of Helsinki Informed consent was not obtained from the patients.**