

BLADDER SENSITIVITY INDEX AS A NEW URODYNAMIC PARAMETER IN OAB PATIENTS

Hypothesis / aims of study

Bladder overactivity is one of the most common causes of lower urinary tract dysfunction. Development of overactive bladder (OAB) symptoms occurs due to the increased detrusor contractility, raised bladder wall sensitivity or low bladder compliance. Urodynamic investigation is the principal diagnostic tool to reveal all types of lower urinary tract dysfunction, including OAB. The aim of current research was to increase an accuracy of urodynamic diagnosis using new urodynamic parameter - bladder sensitivity index.

Study design, materials and methods

341 non - neurogenic OAB patients were underwent urological examination. There were 252 (73,9%) females and 89 (26,1%) males. Mean age was $54,7 \pm 0,5$ years. Water cystometry was performed in all patients. ICS recommendations for this method were strictly followed. Severity of OAB symptoms was evaluated by 3 days voiding diaries. Implementation of a new urodynamic parameter - bladder sensitivity index (BSI) seemed to be promising after the data obtained from the urodynamic investigations of OAB patients was analyzed. BSI was calculated as a ratio of maximal bladder volume (V max) to the bladder volume during the first desire to void (V1): $BSI = V \text{ Max} / V1$.

Results

BSI describes duration of the interval between the first desire to urinate and the accomplishment of the maximal bladder capacity when a patient is not able to postpone urination any longer. New urodynamic parameter characterizes the intensification rate of the desire to urinate from the first sensation till the urgent. Low BSI corresponds with the shorter interval between the first desire to void and the accomplishment of the maximal bladder capacity. Thus BSI reflects OAB clinical currency.

Multiple regression analysis confirmed that BSI value depends on patient's gender, presence of involuntary detrusor contractions and number of urgency episodes ($R^2=0,03$; $F=5,80$; $p<0,004$).

BSI was lower in OAB male patients ($3,83 \pm 0,34$) than in female ones ($5,74 \pm 0,37$; $t=2,86$; $p=0,005$). BSI was also lower in patients experienced involuntary detrusor contractions (IDC) ($3,55 \pm 0,26$) compared to those who had not ($5,62 \pm 0,50$; $t=3,31$; $p=0,001$). In fact, patients with IDC proceed from the first desire to void to urgent more rapidly than those without IDC.

Reliable correlation between BSI value and number of urgency episodes was found ($R^2=0,15$; $F=10,88$; $p<0,002$). It was a linear dependence, so the lower BSI was the more urgency episodes patient had. Other OAB symptoms did not correlate with the BSI value. Negative correlation between BSI and patient's age was observed BSI was lower in older patients that could be explained by low bladder compliance because of the development of bladder wall sclerosis.

Interpretation of results

Results of current research have proved the possibility to implement new urodynamic parameter - bladder sensitivity index. BSI value describes intensification rate of the desire to urinate in OAB patients and could represent severity of OAB.

Concluding message

BSI characterizes OAB clinical currency and correlates with one of the main OAB symptoms – urgency.

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<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Local Ethics Committee of St Petersburg State Medical State Pavlov University
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes