

DETRUSOR UNDERACTIVITY IN FEMALES: SIGNIFICANT CORRELATION BETWEEN STANDARDISED MEDICAL HISTORY ASSESSMENT AND URODYNAMIC FINDINGS

Hypothesis / aims of study

The assessment of voiding dysfunction in female patients has been a challenging issue for several decades. For the differentiation of detrusor contractile impairment and infravesical obstruction, a conventional urodynamic study (conventional UDS) still is necessary. The purpose of this study was to define whether, and if so, to what extent there is a correlation between history of voiding symptoms and urodynamic abnormalities that point into the direction of detrusor underactivity.

Study design, materials and methods

For this study a subset of our “pelvic care center” database, containing 3773 patients with urological, gynecological and / or gastrointestinal problems, was used. All included female patients were having urological problems, underwent a standardised history taking and a conventional urodynamic study between 2000 and 2007. The voiding symptoms domain of a structured multidisciplinary questionnaire developed by experienced specialists was used here. Bladder Contractility Index (BCI) was used as urodynamic contractility parameter. BCI is a contractility parameter used in clinical practice already in males. Although it has not been validated in females, this seems the best option to estimate female bladder contractility at the moment.

A subgroup analysis was performed to analyse the relationship between a history of hysterectomy and incomplete bladder emptying (i.e. a PVR \geq 100 ml).

Results

A total of 219 patients was included consecutively in this study based on filling out voiding symptom questions and undergoing a conventional UDS, with a mean (SD) age of 56 (13.5) years. The data show a significant correlation between urodynamically derived PVR and almost all of the voiding questions that were addressed, except for “applying abdominal pressure during voiding?”. In addition, BCI showed a significant correlation with the questions related to ‘a feeling of incomplete emptying’, ‘hesitancy’ and ‘presence of a weak stream’.

Subgroup analysis regarding hysterectomy related history

In 215 of the 219 females the hysterectomy status was known. In 87 (40.5%) patients a hysterectomy was performed, with a significant difference in the amount of patients having a PVR \geq 100 ml ($p = 0.004$). The Odds ratio (95% CI) of having a PVR \geq 100 ml after hysterectomy was 2.295 (1.300 – 4.052).

Interpretation of results

Until now, it is proven to be difficult to assess voiding dysfunction and more specifically detrusor underactivity in males as well as females. Therefore, at the moment urodynamics was necessary to assess voiding dysfunction. Particularly in females the topic of detrusor underactivity is rather unexplored and badly defined.

Our initial results shows a correlation between answer to the specific standardised voiding questions and an objective incomplete bladder emptying (e.a. PVR \geq 100 ml). These data could help in stratifying whether or not females are at risk of having detrusor underactivity. Moreover, a hysterectomy related history and PVR \geq 100 ml are indicative of a relationship of this condition with an underactive bladder.

Concluding message

In this study we were able to show a significant correlation between voiding symptoms, indicative of detrusor underactivity, and urodynamically derived post-void residual measurement and Bladder contractility index (BCI). In the near future these standardised questions (or combinations of questions) might serve as a screening tool to indicate a subgroup of patients likely to have detrusor underactivity. This would eventually mean that urodynamic measurements could be applied specifically in patients who are ‘at risk’. This characterisation of patients at risk might be useful to determine whether patients qualify for studies on detrusor underactivity or further more invasive assessment.

	Post-void residual		Bladder Contractility Index	
	Correlation coefficient	p-value	Correlation coefficient	p-value
N=219				
Feeling of incomplete bladder emptying	0.204	<0.001	-0.134	0.018
Hesitancy during micturition	0.255	<0.001	-0.158	0.005
Weak stream	0.146	0.012	-0.146	0.010
Applying abdominal pressure during voiding	0.096	n.s.	-0.033	n.s.
Effort to start or maintain voiding	0.123	0.033	-0.023	n.s.

Table 1. Correlation between questions related to voiding dysfunction and post-void residual / Bladder Contractility Index (BCI) given as correlation coefficient (Kendall's tau coefficient, with $p \leq 0.05$ considered significant) and corresponding p-value (threshold of 0.05). n.s.: not significant.

Disclosures

Funding: Astellas Europe fund 2012 **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** The study is based on a retrospective evaluation of patients diagnosed and treated at our Urology department based on standard clinical practice.
Helsinki: Yes **Informed Consent:** No