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VALIDATION OF THE URGENCYMETRY 1.0 – QUANTIFICATION OF THE URINARY URGENCY IN FEMALES

Hypothesis / aims of study

Urgency is defined as the complaint of a sudden compelling desire to pass urine which is difficult to defer (1). The urinary urgency as the most clinically significant symptom of the overactive bladder (OAB) requires quantification. A visual analogue scale (VAS) is a measurement instrument that tries to measure a characteristic across a continuum of values. The aims of this study were to use VAS for quantification of urgency, construction and validation of The Urgencymetry 1.0 as a new diagnostic tool for evaluation of the urinary urgency.

Study design, materials and methods

Females with OAB were interviewed face-to-face about VAS as a possible instrument for detection and quantifiable measure of urinary urgency. The second step was construction of rotating urgencymetric disc as a paper disc divided into 24 hours lines according to the VAS 0 – 100 (0 represents no urgency, 100 represents the most extreme urgency). Disc was inserted into the cover with two open windows. Subjects used correct points on the VAS (the first window) during the actual time (the second window). Urgencymetry version 1.0 was developed, validated and used in the prospective study of females with urgency (study group) and without urgency (control group) in concordance with I.C.S. definition. Analysis quantified number and stage of urgencies during 24-hours period. All females filled validated version of the 33-item OAB questionnaire (OABq) for assessment the impact of OAB symptoms on health related quality of life (Symptom bother score and HRQL scale), the Urgency Perception Scale (UPS) and collected urgencymetric discs for three days (2, 3). Statistical non-parametric tests were used for statistical analyses, $p < 0.05$ was statistically significant.

Results

A total of 303 urgencymetric discs were collected from 101 females (61 females – study group, 40 females – control group). Mean age was of 49 years (range of 20 – 74 years), mean Symptom bother score of 27.6 (r. 0.0 – 80.0), total HRQL score of 77.9 (r. 20.0 – 100.0), UPS of 1.4 (r. 1 – 3), Urgency VAS of 26.7 (r. 0 – 78) and mean number of Urgency episodes per 24-hour period reached of 8.3 (r. 0 – 24). Spearman correlations among OABq scores and urgencymetric values confirmed statistically significant relations in study and control groups. The subjects of study group had statistically significant higher mean Symptom bother score vs. control group (44.9 ± 18.8 vs. 1.2 ± 2.8 ; $p < 0.01$), mean HRQL total score (64.1 ± 16.7 vs. 99.0 ± 2.7 ; $p < 0.01$), mean Urgency VAS (42.7 ± 16.2 vs. 2.2 ± 4.7 ; $p < 0.01$) and mean Urgency episodes per 24-hour period (14.1 ± 4.1 vs. 0.3 ± 0.5 ; $p < 0.01$). Testing of receiver operating characteristics (ROC) revealed of high diagnostic sensitivity and specificity. Area under the curves ROC was from 0.81. The most of patients agreed with format of Urgencymetry 1.0 as a simple tool for easy to use.

Interpretation of results

Our data confirmed good correlation between 33-item OAB questionnaire (OABq) for assessment the impact of OAB symptoms on health related quality of life (Symptom bother score and HRQL scale) and Urgencymetric variables of Urgency VAS and Urgency episodes per 24-hour. Diagnostic accuracy of Urgencymetry 1.0 revealed acceptable values of receiver operating characteristics.

Concluding message

Urgencymetry 1.0 is simple, easy to use and useful tool for evaluation of urgency in females. Simple analysis of visual analogue scale provides specific quantifiable measures of urinary urgency. Urgencymetric discs are suitable for routine clinical practice and research of the urgency as well as overactive bladder.

Table1. Spearman Correlations among OABq Scores and Urgencymetric Values (n=101)

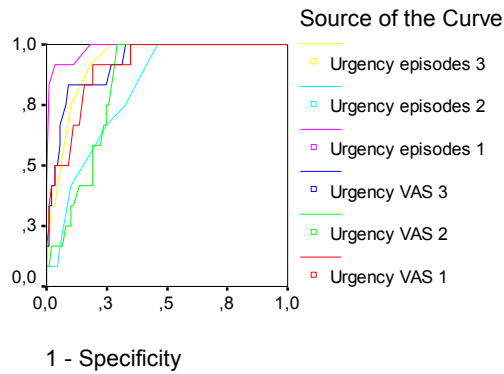
		Urgency episodes Day1	Urgency episodes Day2	Urgency episodes Day3	Urgency VAS Day1	Urgency VAS Day2	Urgency VAS Day3
Symptomatic group	Symptom bother	0.83**	0.41**	0.77**	0.87**	0.70**	0.77**
	HRQL	- 0.75**	- 0.37**	- 0.58**	- 0.83**	- 0.66**	- 0.72**
	UPS	0.85**	0.26*	0.57**	0.61**	0.54**	0.67**
Asymptomatic group	Symptom bother	0.47**	0.72**	0.64**	0.57**	0.78**	0.68**
	HRQL	- 0.47**	- 0.73**	- 0.63**	- 0.59**	- 0.81**	- 0.65**
	UPS	0.33*	0.40*	0.46*	0.40*	0.46**	0.47**

* $p < 0.05$; ** $p < 0.01$

Table 2. Receiver Operating Characteristics (ROC) curves and Area Under Curve (AUC) among Urgencymetric values ($p < 0.01$)

Test Result Variable(s)	Area under curve
Urgency VAS day 1	0.91
Urgency VAS day 2	0.83
Urgency VAS day 3	0.92
Urgency episodes day 1	0.98
Urgency episodes day 2	0.81
Urgency episodes day 3	0.93

ROC Curve



Diagonal segments are produced by ties.

References

1. Neurourol Urodyn 2002;21:167-178
2. BJU Int 2005;95: 591-596
3. Neurourol Urodyn 2007;26:196-203

Specify source of funding or grant	No
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Ethics Committee of Martin´s Teaching Hospital, Slovak Republic
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes