

## CLINICAL SIGNIFICANCE OF CORE LOWER URINARY TRACT SYMPTOM SCORE (CLSS) FOR THE ASSESSMENT OF LOWER URINARY TRACT SYMPTOMS OF VARIOUS DISEASES/CONDITIONS

### Hypothesis / aims of study

Assessment of lower urinary tract symptoms (LUTS) is of utmost importance in diagnosing and treating men and women complaining of LUTS. As the assessment tool the International Prostate Symptom Score (IPSS) has been commonly used; however IPSS is the symptom score specifically developed for benign prostatic hyperplasia (BPH) thus cannot be used for other diseases/conditions. Recently, we have developed the Overactive Bladder Symptom Score (OABSS) questionnaire for evaluating OAB symptoms and the Core Lower urinary tract Symptom Score (CLSS) questionnaire for non-disease-specific symptoms (1, 2). The aim of this study is to examine the inter-relationship among these 3 symptom questionnaires.

### Study design, materials and methods

We administered IPSS, OABSS and CLSS to the consecutive 400 patients (age: 15-88, mean age:  $67.8 \pm 12.0$ , 320 men and 80 women) irrespective of complaining of LUTS. Clinical diagnoses were multiple, including BPH (n=99), OAB (n=33), interstitial cystitis (n= 9), stress urinary incontinence (n= 7), pelvic organ prolapse (n=15), prostate cancer (n= 89), bladder cancer (n= 27), renal cell carcinoma (n= 15), urolithiasis (n= 14), and others (n=92). IPSS contains 7 questions for incomplete emptying, daytime frequency, interruption, urgency, weak stream, straining, and nocturia (score: 0 to 5; total 0 to 35). OABSS evaluates OAB symptoms: daytime frequency (score: 0 to 2), nocturia (0 to 3), urgency (0 to 5), and urgency incontinence (0 to 5), giving a total score from 0 to 15. CLSS addresses 10 important symptoms selected from 25 LUTS defined by the ICS standardization committee: daytime frequency, nocturia, urgency, urgency incontinence, stress incontinence, slow stream, straining, incomplete emptying, bladder pain, and urethral pain (score: 0 to 3). Symptoms and possible digit scores of these symptom score questionnaires are summarized in Table 1. Quality of life (QOL) aspect was measured by IPSS QOL Index (score 0: delighted, 1: pleased, 2: mostly satisfied, 3: mixed, about equally satisfied and dissatisfied, 4: mostly dissatisfied, 5: unhappy, 6: terrible). Correlation among scores of 3 questionnaires was explored by Spearman rank-correlation coefficient. Multivariable analysis using Cox-hazard model was used to detect symptoms that predict worse QOL.

### Results

The correlation of individual symptoms of IPSS and OABSS with CLSS was shown in Table 1. Spearman rank-correlation coefficient ( $r$ ) was 0.64 to 0.79 for all the IPSS symptoms except for interruption, which is not included in CLSS (all  $p < 0.001$ ). Similar relation was observed for questions addressed by OABSS and CLSS;  $r$  was 0.62 to 0.76 for 4 symptoms (all  $p < 0.001$ ). By multivariable analysis worse QOL was significantly related to daytime frequency, nocturia, urgency, urgency incontinence, incomplete emptying, bladder pain, and urethral pain in any of 3 questionnaires (Table 2). All symptoms of OABSS had significantly negative impact on QOL. IPSS does not address urgency incontinence, bladder pain, and urethral pain, which exerted significant negative impact. Of particular the hazard ratios for pain symptoms were impressive (3.15 and 2.59). Interruption, which is included in IPSS only, had no significant impact on QOL.

### Interpretation of results

Symptom scores of IPSS and OABSS were highly correlated with scores of corresponding symptoms of CLSS. CLSS questionnaire is capable of capturing clinically significant LUTS that have negative impact on QOL and not covered by IPSS or OABSS.

### Concluding message

CLSS questionnaire would be an appropriate tool for the global assessment of critical LUTS.

Table 1: Possible digit symptom scores and their correlation with CLSS

	IPSS		OABSS		CLSS
	scores*	<i>r</i> with CLSS+	scores*	<i>r</i> with CLSS+	scores*
daytime frequency	0 – 5	0.45	0 – 2	0.68	0 – 3
nocturia	0 – 5	0.79	0 – 3	0.76	0 – 3
urgency	0 – 5	0.64	0 – 5	0.62	0 – 3
urgency incontinence	NA		0 – 5	0.72	0 – 3
stress incontinence	NA		NA		0 – 3
slow stream	0 – 5	0.73	NA		0 – 3
straining	0 – 5	0.68	NA		0 – 3
interruption	0 – 5		NA		NA
incomplete emptying	0 – 5	0.78	NA		0 – 3
bladder pain	NA		NA		0 – 3
urethral pain	NA		NA		0 – 3

\*: Possible digit symptom scores

+:  $p < 0.001$  for all correlation

IPSS: International Prostate Symptom Score, OABSS: Overactive Bladder Symptom Score, CLSS: Core Lower urinary tract Symptom Score, *r*: Spearman rank-correlation coefficient, NA: not addressed

Table 2: Hazard ratio of symptoms to predict worse QOL by multivariate Cox hazard model

	IPSS	OABSS	CLSS
daytime frequency	1.23 (0.018)*	1.24 (0.31)	1.20 (0.22)
nocturia	1.52 (<0.0001)	1.47 (0.0006)	1.39 (0.037)
urgency	1.44 (<0.0001)	1.30 (0.0078)	1.45 (0.016)
urgency incontinence	-	1.40 (0.01)	1.91 (0.0014)
stress incontinence	-	-	1.35 (0.22)
slow stream	1.01 (0.90)	-	1.19 (0.14)
straining	1.17 (0.15)	-	0.91 (0.51)
interruption	0.90 (0.28)	-	-
incomplete emptying	1.27 (0.013)	-	1.51 (0.0046)
bladder pain	-	-	3.15 (0.0021)
urethral pain	-	-	2.59 (0.0061)

\*hazard ratio (p value)

IPSS: International Prostate Symptom Score, OABSS: Overactive Bladder Symptom Score, CLSS: Core Lower urinary tract Symptom Score

## References

1. Homma Y, et al. Core lower urinary tract symptom score (CLSS) questionnaire: A reliable tool in the overall assessment of lower urinary tract symptoms. *Int J Urol*, 15: 816; 2008
2. Homma Y, et al. Symptom assessment tool for over active bladder syndrome-overactive bladder symptom score. *Urology*, 68: 318; 2006

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<b>Was this study approved by an ethics committee?</b>	<b>Yes</b>
<b>Specify Name of Ethics Committee</b>	<b>Ethics committee of Tokyo University Hospital</b>
<b>Was the Declaration of Helsinki followed?</b>	<b>Yes</b>
<b>Was informed consent obtained from the patients?</b>	<b>Yes</b>