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Park K K[1], Mah S Y[2]

1. *Yongin Severance Hospital Yonsei University Health System,* ***2.*** *Gangnam Severance Hospital, Yonsei University Health System*

RELIABILITY AND VALIDITY OF TIME OF URINARY HESITANCY CALCULATED WITH UROFLOWMETRY

Hypothesis / aims of study

Uroflowmetric measurements are a common procedure in urological examination of patients presenting with lower urinary tract symptoms(LUTS). Urinary hesitancy is a symptom of LUTS difficult to be evaluated by uroflowmetry. Because of possibility of instability of hesitancy time. However, related studies were not found. In this study, we investigated reliability and validity of urinary hesitancy time in healthy young men.

Study design, materials and methods

From Sep 2009 to March 2010, total 33 consecutive young male volunteers (IPSS score < 9 and prostate volume < 30g)whose mean age was 27.6 ± 0.7 years old were enrolled. None of these had conditions or disease or procedure compromising voiding function and their IPSS score . To evaluate their validity and reliability, their urine flow graphs were obtained three times at given time period of the different day (given available time to micturition was between 1 and 3 PM). To measure the time of hesitant to void (T2V). 1 ml of water was poured into the funnel of uro-flowmeter just after pulling a underwear down. This is a method to overcome the disadvantage of uro-flowmeter which works at the begining of urination. After urination, subjects were asked whether they experienced any urinary hesitancy at that time and also asked presence of psychological voiding inhibition. If subject believe current voiding was unusual delay, this result was excluded and repeat uroflow study at the next day. Subjects also completed an IPSS questionnaire and transrectal ultrasound at baseline. Data were analyzed with the repeated measures ANOVA and Turkeys' HSD test for post hoc comparison.

Results

Fourteen uroflowmetric measurements were repeated because the voiding volume(VV) was below 150ml. No patients complain of urinary hesitancy at that time of micturition except phychological voiding inhibition (n=9). Patients median values of T2V(sec) were 7.6 ± 1.9 sec. VV, maximal flow rate and postvoiding residual volume were no significant difference among three voiding episodes. All T2V were less than 11.5 sec which was cut-off point of urinary hesitancy in our previously reported study [1]. These mean T2V well reflected the presence of urinary hesitancy. We also found that T2V was negative correlated with VV ($r = -0.44$, $p = 0.031$) for all range of VV. however, when we limited range over 150ml, T2V was not significantly correlated with VV ($r = -0.34$, $p = 0.093$).

Interpretation of results

We could confirm reliability and validity of hesitancy time calculated by uroflowmetry. And hesitancy time was not affected by voiding volume between 150 and 500ml

Concluding message

Our results suggest that the T2V is stable, well reflect the actual value and unaffected by VV in the range of 150ml or more. Therefore, we believe T2V was sufficient reliable and valid to evaluate urinary hesitancy in the VV range of 150ml or more.

Table 1. Uroflowmetric values in first, second and third attempt of micturition

Parameters	1st	2nd	3rd	p
T2V (sec)	7.8 ± 2.7	7.4 ± 1.6	7.5 ± 2.1	0.463
Qmax (ml/sec)	19 ± 1.3	20.4 ± 1.9	21 ± 1.7	0.564
Qave (ml/sec)	18.5 ± 1.2	19.8 ± 1.4	20.4 ± 1.2	0.668
VT (sec)	16.6 ± 0.7	18 ± 0.9	17.5 ± 1.1	0.987
VV (ml)	291 ± 15.0	288.4 ± 14.8	292.± 19.1	0.964
PVR (ml)	6.6 ± 1.7	6.3 ± 1.5	6.2 ± 1.6	0.988

T2V: time to hesitancy, Qmax: maximal flow rate, Qave: average flow rate, VT: voiding time, VV: voided volume, PVR: postvoiding residual urine volume. Data presented as mean ± SD.

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References

1. Park et al. Association between urinary hesitancy symptoms and uroflowmetry measured urinary hesitancy time in men with lower urinary tract symptoms. Neurourology and urodynamics (2011) pp.

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