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DIFFERENCE OF UROFLOW PARAMETERS BETWEEN NOVEL TOILET-SHAPED UROFLOWMETER AND CONVENTIONAL UROFLOWMETER IN UROLOGICALLY NORMAL FEMALE PATIENTS

Hypothesis / aims of study

Uroflowmetry is a noninvasive and relatively inexpensive method for urodynamic measurement. Therefore, it is an indispensable, first-line screening test for most patients with suspected lower urinary tract dysfunction[1)]. On the other hand, since patients feel the strain when they undergo examination in conventional uroflowmeter those measurement environment is different from the toilets they use in their daily lives, it is possible that this strain influences the examination results. In 2008,the novel uroflowmeter (UM-100; TOTO Ltd., Fukuoka Japan) was developed, which is toilet-shaped and allows the patients to perform uroflowmetry just by urinating in the toilet as usual and can reduce the patients' strain. The aim of this study was to elucidate the differences in the uroflow parameters between the novel toilet-shaped and conventional uroflowmeters in urologically normal female patients.

Study design, materials and methods

This study included 29 consecutive patients who planned to undergo radical hysterectomy in whom the preoperative voiding functions was assessed. All of these patients were diagnosed as being urologically normal by a trained urologist. Among them, 17 early patients underwent uroflowmetry with a conventional uroflowmeter (rotating disk mechanism). Twelve subsequent patients underwent uroflowmetry with the novel toilet-shaped uroflowmeter. The data of uroflow parameter were collected from medical records retrospectively. The accuracy of this novel uroflowmeter was based upon the ICS guidelines[1)], quality control from International Continence Society. We compared the following uroflow parameters: voided volume, micturition time, maximum flow rate and average flow rate.

Results

The average flow rate was significantly greater in the novel uroflowmeter group (15.9 ± 5.4 ml/sec vs. 12.0 ±5.4ml/sec, p=0.04). Moreover, the micturition time was also significantly shorter in the novel uroflowmeter group (10.9 ± 8.0 sec vs. 22.6 ± 19.3 sec, p=0.04)(table1). The maximum flow rate and voided volume were not different between the two groups.

Table 1. uroflow parameters according to uroflow machine

uroflow parameter	voided volume	micturition time	maximum folw rate	average flow rate
type of uroflowmeter				
novel	183.2 ± 146.2	10.9 ± 8.0	25.0 ± 9.6	15.9 ± 5.4
conventional	207.1 ± 101.4	22.6 ± 19.3	21.5 ± 7.9	12.0 ±5.4
p value	0.60	0.04	0.29	0.04

Interpretation of results

In this study, the average flow rate and micturition time were significantly improved with the novel toilet-shaped uroflowmeter in urologically normal female patients. There are several possible explanations for these differences, including psychological factors and mechanical problems. In this study, the voided volume tended to larger in the novel uroflowmeter group. However, the micturition time was significantly shorter. Both uroflowmeters depend upon guidelines, and their technical accuracy is beyond ± 5%. We believe that these differences were due to psychological factors. There are some limitations to this study. The number of patients was relatively small, the voided volume was not particularly large and these subjects were urologically normal. Further studies are needed to resolve these problems.

Concluding message

We conclude that the findings of uroflowmetry using the novel toilet-shaped uroflowmeter provides better results for the micturition time and average flow rate than with the conventional uroflowmeter in urologically normal female patients.

References

1. Neurourol Urodyn (2002) 21;261-274

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Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**

This study did not require ethics committee approval because	**This study is a retrospective study. No need ethics committee approval on retrospective study in our institution.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**No**