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THE REPEATABILITY OF 1-HOUR PAD TEST IN UNTREATED URINARY INCONTINENT WOMEN

Hypothesis / aims of study

A pad test can be used in two ways: as an objective means of detecting urine leakage when clinical testing is otherwise negative or more generally to quantify urine loss prospectively. In many studies, it showed that the repeatability of 1-hour pad test remains controversial. However, they reported a better reproducibility when bladder volume at the start of the test was taken into account. More recently, the test-retest reliability of the ICS 1-hour pad test was re-evaluated by Simons et al in 2001. In their study, 56 women performed the 1-hour pad test twice, 3-10 days apart. Using a bladder scan, the bladder volume was ascertained to be similar both times for each patient. The second pad test was significantly larger than the first one (median 4g vs 14g, P = 0.037). For this reason, if a woman voids before the 1-hour pad test is performed, the bladder volume might be controlled and then the repeatability of the test may increase. The objective of this study was to assess the repeatability of 1-hour pad test within 7 days in untreated urinary incontinent women.

Study design, materials and methods

This was a prospective, observational study. Women with stress, urge or mixed urinary incontinence who were willing to attend for 1-hour pad test were recruited. All subjects underwent complete assessment including incontinence questionnaire, 1- hour pad test, TAS (transabdominal sonography) to estimate post-void residual volume and bladder volume, voided volume measurement. Before the study, the subject was asked to empty her bladder. Transabdominal sonography was performed to estimate post-void residual volume and bladder volume. Then the standardized 1- hour pad test was performed. The second test using the same method was performed within seven days. The main outcome measure was pad weight gains at the first and the second test.

Results

Among the 53 women with documented leakage based on incontinence questionnaire and three-day bladder diary, 45 women (85%) had stress incontinence and 8 women (15%) had mixed incontinence. All of the subjects completed this study before receiving any treatment. Post-void residual volume, bladder volume and voided volume were not different between the first and the second tests. The median value for the first and the second bladder volume was 48.46 ml (5.29 – 209.64) and 39.06 ml (7.30 – 332.35), respectively. (Table 1)

Table 1 Urinary measurements

Measurements (ml)	Test			Retest			P- value
	25th	Median	75th	25th	Median	75th	
Post void residual volume	0	0	4.44	0	0	2.82	0.24
Bladder volume	23.42	48.46	92.49	23.15	39.06	69.19	0.32
Voided volume	150.00	250.00	337.50	150.00	225.00	300.00	0.08

The median value for the first and the second pad test gain was 0.69 g and 0.59 g, respectively. One-hour pad test results from both test and re-test showed no statistically significant difference (p = 0.13) with the mean difference of 2.68 ± 6.52 g. Pad weight gains of test and re-test 1-hour pad test demonstrated good correlation (r = 0.48).

Twenty-one women (40%) had positive 1-hour pad test. Among these women, 17 had stress incontinence and four had mixed incontinence. In this group, the median value for the first and the second bladder volume were 49.44 ml and 23.22 ml with no statistically significant difference(P = 0.93). (Table 4) The median values for the first and the second pad test gain were 2.08 g and 2.05 g, respectively. The result from both test and re-test were not significantly different (p = 0.39) with the mean difference of 3.22 ± 6.05 g. (Table 5) The correlation of test and re-test was good (r = 0.60). (Table 2)

Table 2 Pad test (Positive pad test)

Type of incontinence	Pad weight gain (g)						P- value
	Test			Retest			
	25th	Median	75th	25th	Median	75th	
Total (n=21)	1.32	2.08	6.26	1.28	2.05	6.26	0.39
Stress (n=17)	1.27	1.47	5.92	1.23	1.66	2.72	0.24
Mixed (n=4)	2.88	13.75	30.99	3.27	8.20	35.23	1.00

Interpretation of results

In this study, we attempted to control urinary volume in the first and second tests by asking women to void at 0 minute, the bladder volumes evaluated with ultrasonography were not different in test and re-test periods.

There are a few limitations that may affect the results such as the small sample size and the small bladder volume before performing activities in the 1-hour pad test. The first noteworthy finding of this study is that only 40% of patients with

documented leakage on symptoms and bladder diary demonstrated positive result on two consecutive 1-hour pad tests. The discrepancy between the patients' subjective symptoms compared with their objective pad test result may be explained by two reasons; one is the small amount of bladder volume resulted from emptying bladder and the other is anxiety upon the willingness to leak which was demonstrated in previous studies.

Concluding message

With a suggested modification, the 1-hour pad test starting with empty bladder showed good repeatability for assessment of urinary incontinence.

Disclosures

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