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ORIGINAL RESEARCH

Role of urodynamic studies in predicting treatment outcomes for female stress urinary incontinence

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ABSTRACT

Background: Stress urinary incontinence (SUI) is a common urological problem in the female population with an estimated prevalence between 4% and 35%. The present study was conducted to evaluate role of urodynamic studies in predicting treatment outcomes for female stress urinary incontinence. **Materials & Methods:** 78 women with history of symptoms of stress urinary incontinencewere divided equally into 2 groups. Group I was urodynamic-testing group. Group II was evaluation-only group. The primary outcome was treatment success at 12 months, defined as a reduction in the score on the Urogenital Distress Inventory of 70% or more and a response of "much better" or "very much better" on the Patient Global Impression of Improvement. **Results:** The mean age was 50.4 years and 51.2 years, BMI (kg/m2) was 28.5 and 28.6, duration of incontinence (months) was 96.2 and 85.6, urogenital distress inventory score was 124.6 and 120.3, incontinence severity index score was 7.8 and 7.4, incontinence impact questionnaire score was 42.1 and 42.8, SF-12 score was 97.6 and 96.1 in group I and II respectively. The difference was significant (P< 0.05). A change in urogenital distress inventory score was -100.6 and -98.4, change in incontinence severity index score was -6.2 and -5.1, change in incontinence impact questionnaire score was -35.4 and -37.0 and change in SF-12 score was 5.1 and 7.4 in group I and II respectively. The difference was non- significant (P> 0.05). **Conclusion:** A preoperative evaluation that also included urodynamic testing is not inferior to a basic office assessment for women with uncomplicated stress-predominant urine incontinence who had stress incontinence on office evaluation.

Keywords: Stress urinary incontinence, Patient Global Impression, urogenital distress inventory score

INTRODUCTION

Stress urinary incontinence (SUI) is a common urological problem in the female population with an estimated prevalence between 4% and 35%. Etiology of this problem is thought to be multifactorial. Besides, there are a number of associated voiding problems, which make the management more complex and outcome more difficult to predict. Identification of the underlying disorders of bladder and urethral function is therefore of paramount importance in precise evaluation in this group of patients.

Urodynamic studies, which assess physiological variables during bladder storage and emptying, are often performed preoperatively to confirm and characterize the clinical features of stress urinary incontinence or to guide decisions about modifications in treatment. However, these studies have not been shown to improve surgical outcomes, they are uncomfortable and costly (payments allowed by Medicare are greater than $500 for the three-part study), and they increase the risk of urinary tract infection. Besides, the presence of pelvic organ prolapse and failed previous surgery add further to the challenges to the precise preoperative evaluation of this group of patients. Identifying these factors may enhance preoperative evaluation and in turn translate into even better surgical outcomes in these patients.The present study was conducted to evaluate role of urodynamic studies in predicting treatment outcomes for female stress urinary incontinence.

MATERIALS & METHODS

The study was carried out 78 women with history of symptoms of stress urinary incontinence. All gave their written consent to participate in the study.

Data such as name, age, etc. was recorded. Patients were divided equally into 2 groups. Group I was

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urodynamic-testing group. Group II was evaluation-only group. The primary outcome was treatment success at 12 months, defined as a reduction in the score on the Urogenital Distress Inventory of 70% or more and a response of "much better" or "very much better" on the Patient Global Impression of Improvement.Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table IBaseline parameters

Parameters	Group I	Group II	P value
Age (years)	50.4	51.2	0.84
BMI (kg/m^2)	28.5	28.6	0.35
Duration of incontinence (months)	96.2	85.6	0.01
Urogenital distress inventory score	124.6	120.3	0.74
Incontinence severity index score	7.8	7.4	0.90
Incontinence impact questionnaire score	42.1	42.8	0.39
SF-12 score	97.6	96.1	0.57

Table I shows that mean age was 50.4 years and 51.2 years, BMI (kg/m2) was 28.5 and 28.6, duration of incontinence (months) was 96.2 and 85.6, urogenital distress inventory score was 124.6 and 120.3, incontinence severity index score was 7.8 and 7.4, incontinence impact questionnaire score was 42.1 and 42.8, SF-12 score was 97.6 and 96.1 in group I and II respectively. The difference was significant (P< 0.05).

Graph I Baseline parameters

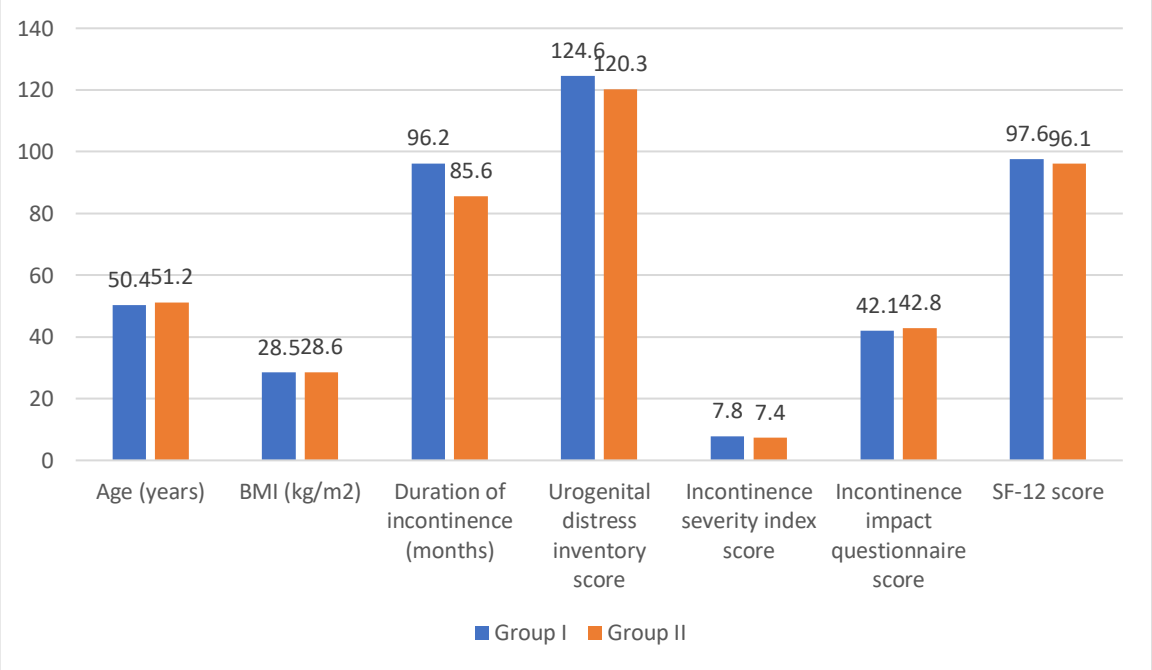

Table II Assessment of Outcome

Parameters	Group I	Group II	P value
Change in Urogenital Distress Inventory score	-100.6	-98.4	0.79
Change in Incontinence Severity Index score	-6.2	-5.1	0.43
Change in Incontinence Impact Questionnaire score	-35.4	-37.0	0.57
Change in SF-12 score	5.1	7.4	0.12

Table II shows that change in urogenital distress inventory score was -100.6 and -98.4, change in incontinence severity index score was -6.2 and -5.1, change in incontinence impact Questionnaire score was -35.4 and -37.0 and change in SF-12 score was 5.1 and 7.4 in group I and II respectively. The difference was non- significant (P> 0.05).

DISCUSSION

Urinary incontinence is defined as the involuntary loss of urine and is the inability to retain urine in the bladder between voluntary acts of urination.[6] It has a number of different causes. Urodynamic tests are used to measure nerve and muscle function, pressure around and in the bladder, flow rates, and other factors which might help to explain why someone

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leaks urine or what type of leakage they have.[7] Some people find these tests embarrassing and uncomfortable. However, they might show what the cause of the incontinence is, or what sort of incontinence the person has, so that the correct treatment can be chosen.[8] This might improve the success of the treatment.[9,10]The present study was conducted to evaluate role of urodynamic studies in predicting treatment outcomes for female stress urinary incontinence.

We found that mean age was 50.4 years and 51.2 years, BMI (kg/m2) was 28.5 and 28.6, duration of incontinence (months) was 96.2 and 85.6, urogenital distress inventory score was 124.6 and 120.3, incontinence severity index score was 7.8 and 7.4, incontinence impact questionnaire score was 42.1 and 42.8, SF-12 score was 97.6 and 96.1 in group I and II respectively. Clement et al[11]determined if treatment according to a urodynamic-based diagnosis, compared to treatment based on history and examination, led to more effective clinical care of people with urinary incontinence and better clinical outcomes.Eight trials involving around 1100 people were included but data were only available for 1036 women in seven trials, of whom 526 received urodynamics. There was some evidence of risk of bias. The four deaths and 12 dropouts in the control arm of one trial were unexplained.There was significant evidence that the tests did change clinical decision making. Women in the urodynamic arms of three trials were more likely to have their management changed (proportion with change in management compared with the control arm 17% versus 3%, risk ratio (RR) 5.07, 95% CI 1.87 to 13.74), although there was statistical heterogeneity. There was evidence from two trials that women treated after urodynamic investigations were more likely to receive drugs (RR 2.09, 95% CI 1.32 to 3.31). On the other hand, in five trials women undergoing treatment following urodynamic investigation were not more likely to undergo surgery (RR 0.99, 95% CI 0.88 to 1.12).There was no statistically significant difference however in the number of women with urinary incontinence if they received treatment guided by urodynamics (37%) compared with those whose treatment was based on history and clinical findings alone (36%) (for example, RR for the number with incontinence after the first year 1.02, 95% CI 0.86 to 1.21). It was calculated that the number of women needed to treat was 100 women (95% CI 86 to 114 women) undergoing urodynamics to prevent one extra individual being incontinent at one year.One trial reported adverse effects and no significant difference was found (RR 1.10, 95% CI 0.81 to 1.50).

We found that change in urogenital distress inventory score was -100.6 and -98.4, change in incontinence severity index score was -6.2 and -5.1, change in incontinence impact Questionnaire score was -35.4 and -37.0 and change in SF-12 score was 5.1 and 7.4 in group I and II respectively. Nager et al[12] in their study a total of 630 women were randomly assigned to undergo office evaluation with urodynamic tests or evaluation only (315 per group); the proportion in whom treatment was successful was 76.9% in the urodynamic-testing group versus 77.2% in the evaluation-only group (difference, −0.3 percentage points; 95% confidence interval, −7.5 to 6.9), which was consistent with noninferiority. There were no significant between-group differences in secondary measures of incontinence severity, quality of life, patient satisfaction, rates of positive provocative stress tests, voiding dysfunction, or adverse events. Women who underwent urodynamic tests were significantly less likely to receive a diagnosis of overactive bladder and more likely to receive a diagnosis of voiding-phase dysfunction, but these changes did not lead to significant between-group differences in treatment selection or outcomes

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that a preoperative evaluation that also included urodynamic testing is not inferior to a basic office assessment for women with uncomplicated stress-predominant urine incontinence who had stress incontinence on office evaluation.

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