

# Conservative treatment of idiopathic detrusor instability in elderly women

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## ABSTRACT

**Objectives:** The aim of this paper is to give an overview of the conservative treatment of idiopathic detrusor instability in elderly women. It describes the clinical and urodynamic features of the over-active bladder and the role of physiotherapy as well as the various physiotherapeutic techniques in the management of this condition.

**Methods:** This is a prospective, uncontrolled clinical trial in which 20 older women aged 55-75 years participated for 8 weeks duration. The study was started on April 2000 at King Fahad Hospital of the University, Kingdom of Saudi Arabia. Therapeutic modalities including bladder training, pelvic floor exercise and electrical stimulation were applied for all subjects.

**Results:** The first desire to void, maximum capacity, flow rate and voiding intervals was increased in its mean at the end of the study period ( $P < 0.0001$ ), while the means of residual volume and frequency of micturition had significantly decreased at the end of the study ( $P < 0.0001$ ).

**Conclusion:** The study shows that correctly taught pelvic floor exercise, combined with bladder training, electrical stimulation and restriction of fluids' intake are effective treatment modalities for the idiopathic detrusor instability in elderly women.

**Keywords:** Detrusor instability, elderly women, pelvic floor exercise, bladder training, electrical stimulation.

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Over-active bladder known as detrusor instability (DI) is the 2nd most common cause of urinary dysfunction in women who rush to the lavatory frequently and leak if they are unable to reach it quickly.<sup>1,2</sup> The impact may be devastating, giving rise to feelings of distress and despair.<sup>3</sup> It is a widespread and debilitating problem, possibly affecting one quarter or more of women. In this condition, the detrusor muscle of the bladder is unstable, namely, contracts, spontaneously or on provocation during the filling phase of cystometry testing, while the patient is attempting to inhibit micturition.<sup>4</sup> Incontinence is a common urinary condition which affects women of all ages and of all social and cultural background. The most common tactics to

limit leakage include fluid restriction, regular toileting, exercises and weight reduction.<sup>5,6</sup> The onset of the menopause with estrogen deprivation and increased risk of urinary tract infection can further compromise bladder function.<sup>7</sup> For physiotherapists, it is important, to be able to distinguish these patients from those who have genuine stress incontinence (leakage due to raised intra-abdominal pressure) because the treatment of DI mainly focuses upon bladder training, with or without the use of anticholinergic drugs. The success of bladder retraining, however, depends on patient education and a collaborative effort between patient and therapist, the individual's motivation, and ability to

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follow the instructions and adhere to the program.<sup>8</sup> The aim of this study was to assess different conservative treatment modalities and the role of physiotherapy in the management of idiopathic detrusor instability (IDI) in elderly women.

**Methods.** The study was a prospective, uncontrolled clinical trial. Twenty-five older women aged 55-75 years referred from the Urology and Gynecology Departments, were recruited for the study. An initial interview by a specialist in Urology and Gynecology Departments, determined the subjects' suitability for the trial. A recent urine sample was sent to the microbiology laboratory for urinalysis and culture to exclude infection. Urodynamic studies were performed to establish a definite diagnosis and identify whether patients have pure DI, pure stress incontinence, or mixed incontinence, and thus guide one towards the most effective treatment regimen. Any patient who had or more of the following criteria was excluded from the study; urinary tract infection (UTI), inability to perform voluntary pelvic floor contraction, pelvic malignancy, cardiac pacemaker, neurological diseases including sensory and motor systems, multiple sclerosis, previous surgical history, previous pelvic irradiation, chronic pulmonary diseases associated with cough, smoking, constipation, and history of being on hormone replacement therapy for less than 3 months. Every patient was given a full explanation of the different treatments. Five subjects were excluded from the study: 2 had unstable bladder, one has cardiac pacemaker, one has a previous history of pelvic irradiation and one was excluded due to hormone replacement therapy which was started 5 weeks prior to the study. The final group consisted of 20 patients aging from 55-75 years with a mean age of  $64.55 \pm 6.08$  years. They received the treatment 2 times at the beginning of the study as clinical sessions. Then, they completed the program as a home treatment by twice daily application (15 minutes each) for 8 weeks including bladder training, pelvic floor exercises and electrical stimulation, in addition to the fluid intake guidance and restriction of caffeine containing drinks. The subjects received individual instruction and training from the physiotherapy team, regarding the mainstay of treatment in bladder training<sup>9</sup> and pelvic floor exercises to shut the bladder neck and to prevent any escape of urine into the proximal urethra.<sup>10</sup> In addition to bladder training and pelvic floor exercises, subjects were instructed to use the electrical stimulation 2 times a day at a low intensity for 15 minutes. During the bladder training, the patients who have previously restricted their fluid intake were guided to increase their intake gradually to 1.5 to 2 liters per day, as aid to the expansion of bladder activity. Data was entered and analyzed using Statistical Package for Social Sciences (SPSS version

9.0). Paired t-test was used to compare the effect of the intervention for the studied variables before and after using the physiotherapy modalities.

**Results.** Twenty older women participated in the study with a mean age of  $64.55 \pm 6.08$  years. Their mean height was  $161.2 \pm 4.42$  cm, the mean weight was  $84.5 \pm 6.37$  kg, and with mean body mass index  $32.51 \pm 2.01$ . Comparison of the measured variables before and at the end of the study namely first desire to void (ml), maximum capacity (ml), flow rate (ml/second), residual volume (ml/second), voiding intervals (hours), frequency of micturation were made and the differences were significant ( $P < 0.0001$ ). The first desire to void, maximum capacity, flow rate and voiding intervals increased in its mean at the end of the study, while the means of residual volume and frequency of micturation had significantly decreased at the end of the study.

**Discussion.** The results obtained from the present study demonstrated that the comparison of same measured variables before and after the study were significantly different ( $P < 0.0001$ ). The first desire to void, maximum capacity, flow rate and voiding intervals were significantly increased in its mean at the end of the study, while mean of residual volume and frequency of micturation significantly decreased after the study. The results of this study corroborate previous randomized, double blind, placebo-controlled trial of pelvic floor stimulation in women with genuine stress incontinence.<sup>11</sup> The patients who received vaginal stimulation (50 hertz (Hz) and 12.5 Hz simultaneously) demonstrated significant improvement in pelvic floor muscle strength and reduction in urine loss after 15 weeks. Miller et al<sup>12</sup> found that stress incontinent women were able to appreciate a statistically significant reduction in urine loss ( $P=0.005$ ) by voluntary contraction of the pelvic floor muscles during cough. Another study<sup>13</sup> reported a significantly increased pelvic floor muscle strength in the period between 16th week and one year post partum. The symptoms of urgency of micturation and urge incontinence have been successfully improved by bladder retraining combined with pelvic floor muscle exercises. During an unstable detrusor contraction, the inhibitory reflex may be activated in any pelvic floor muscle exercises or electrical stimulation.<sup>14</sup> Jackson et al<sup>15</sup> reported that the pelvic floor muscle exercise protocol of 15 minutes once a week for 10 weeks showed similar success rates, and 74% of 28 subjects in their study were cured or significantly improved with urodynamically proven stress incontinence. All subjects who participated in a biofeedback and pelvic floor exercise program plus behavioral strategies were reported to be improved.<sup>16</sup> However, the debate continues between researchers on the mechanism and

measurement of the effect on the pelvic floor musculature. Two outstanding comprehensive literature reviews discuss and challenge the generally accepted opinions on pelvic floor muscle exercises.<sup>17,18</sup> The treatment of urinary incontinence by electrical stimulation has been conducted and successfully proved. A current sufficient amplitude will excite nerves and muscle tissue in its field causing a muscular contraction by either maximal electrical stimulation or low intensity electrical stimulation.<sup>14</sup> In treatment of DI, stimulation at 10 to 20 hertz causes a reflex inhibition of the detrusor contraction. The clinical benefit of electrical stimulation in 2 randomized controlled trials on women with stress urinary incontinence has shown significantly beneficial effects in women who received this treatment.<sup>11,14</sup>

In conclusion, the findings of this study have demonstrated that correctly taught pelvic floor exercises, combined with bladder training, electrical stimulation and restriction of fluids intake may be used as an effective treatment for the IDI.

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