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The Role Of Conservative Methods In The Today's Treatment of Urinary Incontinence

Üriner Inkontinans Tedavisinde Günümüzde Kullanılan Konservatif Tedavi Yöntemlerinin Rolü

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Abstract

Urinary incontinence (UI) is a condition that aggravates the performance status of the patient, decreases the quality of life, and has a high prevalence. When the incidence of urinary incontinence is observed, stress urinary incontinence (SUI) is the most common (49%), mixed urinary incontinence (MUI) is the second (29%) and urge urinary incontinence (UUI) (21%) is the least frequent in all ages.

Conservative methods are effective, well-tolerated, noninvasive, and safe treatment options for the treatment of UI. Conservative approaches can be summarized as lifestyle changes, bladder training, and pelvic floor muscle training (PFMT). PFMT includes biofeedback, vaginal pressure, PFM exercises, electrical stimulation (ES), electromagnetic stimulation (EMS). The goal of rehabilitation is to achieve urethral stability by increasing the strength of the pelvic floor muscles. These approaches can result in approximately 26% reduction in incontinence episodes.

This article was conducted by examining the latest international literature data available on this subject. In this article, it is aimed to give an overview of conservative treatment in patients diagnosed with urinary incontinence.

Key Words: Urinary incontinence, Conservative methods, Pelvic floor muscle training, Biofeedback, Electrical stimulation, Electromagnetic stimulation

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Özet

Üriner inkontinans (Üİ) , hastayı zorlayan, hayat kalitesinde düşüş yaşatan, yüksek prevelansa sahip bir durumdur. Üriner inkontinansın görülme oranlarına bakıldığında tüm yaşlarda en sık SÜİ (%49), ikinci sıklıkta MÜİ (%29) ve en az sıklıkta ise Üİ (%21) görülmektedir.

Üİ tedavisinde konservatif yöntemler, etkili, iyi tolere edilebilen, noninvaziv ve güvenli tedavi seçenekleridir. Konservatif yaklaşımlar, yaşam tarzı değişiklikleri, mesane eğitimi ve pelvik taban kas (PTK) rehabilitasyonu olarak özetlenebilir. PTK rehabilitasyonu içine biofeedback, vaginal ağırlıklar, PTK egzersizleri, elektriksel stimülasyon (ES), elektromagnetik stimülasyon (EMS) girer. Rehabilitasyonun amacı pelvik taban kaslarının gücünü artırarak üretral stabiliteyi sağlamaktır. Bu yaklaşımlarla inkontinans epizodlarında %26'ya yakın bir azalma elde edilebilir.

Bu çalışma bu konuda mevcut son uluslararası literatür verileri incelenerek yapılmıştır. Biz bu çalışmada üriner inkontinans tanılı hastalarda konservatif tedavi hakkında genel bir bakış vermeyi amaçladık.

Anahtar Kelimeler: Uriner inkontinans, Konservatif yöntemler, Pelvik taban kas egzersizleri, Biofeedback, Elektriksel stimulasyon, Elektromagnetik stimulasyon

Introduction

The definition of urinary incontinence (UI) was standardized and edited as "involuntary urinary incontinence" by The International Continence Society (ICS) in 2002. There are different rates in the prevalence studies for urinary incontinence in the literature, ranging from 11% to 57% [1]. Among these studies, in the EPINCONT study (n=27900), which had the highest number of cases, a postal survey method was used in Norwegian women and the prevalence of urinary incontinence was reported as 25% [2].

UI is divided into subgroups: stress urinary incontinence (SUI), urge urinary incontinence (UUI), mixed urinary incontinence (MUI), and overactive bladder (OAB). Risk factors for UI are; age, pregnancy, parity, obstetric causes, menopause, history of hysterectomy, obesity, smoking, diet, and genetic causes.

UI, which affects the quality of life considerably, is a highly probable curable health problem. There is a wide range of treatment options ranging from drug treatments, conservative treatments and, where necessary, surgical interventions. The main purpose of the treatments is to increase the strength of the pelvic floor muscles and correct the position of the urethra. The expected outcome of all these treatments is to increase the quality of life of the patient.

The choice of treatment for UI is based on etiopathogenesis. The aim of surgical approaches is to correct the deformed ureterovesical angle, to increase the strength (resistance) of the urethra and to provide its coaptation (capacity to close).

Behavioral therapy, timed voiding, fluid restriction, regulation of the gastrointestinal system, avoidance of irritant food, psychotherapy, pelvic floor exercises, biofeedback, pelvic electrical stimulation, and sacral nerve stimulation are applied in conservative approaches. Today, conservative methods are recommended as

an alternative in the treatment of UI because the probability of side effects is close to zero and they are low cost. In the literature, continence rates are reported to be between 43% and 68% by using biofeedback and combined exercise methods[3]. In this article, it is aimed to review the actual situation of conservative treatment methods used in the treatment of UI in women.

Treatment of Urinary Incontinence

The choice of treatment for UI is mainly based on etiopathogenesis. The main purpose of the treatments is to increase the strength of the pelvic floor muscles and correct the position of the urethra. Although UI is not a life-threatening discomfort, patients develop emotional disorders up to depression due to the feeling of discomfort caused by constant wetness and irritation. It is known that the sexual life of patients with UI, their daily domestic and business activities are affected and that to prevent this condition, limit their social and physical activities and even reduce their fluid intake.

First and second-line diagnosis and treatment recommendations for female incontinence were identified in the Third International Incontinence Consultation (IIC) report[4]. Conservative, pharmacological, and surgical methods are being tried in the treatment of patients with UI. The purpose of this is to regain bladder control. The expected outcome of all these treatments is to increase the quality of life of the patient.

Conservative Treatment Approaches in Urinary Incontinence

Conservative treatments are the treatment methods that are effective, safe, tolerable, and preferred by many patients. Today, conservative methods are recommended as an alternative in the treatment of UI because the probability of side effects is close to zero and UI is low cost. Behavioral therapy, timed voiding, fluid restriction, regulation of the gastrointestinal system, avoidance of irritant food, psychotherapy, pelvic floor exercises, biofeedback, pelvic electrical stimulation, and sacral nerve stimulation are applied in conservative approaches. There are studies in the literature that have reported continence rates between 43% and 68% by biofeedback and combined exercise methods [3].

Since the effect of incontinence varies from one patient to another, the patient's emotional level and expectations of the treatment should definitely be taken into account when planning the treatment. Therefore, the patient should be treated with the least invasive treatment that can be successful.

1. Behavior Therapies:

It is known that lifestyle interventions such as weight loss and reducing fluid intake decrease UI. Patients are advised to modify their diet and lifestyle to improve their quality of life. In general, patients should pay attention to the amount of fluid they take. Some foods and drinks are thought to trigger detrusor activity and an overactive bladder problem. Therefore, it is recommended to avoid foods and drinks such as alcohol,

caffeine, carbonated foods, tomato and tomato products, spicy foods, citrus type fruits and fruit juices, artificial sugars, chocolate, corn syrup, sugar, and honey.

a. Diet:

It is known that consumption of caffeinated foods facilitates the formation of UUİ. Therefore, foods containing caffeine are limited. Fizzy drinks, tea, coffee, alcohol and chocolate is removed from the diet because they cause diuresis. Consumption of foods that cause irritation in the genitourinary system should also be limited.

It is important to take fibrous food and sufficient fluid since the consolidation is usually associated with UI. Therefore, fluid intake should not be extremely limited. The person should consume at least 2-3 liters of liquid per day. Thus, constipation is prevented and urine is diluted.

b. Fluid Restriction:

A healthy person voids 4-6 times during the day and 1-2 times at night, a total of eight times a day. In each micturition, patients needs to urinate at an average of 300cc so that the bladder is fully emptied. If the patient urinates more frequently and urinates in fewer amounts, the bladder capacity will become smaller and smaller since there is no complete ejaculation.

Attention should be paid to the diurnal rhythm of liquid consumption. For example, the fluid restriction should be made at night to reduce the patient's nocturia. Foods that increase diuresis should not be consumed, especially during the evening hours.

c. Bladder Training:

First, the patient should be educated about the anatomy and pathophysiology of the lower urinary tract. The urination schedule should be determined by looking at the daily voiding intervals in the bladder diary. The patient should be encouraged to urinate according to the schedule even patients do not need for micturition. The aim here is to open the voiding intervals and provide more urine output. The extension of the weekly urination interval is calculated. The voiding interval is increased by approximately 30 (15-60) min each week. It is aimed to reach a 3-4 hour interval. After 6 weeks, the bladder schedule is reviewed. A 60% reduction in incontinence episodes can be observed by this training. Besides, patients may be advised to urinate before starting physical activity.

For example, in a study aimed at examining the effects of the combination of behavioral therapy and drug therapy, it was shown that combining drug and behavioral therapy in a gradual program might provide additional benefit for patients with UUI [5]. Patients were randomized as first group-behavioral therapy, second group-drug (oxybutynin chloride) therapy, and third group-control group (adiaphorous) at the beginning of the study. At the end of 8 weeks, subjects who were dissatisfied with the treatment were offered a chance to proceed to the combined treatment. Of the 197 patients, 35 agreed to switch to combined

treatment. Eight cases (12.7%) in the first group proceed from behavioral therapy to behavioral and drug treatment. It provided an average reduction of 57.5% in incontinence with a single treatment and an average reduction of 88.5% in incontinence with a combined treatment as well as provided additional benefit in terms of recovery (P=.034). Twenty-seven people (41.5%) in the second group went from drug therapy to combined drug and behavioral therapy Additionally, an extra improvement was observed - there was a 72.7% reduction in incontinence with a single treatment and an 84.3% reduction in incontinence with combined treatment (P = .001). This study demonstrated that combining drugs and behavioral therapy in a gradual program could provide additional benefits for patients with UUI [5].

2. Physical Therapy Methods:

The determination of muscle strength of the pelvic floor muscles by vaginal palpation is our key examination in the application of physical therapy methods. If pelvic muscle strength is <3, electrical stimulation is applied as a passive method. Physical therapy is continued until the muscle strength reaches the level of 3 with the treatment and if there is no improvement, surgical treatment should be applied. When pelvic muscle strength is determined as (3 and> 3), exercise biofeedback, vaginal cone, and magnetic field treatments can be applied[6,7].

Conservative treatment including physical therapy and exercise should absolutely be tried in UI, except in cases with the severe anatomic disorder and cases diagnosed with definitive surgical indication. Recovery with conservative treatment in patients with SUI varies by 59-70% [8,9].

a. Pelvic Floor Muscle Training (PFMT):

Exercise is very effective in increasing the muscle strength of the pelvic floor and is a behavioral treatment option applied in the prevention and treatment of incontinence. Short verbal warnings to women are not enough to teach them how to do the exercises correctly. The patients cannot learn which muscles to flex unless tested directly. For this reason, patients are taught to relax the pelvic floor muscles by vaginal digital palpation in the supine position, knees flexion with head raised slightly, abdominal, hip and thigh muscles in loose position (lithotomy position) and the patient is observed to flex the right muscle group. Patients do these exercises 3 times a day for 12 weeks, in the way that 10sec. contraction and 10sec. in the form of relaxation periods. The number of contractions is gradually increased and it reaches 60 repetitions per day. Patients exercises should be applied in 3 different positions - lying down, sitting and standing. If the patient is unable to flex the right muscle, the desire to urinate accidentally may become increasingly congested or exercise may not be effective. The most important factor in the success of exercises is thought to be to supervise exercises with a physiotherapist or a trained nurse. In the correct pelvic floor muscle contraction, the clitoris is pulled down, the vagina is pulled inwards, and the anus thickens.

With PFMT, it is possible to improve the success of increasing muscle strength and delaying urinary incontinence. If the patient learns to flex the pelvic floor muscles correctly, a decrease in incontinence episodes can be observed quickly. However, increasing muscle strength is a time-sink process and no response can be obtained before 4 weeks. It is known that the formation of muscle hypertrophy occurs not before 8 weeks and training should continue for at least 15-20 weeks.

It has been reported that exercises have a success rate of 65-75% in the short term, but the success rate is low due to poor patient compliance in long-term results in Cochrane screening. Moreover, it has been found that only half of the women have continued their exercises in a 5-year follow-up.

b. Biofeedback (BF):

Biofeedback is used for the evaluation and treatment of pelvic floor muscle strength. BF is the projection of physiological events into visual and auditory signals. Since it is an active method, muscle strength increase is higher. Superficial and vaginal electrodes can be used in biofeedback and when the patient contracts his muscles, he/she can see them on the screen as visual or auditory signals. With these warnings, patient can learn to flex or relax his muscles correctly. Use of BF in UI; BF is used in patients with detrusor instability to teach the voluntary inhibition of detrusor contractions, as well as relaxation of abdominal muscles and pelvic floor muscle contraction. This technique is time-consuming and requires the patient to be motivated, independent in patients daily life, and normal in terms of his/her cognitive functions.

When the current literature is examined, Wang et al. compared BF exercises with exercise alone or with exercise applied by intravaginal electrodes. They conducted this study in 103 women between the ages of 15 and 71. The treatment was administered for 12 weeks and results were better in the BFgroup, although the cure rate varied between the groups.

In another study, 70 women were given medical treatment due to UUI and 30 were taken to BF or PFMT group when there was no response to treatment. Although the cure rate was unchanged, larger bladder volumes were obtained in the BF group [10].

In a study in which Choii et al. investigated the effect of behavioral therapy; BF and functional electrical stimulation were applied to the first group and only PFMT was applied to the second group. Statistically, the frequency and amount of urinary incontinence in the BF group were reported to decrease significantly compared to the PFMT group [11].

c. Vaginal Cones:

Vaginal cones are applied both to learn exercise and to increase muscle strength. Cone weights range from 20 to 90 gr. Treatment is first started as 10 minutes then increased to 20 minutes and the procedure is repeated twice a day and caused strong isometric contractions in pelvic floor muscles. Weight is increased as

muscle strength increases [12]. The application of the vaginal cones in standing position causes the feeling of slipping, which in turn triggers the contraction of the pelvic floor muscles.

The most important advantage is that vaginal cones can be applied without supervision, giving the patient the chance to apply at home. It is not recommended for use in the presence of advanced pelvic organ prolapse. Vaginal cones are not accepted by some women and may cause vaginitis, pelvic pain, and ultimately patient non-compliance.

d. Magnetic Field Treatments:

The magnetic field is applied to the patient in the sitting chair and controlled by an external apparatus. The force and magnitude of the magnetic field are adjusted by changing the frequency and amplitude. Since the impact is the largest in the center, the perineum should be located in the middle of the seating area. It is applied in 2 periods of 10 minutes, 2 times a week for 8 weeks at 10-50 Hz. 1-minute rest is left in between periods. This treatment is recommended for use in elderly and obese patients [7,13].

e. Electrical stimulation (ES):

A medium-frequency current, the interferential current is used in ES. Faradic current is abandoned because there is a lot of pain with it. Interferential current application can be done by an electrode or vaginal probe. The vaginal probe is more preferred. Mechanism of action; ES applied intravaginally to the perineum region allows to increase urethral sphincter function and reduce bladder contractility. The effective frequency to inhibit bladder contractions in urge incontinence is 5-10 Hz. Urethral contraction should be activated in stress incontinence, the frequency should be between 10-50 Hz. and must be stimulated for five seconds, rested for 10 seconds. A total of 12 sessions of treatment are applied in 2 or 3 sessions per week, can be applied up to 16-18 sessions. Total treatment time is 20-30 minutes. The treatment time is shorter in the first sessions and in “urge” incontinence. The treatment time should not exceed 15 min[14].

The sacral reflex arch should be intact; muscle denervation should be minimal and combined with active exercises for electrical stimulation to be successful. Besides, it is also more preferred in cases with muscle strength below 3/5. However, it is contraindicated in cases such as severe vaginal prolapse, pregnancy, vaginal infection, intense menstrual bleeding, cardiac arrhythmia, cardiac pacemaker, urinary retention, vesicourethral reflux.

The Posterior tibial nerve is a sensory-motor mixture peripheral nerve and originates from the spinal roots of L4-S3, which also directly contributes to sensory-motor control of the bladder and pelvic floor. Pretibial nerve stimulation (PTNS) is used to treat OAB due to its minimally invasive nature, no need for permanent implants, and its applicability in polyclinic conditions. PTNS is a minimally invasive method that does not require clinical conditions. Techniques developed for superficial, anal, and intravaginal stimulation is available.

Preyer et al. aimed to compare tolterodine with percutaneous tibial nerve stimulation therapy in a randomized controlled study, which conducted in 36 women with OAB symptoms. They administered tolterodine (2mg bid p.o.) to the first group and PTNS weekly to the second group. At the end of twelve weeks of treatment, patients were followed up with QoL (quality of life) form for the total number of UI and its effect on the quality of life in 24 hours. The decrease in QoL scores and 24-hour incontinence attacks improved in both groups compared to pre-treatment ($p = 0.002$). However, there was no statistically significant difference between the two treatment groups ($p = 0.07$). The superiority of the treatments could not be determined, but PTNS administration was shown to cause fewer side effects than tolterodine ($p = 0.04$)[15].

In a similar study, Souto and his colleagues investigated whether the combination of transcutaneous electrical nerve stimulation (TENS) with oxybutynin was more effective than isolated treatment in the treatment of 75 women with overactive bladder syndrome. 75 women with OAB were prospectively randomized in three groups. They applied TENS to the first group twice a week (30-minute periods), 10 mg of slow-release oxybutynin to the second group daily, and the combination of TENS + oxybutynin (multimodal) to the third group. Patients were evaluated with ICIQ-SF, ICIQ-OAB and 3-day urination diaries in 0, 12th and 24th weeks. Significant improvement in OAB symptoms and quality of life (QoL) was observed in all groups after treatment ($p = 0.0001$). Statistically, significant deterioration was detected in the second group although there was a correlation with the scores after the treatment (after 12th week) in the first and third groups at the 24th-week follow-up. As a result, the treatment success of TENS-added groups (either alone or in combination) was shown to be better [16].

Sirls et al. retrospectively examined 113 patients with urge urinary incontinence and PTNS, unlike others. As a result of these examinations, the patients completed an average of 10.5 ± 3 of the planned 12-week PTNS treatment. Additional therapies to PTNS (most commonly anticholinergics) were used in 40 patients (38.1%). The duration of the decrease in symptoms of patients varied between 6 and 12 weeks. Consequently, incompatibility with care and lack of efficacy limited long-term feasibility although the symptoms of most patients after weekly PTNS decreased [17].

In another study, 60 women with OAB syndrome were randomized into two groups by Scaldazza et al. PFMT together with ES were applied to the women in Group A and PTNS were applied to the women in Group B. There was a statistically significant decrease in the number of daily urination, nocturia attacks, and UUI in both groups, but the difference was found to be higher in women treated with PTNS. While the quality of life improved in both groups, frequency improved only in women treated with PTNS. Consequently, PTNS' superiority over ES was shown in this study [18].

In another study, Manríquez et al. evaluated the efficacy of transcutaneous posterior tibial nerve stimulation (PTNS) in contrast to the extended-release oxybutynin (E.R.O.) in 70 patients with OAB by a prospective randomized study. The patients were followed up with a 3-day voiding diary and OAB-q before treatment and after 12 weeks of treatment. Sixty-four patients completed the treatment protocol. No significant differences were found between the study groups in terms of age, body mass index, past hormone replacement therapy, smoking habits, menopause, and parity. No significant differences were observed in the analysis of the 3-day voiding diary before the treatment or in the results of the OAB-q. After 12 weeks of treatment, there was a statistically significant decrease in frequency, urgency, and UUI attacks compared to pre-treatment values. However, no significant difference was found between the two groups [19].

Conclusion

Conservative methods in the treatment of UI are effective, well-tolerated, and safe treatment options. The aim of rehabilitation is to provide urethral stability by increasing the strength of the pelvic floor muscles [6,20]. However, today, conservative approaches are considered to be at the stage of development and relatively new therapeutic modalities.

Conservative methods have a very important place in the treatment of incontinence due to their economic, noninvasive, high patient compliance, low side effects, easy to apply nature and positive results in treatment. Besides, the combination and comparison with medical treatment have been the subject of many studies. When the literature is examined, it is observed that the use of conservative treatment methods either individually or in binary-tripartite combinations gives more positive results. Since the effectiveness of the treatments is similar in general, individual characteristics of the patient, educational status, ease of follow-up come into prominence when deciding on the treatment method. The patient's dominant symptoms and the patient preference as well should be taken into consideration when choosing the treatment combination. Studies are ongoing in terms of different combinations that may be effective in the treatment of OAB.

Conflict of interest: 'none declared'.

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