Özgün araştırma / Original research

Üriner inkontinansın farklı tiplerinin tedavisinde manyetik sandalye tedavisi

Extracorporeal magnetic chair in the treatment of various types of urinary incontinence

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Abstract

Objective: To evaluate the usefulness of extracorporeal magnetic innervations (ExMI) therapy in the treatment of various types of urinary incontinence(UI)

Material and Methods: Total of 88 patients with mean age of 59.76±14.51 (44 male, 44 female) who underwent (ExMI) therapy due UI were included. The patients were diagnosed to have stress UI (53 patients, 60%), mixed UI (24 patients, 27%), true UI (9 patients, 10%) and urge UI (2 patients, 3%). Thirty one patients (35%) had UI after radical prostatectomy (RP), 13 patients(15%) had UI after transurethral prostatectomy (TURP), 8 patients (9%) had UI after delivery and 35 patients (40%) were idiopathic. All patients were primary cases without history of anti-incontinence surgery. All patients have completed 16 sessions of therapy. Each session is 20 minutes and done three times a week. The severity of UI was evaluated using 3rd,4th, and 5th question from ICIQ-SF.

Results: Twenty two patients (25%) were cured, 32 (36%) were improved and 25(28%) partially benefited and 9 (10%) patients had failure of therapy. Both sexes benefited from the therapy; the male score before and after therapy were 18.25±2.44 and 11.80±5.32 respectively (p=0.001), similarly the female scores before and after therapy were 16.62±4.67 and 7.91±5.32 respectively (p=0.001). The mean values of symptoms score before therapy for patients with history of RP and TURP were 18.00± 2.52 and 18.15±2.41 respectively and the post therapeutic

Özet

Amaç: Üriner inkontinansın farklı tiplerinin tedavisinde vücut dışı manyetik innervasyon tedavisinin kullanılabilirliğini değerlendirmek

Gereç ve Yöntemler: Ortalama yaşı 59.76±14.51 olan inkontinans nedeniyle vücut dışı manyetik innervasyon tedavisi alan 88 hasta (44 erkek, 44 kadın) çalışmaya dahil edildi. 53 (%60) hastada stress inkontinans, 24 (%27) hastada mix tip inkontinans, 9 (%10) hastada gerçek inkontinans, 2 (%3) hastada urge inkontinans saptandı. 31 (%35) hastada radikal prostatektomi (RP) sonrası, 13 (%15) hastada transüretral prostatektomi (TURP) sonrası, 8 (%9) hastada doğum sonrası, 35 (%40) hastada idiopatik üriner inkontinans saptandı. Hiçbir hastada inkontinans cerrahisi öyküsü yoktu. Tüm hastalar 16 seans terapiyi tamamladı. Her seans 20 dk olarak ve haftada 3 kez yapıldı.

Bulgular: Yirmi iki (%25) hastada kür, 32 (%36) hastada iyileşme, 25 (%28) hastada kısmı fayda ve 9 (%10) hastada tedavide başarızlık izlendi. Her iki cinsiyet tedaviden fayda gördü. Tedavi öncesi ve sonrası semptom skoru erkeklerde 18.25±2.44 ve 11.80±5.32 (p=0.001), benzer şekilde kadınlarda 16.62±4.67 ve 7.91±5.32 (p=0.001) idi. RP ve TURP öyküsü olanlarda tedavi öncesi ortalama semptom skoru 18.00± 2.52 ve 18.15±2.41, tedavi sonrası 12.44±4.82 ve 11.54±5.68 idi (p=0.001, 0.001). Stres veya miks inkontinansta tedavi sonrası anlamlı iyileşme gözlendi; tedavi öncesi semptom skoru 17.38±3.7 ve 17.00±4.38, tedavi sonrası 9.75±5.18 ve 7.83±5.28 (p=0.001, p=0.001) idi. Gerçek inkon-

score were 12.44±4.82 and 11.54±5.68 respectively (p=0.001,0.001). Patients with stress or mixed types of UI showed significant improvements after therapy; the symptoms scores before therapy were 17.38±3.7 and 17.00±4.38 respectively and after therapy the score became 9.75±5.18 and 7.83±5.28 respectively (p=0.001, p=0.001). Patients with true incontinence had the least benefit of therapy, the symptoms score before and after therapy were 19.33±2.17 and 16.33±4.47 respectively (p=0.08).

Conclusion: ExMI therapy offers a safe and feasible treatment modality for UI. This kind of therapy is effective for different types of UI which occurred due to various types etiologies including oncologic surgery. The least benefit of this modality was in patients with true UI. Further studies recruiting larger number of patients with longer follow up period should be carried out to confirm these results.

Key Words: incontinence, magnetic chair, pelvic floor.

tinans tedaviden en az yarar gördü; tedavi öncesi ve sonrası semptom skoru 19.33±2.17 ve 16.33±4.47 (p=0.08) idi

Sonuç: Vücut dışı manyetik innervasyon tedavisi üriner inkontinans tedavisinde güvenli ve uygulanabilir bir tedavidir. Bu tedavi şekli onkolojik cerrahi dahil çeşitli etiyolojiler nedeniyle meydana gelen üriner inkontinansın farklı tiplerinde etkili bir yöntemdir. Bu yöntemde en az fayda gerçek inkontinansta gözlenmiştir. Daha fazla sayıda ve daha uzun takipli çalışmalarla bu sonuçlar konfirme edilmelidir.

Anahtar Kelimeler: İnkontinans, manyetik sandalye, pelvik taban

Introduction

The definition of UI according to the International Continence Society (ICS) is "the complaint of any involuntary leakage of urine" (1) . This condition is more common in females than in males. One in 4 women and 1 in 9 men were found to complain of symptoms of UI (2). Urinary incontinence can significantly impair the quality of life; "UI is a condition that will not kill me, it will take my life away".

It is estimated that the prevalence of UI among female population between the ages of 15-65 is 10-25% (3). For women older than 60 years, 73% experience some form of UI (4). The burden of UI is high, not only in terms of costs of treatment options available, but also in terms of decreased quality of life and decreased productivity. The economic burden due to UI in the United States in 2000 was estimated to be $19.5 billion (5).

Several treatment options are available for UI. Surgical option is the most valid treatment option for stress UI and medical therapy is the most common used treatment for urge incontinence. Pulse magnetic technology have been developed for the stimulation of pelvic floor muscle and this technology was approved for marketing by Food and Drug Administration in June 1998. The preliminary report for the clinical application for ExMI in the treatment of stress UI were promising; 34-40% complete cure and 40-70% partial improvement was reported (6-10). Nail TM et al was the first to report in a prospective multicenter clinical trial about the feasibility of this therapy for stress UI (11). Latter on a lot of prospective studies support the beneficial effect of ExMI in the treatment of UI (12-14). Kim et al expand the indication of ExMI chair and reported on it's beneficial effect in children with voiding dysfunction or overactive bladder (14). Up to our knowledge we are the first to report on the efficacy of the ExMI in the treatment of various kinds UI including male patients who had UI after malignant or benign surgery of prostate as well as female patients with all major types of UI.

Materials and Methods

Total of 88 patients with mean age of 59.76±14.51 (44 male, 44 female) who underwent ExMI therapy due UI between January 2007 and December 2011 were included. All cases were with primary UI without previous history of anti-incontinence surgery or previous history physiotherapy. Urinary incontinence occurred after prostate surgery in 55 patients (62%); 31 patients (35%) had RP and 24 patients (27%) had TURP. Thirty five (40%) patients had idiopathic UI and 8 (9%) patients had UI in postpartum period. The patients were divided according to types of UI; stress UI 53(60%), mixed UI 24 (27%) and true UI 9 (10%) and urge UI 2 patients (3%). All patients have completed 16 session of therapy in term of 3 sessions per week. The ExMI device (Neocontrol, Neotonus Ins., Marietta, GA, USA) was used in standard manner for all patients; each session's period is 20 minutes, and done three times a week. The severity of UI was evaluated using 3rd, 4th, and 5th questions from ICIQ-SF. The total scores of these questions was 21. Cure was defined as improvement in the symptoms more than 90%, partial

Table 1. The pre-therapeutic demographic characteristics of the study group

	Patient (n,%)	Stress UI (n,%)	Urge UI (n,%)	Mix UI (n,%)	True UI (n,%)	Male/Female
RP	31(35)	22(70%)	0	1(3.2)	8(25.8)	30/0
TURP	13(15)	10(76.92)	0	2(15.38)	1(7.96)	13/0
Postpartum	8(9)	5(62.5)	1(12.5)	2(25)	0	0/8
Idiopathic	36(40.9)	16(44.44)	1(2.7)	19(52.77)	0	1/36
Total (n,%)	88(100)	53(60.22)	2(2.27)	24(27.27)	9(10.22)	44/44

N: number of patients, UI: Urinary Incontinence, RP: radical prostatectomy, TURP: transurethral prostatectomy.

Table 2. Symptoms scores before and after therapy and the percentage of improvements.

	Patients(n)	Mean value of pre-therapeutic score ±SD	Mean value of post-therapeutic scores ± SD	(%) of reduction in the score	P
Total patients	88	17,44±3,79	9,85±5,64	43.52	<0,001
Males	44	18,25±2,44	11,80±5,32	35.34	<0,001
Females	44	16,64±4,67	7,91±5,32	52.46	<0,001
UI after RP	31	18,00±2,52	12,44±4,82	30.88	<0,001
UI after TURP	13	18,15±2,41	11,54±5,68	36.41	0,001
UI after Postpartum	8	13,13±5,66	6,88±5,86	47.60	0,002
Idiopathic UI	35	17,40±4,18	8,20±5,31	52.87	<0,001
Stress UI	53	17,38±3,70	9,75±5,18	43.90	<0,001
Mix UI	24	17,00±4,38	7,83±5,28	53.94	<0,001
True UI	9	19,33±2,17	16,33±4,47	15.15	0,088

N; number of patients, UI; Urinary incontinence, RP; radical prostatectomy, TURP; transurethral prostate resection

cure was defined as improvement in the symptoms score 50-90%, partial response improvement in the symptoms score between 10-50% and failure of the treatment defined as improvement less than 10%. True or total incontinence occurs when the patient has no control over the urinary flow.

Statistical analysis: All data are expressed as mean ± standard deviation (SD). T test was used to compare symptoms scores before after therapy administration. SPSS for windows 10.0 statistical packet was used in statistical analysis. P value more than 0.05 was accepted as insignificant.

Results

The pre-therapeutic demographic characteristics of the study group has shown in Table 1. Twenty two patients (25%) were cured, 32 (36%) were improved, 25 (28%) partially benefited and 9 (10%) had failure of therapy. The average percentage of reduction in the symptoms scores was 43.52%. The highest percentage of reduction in the symptoms score occurred in female patients (52.46%) and in patients with mix type U (53.49%). The lowest percentage of reduction in symptoms score occurred in patients with true UI (15.15%) and patients with UI after RP (30.88%) (Table 2). Both sexes benefited significantly from the therapy; the scores of the male patients before and after therapy were 18.25±2.44 and 11.80±5.32 respectively (p=0.001), the score of the female patients before and after therapy were 16.62±4.67 and 7.91±5.32 respectively (p=0.001) (Table 2). The symptoms score showed significant reduction in all patients with previous history of surgery and in patients with stress, urge or mixed types of UI. The average percentage of reduction in the symptoms score for patients with RP or TURP were 30.88% and 36.41% respectively (Table 2). The mean values of symptoms score before therapy for patients with history of RP or TURP were 18.00±2.52 and 18.15±2.41 respectively and the post therapeutic score were 12.44±4.82 and 11.54±5.68 respectively. (p=0.001, 0.001). Patients with stress or mixed types of UI showed significant improvements after therapy; the symptoms scores before therapy were 17.38±3.7 and 17.00±4.38 respectively and after therapy it became 9.75±5.18 and 7.83±5.28 respecti-

vely (P=0.001, p=0.001). Patients with mix incontinence (53.9%) had more reduction in their symptoms score in comparison to those with stress UI 43.9%. Patients with true incontinence had the least benefit of therapy, the symptoms score before and after therapy were 19.33±2.17 and 16.33±4.47 respectively (p=0.08) with average percentage of reduction in symptoms score was 15.15%.

Discussion

The treatment alternatives of UI range from physiotherapy to surgery (10). In stress UI functional electrical stimulation, vaginal coins, pelvic floor muscle exercise and ExMI chair stimulation are the available treatment options. The choice of treatment for female UI is not easy process. Patients are reluctant to go surgery unless their symptoms become severe. Conservative option seems to have fewer side effect and cause significant long improvement. It could be considered the first line treatment for UI (16). Magnetic nerve stimulation has been used by neurophysiologist as a safe non invasive method for the stimulation of nerve tissue (13,16). Continuous magnetic stimulation is reported to have inhibitory effect on the contraction of detrusor. So far ExMI has been considered as minimal invasive therapy for UI (17).

In our study there was significant reduction in the symptom scores in overall patients with average rate of reduction 43.52% . Only 10% of the patients did not benefit from the ExMI, the remaining patients either cured or improved. In the first data from a prospective randomized multi center study, Galloway et al reported 36% and 66% of cure rate and improvement respectively (18). Similar studies reported rate of complete dryness in 28% and 53% used no pad or less than one pad per day in women with stress or urge UI (13). Regarding the UI after RP or TURP, we had significant and similar reduction in symptom scores in both groups (30% and 36% respectively). It is something expected to have more benefit from ExMI in patients with TURP in comparison to those with RP because RP has more destructive effect on the neurovascular bundle than TURP. In the literature ExMI is a recommendable option for patients who want quick improvement of postoperative UI (17). Yokoyama et al investigated the clinical effect of ExMI on patients who had UI for more than 12 months following RP. In his study the cure rate was (30%), improvement rate was 30% and 40% showed stationary symptoms of UI after RP (19). The least benefit was seen in patients with true UI and the majority of those who did not benefit from ExMI had UI after radical surgery (8 patients) and one patients had TURP.

The main limitations of study were retrospective analyze and short time results. Long term results shold be evaluated.

Conclusion

ExMI is feasible treatment option for stress and mixed UI. Patients with UI after RP or TURP can benefit from this kind of therapy. ExMI therapy offers a new modality for pelvic floor muscle stimulation, it is painless, there is no need for a probe and no need to undress for treatment. Further studies recruiting larger number of patients with longer follow up period should be carried out to confirm these results.

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