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Acupuncture Reflexotherapy in the Treatment of Sensory Urgency That Persists After Transurethral Resection of the Prostate: A Preliminary Report

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Aims: In this study, we wanted to evaluate whether acupuncture reflexotherapy is able to treat the sensory irritative components of LUTS (lower urinary tract symptoms) that persist after transurethral resection of the prostate. **Methods:** We have evaluated 42 patients, randomly selected into three groups: 14 patients received placebo, 15 patients received oxybutynin, and 13 patient were treated with electrostimulation by acupuncture reflexotherapy. **Results:** Before treatment, the mean maximum flow rate (Qmax) was 21.0 ± 3.2 mL/sec, the mean International Prostate Symptom Score (I-PSS) score was 12.9 ± 4.2, the mean I-PSS Quality of Life (IPSS QoL) score was 3.6 ± 1.2. At the first check-up performed after 3 months, we could observe that the I-PSS and QoL scores were 12.6 ± 4.3 and 3.8 ± 1.3 in the group who received placebo; the scores decreased to 11.1 ± 3.2 and to 3.1 ± 1.0, respectively, in the 15 patients treated with oxybutynin and decreased to 6.1 ± 2.6 and 1.3 ± 1.1, respectively, in the 13 patients who underwent acupuncture reflexotherapy. At 1-year follow-up, these parameters were practically similar. The voiding diaries allowed us to deduce that the average number of daytime voidings decreased by 8% in patients who received oxybutynin and decreased by 20% in 13 patients who underwent reflexotherapy; the average number of nocturnal micturitions decreased by approximately 20% and 60%, respectively, in patients who received oxybutynin and reflexotherapy. **Conclusions:** This study has pointed out that acupuncture reflexotherapy has a real benefit in patients with sensory urgency that persists after transurethral resection of the prostate. *Neurourol. Urodynam. 23:58–62, 2004.* © 2003 Wiley-Liss, Inc.

Key words: acupuncture reflexotherapy; benign prostatic hyperplasia; lower urinary tract symptoms; sensory urgency; transurethral resection

INTRODUCTION

Urinary obstruction as a result of benign prostatic hyperplasia (BPH) has been recognized since the earliest days of medicine; until recently, it had been assumed that the cause of symptoms in men with lower urinary tract symptoms (LUTS) was prostatic obstruction; but from a physiologic point of view, the cause of LUTS is multifactorial, comprising at least four conditions [Blaivas, 1988, 1998; Chancelor et al., 1991; Abrams, 1994; Trockman et al., 1996]: urethral obstruction, impaired detrusor contractility, detrusor instability, and sensory urgency. Although LUTS have been subdivided into irritative and obstructive bladder symptoms, there is no correlation between these descriptive terms and the underlying physiology [Ezz el Din et al., 1996; Schacterie et al., 1996; Sirls et al., 1996; Van Ventrooij and Boon, 1996; Witjes et al., 1996], and it is important to be aware of the potential discordance that may exist between the perceived size of the prostate gland and the presence or absence of symptoms and signs.

When the cause of symptoms in men with LUTS is prostatic obstruction, the relief of obstruction is accompanied by relief of symptoms; nevertheless, there exist situations in which irritative symptoms may persist after transurethral resection of the prostate (TURP), and these are the major complaints in patients who do not have evidence of obstruction. With the advent of reliable instruments to document symptoms (questionnaires and diaries) and the ability to define the underlying pathophysiology (urodynamics), the urologists have the ability to tailor the treatments to the specific patient condition.

From our previous experience, it is possible to anaesthetize the prostatic urethra during minimally invasive endoscopic surgery by electrostimulation of particular somatic and auricular points [Ricci, 1997]. In this study, we wanted to evaluate whether acupuncture reflexotherapy is able to treat the

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sensory irritative components of LUTS that persist after TURP; in particular, we wanted to observe whether this treatment can improve the symptoms and the quality of life of patients and whether this treatment is of benefit in comparison with other conventional treatments.

MATERIALS AND METHODS

Among all patients operated on for TURP between January of 1998 and December of 2000 at our Institute, we have considered a selected group of 54 patients, who presented complaining of persistent sensory irritative symptoms (sensory instability) of the lower urinary tract.

Patients who entered into the study protocol had to meet the following *exclusion criteria*: persistent bladder outlet obstruction; concomitant urinary tract infection; presence of detrusor hyperactivity or hyperreflexia at filling cystometry; coexisting prostate or bladder carcinoma; presence of diabetes mellitus with peripheral neuropathy; coexisting neurologic diseases; previous pelvic trauma or surgery; previous sexually transmitted diseases; medications interfering with bladder, bladder neck, and prostate function. For all patients, before entering the study protocol, the following investigations have been performed: transrectal ultrasound of the prostate (TRUS); urethrocystoscopy; uroflowmetry (for Qmax [maximum flow rate]) and voiding cystometrogram; International Prostate Symptom Score (I-PSS) and I-PSS Quality of Life (QoL) scores, by self-administered questionnaires; and voiding diary (self-administered).

The patients were randomly selected into three groups: group 1, 20 patients received placebo for 3 months, and they were, therefore, a control group; group 2, 19 patients received oxybutynin 5 mg b.i.d. for 3 months, group 3, 15 patient were treated with electrostimulation by acupuncture reflexotherapy.

Somatic Points

In all of the patients, the following points for electrostimulation have been used: CV1 (1JM) Huiyin, a 40-mm-long needle is inserted deeply in the perineal musculature between the anus and scrotum; CV2 (2JM) Qugu, the 40-mm needle is inserted 1.5–2 cm deep in the superior margin of the pubic symphysis; CV4 (4JM) Guanyuan, the 40-mm needle is inserted 1.5–2 cm deep approximately 3 cm below the umbilicus; CV5 (5JM) Shimen, the 40-mm needle is inserted 1.5–2 cm deep approximately 2 cm below the umbilicus, at the level of the iliac crests; BL21 (V21) Weishu, a 25-mm needle is inserted 1.5–2 cm deep, lateral to the inferior margin of the spinous apophysis of the 12th dorsal vertebra; BL23 (V23) Shenshu, the 25-mm needle is inserted 1.5–2 cm deep, lateral to the spinous margin of the 2nd lumbar vertebra; BL32 (V32) Ciliao, the overall length of the 40-mm needle is inserted in the 2nd sacral foramen.

Auricular Points

In all of the patients, the following points for electrostimulation have been used: prostate, the 15-mm-long needle is inserted on the conjunction of the inferior portion of the inferior root of the antihelix with the internal portion of the helix; external genitalia: the 15-mm needle is inserted tangentially in the helix at the same height of the inferior root of the antihelix.

The choice of the somatic points has been made on the basis of observations drawn from the anatomy, i.e., the distribution of the autonomic nervous system, and from our previous anesthesiologic experience [Ricci, 1997]; in details, the CV points have been chosen aiming to influence directly the proximal and intraprostatic urethra, as observed during minimally invasive endoscopic surgery; the posterior points of the meridian BL were chosen to modulate orthosympathetic afferences and parasympathetic efferences, that take origin from these zones (Fig. 1).

The choice of the auricular points has been made on the basis of the observation of a somatotropic organization of the human body on the outer ear [Oleson et al., 1980]; points and areas useful to cure muscular and visceral pain have been discovered. The most simple and reliable method to choose a point for treatment is to detect the area most sensitive to finger pressure and correspondent to the somatotropic area of the affected organ. With a special spring detector, two areas referable to lower urinary tract have been identified; the first, termed "prostate," is situated on the medial surface of the ascendent branch of the helix at the conjunction with the antihelix, the second, termed "externa genitalia," is situated on the lateral surface of the ascendent branch (Fig. 2).

All the somatic and auricular point were stimulated at low frequency (from 5 to 10 Hz) and at the highest intensity that

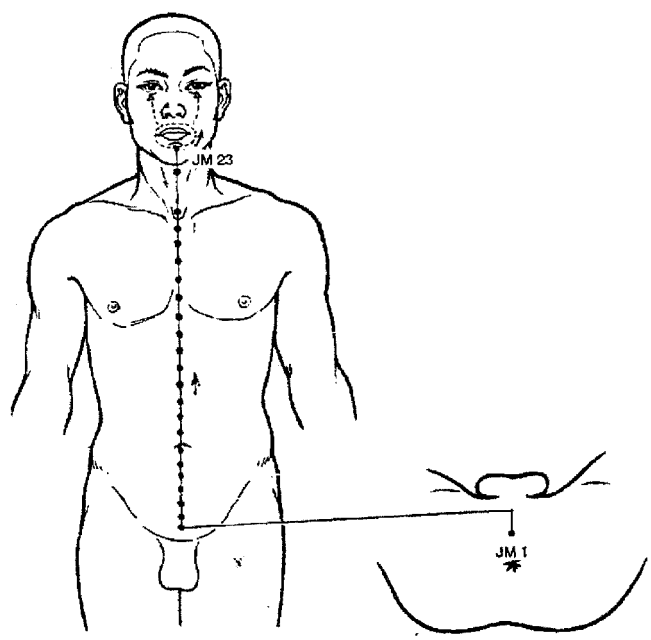

Fig. 1. Representation of the somatic points.

Fig. 2. Representation of urogenital organs on the ear. Reproduced with permission from Romoli M. 2003. Agopuntura auricolare. Ancona, Italy: Unione Tipografico-Editrice Torinese S.p.A.

did not give rise to pain [Oleson et al., 1980]; the somatic points 1 and 2 CV, 4 and 5 CV, BL 21, 23, and 32 bilaterally were connected between them.

Overall, 12 sessions (3 sessions per week for 4 weeks, 20 minutes each session) have been performed in every patient, alternating the stimulation of the anterior (1, 2, 4, and 5 CV) and of the posterior (21, 23, 32 BL) points, while the auricular points were stimulated in each session. A maintenance session every fortnight is performed up to 3 months.

All the 54 patients have been followed up on an outpatient basis every 3 months up to 12 months, and at each visit a digital rectal examination was performed. At the end of the 3rd and 12th months, all the 54 patients were asked to repeat the following investigations: urinalysis and urine culture, urine cytology, transrectal ultrasound of the prostate, uroflowmetry, I-PSS and a I-PSS QoL scores (self-administered), voiding diary (self-administered). A correlation was then made between the results obtained from the analysis of prostatic volume, Qmax, I-PSS, and I-PSS QoL and patient age.

The I-PSS was adopted by the World Health Organisation International Consultation on BPH as an international measure of lower urinary tract symptoms [Donovan et al., 1999] and has since become the most widely used symptom score for LUTS. The symptoms included frequency, incomplete emptying, intermittency, urgency, weak stream, hesitancy, and nocturia. Cutpoints have been determined: mild (0–7), moderate (8–19), and severe (20–35) [Barry et al., 1992]. The I-PSS QoL score consists of a single question in which the patient is asked how he feels if he will have to tolerate the present symptoms for the rest of his life; the answer range from well to very bad, with a score from 0 to 6.

Voiding diaries (also known as frequency-volume charts) are widely used to assess a limited number of LUTS, usually frequency, nocturia, and incontinent episodes. They have been shown to exhibit reasonable test–retest reliability, particularly for incontinent episodes [Wyman et al., 1988].

The statistical analysis has been made by *t*-test as far as prostatic volume and Qmax (maximum flow rate) are concerned and by Wilcoxon Rank test as far as I-PSS and I-PSS QoL tests are concerned. The collateral effect of the various treatments have been evaluated as well the patients' compliance to the treatment and the costs of the procedures.

RESULTS

Of the 54 patients initially included into the protocol, 42 concluded the study and, therefore, were fully evaluated 12 months after the study started; they were stratified as follows: 14 patients treated with placebo, 15 patients treated with oxybutynin, 13 patients treated with acupuncture reflexotherapy. Therefore, in the final evaluation only the 42 patients were considered.

The mean age of the patients was 64.76 years (range, 52–78 years). Before treatment, the mean prostatic volume was 17.2 ± 5.1 mL, the mean Qmax was 21.0 ± 3.2 mL/sec, the mean I-PSS score was 12.9 ± 4.7, the mean I-PSS QoL score was 3.6 ± 1.2 (Table I).

At the first check-up performed after 3 months, we could observe that the mean prostatic volume and the mean Qmax were practically unchanged in all the patients; the I-PSS and I-PSS QoL scores were 12.6 ± 4.3 and 3.8 ± 1.3 in the group who did not receive any therapy; the scores decreased to 11.1 ± 3.2 and to 3.1 ± 1.0, respectively, in the 15 patients treated with oxybutynin and decreased to 6.1 ± 2.6 and 1.3 ± 1.1, respectively, in the 13 patients who underwent acupuncture

TABLE I. Results: Stratification of Patients in Relation to the Treatment Received[a]

	Baseline	At 3 months	At 12 months
Qmax	21.0 ± 3.2 ml/sec	20.5 ± 4.1 ml/sec	21.7 ± 5.7
I-PSS	α 12.9 ± 4.7	α 12.6 ± 4.3	α 13.2 ± 5.0
	β 13.1 ± 3.9	β 11.1 ± 3.2	β 9.3 ± 3.7
	γ 12.7 ± 4.1	γ 6.1 ± 2.6	γ 5.1 ± 2.0
QoL	α 3.6 ± 1.2	α 3.8 ± 1.3	α 4.2 ± 1.8
	β 3.8 ± 1.0	β 3.1 ± 1.0	β 2.5 ± 1.3
	γ 3.4 ± 1.4	γ 1.3 ± 1.1	γ 1.9 ± 0.8

[a]Qmax data represents all three patient groups. α, patients who received placebo; β, patients who received oxybutynine; γ, patients treated by acupuncture reflexotherapy.

reflexotherapy. At 1 year follow-up, these parameters were practically similar.

The statistical analysis was not significant as far as differences in prostatic volume and Qmax are concerned; analysis of I-PSS and I-PSS QoL scores using the Wilcoxon Rank test revealed the differences to be statistically nonsignificant in the control group and in the patients who received oxybutynin ($P > 0.5$), although significant in the patients who received acupuncture reflexotherapy ($P < 0.001$).

By the analysis of the voiding diary at 3 and 12 months, it was possible to deduce that the average number of daytime voidings remained unchanged in the control group, it decreased by an average 8% (from 12 ± 1.5 to 11.1 ± 1.7 voidings per day) in patients who received oxybutynin and decreased by an average 20% (from 12.1 ± 1.3 to 9.4 ± 1.0 voidings per day) in the 13 patients who underwent reflexotherapy; the average number of nocturnal micturitions remained unchanged in the control group, whereas the number decreased by an average 20% (from 4 ± 2.1 to 3.2 ± 1.9 voidings per night) and 60% (from 4.1 ± 2 to 1.8 ± 1.5 voidings per night), respectively, in patients who received oxybutynin and reflexotherapy.

Analyzing Qmax, I-PSS, and I-PSS QoL score, we observed that the results obtained are not dependent on patient age. Dryness of the mouth was observed in 6% of placebo-treated patients, in 68% of those receiving oxybutynin, and in none of the patients during acupuncture reflexotherapy; no other relevant side effects have been reported in the three groups of patients.

The costs of the treatment with oxybutynin was 82 Euros for each patient, whereas the overall cost for treatment with acupuncture reflexotherapy was 52 Euros per patient. Patient compliance with all treatments were good, as 14 of 20 (70%) patients who received placebo, 15 of 19 (79%) patients who received oxybutynin, and 13 of 15 (87%) patients who receive acupuncture reflexotherapy completed the study protocol.

DISCUSSION AND CONCLUSIONS

This study, although limited because of the small number of patients even if well selected, has pointed out that acupuncture reflexotherapy has a real benefit in patients with LUTS, especially as far as the irritative component of the symptoms is concerned in patients with sensitive bladder problems. Patient compliance with this treatment is good, and patient satisfaction during the treatment, as far results obtained are concerned, is very acceptable.

Longer term results are still under investigation, but from our preliminary experience, we can say that acupuncture reflexotherapy is a good alternative treatment for sensory urgency; maintenance sessions can be performed whenever necessary to strengthen symptoms improvements. On the basis of our results, we believe that acupuncture reflexotherapy does not influence lower urinary tract function, because we did not observe modifications of Qmax.

We assume that electrostimulation of the anterior points (1, 2, 4, 5CV) has a direct effect on the proximal urethra by means of the peripheral block of the irritative signals leaving from the prostate. The posterior points (21, 23, 32BL) may serve to modulate the autonomic control of the urethra, in particular the sympathetic and parasympathetic nervous system [Ernst and Lee, 1985]. Stimulation of the auricular points may have a central effect, as observed by the decrease of I-PSS and QoL scores; the patient continues to have the symptoms, but the way the symptoms are perceived is more acceptable to him; at present, we do not have evidence to assume that acupuncture reflexotherapy has a direct or peripheral anti-inflammatory effect.

Because reflexotherapy is a therapeutic modality acting on function and not on the target organ, we did not expect objective results; however, it is interesting to observe that improvement of symptoms is accompanied by the disappearance of pain upon palpation of the auricular point called "prostate". This finding indicates a favorable response to therapy. The treatment of sensory urgency by acupuncture reflexotherapy does not add relevant costs to the National Health Service nor for the treatment of side effects. This manuscript is part of a pilot project that aims to prove the efficacy of reflexotherapy in the so-called *functional syndromes*, which seldom can be resolved by conventional medical or surgical therapy.

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