The Effect of Needle-embedding Therapy and Pharmacopuncture Therapy on Patients with Urinary Incontinence

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Abstract
Objectives: This study was designed to evaluate the effect of traditional Korean medical therapy, consisting of needle-embedding therapy and pharmacopuncture therapy, on patients with urinary incontinence.

Methods: Twenty-nine patients with urinary incontinence underwent two sessions of traditional Korean medical therapy in a month. The pressure and the duration of pelvic muscle contraction were measured and compared. The primary endpoint of the study was improvement in the strength of pelvic floor muscle contraction. The paired t-test was used for the statistical analysis.

Results: Before treatment, a maximum pressure of 16.03 ± 6.28 mmHg and an average pressure of 9.62 ± 4.98 mmHg were measured, and the duration was 11.82 ± 12.08 seconds. After the first treatment, the pressures were 27.41 ± 10.46 mmHg (maximum) and 18.62 ± 9.72 mmHg (average), and the duration was 40.75 ± 60.02 seconds. After the second treatment, the pressures were 29 ± 14.86 mmHg (maximum) and 20.31 ± 11.51 mmHg (average), and the duration was 34.62 ± 42.02 seconds. Comparisons between before treatment and first treatment results and between before treatment and second treatment results showed statistically significant changes but the difference between the first treatment result and the second treatment result was not statistically significant.

Conclusions: Patients receiving traditional Korean medical therapy showed improved pelvic muscle contraction ability after a single treatment. If strength of pelvic floor muscle contraction is improved, symptoms of urinary incontinence also get better. Traditional Korean medical therapy, with a focus on needle-embedding therapy and pharmacopuncture therapy, may be effective for treating urinary incontinence.
1. Introduction

Urinary incontinence is an abnormal state of involuntary urine outflow that causes social and sanitary troubles [1]. It gives rise to complications of polyuria and nocturnal enuresis, which limits activities and quality of life [2]. Urinary incontinence in female patients can be classified by clinical type as stress, urge, mixed, overflow, fistula or functional incontinence. Among these, stress, urge, and mixed types are the most common [3,4]. A study reported that 21% of Korean females aged between 20 years and 40 years had urinary incontinence [5]. However, the actual prevalence rate may even be higher when the aging population and the lack of patients’ concern are considered [6].

Treatments for urinary incontinence vary and include behavioral therapy, medication, and surgery [7]. Acupuncture is a common way to treat urinary incontinence in Oriental medicine [8]. Previous studies investigated electric acupuncture on B33 (Ciliao) [9] and moxibustion on CV3 (Zhongji) [10] but there are no case reports or studies on needle-embedding therapy for urinary incontinence. Thus, we studied 29 patients with urinary incontinence who were treated with needle-embedding therapy and pharmacopuncture therapy.

2. Methods and materials

We enrolled 43 patients with urinary incontinence who were treated from February 23, 2010 to October 29, 2010. Of those patients, 29 finished treatment and data on those patients were analyzed. We excluded patients with sensory and motor paralysis due to orthopedic disease of the pelvic or the lumbar region and patients with psychiatric or genital disease. We included one patient with spinal stenosis and four patients with a history of genital surgery (pelvic basal muscle restoration). Patients received one therapy session every 2 weeks for 1 month, for a total of two therapy sessions.

Treatment needles were 26- and 29-gauge syringes (Meta Biomed Inc., USA) and were used as follows: 9-cm 26-gauge needles were embedded along both sides of the iliopelvic line, 9-cm 26-gauge needles were embedded along both sides of the sacral line passing through Paliao (B31, B32, B33, B34), 3.8-cm 29-gauge needles were embedded on both sides of the tensor fascia latae, a 3.8-cm 29-gauge needle was embedded at CV2 (Qugu) in front of the clitoris, 3.8-cm 29-gauge needles were embedded at CV2 at 45 degrees from the median line, a 3.8-cm 29-gauge needle was embedded at CV1 (Huiyin), and 3.8-cm 29-gauge needles were embedded on both sides of the vaginal wall.

Acupuncture treatment was applied at various trigger points for body balancing. Disposable stainless steel acupuncture needles (0.25 mm × 40 mm, HangLinSeoWon Co., Korea) were used. Needles were applied for 20 minutes at a depth of between 20 mm and 30 mm.

We used pharmacopuncture supplied by the Korean Pharmacopuncture Institute. Three types of pharmacopuncture materials, Flos carthami and cornu Cervi pantotrichum pharmacopuncture (CFC), Calculus bovis and Fel Ursi and Moschus pharmacopuncture (BUM), and Jahageo (Hominis placenta) pharmacopuncture, were used as follows: 0.05 mL of CFC at two points 1 cm from the fourth lumbar spinous process, 0.05 mL of CFC at two points 1 cm from the fifth lumbar spinous process, 0.05 mL of CFC at both B32 (Shangliao), 0.05 mL of CFC at both B33, 0.02 mL of Jahageo on both sides of the clitoral hood, 0.2 mL of BUM at the Jeonyang, Youjung, and Busu acupoints, and 0.2 mL of BUM at CV1. We also applied pelvic correction after determining the patient’s pelvic displacement throughout analysis based on toes and foot shape. Needle-embedding therapy and pharmacopuncture therapy are separate treatments. In this study, each therapy was used at the same time. A perineometer (ExTT-101 Version 1.0, Apimeds Inc., Korea) was used to find out the efficacy of these therapies.

A perineometer was used as its probe sited into the vagina. We recorded the vaginal contraction pressure (mmHg) and time (second) when the patient was induced to contract her pelvic floor muscles. We measured the maximum and the mean values of the pelvic muscle contraction pressure (mmHg) and the duration (second) of the contraction. Three measurements were made: before treatment (baseline), after the first treatment and after the second treatment. We compared the collected data between the baseline and the first treatment, between the baseline and the second treatment, and between the first and the second treatments. We used SPSS 15.0 for Windows (SPSS Inc., Chicago, IL, USA). Results were described as means ± standard deviations. We used the paired t-test to define statistical significance (p < 0.05).

3. Results

Patients were aged between 31 years and 56 years (mean: 43.03 ± 6.88 years) and 19 of them had experience of childbirth (1–4 child births; mean: 2.21 ± 0.91 child births; Table 1). Types of urinary incontinence (Table 2) were urge (n = 9, 31%), stress (n = 10, 34%), mixed (n = 3, 10%), and unclassified (n = 7, 24%).

The vaginal contraction pressure was measured with a perineometer. Maximum pressures at baseline, after the first treatment, and after the second treatment were 16.03 ± 6.28 mmHg, 27.41 ± 10.46 mmHg, and 29 ± 14.86 mmHg, respectively. The mean pressures at baseline, after the first treatment, and after the second treatment were 9.62 ± 4.98 mmHg, 18.62 ± 9.72 mmHg, and 20.31 ± 11.51 mmHg, respectively, and the durations at baseline, after the first treatment, and after the second treatment were 11.82 ± 12.08 seconds, 40.75 ± 60.02 seconds, and 34.62 ± 42.02 seconds.

Statistical analysis was done with the paired t-test. The vaginal pressure and the duration between baseline and after first treatment and between baseline and after second treatment showed statistically significant changes.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>General characteristics.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Age (yrs.)</td>
<td>29</td>
</tr>
<tr>
<td>Birth history (times)</td>
<td>19</td>
</tr>
</tbody>
</table>

Values are number or mean ± standard deviation.
However, the vaginal pressure and the duration showed no statistically significant change between after first treatment and after second treatment (Table 3).

### 4. Discussion

Urinary incontinence is any involuntary leakage of urine. It is a common and distressing problem, which may have a profound impact on quality of life. Moderate amounts of urine in the bladder are collected; thereafter, due to relaxation of the urethral sphincter and contraction of the urinary bladder, urination occurs. However, for a variety of reasons, when urethral resistance is higher than the pressure inside the bladder, symptoms of urinary incontinence occur [11]. Types of urinary incontinence are stress incontinence, urge incontinence (or overactive bladder), mixed incontinence, and overflow incontinence, and various treatments are used, depending on the cause of the incontinence. Treatments for urinary incontinence can be divided into nonsurgical therapy and surgical therapy. In recent years, nonsurgical treatment for urinary incontinence has been reported in many papers [12]. Nonsurgical therapies include pelvic floor muscle exercise, biofeedback, electric stimulation therapy, magnetic nerve stimulation therapy, assisting devices, drug therapy, and so on.

In Korean Oriental medicine, the etiology of urine incontinence is associated with viscera and bowel weakness and disorder, which are caused by qi deficiency in the spleen, lung and the kidney, noninteraction between the heart and the kidney, and liver and kidney deficiency. Other etiologies are static blood, damp heat, postpartum, illness, fragility, senility, and so on. The treatments are divided based on deficiency syndrome and excess syndrome. In the case of deficiency syndrome, treatment focuses on supplementing warmth, using methods that converge lower-energizer, warming and toning the kidney yang, strengthening the spleen and the kidney, harmonizing and complementing the heart and the kidney, complementing and promoting the kidney, and strengthening the liver and the kidney but many treatments tone and replenish the middle qi at the same time. In the case of excess syndrome, blood circulation is promoted, blood stasis is removed, and body heat is cooled [8].

Symptoms of urinary incontinence are as follows: involuntary leakage of urine, frequent urination, and so on. The prescriptions for deficient syndrome are Bojungkitgatang - kami, Yukmizihwangtang - kami, Chukcheon - hwan, Sangpyo - san, Sipjeondaebotang - gagam, Sangitang, Tosa- zasan, Ozawon, Bobueum, and Daebodeumhwan. The prescriptions for excess syndrome are Paljueongsan, Samgieum, Tosazasan, Ozawon, Bobueum, and Daeboeumhwan [13]. In addition, the most effective acupoints for urinary incontinence are CV4 (Guanyuan) and Sp6 (Sanyinjiao), GV20 (Baihui), CV6 (Qihai), CV3, Sp9 (Yinlingquans), B23 (Shenshu), S36 (Zusanli), and L7 (Lieque) are also used [14].

In the treatment of urinary incontinence, Jung [15] reported that the improvement rate was good for acupuncture and moxibustion and moxa and for medication (herbal medicine). Ko et al. [9] and Kim et al. [16] reported that the symptoms of urinary incontinence were improved by using electroacupuncture (Ciliao, B32). Kim et al. [10] reported that moxibustion was a very effective treatment for improving stress urinary incontinence in middle-aged women. However, no research and no report exist on needle-embedding therapy for urinary incontinence. Thus, we studied 29 patients with urinary incontinence who were treated with needle-embedding therapy and pharmacopuncture therapy.

This study was designed to evaluate the effect of traditional Korean medical therapy (needle-embedding therapy and pharmacopuncture therapy). Needle-embedding therapy, also called “acupoint embedding therapy,” is a newly developed therapy that uses specialized tools [17]. Embedded alien substances stimulate acupoints and help maintain stimulation. In needle-embedding therapy, metal tools are applied at acupoints, and alien substances are embedded to stimulate the acupoints. The kinds of embedded alien substances are animal tissue (adrenal, pituitary, fat, etc. of pigs, sheep, chickens, rabbits, etc.),

### Table 2 Classification of urinary incontinence patients.

<table>
<thead>
<tr>
<th>Type</th>
<th>N</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>urge</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>stress</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>mixed</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>unclassified</td>
<td>7</td>
<td>24</td>
</tr>
</tbody>
</table>

### Table 3 Pressure and duration of pelvic muscle contraction.

<table>
<thead>
<tr>
<th>Test</th>
<th>Data</th>
<th>Mean ± SD</th>
<th>Difference comparison</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. (mmHg)</td>
<td>Baseline</td>
<td>16.03 ± 6.28</td>
<td>Baseline-1st</td>
<td>0*</td>
</tr>
<tr>
<td>Max. (mmHg)</td>
<td>1st treatment</td>
<td>27.41 ± 10.46</td>
<td>1st-2nd</td>
<td>0.495</td>
</tr>
<tr>
<td>Max. (mmHg)</td>
<td>2nd treatment</td>
<td>29 ± 14.86</td>
<td>2nd-1st</td>
<td>0*</td>
</tr>
<tr>
<td>Mean (mmHg)</td>
<td>Baseline</td>
<td>9.62 ± 4.98</td>
<td>Baseline-1st</td>
<td>0*</td>
</tr>
<tr>
<td>Mean (mmHg)</td>
<td>1st treatment</td>
<td>18.62 ± 9.72</td>
<td>1st-2nd</td>
<td>0.379</td>
</tr>
<tr>
<td>Mean (mmHg)</td>
<td>2nd treatment</td>
<td>20.31 ± 11.51</td>
<td>2nd-1st</td>
<td>0*</td>
</tr>
<tr>
<td>Duration time (second)</td>
<td>Baseline</td>
<td>11.82 ± 12.08</td>
<td>Baseline-1st</td>
<td>0.011*</td>
</tr>
<tr>
<td>Duration time (second)</td>
<td>1st treatment</td>
<td>40.75 ± 60.02</td>
<td>1st-2nd</td>
<td>0.373</td>
</tr>
<tr>
<td>Duration time (second)</td>
<td>2nd treatment</td>
<td>34.62 ± 42.02</td>
<td>Baseline-2nd</td>
<td>0.004*</td>
</tr>
</tbody>
</table>

Values are number or mean ± standard deviation.

*P-value <0.05.
drugs, steel, magnets, and so on. Needle-embedding therapy stimulates an acupoint by using the chemical and the physical stimulation by the embedded alien substance [18]. It is applied for both chronic and acute diseases, and it is applicable to 200 kinds of diseases in medical specialties from internal medicine to pediatrics to dermatology [19]. Based on meridian theory, recent studies have focused on the fields of plastic surgery, cosmetics and hair loss [20].

Pharmacopuncture is a new kind of acupuncture treatment based on two major Oriental medical theories, meridian and herbal medicine. Many Oriental herbal medicines are injected at acupoints or at disease-related points to treat various symptoms [21]. CFC is a compound of cornu Cervi pantotrichum extract and Carthamus tinctorius Flos oil. It is prescribed for patients with degenerative vertebral disease, frozen shoulder, tennis elbow, and compression fractures. BUM is made from Fel Ursi, Calculus Bovis and Moschus. It has an anti-inflammatory and pain-relieving effect [22]. Jahageo is made from human placenta and is used to treat chronic hepatitis, liver cirrhosis, bronchial asthma, tuberculosis, and stroke [23]. We applied chuna manual treatment of pelvic correction after determining the patient’s pelvic displacement throughout analysis based on toes and foot shape [24].

Normal male contraction pressure at urination is between 40 cmH2O and 60 cmH2O (29.42–44.13 mmHg) whereas female urination pressure is much lower [25]. It is difficult to describe improvement in urination capability because of the lack of definite diagnostic and treatment standards for urinary incontinence [26]. However, in this study, the maximum contraction pressure was increased after the second treatment; the mean pressure was also increased, and the duration of muscle contraction was extended by as much as three times compared with the baseline value. In stress-type urinary incontinence, a urine leakage pressure of 60 cmH2O (44.13 mmHg) is key to diagnosing endogenous sphincter muscle failure [27]. Pelvic muscle contraction ability and urinary incontinence are closely related. If strength of pelvic floor muscle contraction was improved, symptoms of urinary incontinence also get better [12,28,29]. Thus, study results after the second treatment may show improved urinary capability.

We studied 29 patients of urinary incontinence who were treated with needle-embedding therapy, pharmacopuncture, and chuna manual and concluded that Oriental medical treatment, mainly needle-embedding therapy and pharmacopuncture therapy, may have an effect on urinary incontinence. Even a single session of treatment improved the muscle compression pressure. We expect this study will help conservative treatment and management of urinary incontinence in clinics.

Acknowledgment

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References


