

Japanese Acupuncture - Current Research

Japanese Traditional Medicine Text (14) –

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The positive effects of acupuncture for Urological conditions have been reported in international journals since the late 1980s. The effects of acupuncture and moxibustion treatment, in particular acupuncture effects, have been known for many practitioners in urology more than 20 years.

Bladder and urethra, as it is called the lower urinary tract, functions are obviously controlled by autonomic and somatic nervous systems as research has revealed¹⁾. Neuromodulation is an easy to understand mechanism of acupuncture treatments as the therapeutic procedure for the lower urinary tract symptoms (LUTS). Further, as a supplemental treatment for refractory enuresis or incontinence (mainly side effects of drug therapy) there are high expectations for the effectiveness of acupuncture treatment. Actually, although there have been numerous reports of acupuncture treatment being used successfully for refractory enuresis, urinary incontinence and urinary tract conditions, the usefulness of acupuncture should not be limited to these conditions. This section outlines for indications and effects of acupuncture treatment for domestic and international research in the field of Urology.

1. Clinical studies abroad

The first International journal to publish research on the effects of acupuncture for LUTS was in 1988. Chang et al. reported on the effects of acupuncture for urinary frequency and urgency in 52 women. The subjects were divided into two groups: one group was treated at Sp6 (medial lower leg) and the other at St 36 (lateral lower leg, below the knee). Results showed 85% of women treated at Sp6 reported

improvement of their symptoms and, following urodynamic study, showed a significant increase in maximum bladder capacity²⁾. With regard to the reliability of this research, it was not stated that the subjects were “randomly” assigned to test groups so the evidence cannot be considered to be of a high level. On the other hand, St36 was established as the control test point and was expected to produce distinctly different clinical effects, because it is in a different anatomical location, this may be considered a relevant research hypothesis. In contrast, Philip et al. collected 20 subjects complaining of urinary frequency, urinary urgency and urge incontinence and treated them with acupuncture. Treatment areas included the low back, low abdomen and the lower medial leg and utilized K23, BL28, BL32, GV4, CV4 and CV6. It was reported that 77% of the subjects stated that their symptoms had improved and of those subjects it was found that their bladder capacity had also increased³⁾. This study does not qualify as “integrated” because a control group was not established, however, as with Chang et al.’s report, objective improvement in bladder capacity was confirmed among those subjects who reported subjective improvement of their symptoms.

Further, at the beginning of 2000, several reports were published whose titles did not include the term “acupuncture”, but used “electro-acupuncture stimulation” to treat urinary frequency and incontinence⁴⁻⁶⁾. Up until recently, skin surface electrodes known as “transcutaneous electrical nerve stimulation” or TENS have been used, however, here the researchers reported on usefulness of electrical stimulation of the medial lower leg after using a needle electrode intended to stimulate the tibial nerve. The affected area is on the lower medial leg in areas almost equivalent to treating Sp6 and K3 with electro-acupuncture. These reports implicitly indicated the usefulness of even low-frequency electrical stimulation using acupuncture in clinical research.

Klingler et al. investigated the effects of acupuncture at points near Sp6 on the lower medial leg in 15 subjects with frequent urination and urinary urgency. The opposite pole plate was attached to a needle below and posterior to the medial malleolus (approximately K3), so stimulation would be applied to the posterior tibial nerve (20Hz, 30 minutes). Treatments were conducted 4 times per week for a total of 12 treatments before results were confirmed. After urodynamic testing, it was found that onset of urination was easier, the urge to urinate was normalized and bladder capacity was significantly increased. In conclusion, 47% of the subjects reported their symptoms had completely disappeared and 20% reported significant improvement⁴⁾. Vandoninck et al. conducted a 12-week study using electro-acupuncture once a week (20Hz, 30 minutes) near the posterior tibial nerve on 35 subjects complaining of urinary urgency and incontinence. Seventy percent of the subjects confirmed their incidence of incontinence had been reduced by more than half and 46% reported complete disappearance of their incontinence⁵⁾. The above integrated reports on both urinary frequency and incontinence suggest the usefulness of the posterior tibial nerve stimulation for these conditions.

Similarly, Hoebeke et al. treated 32 school age children (average age 12) who's symptoms of urinary urgency, frequency and enuresis were found to be resistant to standard medical treatments. They reported that stimulation to the posterior tibial nerve (20HZ, 30 minutes) once a week for 12 weeks eliminated the sensation of urinary urgency in 25% of the subjects and improved the symptom in 36%. Further, it was reported that 17% of subjects with enuresis experienced complete elimination of the symptom and 52% confirmed their symptom had improved⁶⁾. This study treats patients with an integrated research approach, and further shows that a therapy using posterior tibial nerve

stimulation while creating no side effects can be useful in children.

This research points to a changed environment surrounding the lower urinary tract symptoms. In 2002, effective acupuncture treatment for lower urinary tract symptoms was reported. The syndrome includes a constellation of symptoms with or without urge incontinence, usually including frequent urination or accompanied by frequent urge to urinate at night that has become referred to as "overactive bladder" (OAB), a concept addressed by the International Continence Society (ICS). Until recently, invasive inspection protocols had been used to diagnose such symptoms but these methods have changed significantly⁷⁾. According to this new symptom syndrome, overactive bladder has been reported with an estimated prevalence of 16% in Europe and 12% in Japan. Here, clinical studies on the effect of acupuncture treatment for overactive bladder are reported.

Emmons et al. treated 85 overactive bladder patients who complained of urinary incontinence. The patients were divided by into two groups by treatment objective. The first was an acupuncture treatment group aiming to treat their OAB symptoms with Sp6, UB40, UB38 and CV4. The second group, considered the placebo group, aimed to promote relaxation through acupuncture and utilized GB31, St36, UB12 and CV12. The frequency of urinary incontinence in the treatment group decreases by 59% and by 40% in the placebo trial group. Both of these results are significant and there was no significant difference between the two groups. It was reported that the frequency of urinary urgency decreased significantly and the overall amount of urine increased significantly only in the acupuncture trial group⁸⁾. This RCT paper provided high level evidence and so is of great international significance as a published journal article in Obstetrics and Gynecology while examining the effect of acupuncture treatment for overactive bladder.

On the other hand, acupuncture treatment for lower urinary tract symptoms has been adapted for enuresis in children, and its usefulness has been reported in the scientific literature. Björkström et al. treated 24 school age children (average age 10 years) with electro acupuncture (2Hz or 15Hz) on the lower medial leg, foot and lower abdomen (Sp6, UB60, LV3 and CV3 or K3, GB34, ST44 and CV4). It was reported that six months following the cessation of the treatment sessions, 46% of the subjects confirmed their symptoms had improved⁹⁾. Additionally, it was reported that among the subjects who had felt their enuresis improved, also stated that it was easier to wake up to go to the bathroom at night than it had been previously. Consequently, it was concluded that acupuncture was not only useful for enuresis but is also expected to help the subject awaken to urinate without wetting the bed. This research is an integrated compilation of case studies, however, as a useful mechanism of effective acupuncture treatment for nocturnal enuresis it represents significant research. By the way, reports of acupuncture treatment of urological conditions are not only relevant for enuresis, urinary frequency and incontinence.

There are of course more painful urological disorders such as chronic prostatitis and urinary calculi. The effectiveness of acupuncture as a treatment for such diseases has been studied and reported.

The effectiveness of acupuncture has been reported for pelvic pain syndrome due to non-bacterial prostatitis classified under chronic prostatitis. Chen et al. confirmed significant reduction of symptoms following bi-weekly electro-acupuncture for 6 weeks¹⁰⁾. Two protocols were utilized. The first was CV4, CV3 and 腸遺穴 (extra point) (M-CA-17) at 5 Hz, for 20 minutes. The second set included UB35 and UB53 (20 Hz, 20 minutes). This research was an integrated review of case studies, however it has deep clinical significance regarding the usefulness of acupuncture therapy for treating chronic pelvic pain syndrome. On the other hand, Lee et al. investigated

the effects of acupuncture for chronic prostate inflammation resulting in chronic pelvic pain syndrome. They randomly divided 39 patients into three groups for their RCT study. All subjects received life style coaching and were instructed in appropriate exercises as the basis for long-term change. The first group received electro-acupuncture, the second group received sham acupuncture and the third group received no extra stimulation and served as the control. After the six-week observation period, the acupuncture electrical stimulation group was compared to the other two groups, they reported significant ($p < 0.001$) improvement of subjective symptoms. On the effect of acupuncture treatment for intractable chronic prostate inflammation and chronic pelvic pain syndrome, this research in urology, because this RCT based evidence was gleaned from a high level project, it has great academic significance.

A urinary stone (colic) attack is cited as one of the most violent types of pain experienced in urology. However, the effectiveness of acupuncture as a treatment has been reported. Lee et al. randomly divided 38 male patients with colic attacks into to an acupuncture treatment or a drug administration group. The acupuncture group subjects were treated with points on their upper and lower back: UB21, 22, 23, 24, 25, 50, 51, 52, You Gan (extra point) as well as 4-5 points on the hand were selected, needled and retained for about 1 minute. In the acupuncture group, after an average of 3 minutes treatment, an analgesic effect was observed and 86.4 % of subjects reported their pain was completely relieved. For the subjects in the analgesic group, 62.5% reported complete pain relief, however only after an average of 15 minutes had elapsed¹²⁾. This study reported the effectiveness of acupuncture for urinary calculi colic attack using RCT evidence level methods, for the application of acupuncture this should be considered meaningful research.

2 Current status of and prospects for clinical studies in Japan

In Japan, there have not been many reports of acupuncture and moxibustion therapy in the field of urology. Until now, most research has focused on the perspective of impact on or changes in symptoms and bladder function. The effects of acupuncture therapy for overactive bladder, urinary frequency and urinary incontinence have been primary. One of these reports, for subjects complaining of urinary incontinence and urgency, 11 patients with detrusor hyperreflexia (detrusor overactivity), as demonstrated by urodynamic study, underwent sacral acupuncture treatment and these effects were examined¹³).

The acupuncture treatment focused on the sacrum involving bi-lateral insertion at the 3rd sacral foramen (UB33), using stainless disposable acupuncture needle (0.3 mm in diameter, 60 mm in length). Stimulation was obtained by inserting the needle into the sacral periosteal edge directed toward the head to a depth of 60mm until a dull, heavy sensation (dull pain) was achieved. One treatment consisted of thrusting stimulation from this location, continued to a depth of 5 mm for 10 minutes. Following the treatment, 82% of the subjects reported their incontinence had disappeared or their urinary urgency had improved. Urodynamic study was performed before and after the acupuncture treatment. Prior to the treatment maximum urine capacity was 142.5 ± 62.9 mL but after the treatment it became 250.0 ± 100.4 ml, a significant increase ($p < 0.01$). 55% of patients with overactive bladder reported their symptoms had disappeared. From the observed improvement of urinary urgency or incontinence with acupuncture treatment for overactive bladder, it should be suggested that sacral acupuncture is a useful alternative or complement to standard pharmacotherapy.

Similarly, 13 spinal cord injury patients with urinary incontinence were treated with sacral acupuncture.

61% reported their incontinence was reduced by half and following urodynamic study, a significant increase in urine capacity was also confirmed ($p < 0.01$)¹⁴. From these results, sacral acupuncture treatment was hypothesized to likely inhibit over active bladder function. Further, it has been suggested that sacral acupuncture treatment for the patients with bladder hyperactivity caused by chronic spinal cord injuries would likely be useful. Incidentally, among the subjects who reported acupuncture was effective for their symptoms after 4 treatments, urodynamic study conducted one month later, confirmed 6 people continued to show increased urine capacity greater than prior to treatments. These results suggest that treatment effects continued for more than one month without any further acupuncture treatments. It was suggested that monthly maintenance acupuncture therapy would be beneficial, because bladder capacity began to decrease slightly after just one week cessation of the treatments. One point worth noting in the present study is that these results were due to a combination of acupuncture and anticholinergic treatment. Four of 13 subjects who were taking anticholinergic agents (Oxybutynin hydrochloride) found drug therapy by itself did not produce a desired effect, also increasing amount of the drug led to unpleasant side effects in these refractory cases. Improved rates of urinary incontinence among the patients using the pharmacotherapy by anticholinergic agents were more effective than the patients without the pharmacotherapy. Therefore, it suggests that the usefulness of a combination therapy utilizing acupuncture and the pharmacotherapy among the patients with bladder hyperactivity.

Besides overactive bladder, we have also reported on the effects of acupuncture on enuresis. We treated 15 children (average age 10 years), these subjects also received the sacral area acupuncture treatment mentioned above for overactive bladder¹⁵. Treatment results were evaluated after UB33 was

needed once a week for 4 weeks. The children in the study reported that rather than feeling pain at the insertion site, there was a feeling of heaviness or dullness. None of the patients discontinued treatment because they could not put up with such a sensation and no especially harmful side effects were observed. Urinary records were evaluated based on the effects of 1 acupuncture treatment per week and how this influenced urinary frequency at night. Following one month of Acupuncture treatments, 6 subjects (40%) reported decreased urinary frequency at night, and following 2 months of treatment, 7 subjects (47%) reported their enuresis had disappeared. In this study, only the subjects in the acupuncture treatment group experienced significantly greater nocturnal bladder capacity. One hypothesis about enuresis is that if the child becomes cold while sleeping, his bladder may contract, thereby reducing bladder capacity and retention. Acupuncture is thought to counteract this contraction, allowing the subject to maintain or improve their bladder capacity, effectively eliminating or reducing enuresis. Also, following acupuncture treatment, the subjects who reported more than 50% improvement in the number times they went to the bathroom at night were placed in the “effective” group. In contrast, those subjects who reported less than 50% improvement were placed in an “ineffective” group. Nocturnal bladder capacity increased significantly in the “effective” group, and showed no significant change in the “ineffective” group. Additionally, it was found that most of the children in the “effective” group were over the age of 10 and most of the children in the “ineffective” group were under 10 years. From the above results, it is thought that the effectiveness of acupuncture for reducing or eliminating enuresis by increasing bladder capacity is more significant in older children (over 10 years).

Next, acupuncture has also been found effective for treating enlargement of the prostate gland, a very common complaint in geriatric men. Kitakoji et al.

utilized the International Prostate Symptom Score (IPSS), a subjective measure of prostate enlargement and diminished bladder capacity as subject criteria. Twenty-four subjects with an IPSS greater than 8 and bladder capacity less than 30ml were accepted into the study. According to the results obtained, it was reported that following sacral acupuncture, IPSS improved significantly ($p<0.001$) and the parameter of maximum urinary flow and average flow rate ($p<0.05$) also improved significantly¹⁶. As the mechanism of action in this study, following sacral acupuncture, the results showed increased urine flow rate and decreased urethral resistance. The results of sacral acupuncture on urinary tract function suggest that this type of treatment not only impacts bladder function but also that of the lower urinary tract.

In addition, we present international and domestic evidence on the usefulness of acupuncture treatment for chronic pelvic pain syndrome¹⁷. This study recruited 10 patients with non-inflammatory chronic pelvic pain syndrome associated with pelvic congestion syndrome. Prior to receiving acupuncture, 8 of these subjects had received pharmaceutical therapy but found their symptoms unchanged as a result. The Acupuncture treatment was similar to previous reports, sacral acupuncture once a week for 4 sessions, then the patients were given the NIH chronic pelvic pain symptom index (NIH-CPSI), which is a measure of subjective symptoms. Before and after acupuncture treatment, findings from MR venous angiography and trans-rectal ultrasonography of pelvic vein stasis were evaluated. Results showed that NIH-CPSI findings for levels of pain and discomfort following acupuncture were significantly reduced ($p<0.05$) and QOL items were significantly improved ($p<0.01$). Additionally, following acupuncture treatment, it was confirmed that pelvic vein congestion and stasis was eliminated and subjective symptoms indexes were improved. On the other hand, these results indicated the relevance

of this study and point to the validity of the reported effectiveness¹⁸⁾.

Concerning the usefulness of Japanese acupuncture treatment in urology and its mechanism of action as reported so far, because many of these papers are compilations of case studies from Japan, although they may be integrated in theory, it cannot be said there is a high level of evidence. For these reasons, therefore, under the present situation, descriptions of acupuncture as seen in typical clinical practice cannot be equated with standard guidelines for lower urinary tract symptoms in the "over active bladder treatment guidelines",¹⁹⁾.

This concludes our personal research as well as a survey of relevant research on acupuncture treatment for Urological conditions. As for domestic or international clinical reporting of acupuncture treatment for lower urinary tract symptoms and success of treatment, acupuncture treatment should be considered one useful treatment option. However, many questions still remain about the detailed mechanism of acupuncture treatment, so without reports of the usefulness of acupuncture performed using large-scale randomized controlled trials in clinical research that yield convincing evidence, it is hard to say there is enough evidence. In the future, our greatest efforts should be organized toward elucidating the mechanism and usefulness of acupuncture, integrating the evidence as recognized in urology and other fields and transmitting this information to the medical establishment.

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