

STUDY ON ACUPUNCTURE AND MOXIBUSTION THERAPY FOR FEMALE URETHRAL SYNDROME

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Among 180 patients with female urethral syndrome, 128 were treated by acupuncture and moxibustion and 52 by western medicine as controls. The short-term effective rate in the acupuncture and moxibustion group was 90.6% and the long-term effective rate, 80.4%; whereas the short-term effective rate of the control group was 26.9% ($P < 0.01$). The maximal uroflow rate increased by an average of 4.6 ml/s, after acupuncture and moxibustion treatment ($P < 0.001$) and the mean uroflow rate increased by an average of 3.1 ml/s ($P < 0.001$); on the contrary, no changes were found in the control group ($P > 0.05$). Sixty-nine cases from the acupuncture and moxibustion group and 39 from the control group were subjected before and after treatment to determinations of the maximal bladder pressure, maximal abdominal pressure, bladder-neck pressure, and maximal urethral closure pressure during urination. All these indexes were decreased remarkably in the acupuncture and moxibustion group, while no changes were observed in the control group.

Urethral syndrome (US) refers to irritable symptoms of the lower urinary tract, a syndrome without organic lesions in the urethra, bladder, and evident bacteruria.¹ It frequently affects young and middle-aged women and manifests itself mainly as frequent urination, urgent urination, dysuria, distension and bearing-down pain of the lower abdomen. The course of this syndrome is relatively long, which relapses frequently and is so lingering as to be difficult to be cured. We have adopted acupuncture and moxibustion to treat this

syndrome in order to observe the effect of this therapy on urodynamic indexes in patients with female urethral syndrome and compared it with that of western medicine.

Clinical Data

All patients admitted met the following criteria: irritable symptoms of the lower urinary tract such as frequent urination, urgent urination, dysuria, distension, and bearing-down pain of the lower abdomen; normal results of repeated routine urine examination and urine bacterial culture; no

organic lesions of the urethra and bladder by cystoscopy and ultrasonography B; and no curative effect after a relatively long-term anti-infection therapy. All the observed subjects were divided into two groups. In the acupuncture and moxibustion group, there were 128 cases with ages between 16 and 80 (average 46.6) years and the duration of illness varying from 1 month to 30 years; in the control group, there were 52 case with ages between 22-69 (average 43.5) years and the duration varying from 2 months to 30 years.

Treatment and Observation Methods

In the acupuncture and moxibustion group, the method of tonifying the kidney to warm *yang* was adopted mainly, and two groups of acupoints were used. Group I : Qihai (Ren 6) (medicinal cake-separated moxibustion), Guanyuan (Ren 4), Dahe (K 12), Henggu (K 11), Shuidao (St 28), Sanyinjiao (Sp 6) and Taixi (K 3) (all tonified); Group II : Mingmen (Du 4) (medicinal cake-separated moxibustion), Shenshu (UB 23), Qihai (UB 24), Sanjiaoshu (UB 22), Zhonglùshu (UB 29), Huiyang (UB 35), Weiyang (UB 39) (all tonified). The 2 groups of acupoints were used alternately, with 3-4 acupoints each time. The manipulation technique adopted was reinforcing by lifting, thrusting and twirling the needle. Long needles were used to insert deeply into Huiyang, and Zhonglùshu in order to let the needling sensation irradiate to the lower abdomen and the perineum, while moxibustion with three moxa-cones for one acupoint was applied after inserting the needle through a medicinal cake made of herbal medicines which have the function of tonify-

ing the kidney to warm *yang*. For patients having damp-heat, Yinlingquan (Sp 9) and Jiaoxin (K 8) were added for reduction of *yin*.²

The treatment was given once every other day, ten times of treatment constituting one course of therapy. Re-examination was carried out after treated for 1-2 courses.

In control group, Hu Qian Lie Pian (护前列片) was given orally tid, 2 tablets a time. Re-examination was also performed after 1-2 courses of treatment.

Urodynamic determination: A Dan Di 2100 Model Urinary Dynamic Device was used for determinations of uroflow rate, intrabladder pressure, urethral pressure, etc. The method of determination was as reported in the literature.³

Results and Analysis

1. Criteria for therapeutic effects:

According to the severity of irritable symptoms of the lower urinary tract such as frequent urination, urgent urination, dysuria, distension and bearing-down pain in the lower abdomen as complained by patients, scoring was carried out before and after treatment.² Remarkably effective refers to a reduction of the overall scores by over two thirds after therapy; effective refers to a reduction of the overall scores by 1/3 to 2/3 after treatment; and ineffective refers to the score reduction by less than 1/3.

2. Short-term therapeutic effect:

After 1-2 months of treatment in the acupuncture and moxibustion group, 66 (51.6%) cases were evaluated as remarkably effective, 50 (39.1%) effective and 12 (9.4%) ineffective; the total effective rate was

90.6%. In the control group 3 cases (5.8%) were evaluated as remarkably effective, 11 (21.2%) effective, and 36 (69.2%) ineffective, with a total effective rate of 26.9%. The short-term clinical efficacy of acupuncture and moxibustion was significantly superior to that of western medicine ($P < 0.01$).

3. Comparison of scores for symptoms:

As shown in Table 1, there were no significant differences in symptoms before

treatment between these two groups ($P > 0.05$), but reduction of symptom scores was significant in the acupuncture and moxibustion group after treatment, with a reduction of 0-4 points in 84.4% of cases. In the control group, the scores were also reduced after treatment, however, a reduction of 0-4 points occurred in only 25.0%. There was a significant difference between the two groups ($P < 0.05$).

Table 1. Comparison of symptom scores before and after treatment

Groups	No. of cases	0-4 points		5-6 points		7-8 points	
		Before treat.	After treat.	Before treat.	After treat.	Before treat.	After treat.
Acupuncture group	128	19	108	32	17	77	3
Control group	52	6	13	17	20	29	19

4. Comparison of the frequency of urination during the day and at night: There was no significant difference in frequency of urination during the day and at night before treatment between the two groups ($P > 0.05$). In the acupuncture and

moxibustion group, the frequency of urination reduced evidently after treatment ($P < 0.01$), whereas no evident reduction was found in the control group ($P > 0.05$), showing a significant difference between the two groups ($P < 0.01$).

Table 2. Comparison of the frequency of urination during the day and at night in the two groups before and after treatment

Groups	No. of cases	Frequency of urination during the day		Frequency of urination at night	
		Before treat.	After treat.	Before treat.	After treat.
Acupuncture group	128	12.7 ± 4.6	$6.4 \pm 2.2^{\Delta*}$	3.9 ± 3.0	$1.7 \pm 1.4^{\Delta*}$
Control group	52	11.7 ± 4.3	10.6 ± 4.2	4.0 ± 1.8	3.7 ± 1.7

Note: Figures in the table are mean \pm S.D., the same in the following tables;

Δ Self comparison before and after treatment, $P < 0.01$;

* Comparison between the two groups, $P < 0.01$.

5. Long-term therapeutic effect:

Follow-up was carried out for 0.5-1 year in 46 patients after cessation of acupuncture and moxibustion therapy. The

results showed that in 13 cases the condition was stable without relapse; in 18 cases the symptoms were basically stable with occasional relapse; in 6 cases relapse occur-

red, however, the frequency of urination was reduced and the severity of symptoms alleviated; and in 9 cases no change was observed in symptoms after treatment. The long-term effective rate was 80.4%.

6. Changes in urodynamic indexes:

1) Uroflow rate: Comparison was made among 126 cases of the acupuncture and

moxibustion group and 51 of the control group. In the acupuncture and moxibustion group, the maximal and the mean uroflow rates were all significantly increased after treatment ($P < 0.001$), but no change was seen in the control group ($P > 0.05$), showing a very significant difference between the two groups ($P < 0.001$) (Table 3).

Table 3. Comparison of uroflow rates between the 2 groups before and after treatment

Groups	No. of cases	Maximal uroflow rate (ml / s)		Mean uroflow rate (ml / s)	
		Before treat.	After treat.	Before treat.	After treat.
Acupuncture group	126	17.15 ± 7.56	$21.79 \pm 9.13^{\Delta*}$	11.73 ± 8.34	$14.88 \pm 7.31^{\Delta*}$
Control group	51	16.54 ± 7.81	15.19 ± 7.94	10.30 ± 6.37	9.80 ± 6.43

Δ Self comparison before and after treatment, $P < 0.01$; * Comparison between the two groups, $P < 0.01$

2) Intravesical pressure and intra-abdominal pressure: The pressures were recorded in 69 cases of the acupuncture and moxibustion group and 39 of the control group before and after treatment. The maximal bladder pressure and maximal abdominal pressure were relatively higher be-

fore treatment in the two groups. The pressures lowered remarkably after acupuncture and moxibustion treatment, whereas they did not lower evidently after treatment with western medicine, showing a very significant difference between the 2 groups ($P < 0.01$) (Table 4).

Table 4. Comparison of uroflow rates before and after treatment in the 2 groups

Groups	No. of cases	Maximal bladder pressure (cmH ₂ O)		Maximal intraabdominal pressure (cmH ₂ O)	
		Before treat.	After treat.	Before treat.	After treat.
Acupuncture group	69	52.63 ± 26.63	$42.60 \pm 20.44^{\Delta*}$	35.32 ± 35.92	$23.83 \pm 19.37^{\Delta*}$
Control group	39	60.87 ± 31.26	40.17 ± 33.12	54.93 ± 26.24	37.42 ± 30.68

Δ Self comparison before and after treatment, $P < 0.01$;

* Comparison between the 2 groups, $P < 0.01$.

3) Intraurethral pressure: The bladder-neck pressure and maximal urethral closure pressure were all higher in the 2 groups before treatment. However, the pressures were remarkably reduced after

acupuncture and moxibustion treatment, but not after western medicine treatment, showing a significant difference between the 2 groups ($P < 0.01$) (Table 5).

Table 5. Comparison of bladder-neck pressure and maximal urethral closure pressure in the 2 groups before and after treatment

Groups	No. of cases	Bladder-neck pressure (cmH ₂ O)		Maximal urethral closure pressure (cmH ₂ O)	
		Before treat.	After treat.	Before treat.	After treat.
Acupuncture group	69	26.04 ± 11.27	22.20 ± 33.36 [△] *	110.87 ± 34.68	42 ± 29.45 [△] *
Control group	39	27.02 ± 13.98	29.65 ± 12.63	103.24 ± 38.43	112.52 ± 37.21

[△] Self comparison before and after treatment, $P < 0.01$; * Group comparison, $P < 0.01$.

Discussion

The cause of female urethral syndrome is not clear yet, and there is no specific treatment for it in clinical practice. Many clinicians have adopted chiefly anti-infection therapy, however, achieve little. Furthermore, urethral dilatation or urethrotomy gives the patient a lot of suffering in addition to the uncertain efficacy. Based on our experience in acupuncture and moxibustion treatment of diabetic pathological changes of urinary system, we have found that deep puncture of Huiyang (UB 35), Zhonglùshu (UB 29) etc. can biphasically regulate the functions of bladder and urethra,⁴ and satisfactory therapeutic results have been achieved when it is used in the treatment of female urethral syndrome.

By using urodynamic indexes in the study on acupuncture and moxibustion treatment of female urethral syndrome, we found "the high urethral pressure type" was dominant in this group of patients, manifesting itself as elevation of the maximal urethral closure pressure, with or without increase of the bladder-neck pressure, remarkable reduction of uroflow rate, increase of the maximal bladder pressure and

maximal abdominal pressure during urination. These are consistent with the results reported in the Chinese and foreign literature. The above manifestations can explain a series of symptoms in patients with urethral syndrome. Among these changes, elevation of the maximal urethral closure pressure could be the pathological basis of this syndrome. Due to the elevation of the latter, the pressure generated by pubovesical muscle can not overcome the urethral resistance, thus the abdominal pressure is increased to assist the bladder. Although normal urination can be done with the aid of abdominal strength, dysuria, interrupted uroflow, small and weak urine stream, urgent urination, frequent urination, and other symptoms all develop.⁵

By comparison of urodynamic indexes before and after acupuncture and moxibustion and control treatment, we found not only remarkable amelioration of symptoms of urethral syndrome but also evident improvement of urodynamic indexes after acupuncture and moxibustion treatment: reduction in the maximal urethral closure pressure, maximal bladder pressure and maximal abdomen pressure at urination, marked increase in the maximal

and the mean uroflow rates. Thus, we hold that reduction of the maximal urethral closure pressure plays a key role in improvement of clinical symptoms and urodynamic indexes.

The cause of elevation of the urethral pressure is not yet clear. Some specialists consider that elevation of the urethral pressure in patients with urethral syndrome may be related to the increase of excitability of pudendal nerves innervating the urethra and sympathetic nerves.⁶⁻⁸ This excitability of nerves induces spasm of the external sphincter of the urethra, the smooth muscle of the bladder neck and pelvic floor muscles (also innervated by pudendal nerves), resulting in elevation of urethral pressure, increase of urethral resistance and disorder in urination. Based on the previous studies, it can be seen that the nerves under the acupoints chosen in this study all enter the spinal segments of L₁ to L₅, corresponding to nerves innervating the urethra.^{9,10} Hence, when stimulating these points by acupuncture and moxibustion, especially deep puncture of Huiyang (UB 35) and Zhonglùshu (UB 29), the tip of needle can reach directly the nerves nearby in the pelvic cavity, resulting in afferent impulses spreading to the urination center to inhibit related neurons excessively excited, relax the urethral sphincter and pelvic floor muscles, and lower the urethral resistance. Besides,

medicinal cake-separated moxibustion can also relax the pelvic floor muscles, urethral sphincter and the local muscles. Acupuncture can decrease the maximal urethral pressure, reduce secondarily the maximal bladder pressure, the maximal abdominal pressure, and increase the maximal and mean uroflow rates, so that the symptoms can be alleviated.

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(Translated by Li Yuanmin)