

Clinical curative effect observation on functional electrical stimulation combined with biofeedback pelvic floor exercise of pelvic congestion syndrome

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ABSTRACT Objective: Analyze the curative effect of functional electrical stimulation combined with biofeedback pelvic floor muscle training in the treatment of pelvic congestion comprehensive syndrome. **Methods:** A retrospective analysis of Our hospital during June 2013 to June 2015 45 cases by analgesic drugs and traditional Chinese medicine enema poor treatment of pelvic congestion syndrome in Patients with functional electrical stimulation combined with biofeedback pelvic floor Muscle training in the treatment, current frequency 10–20Hz period of 200 microseconds pulse, current intensity for 10–50mA, for 30 min each time, 2 times a week continuous treatment for 5 weeks. Before and after the treatment of pelvic vein diameter and blood flow rate, as well as the pain score [using the pain score table (VAS)]. **Results:** Patients in the treatment without adverse reaction and after treatment of pelvic vein diameter ($2.9 + 1.6$ mm) was significantly lower than the treatment of $7.5 + 2.6$ mm, $P < 0.05$, venous blood flow velocity ($84.9 + 3.8$) mm/s significantly faster than before treatment ($53.6 + 2.9$) mm/s, $P < 0.05$. The total effective rate was 91.1%, pain score ($2.52 + 1.29$) were significantly lower than those before treatment ($4.82 + 1.29$) ($P < 0.05$). **Conclusion:** Functional electrical stimulation combined with Biological feedback and pelvic muscle exercise can significantly alleviate the pelvic Congestion syndrome pain symptoms. The curative effect is distinct and worth popularization in clinical.

KEYWORDS

Pelvic congestion syndrome
Electrical stimulation
Pelvic muscle exercise

Introduction

Pelvic congestion syndrome is one of the major causes of gynecology pelvic pain, and any cause pelvic vein impeded factors may cause pelvic venous congestion. [1] Patients often drop of pelvic pain, waist pain, and pain during sex, leucorrhoea, an abnormal bladder sensation, etc. There are many ways to the treatment of pelvic congestion syndrome and the efficacy is different. For the analysis of functional electrical stimulation pelvic floor muscle exercise combined biological feedback treatment of pelvic congestion syndrome treatment effect, after finishing in clinical data of patients, the report is as follows:

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1. Data and methods

1.1 General information

Select 45 cases of pelvic congestion syndrome patients in our hospital during June 2013 to June 2015 who received analgesic drugs and traditional Chinese medicine enema treatment of as the research object, and the patients were in line with the “Obstetrics and Gynecology” pelvic congestion syndrome diagnostic criteria: age (35.6 ± 5.3) years old, the course of the disease (2.6 ± 1.1) years. And there is no history of opioid drug abuse, eliminate patients with heart cerebrovascular disease, malignant tumor, mental illness, urinary system diseases and liver and kidney disease.

1.2 Method

8 therapeutic apparatus adopts the PHENIX USB, patients take the hypothesis, insert the negative probe for electrical stimulation, and for patients with pelvic floor muscle electromyography, current frequency

from low frequency 10hz to high frequency 20 hz, pulse period 200 μ s, current density is 10-50 Ma, the current size is standard for the patients feel strong muscle tissue without pain. Each treatment lasted 30min, 2 times a week, 2 weeks of continuous treatment. In the treatment of patients with functional electrical stimulation tolerance improved gradually, therefore doctors need to adjust stimulation parameters in each treatment. And then uses the PHENIX USB 8 for perineal muscle strength and potential value, passing the information about pressure curve and electromyography to patients, guiding patients for effective pelvic floor muscle exercise. Patients do the exercise twice a week, and half an hour at a time, exercise therapy for three weeks in a row and the total course is about 5 weeks. During treatment in patients with practice in home, doctors guide the patients to exercise methods using vaginal dumbbell exercise 1 times a day, half an hour at a time.

1.3 Observational index

Analyze the improvement of pelvic congestion syndrome, the situation changes of pain and record the change of the vein diameter, venous blood flow velocity and the adverse situation. The pain evaluation used in patients with pain scale (VAS) score, the higher the score, pain in patients with more severe.

1.4 Statistical analysis

Application SPSS 17.0 statistical software measure data, using $\bar{x} \pm s$ indicate the patients of pelvic vein and vein blood flow velocity and the pain VAS score, using t test, using the measurement data indicate the patients with pelvic congestion syndrome degree. Comparison between the two groups using χ^2 test, $P < 0.05$ indicated that there was statistical significance.

2. Results

2.1 Improvement of patients with pelvic congestion

There was no adverse reaction in the treatment. After treatment, the diameter of the vein was significant reduced, and the flow rate was significantly increased, $P < 0.05$, as shown in Table 1.

Table 1. Improvement of patients with pelvic congestion

Time	Intravenous(mm)	Venous flow rate(mm/s)
Before treatment	7.5 \pm 2.6	53.6 \pm 2.9
After treatment	2.9 \pm 1.6	84.9 \pm 3.8
t	6.52	8.19
p	0.029	0.013

2.2 Improvement of patients with pain

Before treatment, the VAS score of patients is at 2–8 points, the average (4.82 \pm 1.29). After treatment, the VAS score of patients is at 0–7points, the average (2.52 \pm 1.29), and the pain score significantly reduced, $P < 0.05$.

2.3 Changes of degree of pelvic congestion syndrome

After treatment, 33 cases were cured, 6 cases were markedly effective, 2 cases were effective, and 4 cases were ineffective. The total effective rate was 91.1%. Patients with pelvic congestion syndrome degree were improved, shown in Table 2.

Table 2. Changes in the degree of pelvic congestion syndrome

Time	Level 0	Level 1	Level 2	Level 3
Before treatment	0	10	29	6
After treatment	2	33	10	0
χ^2	5.92	7021	6.82	7.29
p	0.037	0.008	0.016	0.006

3. Discussion

Pelvic congestion comprehensive syndrome is caused by one of the main causes of pelvic pain; any cause pelvic venous obstruction factors may cause pelvic venous congestion. It is generally believed that expand bending vein compression with lymphatic vessels and nerve fibers, exhibit pelvic falling pain, low back pain, sexual intercourse pain and discomfort. Female pelvic congestion syndrome caused by many factors, such as standing for long periods, long-term constipation, retroposition of uterus, frequent pregnancy and mechanical factors like broad ligament laceration can affect the pelvic blood flow and change the local blood pressure to venous congestion, There are many studies pointed out that female pelvic vein is rather special, the large quantity, the weak structure and the weak tube wall in some patients are easy to form venous stasis. In addition, myoma of uterus, chronic pelvic inflammatory disease, and poor mental state and endocrine disorders can also cause pelvic congestion syndrome.

There are many different therapeutic methods for pelvic congestion syndrome with different effect in different research. [2] Clinical treatment often used drug treatment, looking for the cause of pelvic congestion comprehensive syndrome pathological factors in patients and has the symptomatic treatment, but many studies pointed out the effect of drug is ineffective and should pay attention to the patients with physical exercise in the treatment [3], and combined with promoting blood circulation and removing blood stasis to improve the therapeutic effect. There are also research and analysis through the surgical treatment to achieve the therapeutic effect, but it will cause the greater trauma to patients. Many studies have pointed out that using functional electrical stimulation can improve the patients with pelvic circulation [4], in the analysis of this group of mainly analyzes functional electrical stimulation combined with biofeedback pelvic floor muscle training in the treatment of pelvic congestion syndrome. Zhiru Sun *et al* [5] in the treatment of pelvic congestion comprehensive syndrome use low frequency electric pulse stimulation combined with traditional Chinese medicine retention enema and ultraviolet microwave treatment, and then point out that this therapeutic can improve the immunity of the patients, reduce the proliferation of pelvic cavity inflammation and improve the effect if treatment. Huiyan Wu *et al* [6] use transcutaneous electrical nerve stimulation therapy in the treatment of pelvic congestion comprehensive syndrome. The results show that the pelvic congestion syndrome level significantly improved, so does the pain of patients. The advantage of physical therapy can also be seen in this group of molecules. Doctors select the patients with poor effect by the analgesic drugs and traditional

Chinese medicine enema treatment as the research object, and then analyze the treatment effect of functional electrical stimulation combined with biofeedback pelvic floor muscle training. Junmei Wu *et al* [7] use pelvic floor muscle exercise treatment of postpartum sexual dysfunction, and point out that pelvic floor muscle exercise can effectively enhance the effect of pelvic floor muscle exercise on patients with postpartum sexual dysfunction. Pelvic floor muscle training is a recovery method of pelvic floor function which is first put forward in America. Through biofeedback therapy, with the help of electronic biofeedback therapy instrument, it can check the pelvic muscle exercise; effectively guide the patients to do the pelvic floor muscle exercise, and then form conditioned reflex to enhance the effect of pelvic floor muscle exercise. Biofeedback electrical stimulation combined with pelvic floor muscle training in recent years gradually carries out in our country. It is mainly used in clinical to treat the pressure urinary incontinence, pelvic organ prolapsed, pelvic pain, sexual dysfunction, urinary bladder exercise activities and so on. Li Li *et al* [8] in the postpartum pelvic floor rehabilitation treatment use biofeedback electrical stimulation combined with pelvic floor muscle exercise and point out that the joint use can improve the treatment compliance of patients and the treatment effect, and there is no adverse reactions. The research results show that there were no adverse reactions in the treatment, after the treatment the pelvic vein diameter (2.9 ± 1.6)mm was significantly lower than before treatment (7.5 ± 2.6)mm, $P < 0.05$, venous blood flow velocity (84.9 ± 3.8)mm/s was significantly faster than before treatment (53.6 ± 2.9)mm/s, $P < 0.05$, and the total efficiency 91.1%, pain score (2.52 ± 1.29) was significantly lower than before (4.82 ± 1.29), $P < 0.05$. These data illustrate the use of functional electrical stimulation combined with biofeedback pelvic floor muscle training can remarkably improve the clinical symptoms.

This result is consistent with previous research results and can infer that the functional electrical stimulation can excite fiber, relieve pain. Low frequency electric stimulation can cause the human endogenous opioid peptide release to achieve the analgesic effect; the thermal effect of functional electrical stimulation can accelerate the motor nerve conduction and strengthen the pelvic floor muscle contraction, improve pelvic blood circulation, effectively alleviate the pain. And the treatment is safe and effective.

In short, this study showed that functional electrical stimulation combined with biological feedback and pelvic muscle exercise can significantly alleviate the pelvic congestion syndrome pain symptom. The curative effect is distinct and is worthy of being popularized in clinic.

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