

Clinical Study of Acupuncture Combined with Emotional Intervention in Patients with Post-Stroke Depression

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Abstract: *Objective:* To investigate the clinical efficacy of acupuncture combined with emotional intervention in patients with post-stroke depression (PSD). *Methods:* A total of 100 patients with PSD who met the inclusion criteria were randomly divided into an experimental group (50 cases) and a control group (50 cases) using the random number table method, and the enrollment was in order of admission time. The control group used conventional treatment of oral antidepressant Deanxit tablets (0.5 mg flupenthixol + 10 mg melitracen) with the dose appropriately adjusted according to the patient's medication effect, and modern rehabilitation treatment given selectively according to the patient's condition. The experimental group had similar treatment as the control group with the addition of traditional Chinese medicine (TCM) acupuncture combined with emotional intervention. The application effects of both groups before and after treatment were verified using the Hamilton Depression Rating Scale (Ham-D), National Institutes of Health Stroke Scale (NIHSS), and Activities of Daily Living (ADL), serotonin levels were measured, and statistical analyses were carried out. *Results:* The total effective rate of patients in the experimental group was significantly higher than that in the control group, and the Ham-D score, NIHSS score, ADL score, and serotonin level after treatment were significantly higher than those in the control group, and the difference between the two groups was statistically significant ($P < 0.05$). *Conclusion:* For patients with PSD, adding TCM acupuncture with emotional intervention on top of conventional treatment significantly improve the clinical efficacy and better improve the daily life ability of patients.

Keywords: Post-stroke depression; Emotional intervention; Acupuncture; Conventional treatment

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1. Current research dynamics and levels at home and abroad

Post-stroke depression (PSD) is a combination of a variety of pathological factors. Depressive symptoms of varying degrees may last more than two weeks^[1]. It has a variety of mental and physical symptoms such as low mood, decreased interest, insomnia, anxiety, and neurological deficits as its main clinical manifestations.

The appearance of PSD not only affects the rehabilitation of patients but also leads to unexpected events in patients to a certain extent^[2]. Studies have confirmed that the concentration of sterols in patients with PSD affects the psychological state of patients^[3]. Changes in the secretion of serotonin, dopamine, norepinephrine, sex hormones, plasma endorphins, HCG, DHA, cholesterol, etc. also affect the psychological state of patients^[4]. According to the theory of traditional Chinese medicine (TCM), the main

pathogenesis of PSD is believed to be the disturbance of phlegm on the brain and nerves that are related to the liver and spleen. It is difficult to treat PSD effectively at the moment, hence it is vital to seek a more systematic PSD treatment.

The quote “when acupuncture is used for treatment, it is important to monitor the ups and downs of the patient’s spirit,” in the ancient Chinese medical text Yellow Emperor’s Inner Classic (Huangdi Neijing) emphasized the importance of the spirit in acupuncture. Clinical research found that there are a variety of acupuncture methods for the treatment of depression. Wang believed that the Tongdu Tiaoshen acupuncture method can effectively improve depression ^[5]. Acupuncture is also shown to be effective in treating PSD safely with few adverse reactions, and is superior to the Western antidepressant treatment ^[6].

Several quotes such as “People have five internal organs, that transform five qi to produce happiness, anger, sorrow, and fear” in the Yellow Emperor’s Inner Classic Plain Questions (Huangdi Neijing Suwen) – The Great Treatise on the Manifestations of Yin and Yang and Depression is caused by the irregularities of the seven emotions, which leads to a stagnation knot, causing the depression to persist for a long time, which in turn lead to many diseases. This statement illustrated the impact of excessive emotional bias on the body’s qi, blood, and organ functions. Liu believed that the efficacy of TCM emotional nursing in the treatment of PSD is better than conventional nursing, and the optimal intervention time is not more than 1 month ^[7].

By searching relevant literature, emotional care for patients using acupuncture treatment can effectively relieve patients’ bad emotions. For the acupuncture treatment of PSD, a variety of acupuncture methods have been formed, such as awakening the brain, awakening the mind, Tongjiao supervision, liver thinning and adjusting the mind, wisdom three injections, head acupuncture, abdominal acupuncture, and so on.

2. Materials and methods

2.1. General information

A total of 100 hospitalized patients from the Department of Encephalopathy of Binzhou Traditional Chinese Medicine Hospital, clinically diagnosed with PSD, and met the inclusion criteria were recruited and divided into an experimental group and a control group according to the random number table method, with 50 people in each group, and the enrollment order was in order of admission time. The Hamilton Depression Rating Scale (Ham-D), National Institutes of Health Stroke Scale (NIHSS), and Activities of Daily Living (ADL) scores were performed before and after treatment, and the serotonin level was measured to verify the application effect of the treatments.

2.1.1. Diagnostic criteria

Diagnostic criteria included:

- (1) The diagnosis of stroke meets the 4th national diagnostic standard for cerebrovascular diseases in 1995 by the Neuroscience Association of the Chinese Medical Association and is confirmed by CT or MRI imaging.
- (2) The diagnostic criteria of depression in Western medicine refer to the “Chinese Classification and Diagnostic Standards for Mental Disorders” (3rd Edition) for diagnosis of depression.
- (3) Depression severity was assessed by the Hamilton Depression Rating Scale (Ham-D).
- (4) The classification of depression disease refers to the “Diagnostic Efficacy Standards of Traditional Chinese Medicine Symptoms”.

2.1.2. Inclusion criteria

Inclusion criteria included:

- (1) Meet the above diagnostic criteria;
- (2) Age 30~60 years old;
- (3) Conscious, able to accept surveys and answer questions, HAMD score ≥ 17 ;
- (4) Disease course < 1 year;
- (5) The study has been approved by the Medical Ethics Committee, and patients and their families have informed consent to the study and signed the informed consent form.

2.1.3. Exclusion criteria

Exclusion criteria included:

- (1) Those who do not meet the above diagnostic criteria;
- (2) Severe depression with suicidal tendencies;
- (3) Those with speech, cognitive, audiovisual, and other disabilities who cannot cooperate with the examination and assessment;
- (4) Those with serious, heart, liver, kidney, and other important organ diseases;
- (5) Those who have an unstable working and living environment and are prone to loss of interview;
- (6) Those who use drugs outside the prescribed range;
- (7) Those with concealing medical history that affects the accuracy and safety of experimental results;
- (8) Those who had allergic reactions or serious adverse events needed to stop taking the drug according to the doctor's judgment;
- (9) Those whose condition deteriorates during the study and the clinical experiment should be stopped according to the doctor's judgment;
- (10) Those with medication compliance $< 80\%$, or automatic dressing change or addition of Chinese and Western drugs prohibited by this protocol;
- (11) Those who withdraw from this study halfway;
- (12) Those who no longer received medication and testing and lost follow-up.

2.2. Methods

The method of field investigation and analysis was used, and the patients with the clinical diagnosis of PSD in the Department of Encephalopathy of Binzhou Traditional Chinese Medicine Hospital were studied.

2.2.1. Research methods

The patients' gender, age, education level, family factors, individual factors, and other general information were investigated. The Ham-D was used to determine the depressive status of patients and has 17 items. Two trained medical staff performed a joint examination of the Ham-D using conversation and observation. At the end of the examination, two assessors scored independently. A total score of < 7 points is considered normal, an overall score of 7–17 points indicated mild depression, an overall score of 17–24 points indicated moderate depression and an overall score of > 24 points indicated major depression.

2.2.2. Treatment plan

The control group used oral antidepressant Deanxit tablets (20 tablets of 0.5 mg flupenthixol + 10 mg melitracen, H. Lundbeck A/S, approval number: H2017110), and the dose of the drug was appropriately adjusted according to the patient's medication effect. Conventional treatment was given according to the patient's condition, and modern rehabilitation treatments such as exercise therapy, occupational therapy, speech swallowing therapy, and biofeedback therapy were selectively given.

The experimental group had a similar treatment as the control group in addition to TCM acupuncture combined with emotional intervention. The acupuncture treatment included the selection of the main acupoints such as Taichong, Baihui, Neiguan, Zusanli, and Sanyin Jiao, in combination with the diseases-differentiation-related acupoints for treatment, such as Yintang, Shenting, Benshin, Sishen Cong, Neiyuan, Fenglong, and other acupoints. Conventional acupuncture, flat filling, and laxative techniques were carried out. Acupuncture needles were left for 30 minutes each time, and the acupuncture was once a day. The one-course treatment was 4 weeks, and a total of 1 course of treatment was given.

After the acupuncture treatment is completed, TCM emotional intervention is carried out, and the patient is intervened by a trained physician. Emotional interventions included adjustments of the body, mind, and breath, where patients can choose either a slow walk or any suitable fitness exercise during the early morning, in combination with abdominal breathing and breath-holding while sitting quietly and listening to soothing music in a shady place. It is recommended that the patients sweat slightly through moderate exercise. Emotional restraint through strengthening communication with patients, making patients happy in a variety of ways, and restraining depression with joy were also carried out. The two emotional intervention methods were carried out in the above order once a day, the one-course treatment was 4 weeks, and a total of 1 course of treatment was given.

2.2.3. Evaluation indicators

The evaluation indicators in this study included scale scores and serum serotonin detection to verify their application effect. The Ham-D, NIHSS, and ADL scores were observed and recorded in detail before and after treatment. The serotonin levels in two groups of patients were measured before and after treatment using an XE-2100 fluorescence spectrophotometer [Sysmex Medical Electronics (Shanghai) Co., Ltd., China].

2.2.4. Evaluation criteria

The evaluation criteria for the clinical efficacy of PDS are categorized as follows:

- (1) Basic cure: clinical symptoms and signs completely disappear after treatment, the limb and language functions are restored, and daily life can be taken care of;
- (2) Effective: after treatment, the patient's clinical symptoms and signs, limb function, and daily living ability have been improved;
- (3) Ineffective: failure to meet the aforementioned criteria after treatment.

The total effective rate was calculated as the sum of the effective rate and the basic cure rate.

2.2.5. Statistical processing

In this study, SPSS 20.0 statistical software was used for statistical analysis, and different statistical methods were selected according to different data. The χ^2 test was used for counting data, and the measurement data satisfies the normal distribution condition and is denoted by mean \pm standard deviation (SD). The *t*-test was used to compare the two groups, and the difference was considered statistically significant when $P < 0.05$.

3. Results

3.1. Comparison of post-treatment scores between the two groups

The scores of patients in the experimental group after treatment showed that the clinical efficacy was significantly better than that of the control group, and the data of the two groups were statistically significant ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of scores before and after treatment between the two groups (n = 50 points, mean ± SD)

Groups	Treatment	Ham-D	NIHSS	ADL	Serotonin (ng/mL)
Experimental group	Before	21.39 ± 4.01	24.65 ± 3.25	36.15 ± 5.33	101.45 ± 8.55
	After	9.51 ± 3.85*	12.55 ± 2.65*	78.89 ± 9.73*	146.89 ± 9.08*
<i>P-value</i>		< 0.01	< 0.01	< 0.01	< 0.01
Control group	Before	22.59 ± 3.63	25.66 ± 3.02	35.69 ± 6.01	102.19 ± 9.66
	After	11.27 ± 3.35	14.55 ± 2.39	61.03 ± 12.38	128.66 ± 11.21
<i>P-value</i>		< 0.01	< 0.01	< 0.01	< 0.01

**P* < 0.05 when compared to the control group after treatment

3.2. Comparison of clinical effects between the two groups

The clinical effect of patients in the experimental group was significantly better than that of the control group, and the difference between the two groups was statistically significant (*P* < 0.05), see **Table 2**.

Table 2. Comparison of clinical effects between the two groups [n (%)]

Groups	Completely healed	Effective	Ineffective	Total efficiency
Experimental group (50)	30	18	2	48 (96%)*
Control group (50)	21	16	13	37 (74%)
<i>P-value</i>				0.037

**P* < 0.05 when compared to the control group

4. Discussion

Based on years of clinical practice, this study uses the treatment method of “drain the liver and regulate the spirit” as the core treatment, and selects Baihui, Taichong, Neiguan, Zusanli, Sanyin, and other acupoints treatments. Baihui acupoint belongs to the important acupoint of the Du vein, opening up a hundred veins and the convergence of the Yang Sutra. Taichong acupoint belongs to the original acupoint of the Foot Yin Liver Meridian and was selected as Daozang mentioned that “The head is crucial”. Zusanli acupoint belongs to the Zuyang Ming stomach meridian and was selected as it was believed that PSD is caused by the disturbance of phlegm in the brain and nerves related to the spleen and liver. All acupoints are used together to soothe the liver, regulate qi, refresh the brain, adjust and open the mind, and relieve depression. TCM emotional intervention is guided by the overall concept of TCM and dialectical treatment, and dialectical treatment is a special method for targeted TCM emotional intervention. While maintaining a comfortable mood, patients can pay attention to their own physical and internal exercises, and achieve the state of “conditioning the body, adjusting the breath, and adjusting the mood” through morning exercise (when the sun rises) such as jogging, guided breath, Ba Danjin, Wu Qin play, standing piles, Tai Chi, Yi Jing, patting eight voids (bilateral armpits, elbows, groin, popliteal fossa), etc. Based on the mentioned literature and in combination with years of clinical practice, the TCM intervention methods in this study mainly included the use of the Chinese medicine theory of the “liver is associated with the Wood element, and the Wood heralds the beginning of dawn”, where patients participated in an early morning fitness and breathing exercises, as well as the quote of “the breath is fast when angry, the breath is slow when happy” from the Yellow Emperor’s Inner Classic and the saying of “joy overcomes worry” from Wu Xing Xiang Ke. Therefore, emotional intervention can be used for PSD patients to restrain depression with joy. It is beneficial to relieve patients’ depression and improve clinical efficacy. TCM acupuncture combined with

emotional intervention is guided by TCM theories, and medical staff use emotional intervention to improve the depressive state of stroke patients. For patients with PSD, adding acupuncture with emotional intervention in addition to the conventional treatment including oral antidepressant drugs and modern rehabilitation exercises can effectively reduce the incidence of PSD. This can effectively improve the clinical treatment effect, the depressive symptoms of patients, the serum serotonin content, and daily life self-care ability, and is worthy of clinical promotion and implementation.

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Disclosure statement

The authors declare no conflict of interest.

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