

Evaluation of the Clinical Efficacy of Acupuncture and Moxibustion Combined with Repetitive Transcranial Magnetic Stimulation on Cognitive Function and Sleep Disorders in Patients with Mild Vascular Dementia

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Abstract: *Objective:* To explore the clinical effects of acupuncture and repeated transcranial magnetic stimulation in patients with mild vascular dementia. *Method:* From May 2020 to May 2021, 40 patients with mild vascular dementia in Harbin Fourth Hospital (our hospital) were divided into the experimental group (20 cases, using conventional drugs + acupuncture + repeated transcranial magnetic stimulation) and the control group (20 cases, for example, the application of conventional medication). The improvement of cognitive function score, sleep quality score, quality of life score, and cerebral hemodynamics before and after treatment were compared between the two groups. *Result:* Before treatment, the difference in cognitive function score, sleep quality score, quality of life score, and cerebral hemodynamic index between the two groups of patients did not form, that is, $p > 0.05$; after treatment, the experimental group's cognitive function score was (19.45 ± 2.47) points, Sleep quality score (12.18 ± 2.09) , quality of life score (33.29 ± 4.08) , left cerebral blood flow velocity (65.76 ± 3.32) cm/s, right cerebral blood flow velocity (64.32 ± 3.25) cm/s, more For the control group, $P < 0.05$. *Conclusion:* In the clinical treatment of patients with mild vascular dementia, based on conventional drugs, combined with acupuncture and repetitive transcranial magnetic stimulation, the patients' cognitive function can be improved, and the quality of sleep and quality of life can be improved. Comprehensive clinical promotion.

Keywords: Acupuncture; Transcranial magnetic stimulation; Mild vascular dementia; Cognitive function; Sleep disorder

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1. Introduction

Vascular dementia is dementia caused by ischemic or hemorrhagic cerebrovascular disease and acute and chronic hypoxic encephalopathy. Cognitive disorders, affective disorders, mood disorders, and memory decline are often accompanied by symptoms, which directly affect the patient's daily routine, which is the quality of life and work^[1]. However, there are no specific drugs in the clinical treatment of vascular dementia at this stage. It is necessary to combine the patient's condition and doctor's treatment experience in clinical treatment. Commonly used drugs mainly include donepezil hydrochloride and oxiracetam, but the effect is not satisfactory. Based on the continuous deepening of clinical research, many scholars believe that moxibustion and transcranial magnetic stimulation can be used in the treatment of such patients, which can fully optimize the efficacy and further improve their quality of life. It can be seen that the in-depth study and analysis of clinical treatment programs for patients with mild vascular dementia have certain practical significance. The following clinical studies will be carried out with patients with mild vascular

dementia as the main research objects.

2. Materials and methods

2.1. Basic information

The subject randomly selected 40 patients with mild vascular dementia who were treated in our hospital from May 2020 to May 2021 for statistical comparison. The two groups were divided into two groups according to the admission serial number. There were 20 cases in the control group, 11 males and 9 females. For example, the upper and lower age limits are 55 and 77 years old, the median age is (61.25±6.24) years old, and the course of disease is from 4 to 12 months with average course of (7.05±2.54) months. The experimental group has 20 cases, 10 males and 10 females, the upper and lower limits are 52 years old, 79 years old, and the median age (61.22±6.26) years old with the course of disease from 3 to 12 months and average course of (7.02±2.51) months. The statistics of the two groups of patients showed $p>0.05$, and the comparability was significant.

2.2. Method

The control group was treated with conventional drugs, taking Oxiracetam twice a day (National Medicine Standard: H20203177 Approval Date: 2020-04-23 Manufacturer: North China Pharmaceutical Co., Ltd. English Name: Oxiracetam Tablets), each dose was 0.8 grams^[2]. The experimental group was treated with conventional drugs + acupuncture + repeated transcranial magnetic stimulation. The usage and dosage of oxiracetam were the same as those in the control group, combined with acupuncture and transcranial magnetic stimulation. Acupuncture and moxibustion need to determine the specific acupoints, which generally consist of Shenting, Dazhui, and Baihui. If patients with liver and kidney deficiency, Ganshu and Shenshu points should be added; if patients with Qi deficiency, Qihai points should be added. If patients with phlegm obstructing the orifice, Zhongwan and Fenglong points should be added. Place the aconite cake with a thickness of 4-6 mm at Baihui point. After igniting the Qing moxa, press moxibustion on the aconite until the skin at the acupoints is flushed and hot to lift up the moxa, and then press the moxibustion again and repeat the procedure. It takes 20 minutes. For Shenting and Dazhui points, only Qing Moxa lighting and moxibustion should be used, each time is 20 minutes^[3]. For other points, fili-needle acupuncture should be used. The technique is mainly for flattening, replenishing, relieving, moxibustion once a day, six times a week, 4 weeks as a course of treatment, treatment time is 12 weeks, and it takes between two courses of treatment. One week apart. During transcranial magnetic stimulation treatment, the patient is required to be in a sitting position. The coil diameter of the magnetic stimulator is set to 12 cm, the peak stimulation intensity is 1.2T, the pulse duration is 100 seconds, and the frequency is 20 Hz. At the same time, the maximum stimulus intensity of the frontal lobe is set to 0.72T, and the number of stimuli per time is 30 times (a sequence). One sequence of treatments per day is sufficient. One treatment course is seven days, four consecutive treatment courses, and the interval between each treatment course is Three days.

2.3. Evaluation index

The experimental group and the control group were evaluated for cognitive function scores, sleep quality scores, quality of life scores, and cerebral hemodynamic indicators before and after treatment. Among them, refer to the Simple State Examination Scale (MMSE) to evaluate the patient's cognitive function, with a full score of 30 points. The higher the score, the higher the cognitive function; the reference to the Pittsburgh Sleep Quality Index (PSQI) to evaluate the patient's sleep quality, the higher the score Low means that the patient's sleep disturbances are less and the quality is higher; referring to the ADL, the indicators mainly include personal hygiene, eating actions, more action and excretion actions, etc. The number of items is 20,

if the patient can be autonomous 1 point for completion, 2 points for self-completed but longer time required, 3 points for completion with help from others, 4 points for difficult completion. The higher the score, the worse the patient's ability to live and the lower the quality of life ^[4]. The two groups received magnetic resonance examination and cerebral hemodynamic indexes before and after treatment.

2.4. Statistical analysis

The study used SPSS 17.0 software for data statistics, and the count data was expressed as %. The comparison between groups was performed by X² test. P<0.05 indicated that the difference was clinically statistically significant.

3. Results

3.1. Study the cognitive function scores of both groups before and after treatment

The indexes of the experimental group were compared with those of the control group, P<0.05. (Table 1.)

Table 1. Comparison of cognitive function scores before and after treatment in the experimental group and the control group ($\bar{x} \pm s$)

Group	n	Cognitive function score	
		Before treatment	After treatment
Test group	20	14.23±1.88	19.45±2.47
Control group	20	14.21±1.84	16.52±2.64
t value		0.0340	3.6244
P value		0.9731	0.0008

3.2. Comparison of sleep quality scores between the experimental group and the control group before and after treatment

After treatment, the data between the groups were compared, P<0.05. (Table 2.)

Table 2. Analysis of sleep quality scores before and after treatment in the two groups ($\bar{x} \pm s$)

Group	n	Sleep quality score	
		Before treatment	After treatment
Test group	20	17.78±2.43	12.18±2.09
Control group	20	17.74±2.46	15.59±2.65
t value		0.0517	4.5185
P value		0.9590	0.0001

3.3. The quality of life scores of the two groups of patients before and after treatment

After treatment, the score of the experimental group was better than that of the control group, P<0.05. (Table 3.)

Table 3. The quality of life score analysis of the experimental group and the control group before and after treatment ($\bar{x} \pm s$)

Group	n	Life quality score	
		Before treatment	After treatment
Test group	20	46.35±3.32	33.29±4.08
Control group	20	46.32±3.36	40.04±4.25
t value		0.0284	5.1239
P value		0.9775	0.0000

3.4. Comparison of cerebral hemodynamic indexes before and after treatment in the experimental group and the control group

After treatment, the indicators between the groups were compared, $P < 0.05$. (Table 4.)

Table 4. Comparison of cerebral hemodynamic indexes before and after treatment in the two groups of patients ($\bar{x} \pm s$)

Group	n	Left cerebral blood flow		Right cerebral blood flow	
		Before treatment	After treatment	Before treatment	After treatment
Test group	20	45.21±2.13	65.76±3.32	45.77±2.22	64.32±3.25
Control group	20	45.24±2.11	53.01±3.44	45.73±2.25	52.41±3.34
t value		0.0447	11.9268	0.0566	11.4292
P value		0.9645	0.0000	0.9552	0.0000

4. Discussion

In traditional medicine of the motherland, vascular dementia is subordinate to “stroke dementia.” The cause of this disease is the inadequacy of the marrow sea and the deprivation of the brain. Therefore, many doctors point out that it is caused by renal dysfunction and insufficient kidney essence. Cerebral dystrophy is the key to the pathogenesis of dementia [5]. The clinical treatment of vascular dementia is mainly to alleviate its clinical manifestations and slow down the development of the disease. Usually combined with the patient’s condition and the doctor’s clinical experience, medication is given, mainly donepezil hydrochloride and oxiracetam. The oxiracetam selected in the study can activate creatine kinase, and the receptors that act on aspartate will also increase significantly, and the affinity for uptake of choline will also increase, which is more conducive to choline metabolism and makes the brain The effect on glucose and oxygen is improved, so that the patient’s memory impairment is improved. In addition, Oxiracetam can effectively activate, protect and repair nerve cells, improve the patient's memory, and realize the improvement of thinking and learning ability. But it is worth noting that although drug treatment can effectively alleviate the patient's condition, the long-term effect is not ideal.

In the study, patients in the experimental group were treated with conventional drugs + acupuncture + repetitive transcranial magnetic stimulation. Compared with the control group, all indexes were $P < 0.05$. This shows that patients with mild vascular dementia are treated with drugs, acupuncture and transcranial magnetic stimulation, and their cognitive function, sleep state and quality of life are significantly improved. In other words, acupuncture and transcranial magnetic stimulation are effective in treating patients with mild vascular dementia [6]. The reason is that patients choose the head acupoints as the main acupoints in acupuncture treatment, which can achieve the therapeutic purpose of removing blood stasis and dredging

collaterals. The main point of Baihui point is treated by aconite cake pressing moxibustion, and Dazhui point and Shenting point are treated with moxibustion with moxibustion, which can achieve the effect of removing blood stasis, dredging collaterals and filling marrow. In addition, transcranial magnetic stimulation is a non-invasive and safe cortex stimulation. It is mainly divided into low frequency and high frequency. It is repeatedly applied to the cortex after short and strong magnetic field pulses, and the magnetic field formed by the coil can penetrate the patient's scalp and the skull makes the current appear in the cortex, changes the excitability of the local cortex of the brain, realizes the effective transformation of sebum metabolism, improves the plasticity of the patient's brain tissue, and accelerates the speed of its functional recovery [7]. At the same time, transcranial magnetic stimulation treatment can improve the patient's cerebral blood flow, regulate its neural circuits and neurotransmitters, and adjust the ion balance and anti-apoptotic effects. Especially in the treatment of patients with vascular dementia, it can reshape the overall neural network, regulate the effects of acetylcholine and neuropeptide transmitters, and improve the mental state, cognitive impairment and sleep quality of the patients. Improve their quality of life [8].

In general, using conventional drugs as the basis of treatment, combined with acupuncture and repetitive transcranial magnetic stimulation to treat patients with mild vascular dementia can not only improve their cognitive function, but also benefit their sleep quality and quality of life. Thus, the patient's clinical symptoms can be improved, so it has a higher clinical application value.

Disclosure statement

The author declares no conflict of interest.

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