

Research Progress of Different Schools of Scalp Acupuncture in the Treatment of Insomnia

Kun Cao¹, Junming An^{2*}, Wenfan Wu¹, Huan Lei¹

¹Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

²Xi'an Hospital of Traditional Chinese Medicine, Xi'an 710021, Shaanxi, China

*Correspondence Author

Abstract: *Insomnia is the most common sleep disorder in clinical practice. Its complex etiology, high incidence, long course of disease, and high recurrence rate seriously affect people's quality of life and physical and mental health. At present, western medicine treatment is mainly based on sedative hypnotic drugs, but its drug resistance, addiction dependence, withdrawal difficulties and so on have certain limitations. As a new acupuncture therapy, scalp acupuncture has many schools and characteristics, and has advantages in the treatment of mental diseases. This article aims to summarize the research progress of different schools of scalp acupuncture in the treatment of insomnia in recent years, in order to provide an effective reference for clinical treatment of insomnia.*

Keywords: Scalp acupuncture, Insomnia, Schools of traditional Chinese medicine, Research progress.

1. Introduction

Insomnia is mainly manifested as sleep disorders that are difficult to fall asleep, easy to wake up, difficult to fall asleep after waking up, poor sleep quality and reduced time, resulting in impaired daytime social function [1-2]. Epidemiological survey [3] showed that the number of adults with different degrees of insomnia reached 38.2%. With the increase of age, the incidence of insomnia gradually increased, and 40% to 70% of the elderly had sleep disorders. Long-term insomnia can lead to inattention, poor mental state, memory loss and decreased quality of life, and also increase the risk of other diseases, such as depression, anxiety, cardiovascular and cerebrovascular diseases [4-5]. Insomnia treatment guidelines are mainly based on drug therapy. Although there is a certain effect, the adverse drug reactions are also obvious. There are adverse reactions such as addiction, cognitive dysfunction and mental damage, and reduced quality of daytime awakening, and there are shortcomings such as easy drug resistance and easy rebound [6]. Many patients and health care providers are beginning to seek safer and more effective alternative therapies [7]. There are various methods for treating insomnia in traditional Chinese medicine. As a new acupuncture therapy, scalp acupuncture is effective in treating insomnia in clinic, and has no side effects. It has been gradually accepted and promoted at home and abroad [8]. By searching the literature on the treatment of insomnia by different schools of scalp acupuncture in recent years, the author comprehensively discusses the clinical research of different schools of scalp acupuncture in the treatment of insomnia, in order to provide a reliable basis for the clinical treatment of insomnia.

2. Fang's Scalp Acupuncture

Fang's scalp acupuncture is a therapy that Professor Fang Yunpeng combines anatomy and holographic theory under the guidance of traditional acupuncture theory to stimulate the specific acupoint area of the head to treat neurological diseases. Fang's scalp acupuncture divides the head into four central stimulation areas: Fuxiang, Fuzang, Daoxiang and Daozang, and 21 cortical functional stimulation areas: thinking (single acupoint), speaking, writing, smelling,

hearing, memory, signal, vision, Yunping, balance and Huxun (double acupoints) [9]. The needle insertion technique adopts the triple row needle technique of light twist, heavy pressure and vibration after the needle insertion of "flying needle direct puncture, direct access to periosteum," which has the characteristics of heavy stimulation and small pain. Previous studies have found that it has a significant effect on mental disorders, emphasizing that 'the brain is the house of the original spirit', and the treatment should be based on the three-step method of 'Ningshen, Jushen, and Heshen' [10]. Liu et al. [11] included 60 patients with insomnia. The control group was treated with conventional acupuncture, and the observation group was treated with Fang's scalp acupuncture combined with Nazi acupuncture. The scalp acupoints were selected as Fuxiang head acupoint, Fuzang Shangjiao acupoint, Thinking acupoint and Memory acupoint. After 2 courses of treatment, the results showed that the Pittsburgh Sleep Quality Index (PSQI) score, serum γ -aminobutyric acid (GABA) and glutamate (Glu) scores of the observation group were better than those of the control group. It is not only proved that scalp acupuncture combined with Nazi method is better than conventional acupuncture in the treatment of insomnia, but also proposed that the mechanism of Fang's scalp acupuncture in the treatment of insomnia is related to the increase of GABA level, the decrease of Glu level and the regulation of sleep-wake rhythm. Xu Xiaoying et al. [12] collected 66 patients with insomnia. The control group was treated with routine acupuncture. The observation group was treated with Fang's scalp acupuncture on the basis of routine acupuncture. The acupoints were selected as Fuxiangtou, Fuzang Shangjiao, Fuzang Zhongjiao, memory, signal, thinking, etc. The total effective rate of the observation group was 93.8%, which was higher than that of the control group (87.1%) ($P < 0.05$). The improvement of PSQI, pressure perception scale (CPSS) and polysomnography (PSG) before and after the two groups were observed. It shows that Fang's scalp acupuncture combined with body acupuncture can improve the slow wave sleep and rapid eye movement sleep of insomnia patients, thus improving sleep efficiency. Qiao Yiqi et al. [13] screened 60 patients with insomnia of heart and spleen deficiency type. The control group was treated with simple body acupuncture. The observation group was treated with Fang's scalp acupuncture combined with body

acupuncture. The head acupoints were: Fuzang Shangjiao, Fuzang Zhongjiao, memory, signal and thinking. The results showed that the effective rate of the observation group was 90% higher than that of the control group (66.7%). The effect of reducing sleep time and improving PSQI and self-rating anxiety scale (SAS) in the observation group was more obvious. The above research shows that Fang's scalp acupuncture therapy can significantly improve the sleep quality of patients with insomnia, improve anxiety and depression, relieve stress, and regulate sleep structure. Through subjective and objective evaluation, the curative effect is more reliable.

3. Jiao's Scalp Needle

In the 1970 s, according to the theory of brain function positioning and body surface projection, Mr. Jiao Shunfa divided the head into 19 stimulation areas, such as motor area, sensory area, vasomotor area, mental and emotional area, and fainting area. Jiao's scalp acupuncture adopts continuous twisting for 3-5 min, 160-200 times / min strong stimulation twisting technique, which produces stimulation current and directly acts on the brain. It is mostly used in the treatment of nervous system in clinical practice [14]. Zhu Hao [15] applied Jiao's scalp acupuncture to treat 66 patients with insomnia of liver depression transforming into fire type. The head acupoints were selected in the mental and emotional area and the halo area. The rapid needling method, rapid twisting method, intermittent twisting method and enhanced stimulation were used. The improvement of PSQI scale total score and TCM syndrome scale score in the treatment group was significantly better than that in the conventional acupuncture group at 4 weeks of treatment and later follow-up. Li Xinhao et al. [16] divided 66 patients with insomnia of liver depression transforming into fire type into the control group with ordinary acupuncture combined with electroacupuncture. The observation group was treated with Jiao's scalp acupuncture combined with electroacupuncture. The scalp acupoints were selected as vasomotor area, mental emotional area and fainting area. After treatment, the scores of Athens Insomnia Scale (AIS), PSQI and TCM syndromes in the observation group were significantly lower than those in the control group. The vasomotor area and the mental and emotional area of Jiao's scalp acupuncture are the scalp cortex projection of the frontal lobe, and the halo area is the scalp cortex projection of the temporal lobe. The frontal lobe is responsible for executive function, which is closely related to thinking and behavior. The temporal lobe can regulate mood and spirit [17]. Acupuncture emotional area, regulate mood to reduce insomnia. Acupuncture at the dizzy listening area can relieve symptoms such as dizziness, tinnitus, upset, irritability, and can also relieve mental and emotional disorders.

4. Jin's Three-needle

Jin's three-needle is a acupuncture therapy summarized by Professor Jin Rui, a Lingnan physician, based on the principles of traditional acupuncture and moxibustion treatment, such as near treatment and far treatment, and acupoint selection according to syndrome. All three acupoints are one acupoint group. According to the unified naming of curative effect, it pays attention to the treatment of spirit and regulating spirit. It is represented by Sishen needle (1.5 inches

apart from Baihui acupoint), Zhisun needle (Shenting and bilateral Benshen), Naosan needle (Naohu and bilateral brain space), Dingshen needle (Yintang and bilateral Yangbai), etc., combined with acupuncture and moxibustion tonify and drain, treat spirit and regulate spirit, and play the role of regulating spirit, condensing spirit and gathering spirit [18-20]. Tong Meiling [21] collected 60 patients with perimenopausal insomnia. The control group was treated with estazolam tablets, and the observation group was treated with Jin's three-needle (Sishen needle, Dingshen needle) and electroacupuncture continuous dense wave. After 3 weeks of treatment, the results showed that the total effective rate of the observation group was higher than that of the control group. The PSQI score, Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD) scores of the observation group were lower than those of the control group ($P<0.05$). It is proved that scalp acupuncture combined with electroacupuncture is better than drug therapy for perimenopausal insomnia patients, which not only improves sleep quality, but also is more conducive to relieving anxiety and depression in perimenopausal patients. Wang Yanshan et al. [22] included 60 patients with insomnia. The control group was treated with conventional acupuncture, and the treatment group was treated with mind-regulating acupuncture group (Sishen acupuncture, Zhisun acupuncture). The results showed that after one course of treatment, the PSQI and SRSS scores of the two groups decreased, but there was no significant difference. After two courses of treatment, the PSQI and SRSS scores of the mind-regulating acupuncture group were more obvious than those of the ordinary acupuncture group, that is, the effect on insomnia was more significant. Zhang Hanyuan et al. [23] included 134 patients with insomnia of heart and spleen deficiency type. The control group was treated with repetitive transcranial magnetic stimulation, and the observation group was treated with Jin's three-needle therapy (four-sea needle, mind-setting needle, sleep three-needle, etc.) on the basis of it. After 4 weeks, the curative effect was evaluated. The effective rate of the observation group (98.50%) was significantly higher than that of the control group (88.06%). The PSQI, SAS, SDS scores and TCM syndrome scores of the observation group were lower than those of the control group ($P<0.05$). The WHO quality of life measurement scale score of the observation group was higher than that of the control group. The results confirmed that Jin's three-needle combined with repetitive transcranial magnetic stimulation can significantly improve the patient's mood, improve the quality of life and sleep. Jin's three-needle therapy has simplified acupoint selection and simple operation. The combination of Jin's three-needle unique mind-regulating acupoint group with acupuncture and moxibustion reinforcing and reducing, mind-regulating manipulation has a significant clinical effect and is worthy of promotion.

5. Yu's Scalp Acupuncture

Professor Yu Zhishun [24-25] put forward the hypothesis of 'needle field' by combining the traditional meridian theory with the surface positioning of skull anatomy, and put forward 7 partitions from the point and line to the surface combined with the function of the brain, and put forward cluster needling, penetrating needling, long-term needle retention and intermittent twisting. It is to cluster needling in the head

and penetrate needling to the periphery with the acupuncture site as the center. The twisting frequency needs to reach 200 times/min and continuous twisting for 1 min. Long needle 6~8 h, the initial interval of 30 min twirling 1 times, repeat 2 times, then twirling 1 times every 2 h, fully stimulate the local gas induction to strengthen the curative effect. Zhang [26] included 60 patients with insomnia due to deficiency of both heart and spleen. The control group was treated with conventional acupuncture, and the observation group was treated with cluster acupuncture at scalp acupoints combined with original acupoints. The results confirmed that both groups had certain curative effects. The observation group was superior to the control group in improving the clinical syndromes of TCM, transcranial Doppler ultrasound cerebral blood flow velocity and sleep quality of insomnia patients. Xie Qiyao et al. [27] collected 60 patients with insomnia and randomly divided them into cluster acupuncture electroacupuncture group, drug group and acupuncture combined with drug group. The head acupoints were selected: the top area (Baihui to the front top and the left and right 1~2 inches), the frontal area (Shenting to the fontanelle and the left and right 1~2 inches), plus electroacupuncture density wave, frequency 2HZ. The results after treatment confirmed that the efficacy of cluster acupuncture in the treatment of insomnia was comparable to that of western medicine and the improvement of anxiety and depression was better than that of the drug group, while the combination of acupuncture and drug group was more significant than that of the simple drug and cluster acupuncture group. The total effective rate was 95%. Yang et al. [28] randomly divided 60 patients with insomnia into observation group and control group. The observation group was given cluster needling of scalp acupoints, and the acupoints were selected (parietal area, anterior parietal area and frontal area). The control group was treated with conventional acupuncture. After 2 courses of treatment, the cure rate of the observation group was 67%. The markedly effective rate was 33.0% and the total effective rate was 100%, while the control group was 33.0%, 43.0% and 77.0% respectively. There were significant differences in the cure rate and total effective rate between the two groups ($P<0.05$). Modern medical research shows that the volume of gray matter in the dorsolateral prefrontal lobe and temporal lobe of insomnia patients is reduced, and the volume of gray matter in the prefrontal lobe is negatively correlated with the severity of insomnia [29]. In clinical practice, acupuncture is often used in the three regions of the frontal, parietal and temporal regions to treat insomnia patients. Through regional sheet acupuncture and long needle retention to strengthen the sense of acupuncture points, the operation of head qi and blood is regulated, the yin and yang of the human body is adjusted, and then the spirit is adjusted.

6. Sun's Scalp Acupuncture

According to the combination of transcranial electrical and magnetic stimulation hypothesis and the projection area of brain function and nerve function, Professor Sun Shentian, a master of traditional Chinese medicine, proposed 'transcranial repetitive stimulation therapy', which is characterized by rapid and repetitive twirling manipulation after needle insertion [30]. Professor Sun's clinical experience over the years believes that the accuracy of acupoint selection and the standard of manual stimulation are the key to the efficacy.

Electroacupuncture is often used to increase the amount of stimulation in the treatment of insomnia. The acupoints are Ningshen (located at the midpoint of the connection between Shenting and Yintang), emotional area (emotional area is Ningshen and horizontal side opening 1 inch each, a total of 3 acupoints), manual stimulation is divided into three types: stimulation frequency (needle twisting speed), stimulation time (needle twisting time), stimulation cycle (interval time) [31-32]. Hou Zhitao [33] and others included 90 patients with insomnia after stroke. They were randomly divided into acupuncture group, drug group and placebo group. The acupuncture group was treated with transcranial heavy stimulation. The scalp points were Baihui, Ningshen, emotional area, Wangu and Taiyang. After a small amplitude of rapid twisting, electroacupuncture was applied to connect Baihui, Ningshen and bilateral Wangu, with a frequency of 10 Hz. The intensity was 0.5~1mA, once a day, 40 min each time. The drug group was given oral diazepam 2.5 mg daily before bedtime, and the placebo group was given oral starch capsules. After one month of treatment, the total effective rates of the acupuncture group, the drug group and the placebo group were 86.7% (26/30), 90.0% (27/30) and 20.0% (6/30), respectively. The serum orexin A content in the acupuncture group and the drug group was significantly lower than that before treatment ($P<0.05$). The results confirmed that the effect of transcranial repeated stimulation therapy combined with electroacupuncture to increase the intensity of head stimulation on insomnia patients was equivalent to that of oral diazepam. Zhang Yu et al. [34] collected 30 cases of insomnia patients with liver stagnation and spleen deficiency treated with transcranial repeated stimulation acupuncture. The Baihui, Ningshen and emotional areas were treated with transcranial repeated acupuncture, and 0.25 mm × 40 mm was selected. The filiform needle was obliquely inserted into the subcutaneous tissue, and a small amplitude of rapid twisting was applied. The rotation speed was 200 r / min, lasting for 3 min, and the electroacupuncture was added after twisting once every 15 min. 30 patients in the control group were treated with conventional acupuncture. 3 weeks after treatment, the effective rates of the two groups were 93.3% and 83.3%, respectively ($P<0.05$). The Pittsburgh sleep quality index (PSQI) of the two groups of patients was lower than that before treatment, but the observation group was significantly lower than the control group. The results showed that the transcranial repeated acupuncture therapy could improve the clinical effect of acupuncture in the treatment of insomnia with liver depression and spleen deficiency. Sun Yuanzheng et al [35] selected 60 patients with sleep disorder of heart and spleen deficiency type after stroke. The control group was treated with transcranial repeated acupuncture stimulation, and the observation group was treated with Tiaoshen electroacupuncture on this basis. After four weeks of treatment, the clinical efficacy of the observation group was 90% higher than that of the control group 76.67%. After treatment, the TCM symptom score, PSQI score and NIHSS score of the two groups decreased, and the observation group was lower ($P<0.05$). The SDNN, SDANN, LF and LF/HF in heart rate variability HRV were decreased before and after ($P<0.05$), RMSSD, PNN50 and HF were increased ($P<0.05$), the observation group was more significant ($P<0.05$). The neurotransmitter 5-hydroxytryptamine was increased in both groups, and the observation group was higher ($P<0.05$). Norepinephrine NE decreased in both groups, and the

observation group was lower ($P < 0.05$). The results confirmed that transcranial repeated acupuncture stimulation combined with electroacupuncture can significantly improve the clinical symptoms of patients with sleep disorders of heart and spleen deficiency after stroke, and the curative effect is definite. The high-frequency twirling manipulation during acupuncture increases the amount of acupuncture stimulation. When the amount of stimulation is accumulated to a certain intensity, a biological magnetic field effect is generated, which acts on the cerebral cortex corresponding to the acupoints, regulates the cerebral cortex nerve cells, and releases various neurotransmitters [36], thereby achieving the effect of treating diseases.

7. Summary

By comprehensively sorting out the relevant literature of different schools of scalp acupuncture in the treatment of insomnia in recent years, it can be found that there are many schools of scalp acupuncture. The theoretical basis of various schools of scalp acupuncture is based on meridian theory, anatomy theory and holographic theory. Each has its own emphasis, and the division of acupoint areas is also slightly different. However, from the perspective of total clinical efficacy, whether it is a single factor intervention of scalp acupuncture alone or a combination of scalp acupuncture and other therapies, the results are consistent: the total clinical effective rate is better than that of the control group, indicating that scalp acupuncture single therapy or combined therapy can effectively improve symptoms. In recent years, the quality of clinical research has gradually improved, and more and more clinical studies have applied randomized controlled trials. However, there are still many problems in the clinical research of scalp acupuncture in the treatment of insomnia, which need to be solved urgently. In the current study, scalp acupuncture therapy lacks uniform operating standards, needle retention time, and efficacy evaluation, and there is a lack of comparability between different research results. The head treatment area, needle insertion technique, needle insertion technique and needle retention time selected between different schools of scalp acupuncture are different, which limits the promotion of school acupuncture to a certain extent. Different scalp acupuncture schools should be based on the characteristics of their academic systems, repeated clinical practice, to determine the unified, standardized, standardized diagnosis and treatment programs. Most of the clinical studies are to carry out the longitudinal comparative study of scalp acupuncture therapy, that is, the clinical efficacy analysis of scalp acupuncture or scalp acupuncture combined with other therapies. However, few horizontal studies have reported that different schools of scalp acupuncture have better efficacy in the treatment of insomnia, and most of the evaluation methods still lag behind the evaluation of subjective scales, lacking objective evaluation methods. Objective and standard efficacy evaluation system (polysomnography, heart rate variability, 5-hydroxytryptamine, norepinephrine, serum γ -aminobutyric acid and glutamic acid, etc.) can increase the credibility of the study. In addition, the basic research on the mechanism of scalp acupuncture in the treatment of insomnia is still insufficient, which greatly reduces the scientific nature of clinical research.

Giving full play to the advantages of scalp acupuncture therapy, formulating standard research programs, standardizing the implementation of research procedures, adopting objective efficacy indicators, filling relevant basic research, and improving the scientificity and rigor of scalp acupuncture-related research will contribute to the promotion and application of scalp acupuncture, a new acupuncture therapy, in the treatment of insomnia.

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