Analysis of Clinical Characteristics of Insomnia Patients and Effect of Acupuncture Therapy

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Abstract: Objective: To explore the clinical characteristics of insomnia patients and the function and mechanism of acupuncture therapy, to improve the recognition and diagnosis of insomnia. Methods: The clinical data of 60 patients with insomnia who met the criteria and were admitted to the Department of Acupuncture and moxibustion in Yunnan Provincial Hospital of Integrated Traditional Chinese and Western Medicine from January 2023 to February 2024 were selected, the clinical characteristics of the patients were analyzed, and the patients were randomly divided into two groups for routine treatment and acupuncture treatment, respectively, to explore the therapeutic effect and possible mechanism. Results: The insomnia symptoms of the patients were mainly difficulty in falling asleep. Acupuncture treatment could significantly improve the insomnia symptoms and promote the expression levels of DA and NE. Conclusion: Patients with insomnia have various clinical features, mainly sleep difficulties. Acupuncture treatment can significantly relieve insomnia symptoms by up-regulating DA and NE levels, and then improve sleep quality.

Keywords: insomnia, clinical features, acupuncture, DA, NE

1. Introduction

Insomnia Disorder (ID), also known as "insomnia", also known as "cannot sleep", "cannot sleep" or "cannot sleep", is mainly a clinical common disease that is restless, difficult to fall asleep, restless or sleepless all night, resulting in insufficient sleep time, depth and eliminating fatigue [1].The results of epidemiological studies showed that the incidence of insomnia is high, and seriously affect people's quality of life [2]. Insomnia patients need to actively seek treatment after illness, and early treatment is helpful to improve the clinical treatment effect. Acupuncture and moxibustion, as a traditional characteristic therapy, has the advantages of good efficacy, high safety, and small side effects, and has been widely recognized in the treatment of insomnia, and different acupuncture and moxibustion therapy its efficacy and mechanism of action may be very different. This study aimed to explore the clinical characteristics of insomnia patients, the curative effect of acupuncture and moxibustion and the possible mechanism of action, to provide a basis for the clinical diagnosis and treatment of insomnia.

2. Materials and methods

2.1 General information

A total of 60 patients with insomnia who met the criteria and were admitted to the Department of Acupuncture and moxibustion of Yunnan Provincial Hospital of Integrated Traditional Chinese and Western Medicine from January 2023 to February 2024 were selected as the study objects, and the clinical data of the patients were collected. The two groups of patients were randomly divided into experimental group and control group, with 30 cases in each group. In the experimental group, there were 12 males and 18 females, aged 25-73 years, with an average age of 53.32±12.51 years. In the control group, there were 11 males and 19 females, aged 23-76 years, with an average age of 57.53±11.98 years. There was no significant difference in clinical data between the two groups, which was comparable. This study was approved by the hospital Medical Ethics Committee, and the patient or family members were informed and consented.

2.2 Diagnostic criteria

According to the Pittsburgh Sleep Quality Index (PSQI) developed in 1993[3], patients with a score of 11 to 21 and who meet the DSM-IV diagnostic criteria for sleep disorders are considered to have insomnia.

Key points of diagnosis:

(1) The chief complaint is either difficulty falling asleep, difficulty maintaining sleep, or poor sleep quality;

(2) This sleep disorder occurs at least three times a week for more than a month;

(3) Focusing on insomnia day and night and worrying excessively about the consequences of insomnia;

(4) Dissatisfaction with the amount and/or quality of sleep caused significant distress or affected social and occupational functioning.

2.3 Inclusion criteria

(1) Meet the DSM-IV diagnostic criteria: and PSQI score between 11 and 21 points;

(2) Age 18-80 years old, male or female;

(3) Those who have not been treated in the last two weeks.

2.4 Exclusion criteria

(1) Severe intracranial surgery, patients with acute craniocerebral disease or intracranial tumor, tuberculosis and other space-occupying lesions causing strong interference, patients with serious mental illness;

(2) People with more than 3 serious diseases.

2.5 Methods

Clinical data such as sex, age, occupation, economic condition, interpersonal relationship, sleep environment, chronic disease, mental state, education level and sleep habits of 60 patients were collected by questionnaire.

Control group was given conventional drug treatment, that is, oral administration of Dexzopicone tablet (Jiangsu Tisli Diyi Pharmaceutical Co., LTD., Sinopod: H20090210, specification: 1 mg/ tablet) 2 mg/ time, 1 time/day, 4 weeks of treatment as a course of treatment. Patients in the experimental group were given acupuncture treatment based on the control group, acupuncture at the effective points, and acupuncture direction, depth and lifting, inserting and twisting frequency were strictly controlled according to the corresponding acupuncture methods. Huatuo brand 0.30mm*40mm acupuncture needles produced by Suzhou Medical Supplies Factory Co., Ltd. were selected for acupuncture. The retention time of the needle was 30 min, once /d, and the treatment were recommended in the afternoon every day, for 5 days a week, and stopped for 2 days.

2.6 Observation index

PSQI score was used to evaluate the sleep quality of the two groups before and after treatment, which was mainly divided into seven aspects: subjective sleep quality, sleep time, sleep efficiency, sleep disorders, hypnotic drugs, and daytime dysfunction. The total score was 0 to 21 points, and PSQI score >7 points was used as the reference threshold for sleep quality problems. The higher the score, the worse the sleep quality.

From 8:00 am the day before acupuncture in the experimental group and 8:00 am the day after the tenth day of acupuncture, 5ml of 24-hour urine in the control group and the experimental group were collected twice for the detection of dopamine and norepinephrine.

2.7 Statistical analysis

SPSS 26.0 statistical software was used for data analysis. Measurement data were expressed as mean ± standard deviation (`x± s). ANOVA using T-test or repeated measurement design was compared. The statistical data were expressed as constituent ratio or rate (%) and compared with χ^2 test. $P < 0.05$ was considered statistically significant.

3. Results

3.1 Clinical characteristics of insomnia patients

3.1.1 Insomniacs complain of self-conscious symptoms

The first symptom of insomnia patients as the main complaint symptom, 60 patients of the main complaint symptoms are as follows: sleeping difficulty in 35 cases, accounting for 58.3%; 12 cases (20%) woke up early; 8 cases were easy to wake up in light sleep (13.3%). Dreaminess was 4 cases (6.8%). There were 1 cases (1.7%) with difficulty to fall asleep after waking up. The results showed that most insomniacs had difficulty falling asleep.

3.1.2 PSQI score of insomnia patients

Before treatment, the PSQI score of 60 patients was 13.11±1.28 points, indicating that the sleep quality of patients was very poor.

3.2 Analysis of the effect of acupuncture and moxibustion on insomnia

3.2.1 Comparison of PSQI scores between the two groups before and after treatment

The PSQI scores of the two groups were shown in Table 1. There was no significant difference in PSQI scores between the two groups before treatment, and both patients had poor sleep quality. After treatment, the PSQI scores of the two groups were significantly decreased compared with those before treatment (P<0.05), but the experimental group had a larger decline and better treatment effect, which was significantly different from the control group (P<0.05).

Table 1. PSQI score of insomnia patients

Groups	PSQIscore			
	Before treatment	After treatment	t	p
Experimental group	13.02±1.32	3.90±0.77	46.11	<0.001
Control group	13.20±1.23	6.05±0.91	36.15	<0.001
t	0.786	13.94		
p	0.433	<0.001		

3.2.2 Comparison of DA and NE levels between the two groups after treatment

As shown in Table 2, after treatment, DA and NE levels in the experimental group were significantly higher than those in the control group, with statistical significance (P<0.05).

Table 2. Comparison of DA and NE levels between the two groups(ng/L)

Groups	DA	NE
Experimental group	45.81±2.60	51.68±9.59
Control group	28.52±2.16	24.05±7.29
t	39.68	17.77
p	<0.001	<0.001

4. Discussion

Insomnia is a health problem of common concern in modern society, and the quality of sleep directly affects the quality of life and the course of the disease [4]. The incidence of insomnia in our country is much higher than the world average level, among which the elderly group is mostly, the incidence is as high as 35%~50%, and insomnia is becoming more and more young, the incidence in the young and middle-aged group is as high as 10%~20%, and showing a growing trend [5].

The clinical data of 120 patients with insomnia were collected in this study, and it was found that the main symptoms of insomnia patients were difficulty falling asleep, early waking up, poor subjective sleep quality and other clinical characteristics. The loss of sleep impairs the patient's ability to adequately regulate and express emotions at the brain and behavioral levels [6]. Accordingly, the patient's sleep quality will be very poor, therefore, insomnia needs timely treatment.

Compared with modern medicine, traditional Chinese medicine has many unique advantages in the treatment of insomnia, with significant curative effect and less adverse reactions. Among them, acupuncture and moxibustion as a kind of characteristic treatment means of traditional Chinese medicine, there are a lot of studies on its treatment of insomnia, and it has a unique effect on the treatment of insomnia, which can effectively alleviate the clinical symptoms of patients and improve the quality of life of patients. The results of this study showed that the sleep quality of patients could be significantly improved after acupuncture treatment, which was consistent with the results of previous studies [7,8].

Previous studies have confirmed that central neurotransmitters are closely related to the mechanism of insomnia [9]. There are many neurotransmitters involved in the regulation of sleep-wake. DA neurons are distributed in the putrum and caudal nuclei of the body, and their fibers project to the brain's blue-spot, preoptic area and other neural structures related to sleep-wake. At the same time, DA receptors can directly excite the body's cerebral cortex, and its metabolites can activate its β-adrenaline, and then make the body in a state of awakening. However, whether DA is involved in sleep-wake regulation is still debated. In this study, it was found that the level of DA in insomnia patients increased significantly after acupuncture treatment, suggesting that acupuncture may alleviate insomnia symptoms by regulating the concentration of DA. In addition, as a neurotransmitter, NE can not only promote arousal by inhibiting hippocampal neurons, but also increase blood pressure and heart rate, thereby inducing energy release such as glucose. When the sleep-wake cycle is disturbed, the NE level will increase, and when the sleep-wake cycle returns to normal, the NE level will decrease, indicating that the level is inversely

proportional to the sleep quality and sleep time of the body. This study confirmed that the level of NE in insomnia patients increased significantly after acupuncture treatment, so the change of NE concentration may also be one of the mechanisms of acupuncture treatment for insomnia.

To sum up, the clinical characteristics of insomnia patients were relatively obvious, mainly sleep difficulty, early wake up, easy to wake up, multiple dreams and difficult to fall asleep after waking up. Through acupuncture treatment, insomnia symptoms could be significantly improved, and acupuncture could significantly stimulate the expression of DA and NE, and then significantly improved insomnia symptoms.

Acknowledgments

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