

# Research Progress of Traditional Chinese Medicine in the Treatment of Sleep Disorders due to Decreased Ovarian Reserve Function

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**Abstract:** *The clinical manifestations of diminished ovarian reserve are complex and diverse. Among them, there are many people with sleep disorders, and the treatment is difficult. Long-term sleep disorders will aggravate the development of the disease, and even appear anxiety, depression and other negative emotions, affecting the various functions of the patient's body. At the same time, the impact on their families and even society is also far-reaching. Traditional Chinese medicine has a good advantage in the treatment of sleep disorders with decreased ovarian reserve function. In recent years, it has been found that traditional Chinese medicine treatment is rich and effective. This paper summarizes the treatment methods of traditional Chinese medicine in order to provide reference for the treatment of such diseases in labor.*

**Keywords:** Ovarian reserve function decline, Sleep disorders, Traditional Chinese medicine.

## 1. Introduction

Diminished ovarian reserve (DOR) is due to the decrease in the number and / or quality of oocytes, resulting in insufficient ovarian function, resulting in decreased fertility, accompanied by decreased anti-Mullerian hormone (AMH) levels, decreased antral follicle count (AFC), and increased basal FSH levels [1]. In addition to the decline in fertility, these patients also showed irregular menstruation, insomnia and dreaminess, irritability, loss of libido and other symptoms. Studies have shown that 81.77 % of DOR patients suffer from insomnia and dreaminess [2]. Sleep is one of the core biological activities for humans to maintain physiological homeostasis, and its disorders affect the body's immune function [3]. Patients with poor sleep quality will not only increase the risk of cardiovascular and cerebrovascular diseases, but also affect the autonomic nervous regulation function and seriously affect their quality of life. Therefore, more and more studies have begun to focus on sleep disorders with decreased ovarian reserve. Western medicine treatment usually regulates the body's hormone levels by using hormone replacement therapy and symptomatic treatment with hypnotic sedative drugs, and long-term use of such drugs is prone to adverse reactions. Traditional Chinese medicine has unique advantages in the treatment of sleep disorders with diminished ovarian reserve. This article reviews the treatment of sleep disorders with diminished ovarian reserve by traditional Chinese medicine in this year.

## 2. Traditional Chinese Medicine Understanding of Ovarian Reserve Decreased Sleep Disorders

In traditional Chinese medicine, the decline of ovarian reserve function belongs to 'perimenopausal period', 'symptoms before and after menstruation', 'depression syndrome', 'dirty impatience', and sleep disorder belongs to 'insomnia'. Traditional Chinese medicine believes that perimenopausal insomnia is mainly caused by liver and kidney deficiency.

Yang Lei et al. [4] believed that the core pathogenesis of sleep disorder of ovarian reserve function is the deficiency of kidney yin, which leads to the flicker of ministerial fire, the misplacement of ministerial fire and the unknown monarch fire. Zheng Ruichen et al. [5] believed that patients with decreased ovarian reserve function had kidney yin deficiency, Tiangu gradually exhaustion, Shaoyin cardinal adverse, and Yang could not enter Yin, resulting in insomnia; the dysfunction of Shaoyin cardinal will hinder the operation of qi, and the pathological products such as phlegm and dampness will be further produced. Disrupting the mind can aggravate insomnia and form a vicious circle. Yao et al. [6] believed that women are congenital to the liver. The cause of this disease is liver and kidney yin deficiency caused by liver depression transforming into fire, deficiency of Yigui, liver qi taking over the spleen, insufficient source of spleen and stomach biochemistry, and loss of heart and mind. Chinese medicine master Zhou Zhongying [7] believes that the disease is also combined with hyperactivity of liver yang on the basis of deficiency of kidney yin and yang. Therefore, in addition to nourishing liver and kidney, it is also necessary to clear liver fire during treatment.

## 3. Internal Treatment of Traditional Chinese Medicine Treatment

The internal treatment of traditional Chinese medicine is a treatment method for oral Chinese medicine to directly enter the human body to regulate the balance of yin and yang in the human body. That is, through the dialectical analysis of the patient's symptoms, pulse conditions, tongue coating, etc., according to the taste and meridian tropism of Chinese herbal medicine, the prescription is formed by the combination of monarch, minister, adjuvant and enabler. The forms of medication are diversified, including decoction, pill, powder, granule and ointment, which can be classified into the following two categories.

### 3.1 Oral Chinese Medicine Decoction Treatment

Li Yaxi [8] and other patients were randomly divided into experimental group (oral lily rehmannia decoction) and control group (oral estazolam tablets), 56 cases in each group. The total clinical effective rate, sleep quality (Pittsburgh Sleep Quality Index, PSQI), menopausal symptoms (Kupperman scale score, TCM syndrome score, serum sex hormones including estradiol, luteinizing hormone, follicle stimulating hormone levels were recorded in the two groups after treatment. Finally, it was concluded that lily rehmannia decoction can nourish yin and yang, clear heat and calm the mind, and significantly improve the sleep quality and serum sex hormone levels of such patients.

Lin Lijun et al. [9] randomly divided patients with kidney deficiency and liver depression into control group (oral estazolam tablets) and observation group (oral Zishen Shugan Anshen Decoction and estazolam tablets), 32 cases in each group. The Pittsburgh Sleep Quality Index (PSQI), TCM symptom score, and serum 5-hydroxytryptamine (5-HT) level were recorded. Finally, it was concluded that Zishen Shugan Anshen Decoction can tonify liver and kidney, clear heart and relieve liver, and improve sleep quality.

Patients such as Huang Jiajia [10] were randomly divided into a sedative group (oral estazolam tablets + estradiol tablets / estradiol dydrogesterone tablets composite packaging treatment) and a combined decoction group (sedative group based on the addition of Suanzaoren decoction), 30 cases in each group. TCM syndrome scores, sex hormone levels [luteinizing hormone (LH), follicle stimulating hormone (FSH), estradiol (E2)], modified Kupperman score, sleep index, Pittsburgh sleep quality index (PSQI) score, and adverse reactions were recorded before and after treatment. It was concluded that Suanzaoren decoction can significantly improve the sleep quality of such patients. And high safety, low incidence of adverse reactions.

Gu Wei [11] randomly divided the patients with liver depression and yin deficiency with blood stasis type into control group (treated with Kuntai Capsule orally) and observation group (treated with Chaihu Wenjing Decoction orally on the basis of the control group), 30 cases in each group. The Pittsburgh Sleep Quality Index, Self-rating Anxiety Scale and Self-rating Depression Scale were observed and recorded before and after treatment. Finally, it was concluded that Chaihu Wenjing Decoction can nourish yin and activate blood, improve the internal environment, regulate the pivot, and play a role in relieving insomnia symptoms and reducing depression and anxiety.

Jin Xiaoxia [12] randomly divided the patients with phlegm-heat internal disturbance type into the control group (treated with oral estazolam tablets) and the observation group (treated with oral Sanhuang Anshen Decoction), 30 cases in each group. The composition of Sanhuang Anshen Decoction was as follows: Radix Scutellariae 3g, Rhizoma Coptidis 3g, Cortex Phellodendri 3g, Radix Glycyrrhizae 6g, Pericarpium Citri Reticulatae 9g, Rhizoma Pinelliae 9g, Poria 9g, Radix Paeoniae Alba 10g, Radix Paeoniae Rubra 25g, Semen Ziziphi Spinosae 35g. The TCM syndrome scores, sleep quality [Pittsburgh Sleep Quality Index (PSQI) score], quality of life [Health Survey Scale 36 (SF-36)] and adverse reactions before and after treatment were recorded and compared.

Finally, it was found that Sanhuang Anshen Decoction can improve the symptoms of insomnia and irritability by clearing heat and resolving phlegm and tranquilizing the mind, so as to improve the quality of life without complications and high safety.

### 3.2 Oral Chinese Patent Medicine Treatment

Wang Wei et al. [12] randomly divided the patients into experimental group (Xiangshao granule combined with insomnia cognitive behavioral therapy) and control group (insomnia cognitive behavioral therapy), with 60 cases in each group. The Pittsburgh sleep quality index (PSQI) score, Kupperman score, Hamilton anxiety scale and Hamilton depression scale were recorded at 2, 4 and 8 weeks after treatment. It was concluded that Xiangshao granule could improve the sleep quality of patients during insomnia cognitive behavioral therapy and reduce the anxiety and depression of patients. Reduce its shedding rate during treatment.

Yuan Zhaoyu et al. [13] randomly divided the patients with liver and kidney yin deficiency into the control group (oral administration of zolpidem tartrate tablets) and the treatment group (oral administration of Nvzhen granules on the basis of the control group), 50 cases in each group. The symptom relief time, quality of life (QOL) score, sleep quality assessment scale (SPIEGEL) score, serum interleukin-1 $\beta$  (IL-1 $\beta$ ), brain glial neurotrophic factor (GDNF), hormone cortisol (COR) and 5-hydroxytryptamine (5-HT) levels were recorded before and after treatment, and the data were compared. Finally, it was proved that the combination of Nvzhen granules was more effective in reducing the body's inflammatory response and improving sleep treatment.

## 4. External Treatment of Traditional Chinese Medicine

The external treatment of traditional Chinese medicine is one of the treasures of traditional Chinese medicine. It is mainly under the guidance of the basic theory of traditional Chinese medicine, in addition to oral drugs in vitro treatment, a treatment method applied to the body surface, including acupuncture, massage, application, auricular point pressing beans, cupping, stone needle, bloodletting and so on.

### 4.1 Acupuncture Therapy

Li Huangyuan [14] The patients were randomly divided into control group (conventional acupuncture treatment) and observation group ('Peiyuan Jieyu method' acupuncture treatment), 38 cases in each group. The PSQI score, modified Kupperman score and serum E2 level of each group before and after treatment were recorded respectively. It is concluded that compared with the conventional acupuncture method, the effect of Peiyuan Jieyu method on improving the sleep quality and related hormone levels of patients is better than that of ordinary acupuncture method.

### 4.2 Other External Therapies

Gu Qin et al. [15] divided the patients with heart-kidney disharmony into control group (auricular point pressing with

beans) and observation group (auricular point pressing with beans combined with fire dragon jar) according to the principle of basic comparability between groups, with 46 cases in each group. The main points of auricular point pressing with beans were heart, kidney, deep sleep, Shenmen, occipital, subcortical nervous system, endocrine, pituitary and ovary, and the rest were modified by dialectical treatment. The fire dragon jar treatment was mainly based on the bladder meridian and governor vessel of foot-taiyang, supplemented by conception vessel. After 2 courses of treatment, the Kupperman score of sleep quality, TCM symptom score and safety observation were recorded respectively. It is concluded that auricular point pressing beans combined with dragon cupping therapy can effectively adjust the heart and kidney function to play the role of water and fire, tranquilizing the mind and tranquilizing the mind, and improve the sleep quality of such patients without obvious adverse reactions.

Hu Feiyan [16] et al. randomly divided patients with disharmony between heart and kidney into control group 1 (oral estazolam tablets), control group 2 (scraping therapy), and treatment group (Wentong scraping therapy), with 30 cases in each group. Among them, the scraping treatment used the horn scraping board to scrape the head meridian, Du meridian, bladder meridian of foot Taiyang, heart meridian of hand Shaoyin and kidney meridian of foot Shaoyin. Wentong scraping is to use Wentong scraping tank to carry out moxibustion while scraping. The selected parts are the same as above. By recording the Pittsburgh sleep quality index (PSQI) and anxiety score, it is concluded that Wentong scraping method can warm the meridians, regulate yin and yang, and communicate heart and kidney. Improve the quality of sleep in patients without side effects, and the patient's acceptance is good.

## 5. Combined Internal-external Therapy

Huang Xiaolan [17] and other patients were randomly divided into experimental group (oral Sun's Anshen Decoction combined with plum-blossom needle along the meridian tapping treatment) and control group (oral estazolam tablets treatment), 50 cases in each group. The composition of Sun's Anshen Decoction is: Rehmannia 15g, Cornus 15g, Rehmannia 15g, Polygonatum 15g, Ligustrum lucidum 15g, Albizia 6g, Cyperus 9g, Semen Ziziphi Spinosae 15g, Paeonia 9g, Cistanche 15g, Licorice 6g, Plum-blossom needle tapping mainly selects the forehead and head bile meridian. Through PSQI score, self-rating anxiety scale (SAS), self-rating depression scale (SDS), IL-1 $\beta$  and TNF- $\alpha$  levels before and after 3 months of treatment, and TCM symptom scores, it was concluded that Sun's Anshen Decoction combined with plum-blossom needle tapping along meridians can tonify liver and kidney, calm the heart and calm the mind, and dredge gallbladder qi. While improving the sleep quality of patients, it can also reduce the symptoms of hot flashes, night sweats, anxiety and depression, and soreness and weakness of waist and knees caused by ovarian dysfunction.

Yao Siping [18] randomly divided the patients into the study group (oral Bushen Ningxin Decoction combined with ordinary acupuncture treatment) and the control group (ordinary acupuncture treatment), with 46 cases in each group. The acupuncture points were selected as Taixi, Shenmen,

Xinshu and Shenshu. The prescription of Bushen Ningxin Decoction was: Hu Huanglian 5g, Rougui 5g, Wuweizi 10g, Yuanzhi 10g, Shichangpu 10g, Bajitian 15g, Danshen 15g, Yejiaoteng 15g, Suanzaoren 20g, Shudihuang 30g. By recording symptom scores, sleep assessment, and Pittsburgh Sleep Quality Index (PSQI) assessment, the conclusion was drawn. Oral Bushen Ningxin Decoction combined with ordinary acupuncture treatment can give full play to the advantages of internal and external combination of Yishen Ningxin Anshen and improve patients' sleep.

Sun et al. [19] randomly divided the patients into control group (oral estazolam tablets) and treatment group (acupuncture combined with Qingre Anshen Decoction), 53 cases in each group. The main acupoints selected by acupuncture were Baihui, Yintang, bilateral Fengchi, Zhaohai, Shenmen, Sanyinjiao, Xinshu, Anmian and Neiguan. Qingre Anshen Decoction: Xiakucao, Zhishi, Chenpi each 12g, Fabanxia 10g, Fushen, Suanzaoren, Shenglongchi, Shengmulu, Zhenzhumu each 30g, Huanglian, Zhuru each 10g, Gancao 6g. After comparing the Pittsburgh Sleep Quality Index (PSQI) score and sex hormone (FSH, LH, E2) level data of each group before and after treatment, it is concluded that acupuncture combined with Qingre Anshen Decoction can clear heat and resolve phlegm, calm the heart and tranquilize the mind, and improve the sleep quality of patients.

## 6. Conclusion

In summary, the use of traditional Chinese medicine in the treatment of sleep disorders due to decreased ovarian reserve function is more effective than oral sedatives and sleeping pills, and the side effects are small and the safety is high. Other symptoms associated with such patients are also improved. Therefore, the application of traditional Chinese medicine treatment programs in clinical practice has great potential. At the same time, we found that the combination of internal and external treatment of traditional Chinese medicine is more effective than a single internal treatment or a single external treatment. However, the treatment mechanism of traditional Chinese medicine has not yet been clarified, and it still needs to be continuously explored in the future, and this type of research has the following shortcomings: 1) small sample size, no multi-center, multi-sample data; 2) The individualized treatment plan is obvious, such as the specific prescription of oral Chinese medicine decoction and the selection of acupuncture points. There is no specific, universal, and unified standard treatment plan. 3) Only the current efficacy was recorded, and the long-term efficacy was not tracked. We look forward to more rigorous and high-quality research in the future, so as to give better play to the advantages of traditional Chinese medicine in the treatment of diseases.

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