

Acupuncture as a primary and independent treatment for a patient with chronic insomnia

One-year follow-up case report

Wanrong Zhang, MD^a, Zhen Huang, MD^a, Yuanyuan Jin, MD^{b,*}

Abstract

Rationale: Insomnia is a common disease. Till date, no study has reported the long-term (up to 1 year) outcomes of acupuncture as a primary and independent treatment in patients with insomnia. This report aims to present response of patient who was treated by acupuncture. This patient was evaluated with polysomnography.

Patient concerns: A 40-year-old patient had been diagnosed with insomnia for 2 years and getting worse since 1 month ago. He had undergone depression and anxiety emotion, but refused to take medical treatment for chronic insomnia.

Diagnoses: In this study, the diagnosis of chronic insomnia was based on the International Classification of Sleep Disorders insomnia. The patient had no obvious differential diagnosis.

Interventions: Acupuncture treatment was planned for this patient who refused to take medical treatment with chronic insomnia. So the patient received 1 hour of acupuncture treatment for 12 weeks.

Outcome: Polysomnographic evaluation was performed at baseline and 3 months, and 1 year after acupuncture treatment. He was asked to keep a diary of all his insomnia-related symptoms. All outcome measures substantially improved. Moreover, during the observation period, the patient's sleep quality did not worsen.

Lessons: After acupuncture treatment, improvements of subjective symptoms such as unrefreshing sleep, sleep disturbances, accompanied symptoms (morning headache, fatigue, and mood worsening) were observed. Remarkable improvement was recorded by polysomnographic parameters. The costs of the treatment of insomnia may be reduced, if this therapy was proved useful in future controlled studies.

Abbreviations: CBT = cognitive behavioral therapy, TCM = Traditional Chinese Medicine.

Keywords: acupuncture, chronic insomnia, independent treatment, one-year follow-up

1. Introduction

Insomnia as one of the most common sleep disorders has been defined as a complaint of trouble initiating or maintaining sleep which is associated with day-time consequences and is not attributable to environmental circumstances or inadequate opportunity to sleep.^[1] It seriously affects patients' social and professional life.^[2] Increasing age, medical and psychiatric disorders, female gender, and use of medications are risk factors for insomnia.^[3] The disorder is identified as chronic insomnia

when it has persisted for at least 3 months at a frequency of at least 3 times per week.^[4] The prevalence of chronic insomnia is 11.7% to 37% in European countries, and it is 9.2% to 11.9% in Asian countries.^[5] In older age groups, the prevalence is significantly higher.

The preferred treatments for chronic insomnia include behavioral, psychological, and pharmacological options, however the duration of efficacy of each is short, and the risk of rebound or other side-effects are high.^[6] The effectiveness of nonpharmacological treatments, such as cognitive behavioral therapy (CBT) has been shown in randomized clinical trials. However the treatment requires well-trained therapists, and it is not accessible or cheap for most patients. Thus, CBTs are not so widely used.^[7]

An alternative therapeutic method for treating insomnia is acupuncture, which is used by as many as 25% people with insomnia.^[8] The Evidence-Based Guideline of Chinese Medicine for Insomnia recommends 3 main points: HT7 (Shenmen), GV20 (Baihui), and SP6 (Sanyinjiao).^[9] The exact actions of these points are not fully understood, however, when used together and with other points they have an obvious effect on biological responses in the short term (up to 1–3 months).^[10] To date, however, no study has reported the long term improvements (up to 1 year) in effectiveness with acupuncture. Therefore, our goal is to determine whether the acupuncture is a viable therapeutic option. The cost of the treatment is also considered.

Editor: N/A.

The authors have no conflicts of interest to disclose.

^a Department of Rehabilitation Medicine, Panyu Central Hospital, Guangzhou, China, ^b Department of Acupuncture and Moxibustion, Zhejiang Hospital, Xi hu District, Hangzhou, China.

* Correspondence: Yuanyuan Jin, Zhejiang Hospital, Hangzhou, Zhejiang, China, 310013 (e-mail: jinghuo1606@126.com).

Copyright © 2017 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

Medicine (2017) 96:52(e9471)

Received: 20 November 2017 / Received in final form: 3 December 2017 /

Accepted: 6 December 2017

<http://dx.doi.org/10.1097/MD.00000000000009471>

2. Case description

A 40-year-old accountant without remarkable cognitive and psychosocial history was admitted to our department for difficulty in initiating sleep, fragmented sleep, and day-time anxiety about being unable to fall asleep at night 2 years ago and getting worse since 1 month ago. He said he opened his eyes almost every night and also could not have a rest at daytime, resulting in morning headaches and day-time fatigue almost each day. This terrible syndrome began without any reason. The patient underwent clinical history taking. Laboratory determinations of his blood samples, computed tomography, and magnetic resonance imaging scans of brain showed no obvious abnormality. He felt very depressed and then tried to come to our department for help. We suggested acupuncture treatment as he refused any kind of medication. We informed the patient that he could not receive any oral medication for insomnia for 1 year after the intervention unless he received specific permission, and the patient agreed to these terms.

3. Examination

We conducted video-assisted overnight polysomnography (Neuron Spectrum; Sleep Systems, Ivanovo, Russia) using electromyography electroencephalogram, and electrooculography. According to American Academy of Sleep Medicine rules, we were able to determine the total sleep time, which is the time from falling asleep to awakening in the morning minus the periods of time awake during the night; sleep efficiency index, which is the ratio of total sleep time to time in bed; sleep latency; and relative durations of the various stages of sleep. All values were expressed as a percentage of the sleep period time, which is from falling asleep to the last epoch of sleep. Electrocardiograms were performed from the time the patient went to bed until the patient got out of bed. In this study, parameters such as percent of sleep efficiency, sleep latency in minutes, wake after sleep onset in minutes, percent of time spent in the rapid eye movement stage, and percent of time spent in Stages 1, 2, and 3 of sleep were taken. We also recorded the apnea hypopnea index.^[11]

4. Intervention

This study was approved by the Research Ethics Review Board of Panyu Central Hospital. The study procedures were explained to the patient. Informed consent was obtained from the patient.

The acupoints selected on the basis of our clinical experience, a literature review, and the principles of Traditional Chinese Medicine (TCM). Disposable sterilized acupuncture (0.25 mm 25 mm; Suzhou Huanqiu Acupuncture Medical Appliance Co., Suzhou, China) was adopted on Sishengcong (EX-HN1), Baihui (DU-20), Hegu (LI-4), Shenmen (HT-7), Neiguan (PC-6), Taichong (LR-3), Zusanli (ST-36), and Sanyinjiao (SP-6), which were needled 10 to 15 mm bilaterally with mild stimulation for 1 hour. Periosteal “pecking” and manual stimulation were done every 20 minutes. Acupuncture treatment sessions were performed once a day for 3 months by a licensed acupuncturist. During the intervention, the patient did not receive any further treatment from any other clinics or hospitals.

5. Outcome

The intervention (therapy and follow-up) was conducted from October 2015 to October 2016 in Panyu Central Hospital. Outcome measures were assessed the day before intervention and

Table 1

Impact of acupuncture on chronic insomnia.

	PSG		
	Baseline	3 months	1 year
Total sleep time, minutes	225	362	321
Sleep efficiency index, %	66	91	95
Sleep latency, minutes	40	25	17
Total sleep period time, minutes	337	395	365.9
Wake after sleep onset, minutes	16	45.5	69
REM stage, %	10.6	12.3	17
Stage 1 sleep, %	12.6	10.4	8.4
Stage 2 sleep, %	70.8	51.5	52.8
Stage 3 sleep, %	4.4	13	11.2
AHI	1.12	0.82	0.82

AHI = apnea-hypopnea index, PSG = polysomnography, REM = rapid eye movement.

3 months, and 1 year after acupuncture therapy. All outcome measures substantially improved. Moreover, during the observation period, the patient's sleep quality did not worsen (Table 1).

The first 2 weeks, he presented with no improvement, he still opened his eyes all days, fatigue and morning headache still troubled him. A month later, he reported feeling better as he could fall asleep after spending 2 hours in the bed before being able to sleep, but would be awake more than 5 times during the night. He was very excited about his improvement and started to get confidence in his sleep condition. The second month, he reported more improvements. He could fall asleep after half an hour, stay sleeping for 5 hours with some dreams without waking up. He reported total recovery from the insomnia after the last month's treatment, and no further tiredness with good quality sleep since his last visit.

6. Discussion

Many studies on acupuncture are as an adjuvant therapy within Western treatment^[12] and the short-term effect (up to 1–3 months) has been reported.^[10] As far as we are concerned, this is the first case report describing the long-term follow-up (up to years) of a patient with chronic insomnia whose symptoms were managed with acupuncture as a primary and independent treatment.

Our goals were to determine whether the insomnia improved after 3 months of acupuncture treatment alone and whether any improvements were maintained in 1 year after the intervention. Our clinical results indicated that the sleep quality improve over the 1-year period (before intervention to 1 year after intervention) and do not worsen during the observation period. Acupuncture was thought to return the sleep–wake cycle to normal as well.

In our case, we found the patient has no past medical history, which was associated with insomnia, his previous individual history was recorded, including regular diet with low fat/salt/sugar, no smoking/drinking history, and no mood disorders to the onset. But he undergone stressful overwork pressure, and he had no fixed working hours, which meant he worked during the daytime and at night. Many studies have reported that the working process has a particular nature, because the activities involved can trigger occupational health risks.^[13] One example is the alternating work shifts, with workers performing tasks at different periods, during the day and night, making it impossible for their sleep–wake cycle to adapt to the working hours.

The sleep disorders in insomnia are accompanied with fatigue, depression, anxiety. HT7 (Shenmen), GV20 (Baihui), and SP6

(Sanyinjiao) are recommended as main points, which often used together and with other points based on syndrome differentiation. EX-HN1, DU-24, LI-4, DU-20, and HT-7 acupoints are most commonly used for variable emotions (e.g., anger, anxiety, sadness, and depression). In addition, the Sp-6 and PC-6 acupoints play an important role in inducing sedation and tranquility.^[14] Our results for the treatment indicated that subjective symptoms, such as unrefreshing sleep, headaches, and mood worsening in the morning, reduced motivation and daytime performance, tiredness, and sleep disturbances, were improved after acupuncture treatment and did not worsen during the observed period.

We believe that the long-term effects of the treatment have the potential to reduce the rising medical costs of stroke rehabilitation. Many patients are difficult to pay CBT and pharmacological charge within health insurance; meanwhile a lot of patients are without health insurance in China. The combined treatment over a 1-year costs about \$7542 (≈¥50,000), while the cost of acupuncture treatment for 3 months is \$1357 (≈¥9,000) in our hospital. Therefore, the acupuncture treatment is less expensive than CBT and pharmacological treatments.

This case report has a few limitations. First, we are unable to prove the efficacy of the treatment alone only by a single case. Multicenter studies and a long follow-up with large samples are needed to confirm our observations. Second, there is no control group as the case report was prospective. Future studies should require a more rigorous design, such as a randomized controlled trial. Third, the lack of patient-reported outcomes during the follow-up period and the lack of more frequent follow-up assessments may mean that other possible relevant factors were overlooked.

Considering the promising outcomes seen in this case report, we believe that acupuncture treatment offers promise for effectively improving sleep quality and accompanied symptoms in patients with chronic insomnia. In conclusion, acupuncture is a relevant approach in the management of sleep-wake cycle in insomnia.

References

- [1] Sateia MJ, Buysse DJ, Krystal AD, et al. Clinical practice guideline for the pharmacologic treatment of chronic insomnia in adults: an American Academy of Sleep Medicine Clinical Practice Guideline. *J Clin Sleep Med* 2017;13:307–49.
- [2] Jackson ML, Sztendur EM, Diamond NT, et al. Sleep difficulties and the development of depression and anxiety: a longitudinal study of young Australian women. *Arch Womens Ment Health* 2014;17:189–98.
- [3] Ohayon MM, Caulet M, Lemoine P. Comorbidity of mental and insomnia disorders in the general population. *Compr Psychiatry* 1998;39:185–97.
- [4] Ito E, Inoue Y. The International Classification of Sleep Disorders, third edition. American Academy of Sleep Medicine. Includes bibliographies and index. *Nihon Rinsho* 2015;73:916.
- [5] Kessler RC, Berglund PA, Coulouvrat C, et al. Insomnia and the performance of US workers: results from the America insomnia survey. *Sleep* 2011;34:1161–71.
- [6] Winkler A, Auer C, Doering BK, et al. Drug treatment of primary insomnia: a meta-analysis of polysomnographic randomized controlled trials. *CNS Drugs* 2014;28:799–816.
- [7] Pinto LRJr, Alves RC, Caixeta E, et al. New guidelines for diagnosis and treatment of insomnia. *Arq Neuro-psiquiatr* 2010;68:666.
- [8] Pearson NJ, Johnson LL, Nahin RL. Insomnia, trouble sleeping, and complementary and alternative medicine: analysis of the 2002 National Health Interview Survey Data. *Arch Intern Med* 2006;166:1775–82.
- [9] Li TYJ. Epidemiological and Electrophysiological Studies for TCM-based Diagnostic Classification of Insomnia. 2015;Open Dissertation Press,
- [10] Shergis JL, Ni X, Jackson ML, et al. A systematic review of acupuncture for sleep quality in people with insomnia. *Complement Ther Med* 2016;26:11.
- [11] Holley A, Sheikh K, McMahon M, et al. Pretest probability for obstructive sleep apnea, using American Academy of Sleep Medicine (AASM) 2012 Hypopnea Scoring Criteria, in a Military Population. *Chest* 2015;148:1036A.
- [12] Qaseem A, Kansagara D, Forcica MA, et al. Management of chronic insomnia disorder in adults: a clinical practice guideline from the American College of Physicians. *Ann Int Med* 2016;165:125–33.
- [13] De MMM. The architecture of day sleeping and the sleep-wake cycle in nurses in their working shifts. *Revista Da Escola De Enfermagem da USP* 2009;43:194–9.
- [14] Guo J, Wang LP, Liu CZ, et al. Efficacy of acupuncture for primary insomnia: a randomized controlled clinical trial. *Evid Based Complement Alternat Med* 2013;2013:163850.