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Original article

Effect of acupressure with valerian oil 2.5% on the quality and quantity of sleep in patients with acute coronary syndrome in a cardiac intensive care unit

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ABSTRACT

The purpose of this three-group double-blind clinical trial study was to investigate the effect of acupressure (指壓 zhǐ yā) with valerian (纈草 xié cǎo) oil 2.5% on the quality and quantity of sleep in patients with acute coronary syndrome (ACS) in a coronary intensive care unit (CCU). This study was conducted on 90 patients with ACS in Mazandaran Heart Center (Sari, Iran) during 2013. The patients were randomly assigned to one of three groups. Patients in the acupressure with valerian oil 2.5% group (i.e., valerian acupressure group) received bilateral acupoint (穴位 xué wèi) massage with two drops of valerian oil for 2 minutes for three nights; including every point this treatment lasted in total 18 minutes. Patients in the acupressure group received massage at the same points with the same technique but without valerian oil. Patients in the control group received massage at points that were 1–1.5 cm from the main points using the same technique and for the same length of time. The quality and quantity of the patients' sleep was measured by the St. Mary's Hospital Sleep Questionnaire (SMHSQ). After the intervention, there was a significant difference between sleep quality and sleep quantity in the patients in the valerian acupressure group and the acupressure group, compared to the control group ($p < 0.05$). Patients that received acupressure with valerian oil experienced improved sleep quality; however, this difference was not statistically significant in comparison to the acupressure only group. Acupressure at the ear spirit gate (神門 shén mén), hand Shenmen, glabella (印堂 yìn táng), Wind Pool (風池 fēng chí), and Gushing Spring (湧泉 yǒng quán) acupoints can have therapeutic effects and may improve the quality and quantity of sleep in patients with ACS. Using these techniques in combination with herbal medicines such valerian oil can have a greater impact on improving sleep and reducing waking during the night.

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1. Introduction

Cardiovascular diseases are among the most common diseases in human societies and the number of these patients has increased in recent decades.¹ In 2008, coronary artery disease caused one of every

six deaths in America. On average, one American experiences cardiac events every 25 minutes, and one person dies every 1 minute.² The emergence of cardiovascular diseases, especially coronary diseases, is widely increasing in China, India, Pakistan, the East Mediterranean region, and the Middle East; it is an important health and social problem.^{3–6} Every year, approximately 3.6 million people are hospitalized in hospitals under the Ministry of Health and Medical Education and Treatment of Iran. A remarkable number of these patients have heart disease, especially patients with acute coronary syndrome (ACS), which includes acute myocardial infarction and unstable angina.⁷ Most sleep problems encountered by patients are because of

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their hospitalization.⁸ Many patients who are hospitalized in a coronary intensive care unit (CCU) experience reduced quality and quantity of sleep with regard to mental and environmental factors.^{9–13} Even if environmental factors are controlled, patients with acute myocardial infarction have an altered sleep structure (i.e., sleep pattern) that can result from physiologic inflammatory changes or from the nature of the myocardial infarction itself.¹⁴

Approximately 56% of the patients are sleep-deprived at the end of the 1st day of hospitalization. Based on other studies, ACS patients have low sleep quality during the first 3 days of their hospitalization.^{15,16} Comfortable sleep is difficult for patients hospitalized in intensive care units because of constant monitoring, lighting on the unit, noise due to the staff caring for other patients, mechanical ventilation, frequent awakening by the nurses, the use of sedating and inotrope drugs, disease severity, and the staff awakening patients early in the morning in these units even though the patients need more sleep.⁹ Hospitalization can remarkably disturb the sleeping model.¹⁷

Sleep is a primary need of human beings. It is necessary for maintaining energy, appearance, and physical well-being. Sleep has an important role in cardiovascular function. Its deprivation intensifies anxiety, irritability, and anger, and increases the heart rhythm and myocardial oxygen demand in a frequent and dangerous cycle.^{18,19} Insomnia can be treated by drugs, herbal medicine, psychotherapy, and physiological treatments.²⁰ The most common way to treat or cope with sleeping problems is by using drugs. Based on research studies,¹¹ there is no significant difference in sleep quality and quantity of the patients who use these drugs and patients who do not use them. The effectiveness of drugless therapies is slower than the effectiveness of sleep aids; however, drugless therapies are more permanent and do not have the side effects of drugs such as memory deficits, drug resistance, drug dependency, and drug addiction.

Insomnia can be treated by medication, herbal therapy, and psychological or physical therapy.²⁰ Acupressure (指壓 zhǐ yā) can enhance comfort and sleep through massaging and stimulating certain points in the head, hands, and back.²¹ Individuals can use this treatment method by themselves or with the help of other family members.²²

A traditional way of treating insomnia is by using valerian herb (續草 xié cǎo) self grown in nature plant. It is one of many plants used to treat insomnia.²³ The effect of valerian is similar to that of the benzodiazepines (e.g., its effect is comparable with that of 10 mg oxazepam²⁴); however, the adverse effects of valerian are fewer. When the human body absorbs valerian, gamma-aminobutyric acid (GABA) receptor activity increases.²⁵ The result of a review article concluded that valerian could improve sleep quality with minimal or no adverse effect.²⁶

Based on available data, an article concerning the effectiveness of acupressure with valerian oil on the quality and quantity of sleep in patients with ACS has not been previously published. Because of the high prevalence of insomnia in intensive care units and because of the effect that acupressure has as a noninvasive and complementary method in treating sleep disorders, the present study aimed to examine the effect of acupressure with valerian oil on sleep quality and quantity in patients hospitalized in a CCU, and thus improve sleep quality, health, and life quality and satisfaction in patients with ACS.

2. Material and methods

This three-group double-blind clinical trial study was performed on 90 patients with ACS in Fatimatazahra Education Center of Sari, Iran (i.e., Mazandaran Heart Center) in 2013. Participants of this study were selected from a convenient statistical population. After determining the inclusion criteria, the participants were,

TRADE KEY Company. Thailand randomly assigned by random Rand numbers and Excell software into three 30-patient groups: the acupressure (指壓 zhǐ yā) group the valerian (續草 xié cǎo) acupressure group, and the control group. In accordance with a similar study,²⁷ the present Iranian study had a 95% confidence level: the average and standard deviation of the insomnia total score before and after intervention in the experimental group was 20.12 ± 5.76 and 13.31 ± 2.58 , respectively; and the sample size with 30 people in each group counted as 90 samples in total. The inclusion criteria included a patient's willingness to participate in the study, a minimum age of 18 years, an awareness of time and place, having not undergone surgery, and an ejection fraction (EF) > 40%.²⁷ The exclusion criteria included receiving drugs 5–6 hours before sleeping at night, having hearing and vision disorders such that the patient could not communicate with the researcher, drug addiction, being used to using any kind of effective drug or medicine for sleeping, leg amputation or wound amputation at the site of the acupressure points or using inotropes at the site of the acupressure points, allergy to flower essences or their pollens, emergence of acute problems at the time of hospitalization, and a person's lack of cooperation in continuing the research study.

The aims of the study were explained to the patients before beginning the study. After achieving written consent and before beginning the intervention, the patients completed questionnaires that assessed their demographic and clinical characteristics, and completed the St. Mary's Hospital Sleep Questionnaire (SMHSQ), which assessed the patients' sleep at home (i.e., the night before hospitalization). These questionnaires were considered the base measurement. The demographic questionnaire included questions about age, sex, marital status, literacy level, education level, history of heart disease, history of hospitalization, type of underlying disease, the amount of EF, the patient's experience in using sleep aids and the type, and their experience with using complementary medicine.

The SMHSQ is designed to evaluate the sleep status of hospitalized patients.²⁸ It is a systematic sleep questionnaire for assessing the previous night's sleep. It can be repeated. The questionnaire includes 14 items for assessing subjective sleep time and quality. It includes a Likert scale and a fill-in-the-blank response for every question. The validity and reliability of the SMHSQ questionnaire have been assessed in many studies throughout the world. There is no standard grading in this questionnaire and it is used based on the study.²⁹ The SMHSQ questionnaire was scored in the present study, based on the opinion of experts and specialists and because of the need for sleep status analysis. Scores were between 10 and 50. A score up to 10 indicates the lack of a sleep disorder; a score of 10–22, a slight sleep disorder; a score of 23–36, a moderate sleep disorder; and a score of 37–50, a severe sleep disorder. In Iran, Moyeeni¹³ and Abolhasani³⁰ used this questionnaire for their studies. Abolhasani achieved 91% reliability using the Cronbach α for this questionnaire.³⁰

In the present study, quantitative content validity with the content validity relative (CVR) index and the content validity index (CVI) were used to assess content validity and the value for questions CVR were up to 0.75, 0.79 for questions of CVI, and for the total instrument it was estimated 0.938. The reliability of this questionnaire was also calculated using the Cronbach α coefficient. This questionnaire has an estimated 80% reliability.

There was no intervention on the first night of hospitalization because of the patients' acute conditions. On the following day, questionnaires were completed by the patients concerning their first night of sleep in the hospital. Intervention for the patients was initiated on the second night of hospitalization. Patients in the valerian acupressure group and the acupressure group received acupressure in the Wind Pool point (風池穴 fēng chí xué) behind the head, the glabella point (印堂穴 yìn táng xué) in the forehead, the ear

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