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Effects of acupressure on fatigue of lung cancer patients undergoing chemotherapy: An experimental pilot study

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KEYWORDS

Fatigue;
Acupressure;
Experimental study;
Lung cancer

Summary

Background: This study explored the effects of acupressure on fatigue of lung cancer patients undergoing chemotherapy.

Patients and methods: For this experimental study, 57 subjects were randomly assigned to three groups: acupressure with essential oils ($n = 17$), acupressure only ($n = 24$), and sham acupressure ($n = 16$). Acupoints were Hegu (LI4), Zusanli (ST36), and Sanyingjiao (SP6). All subjects received acupressure once every morning for 5 months, with each acupoint pressed for 1 min. Fatigue, functional status, anxiety, depression, and sleep quality were measured before initial chemotherapy (T0), on Day 1 of third chemotherapy (T1), and on Day 1 of sixth chemotherapy (T2). Outcome differences between groups were analyzed at T0, T1, and T2 by general estimating equations.

Results: After controlling for baseline outcome values, age, and adherence to acupressure, subjects who received acupressure with essential oils and acupressure had significantly less fatigue in daily living activities and sleep better quality at T1 than subjects who received sham acupressure. Subjects who received acupressure with essential oils had significantly better sleep quality at T2 than the sham acupressure group. Subjects who received acupressure with or without essential oils had greater odds of better functional status at T1 than the sham group.

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Conclusion: It is plausible that acupressure with or without essential oils helps lung cancer patients undergoing chemotherapy reduce cancer-related fatigue and increase activity level. Further study is wanted to test this hypothesis.

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Introduction

About 7.6 million people worldwide died from cancer in 2008, accounting for 13% of total mortality,¹ with lung cancer as the top cause of cancer death.^{2,3} Lung cancer patients commonly experience fatigue; 70–96% of patients on chemotherapy and 65–100% of patients receiving radiotherapy report fatigue.^{4,5} Unfortunately, clinicians lack effective methods for treating fatigue.⁵

Cancer-related fatigue (CRF) is defined as subjectively perceived, persistent fatigue and exhaustion associated with cancer and its treatment.⁶ Most Chinese people with lung cancer use traditional Chinese medicine (TCM), e.g., Chinese herbal medicine, acupuncture, acupressure, and qigong therapy, combined with western medicine therapy.^{7,8} Indeed, combining Chinese and western medicine therapy is more effective on lung cancer patients than either treatment alone.⁹ TCM not only reinforces the effects of chemotherapy and avoids its side effects, but also enhances patients' quality of life.

In TCM, symptoms are believed to be caused by an imbalance between Ying and Yang, which influences the operation of *qi*, the energy of life, along meridians in the body to maintain health. When *qi* is blocked, illness will result in parts related to the meridians,¹⁰ which connect with the *qi* of organs at places called acupoints. The body has 365 important acupoints on 14 major meridians.¹¹ Each acupoint is associated with a specific therapy.

Acupressure and acupuncture therapy are based on the same theory and acupoints. Most studies on acupoint therapy have tested the clinical effectiveness of acupuncture. Since the 1970s over 500 randomized clinical trials (RCTs) have examined acupuncture, with a few studies on improving cancer patients' symptoms by acupressure.^{12–16} Only two of them studied CRF.^{13,16} Acupressure has also been shown to control fatigue in patients with end-stage renal disease.^{17,18}

A 1998 systematic review of 500 acupuncture-related RCTs concluded that "current quantity and quality of RCTs still cannot demonstrate the effectiveness of acupuncture."^{19, p.379} A similar conclusion was reached by four 2013 systematic reviews of TCM and CAM for controlling cancer symptoms.^{20–23} The findings were criticized for issues with research design, e.g., small sample size, imprecise definition of disease types, insufficient findings, and uncertain conditions of sample selection. Of the four recent systemic reviews, three investigated the effects of acupuncture,^{20–22} and one investigated the effect of all CAM modalities on CRF.²³ No reviews investigated acupressure.

Compared to acupuncture, acupressure is safe, convenient, and inexpensive; with a little training, it can be used by research personnel, medical care workers, family members and patients themselves.^{12,16,24} Acupressure achieves its effects by applying pressure to acupoints, thus releasing neurotransmitters that transmit signals along

neurons or activate the hypothalamic-pituitary-adrenal axis to regulate endocrine function.^{25,26} Another effect of acupressure is to release brain neurotransmitters, endorphins, and other neurochemicals to reduce symptoms of discomfort^{27–30} and alleviate stress.³¹ The effect of acupressure on CRF has only been examined in cancer survivors, after they had finished chemotherapy.^{13,16} Since CRF appears most serious during chemotherapy, immediately treating CRF will positively enhance cancer patients' quality of life and treatment compliance. Therefore, our study was designed to examine the effect of acupressure on CRF in lung cancer patients receiving chemotherapy.

Methods

Design

For this experimental pilot study with repeated measures, lung cancer patients were recruited from pulmonary wards at a medical center in northern Taiwan from July 2008 to August 2010. This feasibility trial was implemented to help develop a future large trial.

Setting and subjects

Lung cancer patients were included if they met these criteria: (1) receiving conventional chemotherapy, (2) no infection, injury and ulcers around the acupoints, (3) not taking antidepressants or suffering from a psychiatric disorder, (4) >18 years old, (5) never participated in acupressure and any fatigue-related intervention, and (6) willing to learn acupressure and apply it at home. Patients were excluded by these criteria: (1) pregnant, (2) lymphedema at acupressure points, (3) hemoglobin \leq 9 g/dL, hematocrit $<$ 30, (4) using steroids to treat fatigue, (5) moderate-to-severe heart failure or thyroid disorder, and (6) diagnosed with hepatitis and its acute exacerbation.

Patients were screened by physicians in pulmonary wards, who referred possible subjects to a research assistant (RA) for assessment. Patients meeting the study criteria and willing to participate were enrolled. Those who agreed to participate were randomly allocated to three groups by flipping a coin twice. If the flipped coin landed heads two consecutive times, participants were randomized to receive essential oils and acupressure (group A); if the coin landed heads/tails one time, and tails/heads the second time, participants were randomized to receive only acupressure (group B); if the coin landed tails two consecutive times, participants were randomized to receive sham acupressure (group C).

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