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Original Article

Effect of acupressure on sleep quality of middle-aged and elderly patients with hypertension

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ABSTRACT

Purpose: To evaluate the effect of acupressure on blood pressure and sleep quality in middle-aged and elderly patients with hypertension.

Methods: A total of 75 elderly hypertensive patients with sleep disorders were randomly divided into either an experimental group ($n = 38$) or a control group ($n = 37$). All subjects received conventional treatment and health guidance. The experimental group also received acupressure treatment. The score of PSQI (Pittsburgh Sleep Quality Index) and blood pressure were measured and recorded before and after the treatment.

Results: After the intervention, the systolic (SBP) and diastolic blood pressure of the experimental group decreased significantly ($p < 0.01$). There was a significant difference in SBP between the groups ($p < 0.01$). After four weeks of intervention, the total PSQI score in the experimental group was significantly lower compared to the control group ($p < 0.01$).

Conclusion: Acupressure can lower SBP and effectively improve the sleep quality in middle-aged and elderly patients with hypertension.

1. Introduction

Hypertension is one of the most common chronic diseases in elderly and the main risk factor for the cardio-cerebrovascular diseases which can be a serious threat to human health. Hypertension has a high incidence rate in China, and the number of people diagnosed with the disease is expected to grow. With the progression of the disease, patients may suffer from various sleep disorders. A previous survey showed that 63.93% of elderly patients with hypertension had sleep disorders [1]. Sleep disorders can seriously affect the blood pressure in patients suffering from hypertension [2], aggravate the progression of hypertension and interfere with blood pressure control. Furthermore, these sleep disorders are the independent risk factor for complications in patients with other cardiovascular diseases including coronary heart disease and stroke [3]. The common clinical treatment for hypertension in

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patients with sleep disorders is administration of hypotensor in combination with sleep medications. However, this long-term medical treatment has many shortcomings, such as poor adherence [4], and adverse reactions. Therefore, it is of clinical importance to explore safe, effective, convenient, and economical non-drug treatments for managing sleep disorders in hypertensive patients. Our study was based on the traditional Chinese meridian theory where a four-week acupressure intervention was applied to treat sleep disorders in middle-aged and elderly hypertensive patients.

2. Subjects and methods

2.1. Subjects

Patients with primary hypertension (grade 1 and 2) were recruited from the cardiology outpatient department in the Grade III General Hospital in the Fujian province from April to December, 2013. The hypertension diagnostic criteria was based on the "Guidelines for Prevention and Treatment of Hypertension in China" [5]. The inclusion criteria were as follows: (1) complained of sleep disorder, Pittsburgh Sleep Quality Index (PSQI) score > 7; (2) age ≥ 45 years and primary school education or above; (3) no sleep medication; (4) not receiving acupuncture or acupoint massage therapy within a week before study; (5) informed of the study and agreed to participate. The exclusion criteria were as follows: (1) diagnosis of the secondary hypertension; (2) previous diagnosis of heart, liver, kidney or brain function failure, diabetes or other serious complications; (3) diagnosis of communication disorders, mental disorders, personality disorders, intelligence or thinking abnormalities that cannot be resolved; (4) skin diseases or severe skin damage in the treatment areas.

A random number table was used to recruit 75 subjects who met the above-described criteria for this study. The subjects were randomly divided into either the experimental and control group. In accordance with the outpatients sequence number, the participants were numbered sequentially (1st, 2nd, 3rd … 75th). Arbitrary numbers, chosen from a random number table, were read along the same direction of 75 numbers corresponding to the following arrangement; odd numbers were assigned to the experimental group and even numbers were assigned to the control group. A total of 38 subjects were recruited for the experimental group, and 37 subjects were recruited for the control group. There were no differences in age, gender, pathogenesis, antihypertensive, blood pressure or PSQI score between the two groups ($p > 0.05$; Table 1).

2.2. Methods

2.2.1. Conventional treatment and health guidance

All subjects received conventional treatment and health guidance. Based on the individualization principle, patients were treated with s single drug or drug combination which included levamlodipine besylate, hydrogen chlorothiazide, Perindopril, Telmisartan, Valsartan et al. The regular health guidance provided to the participants encompassed information on lifestyle improvements, abstinence from alcohol, reduction in sodium, saturated fat and fat volume intake, and regular exercise. Patients were informed on how to establish a reasonable sleep cycles: 30 min nap at noon and sleep on time at the night. Patients were encouraged to avoid intense mental or physical activity before sleep, refrain from eating too much, drinking coffee, strong tea or any other drinks rich in caffeine. Furthermore, the importance of maintaining the psychological balance and relieve mental stress was emphasized.

2.2.2. Acupressure treatment

The experimental group received acupressure treatment in addition to the conventional treatment and health guidance. The acupoint selection (double sides) included Shenmen (Heart 7) and Taixi (Kidney 3). Shenmen is positioned on radialis flange of ulnaris wrist flexor and ulnaris side of the volar wrist stripes; Taixi is the midpoint between the highest point of medial malleolus and flange of Achilles tendon. Prior to the treatment, subjects washed their hands, trimmed their nails and took a comfortable position. Shenmen and Taixi were rubbed using thumb on the acupuncture points. The area positioned 2 cm from the point was rubbed rhythmically with the force that came from the forearm and wrist. The force was strengthened gradually till the patient felt soreness, local numbness, and even warmth. The acupressure was applied 5 min per point once or twice per day (before the noon break and night sleep, a total of 40 min per day of acupressure). The whole intervention lasted four weeks.

2.2.3. Acupressure guidance of patients and the assessment

The method of acupoint selection, acupressure skills and the key acupressure points were explained to subjects. The acupressure points were demonstrated in the form of small cards to strengthen their effectiveness.

Table 1 – Comparison of subjects between groups before the treatment.

Group	*n*	Age (years)	Gender (cases)		Pathology (years)	Antihypertensive (species)		SBP (mmHg)	DBP (mmHg)	PSQI
			Male	Female		1	2			
Experimental group	38	59.84 ± 7.20	14	24	9.16 ± 5.30	23	15	136.21 ± 11.94	78.37 ± 9.49	12.16 ± 2.80
Control group	37	58.95 ± 8.29	12	25	8.43 ± 4.43	23	14	133.08 ± 11.39	78.86 ± 8.91	11.68 ± 3.12
t/χ^2		−1.195	0.161		0.652	0.021		1.161	−0.273	0.705
p		0.232	0.688		0.516	0.884		0.250	0.785	0.483

SBP = systolic blood pressure; DBP = diastolic blood pressure; PSQI = Pittsburgh Sleep Quality Index.