EFFECT OF MEDITATION ON ADRENALINE, NOREPINEPHRINE AND BLOOD PRESSURE CONTROL OF ELDERLY HYPERTENSIVE PATIENTS IN COMMUNITY

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ABSTRACT

Objective: *To explore the effect of meditation on adrenaline, norepinephrine, and blood pressure control of elderly hypertensive patients in the community.*

Methods: *The clinical data of elderly hypertensive patients treated in our hospital were analyzed retrospectively. From October 2017 to October 2018, 94 patients were selected as experimental subjects. All patients' information was entered in an Excel table. The patients were all numbered and divided into two groups (47 cases in each group) according to the odd and even numbers. Among them, 47 patients with odd numbers received routine nursing, while 47 patients with even numbers received meditation intervention as observation group.*

Results: *Before intervention, there was no significant difference in negative emotion, hormone level and blood pressure level between the two groups (P>0.05). After intervention, the negative emotion score, hormone level and blood pressure level in the observation group were significantly lower than those in the control group (P<0.05). The living quality scores in the observation group were significantly higher than those in the control group (P<0.05).*

Conclusion: *Meditation intervention for elderly hypertensive patients in the community could obviously relieve their negative emotions, reduce their levels of adrenaline and norepinephrine, improve the effect of blood pressure control and improve their living quality.*

Keywords: *Elderly hypertensive patients in the community, meditation, hormone level, blood pressure level; living quality.*

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Introduction

Hypertension is a common chronic disease with a long course. It can easily induce serious complications such as cardiovascular and renal failure, posing a great threat to patients' physical and mental health. With the improvement of people's living standard and the change of diet structure, the incidence of hypertension is on the rise year by year. It is difficult to achieve the expected effect only by taking unilateral medication, and even some patients resist medication[(1)]. Therefore, it is necessary to cooperate with certain behavioral and mental intervention on the basis of disease treatment, which is helpful to reduce the patient's physical and mental burden and improve the curative effect[(2)]. This paper mainly discusses the effect of meditation on adrenaline, norepinephrine, and blood pressure control of the elderly hypertensive patients in the community. It is presented as follows:

Data and methods

General information

A total of 94 patients were included in this study. The starting time of the selected cases was October

2017 and the ending time was October 2018. The cases were divided into two groups according to the odd and even numbers, with 47 cases in each group. The control group included 25 males and 22 females, aged 62-84 years with an average of (73.04±11.12) years. The observation group included 21 males and 26 females, aged 63-83 years, with an average of (72.98±10.45) years. Comparison of general data between the two groups showed homogeneity (P >0.05).

Inclusion criteria:

• Meeting the diagnostic criteria of hypertension in Chinese Guidelines for Prevention and Treatment of Hypertension[3];

• Complete medical records and clinical files;

• Patients and their families are aware of the existence of this experiment and are willing to take the initiative to participate.

Exclusion criteria:

• Patients with secondary hypertension and acute and chronic physical diseases;

• Suffering from lumbar disc herniation and arthritis affecting meditation;

• Those who participated in other health promotion projects 15 days before participating in the experiment;

• Suffering from malignant tumor, serious infection and coagulation dysfunction;

• Suffering from serious organic diseases in heart, liver, lung, spleen and other organs;

• Suffering from mental disorder or mental retardation, and unable to communicate normally.

Method

The patients in the control group received routine nursing and were told to take medicine on time and in quantity. Their blood pressure levels were measured and recorded every day, and follow-up was carried out. In the observation group, meditation intervention was carried out. Cardiovascular medical staff cooperated with meditation therapists to learn the basic data and actual physical quality of the elderly hypertensive patients in detail, and jointly developed targeted meditation training courses guiding the patients to relax, adjust their breathing and concentrate their attention on the background of specific music and pictures.

Among them, certain postures were taken in physical relaxation, such as sitting quietly on the seat cushion and closing eyes, sitting straight on your back, and putting your hands on your legs to achieve physical relaxation; for breathing adjustment, abdominal breathing is used, with the left hand on the abdomen and the right hand on the chest. The patients were told to relax the muscles of the whole body and inhales through the nasal cavity. At this time, the patients should try their best to hold the abdomen and keep the chest still, and then exhales slowly, with abdomen shrinking during the period.

The patients should maintain the minimum range of chest activity, that is, rest breathing; focusing attention is to focus the attention on breathing, graphics or pictures. Take breathing as an example. The patients should focus on the feeling when breathing leaves nose and mouth. Since itit is possible to be distracted during practice, the patients should remind themselves repeatedly to bring their attention back to the breath as much as possible. The patients were told to repeat continuously. They were able to carry out the method smoothly after grasping the above contents. At the same time, meditation therapists may also give attention to mental awareness and voice meditation training, in which mental awareness includes different feelings such as thoughts, bodies, and emotions in the mind.

They may guide patients to view the above contents with a simple and detached attitude, rather than just paying attention to any one of them; phonetic meditation refers to focusing attention on a particular pronunciation. The main training modes of meditation training include group training and family training. The group training refers to concentrated training in one afternoon every week, with one hour each time. The training lasts for eight weeks; family training refers to that patients take meditation exercises at home twice a week.

Observation indicators

Negative emotions

Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were used for evaluation. Each scale includes 20 items, and each item is divided into 1-4 grades. Normal: <50 points; Mild: 50-60 points; Moderate: 61-70 points; Severe: >71 points. The patients were measured before and 8 weeks after intervention.

Hormone level

ELISA kit was used to measure the levels of epinephrine and norepinephrine.

Blood pressure level

Systolic blood pressure and diastolic blood pressure were measured before and after intervention.

Living quality

The QLQ-A30 scale was used for evaluation, including physical function (0-100 points), emotional function (0-100points), cognitive function (0-100points), social function (0-100points) and vitality (0-100points). The higher the score is, the better the living quality is.

Statistical methods

All the patients in this study were analyzed by SPSS17.0 software, and the data were tested by T and x^2, respectively. The test standard was: P<0.05.

Results

Negative emotions

See Table 1 for comparison of negative emotions before and after intervention between groups.

Group	Case	SAS		SDS	
		Before intervention	After intervention	Before intervention	After intervention
Observation group	47	65.33±8.46	45.36±5.07	63.97±8.12	47.08±5.16
Control group	47	65.32±8.42	50.22±5.10	64.02±8.09	51.31±5.04
t	/	12.337	4.633	0.030	4.020
P	/	0.000	0.000	0.488	0.000

Table 1: Comparison of negative emotions ($\bar{x}$±s, points).

Blood pressure level

See Table 2 for comparison of blood pressure level before and after intervention between groups.

Group	Case	Diastolic pressure		Systolic pressure	
		Before intervention	After intervention	Before intervention	After intervention
Observation group	47	89.42±5.19	76.13±4.88	157.19±5.76	131.47±5.21
Control group	47	89.50±5.23	82.45±4.32	157.20±5.84	146.84±5.03
t	/	0.074	6.648	0.008	14.550
P	/	0.470	0.000	0.497	0.000

Table 2: Comparison of blood pressure level ($\bar{x}$±s, mmHg).

Hormone level

See Table 3 for the comparison of hormone level before and after between groups.

Living quality

There is significant difference in living quality between groups (P<0.05), as shown in Table 4.

Group	Case	Norepinephrine		Epinephrine	
		Before intervention	After intervention	Before intervention	After intervention
Observation group	47	393.12±25.47	354.28±16.89	167.35±20.47	136.12±8.49
Control group	47	392.88±25.42	390.47±20.10	168.04±20.50	165.34±8.51
t	/	0.046	9.450	0.163	18.204
P	/	0.482	0.000	0.435	0.000

Table 3: Comparison of hormone levels ($\bar{x}$±s, ng/L).

Group	Case	Somatic function	Emotional function	Cognitive function	Social function	Vitality
Observation group	47	75.33±5.89	79.84±8.02	80.56±8.44	74.20±6.75	74.23±6.49
Control group	47	67.46±5.73	71.02±7.49	71.15±8.38	66.33±6.41	66.07±7.52
t	/	6.566	5.510	5.424	5.796	5.632
P	/	0.000	0.000	0.000	0.000	0.000

Table 4: Comparison of living quality score ($\bar{x}$±s, score).

Discussion

Hypertension tends to occur in the elderly population. With the increase of age, all the systems and functions of the body will deteriorate. The resistance and immunity will be poor, and a variety of basic diseases will generally be combined[4]; in addition, most elderly patients lack sufficient correct understanding of the treatment of hypertension. Under the influence of worrying about their own life safety and suffering from long-term pain, they are prone to negative emotions such as anxiety, tension and panic, which affect the smooth development of treatment and nursing work, reduce the comfort of patients and go against the prognosis[5].

Studies have shown that meditation training can eliminate the negative emotions of elderly hypertensive patients and improve their comfort[6]. Meditation intervention originated from Eastern Buddhism meditation. As a way of practice, it has been introduced from India to China, and has gradually developed into an important means of psychotherapy, and achieved good results. Meditation intervention, as a comprehensive psychological and behavioral training method, requires individuals to concentrate on a specific object in a conscious state and spend the whole process of relaxation and concentration. In the process of implementation, patients are required to carry out the training of mental willpower through self-regulation of consciousness and attention exercises, so as to obtain a quiet state and experience. During the period, relaxation is emphasized in many

aspects such as body, cognition and psychology. The patients concentrate their spirits highly, adjust their breathing and gather their thoughts. When inhaling, they imagine the warm sunshine shining on the earth in their minds. When exhaling, they imagine the body sinking slowly, and focus their vision and consciousness on a certain point to ensure that the body and the painting are integrated into one, so as to achieve mental calm. Through the above mode, patients can relax their whole body muscles. Even, during the period of drug treatment, they can have a pleasant experience, enter a state of no anxiety and depression, and fully enjoy the peace of life[7]. The results showed that SAS and SDS scores of the observation group were significantly lower than those of the control group after intervention ($P<0.05$). It is suggested that meditation can help relieve anxiety and depression of patients, which is consistent with the above analysis.

It may be because meditation can effectively adjust cortex of brain limbic system, focus attention, reduce sympathetic nerve excitability, improve alpha wave coherence of frontal EEG, avoid excessive emotional fluctuation of patients, calm down their over-thinking, fully relax their brain and whole body muscles, and help patients always keep stable emotions in cooperation with treatment and nursing[7-8]. Meditation also has some influence on the levels of adrenaline and norepinephrine. The results of this study showed that hormone levels in the observation group were significantly lower than those in the control group after intervention ($P<0.05$). It is suggested that meditation intervention is helpful to reduce the levels of adrenaline and norepinephrine and regulate the disorder of the internal environment. The reasons are as follows: meditation has different effects on plasma catecholamine on the basis of genetic polymorphism of brain-derived neurotrophic factor and tea phenoloxymethyltransferase; it is also possible that meditation intervention can effectively regulate the sympathetic adrenal medullary axis, and promote the decrease of hormone levels in patients with daily stress.

Patients can receive drug intervention on time and in a stable internal environment, which ensures the level of blood pressure control[9]. After intervention, the systolic blood pressure and diastolic blood pressure in the observation group were significantly lower than those in the control group ($P<0.05$). It is suggested that meditation is helpful to lower blood pressure level. In addition, the whole process of meditation intervention is mainly to guide the patient to breathe to maintain the stability of the internal environment of the body. The method is simple and easy to learn. It does not need complicated instruments, and has low technical cost, without harm to the body. The patient is relaxed physically and mentally, and can gradually adapt to the normal rhythm of life. As a result, mediation is very popular among patients and their families. The results of this study showed that the scores of living quality in the observation group were significantly higher than those in the control group ($P<0.05$), which once again proved the feasibility and effectiveness of meditation intervention.

To sum up, the implementation of meditation in elderly hypertensive patients in the community has a good effect and is worth popularizing.

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