

1. Introduction

Over the past decade, interest in complementary alternative medicine (CAM) has increased significantly. The prevalence of CAM is as high as 20 % in the United Kingdom [1] and up to 65 % in Germany [2]. In Japan and Korea, the practice of CAM is even more widely used; it is used by up to 75 % of doctors in improving the health of their patients [3]. Acupuncture, as one of the types of complementary medicine, is used in the treatment and prevention of many diseases, including arterial hypertension [4]. Acupuncture is one of the factors that can significantly increase the nonspecific resistance of the organism. Its feature is the ability to directly influence the immuno-biological protective properties of the body, both local and general, thereby increasing its adaptive capacity [5]. Currently, clinicians have a high commitment to medical methods of treatment (whose role is unquestionable) and some wariness regarding the physical factors of treatment, which is most likely due to a lack of awareness of doctors. This may be due to the lack of recommendations on the use of physiotherapeutic methods of treatment with modern devices in the existing standards of patient management and the lack of recommendations for general practitioners and local physicians [6]. Patients with arterial hypertension (AH) and low cardiovascular risk do not need immediate prescription of hypertensive therapy. In the early stages of the disease, complementary alternative medicine methods can be applied to them [7]. The theoretical basis of reflex-adaptation and reflex-prevention is the modern theory of stress and adaptation, which organically combines the domestic direction of hormone-humoral therapy by G. Selye. Adaptogenic set of acupuncture points allows you to simultaneously selectively regulate the function of organs and systems on the principle of segmental and autonomic innervation. These features of the methods of reflex therapy provide the development of combined-specific and non-specific – therapeutic and prophylactic effects [8].

ALTERNATIVE METHOD FOR TREATING ARTERIAL HYPERTENSION WITH THE USE OF THE «MOXI» DEVICE

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Abstract: The aim of the article was to study of the influence of the apparatus “MOXI” as an alternative method for the correction of arterial hypertension and improving the quality of life of patients using acupuncture reflexotherapy.

Materials and methods. The study was conducted in 36 patients with arterial hypertension of 1 stage, low risk, with the experience of the disease from 1 to 2.5 years, without taking antihypertensive therapy. The average age of patients was $41.3 \pm \pm 2.6$ years. The state of the psycho-emotional sphere was assessed by the SAN test. The determination of the general non-specific adaptation reaction according to Garkavi-Kvakina-Ukolova was carried out. Control of blood pressure and pulse, was carried out in the center, and by the diaries of self-control. We calculated the arithmetic mean of blood pressure for the day and week. Baseline blood pressure was 152/106 mmHg when measured at the center and 149/102 mmHg at home.

Results. The obtained results indicate that the adaptogenic set of acupuncture points allows you to simultaneous selective regulation of the function of organs and systems according to the principle of segmental and vegetative innervation. After a course of preventive recovery, a statistically significant ($p < 0.05$) normalization of well-being indicators according to the SAN test was noted from 4.0 to 4.6 points, activity from 3.9 to 4.4 points, mood from 3.9 to 4.7 points. All patients showed a pronounced reduction of complaints and autonomic disorders. In addition, we revealed improvement in the functional state of the cardiovascular system. So, systolic pressure decreased from 152 ± 1.5 mmHg up to 134 ± 2.4 mmHg, and diastolic from 106 ± 0.7 mmHg to 82 ± 1.8 mmHg.

Conclusions. As a result of the prophylactic treatment, all patients registered a normal type of adaptive response, since the training reaction was detected in 44.4 % of cases, the calm activation reaction was 22.2 %, in the area of increased activation – 33.4 %. The use of the “MOXI” device in the treatment of patients with arterial hypertension of 1 type, with a low level of risk gives a positive therapeutic effect in the normalization of the psycho-emotional state of patients. It normalizes non-specific adaptation reactions of the body, and allows you to achieve a decrease in blood pressure to normal levels.

Keywords: acupuncture reflexology, arterial hypertension, prevention of hypertension, alternative treatment.

With the development of modern science and technology, the methods of electropuncture, laser puncture, cryopuncture, thermopuncture, EHF puncture and others have become common. Methods of reflexology have many advantages: the absence of side effects, including allergies, the relatively rapid receipt of a positive effect and almost no contraindications. Currently, there has been a significant increase in the growth of specific weight, the use of methods of reflexotherapy in various nosological units; the scope of application of the methods of reflexotherapy in the treatment of cardiovascular pathology, namely hypertension of I–II type, dyscirculatory encephalopathy of various genesis, coronary heart disease and angina pectoris [9, 10]. However, in the literature available to us, we have not met studies of the use of methods of reflexotherapy at home, with the aim of primary and secondary prevention of diseases. As practical measures for the prevention of diseases and hypertension in particular, methods for increasing the adaptive capacity should be widely used, providing an increase in nonspecific or cross-resistance.

Improvement of existing and development of new means and methods of prevention is one of the most important problems of medicine. Rational prevention is based primarily on increasing mobilization readiness and the effect of the protective and adaptive mechanisms of the patient's body [11]. For this purpose, Korean specialists have developed a unique reflexotherapy apparatus “MOXI” for home use.

The aim of the research. To study the effect of the “MOXI” device on the correction of arterial hypertension, improving the quality of life of patients.

2. Materials and methods of the research

We have created a group of 36 patients, demonstration centers “NovuMedical” of Ukraine, who underwent rehabilitation in July – September 2018, using a random sampling method, with arterial hypertension of 1 type, low risk, with experience from 1 to 2.5 years, not taking antihypertensive therapy. The diagnosis was established by a medical institution at the place

of residence of patients. The average age of patients was 41.3 ± 2.6 years. All patients had complaints of increased blood pressure, headaches of varying intensity, irritability, instability of mood, poor sleep, performance decrement. All patients were given recommendations on a healthy lifestyle, diet, physical activity and sleep patterns. Control of blood pressure and pulse, was carried out in the center, and the diaries of self-control. Patients measured blood pressure and pulse at home at 7 and 19 hours daily and fixed the meanings in the self-control diary.

The state of the psycho-emotional sphere was assessed by the SAN test. A general non-specific adaptive response was determined, the indicator of which was the Garkavi-Kvaki-na-Ukolova index [12]. In accordance with this, the ratio of lymphocytes to segmented neutrophils in a leukocyte formula of blood 0.30 and less indicates the presence of stress, 0.31–0.50, indicates a training reaction, 0.51–0.70 – a reaction of calm activation, 0.71 and above – increased activation reaction. The survey was carried out before the start of procedures and after 30 days of preventive treatment. Before treatment, the normal type of adaptive reactions in the examined patients was detected in 75 % of cases, of which the training response was noted in 50 %, the calm activation reaction – 18.8 %, the increased activation reaction in 6.2 % of cases, and the stress response registered in 25.0 % of the surveyed. The survey was conducted in the medical laboratory SINEVO, the laboratory is certified according to the international quality management standard ISO 9001:2000. All results were statistically processed by Student's and Mann Whitney methods taken for small samples using the Statistica 6.0 computer program.

The calculation of the arithmetic mean value of blood pressure per day and week was carried out. Baseline blood pressure was 152/106 mmHg, when measured at the center and 149/102 mmHg at home. With antihypertensive treatment, patients underwent acupuncture reflex therapy with effects on acupuncture points and study of the meridians of the kidneys, gall bladder and pericardium. The impact on acupuncture points and meridians was carried out using the "MOXI" apparatus.

"MOXI" (Korea) is a device for acupuncture, effects on active points (AP) and study of meridians. The device uses preformed physical factors: infrared heat up to 770 nm, with the ability to control the temperature from 40 to 70 degrees, which allows not only to warm the AP, but also to cauterize them. Tourmaline insert to enrich the site of impact with negative air ions – 1000 ions per $\text{cm}^3 \pm 200$, constant magnetic field – 30 mT, low-frequency vibration – 3 modes (10–30 Hz), as well as low-energy laser radiation with a wavelength of 630 nm, power 10 mW.

Thus, acupuncture points are simultaneously affected by several preformed physical factors. The device uses: constant magnetic field, infrared heat, ionization, mineral therapy, vibration, all of them are well studied and scientifically based on their use for therapeutic and prophylactic purposes [13, 14], and low-energy laser radiation [15, 16]. The basis of the mechanism of action of physical factors is the conversion of their energy into the energy of biological processes, as a result of which therapeutic effects develop — anti-inflammatory, sedative, vasodilator, analgesic, trophic, etc. [17, 18].

The target level of blood pressure reduction was considered 140/90 mmHg. Selection of points for a session was carried out individually, from a number of points: tai - si, kun - lun, lao - gun, nei - gua, zu - san li, san - yin - jiao, shao - hai, he - gu, fen - men, jian - jin, yun - chuan, 4–6 points for a session. The meridians of the kidneys, gallbladder, and pericardium were worked out in order to improve the energy flow through them. The duration of the procedure is 30 minutes, sessions were held

daily, for 1–2 minutes per point, all active factors included in the device were used. Evaluation of the results was carried out in a month according to the survey, the dynamics of complaints, indicators of blood pressure and pulse measured in the center and data of patient self-control diaries, study of the type of adaptive response of the organism.

3. Results of the research

All patients tolerated the procedure well, noted a positive trend in improving well-being, headaches disappeared, dizziness ceased to bother, sleep improved, the morning awakening became joyful and vigorous. After a course of preventive recovery, a statistically significant ($p < 0.05$) normalization of well-being indicators according to the SAN test was noted from 4.0 to 4.6 points, activity from 3.9 to 4.4 points, mood from 3.9 to 4.7 points. All patients showed a pronounced reduction of complaints and autonomic disorders. Revealed improvement in the functional state of the cardiovascular system. So, systolic pressure decreased from 152 ± 1.5 mmHg up to 134 ± 2.4 mmHg, and diastolic with 106 ± 0.7 mmHg, to 82 ± 1.8 mmHg. There was also a trend towards normalization of the pulse from 91 ± 1.3 beats per 1 minute, to 79 ± 1.1 beats per 1 minute, and at home from 82 ± 0.7 to 68 ± 0.7 (Table 1).

Table 1
Dynamics of blood pressure and pulse

The initial state of BP and Ps		BP and Ps after treatment	
BP and Ps at the center	BP and Ps at home	BP and Ps at the center	BP and Ps at home
$152 \pm 1.5 / 106 \pm 0.7$ mmHg	$149 \pm 1.4 / 102 \pm 1.1$ mmHg	$134 \pm 2.4 / 82 \pm 1.8$ mmHg	$129 \pm 2.2 / 79 \pm 2.4$ mmHg
91 ± 1.3	82 ± 0.7	79 ± 1.1	68 ± 0.7

As a result of prophylactic treatment, a normal type of adaptive response was recorded in all patients, while prior to the beginning of treatment, 9 patients (25 %) had a pathological adaptive response. So, after the treatment, the training reaction was detected in 44.4 % of cases, the reaction of calm activation in 22.2 %, in the zone of increased activation – 33.4 %. The obtained results subscribe to the fact that the adaptogenic set of acupuncture points allows you to simultaneous selection of the control and system according to the principle of segmental and autonomic innervation. These features of the methods of reflexotherapy provide the development of combined specific and nonspecific therapeutic and prophylactic effects.

4. Discussion

It is well known that hypertension is the most common non-infectious disease in the world. According to WHO, more than half the population suffers from this disease. Patients with a degree of disease are, as a rule, socially active and able to work, therefore timely and adequate treatment of such patients carries economic benefits, both for the state and the patient himself. According to the National Clinical Recommendations of RSC (2011), a short history of the disease, an increase in blood pressure up to type 1, the absence of risk factors and target organ damage define the cardiovascular risk as low, which does not imply immediate prescription of drug therapy. The leading links of pathogenesis in the initial stages of the disease is the breakdown of the neuro-humoral regulation of arterial pressure, the center of congestive arousal in the cerebral cortex, the depletion of adaptive mechanisms. In this aspect, it can be assumed that alternative methods,

in particular acupuncture, with simultaneous exposure to AP with several preformed factors, are aimed at correcting the above mentioned pathogenesis, and in combination with non-drug methods of influencing the disease (modification of lifestyle, diet, motor activity, quitting smoking) will also be effective. There were conducted several studies, the results of which showed the effectiveness of the use of acupuncture in the treatment of hypertension [2, 4]. The therapeutic effect in this case is realized through stress relief, balancing the basic nervous processes and neuro-vascular reactions, restoring and harmonizing the adaptive reactions of the body [14]. The combined use of preformed factors in the "MOXI" device for acupuncture, the selection of appropriate points of influence are aimed at correcting these violations. As a result of exposure to the "MOXI" apparatus, a cascade of body reactions occurs, which is confirmed by studies by other authors [6, 13]. The use of acupuncture in the treatment of hypertension has not a large, but a statistically significant effect on the level of blood pressure, which was once again confirmed by our study.

The course of prophylactic blood pressure correction with the use of acupuncture reflex therapy with the "MOXI" device

allows optimizing the balance between the sympathetic and parasympathetic parts of the autonomic nervous system by activating adaptive-adaptive mechanisms. It promotes the reduction of complaints and autonomic disorders, as evidenced by subjective and objective signs.

The use of the "MOXI" device in the treatment of patients with arterial hypertension of 1 type, with a low level of risk gives a positive therapeutic effect in the normalization of the psycho-emotional state of patients. It normalizes non-specific adaptation reactions of the body, and allows you to achieve a decrease in blood pressure to normal levels.

Acupuncture reflexology is well tolerated by patients, does not cause side effects, can be successfully used at home with the aim of primary and secondary prevention of arterial hypertension.

Due to the fact that the therapeutic effect is realized through stress relief, balancing the basic nerve processes and neurovascular reactions, restoring and harmonizing the body's adaptation reactions, the "MOXI" device can be used to prevent a large number of diseases by individually selecting of the appropriate acupuncture points.

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