Duration of preservation of the clinical effect of laser reflexotherapy in patients angina pectorisM.Yu. Sapozhnikov1, N.V. Spassov2 (1Chuvash State University named after I.N. Ulyanov, Cheboksary,2GOU DPO "Institute for Advanced Training of Doctors", Cheboksary)

Duration of clinical effect of laser conservation effort angina patients Sapozhnikov MY1, Spasova NV2 1Chuvash State University, Cheboksary (Cheboksary, Russia), 2Institute of Postgraduate Medical (Cheboksary, Russia)

RESUME

The aim of the study - to study the duration of clinical effect of laser conservation effort angina patients against a background of basic medical treatment. Material: 251 patients angina core group subjected to laser therapy and 97 - the comparison group. Methods of examination: Map-profile, ECG, bicycle ergometry, six-minute walk test before the study, after 15 days, 1, 3, 6 and 12 months. When laser therapy was used setting Ulf-01 Generation radiation wavelength 0.63 nm. Significant improvement in the patients maintained 6 months. Conclusion: The effect of laser therapy on the background of basic medical treatment persists for at least 6 months.

Keywords: angina, laser therapy, a prospective surveillance, clinical picture.

SUMMARY

The aim of the investigation was to study the duration of the preservation of the clinical effect of laser therapy in patients with exertional angina pectoris against the background of basic drug treatment. Material: 251 patients with exertional angina of the main group who underwent laser therapy and 97 - the comparison group. Survey methods: card-questionnaire, electrocardiography, bicycle ergometry, six-minute walk test before the study, after 15 days, 1, 3, 6 and 12 months. For laser therapy, an ULF-01 device generating radiation with a wavelength of 0.63 nm was used. A significant improvement in the patients' condition lasted for 6 months. Conclusion: the effect of laser therapy against the background of basic drug treatment lasts for at least 6 months.

Key words: exertional angina, laser therapy, prospective observation, clinical picture.

Introduction

Low-intensity laser radiation has been actively used in the treatment of cardiac patients for more than 2 decades. The effectiveness of low-intensity laser radiation can be explained by its powerful inhibitory effect on lipid peroxidation processes. Under the action of laser radiation, there is an increase in the activity of blood enzymes that neutralize free radicals (catalase, ceruloplasmin), the number and activity of which are significantly reduced under conditions of ischemia and hypoxia [9]. As a result, there is a decrease in lipid and cholesterol peroxidation [6] and an increase in the antioxidase protection of cells [5]. In addition, the mechanisms that implement the angioprotective effect of low-intensity laser radiation are the anti-inflammatory effect [15], the ability to potentiate the synthesis of nitric oxide by the endothelium of the vascular wall [12], causes a pronounced analgesic effect, etc. However, there is not enough information in the literature on how long the achieved positive clinical effect of laser reflexotherapy lasts.

Purpose of the study: To study the duration of the retention of the clinical effect of laser reflexology in patients with exertional angina.

Materials and methods

The studies involved patients with clinical signs of exertional angina identified by Rose's questionnaire (G. Rose, 1976) and ischemic veloergometric (VEM) test (348 people). All patients were randomly divided into 2 groups: the main group (251 people), in which a course of laser reflexotherapy was carried out against the background of basic drug therapy, and a comparison group (97 people), in which all patients received only basic drug treatment.

The main criterion for enrolling patients in the study was the presence of exertional angina, confirmed by a positive VEM test.

Of the 251 patients of the main group, 165 (65.7%) were represented by middle-aged men 57.6 \pm 2.2 years; in the comparison group, out of 97 patients, there were 71 (73.2%) men, mean age 57.7 \pm 3.4 years. There were significantly fewer women in the study groups - 34.3% in the main group and 26.8% in the comparison group, and their average age was 59.4 \pm 2.5 and 59.3 \pm 4.1, respectively.

All patients included in the study received basic drug therapy: beta-blockers, angiotensinconverting enzyme inhibitors, calcium antagonists, nitrates, statins, antiplatelet agents (aspirin).

The following research methods were used:

- a questionnaire card based on the WHO-recommended standardized Rose's questionnaire, which was completed for each patient at the beginning and end of the study, as well as 1, 3, 6 and 12 months after its completion;

- stress VEM test, which was performed on all subjects included in the study for selection into both groups. Subsequently, the load VEM test was performed after the completion of the course of laser reflexotherapy in the main group after 15 days of observation, in the comparison group and during each control examination: after 1, 3, 6 and 12 months;

- a six-minute walk test, carried out in all patients at the beginning of the study, after completion of treatment or observation and during each follow-up examination (1; 3; 6 and 12 months). The distance covered by the patient in 6 minutes at the maximum possible walking pace was taken into account.

Laser reflexotherapy was carried out at all points of acupuncture of the meridians of the heart and pericardium using the ULF-01 device, which generates continuous laser radiation with a wavelength of 0.63 μ m, with an output power flux density of 0.1-10 mW / cm2... The method of dosimetry of laser radiation, developed by A.F. Pavlov, was used. et al. (1985). The duration of laser exposure to each acupuncture point was determined by the dynamics of the magnitude of the electric potential relative to the initial level.

Research results and discussion

In the main group of patients, the weekly number of angina attacks was initially 9.6 ± 1.4 , and the weekly need for nitroglycerin for their relief was 11.9 ± 1.9 tablets, in the comparison group these indicators were 10.8 ± 1.2 and 11, 6 ± 1.5 , respectively. Re-examination of patients in the main group at the end of the course of laser reflexotherapy showed a decrease in the weekly number of angina attacks to 2.4 ± 1.6 and the weekly demand for nitroglycerin to 2.7 ± 2.1 . After 1 month, the weekly number of angina attacks was 2.4 ± 1.6 (p <0.05) episodes, and the weekly need for nitroglycerin was 2.7 ± 2.1 (p <0.05) tablets. 3 months after laser reflexology, a weekly number of angina attacks and a weekly need for nitroglycerin

increased to 6.1 ± 2.3 and 5.7 ± 3.6 at p <0.05, after 6 months they were 6.3 ± 3.1 and 8.1 ± 5.2 , respectively, and only to the end of the year approached the initial values. In the comparison group, the dynamics were insignificant and ambiguous.

The distance covered during the six-minute walk test in patients of the main group before the start of laser reflexotherapy was 412.1 ± 12.4 m, in the comparison group it was 425.4 ± 11.7 m. By the end of the course of laser reflexology in patients of the main group it was 489.9 ± 11.8 m (p <0.001), after 1 month - 492.3 ± 13.4 (p <0.01), after 3 months - 459.8 ± 21.4 (p <0 , 05), after 6 months and 1 year - 438.4 ± 28.7 and 419.2 ± 39.4 , respectively. In the comparison group, following a statistically insignificant increase in the distance traveled after 15 days from 425.4 ± 11.7 to 459.4 ± 12.9 , there was a gradual slow decrease.

The change in the results of the VEM test within a year after the course of laser reflexotherapy in patients of the main group is presented in table. 1. The increase in work performed by the 15th day of treatment continued to grow within 1 month, later it underwent a slow decrease, but even after a year this indicator remained slightly higher than the initial level. Chronotropic and inotropic reserves, as well as the value of the double product, had similar dynamics. The duration of the VEM test, as the main indicator of the effectiveness of the performed exposure, after 1 month increased by 0.3 minutes, after 3 months it decreased by 0.3 minutes, after 6 months - by 1.2 minutes, and after a year the decrease was 1, 9 minutes compared to the test time at the end of the laser reflexology course.

Table 1

Показатели	До лечения, n = 251	После лечения, n = 218	через 1 месяц, n = 103	через 3 месяца, n = 67	через 6 меся- цев, n = 31	через 1 год, n = 25
Выполненная работа, кгм	$1661,2 \pm 324,1$	2501,2 ± 256,9 ***	2700,1 ± 297,1 *	$2410,0 \pm 321,4$	$1950,0 \pm 421,0$	$1710,5 \pm 487,5$
Аэробная мощ- ность миокарда, %	$56,6 \pm 5,2$	$57,0 \pm 4,8$	$58,2 \pm 5,4$	$57,4\pm6,7$	$56,9 \pm 8,9$	$55,8 \pm 11,2$
Двойное произведение, ед.	$179,5 \pm 7,8$	$180,0\pm8,4$	$181,1 \pm 8,9$	$179,3 \pm 10,4$	$178,8\pm14,3$	$179,8\pm20,1$
Хронотропный резерв, уд./мин.	$34,9 \pm 4,5$	40,2 ± 4,1 ***	$42,5\pm5,8$	$40,8 \pm 7,6$	$38,1 \pm 9,4$	$35,2 \pm 16,4$
Инотропный резерв, мм.рт.ст	$36,1 \pm 3,2$	40,3 ± 2,9 *	$41,8 \pm 4,7$	$40,1 \pm 5,8$	37,8 ± 8,7	$36,9 \pm 14,0$
Длительность нагрузки, мин.	$5,6 \pm 0,9$	7,8 ± 1,1 ***	8,1 ± 1,8	$7,5 \pm 2,7$	$6,6 \pm 4,4$	$5,9 \pm 8,9$
Толерантность к физичекой нагрузке, кгм/мин.	341,3 ± 42,5	463,1 ± 41,2 ***	481,2 ± 52,4 *	$445,7 \pm 67,9$	397,8 ± 87,5	338,7 ± 101,8
Длительность восстановительно- го периода, мин.	5,1 ± 1,1	4,7 ± 0,7 *	$5,1 \pm 1,1$	4,9 ± 1,9	$4,7 \pm 2,1$	$4,9 \pm 3,2$

Dynamics of VEM-test indices in patients of the main group during prospective observation

Примечание: *** - p < 0,001, * - p < 0,05

Nevertheless, the duration of the VEM test one year after treatment was slightly longer than before the start of laser exposure. Exercise tolerance had a similar dynamics.

The results of the VEM test of patients in the comparison group, carried out at the beginning of the study, were comparable to those of the main group, and further their dynamics was insignificant and ambiguous. So, the work performed at the beginning was 1891.2 ± 345.6 kgm, after 15 days - 1905.2 ± 387.3 , after 1, 3, 6 and 12 months it was 1809.9 ± 426.0 , 1900.4 ± 511.2 , 1862.4 ± 613.5 and 1825.1 ± 736.2 kgm, respectively. The duration of the load at the beginning of the study was 6.6 ± 1.3 minutes, after 15 days 6.5 ± 2.4 minutes, and after 1, 3, 6 and 12 months - 6.2 ± 2.6 , 6, 5 ± 3.2 , 6.3 ± 3.8 , and 6.2 ± 4.6 minutes, respectively. Other indicators of the VEM test

also did not undergo significant changes.

conclusions

It was found that the positive clinical effect achieved as a result of laser reflexotherapy in patients with exertional angina lasts for at least 6 months. An increase in the positive effect was revealed within one month after the completion of the course of laser therapy in the form of a decrease in the weekly number of angina attacks and a weekly need for nitroglycerin, an increase in the distance traveled in 6 minutes, and an improvement in the VEM test indicators. The method can be used in the complex therapy of exertional angina. In order to optimize the effect, the course of laser reflexology is recommended to be carried out 2 times a year.

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