Respiratory function in patients with exertional angina and its dynamics under the influence of laser reflexology

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Function of external respiration of patients with angina pectoris and its dynamics under the influence of laser acupuncture

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SUMMARY

The aim of the study was to study the state of the function of external respiration in patients with exertional angina and the effect of laser reflexotherapy on it. The material of the study was 348 patients with ischemic heart disease, which constituted the main (251 people) group and the comparison group (97 patients). The groups were matched by sex, age, social composition, presence of concomitant and past diseases and were on basic drug therapy. During the study, the following methods were used: spirography, veloergometry, six-minute walk test. In the complex treatment of patients of both groups, the method of laser reflexology was used for acupuncture points of the "meridians" of the heart and pericardium. Conclusions: as a result of a 15-day course of laser therapy on acupuncture points of the meridians of the heart and pericardium of patients with ischemic heart disease,

Key words: angina pectoris, laser therapy, externalbreathing.

RESUME

The purpose to study the state of lung function in patients with angina pectoris and the influence of laser acupuncture The study is based on 348 patients with ischemic heart disease, formed the main (251 patients) group and the comparison group (97 patients). The groups were comparable in sex, age, social composition, the presence of accompanying and previous diseases and were on the basic medicamental therapy. The research used the following methods: spirography, bicycle ergometry, six-minute walk test. In the complex treatment of patients in both groups the method of laser acupuncture by acupuncture points located on meridians of the heart and pericardium was used. Conclusions:

Keywords: angina pectoris, laser therapy, function of external respiration.

Introduction

Respiratory dysfunctions (FVD) in ischemic heart disease (CHD) are mainly associated with the presence of circulatory failure and the degree of its severity [9]. Restrictive ventilation disorders are explained by the accumulation of extravascular fluid in the interstitial tissue. Overflow of the vessels of the lungs and the accumulation of extravascular fluid contribute to a decrease in the elasticity of the lung tissue. Obstructive disorders are associated with congestion in the pulmonary vessels, leading to edema of the bronchial mucosa, excessive secretion of glands, desquamation of the bronchial epithelium; and passive compression of small bronchi by accumulated extravascular pulmonary fluid, which leads to early expiratory closure of the airways [2].

Alveolar shunt, which develops in the case of left ventricular failure due to "flooding" of the alveoli in alveolar pulmonary edema, the appearance of atelectasis, plays a certain role in the development of FVD disorders in ischemic heart disease [1]. According to A.P. Zilber, are important in the development of pulmonary shunt in IHD diffusion disorders that develop in heart failure due to the accumulation of extravascular fluid, which leads to thickening of the alveolar-capillary membrane and impaired gas diffusion [3]. Tereshchenko S.N. et al. explain the deterioration of FVD in patients with CHF by impaired contractile function of the heart, which contributes to the appearance of respiratory and tissue hypoxia, in which there is a violation of general pulmonary perfusion, and alveolar hypoventilation develops [7].

All these changes in the cardio-respiratory system manifest themselves clinically as shortness of breath, cough, wheezing in the lungs [10].

Heart rhythm and conduction disorders, which often develop in IHD, have a significant effect on hemodynamics and, accordingly, lead to dysfunction of the bronchopulmonary apparatus [5, 6]. Currently, adrenergic blockers (BAB) are widely used for the treatment of ischemic heart disease. In a number of patients, they are capable of causing a blockade of adrenergic receptors of the bronchial tree, and the resulting weakening of adrenergic stimulation leads to an increase in the tone of the bronchial muscles and a deterioration in bronchial patency [4].

Purpose of the study: to study the state of the function of external respiration in patients with angina pectoris and the influence of laser reflexology on it.

Materials and methods

The study of FVD was carried out in all 348 patients with ischemic VEM-test, which constituted the main (251 people) group and the comparison group (97 patients). All included in the study were on basic drug therapy, including about 95% of patients in both groups received - blockers.

The main group and the comparison group were comparable in gender, age, social composition, the presence of concomitant and past diseases.

154 (61.4%) patients in the main group and 58 (59.8%) in the comparison group suffered from arterial hypertension, hypercholesterolemia was recorded in 189 (75.3%) and 70 (72.2%) patients in the main group and the comparison group, respectively ...

At the time of the survey, 55 (21.9%) people smoked in the main group and 19 (19.6%) in the comparison group. Patients in both groups also did not differ in the severity of angina pectoris and the severity of symptoms of chronic heart failure (CHF). So the I functional class (FC) angina pectoris had 9 (3.6%) and 5 (5.2%), II FC 93 (37.1%) and 37 (38.1%), III FC 92 (36.7 %) and 28 (28.9%) and IV FC 57 (22.7%) and 27 (27.8%) patients in the main group and the comparison group, respectively. According to the CHF FC, the patients were distributed as follows: FC I was registered in 94 (37.5%) patients in the main group and in 40 (41.2%) patients in the comparison group, FC II - in 83 (33.1%) and 35 (36 , 1%), III FC - in 43 (17.1%) and 11 (11.3%) patients of the main group and the comparison group, respectively. FC IV occurred only in 6 (2.4%) patients of the main group.

The study of the function of external respiration was carried out when included in the group and after 15 days on a FlowScreen spirograph (Erich Jaeger, Germany) with automatic processing of all parameters. All volume measurements were recorded in the BTPS system using spirography with computer analysis of the flow – volume maximal expiratory loop. At the same time, the following indicators of FVD were examined: vital capacity of the lungs (VC), forced vital capacity of the lungs (FVC), forced expiratory volume in 1 sec. (FEV_1) with the calculation of the Tiffno index (IT): OFV_1/ VC, maximum volumetric velocity after expiration of 25% FVC (MOS_{25}), 50% FVC (MOS_{50}), mean volumetric expiratory flow in the range between 25% and 75% FVC (SOS_{25-75}). The assessment of spirographic indicators was carried out according to the degree of their deviation from the proper values, which were calculated automatically.

Laser therapy technique. When treating patients of the main grouplaser therapy (LT) was used for acupuncture points (TA) of the meridians of the heart and pericardium, using the ULF-01 laser device, which generates continuous low-intensity laser radiation with a wavelength of 0.63 microns, power density at the output of 0.1-10 mW / cm^2 and a beam diameter of 1.5–0.1 mm. To achieve the maximum therapeutic effect and exclude overdose, the method of dosimetry of laser radiation, developed by A.F. Pavlov, was used. et al. (1985), A.S. for invention No. 1194415 (1985). The duration of the laser action on each TA was determined by the dynamics of the magnitude of the electric potential relative to the initial level.

The moment of the beginning of the laser action on the TA is accompanied by a change in the level of the electric potential at the end point of this meridian - the point of energy “exit”. The dynamics of changes in the level of electropotentials in each patient in each case proceeds individually. In this case, the magnitude of the electric potential decreases or increases relative to the initial values and remains at the newly reached level for a certain time. The termination of changes in the magnitude of the electric potential serves as the basis for the termination

laser action on TA.

Research results

Spirography of patients with exertional angina showed a decrease in all respiratory parameters. As a result of RT, all 199 patients of the main group, re-examined after completion of the course of treatment, showed a statistically significant improvement in all parameters of respiratory function (see table).

So VC at the time of inclusion of patients in the main group and the comparison group was 71.8 ± 2.9 and 68.7 ± 2.1%, FVC 75.6 ± 2.7 and 76.8 ± 2.6%, FEV_1 71.5 ± 1.8 and 70.3 ± 3.2% of the due values, respectively. Tiffno's index in the main group was 94.1 ± 2.9 in the comparison group - 93.9 ± 3.6%. Largest PIC, MO_{C50}, MOS_{25} and SOS_{25-75} both groups were also comparable. Repeated spirographic examination of patients of the main group, carried out after completion of the RT course, revealed a significant improvement in all parameters. VC increased from 71.8 ± 2.9 to 75.3 ± 4.1, FVC from 75.6 ± 2.7 to 83.8 ± 6.0, FEV_1 from 71.5 ± 1.8 to 80.8 ± 4.3% of the due values. PIC increased from 68.5 ± 3.7 to 74.1 ± 2.9, MOS_50 from 58.7 ± 4.4 to 66.7 ± 3.8, MOS_{25} from 49.5 ± 7.2 to 55.1 ± 6.8, SOS_{25-75} from 56.9 ± 2.8 to 63.7 ± 5.1% of the due values.

Repeated spirographic examination of patients in the comparison group, carried out 15 days later, registered insignificant and ambiguous dynamics.

table

Dynamics of FVD indicators in patients of the main group and the comparison group

Показатели	Основная группа		Группа сравнения	
	До лечения, n = 251	После лечения, n = 199	Исходно, n = 97	Через 15 дней, n = 62
ЖЕЛ, %	71,8 ± 2,9	75,3 ± 4,1 ***	68,7 ± 2,1	69,4 ± 2,9
ФЖЕЛ, %	75,6 ± 2,7	83,8 ± 6,0 ***	76,8 ± 2,6	75,9 ± 2,4
ОФВ1, %	71,5 ± 1,8	80,8 ± 4,3 ***	70,3 ± 3,2	68,5 ± 3,6
ИТ, %	94,1 ± 2,9	94,6 ± 5,1 ***	93,9 ± 3,6	92,6 ± 5,7
ПОС, %	68,5 ± 3,7	74,1 ± 2,9 ***	70,8 ± 5,2	71,1 ± 3,2
МОС 50, %	58,7 ± 4,4	66,7 ± 3,8 ***	59,1 ± 4,9	60,3 ± 4,2
МОС 25, %	49,5 ± 7,2	55,1 ± 6,8 ***	49,7 ± 4,1	50,6 ± 6,1
СОС 25-75	56,9 ± 2,8	63,7 ± 5,1 ***	55,8 ± 5,4	55,1 ± 7,5

Примечание: *** - $p<0,001$

conclusions

As a result of a 15-day course of laser therapy at the acupuncture points of the meridians of the heart and pericardium of patients with ischemic heart disease who are on basic drug therapy, a statistically significant improvement in all parameters of FVD is achieved.

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