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PERFORMED FACTORS IN THE REHABILITATION OF CARDIAC PATIENTS ON AN OUTPATIENT BASIS

Використання преформованих факторів в реабілітації хворих кардіологічного профілю в умовах амбулаторії

Abstract

In older people, adequate pharmacological tactics when using modern antihypertensive drugs and their combinations, which provide maximum cardiovascular protection, can increase the duration and improve the quality of life, significantly reduce the likelihood of complications. An increase in the tone of the sympathetic nervous system leads to biliary dyskinesia by hypokinetic type, an increase in blood pressure.

Purpose of the study. *The aim is to optimize the treatment of patients with high blood pressure, rhythm disturbances, to analyze the possibility of using Poltava's Bischofite mineral compound, dietary magnesium-mineral supplements Bisheffect, in the complex treatment of hypertension for internal use.*

Matherials and methods. *68 patients with arterial hypertension with concomitant hepatobiliary pathology, which was confirmed by clinical and instrumental research methods, were under observation. The patients' mean age was 47,9 ± 2,9 years. The analysis of heart rate variability was carried out during a test with physical activity on a bicycle ergometer with «Cardiolab+» equipment («XAI-Medica», Kharkiv, Ukraine). In addition, daily monitoring of blood pressure was carried out using the ABPM-04 – Meditech apparatus.*

Result. *By the end of the first week of treatment, most patients (82,34%) noted a significant*

Реферат

У літніх людей адекватна фармакологічна тактика при застосуванні сучасних гіпотензивних препаратів та їх комбінацій забезпечує максимальний захист серцево-судинної системи, дозволяє збільшити тривалість та покращити якість життя, значно знижує ймовірність розвитку ускладнень. Підвищення тонусу симпатичної нервової системи призводить до дискінезії жовчовивідних шляхів за гіпокінетичним типом, а також до підвищення артеріального тиску.

Мета дослідження. *Метою цього дослідження була оптимізація лікування пацієнтів з підвищеним артеріальним тиском та порушеннями ритму спираючись на аналіз можливості використання Полтавського мінерального з'єднання «Бішофіт», дієтичних магнієво-мінеральних добавок Бішефект у комплексному лікуванні гіпертонічної хвороби при внутрішньому застосуванні.*

Матеріали та методи. *Під спостереженням перебувало 68 хворих на артеріальну гіпертензію з супутньою гепатобіліарною патологією, що підтверджено клініко-інструментальними методами дослідження. Середній вік пацієнтів становив 47,9 ± 2,9 роки. Аналіз варіабельності серцевого ритму проводили під час тесту з фізичним навантаженням на велоергометрі з обладнанням «Cardiolab+» («XAI-Медика», Харків, Україна). Крім того, добовий моніторинг артеріального тиску здійснювався за допомогою апарату АВРМ-04 – Meditech.*

improvement in well-being. During bicycle ergometry, autonomic nervous system stabilisation, blood pressure normalisation, a decrease in the number of extrasystoles, the sleep and the stool normalisation were recorded. The reason for the failure of standard antiarrhythmic therapy in this group of patients was determined based on the studies. Such a problem was observed due to dysfunction of the autonomic nervous system, which is an integral companion of the pathology of the gastrointestinal tract. This concept involves expanding the diagnostic search and stimulates the search for new ways of rhythm disturbances treatment in the pathology of the gastrointestinal tract. Also, the indices of blood pressure variability have decreased. Average 24h blood pressure in patients on the 10th day of treatment decreased by an average of 25–35 mm Hg, and there was a decrease in cranialgia attacks and autonomic disorders. An increase in the blood ejection fraction by 34%, a heart's stroke volume by 19%, and a normalisation of the minute volume ($p < 0,05$) were revealed, which confirms the positive effect of bischofite-therapy in the complex treatment of cardiac pathology.

Conclusions. *Treatment with standard LEIT-therapy, use of dietary magnesium-mineral Bisheffect supplements resulted in the autonomic nervous system stabilisation, blood pressure normalisation, a decrease in the number of extrasystoles, the sleep and the stool normalisation, increased exercise tolerance.*

Keywords: *arterial hypertension, biliary dyskinesia, sympathetic nervous system, Bischofite, LEIT-therapy.*

Результати. *До кінця першого тижня лікування більшість пацієнтів (82,34%) відзначали значне покращення самопочуття. Під час велоергометрії зафіксовано стабілізацію вегетативної нервової системи, нормалізацію артеріального тиску, зменшення кількості екстрасистол, нормалізацію сну та стільця. На підставі проведених досліджень встановлено причину неефективності стандартної антиаритмічної терапії у цієї групи пацієнтів. Така проблема спостерігалася через порушення функції вегетативної нервової системи, яка є невід'ємним супутником патології шлунково-кишкового тракту. Ця концепція передбачає розширення діагностичного пошуку та стимулює пошук нових шляхів лікування порушень ритму при патології шлунково-кишкового тракту. Також знизилися показники варіабельності артеріального тиску. Середньодобовий артеріальний тиск у пацієнтів на 10-ту добу лікування знизився в середньому на 25–35 мм рт. ст., спостерігалося зменшення нападів краніалгії та вегетативних розладів. Виявлено збільшення фракції викиду крові на 34%, ударного об'єму серця на 19%, нормалізації хвилинного об'єму ($p < 0,05$), що підтверджує позитивний ефект бішофіт-терапії в комплексному лікуванні серцевої патології.*

Висновки. *Лікування стандартною LEIT-терапією, застосування дієтичних магнієво-мінеральних добавок Bisheffect призвели до стабілізації вегетативної нервової системи, нормалізації артеріального тиску, зменшення кількості екстрасистол, нормалізації сну та стільця, підвищення переносимості фізичних навантажень.*

Ключові слова: *артеріальна гіпертензія, дискінезія жовчовивідних шляхів, симпатична нервова система, Бішофіт, LEIT-терапія.*

INTRODUCTION

Hypertension leads to the risk of developing cardiovascular system diseases, as well as the brain (heart attack, stroke). In addition, hypertension is one of the leading causes of death worldwide.

1,28 billion adults aged 30–79 years worldwide are hypertensive, the majority (two-thirds) of whom live in low- and middle-income countries [9]. The World Health Organization targets a 33% reduction in the prevalence of hypertension between 2010 and 2030 as one of the global targets for the fight against non-communicable diseases.

In older people, adequate pharmacological tactics when using modern antihypertensive drugs and their combinations, which provide maximum cardiovascular protection, can increase the duration and improve the quality of life, significantly reduce the likelihood of complications.

The genesis of hypertension may vary. One of the reasons for the blood pressure increase is the predominance of the sympathetic nervous system. According to Wayne, the sequence from which the pressure rises is not clearly defined today. This may be due to a violation of the autonomic nervous system and vice versa. Problems with the biliary system can be premonitory signs of the development of hypertension [2–4].

An increase in the tone of the sympathetic nervous system leads to biliary dyskinesia by hypomotor type, an increase in blood pressure. With the pathology of the biliary system, dysfunction of the autonomic nervous system develops, which leads to rhythm disturbances like ventricular extrasystole, sinus arrhythmia. Patients receive modern antiarrhythmic drugs. After cancellation, the rhythm disturbance resumes and continues to bother patients. With the pathology of the biliary system, osteoporosis and the deforming osteoarthritis development

occur [Povoroznyuk V.V.], which means that the development of vertebral artery syndrome is possible in the future. The lipid profile changes associated with the pathology of the biliary system. This leads to the development of atherosclerosis, pathology of the brain vessels, heart. The presence of vascular encephalopathy with cognitive impairment in patients with hypertension over the age of 65, according to various epidemiological studies, ranges from 5% to 15%.

The aim is to optimize the treatment of patients with high blood pressure, rhythm disturbances, to analyze the possibility of using Poltava's Bischofite mineral compound, dietary magnesium-mineral supplements Bisheffect in the complex treatment of hypertension for internal use.

MATERIALS AND METHODS

68 patients with arterial hypertension with concomitant hepatobiliary pathology were under observation, which was confirmed by clinical and instrumental research methods.

The patients' mean age was 47,9 ± 2,9 years. The analysis of heart rate variability was carried out during a test with physical activity on a bicycle ergometer with «Cardiolab+» equipment («XAI-Medica», Kharkiv, Ukraine). In addition, daily monitoring of blood pressure was carried out using the ABPM-04 – Meditech apparatus. Based on the analysis of rhythm variability (function of the autonomic nervous system) and blood pressure dynamics (ABPM), the effect of treatment was assessed.

Physiotherapy treatment consisted of LEIT-therapy prescription according to the method of «three tracks», «six points», on the liver and gallbladder area for 10 minutes at a frequency of 77 Hz.

We have refused to use bischofite for baths and instead have been using drinking bischofite a dietary magnesium-mineral supplement Bisheffect. Bischofite is a salt crystallization product [5–6]. The composition of Poltava's Bischofite is a polymineral complex of sulfates and chlorides of magnesium, potassium, calcium, with a high content of iodine, bromine, zinc, manganese, iron, molybdenum, copper, chromium, and other microelements. The effectiveness of bischofite is due to the high content of magnesium (up to 10%), potassium (up to 2%). Bischofite Complex is unique in terms of the biological interaction of all its minerals, which in their composition maximally replicate the ratio of minerals in the Primary ocean and reproduce the ratio of microelements in the blood.

The effects obtained when using this form were comparable to the Bischofite Baths, but technically they were much more straightforward and did not require additional equipment. Bischofite was taken once dissolved in the water with a temperature of 42 °C on an empty stomach.

RESULT

By the end of the first week of treatment, most patients (82,34%) noted a significant improvement in well-being. During bicycle ergometry, autonomic nervous system stabilisation, blood pressure normalisation, a decrease in the number of extrasystoles, the sleep and the stool normalisation were recorded.

During bicycle ergometry, physical workload tolerance was assessed. A positive significant dynamics manifested in threshold double product and physical efficiency increase (Table 1).

Table 1

Physical efficiency dynamics during the treatment

Indices	Before treatment M ± m	After treatment M ± m
Threshold workload, W	116,7 ± 5,81	121,8 ± 5,3
Physical efficiency, W/kg	1,55 ± 0,08	1,6 ± 0,07
Heart rate max, bpm	144,1 ± 3,63	146,9 ± 3,4
Heart rate increase	63,7 ± 3,65	65,9 ± 3,7
Blood pressure/heart rate index, mm Hg/min	0,79 ± 0,04	0,76 ± 0,03
Rate pressure product initial	104,7 ± 3,53	106,4 ± 3,3
Rate pressure product threshold	230,2 ± 10,26	283,5 ± 10,6
Rate pressure product recovery	129,9 ± 5,15	132,08 ± 5,03
Physical efficiency, points	226,8 ± 8,26	282,8 ± 7,8
Maximal oxygen consumption, l/min	2,22 ± 0,06	2,2 ± 0,06

A high level of physical workload tolerance before treatment was found in 1 patient, and after treatment – in 4 patients; average level – in 27 patients, and after treatment – in 30 patients; the level below the average – in 22 patients, and after treatment – in 26 patients; low level – in 22 patients, and after treatment – in 12 patients.

Sinus arrhythmia at rest before treatment was

recorded in 43 patients, and after treatment – in 19 patients; sinus bradycardia before treatment was observed in 2 patients, and after treatment was not detected; moderate sinus tachycardia was noted before treatment in 17 patients, and after treatment – in 12 patients; severe tachycardia before treatment was in 9 patients, and after treatment – in 7 patients; 25 patients had normal sinus rhythm after treatment. The stepwise increase in the workload revealed the normalisation of the indices characterizing the rhythm variability.

Extrasystole was initially recorded in all 68 patients (11,16 ± 1,3 extrasystoles per minute), and more than 5 per minute – in 43 patients. After treatment, extrasystole was also registered in all 68 patients, but the number of extrasystoles for more than 5 minutes was detected in 12 patients, and on average was 5,9 ± 0,7 per minute. Thus, the dynamics of extrasystoles generation during physical workload after the treatment was positive (Table 2).

Table 2

Extrasystole generation dynamics during the physical workload test

Stages	Extrasystole presence	Before treatment M ± m	After treatment M ± m	t	p
Initial	present	11,2 ± 1,4	5,9 ± 0,7	3,39	< 0,001
1 stage	present	4,1 ± 0,6	1,9 ± 0,2	3,48	< 0,001
2 stage	present	2,4 ± 0,4	2,0 ± 0,3	0,8	> 0,05
3 stage	present	1,3 ± 0,4	0,7 ± 0,2	1,34	< 0,1
Recovery period	present	5,67 ± 0,7	2,4 ± 0,3	4,29	< 0,001

The positive dynamics of the blood pressure response to the exercises was observed. Before treatment, 7 patients had a hypertensive type of blood pressure response, after treatment – only 2 patients, a borderline type before treatment was in 4 patients, and after treatment – in 2 patients.

The reason for the failure of standard antiarrhythmic therapy in this group of patients was determined based on the studies (analysis of heart rate variability). Such a problem was observed due to dysfunction of the autonomic nervous system, which is an integral companion of the pathology of the gastrointestinal tract. This concept involves expanding the diagnostic search and stimulates the search for new ways of rhythm disturbances treatment in the pathology of the gastrointestinal tract.

Also, the indices of blood pressure variability have decreased. Average 24h blood pressure in patients on the 10th day of treatment decreased by an average of 25–35 mm Hg, and there was a decrease in cranialgia attacks and autonomic disorders. An increase in the blood ejection fraction by 34%, a heart's stroke volume by 19%, and a normalisation of the minute volume ($p < 0,05$) were revealed, which confirms the positive effect of bischofite-therapy in the complex treatment of cardiac pathology.

CONCLUSIONS

It is necessary to use an integrated approach, when rehabilitating patients in GP practice, taking into account the age, gender, and characteristics of the disease course. A new promising effective therapeutic method for hypertension is using a natural mineral – bischofite in combination with low-frequency electrical signal influence.

Poltava's Bischofite has an antispasmodic, anti-inflammatory, local reflex, sedative effect, contains ions of potassium, magnesium, iodine, bromine, and many microelements, which enhances the therapeutic effect in a complete treatment program.

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