

HIRUDOTHERAPY BY AVICENNA`S METHODS IN TREATMENT OF CHRONIC HEART FAILURE AT ISCHEMIC HEART DISEASE PATIENTS WITH THE INCREASED ARTERIAL BLOOD PRESSURE

Kodirova Shakhlo Salomova* ; Dilbar Bakhriddinovna Rakhmatova**

*Head of the Department,
Folk Medicine and Occupational Diseases,
Bukhara State Medical Institute,
UZBEKISTAN
Email id: shaxigiza@mail.ru

**Associate Professor,
Department of Folk Medicine and Occupational Diseases,
Bukhara State Medical Institute,
UZBEKISTAN
Email id: rahmatovadilbar19@gmail.com

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ABSTRACT

Many forgotten methods of treatment, known since ancient times, are increasingly reviving in the current conditions of the development of medicine and pharmacy, once again proving the validity of their existence. One of them is hirudotherapy (from Latin hirudina - leech) or bdelotherapy. Treatment with leeches has begun since ancient times. Probably, even prehistoric people accidentally noticed a positive effect after a leech bite. Hebrew Persian, Hebrew and Ancient Indian texts that mention the benefits of leeches contain references to the benefits of leeches. Hirudotherapy was considered one of the aspects of this medical technique, since bleeding has been the most popular method of treating many diseases for thousands of years. Self-treatment with leeches in those days was not yet carried out, since healers believed that leeches were needed only to remove excess blood. It was considered more convenient to use them instead of knives, because the procedure was completely painless.

KEYWORDS: *Heart Failure, Cardiosclerosis, Arterial Pressure, Treatment, Hemostasis.*

INTRODUCTION

Many forgotten methods of treatment, known since ancient times, are increasingly reviving in the current conditions of the development of medicine and pharmacy, once again proving the validity of their existence. One of them is hirudotherapy (from Latin hirudina - leech) or bdelotherapy. Treatment with leeches has begun since ancient times. Probably, even prehistoric people accidentally noticed a positive effect after a leech bite. Hebrew Persian, Hebrew and Ancient Indian texts that mention the benefits of leeches contain references to the benefits of leeches. Hirudotherapy was considered one of the aspects of this medical technique, since bleeding has been the most popular method of treating many diseases for thousands of years. Self-treatment with leeches in those days was not yet carried out, since healers believed that

leeches were needed only to remove excess blood. It was considered more convenient to use them instead of knives, because the procedure was completely painless.

Materials and Methods

100 patients with chronic heart failure of II-III functional class according to NYHA classification aged 55 to 77 years, 80 men and 20 women, were examined. Of these, 71 patients were diagnosed with chronic heart failure of functional class II, 29 - chronic heart failure of FC III. The cause was the development of chronic heart failure: postinfarction cardiosclerosis (78 patients) and small-focal cardiosclerosis (22 patients).

Results

The effect of hirudotherapy on the clinical course of the disease in patients with chronic heart failure with normal blood pressure in 42 patients with coronary heart disease was studied. By the end of hirudotherapy, an improvement in the clinical condition was noted in 33 patients (78.5%), which resulted in a decrease in the functional class of chronic heart failure according to the results of the six-minute walk test. Chronic heart failure I FC was diagnosed in 12 patients with initially verified chronic heart failure II FC before discontinuation of the course of treatment, followed by a tendency to increase the distance of a six-minute walk.

Hirudotherapy has a positive effect on hemostasis in patients with chronic heart failure, which is expressed in the normalization of the concentration of fibrinogen and soluble fibrin-monomer complexes, an increase in the content of plasminogen in the blood, a decrease in spontaneous and ADP-induced platelet aggregation.

Relevance

Many forgotten methods of treatment, known since ancient times, are increasingly reviving in the current conditions of the development of medicine and pharmacy, once again proving the validity of their existence. One of them is hirudotherapy (from Latin *hirudina* - leech) or bdelotherapy. Treatment with leeches has begun since ancient times. Probably, even prehistoric people accidentally noticed a positive effect after a leech bite. Hebrew Persian, Hebrew and Ancient Indian texts that mention the benefits of leeches contain references to the benefits of leeches. Hirudotherapy was considered one of the aspects of this medical technique, since bleeding has been the most popular method of treating many diseases for thousands of years. Self-treatment with leeches in those days was not yet carried out, since healers believed that leeches were needed only to remove excess blood. It was considered more convenient to use them instead of knives, because the procedure was completely painless.

Now the principles of drug treatment of the chronic heart failure (CHF) meaning normalization of an intracardial and central hemodynamics, microcirculation, activity of neurohumoral systems of an organism, prevention and therapy of disturbances of a heart rhythm, sudden cardiac death, thromboembolic syndrome are defined [1,2,3]. Wide use of **ACE inhibitor**, blockers of adrenergic receptors, diuretics allowed to improve considerably quality and life expectancies of patients with chronic heart failure. Despite obvious achievements of the last years in the field of studying of a pathogeny, diagnostics and treatment, chronic heart failure remains widespread, heavy and predictively an adverse complication of many diseases of a cardiovascular system [4,6]. The prevalence of chronic heart failure constantly grows and is in the European population

from 0.4% to 2% (Cowie M.R. et al., 1997). In Russia in 2002 revealed more than 8 million patients with clinical manifestations of chronic heart failure[6,8,9].

In recent years became more active to be applied the non-drug methods of treatment of chronic heart failure based on impact on an organism by electromagnetic radiation (laser therapy, therapy by waves of millimetric range), extracorporeal removal of components of blood (hemodilution, blood ultrafiltration), synchronization of work of auricles and ventricles of heart, surgical correction of pathology of heart, influence as a secret of sialadens of a bloodsucker and others [7,10].

Numerous data confirm high performance of hirudotherapy at treatment of various diseases. Positive action of hirudotherapy on the clinical current of chronic heart failure is well studied. In many works reductions of a acrocyanosis, pant, hypostases, hepatomegalias is revealed at course treatment by medical bloodsuckers [2,4,10]. At patients with coronary heart disease, the arterial hypertension noted positive action of hirudotherapy on indicators of the central hemodynamics, variability of a warm rhythm, a lipidic range of blood, fibrinogen level, functional activity of thrombocytes [4,10]. At the same time at purpose of hirudotherapy sick chronic heart failure did not carry out the tool assessment of systolic and diastolic function of a myocardium of a left ventricle, a condition of a system of a hemostasis that does the offered subject relevant.

Research objective

To estimate influence of hirudotherapy on a clinical current of chronic heart failure, at patients with coronary heart disease with the raised ABP.

Research problems.

1. To estimate influence of hirudotherapy on clinical manifestations of chronic heart failure at patients with the raised ABP.
2. To estimate influence of hirudotherapy on indicators of systolic and diastolic function of a left ventricle at ischemic heart disease patients with chronic heart failure and the normal ABP.
3. To estimate influence of hirudotherapy on indicators of systolic and diastolic function of a left ventricle at ischemic heart disease patients with chronic heart failure and an arterial hypertension.
4. To estimate influence of hirudotherapy on hemostasis indicators at ischemic heart disease patients with chronic heart failure and an arterial hypertension.

Materials and Methods of a Research

100 patients with chronic heart failure of the II-III functional class on classification of NYHA aged from 55 till 77, 80 men and 20 women are investigated. From them at 71 patients II functional class chronic heart failure, at 29 - the III FC chronic heart failure was revealed. Development of chronic heart failure was the reason: postinfarction cardiosclerosis (78 patients) and fine-focal cardiosclerosis (22 patients). The diagnosis was established on the basis of a clinical picture of a disease, the anamnesis, data of definition of a distance of six-minute walking. The arterial hypertension was diagnosed for 54 patients.

Patients with diseases of the blood, connective tissue, an oncopathology, a hemorrhagic syndrome, a diabetes mellitus of the I type expressed by renal and hepatic pathology did not join in a research. Patients were observed in out-patient conditions and after receiving the informed

consent were distributed by means of draw on two groups: the 1st group - 70 patients receiving hirudotherapy course, the 2nd group (control) - 30 patients who were not receiving treatment by medical bloodsuckers. Depending on existence of an arterial hypertension in the anamnesis patients of both subgroups were divided into two subgroups (Table 1). Groups of patients were comparable on age, existence of associated diseases and the accepted medicinal therapy.

Standard therapy of chronic heart failure included APF inhibitors, blockers of beta adrenergic receptors, diuretics, acetylsalicylic acid. During observation of a dose of medicines did not change.

The technique of carrying out hirudotherapy at patients with chronic heart failure included use not less than 5 pieces of medical bloodsuckers on one procedure by Abu Ali ibn Sino's methods. The number of procedures was 10 sessions at an interval of the 2 days. hirudotherapy renders the reflexogenic, anti-coagulating, anti-ischemic, anti-hypoxemic, hypotensive, immunostimulating, anti-inflammatory, analgesic, anti-sclerous, regenerator action, causes aexsanguination, a dekongestion of internals, protective anti-thrombotic effect, elimination of microcirculation violations.

TABLE 1 GENERAL CHARACTERISTIC OF THE STUDIED PATIENTS

| Indicators | The 1st group (n = 70) | The 2nd group (n=30) | p |
|---|---|---|--------|
| | Patients without arterial hypertension (n =36) | Patients with an arterial hypertension (n=20) | |
| Age | 67,4±5,2 | 61,3±6,0 | p≤0,5 |
| Postinfarction cardiosclerosis | 28 | 14 | p≤0,1 |
| Small focal cardiosclerosis | 8 | 6 | p≤0,1 |
| Functional class chronic heart failure: | | | p≤0,01 |
| II | 22 | 12 | |
| III | 14 | 8 | |
| Therapy | | | p≤0,1 |
| ACE inhibitors | 34 | 18 | |
| ATI Blockers | 2 | 2 | |
| Beta-blockers | | | |
| Diuretics | | | |
| Aspirin | 22 | 15 | |
| | 24 | 11 | |
| | 34 | 20 | |

Before treatment and upon termination of the observation period (6 weeks) estimated a clinical condition of patients, defined a distance of six-minute walking, carried out the daily monitoring of arterial blood pressure (DMABP), ultrasound examination of heart with assessment of systolic and diastolic function of heart, hemostasis indicators. In the main group the condition of a hemostasis was estimated in addition next day after the fifth session of hirudotherapy (2-3 weeks). The assessment of a clinical course of a disease was carried out on change of manifestations of chronic heart failure (weakness, an asthma at a usual exercise stress, interruption in cardiac performance and/or heartbeat, peripheral hypostases, a hepatomegalia) and functional class chronic heart failure according to a distance of six-minute walking.

Measurement was taken through a 20-minute interval in the afternoon (from 7:00 till 23:00) and through 30-minute - at night (from 23:00 till 7:00). The index of time was defined how the percentage of number of measurements during which systolic arterial blood pressure exceeded the level of 140 mm Hg. in the afternoon and 120 mm Hg. at night, and diastolic arterial blood pressure exceeded respectively 90 and 80 mm Hg, to the total number of measurements. Were estimated average daily systolic and diastolic arterial blood pressure (in mm Hg.) and the index of time for systolic and diastolic arterial blood pressure (in %).

The test of six-minute walking was carried out in a hospital corridor which length was precisely measured. After acquaintance with the forthcoming test of the patient quietly went along the corridor. After fifteen-minute rest, the patient within 6 minutes went along the corridor, trying to overcome the longest distance. The test was stopped at emergence of the expressed discomfort (pant, dizzinesses, sharp weakness). In 30 minutes the test was repeated and took average value of two tests.

The aggregation ability of thrombocytes was studied on the two-channel laser analyzer of aggregation of thrombocytes of "Biol" (Russia) by a turbidimetric method and assessment of the average size of platelet units in real time. As the inductor used 0.5 microns of ADF. For spontaneous aggregation normal values varied from 1.0 to 1.4 units, for ADF - the induced aggregation from 1.5 to 3.5 units.

At statistical processing of the received results standard methods of the variation analysis were used. Intergroup distinctions were estimated by confidential criterion of Stjudent. Statistical processing of the obtained data was carried out by means of the computer Excel program.

Results of a Research and their Discussion

The 1st group. Influence of hirudotherapy on the clinical course of a disease at sick chronic heart failure with the normal level of arterial blood pressure is investigated at 42 ischemic heart disease patients. To the termination of hirudotherapy improvement of a clinical state is noted at 33 patients (78.5%) that was expressed in reduction of functional class chronic heart failure according to test results of six-minute walking. The IFC chronic heart failure was diagnosed for 12 patients with initially verified IIFC chronic heart failure to the termination of a course of treatment that was followed by a tendency to increase in a distance of six-minute walking.

At patients of 2nd group: We revealed reliable decrease in systolic arterial blood pressure on average in group for 10% ($p < 0.01$) and the index of time of systolic arterial blood pressure by 1.5 times ($p < 0.05$) that demonstrates hypotensive effect of hirudotherapy. Reliable influence on the size of diastolic arterial blood pressure of course treatment by medical bloodsuckers is not

revealed. At 5 patients after the first statement of medical bloodsuckers and at the 3rd patient after the second procedure rise in systolic arterial blood pressure on 10 - 15 mm Hg was noted. with the subsequent decrease to reference values within 30 minutes. Decrease in systolic arterial blood pressure is lower than 100 mm Hg. it is noted. In general, on group reduction of systolic arterial blood pressure to the termination of a course of hirudotherapy on 5 - 20 mm Hg. it is registered at 26 of 33 patients, diastolic arterial blood pressure on 5 - 10 mm Hg. - at 18 patients.

Influence of hirudotherapy indicators of the central hemodynamics was depending on the level of arterial blood pressure. In group of patients with an arterial hypertension reliable decrease in average daily systolic arterial blood pressure and the index of time of systolic arterial blood pressure, a tendency to reduction of size of diastolic arterial blood pressure is revealed. The hypotensive effect of hirudotherapy was confirmed in Maksyutkin N.A. works. (2003) and Gantimurova O.G. (2005).

In case of successful treatment of heart failure at patient's improvement of inotropic ability and diastolic relaxation of a myocardium is noted (Braunvald E., 2005). In group of patients with an arterial hypertension reduction of weight of functional class chronic heart failure was combined with a tendency to reduction of end-diastolic volume, reliable decrease in end-systolic volume and reliable increase in ejection fraction of a left ventricle. In our opinion it is caused by reliable decrease in size of systolic arterial blood pressure at patients in the course of treatment at the expense of what there is a reduction of postload of a myocardium. The combined reduction before - and postloads of a myocardium also leads to increase in a stroke output, fraction of exile and demonstrates improvement of pump function of heart at sick chronic heart failure with the increased ABP level.

Dynamics of diastolic filling of a left ventricle in the course of hirudotherapy was unidirectional in both groups of patients. At most of patients at whom decrease in functional class chronic heart failure was noted reduction of severity of diastolic dysfunction of a myocardium of a left ventricle was revealed. The positive effect of hirudotherapy relaxation of a myocardium of a left ventricle at ischemic heart disease patients can be caused by anti-ischemic effect of secretion of sialadens of a bloodsucker, improvement of indicators of an intracardial and central hemodynamics. Interesting results were received when studying influence of hirudotherapy indicators of a plasma hemostasis and functional activity of thrombocytes. We did not reveal reliable differences in the activated partial thromboplastin time, international normalized ratio level before treatment by medical bloodsuckers. On the other hand, to the termination of a course of treatment the level of fibrinogen and RKMf decreased to normal amounts that speaks about reduction of a trombinemia. We also found initial increase in spontaneous aggregation of thrombocytes in patients of the main and control groups. To the termination of a course of hirudotherapy spontaneous aggregation of thrombocytes was normalized while remained raised with patients of control group. Thus, it is possible to draw a conclusion on existence of antithrombotic effect of hirudotherapy at patients with chronic heart failure.

CONCLUSIONS

1. Use of hirudotherapy by Abu Ali ibn Sino's methods at the same time with "standard" drug treatment is followed by reduction of clinical manifestations of chronic heart failure at patients with coronary heart disease. At the same time the tolerance to an exercise stress (according to a distance of six-minute walking) at sick II and III functional classes of chronic heart failure increases.

2. At use of hirudotherapy complex treatment of chronic heart failure at 25% of patient's reduction of diastolic dysfunction of a myocardium of a left ventricle according to a Doppler research of heart is observed.

3. Has hirudotherapy positive impact on hemostasis indicators at sick chronic heart failure that is expressed in normalization of concentration of fibrinogen and soluble fibrin monomer complexes, increase in content of plasminogen in blood, decrease spontaneous and ADF - the induced aggregation of thrombocytes.

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