



Efficiency of Application of Hirudotherapy to Have Been Having Coronaviral Infection

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ABSTRACT

The article provides information on medical leeches that are suitable for medical treatment. Also, the authors studied the effect of hirudin on the human body in different age, the number of leeches and sessions required to obtain a therapeutic effect.

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INTRODUCTION

Plague and typhus were replaced by dangerous viruses. Environmental changes, climate warming, an increase in population density and other factors provoke their appearance, and high migration activity of the population contributes to their spread throughout the world. Truly, infections know no boundaries. The COVID-19 epidemic has already gone down in history as an emergency of international importance. People will have to study the features of the COVID-19 epidemic for a long time to come, learn the lessons, and analyze the shortcomings of ensuring the biological safety of the population. Until 2002, coronaviruses were considered to cause mild upper respiratory illness. At the end of 2002, the coronavirus (SARS-CoV), the causative agent of SARS, appeared that caused severe acute respiratory syndrome in humans. This virus belongs to the genus Betacoronavirus. The natural reservoir of SARS-CoV is bats, intermediate hosts are camels and Himalayan civets. Over the period of the epidemic, more than 8 thousand cases were registered in 37 countries of the world, of which 774 were fatal. Since 2004, no new cases of SARS-CoV have been reported [1, 4, 5].

It turns out that the virus causes an increase in the permeability of cell membranes and increased transport of albumin-rich fluid into the interstitial tissue of the lung and the lumen of the alveoli. In this case, the surfactant is destroyed, which leads to the collapse of the alveoli, as a

result of a sharp violation of gas exchange, an acute respiratory distress syndrome develops [2, 6].

MATERIALS AND METHODS

We learned people who were infected by COVID-19. The age of people who had had COVID-19 were 25 to 60 years with the same frequency of treatment between men and women.

Methods that have been successfully used by our ancestors for millennia again attract special attention. One of these methods is hirudotherapy - the use of medical leeches for medicinal purposes. The use of leeches for medicinal purposes has a thousand-year history and goes back to the medicine of Ancient Egypt (1500-300 BC). Studying the history of the use of the medicinal healer - leeches, we decided to continue the treatment with leeches.

There are about 400 species of leeches on the globe. Many of them live on the territory of Russia and the CIS countries. But only 2 types of blood-sucking jaw leeches are useful and suitable for medical purposes [7].

1. Medical leech (*Hirudomedicinalis*)

2. Nile leech (*Limnatis nilotica*, *Limnatis turcestanica*) is sometimes called horse.

Often the Nile leech is confused with a predatory jaw leech - the so-called pseudo-cone leech (*Haemopissanguisuga*), which is not fed by blood, but completely swallows various invertebrates or parts of their body.

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Three subspecies are common among medicinal leeches.

1. Medicinal or medical leech - brown-olive color with 6 red-yellow stripes on the back, mottled with black dots along the length of the body with a variegated abdomen and rough rings. Has 10 small eyes on the head and arranged in semicircles, six in front and four on the back of the head. Both ends of the body are equipped with fleshy suckers - suckers, on their front end there is a mouth, and on the back end of the powder. both ends can freely adhere to foreign bodies.

2. Pharmacy leech - unlike the medicinal one, it has a dark green color, with the same six dorsal stripes, but without dots; the abdomen is yellowish without spots, the rings are smooth (it is also called Hungarian). For the most part, it lives in Moldova, Krasnodar Territory, Armenia, its variety is found in the Transcaucasus.

3. Eastern leech - brighter than the previous ones. Along its back, there are narrow orange stripes covered with black 4-sided spots at regular intervals. The belly of the leech is black, with green spots, located in pairs at regular intervals.

The leeches are considered unsuitable for medical use, one-color, without stripes on the back, hairy, cylindrical and with blunt heads. Such leeches are popularly known under the general name-horse, although they often refer to completely different species [8, 9, 10, 11].

RESULTS AND DISCUSSION

Nile leeches (horse) are of the same size and shape as medical ones, but differ from them in insufficiently developed jaws, and on them with blunt teeth. Therefore, they cannot bite through the skin, but only stick to it.

There are two subspecies of the horse leech, which are easily mixed with the medical one:

- greedy bloodsucker - differs from the medical one in that its back is smooth, dull green in color, the abdomen is dark with side yellow or reddish-brown stripes, it secretes a lot of mucus.
- blackish trickle - greenish-yellow with a yellowish abdomen. These leeches live in the reservoirs of Armenia, Georgia, in the south-east of Russia.

The basis of the therapeutic effect of hirudotherapy is leech saliva, which contains a large amount of biologically active substances that contribute to the normalization of internal homeostasis. These include hirudin. Modern researchers have proved that leeches should be considered as a single living, very complex and peculiar non-specific

irritant in relation to the human body as a whole, and not just a local method of mechanical extraction of blood from the capillaries is given to the corresponding “problem organs”. Currently, it is recognized that leeches are the only means of bloodletting at the level of the microvasculature, as the system is where intimate metabolic processes important for the body take place: the delivery of nutrients to cells and tissues (excretion of toxins, waste from them) through the arteriole capillaries, lymphatic vessels and venules.

Leeches can be used in all human diseases, but there are exceptions, it cannot be used for hemophilia in all stages, with advanced stages of cancer and hypersensitive (leech) patients.

Placing leeches at one point or another of the body is a procedure, in general, not at all complicated. But still, only a doctor should put leeches, who determines the number of leeches for his patient and the place of their setting (depending on the general condition of the patient and the severity of the disease process).

Doctors and without the help of leeches have learned to delay blood clotting with the help of certain drugs. However, dissolving an already formed blood clot is a more difficult task. If they are old, then even the best medicines cannot dissolve it, but leeches with their enzymes successfully cope with old blood clots.

Over the past 12 months, we have been contacted by patients with a history of Covid 19, of whom we selected patients aged 45-60 years. In these patients, the disease was relatively more severe and prolonged due to the presence of concomitant diseases, hypertension, diabetes mellitus, chronic respiratory diseases, etc.

The leech is drinking to the desired area on the patient's body using suction cups. After the leech feels that it is firmly entrenched, it bites the skin. Its depth is usually 1.5 - 2 millimeters. After the bite, the leech injects its saliva into the resulting wound, which, as is already known, contains hirudin, which prevents blood clotting.

The leech is on the patient's body from 20 to 60 minutes, depending on the severity of the disease. During this time, one leech sucks from 5 to 15 milliliters of blood.

In our practice, the leeches left after they were full.

The loss of blood from one wound was 20 to 50 milliliters of blood.

The bite sites were covered with cotton wool, which was fixed with a plaster. The patient was advised to remain calm for some time and avoid physical activity.

Table 1. Distribution of patients by age

Age	Sex		Number of patients	Disease	Number of leeches	Treatment course
	man	woman				
45-50 years old	20	15	35	Hypertension, diabetes mellitus, diseases of the respiratory system	3-15 pieces	3-7 sessions

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51 - 56 years old	25	15	40	Hypertension, diabetes mellitus, diseases of the respiratory system	3-18 pieces	3-7 sessions
Over 57 years old	30	15	45	Hypertension, diabetes mellitus, diseases of the respiratory system	3-18 pieces	3-7 sessions

The contingent of patients aged 45-50 years with a disease of the cardiovascular system - hypertension after 3 sessions in the amount of 3-7 leeches, the condition noticeably improved, then the number of leeches had to be increased to 15 pieces and the number of sessions to 7, after which the blood pressure stabilized, the patients felt healthy.

Patients with diabetes mellitus before the use of leeches, we determined the sugar content in the blood, as well as after treatment. Blood sugar levels dropped markedly.

Those suffering from diseases of the respiratory system - chronic bronchitis, bronchial asthma were treated after long-term treatment of coronavirus infection. After taking X-rays and functional studies, they began with a minimum number of leeches in the amount of 5 pieces. The functional states of the lungs were observed to improve, in connection with which the sessions and the number of leeches were increased to 15 pieces. At the end of treatment with leeches, X-rays of the lungs were repeated. Comparing the first images, the X-ray picture has improved markedly. Respiratory rate returned to normal 18-20 per minute.

Patients aged 51-56 years with diseases of the cardiovascular system, metabolic diseases and respiratory diseases. After hirudotherapy sessions, the expected result was obtained after some time, compared to patients at a younger age of 45-50 years.

Elderly people over 57 years old and more who had a history of hypertension, diabetes mellitus, bronchial asthma came to us already knowing that the medical leech is an excellent remedy for the treatment of their disease. They knew in advance that hirudin, after entering the bloodstream, has a beneficial effect on their body, since it contains biologically active substances of natural origin. Some patients before being infected with coronavirus several times previously received treatment with leeches. With them it was easy for us to work, since they already knew the number of leeches and a session that they need to improve their condition. After 2 sessions the pain syndrome, limb numbness, paresthesias subjectively decreased. After 7 sessions, pains were relieved, the severity of sensory and motor disorders regressed, vital and physical activity increased, and remission of the disease was noted.

All treated patients are recommended to repeat hirudotherapy after 6 months.

We were also contacted by people who wanted to get a hirudotherapy session for preventive purposes to raise the body's immune system against coronavirus.

CONCLUSION

All groups of patients showed positive dynamics of the clinical picture, and the therapeutic effect occurred after 3 to 7 sessions, for a more accurate study of long-term results in an outpatient setting, it was found that patients who had undergone coronavirus and received hirudotherapy had a satisfactory result.

As the results of this study have shown, treatment with leeches restores microcirculation and local immunity, correcting some pathological processes (inflammation, microcirculation disorders, hypoxia, etc.). hirudotherapy intervenes during the basic mechanisms of the development of the pathological process, controls the totality of reactions that occur at different structurally functional levels of the formation of the disease.

Hirudotherapy has a normalizing effect on the vascular-motor center, the higher center of the autonomic nervous system (reflexively, which, along with improving the adaptive capabilities of the cardiovascular, respiratory and metabolic system) leads to positive changes in peripheral and central hemodynamics. Thus, the clinical study of hirudotherapy is explained by the ability of leech enzymes to eliminate tissue ischemia and hypoxia, as well as microcirculatory disorders that determine the basic mechanisms of the development of the disease.

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