

## Review Article

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## “COVID-19 – POST-COVID SYNDROME” Pandemic: Complex Treatment with Medical Leeches, Including Detoxification. Confirmation of the Validity of The THEORY “HOMOTOXICOLOGY” OF H. - H. RECKEVEG

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**SUMMARY**

Treatment of the disease “COVID-19 - POST-COVID SYNDROME” requires the mandatory inclusion of detoxification methods in the technology of treatment and rehabilitation. The paper reflects the experience of using medical leeches in the context of the author’s “System Method of Leeching” in cases where intoxication was dominant in the “Clinical Image of the Disease”. The mechanism of action of medical leeches, which were successfully used in case of intoxication of patients with different pathologies, including “COVID-19 - POSTCOVID SYNDROME”, is considered.

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It is this name, “**COVID-19 – POSTCOVID SYNDROME**”, proposed by the author, with which the editors of two scientific medical journals agreed [1,2].

From our point of view, the term used for this disease “Long Covid” does not fully reflect the pathogenesis of this disease.

The **COVID-19** coronavirus pandemic, declared by the World Health Organization (WHO) on 11.03.2020, has stimulated the search for treatment and prevention of this disease in many countries around the world. For this disease, two characteristic phases should be distinguished: the rapid phase of the development of the disease - **the Viral phase**, when it is still possible to use antiviral drugs, for example, ivermectin or hydroxychloroquine, and the **Inflammatory phase**, when the virus penetrates into the lower lungs and enters the circulatory system.

This phase of the disease is fraught with complications, sometimes requiring the use of ventilation, and with an unfavorable combination of risk factors - and to death. In the literature devoted to the topic of COVID-19, the term “**POST-COVID SYNDROME**” appeared, which describes the defeat of the central and peripheral nervous system, thrombosis of the vessels of various organs, damage to the gastrointestinal tract and skin [3].

The term “**POSTCOVID SYNDROME**” was proposed by the collective intelligence of the Moscow City Scientific Society by the therapist (MCSST) named after professor Botkin S.P. We have described a rarer complication, however, characteristic of the Republic of Uzbekistan. We will talk about aseptic necrosis of joints and tubular bones (bone infarction) [18].

In our opinion, this term “**COVID-19 – POSTCOVID SYNDROME**” is more meaningful than the term “**Long COVID**”, because it reflects the essence of this disease. Over the past 30 years, the Academy of Hirudotherapy in St.- Petersburg has obtained a number of new fundamental facts when applying the “**System Method of Leeching**” (SML), which can significantly enhance the clinical effect of its use and reduce the mortality of patients with pneumonia caused by the COVID-19 virus. Based on the conclusion of the Moscow City Scientific Society of Therapists named after professor Botkin S.P.

(MCSST) on the analysis of the main mechanisms of pathogenesis of the COVID-19 virus, treatment was proposed:

1. Long-term use of increased doses of oral anticoagulants;
2. Detoxification in the form of plasmapheresis (5 sessions with the replacement of 1 liter of plasma per 1 liter of physiological solution, with each procedure) [3].

Based on the findings of (MCSST), our work was published (priority of April 29, 2021), which details the therapeutic effects of medical leeches in relation to the treatment of “**POST-COVID SYNDROME**” [4].

In addition, our article on the topic: “COVID-19 - Theoretical and practical justifications for reducing mortality and complications”

was published even earlier [5].

This work also discussed the use of hirudotherapy in the disease **"COVID-19 - POSTCOVID SYNDROME"**, as well as in **complications arising** from vaccination against coronavirus, regardless of the vaccine used.

In September 2021, an international conference dedicated to the 25th anniversary of the creation of the first hirudotherapy department in Russia and the world was held in Russia [6].

The materials of this conference present the most significant discoveries in the field of hirudology and hirudotherapy in Russia. Here are the most significant of them, since they served as the basis for the development of the **"System Method of Leeching" (hirudotherapy) (SML)**.

1992 – The discovery of the phenomenon of "Hirudobiopsy" (A.I. Krashenyuk, S.V. Krashenyuk).

1993 – The discovery of the energy effect (informational entropy) (A.I. Krashenyuk, S.V. Krashenyuk) [7,8].

1996 – The discovery of the neuro-stimulating effect of the medical leeches (A.I. Krashenyuk, S.V. Krashenyuk, N.I. Chalisova) [9, 10].

2001 – The discovery of the acoustic effect of hirudotherapy (A.I. Krashenyuk, D.I. Frolov) [11].

2003 – The discovery of the detoxification effect of hirudotherapy. (A.I. Krashenyuk) [12].

2004 – The discovery of the phenomenon of local hyperthermia in the body benign brain tumor - neurinoma (Kamynin Yu.F., Krashenyuk A.I.) [13,14].

2005 – The discovery of the negentropic effect of hirudotherapy. (A.I. Krashenyuk, G.N. Dulnev) [13].

2007 – The role of autohemohirudotherapy in the formation of the Immunomodulatory effect of hirudotherapy. (A.I. Krashenyuk, S.V. Krashenyuk, A. Krylov) [15].

2010 – The discovery of the hydro-structural effect of hirudotherapy. (Semikhina L.P., Krashenyuk A.I.) [16].

2016 – The discovery of the "Resonance-wave effect" of leeching on the state of the human aquasystem (Vlaskin S.V., Dubovitsky S.A., Krashenyuk A.I., Petrosian V.I.) [17].

2022 – The discovery of the possibility of treating aseptic necrosis of the joints and tubular bones (bone infarction) by a nonoperative method (Krashenyuk A.B., Burkhonov A.B.) [18].

2022 – The discovery of the possibility of effective treatment and prevention of the disease "COVID - 19 - POST-COVID SYNDROME". (A.I. Krashenyuk) [1,2].

In our previous publications, we have considered some new, previously unknown, mechanisms of therapeutic action of medical leeches, and this publication is devoted to a more detailed mechanism of the detoxification effect of hirudotherapy [1,2,4-17,21-26].

### Detoxification Effect of Leeches

When COVID-19 is affected, the human body experiences a state of intoxication, since intravascular thrombosis affects the capillary network of many organs. As a consequence of this process, hypoxia occurs in various organs, which inevitably leads to the accumulation of toxins - products of toxic metabolism.

Today, this has been proven in patho-anatomical autopsies of people who have died of **COVID-19** in many countries, not just China.

That is why, leech therapy is indicated for a disease of moderate and high severity, especially since plasmapheresis is simply not available in many medical institutions.

**"For 6 months after suffering COVID-19, there remains a high risk of death from complications caused by infection"**. This was **announced** on the air of the TV channel "Russia -24" by the Minister of Health of Russia Mikhail Murashko on August 31, 2021.

The Minister of Health noted the need to undergo an in-depth medical examination of those who have had coronavirus infection in recent months.

According to Minister M. Murashko, at this time it is possible to have various kinds of complications associated with the formation of blood clots, damage to the nervous and cardiovascular system, i.e. confirmed the conclusions of **MCSST** and the hypothesis of the development of **"POST-COVID SYNDROME"** [3]. Extended medical examination in order to identify complications after coronavirus infection and further treatment began in the regions of Russia from July 1, 2021. The minister also warned of greater lethality of the delta-strain of the coronavirus. "The mortality rate for COVID-19 disease caused by the delta- strain may be higher than in the previous period of rising incidence", he admitted.

Hemorrhagic complications with prolonged use of **SML** were not detected (the observation period in some patients was more than 22 years of continuous use).

For the first time described by us, the phenomenon of detoxification in the process of hirudotherapy, allows us to remove toxic products (**endo- or exogenous origin** that have not undergone metabolic transformations that allow them to be removed from the body with the help of excretory organs. They are capable of causing "Attached Leeches" (the definition of "Zemstvo doctors" for leeches that have passed the stage of bloodsucking) to vomit or die. This property of attached leeches allows us to consider their behavior after bloodsucking as a method for **assessing the integral toxicity of the patient's blood (author's definition)** [12].

The accumulation of clinical material on the topic of blood toxicity of patients made it possible to discover a number of unknown patterns and new facts. For example, if the death of leeches after bloodsucking occurs in a patient for 5 to 6 months of treatment, it can be concluded that the patient's toxic substances are in the **matrix or intercellular space**. And the task of the doctor is to understand how toxins entered the human body and accumulated in the matrix and how to remove them. And they could get into the matrix as a result of long-term treatment, or with chronic poisoning from the patient's environment: food, air, water, contact when working.

It should be noted that the mentioned changes in the behavior of attached leeches we can observe only if we do not kill them. If leeches die from the very beginning of treatment, this clearly indicates that toxins are in the circulating blood. For example, in the treatment of drugs containing **F<sup>+</sup>** or salts of heavy metals. Then we will observe in the attached leeches the regurgitation of blood and their death.

We will be able to observe these changes in the behavior of attached leeches only if we do not kill them, but control

their behavior by regularly changing their water. With this observation, leeches are collected monthly in a separate jar.

As a result of this observation, we receive unique information and answers to the questions:

1. Is the patient's blood toxic?
2. And if so, where are the toxins, are they in the blood currently circulating or are they in the matrix? To prove the above concept, we present a number of clinical cases demonstrating the **Integral toxicity of patients' blood**.

**Clinical case N1.** Patient. V.M.Z., 33 years old.

**Main diagnosis: chronic fatigue syndrome?**

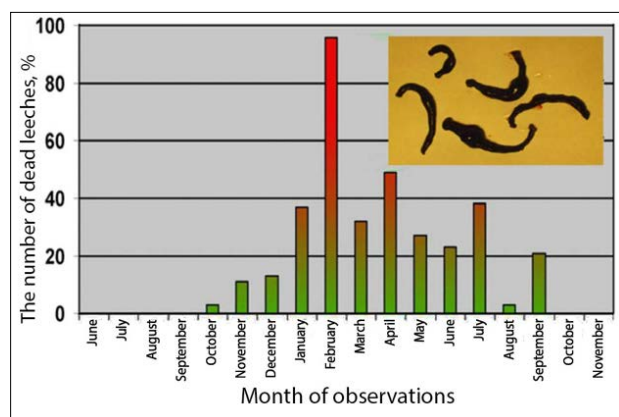
**Concomitant diagnosis: depressive state.**

**Anamnestic diagnosis: Kozhevnikov's form of epilepsy (small form), epilepsy at the age of 7 years. The treatment period is 11 years.**

**From the anamnesis.** At the age of 7 years, 2 months after starting school, the patient developed tics of the facial muscles. A council of doctors during the examination of the child established the presence of a focus of epileptic excitation in the left hemisphere of the brain.

**Diagnosed: Kozhevnikovskaya epilepsy, simple partial motor local seizures.** Drugs of 4 groups are prescribed: anticonvulsants, nootropic, and vasodilators, antihypertensive. During school life, the child took from 9 to 12 drugs of this specificity. By the third grade of school, parents began to notice a decrease in the child's memory and inhibition when performing parental assignments. Treatment of the disease continued throughout the school life of the child, for 11 years.

**Dynamics of leech death in the treatment of a patient in 1999 – 2000**



**Figure 1: Dynamics of leech death in the treatment of a patient with chronic drug poisoning. Diagnosis: a small form of epilepsy. The treatment period is 11 years [12].**

**At the Academy of Hirudotherapy,** treatment with medical leeches was started 16 years after the completion of treatment. **Final diagnosis at discharge: chronic drugs poisoning. Bad habits:** does not suffer. The patient's height is 185 cm, weight is 80 kg. **Observation period:** 18 months, from June 1999 to November 2000.

**Complaints of the patient upon admission to the Academy of Hirudotherapy:** Constant pronounced physical fatigue by 12-14 o'clock in the afternoon, sleep disturbance in the form of frequent awakenings, due to lack of physical strength does not

maintain contact with fellow students, school friends. Frequent depressive thoughts and low mood. Heaviness in the lumbar spine and lower extremities.

When examining blood by PCR for a group of herpes viruses (8 serotypes) in May 1999, the herpes virus carrier was not detected, which allowed the diagnosis of «Chronic Fatigue Syndrome» to be questioned?

In the **Krashenyuk-Akabane dynamic hirudotest** [19,20] at the beginning of treatment, abnormalities were noted in the channels: the large intestine (GI), the pericardium (MC), the stomach (E), the small intestine (IG), the bladder (V), three heaters (TR), the gallbladder (VB). After 4 months of treatment, the patient felt the restoration of physical strength and by the sixth month of treatment (December 1999), the patient notes a pronounced positive effect of treatment and begins training in the section of martial arts "Taykwan-do".

In May 2000 he entered the amateur theater at the place of residence for residents of his municipal body. In a patient with a very severe history, effective treatment was carried out without the development of attachment reactions and with minimal blood loss resulting from post-ping bleeding.

**By the end of November 2000 the patient stated that he considered himself healthy.**

**Clinical case N2.** Patient U.O.S., 33 years old.

**The main diagnosis: Ovarian cysts, a condition after two operations to remove ovarian cysts, cystic fibrous mastopathy of both mammary glands.**

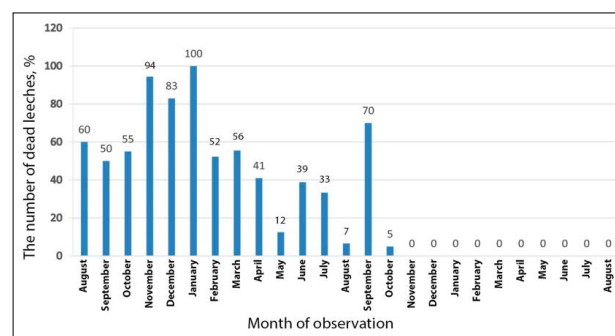
**Concomitant diagnosis: chronic tonsillitis, tonsillectomy surgery in 2013; spinal injury in an accident (2005); ulcer of the 12th duodenum (2007); stomach ulcer (2009).**

**Bad habits:** smoking experience of 12 years. Height 165 cm, weight 95 kg (overweight).

**Observation period:** 25 months.

**Complaints of the patient upon admission to the Academy of Hirudotherapy:** menstrual irregularities in the form of irregular and painful periods. Pulling pain in the lower abdomen, does not feel the right leg, constant headaches, insomnia, itching of the whole body, pain in the liver, periodic twitching pain in the mammary glands, constant congestion in the nose. Intense hair loss, loose stools up to 5 times a day, lethargy, and pain.

**Dynamics of leech death in the treatment of patient in 2014–2016**



**Figure 2: Patient U.O.S., 33 years old. Diagnosis: ovarian cysts, a condition after two operations to remove ovarian cysts. Bad habits: smoking experience of 12 years. The follow-up period is 25 months.**

in the small and large joints of the lower extremities, severe

sweating, shooting pain along the front wall of the abdomen in the vagina. **In the dynamic hirudotest Krashenyuk-Akabane** at the beginning of treatment, disturbances in the channels were noted: the large intestine (GI), the pericardium (MC), three heaters (TR), the spleen-pancreas (RP). Six months after the start of treatment, a pronounced positive clinical effect has been achieved. By September 2015, the regularity of the menstrual cycle was restored. In a patient with a burdened history and manifestations of an allergic reaction in the anamnesis, effective treatment was carried out without the development of attached reactions and with minimal blood loss resulting from post-pubia bleeding. A weight loss of 15 kg has been achieved.

**Edema of the lower extremities has gone, considers herself practically healthy after 25 months of treatment of the SML.**

**Clinical case N3.** Patient: G.E.A., 68 years old.

**Main diagnosis:** hypertension of the II stage, intervertebral hernia, common osteochondrosis. Systemic connective tissue disease.

**Concomitant diagnosis:** prostate adenoma, chronic prostatitis.

**Bad habits:** smoking experience of 18 years. The patient's height is 175 cm; body weight is 68 kg (underweight). Observation period: 24 months.

**From the anamnesis:** 25 years ago he worked with mercury and salts of heavy metals in a research laboratory. About 5 years ago, he began to feel pain in the spine, especially with muscle loads. He is fond of diving, which requires wearing about 30 kg of special equipment (oxygen cylinders) on his back before diving. For the last two years in a row, he could no longer tolerate such loads due to pain in the spine.

During the examination at the Military Medical Academy (MMA named after Kirov) in St. -Petersburg, at the Department of Neurology, numerous hernias were found in the lumbar, thoracic and cervical spine from the proposed neurosurgical operation on the spine in the **Kirov's MMA** refused because of fear of loss of motor activity.

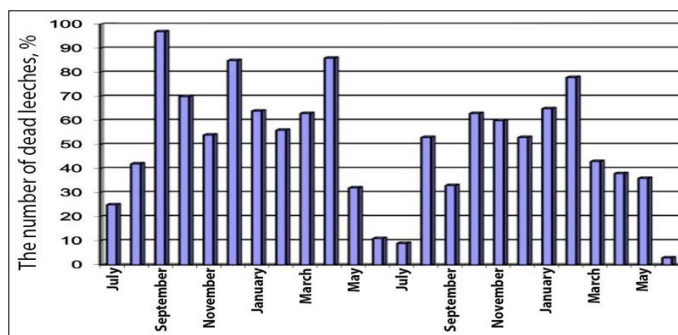
**Patient complaints upon admission to the Academy of Hirudotherapy in July 2011:** severe pain throughout the spine, heaviness in the legs, sleeps disturbances (insomnia), frequent nocturnal urination with a small volume of urine (50-70 ml each), and decreased erectile function. Depressive thoughts are often visited, especially after visiting the Military Medical Academy, where he was offered neurosurgical surgery on the spine with an uncurbed positive result.

**In the Krashenyuk-Akabane dynamic hirudotest**, at the beginning of treatment, abnormalities were noted in the channels: the large intestine (GI), the pericardium (MC), the spleen-pancreas (RP), the renal canal (R) and the bladder canal (V) [19,20].

**A pronounced positive effect** of treatment was noted after 6 months, the treatment was carried out 24 months until June 2013. The patient recovered in the process of treatment by 5.5 kg. Erectile function improved. He believes that the therapeutic effect has been achieved. A positive clinical effect was achieved with conservative treatment with medical leeches, although treatment with neurosurgical meth was previously proposed. In a patient with a severe neurological disease, which usually leads to disability, treatment was carried out without the development of attachment reactions and with minimal blood loss resulting

from post-pyge bleeding.

**Dynamics of leech death in the treatment of a patient in 2011-2013.**



**Figure 3: Patient: G.E.A., 68 years old. Diagnosis:** hypertension of the I century, intervertebral hernia, common osteochondrosis, prostate adenoma, chronic prostatitis. Systemic connective tissue disease. From the anamnesis: 25 years ago he worked with mercury and salts of heavy metals in a research laboratory.

**Clinical case N4.** Patient: L.V.F., 69 years old.

**The main diagnosis:** Hypertension of the II degree, a condition after a burn of 30% of the body in 2013. Osteochondrosis of the spine, hernia of the lumbar spine.

**Concomitant diagnosis:** prostate adenoma, chronic prostatitis.

**Bad habits:** He smoked for 10 years. Occupational hazards: he worked as a welder for more than 10 years.

**From the Anamnesis:** due to high blood pressure on the recommendation of the local therapist since 2010 takes the hypotensive drug **Diroton** at a dose of 3.75 mg x 2 times a day. At the same time, the basic blood pressure (in the morning, when waking up) is kept at the level of 130/90 -135/95.

**Observation period:** 24 months.

The reason for contacting the Academy of Hirudotherapy was the patient's desire to reduce the dosage of **Diroton** or refuse to use it. Height 178 cm, body weight 72 kg (low body weight).

**Patient complaints upon admission to the Academy of Hirudotherapy in January 2015:** constantly elevated blood pressure (BP) to 160/95 - 170/110, frequent hypertensive crises with attacks of angina pectoris.

Disorders of the nervous system are expressed in headaches, dizziness, insomnia, increased irritability, sweating, decreased efficiency, decreased erectile function.

**In the Krashenyuk-Akabane dynamic hirudotest** [19,20], at the beginning of treatment, disturbances were noted in the pericardial (MC), heart (C) spleen-pancreas (RP), kidney canal (R) and bladder canal (V).

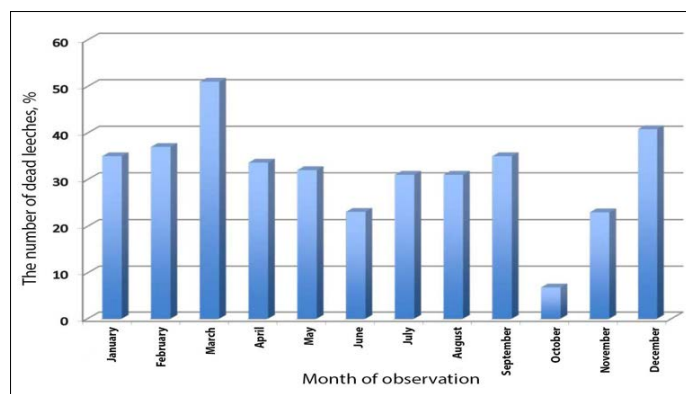
Every 3-4 months, the patient reduced the dose of the drug **Diroton** by 1/4 of the part, since the base blood pressure in the morning decreased to 120/80. **After 6 months from the start of treatment, a pronounced positive clinical effect was achieved**, and the daily dose of **Diroton** was reduced by 2 times, i.e., only 3.75 mg per day. After 12 months from the start of treatment, in connection with the normalization of blood pressure, the patient was completely **canceled Dirotion**. And he took it only periodically, for prevention after severe physical exertion. In a patient with a serious illness, usually leading to a heart attack or stroke, the treatment took place



without the development of adjoining reactions and with minimal blood loss resulting from post-pyar bleeding.

**The patient believes that the therapeutic effect has been achieved.**

#### Dynamics of leech death in the treatment of a patient in 2015.



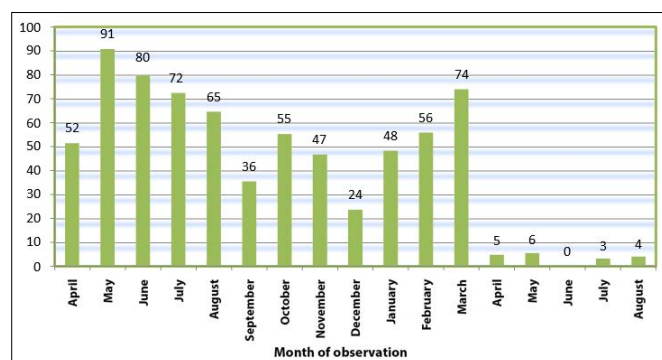
**Figure 4: Patient: L.V.F., 69 years old. Diagnosis: hypertension II st. Since 2010, he has been taking DIROTON in a dose (3.75 mg x 2 times a day). From the anamnesis: more than 10 years he worked as a welder.**

**Clinical case N5.** Patient T.M.I., 28 years old.

**The main diagnosis: Multiple hernias of the thoracic and lumbar spine.**

**Concomitant diagnosis: Osteochondrosis of the spine. Patient complaints upon admission to the Academy of Hirudotherapy in January 2015:** persistent pain of a dull nature in the lumbar spine. With physical exertion, when lifting weights, pains of a similar nature appear in the thoracic spine. Hands are often numb. Violations of the nervous system are expressed in frequent headaches, sleep disturbances, increased irritability.

#### Dynamics of leech death in the treatment of the patient in 2013 – 2014.



**Figure 5: Patient T.M.I. Multiple hernia of the spine, bilateral mastopathy, systemic connective tissue disease. Constant contact with the aerosol of the drug Triosept-VET: alkylidimethylbenzylammonium chloride (12.5%) and glutaraldehyde (3.5%); auxiliary components of neongol AF 9-12, cocoamidepropyl betaine. The observation period is 17 months.**

MRI examination of the spine revealed intervertebral hernias: Th1 - Th2 3 mm, Th3 - Th4 5 mm, Th12 - L1 5 mm, L4 - L5 4 mm. These intervertebral hernias explain the clinical picture and complaints of the patient. During the treatment of the patient, leeches died from the first month of treatment. A positive clinical

effect was achieved by the 4th month of treatment, however, even after 1 year of treatment, leeches continued to die. The reason is that the patient is a veterinarian and in the process of her treatment continued to disinfect the operating table for animals with the **antiseptic Triosept-VET**. Therefore, it was not possible to completely remove the toxicity of the blood even during 15 months of treatment. Please note readers, the experience of the author and his numerous students (about 2000 doctors) showed that both patients in the acute phase and convalescents after "COVID-19 - POST-COVID SYNDROME" noted the death of leeches after their use.

Cessation of leech death during treatment usually coincided or even significantly outpaced the clinically pronounced improvement in the patients' condition.

#### Discussion of the Results

To understand the mechanism of detoxification with medical leeches, it is necessary to recall the fundamental research of the German scientist H.-H. Reckeweg, which formed the basis of his theory of "HOMOTOXICOLOGY" [27,28].

The essence of the theory of H.-H. Reckeweg is that the problem of most diseases is the accumulation of toxins. They can be both internal (**endotoxins**) and external (**exotoxins**). In addition, the key points of his theory are to distinguish the degree of intoxication into three main stages: **humoral, matrix and cellular**, which are structurally separated by a regulatory-compensatory barrier (**biological barrier**) passing between the two phases of the matrix.

The intersection of this barrier by the disease indicates that homotoxins or their effect passes from the extracellular level to the intracellular level. This means that homotoxins that are initially outside the cells either begin to have a toxic effect on the cells, or the toxic effect is realized inside the cells themselves.

The humoral stage includes phases of **excretion and inflammation**. The matrix stage includes the phases of **deposition and impregnation**. The cell stage includes the phases of **degeneration and dedifferentiation** [29].

In the clinical cases we have cited, the most relevant is the consideration of the **matrix stage**. Diseases at this stage occur at the level of the basic substance of the basic regulatory systems (BBS). Synonyms: Pischinger space; intercellular space; a matrix consisting of proteoglycans and glucose aminoglycans.

**Matrix phases are critical in the patient's medical history**, since they are the stages of transition from extracellular toxic lesions to intracellular effects. Properly functioning, not affected by toxins, the system of basic bioregulation is the most important condition for protecting the body from the transition of diseases to chronic and degenerative forms [29].

The material offered by us allows you to understand where the toxin or toxins are located: in the circulating bloodstream or in the matrix, while allowing you to understand what kind of toxin it is - **endo or exotoxin**.

If you look at the nature of the increase in the death of leeches (**Clinical case 1**), it is easy to see that from October (1999) to February (2000), the dynamics of leech death corresponds to a graphically exponential dependence, which corresponds to a constant **influx of toxins from the matrix into the blood**.

Toxins in the matrix were deposited during the 11-year period of therapy during the treatment period and were in the matrix for an additional 16 years, before the start of leech treatment. The mechanism of increasing toxicity (an increase in the monthly death of leeches) suggests that there is an influx of toxins from the matrix into the bloodstream.

From the point of view of biochemical analysis of this process, it can be assumed that the presence of the **enzyme hyaluronidase** in the leech secretion of leeches causes the breakdown of hyaluronic acid - a polysaccharide that is part of the structure of the barrier layer of the matrix. The process of dynamics of changes in blood toxicity shows on the graph three peaks of the increase in toxicity.

The presence of these peaks is also explainable from the point of view of the classical law of diffusion: the rate of diffusion is determined (proportional) to the diffusion coefficient and is inversely proportional to its hydrodynamic radius (the size of the molecule). The author does not give special mathematical formulas for the laws of diffusion (**A. Fick, Stokes-Einstein**), respecting the medical-biological, and not the physical profile of the journal.

**The results obtained by us allow us to offer a new clinical indicator - integral blood toxicity.** This indicator can be a good marker of the patient's detoxification process when treated with leeches, which is especially important for the current **"COVID-19 – POSTCOVID SYNDROME"** pandemic.

In addition, our proposed indicator can also be a test in testing the toxicity of new drugs, **since the LD<sub>50</sub> indicator does not always reflect the actual toxicity of a pharmaceutical drug to humans.**

According to the theory of **"Homotoxicology"** of H.-H. Reckeweg, the treatment of chronic diseases should be approached on the basis of three principles: **detoxification, drainage, support of organs and cell functions, immunomodulation.**

Although Dr. H.-H. Reckeweg wrote about the importance of detoxification and drainage in **"Homotoxicology"**, the modern understanding of the role of the matrix led to the fact that the need for this component of the therapeutic strategy was realized by all areas of **complementary medicine.**

Under the influence of detoxification and drainage, not only the amount of accumulated toxins decreases, but also the symptoms of functional cellular disorders decrease.

It is also extremely important to note the significant structural biochemical similarity of human neurotransmitters and *Hirudo medicinalis*, including neurotransmitters **of a peptide nature** [30].

In conclusion, it should be noted that the **"System Method of Leeching"** has all three principles for the treatment of chronic diseases: **detoxification, drainage, support of organs and cell functions, immunomodulation** [1, 2, 4, 5].

## Conclusions

1. **A new clinical term is proposed - integral toxicity of blood.**
2. **The dynamics of leech death when using the "System Method of Leeching" allows you to determine where**

**the toxin is located, in the circulating blood or in the patient's matrix.**

3. **The "System Method of Leeching" allow you to simultaneously solve the problems: detoxification, drainage, support of organs and cell functions, immunomodulation.**

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