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MORPHOLOGICAL CHANGES IN THE TEXTURE OF THE FACIES OF THE BIOLOGICAL FLUID OF PATIENTS WITH HYPERTENSION BEFORE AND AFTER HIRUDOTHERAPY

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Introduction:

Morphological changes in the texture of biological fluid are the subject of active research in the field of medicine. One of the most common diseases associated with changes in the texture of the facial fluid is hypertension. Hypertension is a serious health problem because it can lead to cardiovascular diseases, stroke and other complications.

In recent years, special attention has been paid to the search for new approaches to the treatment of hypertension, and one of the promising methods is hirudotherapy – the use of medical leeches as a therapeutic agent. Hirudotherapy has been used in medicine since ancient times and has a wide range of effects, including improving blood circulation, lowering blood pressure and reducing blood viscosity. However, the mechanisms underlying the effectiveness of hirudotherapy in hypertension remain not fully understood. Of interest is the study of morphological changes in the texture of the facial biological fluid in patients with hypertension before and after hirudotherapy. This approach allows for a deeper understanding of the processes occurring in the patient's body and to identify possible links between changes in the texture of the facial fluid and a decrease in hypertension symptoms after hirudotherapy.

Relevance:

Historical significance: Hirudotherapy has roots in ancient cultures and has been widely used for many centuries. Its use in folk medicine is associated with a rich heritage of traditions and practices. Naturalness: Leeches are natural organisms, and many adherents of traditional medicine believe that natural methods of treatment are more preferable. Hirudotherapy does not use synthetic drugs, which makes it attractive to some people. Accessibility: In some regions, especially in rural areas, where access to modern medicine may be limited, hirudotherapy may be a more accessible and affordable way of treatment. Patient Satisfaction: People claim that hirudotherapy helps them cope with various conditions, such as joint pain, varicose veins or headaches. Improving well-being and feeling a positive effect can satisfy patients and confirm their belief in the effectiveness of hirudotherapy.

Girudin is a component of leech saliva. It is a powerful anticoagulant, that is, girudin prevents the formation of blood clots and even to some extent eliminates existing ones. That is why hypertension, the formation of blood clots and many other diseases of the circulatory system are particularly effective in treating with hirudotherapy [1]. In addition, girudin itself consists of a number of useful amino acids, such as: glutamine (strengthens the immune system during high physical exertion), lysine (helps to

better absorb calcium and has an antiviral effect), cystine (participates in the regeneration process and reduces the negative effects of alcohol and tobacco smoking), glycine (increases mental performance and reduces psycho-emotional stress), asparagine (responsible for participation in nitrogen metabolism), serine (responsible for the biosynthesis of a number of essential amino acids for the body) and a number of other useful components [3]. In our country, along with other endocrine and oncological diseases, hypertension occupies a special place [5]. Hypertension is a condition in which the pressure in the blood vessels exceeds normal values (140/90 mmHg or higher) [5, 3]. Hypertension is widespread, but in the absence of treatment can lead to serious consequences, about 80% of the Uzbeksitan population in old age, and sometimes in adulthood face this problem, and even if this disease is treated with medication, the symptoms of hypertension can still return, girudin completely eliminates these symptoms for a very long time. Since girudin has a chemical nature and a variety of amino acids in its composition, therefore, the intake of girudin will affect the humoral and physiological state of the body, and will also affect metabolism. To determine how hirudin therapy affects the manifestations of hypertension, we decided to use a simple and non-invasive technique [6, 9, 10, 12]. Everyone knows that biological body fluids are very sensitive to biochemical and physiological changes in the body, and the morphostructure of a dried drop of biological fluid is very informative and reflects the physiological state of the human body [7, 4, 11, 13, 14].

Oral fluid was chosen for our analysis because saliva is a true ion–protein solution, the constancy of which is ensured by the acid-base state of the oral fluid. Oral fluid is a functional unit, a complex filtrate of blood plasma and an indicator of the hematosalivary barrier, objectively reflecting the state of dynamic constancy (homeostasis) of the internal environment of the body. In addition, when exposed to endo- and exogenous factors that actively affect the intensity of salivation, the oral fluid changes significantly in composition, physico-chemical and biological properties [5, 7, 8, 15, 16, 17]. To date, various aspects of salivation and the composition of saliva as a biological fluid are being studied in detail, and yet one of the unresolved and not fully understood problems is the individual variability of both the amount of saliva and its components. Therefore, the study of the physico-chemical properties of saliva and their correlation with the functional and physical state of the body are relevant [18, 19, 20].

Keywords: Morphological changes, biological fluid, hirudotherapy, patients, blood pressure.

The purpose of the study

To clarify the use of hirudin therapy as a treatment for hypertension and to identify morphological markers of their unstimulated oral fluid.

Materials and methods of research

The study included 280 patients of both sexes who were patients of a private clinic at the Fergana Medical Institute of Public Health, all of them had a history of hypertension. All examined by age were divided into two groups:

1. Mature age (from 22 to 60 years)
2. Elderly persons (from 61 and above)

The collection of mixed and unstimulated saliva was carried out in a state of calm wakefulness in an isolated room from 8 a.m. to 10 a.m. The saliva collection method was the following: in the morning on an empty stomach, before brushing teeth, students thoroughly rinsed their mouths with distilled water 2-3 times, then spat 2-3 times into the sink, after that they spat into a graduated test tube for 10 minutes. Then the mixed saliva was pre-centrifuged for 20 minutes at 3000 rpm, a set volume of 0.02 ml of centrifuged saliva was taken using a micropipette and applied to a slide placed on the surface of a portable laboratory device. Saliva for comparison was taken twice, before girudinotherapy and after, at the stage of girudinotherapy, a special diet No. 10 was prescribed. The type of saliva facies was determined by the method of G. Leus, four types of crystallization were identified.

Type I is a clear drawing of interconnected large crystal–prismatic structures of a tree-like (fern-like) shape, evenly spaced along the main layer of the drop. Single organic inclusions are observed around the perimeter.

Type II – in the central part, separate crystal-prismatic structures of a tree-like (fern-like) shape are determined, some of the crystals are not interconnected. A moderate amount of organic inclusions is located along the periphery of the drop.

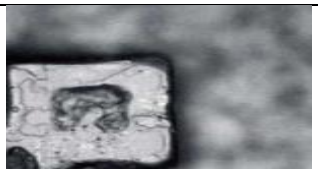
Type III – a large number of irregularly shaped chaotically placed structures are visible throughout the entire drop area, as well as a significant number of organic inclusions sticking to crystals

Type IV – single small crystals of irregular shape, without a clear orientation with signs of disaggregation or complete absence of crystals are detected in the field of view along the entire perimeter of the drop

Results and Discussion

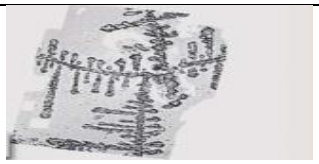
In the course of our study, some differences from the normal form of crystallization of the facies were revealed, namely, before hirudin therapy, a low level of microcrystallization was observed in the range of 40-90 crystals along the perimeter of the facies, a complete or partial absence of an intermediate zone was observed in the facies, the marginal zone was often covered with arcadian cracks, which were signs of pathological conditions. Specific crystals have also been identified, which can be considered markers of hypertensive diseases because after hirudotherapy they either disappeared completely or remained partially.

Table1. Types of crystals in the examined individuals before hirudin therapy

№	Image	Crystal Type
1		Figure "Cross", in 12.7% of cases
2		Fragmented crystals in 80% of cases
3		Crystals in the form of a box in 13.6% of cases.

These types of crystals were typical for both men and women. The level of crystallization and types of crystals are mainly influenced by the age of patients, because the physiological and biochemical processes in adulthood and the elderly are still different.

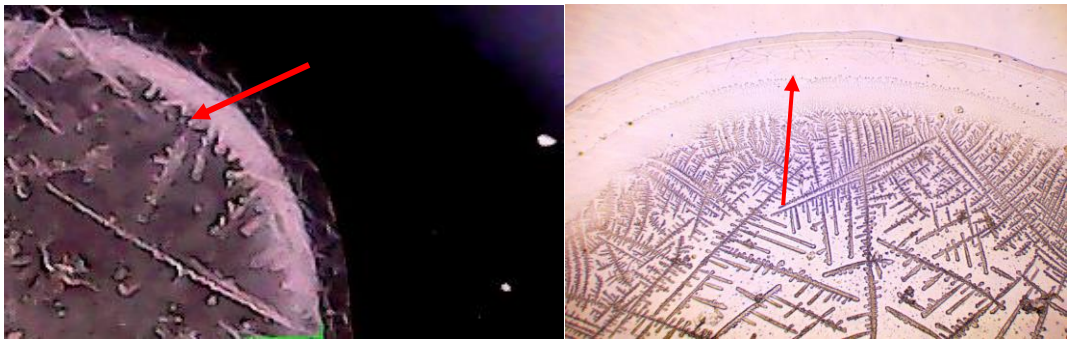
Table 2. Types of crystals in the examined individuals after hirudotherapy

№	Image	Crystal Type
1		Crystals with long micro-processes in 70% of cases
2		Fragmented crystals in 15% of cases
3		Crystals are thinned in 15% of cases.

Consequently, before hirudotherapy, there was no intermediate zone at all in men and women, the marginal zone had pronounced arcadian cracks, and the level of microcrystallization of the facies was reduced.

After hirudotherapy, the opposite picture is observed, namely, an intermediate zone appears in patients. The level of microcrystallization increases, crystals appear mainly in the form of a tree or shrub and crystals with long processes, before hirudotherapy, there were mainly crystals in the form of crosses, thinned and not pronounced crystals.

Large differences were also observed in the marginal zone of the examined individuals, in patients before hirudotherapy, wide arcadian cracks were observed in the marginal zone, and the marginal zone itself was wide enough, which is not a normal indicator.



А Б

Fig. 1. Differences in the marginal zone of patients with hypertension A- before hirudotherapy and after hirudotherapy-B

Based on everything we have studied, we can conclude that the oral fluid has proven to be informative in relation to changes associated with hirudin therapy.

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