

Morphological Indicators of the Facies of Biological Fluids in Patients with Liver Diseases

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Abstract

The article discusses the results of morphometric studies of the solid phase serum of patients with liver disease. It is shown that the marker enzymes, minerals and proteins bioliquid facies (serum) obtained by dehydration wedge observed facies different zones.

Keywords: blood serum, facies, a biological fluid, a wedge-shaped dehydration, liver cirrhosis

1. Relevance of the Work

A few decades ago, many predicted the imminent accession of science in the age of biology. Twenty-first century has been called the century of the life sciences - including health, his longevity, place in nature. And indeed the revision of priorities in science occurred.

In Uzbekistan, along with the developed countries of the world, this process came to the government level, and was reflected in the reorientation of the socio-economic approaches, causing health and environmental problems attached particular importance - as a priority. It is significant that in the first place among scientific programs cost the budget in developed countries is biology, which hold a large amount of applied medical problems.

Biological fluids (blood, urine, saliva, etc.) Play an important role in the organism. The organisms are entire systems and mechanisms that support in the normal conditions of their composition, structure, quantity, parameters and other properties. It is found that the deviation of these parameters outside the adaptation rules always leads to pathological processes in the body at the cellular, organ or system level (Shabalin & Shatokhina, 2001).

Changing the parameters of body fluids can occur either as a result of external causes or effects, either as a result of failures in the components of the organism. In any case, the parameters and properties of body fluids are indicative of the state of health as its individual elements as well as whole body (Shatokhina, 1995).

The purpose of the study was to examine the features of the system of organization and identification of serum markers of healthy and sick people with liver disease.

2. Materials and Methods

To achieve the objectives for the period from 2012 to 2014, the method of wedge dehydration, solid phase serum were obtained of 283 patients (137 males, females, 146) at different ages, with viral liver disease (total 225 patients, of whom 111 in acute, chronic period 104), with liver cirrhosis (68 patients in all stages of a, B, C by Child Pugh) and 51 healthy people. All patients were treated at the Ferghana regional infectious diseases hospital and Fergana regional diversified medical centers.

Clinical diagnoses were established physicians of medical institutions where patients are treated on the basis of patients' complaints, medical history, typical clinical picture, the results of clinical, biochemical, immunological tests and imaging studies. The diagnosis was in accordance with the existing classifications for International Classification of Diseases - ICD-10.

Structural analysis of the blood serum of patients was conducted by the method of wedge dehydration. a control group of healthy people (according to the medical certificate of military enlistment offices and medical form 086 / y) was taken for comparison facies crystals of biological fluids (BF) aged 17-30 years. Determine the types of facies classification V.N. Shabalin and S.N. Shatokhina (Shabalin & Shatokhina, 2002).

Crystallographic picture of dried droplets (facies) was investigated using a stereo microscope Leica Magnum - T 2721 c photosystem MPS 60. Facies image processing performed on the computer program "ExterNET AMI systems" (Abdumanonov, Botirov, & Karabaev, 2014).

3. Results and Discussion

Analysis blood serum crystallographic features let highlight 4 types of its structural organization in the pathology of the liver: partly radial, irradiálny, circulatory and "three-fold".

The first type - partly radial had mild to moderate deviations from the radial-ordered arrangement of sectors, individual and nodules (Figure 1a.).

The second type - irradiálny characterized by significant impairment on the systemic level. Figure facies characterized by asymmetry, the number of basic elements have been reduced, and their configuration is varied (Figure 1 b).

A feature of the third type - circulatory was the presence of large cracks, are arranged parallel to the edge facies between the peripheral and intermediate zones, the formation of which is determined by the circular distribution of the observed basic structures (Fig c.).

The structural pattern of the fourth type, is fundamentally different from the above types of facies serum did not contain the basic elements of her drawing was created by a network of small convoluted (three-prong) cracks that gave us a reason to call this type of "three-beam" (Figure 1g).

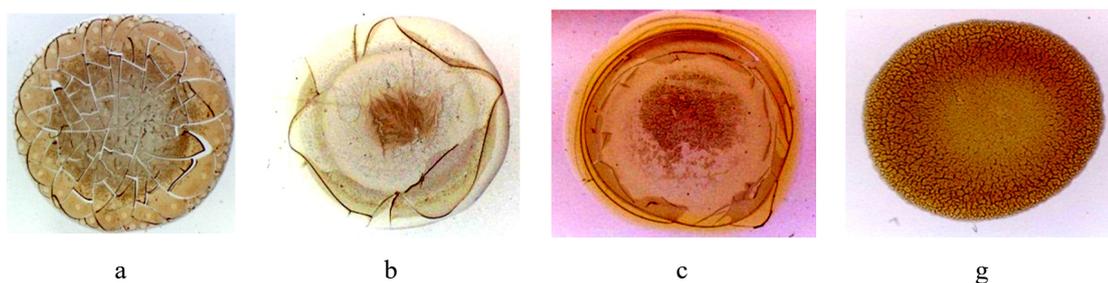


Figure 1. The types of structural organization of serum liver diseases

The distribution of facies types of blood serum in patients examined is shown in Table 1.

Table 1. Facies types of blood serum liver diseases

Facies type	acute viral hepatitis (n=111)		chronic hepatitis (n=104)		cirrhosis of the liver (n=68)		Control (n=51)	
	abc	%	abc	%	abc	%	Abc	%
	Partially groove	-	-	-	-	-	-	51
Irradiálny	45	40.5	54	51.9	45	66.2	-	-
Circulatory	30	27	32	30.8	16	23.5	-	-
Three-prong	36	32.4	18	17.3	7	10.3	-	-

Thus, the serum of patients in the study using the method of wedge dehydration, with significant differences from the norm, is characterized by the presence of at least one of the major structural elements (large cracks, sectors, individual or nodules).

In addition to the identified changes in the main items of the facies in the structural organization of the serum examined patients determined a wide variety of abnormal structures.

Analysis of the results revealed the most typical and most common abnormal structure with cirrhosis who were treated leaf structure and various types of cracks, concentration, etc. are free. The hallmark of facies blood serum in liver disease was pathologically modified polymorphism cracks. There were cracks circulatory, knotted blocks, the structure of the "harness" in the central area and the periphery.

In the spectrum of the most frequently detected violations of local structural organization of the blood serum with liver cirrhosis leading position occupied by leaf-shaped structure, is a sign of sclerosis process, tri-radial cracks - markers of stagnation.

Our results showed that leaf-shaped structure was significantly more common with cirrhosis than in patients with chronic hepatitis and moss figure rounded circular crack on and recorded at approximately the same frequency.

It is known that the pattern being the level of blood serum reflects the degree of tension of adaptive systems of the body: the pronounced adaptive response, the higher the activity of structure. In addition to the basic elements of the identified changes facies in crystallographic picture of blood serum of patients examined was determined by a wide variety of abnormal patterns (Table 2).

Table 2. The frequency of abnormal structures in the morphological picture of blood serum in liver disease

Pathological structure	Groups of patients							
	Acute Viral Hepatitis (n = 111)		chronic hepatitis (n = 104)		cirrhosis of the liver (n = 68)		Norm (n = 51)	
	abs.	%	abs.	%	abs.	%	abs.	%
Dendrites	58	52.2	101	97.1	15	22.1	-	-
spherulites	20	18.0	18	17.3	2	2.9	-	-
Whiskers	-	-	-	-	5	7.4	-	-
defective spherulite	-	-	2	1.9	18	26.5	-	-
Dual facies	20	18.0	35	33.6	4	5.9	-	-
Rounded inclusion	28	25.2	48	46.2	25	36.8	-	-
Circular waves	-	-	10	9.6	17	25	-	-
Asymmetric separately located	58	52.3	104	100	6	8.8	-	-
Arcade-radial cracks	-	-	-	-	10	14.7	51	100
concentration wave	-	-	-	-	8	11.8	-	-
Local concentration waves	-	-	-	-	2	2.9	-	-
The funnel-shaped cracks	-	-	-	-	-	-	40	78.4
Wrinkles	-	-	-	-	17	25	-	-
blur effect	10	9.0	-	-	4	5.9	-	-
Blyashkoobraznye structure	-	-	-	-	10	14.7	-	-
The structure of the "harness"	-	-	48	46.1	14	20.6	-	-
Circular cracks	-	-	55	52.9	30	44.1	45	88.2
nodules	31	27.9	68	65.4	-	-	-	-
The structure of the "harness" on the periphery	58	52.3	104	100	22	32.3	-	-
The structure of "tow" in the central zone of the type	58	52.3	104	100	35	51.5	-	-
Moss	75	67.6	104	100	68	100	-	-
leaflike structure	-	-	-	-	26	38.2	-	-
crack three-beam	10	9.0	15	14.4	49	72.1	-	-
Availability zones	90	81.1	100	96.1	60	88.2	51	100

As Table 2 shows that the dendrites enable rounded asymmetrical spaced apart, such as "plait" structure at the periphery and in the central zone occurs in a large amount (more than 50% cases) during the acute and chronic hepatitis. Circular cracks structure "harness" the type of circular waves, defective spherulites occur in chronic hepatitis and liver cirrhosis. Figures in the form of a "Mocha" and the presence of the zones found in all patients in the facies of blood serum. Zoning is available in all facies of patients examined. Measurement of the diameters of zones, shows that the relationship between them is almost the same in all cases.

We were the first in liver disease have been found, "moss" figure is a sign of increasing concentration of bilirubin in the blood. The figure of "moss" facies in serum in chronic liver disease and cirrhosis of the liver occurs 100%. The emergence of these types of crystals in the blood serum of patients mainly due to the increase in bilirubin, ALT, AST, and total protein. This is confirmed by the testimony of the biochemical laboratory of the Fergana regional infectious diseases hospital.

As a result of our research found that increasing excess of bilirubin (normal bilirubin 8.53-20.5 mmol / l), moss area of the figure is increased by $3,4 \pm 0,3$ mm². Thus, we can say that the blood bilirubin appears in the central area of its dried solid phase in the form of figures "Moss" type area that clearly correlates with the quantity (Botirov, Abdumanonov, & Karabaev, 2013).

It has been shown that more frequent during cirrhosis of the liver than in acute viral hepatitis and chronic hepatitis leaf, tri-radial cracks, and rounded on and circulatory crack recorded at approximately the same frequency. The incidence of the structure of the "harness" in the central zone of facies that are considered dehydration marker in chronic hepatitis was higher than in acute viral hepatitis and liver cirrhosis.

4. Conclusions

- 1) The blood serum of patients in the study using the method of wedge dehydration, with significant differences from the norm, is characterized by the presence of at least one of the major structural elements (large cracks, sectors, individual or nodules). In addition to the identified changes in the main items of the facies in the structural organization of the serum examined patients determined a wide variety of abnormal structures.
- 2) Revealed the most typical and most common abnormal structure with cirrhosis who were treated leaf structure and various types of cracks, concentration, etc. are free. The hallmark of facies serum in liver disease was pathologically modified polymorphism cracks. There were cracks circulatory, knotted blocks, the structure of the "harness" in the central area and the periphery.
- 3) It was found that the leaf structure was significantly more common with cirrhosis than in chronic hepatitis and moss figure rounded circular crack on and recorded at approximately the same frequency.
- 4) We were the first in liver disease have been found, "moss" figure is a sign of increasing concentration of bilirubin in the blood.

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