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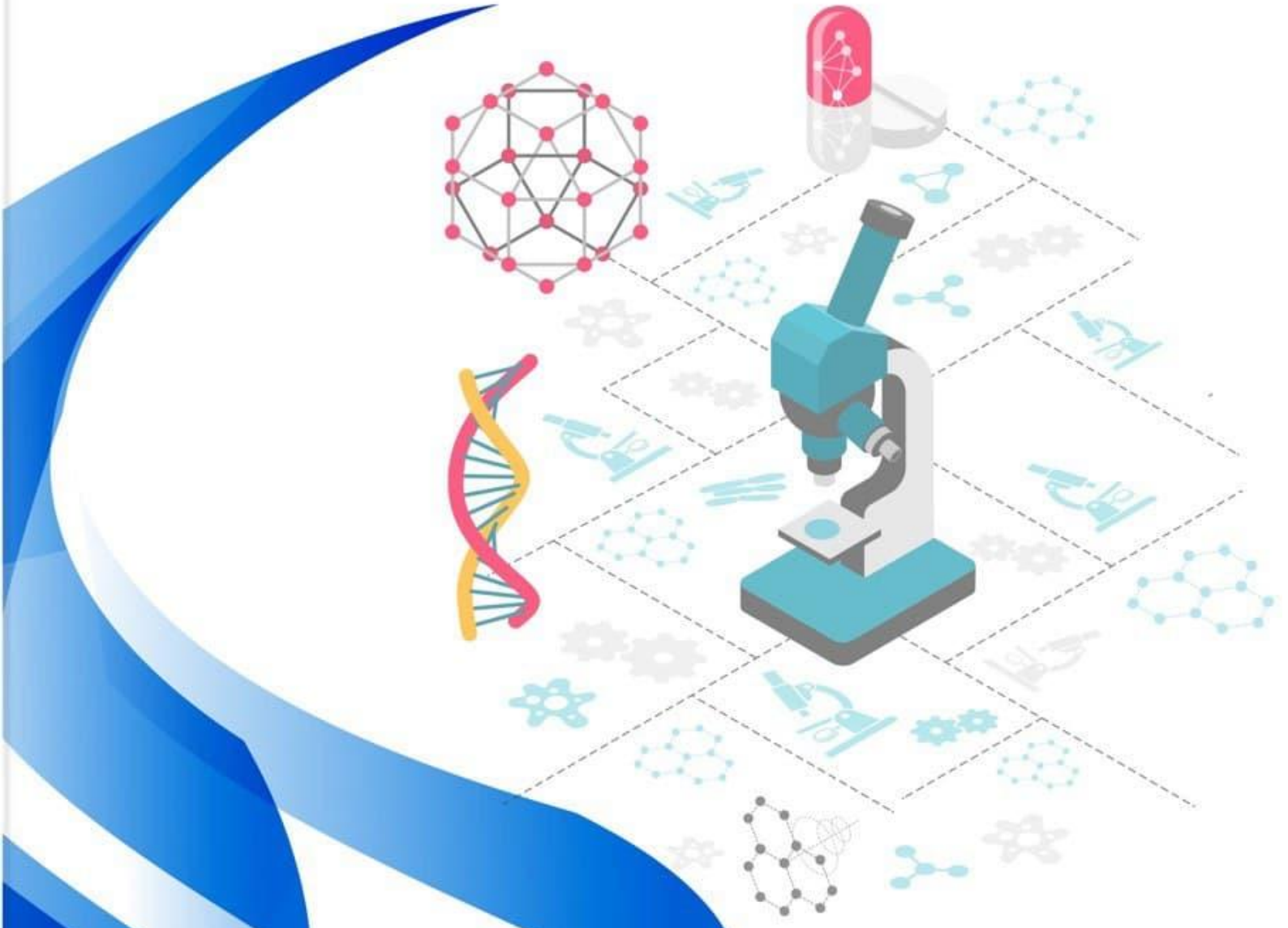

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LIVER HEMODYNAMICS DISORDERS IN PATIENTS BRONCHIAL ASTHMA

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Introduction. In recent years, there has been an increase in the incidence of bronchial asthma, which makes it one of the most common human pathologies[2]. Thus, the incidence of bronchial asthma in some regions of the world reaches 10%. According to WHO, by 2025, this disease will affect another 100-150 million of the world's population[4]. Disability from this disease in the Bukhara region, according to the main regional VTEC, in 2022 there are 15 new registered patients, in 2023 19 patients and in 3 months of 2024 3 patients. The total number of registered VTEK patients with bronchial asthma as of March 2024 is 1507, which in itself indicates a growing trend of bronchial asthma among the population[3].

The medical and social significance of the problem is due to the predominance of people of working age among patients with bronchial asthma. Of undoubted interest is the study of liver hemodynamics in patients with bronchial asthma, which plays an active role in the deposition of blood and the regulation of venous return to the heart, thereby facilitating the work of the right ventricle, which necessitates the development of criteria for identifying early disorders of venous outflow from the liver[1].

At the initial stages of the development of bronchial asthma, hypoxia is caused by impaired external respiration function, which is compensated in the liver by an increase in oxygen extraction from the blood and a slight acceleration of blood flow in the sinusoids[5]. At the same time, it has been experimentally proven that the vascular zones of the liver and lungs react to the pathological process in a friendly and unidirectional manner[6]. At later stages, there is a discrepancy between the inflow and outflow of blood from the liver, which contributes to the formation of venous stagnation and impaired tissue perfusion of the liver.Hypoxia plays a significant role in the pathogenesis of secondary liver damage[7,8].

Purpose of scientific work: To determine the types of liver circulatory disorders caused by discirculation of central hemodynamics in bronchial asthma.

Research objectives: To study the state of central hemodynamics in patients with bronchial asthma and the type of ultrasonographic signs characteristic of certain types of central hemodynamic disorders

Research materials. My supervisor and I conducted an open clinical study of hemodynamic changes in the liver in patients with bronchial asthma. It was carried out on the basis of the Regional Multidisciplinary Medical Center in the department of allergology and pulmonology. 48 patients withbronchial asthmawithout a history of concomitant liver diseases and 12 practically healthy individuals making up the

control group. Patients with severe and moderatebronchial asthmawere aged from 15 to 55 years (average age - 36 years). Among the subjects, 25 were women and 35 men. The duration of the disease varied from 2 to 22 years. The control period was 88 days.

Research methods. Anthropometric, as well as clinical and laboratory, echographic, x-ray, spirography, peak flowmetry. Assessment of central hemodynamic parameters: currently, it is accepted to distinguish three hemodynamic types of central hemodynamics: eukinetic, hyperkinetic and hypokinetic. The authors divided the types of hemodynamics according to the cardiac index (CI), which is the normalized value of minute volume of blood circulation (MCV) per unit surface area of the patient's body[10]. All SI values were divided into three equal parts: the highest SI values were assigned to the hyperkinetic type of blood circulation, the smallest values to the hypokinetic type, and the average values to the eukinetic type. But this does not take into account the gender and weight of the person being studied.

In this regard, a system of standards was developed that made it possible to divide healthy individuals and patients with various pathologies into hemodynamic types, and these standards had to be individual, taking into account the gender, age, height and weight of the patient, i.e. designed for each person.

N.N. Savitsky proposed to determine the value of the proper minute volume (DMV) based on the values of the proper basal metabolic rate (BME), i.e. taking into account the intensity of metabolic processes depending on age and gender[9].
According to the formula of N.N. Savitsky DMO (l/min) = DOO/281.

To calculate the DOO, we used the formulas of Harris and Benedict, taking into account that the basal metabolism depends on the gender, age and height of the patient:

for men:
DOO (kcal) = 13.75M+5R-6.75B+66.77;
For women:
DOO (kcal) = 6.56M+1.85P+4.67B+65.09;
where M is weight in kg, P is height in cm, B is age in years.
Next, the minute volume of blood circulation IOC is determined using the following equation:
MOQ (%)=100*(MOK-DMOC)/DMOC

MOC - minute volume of blood circulation
DMV - proper minute volume
DOO - proper basal metabolic rate

After simple mathematical transformations, we came to the following algorithm for dividing into types of central hemodynamics according to the measured MOC data

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and calculated DMOC, taking into account the gender, age, weight and height of the patient.
Hyperkinetic: %MOK>50%
Eukinetic: -10%≥%IOC≤50%
Hypokinetic: %IOC <-10%

The state of hemodynamics in the liver was assessed using ultrasonographic studies using a SONOSCAPE SSI 5000 model device in Bukhara regional multidisciplinary medical center.

We divided the subjects into groups:

- With a mild degreebronchial asthma17 persons
- With an average degree of 19 persons
- Severe 12 persons
- The control group consisted of 12 practically healthy individuals.

Groups were divided by indicatorsspirometry and peak flowmetry:
Stage 2. FEV1 80% of normal, colebronchial asthma 20-30%.
Stage 3 FEV1 60% of normal, colebronchial asthma up to 30%.
Stage 4. FEV1 59% or less of normal, colebronchial asthma 31% or more.
In the control group. FEV1 more than 90%, colebronchial asthma less than 10%.

All patients in the hospital received complex standard therapy, including basic anti-inflammatory drugs, bronchodilators, antihistamines, infusion therapy, and, if necessary, antibacterial and expectorant drugs. Patients were re-examined upon achieving remission.

Among the individuals we examined, disturbances in central hemodynamics were observed in hypo and hyperkinetic types.

Hyperkinetic type: in 1 patient with mild and 2 patients with moderate severity Hypokinetic type in 17 patients with moderate severity in all 12 patients with severe degree of disease.
The rest of the subjects had a eukinetic type of central hemodynamics.

Indicators of % IOC among those studied.

No.	Easy stage	Middle stage	Heavy stage	Counter. Group
1	48	-12	-13	22
2	40	-15	-18	18
3	36	-11	-20	30
4	20	-12	-17	32
5	52	52	-16	14
6	10	-13	-18	15

7	12	-17	-17	25
8	28	53	-19	29
9	26	-18	-17	27
10	29	-16	-17	25
11	22	-15	-16	24
12	20	-14	-18	26
13	12	-14		
14	44	-16		
15	45	-15		
16	42	-14		
17	38	-18		
18		-17		
19		-12		

During the work, ultrasound examination of patients with bronchial asthma revealed changes in the speed parameters of venous outflow from the liver and an increase in the echogenicity of the liver parenchyma. In patients with a mild course of the disease during exacerbation, despite moderate signs of bronchial obstruction, pressure in the pulmonary artery, and speed indicators of venous outflow from the liver did not differ from those in healthy patients. With an increase in the degree of bronchial obstruction and hemodynamic disturbances in the pulmonary circulation, congestion in the liver developed.

In patients with increasing severity of the disease, an increase in hemodynamic disturbances of the liver was observed as follows:

- During exacerbationbronchial asthmamild course - no obvious signs of liver stagnation were identified.
- During exacerbation of moderatebronchial asthmaThe patients had hepatic circulation disorders - increased echogenicity of the parenchyma, the diameter of the portal vein was increased to 16 mm.
- For severebronchial asthmachanges in the hepatic vessels indicated increasing venous stagnation:

- Increased echogenicity of the liver. Increasing the diameter of the portal vein to 20-22mm.
- There were no significant positive dynamics after treatment in this group of patients.

Based on these data, we can say that among patientsbronchial asthmaThe hypokinetic type of hemodynamics prevails (in 90% of patients) and as the severity of the disease increases, the hypokinetics of central hemodynamics, as well as venous stagnation in the liver, increases.

Conclusions:

- 1. Whenbronchial asthmamild hepatic hemodynamics without obvious changes.
- 2. In patients with moderate and severe asthma, against the background of a hypokinetic type of central hemodynamics, there is a decrease in arterial flow to the liver and venous hypervolemia, which increases with the severity of the disease. Changes in hepatic circulation are persistent.
- 3. Difficulty of venous outflow from the liver in patients was determinedbronchial asthmaand a direct connection with the severity of obstructive syndrome was revealed.

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