CARDIOVASCULAR ACTIVITY IN MILD FORMS OF BRONCHIAL ASTHMA

СЕРДЕЧНО-СОСУДИСТАЯ ДЕЯТЕЛЬНОСТЬ ПРИ ЛЁГКИХ ФОРМАХ БРОНХИАЛЬНОЙ АСТМЫ

BRONXIAL ASTMANING YENGIL SHAKLLARIDA YURAK-QON TOMIR TIZIMI FAOLIYATI

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Annotation. *Disorders of intracardiac blood flow in patients with bronchial asthma (BA) are associated with the severity of obstructive syndrome, while changes in the lungs and minor blood circulation occur periodically as changes in blood movement. The study of disorders of the cardiovascular system in BA can play an important role in the process of their treatment.*
Key words: *bronchial asthma, cardiovascular system, pathogenesis, course, consequences.*

Аннотация. *Нарушения внутрисердечного кровотока у пациентов с бронхиальной астмой (БА) связаны с выраженностью обструктивного синдрома, при этом изменения в лёгких и малом кровообращении периодически проявляются как нарушения движения крови. Изучение нарушений сердечно-сосудистой системы при БА может играть важную роль в процессе их лечения.*
Ключевые слова: *бронхиальная астма, сердечно-сосудистая система, патогенез, течение, последствия.*

Annotatsiya. *Bronxial astma (BA) bilan hastalangan bemorlarda yuzaga keladigan yurak ichidagi qon aylanishi buzilishlari obstruktiv sindromning og‘irligi bilan bog‘liq bo‘lib, shu bilan birga o‘pkada va kichik qon aylanish tizimidagi o‘zgarishlar qon harakatining o‘zgarishi sifatida davriy ravishda namoyon bo‘ladi. BAda yurak-qon tomir tizimidagi buzilishlarni o‘rganish ularni davolash jarayonida muhim ahamiyatga ega bo‘lishi mumkin.*
Kalit so‘zlar: *bronxial astma, yurak-qon tomir tizimi, patogenez, kechishi, oqibatlari.*

Introduction. Bronchial asthma (BA) is a serious global problem and is characterized by the fact that it occurs among representatives of a more able-bodied population. Despite the implementation of national and international treatment recommendations for BA, the progress in pharmacotherapy, the prevalence of this disease is maintained at a high level, and about 250,000 patient deaths are observed every year. According to who, today about 300 million people with BA are infected worldwide, according to predictions this figure will increase by 1.5 times in the next 10 years. Insufficient control of the disease leads to serious complications, disability of patients and lethal consequences.

The choice of the most perfect method in diagnosing the changes observed in the cardiovascular system in this disease in the entire world modern health system is one of the pressing issues of today. Hemodynamic disorders in patients with BA are considered to be associated with the possibility of obstructive syndrome. The causes of death from this disease are led by changes in the cardiovascular system and various complications resulting from it. The study of disorders in the circulatory system in BA plays an important role in the process of their treatment.

Chronic hypoxia, a stress factor that develops in chronic obstructive pulmonary disease and BA and aggravates the course of the disease, increases the function of all vital organs, especially the myocardium. Hypoxia stimulates the release of inflammatory - calling mediators, one of which is the troibocyte inducer-thromboxane A2 causing microcirculatory dysfunction in the myocardium, leading to coronary insufficiency, with little or no symptoms. Also, in turn, the Ba itself and the drugs used in its treatment lead to a violation of the heart rhythm and permeability. However, related disorders occur in lung and cardiac functions, that is, comorbidity develops. In this context, the study of pre-clinical changes in cardiac rhythm disturbances in the walls of medium-caliber arteries in the early stages of BA, that is, in their lighter forms, has aroused great interest.

Material and methods. In accordance with the goals and objectives of the study, the study was carried out in the pulmonology department of the Fergana regional Multidisciplinary Medical Center from 2021-2023. The review protocol was approved by the local ethics committee. All patients included in the study were explained the examination plan and received their written consent to conduct the study. The study involved 103 BA patients.

After patients gave written consent to the study, patients were divided into several groups:

Group 1 with mild intermittent (MI) BA - 41 patients;

Group 2 mild persistent (MP) with BA - 40 patients

Group 3 control group is a group of 22 health professionals.

ECG Holter monitoring using the SCHILLER MT-200 Holter - ECG V 2.71.1 cardioregistrator, a 24-hour ECG was implemented, followed by an automated Analyzer using standard analysis software on the IBM PC, a computer compatible with it.

ECHO multi-frequency 2-4 megagers was conducted with Cardinal sector sensor in General Electric Vivid 7 hardware.

Data obtained as a result of the study Statistica 6.0. it was processed using variable statistics methods using the software package.

Results. In all groups of Representatives, ECHO was carried out, the main indicators and the thickness of the Eyo were determined (Table 1). The indicators studied in all groups of patients were almost at the limit of normative values. No major difference was observed between the groups of riht ventricule, left-atrial size (LAS), and aortic diameter. Statistical reliable differences have been found in the thickness of the left ventricular posterior wall (TLVPW) (R_{1-3}=0.03, p_{2-3}=0.01) and the inter-ventricular barrier (IVB) (R_{2-3}=0.05). It is significant that compared to healthy person, it was observed that TLVPW is thicker regardless of the form of BA, as well as MP BA is thicker in MI. No statistically reliable difference was observed in MI BA compared to the IVB thickness control group.

Table 1

Description of the main indicators of ECHO in patients of all groups

Indicators	LI BA (n=41)	LP BA (n=40)	Control group (n=22)	p
Left atrium, mm	34	30	28	и/э
aortic diameter, mm	32	30	30	и/э
the final diastolic size, mm	50#	48#	50#	p 1-2=0,001 p 2-3=0,007
the final systolic size, mm	35#	32#	35#	p 1-2=0,005 p 2-3=0,04
the final diastolic volume, ml	134#	111#	118#	p 1-2=0,001 p 1-3=0,02
the final systolic volume, ml	44,6#	35#	46#	p 1-2=0,002 p 2-3=0,03
Stroke volume, ml	80#	69#	72#	p 1-2=0,002 p 2-3=0,04
Ejection fraction, %	68	67	66	not reliable
Inter-ventricular barrier, mm	8,5	9,5#	8,5#	p 2-3=0,05

left ventricular posterior wall, mm	9,5#	9,5#	8,5#	p 1-2=0,03 p 2-3=0,01
left ventricular myocardial mass, g	148,6	136,8	141,2	not reliable
left ventricular myocardial mass index g/m^2	78,4	73,6	77,2	not reliable
left atrium, mm	25	23	23	not reliable
epicardial fat, mm	0,5#	2,2#	0#	p 1-2=0,05 p 2-3=0,05

Note: # - reliability between groups (p<0,05)

In all group representatives, the value of left ventricular myocardial mass and left ventricular myocardial mass index was within the regulatory limits, no Intergroup differences were observed, but it is important that in MI BA, these indicators were at the highest value, while in MP BA, the value of the lowest regulatory limits, especially in patients of this group, the final diastolic size showed the least result. The results obtained during the study indicate that the process of concentric remodeling in the left ventricle begins in patients with BA, and dynamic observation requires retention.

No intergroup difference was observed when compared on ejection fraction, but there were statistical reliable differences between MI BA and MP BA group patients on stroke volume (p_{1-2}=0.002) as well as compared to the control group (p_{2-3}=0.04). in MI BA stroke volume is higher compared to healthy individuals, but it has been observed that in IP BA it is clearly reduced. The decrease in stroke volume is indicative of a decrease in chqmm along with a decrease in cardiac contraction force.

A statistically reliable difference was observed between the two groups in terms of the final diastolic volume (p_{1-2}=0.001) and the final systolic volume (p_{1-2}=0.005), the final diastolic volume (p_{1-2}=0.001) and the final systolic size (p_{1-2}=0.002) values. Representatives of the control group with the MP BA group also had reliable differences in final diastolic volume (p_{1-2}=0.007), final systolic volume (p_{1-2}=0.04) and the final systolic size (p_{1-2}=0.03). Differences in the final diastolic volume between MI BA and control group were reliable (p_{1-2}=0.02).

In all group patients, epicardial fat was at the value of regulatory limits, while in representatives of the MI BA and control group it was not detected. But when compared by groups, obvious differences were observed. Depending on the level of hypertrophy, the epicardial fat increases, that is, as the epicardial fat increases, myocardial fibrosis develops faster, it leads to the development of left ventricular hypertrophy, as a result of which the fat layer and the fibrosis process distort the relaxation function of the heart.

All patients underwent duplex scanning of the main arteries and were assessed adventitia thickness and the thickness of the intima media complex and adventitia thickness + thickness of the intima media complex (Table 2).

Table 2

Duplex scanning of the main arteries indicators in all group representatives

Indicators	LI BA (n=41)	LP BA (n=40)	Control group (n=22)	p
The thickness of the intima media complex (right side), мм	0,6	0,5	0,6	not reliable
adventitia thickness (right side), мм	0,5#	0,6#	0,4#	p1-3=0,002 p2-3=0,001
adventitia thickness + thickness of the intima media complex, (right side)	1,1	1,1#	1,0#	p 2-3=0,05
The thickness of the intima media complex (left side), мм	0,6	0,6	0,5	not reliable
adventitia thickness (left side), мм	0,5#	0,6#	0,5#	p1-3=0,02 p2-3=0,004
adventitia thickness + thickness of the intima media complex, (чап томон)	1,1#	1,2#	1,0#	p1-2=0,05 p2-3=0,02

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Note: # - reliability between groups (p<0,05)

No differences were observed among the groups on thickness of the intima media complex. In adventitia thickness, the MI BA and MP BA groups reliably differed from the control group in terms of right side adventitia thickness (p_{1-3}=0.002, p_{2-3}=0.001) and left side adventitia thickness (p_{1-3}=0.02, p_{2-3}=0.004). in the case of right and left side adventitia thickness + thickness of the intima media complex, however, it has been found that there are reliable differences between MP BA and control group (right side R2-3=0.05 and left side p_{2-3}=0.02). There were also convincing differences between the MI BA and MP BA groups on the left side adventitia thickness + thickness of the intima media complex (p_{1-2} = 0.05). This means that these changes indicate that vascular remodeling processes are going to the BA.

All group representatives in the study conducted ECG holter monitoring, the results of which are presented in Table 3.

Table 3

ECG holter monitoring indicators in research groups

Indicators	LI BA (n=41)	LP BA (n=40)	Control group (n=22)	p
The lowest heart rate, in 1 minute	43	42	37	not reliable
The most frequent heart rate, in 1 minute	196	248	218	not reliable
Average heart rate, in 1 minute	72	74	64	not reliable
Bradycardia (less than 50 in 1 minute), the number of complexes	127	0	433	not reliable
Tachycardia (more than 100 times in 1 minute), the number of complexes	87	82	66	not reliable
Pause (more than 1.5 seconds), number	0,7	0	18,0	not reliable
Ventricular extrasystole (VE), number	0	0	0	not reliable
Supra-ventricular extrasystole (SVE), number	3	0	2,5	not reliable

In all of the above indicators of ECG holter monitoring, no reliable differences were found among the groups.

Conclusion. From the results obtained, it can be said that in patients with mild forms of BA cardiovascular system lesions in the absence of clinical signs, there may be some characteristics that characterize the initial clinical changes in the cardiovascular system, it is these characteristics that were identified during the study. Based on the results of exokg, the left ventricular concentric remodeling in MP BA patients showed signs of formation as well as the maximum thickness of Eyo leading to diastolic dysfunction and early developing fibrosis. It was also noted that adventitia thickness as well as thickness of the intima media complex are at maximum values in the patients of this group in the duplex scanning of the main arteries.

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