SOME FEATURES OF STRUCTURAL AND FUNCTIONAL CHANGES OF THE MYOCARDIAL IN PATIENTS WITH DIABETES MELLITUS WITH DIASTOLIC HEART FAILURE

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Currently, chronic heart failure (CHF) remains one of the most important problems in medical practice. Of particular interest is diastolic heart failure, since in recent years the number of patients who develop symptoms of decompensation against the background of preserved contractile function of the left ventricle has been increasing [2,16]. According to the Euro Heart Survay HF Study (2001), the number of patients with diastolic CHF is about 30% [3]. Due to the prevalence of diastolic heart failure, there is a need for early diagnosis and timely initiation of effective therapy. Identification of diastolic CHF in patients with combined pathology presents certain difficulties. The reason for this is that the minimal manifestations of diastolic CHF in concomitant pathology can be "masked" behind the symptoms of the underlying disease (hypertension and type 2 diabetes) and its complications. It should be noted that the success of the treatment of diastolic CHF is determined by early and timely detection of structural and functional changes in the heart.

Purpose of the research: To study the structural and functional changes in the heart in diastolic insufficiency in patients with diabetes mellitus.

Materials and research methods: We examined 82 patients with clinical manifestations of chronic heart failure. All examined patients were divided into three groups. The main group (n = 49) consisted of patients with type 2 diabetes mellitus (DM) in combination with primary arterial hypertension (Patients of the second group (n = 17) had type 2 diabetes without hypertension, and the third group (n = 16) consisted of patients with hypertension without diabetes. The age of the patients ranged from 40 to 68 years (mean age 52). According to the results of the anamnesis, the average duration of hypertension was 15 years, the duration of type 2 diabetes was 2 years. For a more accurate determination of the functional class of CHF, we used the scale for assessing the clinical state as modified by V.Yu. Mareeva (2000) [1] and a test for determining the distance of a 6-minute walk [1, 4]. The study included patients with diastolic heart failure, with sinus rhythm on the ECG. For 2 or more weeks, the use of ACE inhibitors and / or ß-adrenergic blockers was excluded. The diagnosis of type 2 diabetes and the degree of its compensation, yi, were established according to the WHO recommendations and national standards for the diagnosis and treatment of diabetes (2002). AH was assessed according to the GFCF criteria (2004 and 2008). Diastolic chronic heart failure was diagnosed based on the recommendations of the Working Group of the European Society of Cardiology (2002).

At the initial stage, we carried out a traditional general clinical examination of patients: collection of complaints, anamnesis, examination of the objective status, body mass index was calculated. Blood pressure was measured according to the recommendations of the All-Russian

Scientific Society of Cardiology by the method of N.S. All patients underwent echocardiographic examination with Dopplerography to study the structural parameters of the heart, systolic and diastolic functions of the heart.

Discussion of the results . We carried out a comparative analysis of the structural and functional indicators of central hemodynamics in the studied groups of patients.

When analyzing the Echo KG data, the most pronounced changes in the myocardium were observed in patients of the main group (type 2 diabetes + AH). Patients in this group had higher values of EDV and ESR of the left ventricle, IVS thickness in diastole, LVSD thickness in diastole, LVRT, LVMM, and LVMM, mean pulmonary artery pressure compared to patients in the comparison group (type 2 diabetes without AH). In turn, in the control group of patients with arterial hypertension without diabetes mellitus, the above indicators were also higher compared to patients with type 2 diabetes mellitus without arterial hypertension. It can be assumed that these structural changes in the heart are primarily associated with the presence of hypertension, which is considered one of the main triggers of activation of myocardial remodeling processes. within normal limits, which also confirms the high prevalence of CHF with preserved ejection fraction. We also carried out a comparative analysis of the indicators of the transmitral flow in the studied groups of patients (Table 1).

Comparative characteristics of transmitral diastolic flow in the surveyed groups

Table 1

Indicator	1st group n = 49	2nd group n = 17	Group 3 n = 16
E, m / s	0.61 ± 0.16	0.71 ± 0.17	0.68 ± 0.14
A, m / s	0.77 ± 0.17	0.65 ± 0.10	0.79 ± 0.19
E / A	0.78 ± 0.09	1.08 ± 0.28	0.87 ± 0.11
DTe , sec	0.215 ± 0.02	0.213 ± 0.03	0.213 ± 0.01
IVRT , sec	0.098 ± 0.04	0.082 ± 0.01	0.090 ± 0.08

When analyzing the indicators of diastolic flows on the MC and MC, the most pronounced changes in diastolic function were revealed in patients with combined pathology (main group). Peak E values characterizing early, passive diastolic filling of the left and right ventricles and E / A ratio were lower than in the control group. The value of peak A, characterizing later, active diastolic filling of the left and right ventricles, time of isovolumetric relaxation of the left ventricle (IVRT), time of deceleration of peak E (DTe) and diastolic pressure of the left ventricle and right ventricle at the end of diastole were higher in comparison with the group of diabetes mellitus 2 types without AG. There was also a significant difference in the E / A ratio of both the left and right ventricles between the main and control groups. These changes are consistent with literature data [7, 8, 2, 46, 9, 10, 11, 12, 13, 14] on the effect of hypertension and diabetes mellitus on the progression of impaired diastolic heart function, followed by the development of diastolic chronic heart failure.

According to the data of Echo-Doppler spectra, diastolic dysfunction of the left ventricle type I ("hypertrophic") was diagnosed in all examined patients of the main and control groups. Thus, in

11 out of 17 (68.9%) patients in the comparison group, the following changes in parameters were observed: E / A <1.0; DTe> 0.220 sec; IVRT> 0.094cek.

The II type of diastolic dysfunction, ie the "restrictive" type, was not detected in the patients examined by us, as well as the "pseudonormal" or transitional type. The transitional type was excluded according to the criteria: E / A> 1.0, but less than 2.0, an increase in the anterior-posterior size of the left atrium (37-43 mm), the presence of signs of hypertrophic left ventricular remodeling. Diastolic dysfunction of the right ventricle of the first type in the main group was observed in 29 of 49 (58.1%), in the control group in 9 of 16 (57.1%) patients and in 2 of 16 (10.3%) patients in the comparison group (SD without AH).

Normal LV geometry was found in 4 out of 49 (8.1%) patients in the main group, in 12 out of 17 (75.8%) most patients in the control group (type 2 diabetes without AH) and in 1 out of 16 (3.5%) patients examined in group of hypertension without diabetes mellitus. Concentric remodeling was detected in 6 (7.1%) of the study group and in 2 (7.2%) patients of the comparison group. The main part of the altered LV geometry consisted of concentric LV hypertrophy in 40 (46.5%) and nondilatory eccentric LV hypertrophy in 33 (38.3%) patients with concomitant pathology, in 18 of 28 (64.3%) and 7 (25%)) the control group of arterial hypertension without diabetes mellitus.

Conclusion: Thus, when analyzing echocardiographic parameters, patients with type 2 diabetes and hypertension have more pronounced structural changes and diastolic dysfunction of the heart, compared with control groups (type 2 diabetes without hypertension and hypertension without diabetes).

References:

1. Belenkov, Yu.N. Chronic heart failure. Selected lectures on cardiology / Yu.N. Belenkov, V.Yu. Mareev, F.T. Ageev. - M .: GEOTAR-Media, 2006 .-- 432 p.
2. Belenkov, Yu.N. Chronic heart failure. Selected lectures on cardiology / Yu.N. Belenkov, V.Yu. Mareev, F.T. Ageev. - M .: GEOTAR-Media, 2006 .-- 432 p.
3. Yarmukhamedova , S. Kh., And M. S. Bekmuradova . "The development of heart failure in patients with essential hypertension in terms of natriuretic peptide ." *Eurasian Journal of Cardiology* S1 (2019).
4. Russian national recommendations of VNOK and OSSN for the diagnosis and treatment of CHF (second revision) / development . Committee of Experts VNOK and OSSN. - Moscow, 2007.
5. Prognostic value of the 6 min walk test and self-perceived symptom severity in older patients with chronic heart failure / Alan S. Rigby [et al.] // European Heart Journal. - 2007. - Vol. 28, No. 5. - P. 560-568.
6. Gurevich, M.A. Arterial hypertension and chronic heart failure - the unity of pathogenesis and treatment principles / M.A. Gurevich // Russian Journal of Cardiology. - 2005. - No. 6 (56). - S. 91-95.
7. Demidova, N.Yu. Echocardiographic signs of heart damage in arterial hypertension / N.Yu. Demidova, Yu.V. Belousov // Nizhny Novgorod Medical Journal. - 2006. - No. 6. - S. 57-61.

8. Arterial hypertension and chronic heart failure: clinical and instrumental comparisons / I.Yu. Ryukhina [and others] // Heart. - 2006. - T. 5, No. 6 (30). - S. 296-300.
9. Yarmukhamedova S. Kh. Structural and functional state of the right ventricle in patients with arterial hypertension // National Association of Scientists. - 2016. - No. 1. - S. 17-17.
10. Yarmukhamedova , Saodat Khabibovna , and Makhsuda Salohiddinovna Bekmuradov a . "Features of diastolic dysfunction of the right ventricle in patients with arterial hypertension and heart failure ." *National Association of Scientists* 1 (2016): 18-18.
11. Bart, B. Ya. Chronic heart failure with preserved systolic function of the left ventricle (diastolic heart failure) / B.Ya. Bart, Yu.V. Bart, V.N. Larina // Russian Journal of Cardiology. - 2007. - number : 1 (63). - S. 77-83.
12. Dedov , ' I.I. Diabetes mellitus and arterial hypertension / I.I. Dedov, M.V. Shestakov. - M .: LLC "Medical Information Agency", 2006. - 344 p .
13. Demidova, N.Yu. Echocardiographic signs of heart damage in arterial hypertension / N.Yu. Demidova, Yu.V. Belousov // Nizhny Novgorod Medical Journal. - 2006. - No. 6. - S. 57-61.
14. Jahangirov , T.Sh. Heart failure and diabetes : prevalence, morbidity and prognosis / T.Sh. Jahangirov // Heart Failure. - 2005. - T. 6, No. 3. - S. 124-131.
15. Yarmukhamedova S. H., Bekmuradova MS, Nazarov F. Yu D iagnosticheskaya value natriuretic peptide in identifying patients with asymptomatic systolic or diastolic dysfunction // Advances in science and education. - 2020. - No. 8 (62).
16. Diastolic dysfunction of the left ventricle in patients with type 2 diabetes / AC Ametov [et al.] // SD . - 2008. - No. -C. 40-44.
17. 17 Kislyak , OA diabetes type 2, hypertension, and the risk of cardiovascular complications / OA Kislyak , TO Myshlyaeva , N.V. Malysheva // SD . - 2008. - No. 1. - S. 45-49.
18. Violation of left ventricular diastolic function in essential arterial hypertension. Part I. Clinical significance, types of impaired left ventricular diastolic function and methods of their diagnosis.
19. Bekmuradova MS, Gafforov Kh. Kh., Yarmatov ST The value of determining brain natriuretic peptide in the process of diagnosing chronic heart failure // Achievements of science and education. - 2020. - No. 4 (58).
20. Frequency and main pathogenetic mechanisms of impaired left ventricular diastolic function in arterial hypertension / A.I. Martynov [et al.] // Cardiology. - 2001.-№ 5.- S. 74-78.
21. Mazur , HA Diastolic form of heart failure (etiology, pathogenesis) / HA Mazur // Russian journal of cardiology. - 2002. - No. 2 (34). - S. 58-62.