



CLINICAL CHARACTERISTICS AND STRUCTURAL AND FUNCTIONAL STATE OF THE MYOCARDIAL IN PATIENTS WITH AH DEPENDING ON THE LEVEL OF BRAIN SODIUM URETIC PEPTIDE

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Abstract

An experiment with 75 patients revealed changes in the state of hypertensive patients, the structural and functional state of the myocardium and dependence on the level of natriuretic peptide in the brain. The article describes in detail the structure of the entire study and provides a brief conclusion.

Keywords: Doppler, level, However, . Regular, hypertension.

Introduction

In recent years, close attention has been paid to the study of natriuretic peptides as early biochemical markers of CHF [A. Lerman , 1993; M. Davis, 1994; European guidelines for the diagnosis and treatment of CHF, 2005]. Among known natriuretic peptides greatest interest causes brain natriuretic peptide (BNP) and amino terminal fragment NT -Pro-BNP, which is produced in response to left ventricular myocardium tensile its wall [P . Kinnunen , 1993; AJ de Bold , 1996]. In hypertension, the definition of BNP can serve as a reliable marker of diastolic heart failure [K. Yamamoto, 1996]. However, the data are inconsistent. According to some authors, an increase in the level of BNP precedes the development of myocardial hypertrophy [Suzuki et al. 2000], other researchers, on the contrary, associate its increase with LV hypertrophy [M. Koho , 1992; A . Luchner , 2000], especially concentric [T. Nishikimi , 1996]. At the same time, there are no data on the use of the BNP level to identify early signs of structural and functional disorders of the heart and preclinical manifestations of CHF, as well as to assess the effectiveness of antihypertensive therapy. At the same time, the determination of the BNP level is extremely important for assessing the prognosis in hypertension, especially in concomitant CHF.

The aim of the study was to optimize the assessment of the cardioprotective efficacy of antihypertensive therapy in patients with arterial hypertension using brain natriuretic peptide and tissue Doppler sonography.





The BNP level was determined in 118 patients with hypertension included in the study. In 75 people, this indicator did not exceed 350 fmol / ml, while in 43 people, an increase in this indicator of more than 350 fmol / ml was noted. The average BNP level in these groups was 248.5 ± 105.7 and 429.5 ± 106.5 fmol / ml, respectively.

Patients with hypertension, depending on the level of BNP, did not significantly differ in gender, duration of hypertension, body mass index, frequency of occurrence of CHF symptoms and the regularity of taking antihypertensive drugs. However, an increase in the BNP level was associated with the age of the patients (Table 1).

Table 1 Characteristics of AH patients depending on the BNP level

Sign		BNP <350 fmol / ml (n = 75)	MNP> 350 fmol / ml (n = 43)
Age (M ± 8E), years		48.8 ± 7.0	53.8 ± 6.1
Floor	husband.	22 (29.3%)	13 (30.2%)
	wives	53 (70.7%)	30 (69.8%)
Duration of hypertension (M ± 8B), years		6.5 ± 4.9	7.9 ± 5.9
AH degree	1st	25 (33.3%)	16 (37.2%)
	2nd	37 (49.3%)	14 (32.6%)
	3rd	13 (17.4%)	13 (30.2%)
Body mass index (M ± 8B) (kg / m ~)		31.1 ± 6.1	31.3 ± 4.1
Regular antihypertensive therapy		21 (28.0%)	10 (23.2%)
CHF symptoms	dyspnea	28 (37.3%)	17 (39.5%)
	fatigue	37 (49.3%)	20 (46.5%)
	heartbeat	20 (26.7%)	10 (23.3%)

According to echocardiography, an increase in IVS thickness in the group of hypertensive patients with a BNP level > 350 fmol / ml with comparable indicators of the size of the left atrium, an index of the relative wall thickness and mass of the LV myocardium, as well as systolic and diastolic myocardial stress, may indicate that an increase in BNP occurs not only due to the age of the patients, but also due to the development of adaptive LV remodeling. A similar trend was found in relation to the right heart. Thus, the thickness of the free wall of the right ventricle was significantly greater in hypertensive patients with a BNP level > 350 fmol / ml (0.52 ± 0.12 versus 0.45 ± 0.12 cm in the group with a BNP level < 350 fmol / ml; $p < 0.05$) with comparable linear size and volume of the right atrium.



According to Doppler echocardiography, an increase in the BNP level > 350 fmol / ml was accompanied by significantly higher peak rates of late diastolic filling and isovolumic relaxation time with a decrease in the peak rate ratio (E / A). However, taking into account the presence of age differences between the groups, these changes cannot be unambiguously associated with signs of impaired diastolic function of the JDK . In addition, the absence of significant differences between the analyzed groups in the Tei -LV index and the main parameters of DEHO of transtricuspid blood flow indicates the absence of global disorders of diastolic function of the left and right ventricles in both groups.

Table 2 Indicators of DEHO of atrioventricular flows in patients with hypertension, depending on the level of BNP

Ventricle	Parameter	BNP < 350 fmol / ml (n = 75)	MNP > 350 fmol / ml (n = 43)
Left	E (cm / s)	75.4 ± 17.0	73.7 ± 16.4
	A (cm / s)	70.2 ± 15.2	76.9 ± 15.5
	E / A	1.1 ± 0.29	0.98 ± 0.22
	IVRT (ms)	95.9 ± 17.6	104.7 ± 17.9
	Tei -index	0.42 ± 0.14	0.46 ± 0.13
Right	E / A	1.18 ± 0.22	1.17 ± 0.29

Note: E and A - early and late peak blood flow velocities, IVRT - isovolumic relaxation time.

According to tissue Doppler sonography, regional indicators of LV systolic function in patients with AH, depending on the BNP level, did not differ significantly. Indicators of LV regional diastolic function at the level of the annulus fibrosus in hypertensive patients with a BNP level > 350 fmol / ml are characterized by a significant decrease in the peak rate of early diastolic relaxation of the myocardium E_t up to 8.5 ± 2.6 versus 9.5 ± 2.4 cm / s in the group with the BNP level < 350 fmol / ml, the ratio of peak velocities (E_t / A_b), and an increase in the ratio E / E_t up to $9, 4 \pm 3.2$ versus 8.2 ± 2.8 ($p < 0.05$) in the region of the LV inferior wall, which indicates regional violations of the diastolic function of the myocardium in hypertensive patients with an increase in the BNP level. In addition, in the absence of differences in the global Teindex according to the data of the transmitral blood flow, in hypertensive patients with a BNP level > 350 fmol / ml, an increase in the regional Teit-ipdex was revealed in the region IVS and LV anterior walls due to an increase in isovolumic relaxation time to 90.1



± 24.6 versus 78.1 ± 15.8 ms ($p < 0.05$) and 93.9 ± 30.5 versus $78.9 \pm 20, 8$ ms ($p < 0.05$), respectively. The revealed changes may indicate an increase in the BNP level already at the stage of regional disorders of LV diastolic function in patients with hypertension. In order to determine possible factors, the combined combination of which may suggest that the patient has a BNP level of more or less 350 fmol / ml, we analyzed such clinical -anamnesic and structural-functional indicators as age, duration of hypertension, body mass index, load level in metabolic units by treadmill test data, numbers of systolic and diastolic blood pressure according to office measurements, left atrium volume, thickness of IVS and RV free wall, indexed LV myocardial mass, systolic and diastolic myocardial stress, regional Te and - index and combined E / Et index in the lateral LV wall, calculated pressure of pulmonary artery wedging. Based on the results of step-by-step discriminant analysis with exclusion the cumulative factors determining the level of BNP were age, right ventricular free wall thickness a, and body mass index of patients.

Output

In the absence of a pronounced structural and geometric rearrangement of the LV, an increase in the BNP level in hypertensive patients is largely determined by the cumulative effect of age, right ventricular free wall thickness, and body mass index of patients. Regular antihypertensive therapy promotes inhibition of BNP production, which is a favorable factor in preventing or slowing down the development of CHF.

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