



Significance Of Right Ventricular Diastolic Dysfunction in Patients with Hypertension

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ABSTRACT

Hypertension is currently one of the most urgent medical problems. This is largely due to the fact that arterial hypertension, which largely determines the high cardiovascular morbidity, disability and mortality, is also characterized by a wide prevalence. Early diagnosis of changes in the heart in patients with hypertension is of great practical interest, which allows timely preventive measures and treatment

Keywords:

Essential hypertension, arterial hypertension, diastolic dysfunction, right ventricle, echocardiography, maximum filling rate, maximum ejection rate.

Introduction. Hypertension is currently one of the most urgent medical problems. This is largely due to the fact that arterial hypertension, which largely determines the high cardiovascular morbidity, disability and mortality, is also characterized by a high prevalence. [1,2]

Myocardial remodeling remains a significant factor that worsens the course and prognosis of hypertension. While left ventricular remodeling in hypertension has been fairly well studied, the condition of the right ventricle has received much less attention. Violations of the diastolic function of the right ventricle in patients with heart failure are an independent prognostic factor in survival, and the use of tissue Doppler sonography makes it possible to identify new informative parameters of diastolic dysfunction, as well as to prove its connection with the development of pulmonary hypertension [1,2,4].

Purpose of the study: To study the diastolic function of the right ventricle in patients with various stages of hypertension and with the addition of heart failure of II-III functional classes.

Materials and methods of research. We examined 71 patients with hypertension. All examined were subjected to a comprehensive examination in order to exclude symptomatic hypertension and other diseases. The diagnosis of hypertension was made on the basis of the criteria proposed by the WHO expert committee. The study included patients with stage II-III hypertension - 31 women (43.66%) and 40 men (56.3%) (aged 25 to 63 years). The mean age in the group was 50.3±4.6 years. In men, the mean age was 43.4±4.9 and in women 52.7±4.9 years. It should be noted that diastolic function, being a complex process consisting of numerous interrelated factors, depends on such indicators as: age, gender, body surface area, respiratory phase,

Reception of antihypertensive drugs was canceled 24 hours before the start of the study.

Electrocardiographic examination was carried out in 12 conventional leads at a speed of 50 mm/sec.

Measurement of blood pressure was carried out after at least 5 minutes of rest of the patient. Blood pressure was measured on the right brachial artery using the Korotkov method. The diagnosis of stage II hypertension was established in 46 patients. The mean age of the patients was 42.3 ± 4.2 years. Of these, 21 were women (mean age 44.7 ± 4.7 years) and 25 men (mean age 37.4 ± 4.7 years). Patients with diseases that significantly affect the systolic and diastolic function of the right ventricle were excluded from the study, such as diabetes mellitus, obesity, chronic nonspecific lung diseases, tricuspid regurgitation more than grade II, tachycardia with heart rate more than 100 beats per minute and atrial fibrillation.

Research results. All patients showed signs of left ventricular hypertrophy on the ECG and the presence of hypertensive angioretinopathy of the retina. The diagnosis of stage III hypertension was established in 25 patients with lesions of target organs. The mean age of the patients was 57.1 ± 4.3 years. Of these, 10 were women (mean age 55.9 ± 4.6 years) and 15 men (mean age 62.4 ± 4.5 years). Of these, 7 patients (2 women and 5 men, mean age 63.3 ± 4.7 years) had a history of transient cerebrovascular accidents, the remaining 18 (6 women and 12 men, mean age 56.2 ± 5.3 years) - documented ischemic heart disease. The groups of patients with stage II and III hypertension did not differ significantly by sex and age. The combination of hypertension and coronary heart disease and 8 men, mean age 54.3 ± 2.6 years) and in 15 patients with stage III hypertension (60%) (7 women and 8 men, mean age 61.2 ± 7.3 years). The diagnosis of coronary heart disease in hypertensive patients was made according to the criteria recommended by WHO [2].

Discussion. In the group of patients included in the study, the duration of hypertension was 13.4 ± 3.2 years, the duration of a stable increase in blood pressure was 9.7 ± 3.8 years. 38 examined patients (53.5%) complained of headaches, 21 patients complained of dizziness (29.5%), pain in the left side of the chest was observed in 30 patients (42.2%).

Among the examined patients included in the study, a labile course of the disease was observed in 7 (9.8%) patients, stable blood pressure figures - in 64 (90.1%) patients.

According to the "Recommendations of the WHO Expert Committee" [1,2], during the examination, patients with mild, moderate and high arterial hypertension were identified.) and high arterial hypertension - 9 patients (12.7%).

An objective clinical study in 26 patients (36.6%) revealed an expansion of the boundaries of relative dullness of the heart to the left. Other clinical indicators between the subgroups practically did not differ. An analysis was made of the parameters of diastolic function of the right ventricle depending on the level of rise in diastolic blood pressure between patients with mild and high arterial hypertension. At the same time, significant differences were revealed that related to the ratio of the maximum filling rate to the maximum ejection rate with a tendency to increase the time of the fast filling phase of the contribution of the fast filling phase to the diastole of the right ventricle, which is due to the initial signs of diastolic dysfunction of the right ventricle with a decrease in the maximum rate of filling and a moderate increase in the contribution of the right atrial systole to the filling of the right ventricle. Right ventricular relaxation and filling did not differ significantly between patients with mild and moderate increases in blood pressure, except for patients with moderate increases in diastolic blood pressure. When analyzing the diastolic function of the right ventricle, depending on the stage of hypertension, significant differences were found between the subgroups of patients with hypertension, and they concerned only the ratio of the maximum filling rate to the maximum ejection rate, which significantly decreased in stage II hypertension.

Further study of diastolic function in patients with stage II hypertension revealed that 31 patients (40.8%) had a "pseudo-normal" type of diastolic disturbances, which consisted in approaching the normative indicators of the maximum filling rate, as well as in normalizing the contribution of the system of the atrium.

Conclusion. Thus, the diastolic function of the left ventricle depends on the level of blood pressure and / or the presence of myocardial hypertrophy, but

also on the neurohumoral changes that are characteristic of the initial stages of hypertension. The revealed data show the processes of myocardial hypertrophy not only of the left, but also of the right ventricle. The development of diastolic disorders on the part of the right ventricle begins with a decrease in the maximum filling rate and a compensatory increase in pressure in the right atrium. These violations are significant in comparison with the pseudo-normal type of diastolic dysfunction.

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