

### Influence of Nebivolol on Intracardiac Hemodynamics and Quality of Life in Patients with Chronic Heart Failure with Low Ejection Fraction

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#### ANNOTATION

This study assessed the effect of nebivolol on intracardiac hemodynamics, ejection fraction and quality of life in patients with chronic heart failure (CHF) stage II A and B, which developed against the background of coronary heart disease (CHD) and arterial hypertension (AH). This study was conducted on the basis of the Samarkand regional branch of the Republican Specialized Scientific and Practical Medical Center for Cardiology (SRF RSNPMCK ) for the period 2020-2022. The object of the study was 115 patients aged 45 to 78 years (55 men, 60 women) suffering from CHF II A and B stages . According to the results , it was found that in patients with CHF with low ejection fraction after treatment with nebivolol, an increase in intracardiac hemodynamics of TMZhP and STZ was noted, and this drug also had a beneficial effect on systolic and diastolic myocardial function, increased ejection fraction, exercise tolerance and reduces myocardial oxygen demand.

#### Relevance.

Chronic heart failure (CHF) is the outcome of diseases of the cardiovascular system or its damage in other pathological processes in the body. According to the European Society of Cardiology, the prevalence of CHF is approximately 1-2% of the adult population in developed countries, increasing to 10% among people over 70 years of age [8, 10, 14 ]. According to epidemiological studies in the Russian Federation, CHF is diagnosed in 7-10% of cases, while the criteria for identifying patients with CHF significantly affect prevalence rates [8 , 11 ]. Observation of a representative sample of the European part of the Russian Federation (EPOKAHSN) revealed a significant increase in the proportion of patients with CHF over the past 16 years from 4.9 to 8.5%. At the same time, the absolute number of patients suffering from CHF has more than doubled since 1998 (from 7.18 to 12.35 million people), and patients with severe CHF III-IV functional class (FC) according to the New York scale heart associations (NYHA) - from 1.8 to 3.1% (from 1.76 to 4.5 million people) [2, 4, 6] .

CHF is understood as a syndrome that develops as a result of a violation of the ability of the heart to fill and / or empty, occurring in conditions of an imbalance in the vasoconstrictor and vasodilating neurohormonal systems; accompanied by inadequate perfusion of organs and tissues of the body and manifested by a complex of symptoms: shortness of breath, weakness,

palpitations, increased fatigue and fluid retention in the body (edematous syndrome) [8, 10, 12, 14]. Diagnosis of CHF usually occurs at those stages at which clinical symptoms are obvious, while in clinical practice a large number of asymptomatic patients already have severe impairment of systolic and / or diastolic function of the heart. Identification of such patients at early stages of cardiac remodeling and early treatment of diseases leading to the development of CHF plays a central role in preventing the development of severe and rapidly progressive forms of CHF [15, 17, 18].

Historically, CHF is classified according to different criteria, but for choosing a therapy strategy, it is important to separate them depending on the ejection fraction (EF) of the left ventricle (LV). LV EF is the main indicator of LV systolic function [ 11, 13, 16, 19, 20 ], characterizing the proportion of blood volume in the LV ejected into the aorta with each heartbeat. LV EF is one of the key indicators of hemodynamics in CHF and currently determines the choice of therapy strategy. Allocate CHF with preserved LV EF (HFpEF) (LV EF $\geq$ 50%), reduced LV EF (HFpEF). In patients with chronic heart failure with low left ventricular ejection fraction (HFEF), mortality is higher compared with CHF patients with preserved and intermediate left ventricular ejection fraction [22, 23, 25].

It is important to understand that with appropriate treatment, patients may not have symptoms of heart failure. If heart failure is traced for a certain time, then it is designated as chronic. A stable course of CHF is considered when the patient has no progression of the disease for at least 1 month. With the aggravation of the symptoms of CHF, they speak of its decompensation.

**Objective:** To assess the effect of nebivolol on intracardiac hemodynamics, ejection fraction and quality of life in patients with chronic heart failure (CHF) stage II A and B, which developed against the background of coronary heart disease (CHD) and arterial hypertension (AH).

**Material and methods:** this study was conducted on the basis of Samarkand Regional Branch of the Republican Specialized Scientific and Practical Medical Center for Cardiology (SRF RSNPMCC ) for the period 2020-2022 We examined 115 patients aged 45 to 78 years (55 men, 60 women) suffering from CHF II A and B stages, which developed against the background of coronary artery disease and hypertension. All patients were prescribed nebivolol at a dose of 5 mg/day for 3 months. Intracardiac hemodynamics was assessed by echocardiography (Echo-KG) on the SonoScape apparatus with an analysis of the thickness of the posterior wall of the left ventricle (PVS), interventricular septum (VEVS), end-systolic and diastolic dimensions (ESD and EDS), left ventricular ejection fraction (EF). The 6-minute walk method was used to assess the functional abilities of patients before discharge from the hospital and after 3 months. Studies were conducted before and after treatment.

**Results:** Analysis of the medical history, anamnesis of the disease, a survey of relatives of patients in our studies showed that in 54% of cases the disease began with symptoms of heart failure. At the onset of the disease, 96% of patients noted other signs of heart damage: 65% of patients had pain in the region of the heart, 34% of patients had palpitations, and 3% of patients had coronary heart disease with symptoms that were not directly related to heart damage: headaches, pain in the region shoulder joint. According to the results of echocardiography before treatment, the average values of the heart size in the examined patients were as follows: CDR 53.3 $\pm$ 6.6 mm, CSR 34.5 $\pm$ 7.7 mm, TMZhP 13.1 $\pm$ 2 mm, TZS 11 $\pm$ 1, 3 mm, EF 45.8 $\pm$ 9%. After a 3-month treatment with nebivolol, the following results were noted: CDR 52.2 $\pm$ 6.6 mm, CSR 32.3 $\pm$ 7.7 mm, TMZhP 12.1 $\pm$ 2 mm, TZS 10 $\pm$ 1.2 mm, EF 55.5 $\pm$ 9%. In all patients, the test scores with a 6-minute walk were reduced. After treatment with Nebivolol, all patients had a significant increase in the functional abilities of patients, which was expressed in an increase in distance by 33.2% and a decrease in myocardial oxygen demand.

**Conclusions:** Thus, in patients with CHF with a low ejection fraction, after treatment with Nebiv a Lol, an increase in intracardiac hemodynamics of TMZhP and STZ is noted, and this drug also has a beneficial effect on systolic and diastolic myocardial function, increases the ejection fraction, exercise tolerance and reduces myocardial oxygen demand.

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