COMPARATIVE ASSESSMENT OF THE EFFICACY OF VEROSHPIRON AND EPLERENONE IN PATIENTS WITH DIFFERENT LEFT VENTRICULAR EJECTION FRACTIONS IN CHRONIC HEART FAILURE

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Annotation: *In the article, the scientific literature confirming the effect of veroshpirone and eplerenone, belonging to the group of mineralocorticoid receptor antagonists, on the quality of life, the number of hospitalizations, the outcome of the disease, and the length of life of patients with chronic heart failure was studied, and the effects of these two drugs were comparatively evaluated.*

Keywords: *aldosterone, mineralocorticoid receptor antagonists, veroshpiron, eplerenone.*

INTRODUCTION

Chronic heart failure (CHF) is a pathophysiological condition in which the heart cannot meet tissue metabolic needs due to impaired pumping function. According to the results of scientific research conducted in recent years, at least 26 million people are suffering from chronic heart failure. The consequences of this disease are serious, and the average life expectancy of patients with SYY functional class (FS) III-IV is 3-8 years. Despite the advances in modern medicine in the field of treatment and prevention, mortality and morbidity from this disease is still high. Statistical observations show that the number of patients with SYY will increase by 46% by 2030[2]. Prevention of such a negative growth creates the need for more in-depth research in the field of medicine.

Materials and research methods. In the last 2017-2022, the results of scientific research on the progression, diagnosis and treatment of various forms of SYY, cardiac ejection fraction, including the effect of mineralocorticoid receptor antagonists (MRA) on the quality of life of this group of patients are reflected. literature was studied and analyzed.

The purpose of the study. Analysis and comparative evaluation of scientific studies on the effectiveness of veroshpiron and eplerenone in patients with different left ventricular ejection fraction in chronic heart failure.

The main part. SYY is a set of symptoms resulting from decompensated myocardial dysfunction, manifested by an increase in the volume of intercellular fluid, a decrease in perfusion of organs and tissues. The pathophysiological basis of this syndrome is that the heart cannot meet the metabolic needs of the body due to impaired pumping function. SYY has been treated for many years in two main

directions - to eliminate the symptoms of the disease and to improve the quality of life of patients. Clinical symptoms of SYY are manifested by impaired blood pumping function of the left ventricle. New treatment guidelines are based on the degree of left ventricular ejection fraction impairment. The classification representing this indicator is as follows:

1. Reduced ejection fraction <40%;
2. Blood ejection fraction is between 41%-49%;
3. Blood ejection fraction preserved >50%

Today, among several groups of drugs that have been proven to be effective in the treatment of CKD, attention has been paid to studying the effects of mineralocorticoid receptor antagonists (MRAs) such as spironolactone and eplerenone. The main reason for this is that the use of drugs of this group in the treatment of patients with SYY has a positive effect on the quality and duration of life of these patients. One of the factors underlying the mechanism of SYY development is aldosterone, a hormone secreted from the glomerular part of the adrenal gland, which ensures sodium reabsorption and potassium excretion in the renal tubules. Aldosterone secretion decreases renal perfusion, which in turn leads to synthesis of angiotensin II and activation of adrenocorticotropic hormone. The effect of aldosterone is caused by its binding to mineralocorticoid receptors in the endothelium of kidney tubules. RAAS and sympathoadrenal system are activated as a protective reaction in patients with SYY in the initial period, compensatingly eliminating hemodynamic disorders. Later, as a result of the activation of these compensatory mechanisms, pathological processes begin to appear. A high amount of aldosterone is detected in the blood serum of patients with SYY. Its high concentration causes adverse clinical conditions, including excessive sodium and water retention in the body, endothelial dysfunction, left ventricular hypertrophy, and fibrotic changes in the myocardium. It can be seen that an increase in the concentration of aldosterone and angiotensin II in blood serum increases the risk of death. Based on these mechanisms, the American College of Cardiology/American Heart Association (NYHA) guidelines for the management of heart failure recommend MRA in patients with a left ventricular ejection fraction of 35% or less. . In this case, the patient's indicators should be as follows: NYHA class II-IV symptoms, glomerular filtration rate >30 ml/min/1.73 m2 and serum potassium <5.0 mEq/L. Myocardial remodeling is one of the main factors of negative consequences observed in SYY. In the process of restructuring, complex changes in the size, volume, cellular composition and functional state of the myocardium occur, and disruption of hemodynamic and non-hemodynamic processes begins. In addition, restructuring can lead to left ventricular systolic and diastolic dysfunction, as well as negative consequences such as heart failure and atrial fibrillation. Aldosterone plays a special role in the pathogenesis of reconstruction surgery. Intracardiac aldosterone secretion increases in patients with SYY.

Intracardiac and plasma aldosterone correlates with the N-terminal end of procollagen III, a biochemical marker of myocardial fibrosis. This is the basis for describing aldosterone as a stimulator of the fibrosis process. Therefore, the administration of MRA prevents the formation of the fibrosis process by stopping intracardiac aldosterone secretion.

Another cardiovascular effect of aldosterone is to increase cardiac sympathetic nerve activity, which increases cardiac contractility (the cardiac response to heart failure). Aldosterone helps to rebuild the structure by increasing the adrenergic effect, which leads to heart failure[. In another study, spironolactone significantly inhibited the hypersynthesis of the N-terminal fragment of procollagen III after an acute period of myocardial infarction. Spirinolactone has been shown to prevent left ventricular myocardium remodeling after myocardial infarction, even when used with AO'F inhibitors. Similar results - reduction of myocardial fibrosis and reduction in remodeling were observed in patients receiving eplerenone and angiotensin II receptor antagonists (ARA). It is known that myocardial fibrosis serves as a source for the development of ventricular arrhythmias. When spironolactone was given to a group of patients with ventricular arrhythmias, it was observed that the frequency of arrhythmia development decreased. MRA is effective not only in patients with myocardial infarction, but also in the acute period of myocardial infarction. The outcome of the disease improved when eplerenone was given to patients with ST-elevation acute myocardial infarction. Long-term use of MRA in the treatment of SII may require discontinuation of the drug due to the emergence of their side effects. This prompted the creation of selective groups of MRA. In 2011, eplerenone, a drug belonging to the MRA group, was recommended for the treatment of UTI. Due to the low sensitivity and high selectivity of eplerenone to androgen and progesterone receptors compared to spironolactone, side effects caused by the use of spironolactone, including gynecomastia and vaginal bleeding, are not observed. According to the results of the randomized placebo-controlled study EPHESUS, in which the efficacy of eplerenone in the period from 3 to 14 days was evaluated in 6632 patients with acute myocardial infarction, the clinical presentation of SYY FS I-IV. 15% of patients have a history of SYY, and approximately 7% of them have already been hospitalized with SYY. Patients receiving other potassium-sparing diuretics, patients with plasma creatinine levels greater than 220 μmol/L or potassium levels greater than 5.0 mmol/L were not included in the study. Most of the participants received optimal medical therapy for SYY, including IAO'F or ARBs (86%), beta-blockers (75%), diuretics (60%), aspirin (88%), and statins (47%). 45% of patients underwent reperfusion therapy or revascularization. Eplerenone was administered at an average dose of 42.6 mg/day. As a result of taking eplerenone, the overall mortality was significantly reduced by 15%.

In one of the studies comparing the effectiveness of eplerenone and spironolactone, it was observed that the left ventricular ejection fraction increased by 6.2% after a 6-month course of treatment, and by 4.1% in the group treated with spironolactone. In patients treated with spironolactone, gynecomastia was observed in 10.4%, dizziness in 11.4%, and mastalgia in 5.7%, while in patients treated with eplerenone, dizziness was observed in 3.9% of patients, and none of the examined patients had gynecomastia and mastalgia. .

Summary. The reviewed scientific literature indicates that the use of MRA in the treatment of patients with CKD reduces aldosterone-induced adverse effects such as excessive sodium and water retention, endothelial dysfunction, left ventricular hypertrophy, and fibrotic changes in the myocardium. by eliminating it, it has a positive effect on improving the quality of life of patients, reducing the number of re-hospitalizations and prolonging life. It is known from the comparative studies of the effectiveness of Veroshpiron and eplerenone that the effect of both drugs on the course of SYY and its symptom relief is practically the same. Nevertheless, the fact that eplerenone is a selective drug compared to veroshpiron prevents its side effects from appearing and makes it a preferable drug compared to veroshpiron.

REFERENCES:

1. 2022 AHA/ACC/HFSA Heart Failure Guideline: Key Perspectives, Heidenreich PA, Bozkurt B, Aguilar D, et al. J Am Coll Cardiol. 2022 May, 79 (17) e263–e421.

2. Gianluigi savarese and Lars H Lund, Department of Medicine, Cardiology Unit, Karolinska Institutet, FoU Tema Hjarta och Karl, S1:02, 17176 Stockholm, Sweden. E: 2017, Radcliffe Cardiology.

3. Komajda M, Isnard R, Cohen-Solal A, et al. Effect of spirinolactone in patients with heart failure with preserved ejection fraction: the EDIFY randomized placebo-controlled trial. Eur J Heart Fail. 2017; 19:1495–1503.

4. Tsai, CH., Pan, CT., Chang, YY. et al. Left ventricular remodeling and dysfunction in primary aldosteronism. J Hum Hypertens 35, 131–147 (2021).

5. Zhang M, Zhu P, Wang Y, Wu J, Yu Y, Wu X, et al. Bilateral sympathetic stellate ganglionectomy attenuates myocardial remodelling and fibrosis in a rat model of chronic volume overload. J Cell Mol Med 2019;23:1001-13.