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COMPARATIVE EVALUATION OF THE EFFECT OF EPLERENONE AND SPIRINOLACTONE ON LEFT VENTRICULAR SYSTOLIC FUNCTION IN PATIENTS WITH CHRONIC HEART FAILURE

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Abstract. *One of the most common clinical disorders that nevertheless has a high rate of morbidity and death is heart failure (HF) [1]. As to the latest guidelines, all patients with symptomatic heart failure who do not have any contraindications to this therapy should have an MRA prescribed to them in order to lower their risk of hospitalization and mortality from HF [2, 3].**Objective.** By measuring left ventricle ejection fraction (LVEF) in patients with chronic heart failure, our study aimed to compare the effectiveness of eplerenone vs. spironolactone on left ventricular systolic function, particularly their effect on preventing hospitalization, reducing mortality, and improving clinical status among patients with chronic HF.*

Keywords. *Chronic heart failure, Heart failure with reduced ejection fraction, Eplerenone, Spironolactone, Left ventricular systolic function.*

Matherials and Methods. The study was a prospective, randomized, single-blind clinical experiment that ran from June 2021 to June 2022. Using random sample, 142 patients with diminished ejection fraction and chronic heart failure were chosen. Every patient received treatment with either spironolactone (Spiron-HF group) or eplerenone (Epler-HF group) after being randomly assigned to one of the two groups. For the purpose of managing chronic HFrEF, patients in the Epler-HF group were compared to patients in the Spiron-HF group who were matched by age and gender and had an arm of the same size. Clinical, biochemical, and echocardiographic evaluations were performed on each patient at baseline, six months into the treatment, and twelve months into the treatment. To determine if there has been a change in left ventricular systolic function, echocardiography was used.

Background. HF is expected to affect 64.34 million people worldwide, resulting in 9.91 million years of disability [4]. One of the most common clinical disorders that nevertheless has a high rate of morbidity and death is heart failure. A key component of the treatment plan advised for patients with heart failure and reduced left ventricular ejection fraction (HFrEF) is the use of mineralocorticoid receptor antagonists (MRA) [5, 6]. As per the latest guidelines from the ESC and ACC, it is advised that all patients with symptomatic HFrEF who do not have any contraindications for this therapy be prescribed an MRA in order to lower their risk of HF hospitalization and death [7, 8]. Spironolactone and eplerenone each receive

a class I recommendation, although their pharmacokinetics and other characteristics differ significantly [9, 10].

Patients and methods. A planned investigation of 142 patients with persistent cardiovascular breakdown with reduced ejection fraction (HFrEF) was directed from June 2021 to June 2022. The consideration models for taking part in the review were as per the following: grown-up patients age ≥18 years with constant HF, New York Heart Assosiation (NYHA) practical class II/III/IV order side effects in spite of standard ideal clinical treatment, left ventricle ejection fraction (LVEF) of ≤40%, N-terminal supportive of B-type natriuretic peptide (NT-proBNP) ≥ 600 pg/ml rely upon the worth of LVEF, HF hospitalization in somewhere around a year, assessed glomerular filtration rate (eGFR) >30 mL/min/1.73 m2. The prohibition standards were a background marked by excessive touchiness or bigotry to MRA, RAAS inhibitors and SGLT2, eGFR <30 mL/min/1.73 m2, intense coronary disorder stroke, or transient ischemic assault (TIA) inside <3 months, late coronary revascularization, serious valvular coronary illness, intense decompensated HF, implantable cardioverter-defibrillator (ICD) or cardiovascular resynchronization treatment (CRT) in 3 months or less.

Following the recommendations for treating chronic heart failure, we randomly assigned 142 patients with HFrEF to two groups of comparable size (n = 71), each of which was receiving the usual optimum medical therapy for HFrEF. Patients treated with MRA Eplerenone, β-blockers, RAAS inhibitors, SGLT2, digoxin, and angiotensin receptor-nephrilysin (ARNI) are shown in the first group. Epler-HF is the name of this group. Angiotensin receptor-nephrilysin (ARNI), β-blockers, RAAS inhibitors, SGLT2, digoxin, and MRA Spironolactone were administered to a second group of patients. Throughout the 12-month follow-up phase, this group is referred to as Spiron-HF. All subjects had baseline physical exams, full medical histories, electrocardiograms, transthoracic echocardiograms, blood analyses, renal function tests, and NT-pro-BNP testing. The apical four (A4C) and apical two were utilized to calculate the left ventricular ejection fraction (LVEF) using Simpson's technique.

Results. 142 patients with persistent HFrEF were prospectively recruited. With a median age of 65.7 ± 7.1 years, the majority of patients (69%), whether male or female, had arterial hypertension (65%), diabetes mellitus (42%), ischemic heart disease (35%), atrial fibrillation (27%), chronic kidney disease (35%), peripheral artery disease (21%), stroke (21%), and chronic obstructive pulmonary disease (16%). The NT-pro-BNP was 4234 ± 2965 pg/mL, and the eGFR was 75 mL/min/1.73 m2. Heart failure had a 35% ischemic etiology. Patients fall into NYHA Classes I in 8%, II in 49%, III in 37%, and IV in 6% of cases.

Following a 12-month course of therapy, the patients treated with eplerenone showed a notable improvement in left ventricular ejection fraction (37.9 ± 3.8 ± 4.6 in the Spiron-HF group compared to 40.1 ± 5.7 in the Epler-HF group; $P < 0.05$). After a year of therapy, there was a substantial decrease in both the left ventricular systolic diameter volume (2.7 ± 0.5ml in Spiron-HF against 6.7 ± 0.2ml in Epler-HF group; $P < 0.05$) and left ventricular end-systolic volume (6.3 ± 2.5ml in Spiron-HF versus 17.8± 4.4ml in Epler-HF group; $P < 0.05$). The Epler-HF group showed a substantial improvement in left ventricular global longitudinal strain (LV GLS) as compared to the Spiron-HF group (0.6 ± 0.4 versus 3.4 ± 0.9; $P < 0.05$). The left ventricular end-diastolic volume decrease in both arms was not significantly different (2.2 ± 0.5 ml versus 4.7 ± 1.1 ml; $P = 0.103$).

Conclusion. The ESC and ACC Chronic HF Guidelines classify aldosterone antagonists as class I, "useful and recommended," based on clinical trials that demonstrate the additional advantages of this medication for individuals with HFrEF. Our research has shown that in individuals with HFrEF, eplerenone has positive effects on cardiac remodeling measures (LVEF and LV systolic dimension, or volume and diameter). According to our research, individuals with chronic HFrEF who take eplerenone had a statistically significant reduction in all-cause and cardiovascular mortality when compared to those who take spironolactone. Plerenone's critical significance in the treatment of patients with chronic HFrEF is confirmed by its capacity to block the mineralocorticoid receptor efficiently, minimize side effects, and significantly lower the risk of hospitalization and cardiovascular mortality.

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