

# Modern Treatment Methods of Heart Failure

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**Received date:** September 11, 2020; **Accepted date:** September 25, 2020; **Published date:** September 30, 2020

**Citation:** UA Eyubova (2020) Modern Treatment Methods of Heart Failure. *J. Clinical Cardiology and Cardiovascular Interventions*, 3(9);

**Doi:** 10.31579/2641-0419/082

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## Abstract

Modern methods of treatment of heart include, first of all, pathogenetic therapy and modern methods of treatment. Complete pathogenetic treatment has been achieved after the use of sacubitril / valsartan which is neprilysin inhibitor, whose use has been initiated in recent years.

According to data provided in 2017, 26 million people worldwide suffer from heart failure. [1,2] These reasons include especially malnutrition and obesity, diabetes mellitus that is increasing every year, increase in smoking, hypertension, and an increase of alcohol consumption.

In recent years, it is revealed that brain natriuretic peptide has been crucial in the pathogenesis of heart disease. B-type natriuretic peptide has a significant role in the diagnosis of heart failure and in the evaluation of its prognosis. [3]

The device treatment methods also play a significant role in the treatment of chronic heart failure.

**Key Words:** neprilysin inhibitor / sacubitril; and valsartan; device treatments for chronic heart failure.

## Main text:

Modern principles of current treatment techniques are based on the pathogenic concept that develops as a result of the long-term activation of the CHF neurohormonal system. [4]

This is primarily the renin-angiotensin-aldosterone and sympathetic-adrenal systems, which are considered as pathogens of high activity in patients with poorly predicted chronic heart failure. [4]

In recent years, a number of studies have been conducted to investigate the pathogenetic role of natriuretic peptides in the pathogenicity of heart failure. Thus, natriuretic peptides play a role in regulating the activity of cardiovascular, skeletal, nervous, reproductive and other systems by activating transmembrane quinal cyclases and also by increasing their intracellular concentration. [5]

The activity of natriuretic peptides, in particular BNP, causes a number of significant cardiac and renal effects. This effect is widely mentioned in an article by Kobalava Z, Kotovskaya Y, Averkov O and others in 2016. Decline of arterial blood pressure, vasodilation, increased diuresis and natriuresis, increase in soft tissue filtration, decrease in renin and aldosterone secretion, antihypertensive and antifibrotic effects, lipolysis and mitochondrial biogenesis can be attributed to these effects of natriuretic peptides in the organism. [6]

In recent years, a new drug affecting the level of BNP has been used in the conservative treatment of chronic heart failure patients with low ejection fraction. Thus, in the Paradigm-HF study, a detailed combination of sacubitril / valsartan was found to have a positive effect on the treatment of chronic heart failure patients with low ejection fraction. [7]

Sacubitril–valsartan has been included in the 2016 European Society of Cardiology guidelines as an alternative to angiotensin-converting enzyme inhibitors to further reduce the risk of progression of CHF, CHF hospitalization, and death in ambulatory patients. [8]

From the studies we have considered, it is clear that the use of sacubitril / valsartan is one of the most important achievements in the treatment of chronic heart failure.

The implantations of cardiac defibrillators and cardiac resynchronization treatment have been widely used worldwide in recent years.

ICD are mainly used in the treatment of bradycardia, in order to prevent lowering of heartbeat and associated complications. The purpose of the ICD implantation, the implantation process, the possible complications (mainly inappropriate shocks) associated with the activation of the device, as well as the cases when the device is needed to cancel (terminal status) or remove (infection, rehabilitation of the left ventricle) should be explained beforehand to the patients to whom this method of treatment is recommended. [8]

Other device therapy is the resynchronization treatment method of the heart. The information obtained in this field also indicates that the cardiac resynchronization treatment improves cardiac activity, symptoms and general condition of the patients in the correctly selected patients, reduces the incidence of re-illness and the rate of death. In the 2016 European Society of Cardiology guidelines it is also noted that there is no benefit from CRT compared to ICD. It has also shown that, when the biventricular injuries are 98%, the prognosis of the improvement of patients with CRT decreases. In general, patients with a large myocardial infarction may have little improvement in the function of the left ventricle with CRT implantation. [8]

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DOI:[10.31579/2641-0419/082](https://doi.org/10.31579/2641-0419/082)

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