

## Secondary prevention- an essential component of the comprehensive rehabilitation of patients with heart failure

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### Abstract

Heart failure is currently a real public health problem due to the extremely high morbidity and mortality of this disease. In this context, cardiovascular prevention measures should be implemented as early as possible. In addition to classic prevention measures, a number of extremely important specific recommendations should be considered: informing patients about their underlying disease, identifying the cardiovascular and non-cardiovascular factors that have led to cardiac decompensation, reducing daily salt consumption, monitoring body weight, forbidding smoking and recreational substances, conducting a regular exercise program under supervision, and increasing adherence to treatment.

**Key words:** heart failure, cardiovascular prevention,

Heart failure is currently a real public health problem due to its extremely high morbidity and mortality despite the complex and comprehensive treatments of this disease [1]. About 4.7% of the general population in Romania suffers from heart failure [2]. An analysis by sex shows that in a study published in 2013 and carried out at the Rehabilitation Hospital, the Cardiology Department Cluj-Napoca, heart failure females were generally older than males [3].

The presence of co-morbidities such as arterial hypertension, diabetes mellitus, atrial fibrillation, ischemic heart disease induces an aggravation of this disorder. In a study on patients with heart failure conducted at the Rehabilitation Hospital, the Cardiology Department Cluj-Napoca, Romania, the prevalence of atrial fibrillation was 48.3% and that of diabetes mellitus 30.8% [4]. In general, one of the most frequent causes of heart failure in Europe is ischemic heart disease, which is also the case in Romania [3]. There is also a high rate of hypertensive patients with heart failure, the incidence of high blood pressure displaying a constant increase in Romania (40.41%) [5].

Thus, with every acute event, myocardial injury may contribute to progressive left ventricular dysfunction [6,7].

In this context, cardiovascular prevention measures should be implemented as early as possible. In addition to classic prevention methods, a number of

extremely important specific recommendations should be considered [1,8].

- Informing patients about their underlying disease. Providing details about precipitating factors (respiratory interurrences, anemia, hyperthyroidism, etc.) for the development of heart failure. Knowing the first symptoms and signs of heart failure for an early presentation to specialized medical services.
- Identifying the cardiovascular or non-cardiovascular factors that have led to cardiac decompensation.
- Performing mandatory paraclinical examinations: electrocardiogram, pulmonary X-ray, echocardiography, natriuretic hormones, blood count, serum electrolytes, creatinine, urea, C-reactive protein, uric acid, glycated hemoglobin, lipid fractions, TSH, ferritin, transferrin saturation, for evaluation, prognosis and treatment.
- Patients with heart failure should monitor their weight daily. In case of a weight gain of more than 2 kg in 3 days accompanied by dyspnea and lower limb edema, they will be advised to increase the dose of diuretics and/or to visit the doctor urgently. Diet should respect the basic principles regarding the consumption of salt, fluids, alcohol, etc.
- Obesity. The presence of cachexia in heart failure is associated with a negative prognosis. Theoretically, obesity is a risk factor for heart failure, inducing dyspnea and a decrease of the exercise capacity. However, the presence of obesity

is associated with a low mortality rate in heart failure, which is why patients with a moderate degree of obesity (BMI < 35 kg/m<sup>2</sup>) will not be recommended to lose weight. Nevertheless, this is mandatory in the presence of a BMI of 35-45 kg/m<sup>2</sup>.

- Smoking and recreational substances. Forbidding smoking is the best cost-effective strategy for the prevention of cardiovascular diseases. All patients with heart failure will be encouraged and stimulated by non-pharmacological and pharmacological measures to quit smoking. Recreational substance use is also forbidden.

- Psychosocial factors. All patients with heart failure should be investigated for the presence of psychosocial factors that may aggravate the disease: a precarious social status, stress at the workplace and in family life, anxiety and particularly depression. The presence of depression contributes to an aggravation of the disease by a decrease of compliance and adherence to treatment. This is why these patients should benefit whenever necessary from family support, as well as from specialized psychological support.

- Physical activity. Before recommending a certain type of physical activity for patients with heart failure, their exercise capacity should be evaluated. A physical activity program will include aerobic exercises in particular, as well as exercises for the improvement of breathing. All these should be performed on a regular basis.

- Leisure activities. During leisure activities, patients will be advised to strictly take the prescribed medication, to monitor and adapt their fluid intake (particularly during flights or in hot climate regions). Sun exposure may favor the development of skin reactions in patients on amiodarone treatment. Exposure to very high altitudes may have negative effects on oxygenation. Patients with ICDs should provide information about these when travelling by air.

- Sleep and breathing. Problems related to breathing difficulties during sleep should be identified by both patients and doctors (administration of diuretics, salt intake, presence of obesity, alcohol consumption, smoking).

- Vaccinations. Because respiratory disorders are among the most frequent causes of cardiac decompensation, it is recommended that patients with heart failure should be vaccinated against influenza and pneumococcus.

- Use of contraceptives. Premenopausal women with heart failure NYHA III-IV can be advised to take third generation contraceptives (progesterone derivatives) with low estrogen content, to avoid pregnancy.

- Adherence to treatment and secondary drug prevention play an essential role in the case of patients with heart failure. As shown before, they should be made aware of the role of each drug in preventing cardiac decompensation. In this respect, they should know how to increase or reduce the dose of diuretics depending on symptoms, the presence of edema, weight gain or loss.

Regarding drugs with cardioprotective effects, these have the following indications: angiotensin converting enzyme inhibitors and beta-blockers are recommended to all asymptomatic patients with left ventricular dysfunction and a history of myocardial infarction for the prevention of heart failure.

Also, these two combined medications will be administered to all symptomatic heart failure patients with reduced ejection fraction for decreasing the number of hospitalizations and mortality risk. If patients remain asymptomatic despite this treatment, they will also have to receive anti-aldosterone treatment. The 2017 ESC Guidelines for

the management of acute myocardial infarction in patients presenting with ST-segment elevation even discuss the importance of long-term administration of angiotensin converting enzyme inhibitors and beta-blockers to all patients with acute myocardial infarction, regardless of the presence or absence of heart failure [9]. Sartans represent an alternative to angiotensin converting enzyme inhibitors when these are contraindicated or not tolerated by patients. There is strong evidence of their role in decreasing mortality in patients with heart failure [10].

In conclusion, secondary prevention (lifestyle change and drug prevention), along with cardiac rehabilitation, plays an important role in reducing the cardiac morbidity and mortality of patients with heart failure.

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