

Advances in the Diagnostic and Therapeutic Evaluation of Heart Failure. From Tonic-Unloading Treatment to Cell Transplantation and Myocardial Regeneration

Xavier Bosch,^a Fernando Alfonso,^b and Javier Bermejo^c

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From the cardiorenal model of the 1950s to the hemodynamic model of the 60s, the neurohormonal model of the 80s and the current genetic and molecular model, understanding of the pathophysiology of heart failure has increased notably. Nonetheless, defining this syndrome and establishing its diagnosis still remain difficult, both in population studies and in daily clinical practice. Furthermore, although considerable improvement has been made over recent years in treatment, the number of patients with heart failure is increasing and the associated mortality is still high. Although the improvement in the treatment of acute coronary syndromes has resulted in fewer deaths, it has led to greater numbers of patients with ventricular dysfunction and heart failure and a progressive increase in the number of readmissions. Heart failure, therefore, has now become one of the main areas of interest within the spectrum of cardiovascular diseases.

A NEW CARDIOVASCULAR EPIDEMIC

Heart failure is now a common severe disease with its attendant high social and health care costs. The main causes of heart failure are ischemic heart disease and hypertension and its incidence increases with age; it is twice as common in patients with hypertension and five times as common in patients who have had a myocardial infarction.¹

Even though improvements over recent years in primary and secondary prevention have led to stabilization of the incidence of heart failure, its prognosis is still poor. Both the Framingham study

and other recent epidemiological studies have reported mortality rates of around 50% once the disease has been diagnosed. Although new treatments, such as angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor antagonists II (ARA-II) and beta-blockers, have reduced mortality rates in these patients and recent improvements in the early detection of heart failure may change these figures, the prognosis for heart failure is still similar to that for cancer and worse than for heart disease. Heart failure is the third leading cause of cardiovascular death, after ischemic heart disease and cerebrovascular disease,²⁻⁴ especially among women.

The prevalence of heart failure is 1% among persons of 40 years of age, increasing exponentially with age to reach 10% in persons over 70 years old. The mean age of these patients is thus high. Furthermore, the prevalence is increasing because, whilst its incidence remains constant, mortality rates have fallen slightly and there has been a notable increase in life expectancy in the general population, with improved treatment of those acute diseases previously associated with high mortality rates, such as myocardial infarction. Consequently, heart failure is the leading cause of hospital admissions in patients over 65 years of age, ahead of heart disease and stroke,¹ again especially among women. One third of all new cases of heart failure require readmission within 12 months of diagnosis. This increase in the prevalence of and hospitalization for heart failure has led to it being included among what are known as the new cardiovascular epidemics.⁵

Diastolic heart failure is as common as systolic heart failure and is more frequent in older persons, women and patients with hypertension. Despite the apparent differences in the pathophysiology of these two types of heart failure, the prognosis and the number of readmissions are analogous, resulting in similar social and health care costs.^{6,7} Control of coronary risk factors and hypertension is therefore the

^aEx chief Editor. ^bChief Editor. ^cAssociate Editor.

Correspondence: Revista Española de Cardiología.
Sociedad Española de Cardiología
Ntra. Sra. de Guadalupe, 5-7. 28028 Madrid. España.

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only means of controlling the progressive increase in the number of patients with heart failure.

NEED FOR A NEW UPDATE

Given the severity of the disease and its enormous repercussions on the social and health care burden, physicians who care for patients with heart failure should be aware of the multiple treatment options currently available and the improved detection methods; this latter is particularly important, because the earlier the diagnosis the greater the benefits derived from prevention and treatment.

Fortunately, the large amount of data accumulated from clinical trials over the last 20 years has enabled us to provide better treatment for patients with heart failure. Nevertheless, treatment is still challenging and the simple prescription of digitalis and diuretics is no longer sufficient. Medication has evolved greatly and now includes vasodilators, ACE inhibitors, ARA-II, beta-blockers, aldosterone antagonists and various combinations of drugs.⁸ Consequently, treatment is now more complex as it involves not only treatment of the disease itself but also its usual associated complications and prevention of progression. It requires evaluation of all the nuances, sometimes very subtle, associated with treatment at the various stages of the disease.

We are clearly facing a change in the treatment of patients with heart failure, based on primary prevention and an early diagnosis. These will allow us to apply treatments which prevent ventricular remodeling and slow disease progression. Nowadays, we have a much larger arsenal of therapeutic, pharmacologic and non-pharmacologic strategies, such as surgery, cardiac stimulation and treatment of arrhythmias, as well as ambulatory treatment programs to prevent hospital readmission.

With this Update, REVISTA ESPAÑOLA DE CARDIOLOGÍA is starting a new series aimed at providing the most recent information currently available, in the belief that both physicians and patients will benefit. No attempt has been made to cover all aspects of the disease, only the more recent facets. The first chapter, published in this issue, provides the basic epidemiological data which are necessary to understand the importance of heart failure nowadays and the tendencies to be expected in the near future. Other important aspects of the disease will be dealt with later, such as its pathophysiology and its correct diagnosis, which are vital in order to understand the treatment options. Unfortunately,

although heart failure is a common disease, its diagnostic evaluation and therapy still leave much to be desired in daily clinical practice, where too often recourse is made to the totally out-of-date and badly named "tonic-unloading" treatment. Several studies have highlighted this distance between scientific evidence and medical practice.⁹ In this series we shall therefore concentrate on the therapeutic aspect, both pharmacologic and especially non-pharmacologic, paying particular attention to the requirement for a multidisciplinary intervention. Finally, we shall review the latest results obtained with the different techniques for myocardial regeneration, both by pluripotential cell transplant and stimulation of their myocardial development, interventions which have rapidly progressed from being an entelechy to an ever nearer reality. We trust that this will prove stimulating and useful, and help to cast off the old paradigms of treatment for heart failure.

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