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Editorial

Heart failure a cluster of comorbidities or a unique entity?

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According to World Health Organization (WHO) health is "*a state of complete physical, mental and social well-being*". A more realistic approach may be the definition of health as "*a state of balance, an equilibrium that an individual has established within himself and between himself and his social and physical environment*", implying that health may coexist with a disease [1]. The latest definition may be of importance in patients with chronic HF in whom maintenance of quality of life has the same importance as survival has and may change perception of health status.

Heart failure (HF) is a common cardiovascular entity, but with unique clinical features compared to other heart diseases, stimulating unremitting research and clinicians' interest. Importantly, the high morbidity and mortality of the disease, the lack of significant improvement in the treatment targets of chronic HF patients over the last 20 years and the poor quality of life of these patients, can change our perception of the management and therapeutic goals of this population.

Over the last years morbidity and mortality of HF have been significantly improved by the inhibition and modulation of the renin angiotensin aldosterone system. This is more obvious in HFrEF where mortality of patients with chronic HF has been halved during the last 20–25 years, from approximately 10% to 5% per year. Although HFpEF and HFrEF share the same neuroendocrine pathways activation, strategies to inhibit this axis have not achieved a significant survival benefit for patients who fall in the middle category HFmrEF [2].

Physical limitations, symptoms, self-efficacy, self-care, usual activity, pain, anxiety, social interference and personal perception of quality of life determine the disease consequences in patient's life. The most suitable approach to quantify these subjective factors is by the use of specific validated and reproducible questionnaires such as the Kansas City Cardiomyopathy Questionnaire (KCCQ) and EQ-5D (previously called the EuroQOL) which are self-administered utility measures [3,4]. The use of such validated questionnaires not only gives an overall perception of patients' status but can reveal also specific aspects that cause most of patients' stress about their health status.

Over the last years several biomarkers, clinical and echocardiographic indexes as well as composite scores have been used for the assessment of clinical status and prognosis of patients. However none of these approaches has been proved adequately to be established as the gold standard, their clinical applicability is limited and precise risk stratification in HF remains challenging, especially concerning hospitalization [5,6]. Non-cardiac comorbidities are high prevalent in patients with HFpEF while no consistent data exists for the intermediate category HFmrEF [7].

The BIOSTAT-CHF (A systems BIOlogy Study to Tailored Treatment in Chronic Heart Failure) [8] as a well-designed study, was based on 2516 patients with worsening signs and/or symptoms of HF and in a validation cohort of 1738 patients from Scotland with HF aiming to produce a model of individualized response to therapy based on demographics, biomarkers, genome-wide analysis, and proteomics. In this issue of IJC based on data from BIOSTAT-CHF an interesting analysis on the role of non-cardiac comorbidities in prognosis and quality of life in patients with HF is published [9]. Firstly, these data confirm the higher incidence of comorbidities in patients with HFpEF compared to HFrEF associated with lower quality of life in patients with HFpEF. Another interesting finding of this analysis is that in terms of comorbidities the intermediate category of HF (HFmrEF) stands between the HF patients with primarily systolic dysfunction and those with primarily diastolic impairment confirming their distinct pathophysiologic profile.

Among the most interesting findings of the study was also the greatest impact of chronic obstructive pulmonary disease to quality of life, confirming not only the central role of cardiorespiratory system in the homeostasis of human body but also the close interrelationship between cardiac and respiratory function. Of importance is also the realization that in patients with HFpEF only renal impairment and obesity were associated with impaired quality of life. Finally, concerning hospitalization only thyroid dysfunction was significant in HFpEF while in patients with HFmrEF anemia, chronic obstructive disease, thyroid dysfunction and diabetes mellitus were the most important determinants. Overall, this data may be used not only to develop risk scores and prognostic models but also to redefine our treatment targets and diagnostic approaches in patients with HF especially those with HFmrEF

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and HFpEF under the conception, however, that comorbidities are only a part of HF pathophysiology. Interestingly, all those comorbidities and especially obesity and diabetes mellitus, increase inflammatory burden acting as precursors for microvascular endothelium dysfunction, limiting nitric oxide bioavailability, and leading to cardiac hypertrophy and stiffness of cardiac myocytes with increased collagen deposition, causing diastolic left ventricular dysfunction, which is the main cardiac function deficit in all forms of heart failure [10].

Indisputably, the best treatment approach in patient with HF will continue to raise questions, at least over the next few years. However, the understanding of the importance of the comorbidities' role on clinical course and prognosis of HF patients, despite quality of life status, will lead to the development of more appropriate individualized treatments, irrespectively of left ventricular systolic function classification.

Conflict of interest

None of the authors has a conflict of interest.

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