SCIENTIFIC EDITORIAL

Assessing diastolic function in heart failure: A necessity!

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Knowledge in heart failure, particularly in left ventricular systolic function, has progressively increased for the last 15 years. However, the disease remains severe, costly and frequent due to both progress in the management of predisposing cardiovascular diseases as either systemic hypertension or coronary artery disease and population ageing [1,2]. Moreover, ageing increases the risk of association to atrial fibrillation. Despite knowledge progress in heart failure, some gaps persist concerning patients with atrial fibrillation and prognostic factors. Furthermore, the role of diastolic dysfunction is always discussed, thereby constituting a debate between a true pathophysiological dysfunction leading sometimes to heart failure or a simple witness of an early abnormality in systolic function [3,4].

In the present issue of the journal, the original article published by Peltier et al. [5] has two merits. First, it demonstrates the interest of the prognostic value of short deceleration of mitral inflow E velocity (E-wave DT), an easily assessable echocardiographic parameter. During the past, many prognostic factors have been individualized in the literature, using echocardiography [6]. The need for a systematic echocardiographic assessment in heart failure patients has now become a reality both in the diagnosis and the prognostic approach. Nevertheless, the presence of atrial fibrillation has long altered echocardiographic analysis and interpretation of the results. Peltier et al. show E-wave DT is independent of the presence of atrial fibrillation and represents a strong predictive factor in systolic heart failure patients in atrial fibrillation and in sinus rhythm. Indeed, this parameter is related to heart rate and RR interval. The authors underlined this limitation. However,
they attempted to minimize these negative effects by performing echocardiographic measurements after three weeks of clinical stability and under optimized therapy but without β-blockers which were not yet recommended in heart failure in France during the study period. Age might also influence the results of this study. However, mean age was not significantly different between groups according to the level of E-wave DT in case of sinus rhythm or atrial fibrillation, even if patients in atrial fibrillation were older than those in sinus rhythm. In both cases, E-wave DT remained an independent prognostic factor. This simple parameter allows not to consider the presence of atrial fibrillation. This fact is of great importance in the context of heart failure today because of the frequent association with atrial fibrillation. E-wave DT should be systematically considered in the study of diastolic function, namely among all variables suggested in the diagnostic strategy of heart failure with preserved systolic function [7]. These variables all have advantages and disadvantages, but often lose their interests in case of atrial fibrillation, but not the E-wave DT.

The second merit of this article [5], and not the least, is to offer the opportunity of discussing the role of diastolic function in the pathophysiology of systolic heart failure. Of course, E-wave DT only represents a partial approach of diastolic function, as an index of left ventricular diastolic restrictive filling. However, it demonstrates the importance of a preserved diastolic function in the prognosis of patients with heart failure due to left ventricular systolic dysfunction. Some landmark papers in the recent literature [4,7,8] have shown that heart failure is now considered to be a single syndrome characterized by a progressive and unique decline in systolic performance, starting initially by infraclinical abnormalities in systolic function progressively leading to a compensatory mechanism with alteration of diastolic function. Then, detectable systolic dysfunction may appear secondarily. It constitutes a continuum all along the life with a very slow decrease in left ventricular ejection fraction and sometimes different systolic damages when occur some cardiovascular events (myocardial infarction, hypertensive crisis, etc). It is characterized by the major role of systolic dysfunction (more or less marked) and the diastolic disturbances only related to systolic alterations, leading to consider diastolic heart failure as a myth rather than a real concept [4]. Peltier et al. [5] showed that diastole was not similarly altered in all patients with left ventricular systolic dysfunction and that the severity of diastolic dysfunction, at least in its filling component, had a major prognostic role in heart failure patients, either in sinus rhythm or in atrial fibrillation. It is clear that diastolic dysfunction does not reflect systolic dysfunction only. It may be more or less severe due to many other factors (etiology, left ventricular shape and remodeling, loading conditions...). Indeed, it reinforces the need of taking it into consideration; however, more generally, it questions reality of a diastolic heart failure totally independent of systolic dysfunction. The concept of the continuum based on an infraclinical systolic alteration contributing to provoke compensatory phenomenon by means of diastolic alterations remains possible. However, it does not constitute the unique answer to diastolic dysfunction.

Some epidemiological elements did not already confirm this attractive pathophysiological concept. For instance, cardiovascular drugs administered with success in systolic dysfunction do not have the same effect on morbimortality in heart failure with preserved systolic function [9—11]. The study of Peltier et al. [5] showed that diastolic dysfunction was a strong prognostic factor in systolic dysfunction but also independently of systolic dysfunction. Presence of diastolic dysfunction exacerbates systolic dysfunction. It is possible to believe that occurrence of systolic dysfunction might exacerbate a preexisting diastolic dysfunction without any obligatory link. It is thus possible to believe that diastolic dysfunction may contribute to a true diastolic heart failure called heart failure with preserved systolic function, independently of an alteration in systolic function.

The knowledge in heart failure is increasing exponentially. A new step has been reached not only in the prognostic approach but also in the pathophysiological understanding. Now we eagerly await further studies in the area of heart failure with preserved systolic function, one of the stimulating challenges of the near future in cardiology.

References