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Heart failure and its causes: still a lot to learn

Heart failure (HF) remains a central topic in cardiology, as outlined in the most recent guidelines. Moreover, recent studies provide important insights that help us gain a better understanding of this disorder. As noted in one study, HF involves the pump function not only of the heart, but also that of the pulmonary, peripheral, and microcirculation.

The same study, by Thomas Weber and colleagues from the Klinikum der Kreuzschwestern in Wels, Austria, explains that due to the cyclic function of the human heart, pressure and flow in the circulation are pulsatile rather than continuous, affecting both brachial pulse and central pressures, and wave reflections. The latter are closely related to left ventricular late systolic afterload, ventricular remodelling, diastolic dysfunction, exercise capacity, and, in the long term, the risk of new-onset heart failure.

Interestingly, treatments for heart failure with preserved (HFpEF) and reduced ejection fraction (HFrEF), based on a reduction of wave reflection, are emerging.

Atrial fibrillation is a risk factor not only for stroke, but also for heart failure in both those with HFrEF and those with HFpEF. Adriaan Voors and colleagues from the University Medical Center Groningen in the Netherlands suspected that biomarkers may provide insights into underlying mechanisms of the arrhythmias in these phenotypes. They performed a retrospective analysis of the registry BIOlogy Study to TAilored Treatment in Chronic Heart Failure (BIOSTAT-CHF) in 2,152 patients with HFrEF and 524 patients with HFpEF.

The results showed risk marker pattern in HFrEF was different from that in HFpEF: in HFrEF, atrial fibrillation was associated with higher levels of 84% of the risk markers compared with sinus rhythm, whereas in HFpEF, many more markers were higher in sinus rhythm than in atrial fibrillation. However, although atrial fibrillation was associated with 27% increased mortality risk over a period of 21 months, there was no significant effect of an interaction between heart rhythm and HFrEF or HFpEF on outcome.

The management of chronic heart failure has made notable progress over the last decades. However, progress was mainly restricted to patients with HFrEF and more recently those with midrange ejection fraction (HFmrEF), while heart failure with preserved ejection fraction or HFpEF remains an enigma in spite of a considerable morbidity and mortality.

Indeed, inhibitors of the renin–angiotensin–aldosterone system and beta-blockers have revolutionised the management of HFrEF, but provide little or no benefit in HFpEF, as shown in several recent studies including the SOCRATES-PRESERVED study.

It is hoped that advances in precision medicine will have transformative effects on the way that heart failure is managed in the years to come. In a recent review, Antoni Bayés-Genís and colleagues from the Hospital Universitari Germans Trias i Pujol in Badalona, Spain, have noted that circulating biomarkers measured with highly sensitive, specific, and reproducible assays will have increasingly important roles in heart failure for the patient-level risk assessment and therapeutic targeting.

While data currently focus on the use of biomarkers to identify heart failure, stratify its risk, and possibly generically guide therapy with drugs developed for diseases other than heart failure, Bayés-Genís et al. cite the need for much more individualised and focused treatment strategy, including use of complex phenotype/genotype analyses as well as the use of precision therapies targeting deleterious mediator pathways in heart failure.

Source: European Heart Journal
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Published on : Wed, 28 Nov 2018