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Prognostic relevance of global work index and global constructive work in patients with non-ischemic dilated cardiomyopathy

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Aims: Myocardial work (MW) derived from pressure-strain loops is a novel non-invasive tool to assess left ventricular (LV) function, incorporating global longitudinal strain (GLS) by speckle tracking echocardiography and non-invasively assessed blood pressure. Studies on the role of MW in dilated cardiomyopathy (DCM) are still limited. Therefore, the aim of this study was to evaluate the potential value of MW for predicting adverse outcomes in patients with DCM. Methods and results: 116 consecutive patients with DCM who underwent heart catheterization were retrospectively recruited from June 2009 to July 2014. 34 patients (30%) met the composite endpoints for major adverse cardiac events (MACE) of cardiac transplantation, need for implantable cardioverter-defibrillator (ICD) therapy, heart failure hospitalization and all-cause mortality. Patients with DCM were followed up for a mean of 5.1 years (IQR: 2.2–9.1 years). Global work index (GWI) and global constructive work (GCW) were not only independent predictors but also provided incremental predictive values of MACE in multivariate Cox models (Integrated discrimination improvement [IDI] > 0). Furthermore, Patients with GWI < 788 mmHg% (HR 5.46, 95%CI 1.66-17.92, p = 0.005) and GCW < 1,238 mmHg% (HR 4.46, 95%CI 1.53-12.98, p = 0.006) had higher risks of MACE. Conclusion: GWI and GCW assessed by strain imaging echocardiography may have an additional value beyond LV-EF and GLS for predicting adverse outcomes in DCM.

Biography

Peng Chen brings clinical expertise and research precision to the evaluation of cardiac function in patients with dilated cardiomyopathy (DCM). His recent work emphasizes the prognostic value of myocardial work indices—specifically global work index (GWI) and global constructive work (GCW)—as superior markers for predicting major adverse cardiac events compared to traditional metrics like ejection fraction and global longitudinal strain. Using non-invasive pressure-strain loops, his approach offers a sensitive, load-adjusted insight into myocardial performance, validated through long-term follow-up and rigorous statistical analysis. This work opens new avenues for risk stratification and management in non-ischemic heart failure.

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