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EDITORIAL

Is mechanical dispersion superior to global longitudinal strain in the assessment of patients with systemic lupus erythematosus?

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Systemic lupus erythematosus (SLE) is a common systemic disease of the connective tissue, where cardiovascular diseases represent one of the most important causes of disability and mortality [1, 2]. The prolonged disease duration (especially more than 10 years) and the high disease activity score (SLEDAI) were associated with the abnormalities in cardiac structure and function, although the precise mechanisms are unknown, these may be related to myocarditis caused by immune complex deposition and monocyte infiltration or by coronary artery disease, due to premature atherosclerosis, thrombosis, endothelial damage, inflammatory state mediated by immune complexes, renal involvement, hypertension, dyslipidemia, and the use of steroids [3, 4].

Echocardiography is a very useful non-invasive technique for the diagnosis of cardiac involvement in patients with SLE, but the conventional technique may be limited by the low sensitivity for early detection of myocardial dysfunction [5]. The use of speckle tracking echocardiography allows detailed analysis of left ventricular (LV) mechanics. Global longitudinal strain (GLS) has emerged as robust parameter of LV function and allows detection of subclinical LV dysfunction despite normal left ventricular ejection fraction (LVEF) [6, 7]. Mechanical dispersion (MD) is derived from LV longitudinal strain analysis and may cause regional heterogeneity of myocardial contraction. To quantify LV MD, we used the standard deviation (SD) of the 16 different time intervals to maximum myocardial shortening or delta contraction duration, which is defined as the difference between the longest and shortest time interval from ECG onset Q/onset R-wave to the maximum myocardial shortening [8, 9].

Increased MD is associated with malignant arrhythmias in patients with ischemic heart disease and hypertrophic cardiomyopathy. Haugaa KH et al. found in the multivariate analysis of patients post myocardial infarction, that MD was a strong and independent predictor of arrhythmias ($p < 0.001$) in patients with an LVEF > 35% [10] and provides superior prognostic information to LVEF and GLS [9].

Li Ch et al. studied 87 female patients with uncomplicated SLE and 59 healthy female controls using peak strain dispersion (PSD) within the LV detected by 2D speckle tracking. The SLE patients were divided into inactive disease (SLEDAI < 4) and active disease (SLEDAI > 5). These authors found that PSD was more sensitive for inactive SLE patients whereas that GLS was a more vulnerable indicator of early left ventricular dysfunction in active SLE patients. The contribution by Li et al. also demonstrated that exists a positive correlation between disease activity and left ventricular function [11].

Declarations

Conflict of interest The author declare no conflicts of interest.

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