

Dilated cardiomyopathy (DCM) is the second leading cause of heart failure. The pathophysiology in DCM is still poorly understood, partly because of currently limited research tools. We investigated whether cardiovascular magnetic resonance (CMR), using novel imaging techniques, could be used for in vivo assessment of some key pathophysiological mechanisms related to DCM. In addition, we evaluated whether the pathological findings on CMR would predict clinically relevant functional and morphological improvement of the left ventricular (LV) function – the LV reverse remodeling (LVRR).

CMR together with endomyocardial biopsy, echocardiography, cardiopulmonary exercise testing and a thorough assessment of cardiac biomarkers was performed in 44 patients with new-onset DCM (<6 months of duration). The imaging was repeated after 12 months of clinical follow-up.

Endomyocardial biopsy revealed myocardial inflammation in 34 % of the patients. LVRR at 12 months occurred in 45 % of the patients. Presence of late gadolinium enhancement (LGE) in the left ventricle was a sensitive but unspecific sign of myocardial inflammation because it was also a feature of hemodynamic stress related to the heart failure. The baseline extent of LGE was an independent predictor of future LVRR and also a predictor of adverse clinical events. Pericardial effusion and increased early gadolinium enhancement were specific but uncommon signs of myocardial inflammation. Assessment of myocardial edema by T2-weighted imaging did not add value to detection of myocarditis but it was valuable for predicting of LVRR.

In conclusion, CMR seems a suboptimal method for detection of myocardial inflammation in new-onset DCM. However, in these patients CMR may reveal myocardial injury related to hemodynamic stress and it may predict future LVRR.