

## Prognostic implications of late gadolinium enhancement for re-worsening left ventricular ejection fraction in patients with dilated cardiomyopathy: a longitudinal study of left ventricular function

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**Background:** Re-worsening left ventricular ejection fraction (LVEF) after initial recovery occurs in some patients with dilated cardiomyopathy (DCM). However, prevalence and predictors of re-worsening LVEF in longitudinal follow-up are unclear. Late gadolinium enhancement of cardiovascular magnetic resonance (LGE-CMR) can evaluate the damage of myocardial tissue.

**Purpose:** This study sought to evaluate the clinical parameters including LGE-CMR to predict re-worsening LVEF in patients with recent-onset DCM.

**Methods:** We included patients with recent-onset DCM who had an LVEF <45% and underwent LGE-CMR at diagnosis. We performed yearly echocardiographic follow-up [median 6 [4–8.3] years]. Initial LVEF recovery defined as patients increased in >5% LVEF from baseline and had an LVEF ≥45% after medical therapy. Patients were divided into three groups: (1) Improved: defined as those with sustained LVEF ≥45% after initial LVEF recovery; (2) Re-worse: those with decreased >5% and had an LVEF <45% after initial LVEF recovery, and (3) Not-improved: those with no initial LVEF recovery during follow-up. To evaluate the prognostic factors for Re-worsening LVEF after initial LVEF recovery, multivariate logistic regression analysis performed between the Improved group and the Re-worse group.

Cardiac events defined as hospitalization due to heart failure and sudden death.

**Results:** Of 138 patients, 82 patients (59%) were the Improved group, 42 patients (30%) were the Re-worse group, and 14 (10%) were the Not-improved group. Loess curves of long-term LVEF trajectories showed that LVEF in the Re-worse group increased first 2 years and declined slowly thereafter (Fig. 1A). Re-worsening LVEF occurred 4.5±2.2 years after initial LVEF recovery. Multivariate logistic regression analysis demonstrated that LGE area at baseline (Odds ratio: 1.09, 95% confidence interval (CI) 1.02–1.18, p=0.014) and Log brain natriuretic peptide (BNP) at initial LVEF recovery (Odds ratio: 1.53, 95% confidence interval (CI) 1.01–2.31, p=0.042) were independent predictors for Re-worsening LVEF. Kaplan Meier analysis demonstrated that the risk of cardiac events in the Re-worse group was significantly higher (hazard ratio: 3.93, 95% CI 1.49–10.36, p=0.006) than in the Improved group and lower risk than in the Not-improved group (hazard ratio: 0.28, 95% CI 0.12–0.62, p=0.002) (Fig. 1B).

**Conclusion:** Re-worsening LVEF occurred in 30% of patients in patients with recent-onset DCM. LGE area and BNP at initial LVEF recovery were independently associated with re-worsening LVEF after initial LVEF recovery.

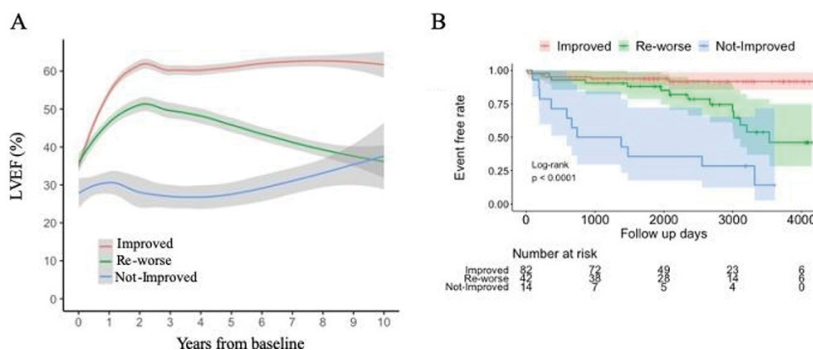


Figure 1