Left ventricular thrombus in patients with heart failure with improved ejection fraction

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Background: This study sought to: (1) determine the prevalence of LV thrombus at baseline and at the time of recovered ejection fraction (EF) in patients with heart failure with improved ejection fraction (HF-imp EF), (2) examine clinical and echocardiographic factors associated with the presence of LV thrombus, and (3) determine the prevalence of thromboembolic events when LVEF was improved and oral anticoagulant (OAC) was discontinued.

Methods and results: Patients with nonischemic HF-imp EF defined as a baseline LVEF of \( \leq 40\% \), a \( \geq 10\% \) increase from baseline LVEF, and a second measurement (6 months apart) of LVEF of \( > 40\% \) were consecutively enrolled in advanced HF clinic in a tertiary center. Patients with recent myocarditis, recent coronary revascularization, active chemotherapy, hypertrophic cardiomyopathy, cardiac amyloidosis, and tachycardia induced cardiomyopathy were excluded. A total of 104 consecutive patients (age \( 51 \pm 15 \) years; 66% were male) with HF-imp EF were included. Of these, 14 patients (14%) had LV thrombus at baseline. Baseline LVEDD, LVEF, and LV global longitudinal strain (GLS) were \( 61 \pm 10 \) mm, \( 23 \pm 15\% \), and \(-5.9 \pm 3.3\%\), respectively. Younger age, absence of atrial fibrillation, receiving oral diuretics, lower LVEF, reduced LV GLS, and reduced RV free wall (FW) GLS were significantly associated with LV thrombus at baseline (p < 0.05 for all) (Table 1). All patients (100%) with LV thrombus at baseline received oral anticoagulants (OAC). At the median follow-up of 27 months, 14 (100%) had complete resolution of LV thrombus when LVEF > 40%. Of 14 patients, 11 (79%) who were in sinus rhythm discontinued OAC. After a median further follow-up of 27.4 months following OAC discontinuation, there was no thromboembolic event or all-cause mortality in these patients. One of 11 patients developed worsening LVEF and recurrent LV thrombus at 25 months after LVEF improvement (> 40%).

Conclusions: Approximately 1 in 6 patients with HF-imp EF had LV thrombus at baseline. LV thrombus formation was associated with more impaired LV and RV systolic function and myocardial deformation implicating more thromboembolic milieu. Complete resolution of LV thrombus occurred in all patients who were on OAC therapy at the time of imp-EF. Discontinuation of OAC when LVEF > 40% was safe. However, recurrent thrombus formation can occur when LV systolic function was deteriorated. Annual or bi-annual echocardiographic follow-up may be essential in these patients.