

A comparison of rate control and rhythm control in tachycardia induced cardiomyopathy patients with persistent atrial flutter

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Background/Introduction: Tachycardia induced cardiomyopathy (TIC) is a potentially reversible dysfunction of the left ventricle (LV) caused by tachyarrhythmias. Early recognition of TIC and treatment of the culprit arrhythmia using pharmacological therapy or catheter ablation results in the recovery of LV function. For atrial flutter (AFL)-induced TIC, rhythm control strategy, such as catheter ablation has been recommended. On the other hand, the efficacy of rate control strategy has remained unclear due to the difficulty of control with arrhythmic medications. However, not all patients can take rhythm control treatments due to their backgrounds.

Purpose: The aim of this cohort study was to establish whether rate control strategy using β -blocker is as effective as invasive rhythm control strategy for the recovery of LV function in patients with TIC due to AFL.

Methods: We prospectively assessed 47 symptomatic non-ischaemic heart failure (HF) patients with left ventricular ejection fraction (LVEF) below 50% and suspected TIC induced by persistent AFL. Patients were divided into rhythm control strategy group (n=22, treatment: catheter ablation, electrical cardioversion) and rate control strategy group (n=25, treatment: bisoprolol). As a sub-group study, the rate control strategy group was divided into the strict rate control group (n=12, average heart rate below 80

bpm) and lenient rate control group (n=13, average heart rate below 110 bpm). The primary outcome was the recovery of LV function, defined as an increase of LVEF over 20% or to a value of 55% or greater after 6 months.

Results: There were no significant differences in baseline AFL heart rate, New York Heart Association class, LVEF, estimated glomerular filtration rate, and brain natriuretic peptide between the two groups. A greater proportion of patients who showed the recovery of LVEF after 6 months belonged to the rhythm control strategy group (90.9% vs. 52.0%, $p=0.004$). The cumulative incidence of HF re-hospitalization was significantly higher in the rate control strategy group than in the rhythm control strategy group (hazard ratio: 4.90, 95% CI: 1.06–22.69). As a result of sub-group study, LVEF recovery was greater in the strict rate control group compared to the lenient rate control group (75.0% vs. 30.8%, $p=0.027$).

Conclusion: Rate control strategy was significantly inferior to rhythm control strategy for the recovery of LVEF in TIC patients with persistent AFL. Rhythm control should be the first choice in the management of TIC with AFL, and strict rate control should be an alternative if rhythm control is not available.

