Magnetocardiography Can Predict Clinical Response and Long-Term Prognosis after Cardiac Resynchronization Therapy

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Background: Cardiac resynchronization therapy (CRT) is a treatment for heart failure (HF) with electromechanical dyssynchrony. However, there is no available tool to accurately predict the efficacy. We hypothesized that magnetocardiography (MCG) with high spatio-temporal resolution can predict the CRT response. Methods: We analyzed 64-ch MCGs in 25 patients with HF and QRS prolongation on ECG (18 CLBBB, 7 IVCD). According to the 2-D current mapping, they were divided into 2 groups (Group-A with Uni-directional pattern and Group-B with Multi-directional pattern). We compared clinical and echocardiographic characteristics at 6 months after CRT implantation. CRT responder was defined when >10% LVDd decrease or >10% LVEF increase was recognized. Results: There were no significant differences between the groups in baseline LVDd, LVEF, BNP, and NYHA. After 6 months, we found 12 responders out of 13 Group-A patients and 9 non-responders out of 12 Group-B patients (p=0.001). During the follow-up of 721 ± 339 days, cardiac events occurred less frequently occurred in Group-A (only 1 HF hospitalization) vs. Group-B (1 death, 2 LVAS implant, 5 HF hospitalization). Conclusions: MCG can predict the CRT response and long-term prognosis after CRT. Keywords: CRT, MCG, heart failure