

**Incidence and Hemodynamic Effects of Anodal Stimulation in Patients with Cardiac Resynchronization Therapy**

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Introduction: Anodal stimulation (ANS) is a well known phenomenon among patients (pts) with CRT. Its incidence varies according to the implanted hardware, and there are inconsistent data regarding its hemodynamic effects. In this prospective study, we sought to evaluate the incidence of ANS among pts with CRT devices and to evaluate the acute hemodynamic effects of this phenomenon by echocardiography.

Patients and methods: After excluding pts with leads and devices incompatible with ANS, the initial screening was done by evaluating the 3 lead ECG while pacing LV-only from LV tip to RV ring at a gradually decreasing output. Pts with evidence of ANS underwent repeated testing by 12-lead ECG during biventricular pacing (BiV) at decreasing output using the same configuration. Pts with electrocardiographic evidence of ANS underwent detailed echocardiography with and without ANS looking at dp/dt, volumes, myocardial performance index and ejection fraction.

Results: We screened a total of 129 pts, of whom 91 were excluded, 68 due to inappropriate hardware, 12 due to atrial fibrillation and 11 pts were enrolled in other trials. Of the 38 subjects tested in this study, ANS was found in 28 pts (75.7%) by LV only pacing. Of these only 12 (32.4%) showed ANS with BiV pacing. Nine pts with ECG evidence of ANS during BiV pacing underwent detailed echocardiography with and without ANS. There were no significant differences in the echocardiographic findings with and without ANS.

Conclusion: Anodal stimulation is a common phenomenon among CRT patients. In many cases ANS is seen in LV pacing only, while it is often not seen during biventricular pacing. The mechanism of this phenomenon remains to be established. Echocardiography did not show any consistent hemodynamic effects of ANS during BiV pacing.