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Electronic Repositioning in CRT devices – Results of the ELECTION Trial On Behalf of the ELECTION Investigators

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Background:
Phrenic stimulation (PNS) and high pacing thresholds (PT) are important deterrants to maintenance of CRT. The Election study sought to investigate the effects of pacing configuration change (electronic repositioning (ER) on PNS and PT in CRT patients (pts) .

Methods:
From 10/2004 to 10/ 2008, 228 pts(64 CRTP, 164 CRTD) pts were enrolled at 15 Centres in Canada, Israel, Denmark and Sweden,. A long term phrenic nerve stimulation sub-study was completed with 48 (of the 228) patients. Patients were followed at implant, 1 month (m) and 6m visits.

Results:
Pts age was 67.7 ± 10.5yrs, 76% males, NYHA class 3/4 in 82% and 3% respectively. EF was 24.6 ± 7.7%, with ischemic and idiopathic CMP in 57% and 43 of pts.
Average PT are depicted in figure 1. With LV tip to LV ring as the nominal configuration (NOM) , 35.1%, 26.3% and 22.8% had a significantly lower (>1V) PT in another configuration at implant, 1m and 6m respectively. In 94.1%, 76.5% and 84.6% a problem of very high (>5V) PT at NOM could be resolved by ER, at implant, 1m and 6m respectively.
For sub-study patients (n=48) PNS ranged from 2.1% to 18% at different configurations at different times. At 1 m, 3/5 (66%) of pts with PNS at NOM could be resolved by ER. At 6m one pt could be resolved with ER, the other had PNS in all configurations . During the period of FU (1m, 6m) there were 7 and 1 cases of ER. In 100% of the cases, ER was judged to have prevented repositioning replacement or abandonment of the LV Lead

Conclusions: ER is an important tool in management of CRT pts which may help to lower thresholds, avoid PNS and to prevent unnecessary reoperations or abandonment of the LV pacing.

Figure 1.