



## Arrhythmias

### **ATRIAL-BASED PACING ALGORITHMS ARE NOT HEMODYNAMICALLY OPTIMAL FOR PATIENTS WITH FIRST DEGREE ATRIOVENTRICULAR BLOCK RECEIVING DUAL CHAMBER PACEMAKERS FOR SYMPTOMATIC BRADYCARDIA**

Poster Contributions

Poster Sessions, Expo North

Sunday, March 10, 2013, 9:45 a.m.-10:30 a.m.

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Session Title: Arrhythmias: Devices II - Improving Outcomes in Patients with Implantable Devices: Tweaking the Well-Functioning Machine

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**Background:** Since right ventricular pacing can worsen heart failure in patients with left ventricular dysfunction, several device manufactures have adopted algorithms to minimize right ventricular pacing. However, such algorithms may not be hemodynamically optimal for patients with normal left ventricular function and prolonged first degree AV block. The purpose of this study was to evaluate the hemodynamic response during atrial based (AAI) and dual chamber (DDD) pacing in such patients.

**Methods:** Ten consecutive patients, 5 male and 5 female, with baseline PR interval >230 msec, scheduled to receive a dual chamber pacemaker, were enrolled in this study. Age was 74±12 years, PR interval was 271±41 msec, and ejection fraction was 63±9%. Two weeks after pacemaker implantation, patients underwent 2D echocardiogram to assess cardiac output as measured by aortic valve velocity time integral (VTI) during AAI and AV optimized DDD pacing. The optimal AV delay was determined by evaluating the average VTI at 20 msec AV intervals from 80 to 220 msec. Evaluation was performed at both 10 (lower rate, LR) and 30 (upper rate, UR) beats per minute above intrinsic heart rate.

**Results:** The maximum VTI achieved at both the LR (70±2 bpm) and UR (88±4 bpm) was higher in AV optimized DDD mode than in AAI mode (30.5±6.2 cm versus 28.8±6.2 cm, p<0.01 for LR, and 29.5±4.4 versus 24.8±4.4, p=0.03 for UR). The PR interval with AAI pacing was significantly longer than the optimized DDD pacing at the LR (332±85 msec versus 160±43 msec, p<0.01) and the UR (394±34 msec versus 152±3 msec, p<0.01). The PR interval in AAI pacing was significantly longer at the UR than the LR (p=0.023). The PR interval for the optimal AV delay was similar for the LR and UR (p=0.87).

**Conclusion:** AV optimized DDD pacing yields better cardiac output than atrial based pacing in patients with prolonged first degree AV block receiving dual chamber pacemakers for symptomatic bradycardia. Further evaluation is warranted to determine if there is any long-term detrimental effect of increased RV pacing in this patient population.