**Evaluation of acute effects of para-Hisian pacing for rate control of atrial fibrillation**

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**Background**:

Many symptoms and hemodynamic effects of atrial fibrillation (AF) are related to rapid ventricular rates and an irregular cardiac cycle. Ventricular pacing during AF eliminates RR intervals longer than the pacing cycle length and decreases the incidence of shorter RR intervals, reducing the irregularity of ventricular activation1. Ventricular desynchronization from right ventricular pacing (RVP) may reduce the hemodynamic benefits from a more regular ventricular rhythm2. His bundle pacing (HBP) may provide an attractive alternative, avoiding desynchronization of ventricular activation3.

**Methods**:

Patients who presented in AF for ablation (not including AV nodal ablation), or His bundle pacemaker implant were included in this study. Continuous hemodynamic monitoring was performed with an EV1000 monitor. Programmed stimulation was performed with a Bloom cardiac EP stimulator or a Medtronic external pacemaker programmer, with a goal of 50 ms shorter pacing cycle length than the average RR interval in AF at baseline (BL). PHP and RVP was done for 60 seconds each and ANOVA was used to compare hemodynamic/electrocardiographic parameters at BL with PHP and RVP.

**Results**:

Data from 15 consecutive patients were analyzed (age 61.5±12.1 years, left ventricular ejection fraction 53±11%). The average RR interval decreased during pacing, compared to baseline (BL 698±170 ms, PHP 656±137, RVP 657±144, p<0.05). The QRS duration increased during pacing (BL 117±27 ms, PHP 147±19, RVP 171±22, p<0.01).

Cardiac index increased during PHP compared to BL (PHP 2.1±0.7 vs BL 2.0±0.7 l/min/m2, p<0.05) and RVP (PHP 2.1±0.7 vs RVP 2.0±0.6 l/min/m2, p<0.05). Other hemodynamic parameters were not affected by pacing (p>0.05): pulse rate BL 84±16, PHP 85±21, RVP 87±22 bpm; mean arterial pressure BL 82±18, PHP 81±18, RVP 80±17 mmHg; stroke volume variability BL 15.7±6.8, PHP 17.7±6.6, RVP 17.5±5.8 %.

**Conclusion**:

RVP and PHP used to regularize RR intervals did not have an adverse effect on hemodynamic parameters in this acute study. PHP had a slight positive effect on cardiac index, possibly due to narrower paced QRS duration compared to RVP. The results warrant further investigation in ambulatory patients to assess symptomatic response to a more regular heart rate in AF.

**References**:

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