Incidence of the primary endpoint and its components

	Lone AF		AF with UHD	
	Rate control (n=53)	Rhythm control (n=55)	Rate control (n=203)	Rhythm control (n=211)
Endpoint - no.(%)	7 (13)	3 (5)	37 (18)	57 (27)
Cardiovascular mortality	2 (4)	1 (2)	16 (8)	17 (8)
Heart failure	0	0	9 (4)	12 (6)
Thromboembolic complications	2 (4)	1 (2)	12 (6)	20 (9)
Bleeding	4 (8)	1 (2)	8 (4)	8 (4)
Side effects of antiarrhythmic drugs	0	0	2 (1)	12 (6)
Pacemaker implants	1 (2)	1 (2)	2 (1)	7 (3)

Conclusion - In patients with lone AF treated with rate or rhythm control, cardiovascular event rate was low, compared to patients with UHD. QoL is higher in patients with lone AF. Event rate with lone AF was too small to assess whether to prefer rate or rhythm control.

1166-218 **Modification of Electrophysiologic Properties of Pulmonary Veins and Adjacent Left Atrial Tissue by Radiofrequency Circumferential Ablation of the Pulmonary Vein Ostia: Correlation With Nonrecurrence of Atrial Fibrillation**

Hiroshi Sohara, Shyutaro Satake, Kazushi Tanaka, Sugako Ishigaki, Yoshio Yamaguchi, Shigeru Saito, Yoshio Watanabe, Shonan Kamakura General Hospital, kamakura, Japan

Background: Electrical disconnection between pulmonary veins (PVs) and left atrium (LA) is now frequently used in the treatment paroxysmal atrial fibrillation (AF). Ablation of PVs per se is, however, time consuming and is often complicated with PV stenosis. Furthermore, the rate of recurrence is rather high perhaps due to anatomical variations of PV-LA junctional area. Hence, we tested the efficacy of PV ostial ablation with a novel radio-frequency balloon catheter (RBC) and elucidated the electrophysiologic changes required for the maintenace of sinus rhythm.
Methods and Results: Forty-nine patients with drug-resistant AF underwent circumferential ablation of PV-LA junction by RBC. Post ablation changes in electrophysiologic properties around the PV ostia were studied with a basket catheter and were correlated with AF recurrence in 34 early cases (ablating 68 superior PVs) and 15 later cases (53 superior and inferior PVs). Total elimination of PV potentials or PV-LA dissociation was achieved in 92.7% (63/68 PVs) and 92.5% (49/53 PVs), respectively. During mean follow-up periods of 15.1+/-4.8 and 6.2+/-2.2 months, AF recurred in 38.2%(13/34cases) and 13.3%(2/15) in early and later groups, but no case developed PV stenosis. Although the amplitude of PV and periostial LA potentials were decreased ($p<0.0001$) in all patients, the remaining PV potentials in 34 nonrecurrence cases were definitely smaller than those in 15 recurrence cases ($p<0.0001$). When a cut-off level of less than 0.4 mV in receiver operating characteristic curves was used, its negative predictive value for non-recurrence of AF was 93% and specificity was 95.2%.
Conclusions: Circumferential PV ostial ablation with an RBC is highly effective in terminating AF without the risk of PV stenosis. Maintenance of sinus rhythm can be predicted when both supeior and inferior PVs are ablated and amplitudes of all the remaining PV-LA potentials are decreased to less than 0.4mV.

POSTER SESSION

1167

Effects of Cardiac Pacing and Resynchronization Therapy

Tuesday, March 09, 2004, 3:00 p.m.-5:00 p.m.
Morial Convention Center, Hall G
Presentation Hour: 4:00 p.m.-5:00 p.m.

1167-207 **Improved Response Rate and Left Ventricular Epicardial Lead Stability Following Robotically-Assisted Ventricular Resynchronization**

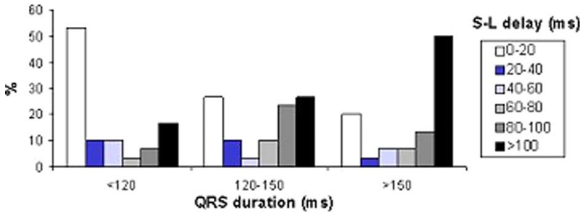
Sandhya K. Balaram, Robert C. Ashton, Jr., Jonathan S. Steinberg, Daniel G. Swistel, Frederick Ehlert, Margot E. Vloka, Joseph J. DeRose, Jr., St. Luke's-Roosevelt Hospital Center, Columbia University College of Physicians and Surgeons, New York, NY

Background: Robotically-assisted left ventricular (LV) epicardial lead implantation is a safe and effective technique for biventricular pacing. We hypothesized that such a strategy for ventricular resynchronization therapy might produce improved clinical response rates over the medium term.
Methods: Twenty patients with congestive heart failure (NYHA Class 3.5 ± 0.5) and a widened QRS (184 ± 30 msec) underwent robotic LV lead placement for biventricular pacing. Mean patient age was 69.4 ± 11.6 years, LV ejection fraction (EF) was 12.3 ± 6% and left ventricular end diastolic volume was 6.8 ± 1.2 cm. The etiology of heart failure was ischemic in 55% and idiopathic in 45%. Ten patients (50%) had prior coronary artery bypass surgery. Indications for robotic LV lead implant included failure of coronary sinus cannulation (10), atretic venous tributaries (4), poor LV lead capture (3), primary implant (2) and coronary sinus dissection (1).
Results: Two epicardial leads were placed on the posterolateral surface of the LV in all patients as directed by intra-operative electrophysiologic mapping. Implant success rate was 100%. Intraoperative lead threshold was 1.2 ± 0.6 v at 0.5 ms, R-wave was 14.4 ± 8.7 mv, and impedance was 1098 ± 220 ohms at 0.5 v. Complications included one post-operative pneumonia, one intraoperative LV injury and one episode of post-operative renal insufficiency. At an average follow-up of 8.5 ± 4.4 months, 19 of 20 patients are alive and well. Improvements in exercise tolerance have been demonstrated in 85% of patients and there have been no lead failures over the follow-up period. Statistically significant improvements in ejection fraction (19.9 ± 13%, p=0.03) and QRS duration (149 ± 21 msec, p=0.007) have also been measured. Over the medium-term lead thresholds have remained unchanged (1.8 ± 1.1V at 0.5 ms, p=ns), and a significant drop in impedance (310 ± 54 ohms, p=0.005) has been detected.
Conclusions: Robotic LV epicardial leads remain stable and reliable over the medium term. Improved clinical response rates may be achieved with the site directed implantation strategy that this technique affords.

1167-208 **Relationship Between QRS Duration and Left Ventricular Dyssynchrony in Patients With End Stage Heart Failure**

G. B. Bleeker, M. J. Schalij, S. G. Molhoek, H. F. Verwey, E. E. van der Wall, J. J. Bax, Leiden University Medical Center, Leiden, The Netherlands

Background: Patients with end-stage heart failure and wide QRS complex are considered candidates for cardiac resynchronization therapy (CRT). A wide QRS complex is considered to represent left ventricular (LV) dyssynchrony. However, 20-30% of these patients do not respond to CRT. Tissue Doppler Imaging (TDI) may provide more accurate information on intra-LV dyssynchrony. Accordingly we evaluated a large cohort of patients with different QRS durations with TDI to assess LV dyssynchrony.
Methods: 90 consecutive patients with severe heart failure (LVEF<35%, NYHA class III-IV) were divided into 3 groups of 30 patients based on QRS duration. (<120ms, 120-150 ms and > 150ms). All patients underwent TDI to assess LV dyssynchrony and QRS duration was compared to the septal-to-lateral delay (S-L delay), a direct marker of LV dyssynchrony. Based on previous work, an S-L delay >60 ms was considered indicative of severe LV dyssynchrony.
Results: Severe dyssynchrony was observed in 8 patients (27%) with narrow QRS complex (<120 ms), in 18 patients (60%) with a QRS duration of 120-150 ms, and in 21 patients (70%) with QRS > 150 ms (see figure). No relation existed between QRS duration and S-L delay.
Conclusions: QRS duration does not adequately reflect intra LV dyssynchrony and TDI should be used alternatively. In addition, 27% of patients with heart failure and narrow QRS complex have dyssynchrony and may be candidates for CRT.



1167-219 **Long-Term Reliability of Epicardial and Transvenous Leads Used for Cardiac Resynchronization Therapy**

John D. Hummel, Leslie A. Saxon, Jerry Luck, David Meyer, Patrick Yong, The VIGOR CHF/VENTAK CHF CONTAK CD Study Investigators, Riverside Methodist Hospital, Columbus, OH, Guidant Corporation, St. Paul, MN

Background: Left ventricular pacing leads used in cardiac resynchronization therapy are either placed in the coronary venous vasculature transvenously (TRANS) or surgically implanted transthoracically on the epicardium (EPI) via limited thoracotomy. A long-term comparison of the reliability of these leads in heart failure patients (pts) has not been previously discussed.
Methods: Pts participating in the VIGOR CHF and VENTAK CHF/CONTAK CD studies had either TRANS (443 pts) or EPI (109 pts) leads implanted. EPI leads were either steroid eluting sutureable (SUT, 81 pts) or non-steroid eluting screw-in myocardial (MYO, 28 pts). A Kaplan-Meier estimate of the time to lead failure or replacement was calculated for TRANS vs. EPI as well as for SUT vs. MYO leads. Pt deaths and explants due to heart transplant or infection were censored at the time of the event.
Results: Revision was required in 44 TRANS (10%) and 26 EPI (24%) leads [9 MYO (32%) and 17 SUT (21%)]. Failure in TRANS leads was typically due to dislodgment while that of EPI leads was usually due to exit block or lead fracture. TRANS leads were significantly more reliable than EPI (hazard ratio=2.5, p=0.0003). SUT trended to greater reliability than MYO (hazard ratio=2.1, p=0.08).