Table 1

parameter	baseline (n=20)	6 months (n=14)
NYHA	3.1±0.4	2.4±0.6*
VO2peak (ml/kg/min)	13.6±2.1	14.1±3.1
VO2AT (ml/kg/min)	10.6±2.2	12.0±4.4
6-min walk (m)	310.0±118.7	385.5±120.7
QOL	75.2±10.6	25.6±22.7
LVEDD (mm)	75.2±10.6	67.0±10.6*

1167-224 **Short-Term Cardiac Memory: Phenotypically Heterogeneous Property of Myocardial Repolarization**

Alexei Shvilkin, Seth McClennen, Panos Papageorgiou, Mathew Reynolds, Aneesh Tolat, Allison Richardson, Peter Zimetbaum, Mark E. Josephson, Beth Israel Deaconess Medical Center, Boston, MA

Background: Cardiac memory (CM) represents persistent T wave changes after a period of aberrant ventricular activation (ventricular pacing, ventricular arrhythmias) upon resumption of normal conduction that are associated with changes in ion channel function, refractoriness and response to antiarrhythmic drugs in animal models. Clinical significance of CM in humans is largely unknown. We hypothesized that a wide variation exists in CM expression in humans that reflects heterogeneity of individual repolarization properties and therefore might convey clinically relevant information.
Methods: Short-term CM was induced in eighteen patients (M/F 13/5, age 28-88 years) referred for electrophysiological study. Four minutes of atrial pacing (AP) at a cycle length (CL) of 600- 800 ms established the baseline (BL) with stable QT. CM was induced by right ventricular AV sequential pacing (A-RVP) with short AV delay at the same CL for 15 min. A-RVP was interrupted by 10 s of AP at 1, 5, 10, and 15 min to observe CM. Vectorcardiograms were reconstructed from digitally acquired 12-lead ECG using inverse Dover transform. CM was quantified by 3-dimensional displacement of T vector peak (TPd) in orthogonal leads and QT change.
Results: CM magnitude increased over the course of A-RVP with TPd = 50 ± 9; 82 ± 10; 105 ± 16; 101 ± 15 μV after 1, 5, 10, and 15 min of A-RVP, resp, p<0.01. Maximal individual CM magnitude varied from 20 to 229 μV. AP QT shortened from 371 ± 5 ms at BL to 360 ± 4 ms after 15 min of A-RVP (p<0.05). A-RVP QT shortened from 404 ± 9 ms at onset to 392 ± 9 ms at 15 min of A-RVP (p<0.01). TPd did not correlate with clinical variables (age, sex, EF, medications) or QT shortening.
Conclusion: A period of altered ventricular activation sequence modifies repolarization resulting in CM and QT shortening during both AP and A-RVP at a constant CL. There is marked heterogeneity of short-term CM in terms of both T vector and QT interval changes. Considerable differences exist in myocardial ability to conform to a new activation sequence in humans. Prospective clinical outcome studies will define clinical significance of these findings.

1167-225 **Lead Position and Long-Term Survival With Biventricular Pacing**

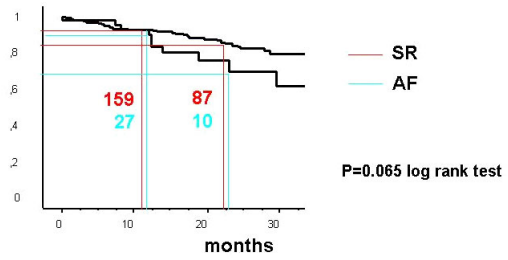
Dusan Z. Kocovic, Heather M. Ross, Douglas Laidlaw, Thomas Lynn, Main Line Heart Center, Wynnewood, PA

Background: Cardiac resynchronization therapy (CRT) has been shown to improve NYHA functional class, exercise capacity, quality of life (QOL), and survival in patients with moderate to severe heart failure and wide QRS complex. The optimal site for left ventricular (LV) pacing was established in acute hemodynamic studies, but long-term impact of different LV stimulation sites is unknown.
Methods: We examined the impact of LV lead position on mortality of 106 consecutively implanted CRT patients with long-term follow-up (18-46 months). At baseline, ejection fraction (EF) was ≤35%, QRS ≥130 msec, NYHA class III (n=90) or IV (n=16). Patients were followed clinically at 6 month intervals with echo, 6 minute walk test, and QOL questionnaire. 30 patients had the LV lead implanted in an anterior or septal position (group 1), and 76 in a lateral, posterolateral, or anterolateral position (group 2) on the LV wall.
Results: At 12 months follow-up, patients with lateral position (group 2) improved more than patients with anterior or septal lead position (group 1) in 6 minute walk test (p<0.05), functional class (p<0.001), QOL (p<0.05), and EF (p<0.05). 90 percent of patients in group 2 were alive versus 75 percent of patients in group 1 (p<0.05 log rank test). Fewer patients in group 2 required hospitalization or intravenous medications for the treatment of HF, compared to group 1.
Conclusion: CRT with LV lead position in the left lateral wall results in more significant clinical improvement and better survival than with LV lead position in a septal or anterior position.

1167-226 **Outcome of Resynchronization Therapy in Patients With Atrial Fibrillation**

Barbara Lamp, Juergen Vogt, Lothar Faber, Johannes Heintze, Bert Hansky, Uwe Schulz, Reiner Koerfer, Dieter Horstkotte, Heart Center North Rhine-Westphalia, Bad Oeynhausen, Germany

Resynchronisation therapy (RT) in patients (p) with severe heart failure (CHF) and left bundle branch block (LBBB) is successful. However conflicting data exist for p with atrial fibrillation (AF).
In this study we analysed 313 p (mean age 62±10 years (y), 174 DCM, 110 CAD, 29 other, mean FU 18.2 ± 12.4 m) who received RT with respect to the underlying rhythm at baseline. Baseline characteristics in the two groups show no statistical differences between SR-pts. and the AF-pts. (26 x permanent AF, 17 x intermittent AF, 6xAF and VVI-PM) concerning age, oxygen consumption at anaerobic threshold (VO2AT), workload, 6 min. walking distance, LVEDD, LVEF and QRS-width. NYHA class and peak oxygen consumption (VO2peak) are better in the SR-group (p<0.05, unpaired t-test). The proportion of pts. with valvular disease is larger in AF than in SR (16% versus 8% in SR). After 3, 6 and 12 m, the clinical course in the AF group seems less beneficial (table) with 22.5 % pump failure as opposed to 13.2% in SR.
Our data show a favourable outcome after RT for pts. with normal SR. However in pts. with preexisting AF the clinical benefit seems to be less sustained. These results are comparable to those of the AF-arm in MUSTIC.



ORAL CONTRIBUTIONS

860

Advanced Surgical and Catheter Ablation for Arrhythmias

Tuesday, March 09, 2004, 4:00 p.m.-5:00 p.m.
Morial Convention Center, Room 254

4:00 p.m.

860-1 **The Success of Surgical Pulmonary Vein Isolation for Atrial Fibrillation Is Not Influenced by Omission of the Mitral Annular Connecting Lesion**

Deon W. Vigilance, Brian Kim, Mauricio Garrido, Mathew Williams, Joy Peacock, Ann Zeidner, Aftab R. Kherani, Jeffery A. Morgan, Satish Kesava, Mehmet C. Oz, Michael Argenziano, Columbia University, New York, NY

Background: Surgical atrial fibrillation ablation (SAFA) has emerged as an alternative to the Maze procedure. Although several left atrial lesion patterns have been utilized, most have included pulmonary vein isolation (PVI) and a "connecting lesion" to the mitral annulus. Since this connecting lesion is difficult to create epicardially, we evaluated whether its omission would have an impact on success of SAFA.
Methods: Over 42 months, 210 patients underwent SAFA for AF as a lone or concomitant cardiac procedure. Early in our experience, all procedures included PVI and a connecting mitral valve lesion (Group I, n=118). More recently, we have performed only PVI (Group II, n=69). Postoperative electrocardiograms were monitored at regular intervals. Success was defined as freedom from AF or atrial flutter (AFL).
Results: There were 23 deaths in the follow-up period. In the remaining 187 patients, mean age was 65.6±12.3 years and mean duration of preoperative AF was 7.5±10.1 yrs. At a mean follow-up of 10.6±10.5 months, patients in Groups I and II had success rates of 69.5% (82/118) and 65.2% (45/69), respectively (p=0.627). Groups I and II also had similar rates of postoperative AFL (8.5% vs. 8.7%, respectively [p=0.809]).
Conclusions: In patients undergoing surgical atrial fibrillation ablation, the connecting lesion to the mitral annulus neither influences the success of the procedure nor alters the incidence of postoperative atrial flutter. These findings suggest that an epicardial ablative procedure consisting only of pulmonary vein isolation is a reasonable option in the treatment of atrial fibrillation.

4:15 p.m.

860-2 **Morphology of Intraoperative Radiofrequency Ablation to Treat Atrial Fibrillation**

Thomas Deneke, Krishna Khargi, Peter H. Grewe, Axel Laczkovics, Bernd Lemke, Klaus-Michael Müller, Medical Clinic II, Bochum, Germany, Institute of Pathology, Bochum, Germany

Intraoperative cooled-tip radiofrequency ablation (SICTRA) is an effective treatment of chronic atrial fibrillation (AF). Ablation lines in the atria aim at producing electric conduction block. Morphological effects in human atrial tissue have not been systematically analyzed.
Methods: 8 patients died 2 to 64 days after open heart surgery plus additional SICTRA to treat chronic permanent af (duration 5±4 years). The atria were analyzed in topographic correlation to the ablation pattern by macroscopy, microscopy and immunohistochemistry.