Conclusion: 1) SRBB was observed in about 1/3 of pts with advanced CHF; 2/3 had a central form of SRBB. 2) CRT significantly improves AHF and nocturnal minimal oxygen saturation in pts with CHF and “CRT on”.

11:30 a.m.

579-5
Mechanical Activation Mapping With Strain Imaging: A New Approach to Localize Ventricular Lead Placement After Cardiac Resynchronization Therapy
Hideaki Kanazawa, Raveen Bazar, David Schwartzman, Kaoru Dohi, John Gorcsan, III, University of Pittsburgh, Pittsburgh, PA

Background: Cardiac resynchronization therapy (CRT) can be beneficial for patients with heart failure (HF) and left bundle branch block (LBBB). Left ventricular (LV) leads for CRT are being placed in various epicardial locations.

Methods: To test the hypothesis that a new mechanical activation mapping method using echocardiographic strain imaging can localize LV lead placement after CRT, 24 HF patients with LBBB (EF 24 ± 5%, QRS 164 ± 29 ms) were studied at baseline and the day after CRT. Strain imaging cine loops were acquired (Vivid 5 or 7, GE Vingmed) from 3 routine apical views: 4-chamber, 2-chamber, and long-axis. The activation maps were constructed with time-to-peak systolic strain at basal and mid LV walls from each apical view (12 sites).

Results: At baseline, the earliest mechanical activation occurred at septal sites in 18 (75%), and propagated latest to basal lateral or posterior sites in 19 (79%). After CRT, the earliest activation site appeared at mid septal-inferior and free wall sites, presumably from right ventricular apical and LV free wall pacing. The site of LV lead placement (lateral 10, posterolateral 9, anterior 3, anterolateral 1, posterior 1) was identified by the mapping with the shortest time-to-peak strain in accurate or contiguous LV anatomical site in 88% (Kappa value 0.88).

Conclusion: Echocardiographic strain mapping revealed changes in the mechanical activation sequence after CRT and successfully localized LV lead position, which has promise for clinical utility.

11:45 a.m.

579-6
Left Ventricular Pre-Excitation Is Superior to Right Ventricular Pre-Excitation in Sequential Biventricular Pacing for Heart Failure
Ilan Hay, Voja Melenovsky, Barry J. Fetics, Joshua Hare, Daniel Judge, Andrew Kramer, Craig Reister, Joe Pastore, Rick Conville, David A. Kass, Ronald Berger, Johns Hopkins Medical Institution, Baltimore, MD, Guidant Co., St. Paul, MN

Cardiac resynchronization (CRT) is commonly provided with simultaneous bi-ventricular pacing; however, sequential Bi-V pacing may be superior. Prior data suggests that overly premature LV or RV stimulation similarly reduces the effectiveness of CRT. We tested this hypothesis in nine patients with cardiac failure (EF<30%) and atrial fibrillation. Patients with marked bradycardia or following AV node ablation were studied to eliminate confounding effects of native AV conduction. Bi-V pacing employed an RV-atrial and LV-posterolateral lead, with RV/LV timing delay varied between -120 msec (RV early) to +120 msec (LV early). In addition, we compared RV only to LV only and Bi-V pacing modes. Ventricular and aortic pressure data were measured for one minute with each pacing mode (Table)

Preexcitation of the LV was superior to RV for each time interval tested. Marked preexcitation of the LV was significantly better than with RV (14.8 ± 2.5% rise in dp/dtmax, RV vs LV, p<0.05). Optimal results were at or near simultaneous activation. Importantly, 120 msec LV pre-excitation was very similar to LV only pacing (14.4 ± 2.7% better than RV only), but not as good as Bi-V (21.4 ± 0.76% over RV, p<0.05). Diastolic function (dp/dtmin) was also better with synchronized Bi-V pacing and declined with increasing RV-LV delay intervals for both pre-excitation sequences. We conclude that LV pre-excitation is superior to RV pre-excitation but offers no advantage over Bi-V pacing in patients without any supraventricular conduction.

10:45 a.m.

590-1
Does a Narrow QRS Identify a Low-Risk Subgroup of Patients With Ischemic Heart Disease? Results of Electrophysiology Testing and T Wave Alternans Testing in a “MADIT-2” Population
Kenneth M. Stein, Sei Iwai, Suneet Mittal, Steven M. Markowitz, Ravi K. Yarlagadda, Bindi K. Shah, Amit B. Guttagi, Bruce B. Lerman, Cornell University Medical Center, New York, NY

Background: Retrospective analysis of the MADIT-2 database has suggested that the population with a narrow QRS complex derives less benefit from ICD implantation than the population with a wide QRS complex. We sought to determine whether the results of EP-testing (EPS) and T wave alternans testing (TWA) in a population with severe left ventricular dysfunction and prior myocardial infarction were consistent with this hypothesis.

Methods: We prospectively evaluated 67 patients (53 men, mean age 68±9 yrs) who were referred for EPS for risk stratification (n=59) or due to a history of syncope or pre-syncope (n=8). All patients had documented coronary artery disease and a prior myocardial infarction were consistent with this hypothesis.

Results: Among the 31 patients with a wide QRS, 65% had positive EP studies vs. 67% of the 36 patients with a narrow QRS (p=NS). Among patients with a wide QRS complex there was no difference in positivity rates between EPS and TWA (p=NS). In 90% of wide QRS patients and 84% of narrow QRS patients at least one of the 2 tests was positive (p<0.05). In 100% of wide QRS patients and 90% of narrow QRS patients at least one of the 2 tests was positive (p<0.05).

Conclusion: The likelihood of a positive electrophysiologic study and/or TWA test is independent of QRS morphology among the 36 patients with a wide QRS complex. We sought to determine whether the results of EP-testing (EPS) and T wave alternans testing (TWA) in a population with severe left ventricular dysfunction and prior myocardial infarction were consistent with this hypothesis.

10:30 a.m.

590-2
Initial Results From the Substrate Mapping and Ablation in Sinus Rhythm to Halt Ventricular Tachycardia Trial (SMASH VT)
Vivek V. Reddy, Allison W. Richardson, Petr Neuzil, Krit Jongnarangsin, Stepan Kralovec, Lucie Sediva, Milos Taborsky, Matt Reynolds, Mark E. Josephson, Beth Israel-Deaconess Medical Center, Boston, MA, Na Homolice Hospital, Prague, Czech Republic

Background: In post-MI patients, implantable cardioverter-defibrillators (ICDs) are effective in terminating ventricular tachycardia (VT) and fibrillation (VF). However, ICD shocks are painful and do not prevent syncope, and antiarrhythmic drugs (AAD) are often required. Substrate based catheter ablation has been shown to decrease events in patients who have received multiple ICD shocks. In this multicenter prospective randomized controlled trial, we examined the role of substrate ablation in the primary prevention of appropriate ICD shocks in high-risk post-MI patients.