Multiscale motion mapping is a novel image processing technique combining optical flow and spline imaging in space & time. Using all available grayscale info, it yields quantitative and visual tracing method (intraobserver variability; 4.5±3.3 vs. 6.6±6.0 %, p<0.005, interobserver variability 8.5±6.8 vs. 13.7±6.4 %, p<0.05).

Conclusion: The biaxial AACT method provides accurate and quick measurement of LVEF in patients with IHD.

Method: We studied 10 sheep using tissue Doppler imaging (VingMed Vivid Five) in apical 4-chamber views to evaluate left ventricular wall motion independently from cardiac translation. For each segment, a slab of tissue was scanned for the baseline, we changed hemodynamic status by blood, dobutamine and metoprolol infusion and compared the pDV/A during IRT and ICT under 4 different hemodynamic conditions and peak positive and negative dP/dt conditions. Results: pDV/A of basal lateral segment during ICT showed the strongest correlation with peak positive dP/dt (r = 0.96, P < 0.0001) and negative dP/dt (r = 0.80, P < 0.0001). There was a significant difference in pDV/A between dobutamine and metoprolol conditions in ICT in all segments (p < 0.05), but pDV/A was less sensitive to blood loading. pDV/A of ICT showed little difference between the 4 different hemodynamic conditions. Conclusions: pDV/A during ICT is a sensitive, preload independent marker for evaluation of dP/dt; the pDV/A of basal lateral wall during ICT showing the strongest correlation with peak positive dP/dt; pDV/A of septal mitral valve annulus during IRT showed a good correlation with peak negative dP/dt.
Interatrial Septal Strain Echocardiography Predicts Success or Failure of Cardioversion for Atrial Fibrillation

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The purpose of this study was to assess the feasibility of measuring left atrial (LA) dysfunction with tissue Doppler imaging derived strain rate (SR) and to explore its role in predicting maintenance of sinus rhythm after cardioversion for atrial fibrillation.

Methods: Strain (SR) and tissue velocity imaging was performed with offline analysis of the basal left atrial free wall and inter-atrial septum in the apical 4-chamber view, and basal of anterior and inferior wall of left atrial at the apical 2-chamber view. Mean peak systolic (Sm-SR) and peak early diastolic (Em-SR) were measured with LA end-systolic short axis dimensions (LADs, LADd, and LADd'15).

27 healthy age-matched controls (C) and 42 patients with AF before cardioversion were studied. Follow-up was for 3.5 years. Cardioversion to SR was successful in 26 pts but 14 patients reverted to AF within 4 weeks. We grouped patients into two subgroups: those who cardioverted and remained in SR (group S, n=12) and those who either failed to cardiovert or reverted to AF within 4 weeks (group F, n=30).

Results: Sm-SR (2.05±0.96 s⁻¹) was significantly reduced in the AF group comparing to normal (2.63±0.73 s⁻¹, p<0.01). Em-SR (2.57±1.01 s⁻¹) was also non-significantly lower compared to normals (3.00±0.78 s⁻¹). LADd, LADd'15 and LADd' were significantly increased and Em-SR significantly lower in group F than group S (all p<0.01). Multivariate analysis showed that Em-SR was the most strongly independent predictive parameter for maintenance of sinus rhythm post cardioversion (p=0.0051).

Conclusions: The risk of suffering an MI increases significantly in asymptomatic individuals who show a stabilization of CVS (yearly change<15%) compared to 42% of the remaining subjects. The prognostic significance of a measured change in CAC is still unknown.

POSTER SESSION

March 19, 2003, Noon-2:00 p.m.
McCormick Place, Hall A

1190MP Moderated Poster Session...Atherosclerotic Burden by Computed Tomography and Magnetic Resonance Imaging

Paolo Raggi, Leslie J. Shaw, Tracy Callister, Matthew J. Budoff, Tulane University, New Orleans, LA, American Cardiovascular Research Institute, Atlanta, GA

Background. Progression of coronary artery calcification (CAC) can be accurately assessed by means of sequential electron beam tomography (EBT) imaging. However, the prognostic significance of a measured change in CAC is still unknown.

Methods. We conducted an observational study for the occurrence of myocardial infarction (MI) in asymptomatic individuals submitted to sequential EBT screening at a minimum interval of one-year between scans. Plaque quantification was performed with a volumetric method (calcium volume score: CVS) and annual progression of CVS was assessed as absolute and percentage change when the initial CVS was assessed as absolute and percentage change when the initial CVS was 30.

Results. 833 subjects met the inclusion criteria (average time between EBT scans: 2.1±1.4 years). 45 subjects suffered an MI (2.2% per year). Only 3 MI patients (7%) showed stabilization of CVS (yearly change<15%) compared to 42% of the remaining 788 subjects (p<0.001). The yearly average CVS change in MI patients was 47.5±17.5% while it averaged 26.0±12.1% in patients without events (p<0.001). The relative risk of suffering an MI in the presence of CVS progression was 7.17 (95% CI: 3.5-34) compared to the progression. In a stepwise Cox model initial CVS, diabetes mellitus, hypertension, and % CV change were independent predictors of MI.

Conclusions: The risk of suffering an MI increases significantly in asymptomatic indivi-