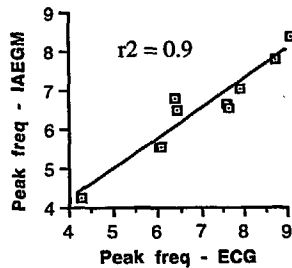


3:00

797-5 Characterizing Atrial Fibrillation (AF) Using the Surface ECG-Correlation With Intraatrial Electrograms (IAEGM)

Rajitt Abrol, Kevin McTeague, Andreas Goette, David DeLurgio, Paul F. Walter, Jonathan J. Langberg. *Emory University Hospital, Atlanta, GA*

Classification schemes for AF have been developed, but are based on the IAEGM. A comparable technique using the surface ECG would be useful. The purpose of this study was to analyze the frequency content of the fibrillatory baseline on the surface ECG and to compare it to the IAEGM. At the time of electrophysiologic study, 10 patients had simultaneous recording from the high lateral right atrium and surface lead a VF during chronic (n = 5) or induced (n = 5) AF. Local maxima/minima were identified on both the IAEGM and the ECG. In order to minimize effects of the QRST, only intervals between the end of the T-wave and the onset of the subsequent QRS were analyzed. Frequency histograms were created and the median frequency of the ECG compared to the IAEGM. *Results:* Median frequency ranged from 4.1–8.5 Hz on the surface ECG and 4.1–8.2 Hz on the IAEGM. There was a close correlation between the median frequency recorded on the ECG and the IAEGM ($r^2 = 0.9$, $p < 0.001$). There was a non-significant trend towards higher frequency in patients with chronic versus induced AF (7.3 vs. 6.7 Hz).



Conclusions: The frequency content of the fibrillatory baseline on the surface ECG closely correlates with the frequency content of the IAEGM, suggesting that AF may be classified based on analysis of the ECG.

3:15

797-6 Coronary Sinus Pacing Prevents Induction of Atrial Fibrillation

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We have previously demonstrated that the presence of anisotropic intra-atrial impulse conduction, especially at the area of the posterior triangle of Koch, may explain why atrial fibrillation (AF) is more often initiated during high right atrial (HRA) stimulation than during coronary sinus (CS) stimulation. We thus examined the hypothesis that the propensity of HRA premature complexes (APDs) to induce AF can be influenced by distal CS (CSd) pacing. Data are expressed as mean \pm S.D. Eleven patients (pts) were studied: 7 men, age 42 ± 17 years, and 4 women, age 44 ± 10 years. Four pts had a history of paroxysmal atrial fibrillation or flutter, 5 pts had atrioventricular nodal reentrant tachycardia, and 2 pts had atrial tachycardia and ventricular tachycardia, respectively. HRA APDs were delivered at HRA paced drives of 600 ms and 450 ms. In all pts, AF was reproducibly induced with critically-timed single HRA APDs at an average coupling interval (CI) of 220 ± 23 ms. At this critical HRA-CI, the APD CI at the posterior triangle of Koch measured 257 ± 36 ms. During normal sinus rhythm, HRA APDs were delivered following CSd paced drives of 600 ms and 450 ms at the same degree of HRA prematurity that previously induced AF. In none of the pts was AF induced. At the critical HRA-CI, the APD coupling interval at the posterior triangle of Koch was significantly prolonged at 368 ± 47 ms. We conclude that CSd pacing may suppress the propensity of HRA APDs to induce AF by decreasing their prematurity at the posterior triangle of Koch and preventing local conduction delay and possible microreentry to occur. This observation may have significant applicability in clinical prevention of AF.

798 Dobutamine Stress Echo: Relationship Between Perfusion and Contractile Reserve

Wednesday, March 27, 1996, 2:00 p.m.–3:30 p.m.
Orange County Convention Center, Room 230C

2:00

798-1 Accuracy of Dobutamine Echocardiography for Detection of Myocardial Viability in Patients With Occluded Left Anterior Descending Artery

Michael L. Main, Paul A. Grayburn, Imran Afridi. *UT Southwestern and VA Medical Center, Dallas, TX*

In patients (pts) with coronary stenosis and left ventricular (LV) dysfunction, contractile reserve (CR) during low dose dobutamine echocardiography (DE) is an accurate marker of myocardial viability. The accuracy of CR for detection of viable myocardium in pts with occluded vessels has not been previously reported. We studied 39 pts with $> 50\%$ stenosis of left anterior descending artery (LAD), and LV dysfunction in LAD distribution, that underwent DE for detection of viable myocardium. Wall motion (WM) at rest and during DE was semiquantitated using a 4 grade scoring system (1 = normal, 2 = hypokinetic, 3 = akinetic, 4 = dyskinetic). Contractile reserve in LAD distribution was defined as improvement in WM score of at least 2 contiguous septal or anterior LV segments. Recovery of function was defined as improvement in resting WM score in at least 2 contiguous segments. Patients were divided into 2 groups according to presence (n = 18) or absence (n = 21) of LAD occlusion. Mean LAD stenosis in the non occluded group was $75 \pm 17\%$. The groups were similar with respect to age, number of diseased vessels, baseline ejection fraction, baseline WM score index and location of LAD lesion. Angiographic collaterals to the LAD were more common in the occluded group (72% vs 5%, $p < 0.001$). Contractile reserve was detected in 33% of pts with occluded and 42% with non-occluded LAD ($p = NS$). Of 39 pts, 26 were revascularized, 11 with and 15 without LAD occlusion. Recovery of function occurred in 5 of 11 pts in the occluded group and 5 of 15 in the non-occluded group (45% vs 33%, $p = NS$). Among pts with occluded LAD, dobutamine echo predicted recovery of function with a sensitivity and specificity of 80% and 100% respectively.

In conclusion, CR during DE can be detected in pts with LAD occlusion and accurately predicts recovery of ventricular function following revascularization.

2:15

798-2 Contractile Reserve by Low-Dose Dobutamine Echocardiography After Myocardial Infarction: Correlation With Coronary Angiographic Anatomy

Giuseppe Trocino, Jan H. Cornel, Abdou Elhendy, Marcel L. Geleijnse, Alessandro Salustri, Paolo M. Fioretti. *Thoraxcentre, Rotterdam, NL*

The improvement of left ventricular (LV) wall thickening during low-dose dobutamine echocardiography (LDD) is used for the assessment of myocardial viability, but its relation with coronary anatomy is uncertain.

Aims of the study: to assess the relation between the contractile response of dyssynergic segments to LDD and the anatomy of left descending coronary artery (LAD) in 37 patients (pts) with old Q-anterior myocardial infarction (MI).

Methods and results: 16 segments model of LV was used for the analysis of contractility (5-point score, from 1 to 4) and 8 segments were considered the LAD territory. Regional wall motion score index (rWMSI), the number of dyssynergic segments (DS), and the number of segments responding to LDD (DS+) were computed. LAD was patent in 16 pts (minimal lumen diameter (MLD) at quantitative coronary angiography > 1.1 mm in 9 pts) and occluded in 21 pts (9 with complete filling through collaterals).

	LAD		Patent LAD		Occluded LAD	
	Patent	Occluded	MLD > 1.1	MLD ≤ 1.1	Collat+	Collat-
pts	16	21	8	8	9	12
rWMSI	3.1 ± 0.6	2.9 ± 0.8	2.9 ± 0.7	3.2 ± 0.5	3.0 ± 0.9	3.0 ± 0.8
DS (nr)	6.6 ± 1.9	5.8 ± 1.7	6.7 ± 1.7	6.5 ± 2.1	6.6 ± 1.7	5.2 ± 1.7
DS+ (nr)	1.6 ± 1.1	1.6 ± 2.0	1.9 ± 1.5	1.4 ± 0.7	$2.7 \pm 2.6^*$	0.7 ± 0.9

* $p < 0.05$

Conclusions: In pts with comparable severity of LV dyssynergies at rest after an old MI the contractile response to LDD: 1) is not related to the patency of the infarct related artery and to the severity of residual stenosis; 2) is strongly related to the presence of good collateral circuit.

WEDNESDAY ORAL