

spontaneous circulation. We investigated the diagnostic value of TEE during resuscitation.

Methods: TEE was performed in adult patients with either in-hospital or out-of-hospital onset of a circulatory arrest, after endotracheal intubation.

Results: 30 patients were included, 17 with in-hospital arrest, and 13 with out-of-hospital arrest (initial rhythm: asystole 7, electromechanical dissociation 7, bradycardia 11, ventricular fibrillation 3, sinus tachycardia 2). Mean time between code call and start of TEE was 15 minutes. Return of spontaneous circulation (ROSC) was observed in 15 patients, 26 patients eventually died, 4 survived to discharge. The TEE diagnoses made were cardiac tamponade (CT) 6, myocardial infarction (MI) 10, pulmonary embolism (PE) 4, aortic aneurysm rupture (AAR) 3, papillary muscle rupture (PMR) 1, none 5. In 11 out of 12 post-mortem examinations and 1 out of 1 surgical procedure the TEE diagnosis was confirmed.

	CT	MI	PE	AAR	PMR	none	other
TEE diagnosis	6	10	4	3	1	5	1
ROSC	2	7	1	3	1	0	1
Died	5	9	4	3	1	2	1
Diagnosis confirmed	3/3	7/7	1/1	0/1	0/0	3/3	0/0

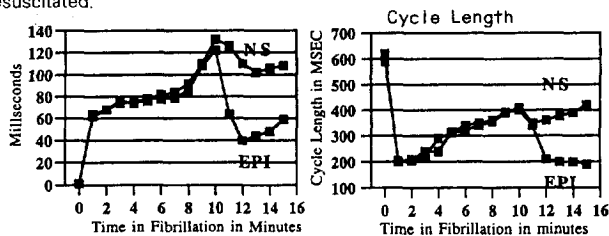
Conclusion: TEE is helpful in establishing the cause of a circulatory arrest, thereby contributing to the early institution of specific therapeutic measures.

4:45

805-4 Mechanism of Epinephrine in Defibrillation After Prolonged Ventricular Fibrillation

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Administration of Epinephrine (Epi) is an integral part of resuscitation of ventricular fibrillation (VF). The mechanism of its action is not known. To evaluate this, 20 open chested pigs were studied using Endocardial (EN) and Epicardial (EP) Monophasic Action potentials (MAP) recordings. Defibrillation is achieved by using two EP patch electrodes. Each animal is fibrillated by using AC current and allowed to fibrillate for 10 minutes. ECG, BP, RV, LV, EN, and EP MAPs were recorded every minute during VF and resuscitation. At 10' of VF, each animal is randomized either to Epi or saline and cardiac massage was instituted for 5 minutes. The heart was then defibrillated. In both groups, cycle lengths of MAPs and synchronization of repolarization which is the interval between EN and EP MAPs were measured during VF and resuscitation. The results were 10/10 of Epi and 1/10 saline animals were resuscitated.



Conclusion: Successful defibrillation with Epi is because of: 1) shortening of cycle length, and 2) synchronization of repolarization.

806 Echocardiography, Post Infarction Remodeling and Prognosis

Wednesday, March 22, 1995, 4:00 p.m.-5:00 p.m.
Ernest N. Morial Convention Center, Room 91

4:00

806-1 Left Ventricular Ejection Fraction After Myocardial Infarction: Importance of Both Infarct Site and Size

Brian M. McClements, Arthur E. Weyman, Michael H. Picard. *Massachusetts General Hospital, Boston, MA*

Left ventricular ejection fraction (LVEF) is an important prognostic variable after myocardial infarction (MI). While the extent of MI is known to affect the subsequent global LVEF, it is not clear whether anatomical site per se affects LVEF. Therefore, 48 consecutive patients (pts) who did not receive lytic therapy or undergo early revascularization were studied by echocardiography one week after Q wave MI. Using a previously validated endocardial mapping technique, the size of abnormal wall motion (AWM) in relation to

the total endocardial surface area and the site of AWM were quantitated. LVEF was measured by Simpson's method using 2 apical views.

Results: Nineteen pts had anterior MI (ANT) and 29 had inferior MI (INF). The mean LVEF was similar in both groups (ANT 46.9 ± 14.7% vs INF 51.7 ± 9.4%, pNS). The mean %AWM was greater in ANT MI (29.7 ± 14.5) than in INF MI (21.3 ± 13.8) (p = 0.05). After accounting for differences in infarct size by multivariate regression analysis, both infarct size (p = 0.0001) and infarct site (p = 0.007) were significant independent determinants of LVEF. This effect was most pronounced in larger ANT MIs (%AWM > 25%) where the LVEF was significantly lower than in smaller MIs. In INF MI, despite a similar range of sizes, increasing %AWM had minimal effect on LVEF.

Conclusion: In addition to infarct size, the site of AWM is an important determinant of global LVEF. This observation may reflect site-dependent differences in the biomechanical responses to regional ventricular dysfunction.

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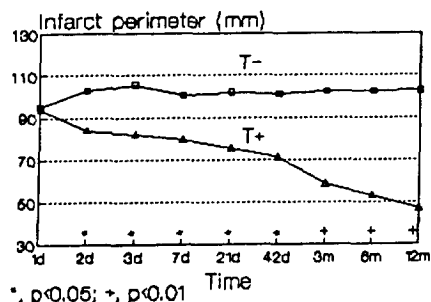
806-2 Impact of Thrombolysis on Infarct Expansion and Ventricular Remodeling After Anterior Infarction: One-Year Echocardiographic Follow-up

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Animal studies have shown that reperfusion of the infarct-related artery (IRA) may prevent infarct expansion (IE); however, clinical studies investigating the impact of thrombolysis (T) and IRA patency on IE are still rare. We have evaluated 49 consecutive pts with anterior MI by 2D echocardiography on post-MI days 1, 2, 3, 7, 21, 42 and after 3, 6, and 12 months. T was administered in 23 pts (T+) and 26 pts were treated with conventional therapy (T-). LV end-diastolic volume index (EDVi) was determined from apical two- and four-chamber views. Total LV perimeter (TP) and infarct perimeter (IP) were determined in end-diastole in the apical four-chamber view. IE was defined as the increase of IP > 5%, with the similar increase of TP on days 2-3. Coronary angiography was performed in 44 pts before discharge; IRA patency was defined as TIMI grade 3.

Results: IE was detected in 15 pts: 1 T+ and 14 T- pts; IRA was occluded in 11 pts. Absence of IE correlated better with T (r = 0.64, p = 0.001) than with IRA patency (r = 0.48, p = 0.01). In T+ pts, IP significantly decreased from day 2 (p < 0.05) onward, compared to T- pts (Figure). EDVi was higher in pts with IE from day 2 (p = 0.018) through 12 months (p = 0.013).

Conclusions: 1) These results indicate that T prevents IE in anterior MI, regardless of late IRA patency. It appears that even transient reperfusion induced by T may attenuate IE and prevent LV remodeling. 2) Moreover, T leads to infarct regression, which is detectable as early as day 2 and continues over 12 months.



4:30

806-3 Absence of Q Waves Following Thrombolysis: A Marker of Decreased Frequency and Persistence of Regional Left Ventricular Dysfunction

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While the functional significance of Q wave myocardial infarction (MI) is well defined, the relationship between Q wave development after thrombolysis and infarct morphology is less well established. Echocardiography was performed within 48 hours of admission (entry) in 86 patients treated with thrombolysis for their first MI. The extent of abnormal wall motion (AWM; cm²) and LV endocardial surface area index (ESAI; cm²/m²) were quantified using a previously validated echocardiographic endocardial surface mapping technique. ECG performed at 48 hours after thrombolysis was used to classify patients into those with (Q; n = 70) and without (non-Q; n = 16) Q waves. At entry, all patients in the Q group had detectable AWM, while 5 of the 16 patients in the non-Q group had no AWM. The proportion of patients with