

14.1% (310/2,196). Of 1,674 CAs in general inpatient areas, 1,084 (64.8%) were M/W, S = 16.4% (178/1,084) vs 590 (35.2%) not M/W, S = 5.9% (35/590), $p < 0.001$. VF/VT was the initial rhythm in 27.1% of pulseless CA cases (S = 34.2%, 449/1,313); 24.9% of cases were PEA (S = 7.8%, 94/1,207); and 34.9% asystole (S = 7.8%, 131/1,692). S from VF/VT was greater than PEA or asystole ($p < 0.001$). Data for time to first shock was entered on 1,154 VF/VT CAs. Self reported time intervals indicated 84.3% of cases met the AHA goal of first shock < 3 min with S = 37.1% with first shock ≥ 3 min, S = 27.1% ($p < 0.05$). Mean time to first shock for S was 0.85 ± 1.70 min vs 1.31 ± 2.94 min for non-S ($p < 0.001$). **Conclusion:** Many hospitalized patients at high risk for CA are M/W. CA that are M/W have higher survival rates than those not M/W. Initial rhythm is VF/VT in only 27%, a lower percentage than for out-of-hospital CA. Although there are known problems with accurate reporting of CA time intervals, 84.3% self-reported achieving the AHA benchmark of < 3 min to first shock. Shorter time to initial shock is significantly associated with S from VF/VT. Survival outcome is better for VF than for PEA or asystole. Overall poor S from CA may reflect low prevalence of VF/VT and contribution of other patient, event, and outcome factors. The large NRCPR database can identify CA factors associated with survival.

4:15 p.m.

870-2

Broad Dissemination of Automatic External Defibrillators Triples Sudden Cardiac Arrest Survival in a Medium-Size Town

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Background. Sudden cardiac arrest (SCA) claims an estimated 350,000 lives per year in the United States, representing a major public health problem. The vast majority of SCA is caused by ventricular fibrillation or pulseless ventricular tachycardia (85%) where early defibrillation is the most important intervention affecting survival. To improve public access to early defibrillation, we established "Progetto Vita" (PV), the first experience of out-of-hospital early defibrillation by non-medical volunteers in a medium-size European city. The results of the first 15-month experience of the project are here presented. **Methods.** Thirty-nine semi-automatic external defibrillators (AEDs) were placed in a middle size European town (Piacenza, Italy, 266,531 inhabitants) distributed among 12 high-risk locations, 12 lay-staffed ambulances, and 15 police-cars. A total of 1,025 lay volunteers were trained to intervene in all cases of suspected SCA. We compared the efficacy of early defibrillation by the volunteers of the PV vs. the traditional intervention of the personnel of the Emergency Medical System (EMS). **Results.** During the first 15-months, 203 codes for suspected SCA were dispatched. In 106 cases, (52%), the PV volunteers arrived to the scene before the EMS Ambulance (mean intervention time: 5 ± 1 min vs. 6 ± 2 min, respectively, $p < 0.05$). Out of the 203 suspected cases, 197 were true SCAs, and shockable rhythms were present in 40 cases: 16 were treated by the PV volunteers and 7 successfully defibrillated, while 24 cases were treated by EMS staff and only 4 cases were successfully defibrillated. The activity of the AEDs was always appropriate. Overall survival was 5.6% (11/197); survival improved from 2.9% (4/134) with EMS intervention to 11.1% (7/63) when the PV volunteers were activated ($p < 0.05$). Survival rate on "shockable" rhythm was 43.7% in group treated by volunteers, vs. 16.6% in those treated by EMS aid, $p = 0.06$. **Conclusions.** Broad dissemination of AEDs, by shortening the intervention time, allows early defibrillation by nonmedical volunteers and more than triples survival rates from out of hospital sudden cardiac arrest, with no additional risk.

4:30 p.m.

870-3

Recurrence Patterns After Failed Defibrillation of Spontaneous Ventricular Fibrillation During Acute Ischemia

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Background Some shocks that have halted spontaneous ventricular fibrillation (VF) during acute ischemia or reperfusion may seem to have failed if VF quickly recurs before the ECG amplifier recovers postshock. This could explain why the defibrillation threshold (DFT) for spontaneous VF appears markedly higher than for electrically-induced VF. **Methods** To test this hypothesis, the DFT for electrically-induced VF (E-DFT) was determined in 15 pigs before ischemia, followed by left anterior ascending or left circumflex artery occlusion. VF was electrically induced 20-min after occlusion, followed 5-min later by reperfusion. Whether spontaneous or electrically-induced, VF during occlusion or reperfusion was treated with up to 3 shocks at 1.5 times E-DFT (1.5E-DFT). If all 3 shocks failed, shock strength was increased. Thirty-min after reperfusion, the other artery was occluded and the protocol repeated. Defibrillation was considered successful if post-shock sinus/idioventricular rhythm was present ≥ 30 -sec. Recurrent VF within 30-sec after the shock was considered immediate or delayed if the first postshock activation complex in a rapidly restored ECG recording was VF or sinus/idioventricular rhythm, respectively. **Results** Defibrillation efficacy at 1.5E-DFT was significantly higher for electrically-induced ischemic VF (76%) than for spontaneous VF (31%). The incidence of delayed recurrence following electrically-induced nonischemic (3%) or ischemic (20%) VF was significantly lower than following spontaneous VF (75%). Mean VF recurrence time following spontaneous VF was 4.6 ± 5.3 sec. The percent of recurrent VF episodes preceded by ≥ 1 perfusing beat, which produced a femoral systolic arterial pressure > 30 mmHg before cardiac massage was attempted, was significantly lower for electrically-induced nonischemic VF (0%) than for occlusion VF (33%) or reperfusion VF (41%), but did not differ among electrically-induced ischemic VF (10%), occlusion VF, or reperfusion

VF. **Conclusion** Rapid VF reinitiation after a shock that has successfully halted spontaneous VF may partly be responsible for what appears to be shock failure in standard ECGs that take many seconds to recover postshock.

4:45 p.m.

870-4

Immediate Termination of Fibrillation is More Likely With Biphasic Truncated Exponential Versus Monophasic Damped Sine Waveforms Used for External Defibrillation

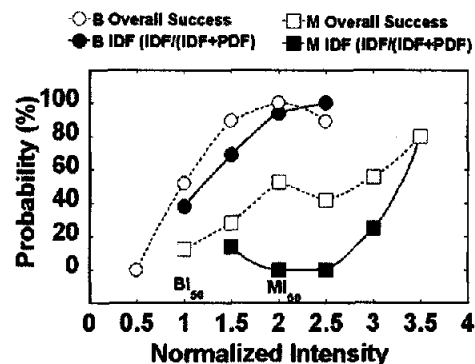
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Background: External defibrillators use either monophasic damped sinusoidal (M) or biphasic truncated exponential (B) waveforms. "Progressive" defibrillation (PDF), where the shock is followed by postshock activations before fibrillation terminates, is more uncertain than "Immediate" defibrillation (IDF), where the shock immediately terminates fibrillation, because it can lead to either success or failure. We hypothesized that B produce greater IDF, correlated with longer, more uniform postshock responses, than M.

Methods: Monophasic action potentials were recorded in 5 isolated rabbit hearts. After 10 seconds fibrillation, defibrillation was attempted with M (n=74) or 12 ms B (n=74); normalized shock coupling interval (NCI) and postshock response durations were determined. Shock intensities were normalized to each heart's biphasic I_{50} .

Results: IDF probability differed significantly for M and B (see figure; $p < 0.001$). At M I_{50} for overall success, IDF probability was 0%. At B I_{50} , probability of IDF was 40%. For M, response duration shortened with NCI (78.6 ± 3.6 for $NCI < 40\%$ vs 69.2 ± 4.5 for $NCI > 40\%$; $p = 0.05$). For B, postshock responses were independent of NCI (80.3 ± 3.1 for $NCI < 40\%$ vs 76.7 ± 2.7 for $NCI > 40\%$).

Conclusion: M produces primarily PDF associated with nonuniform responses; B produces primarily IDF associated with uniformly long responses independent of NCI. In addition to reducing threshold, B's primary production of IDF may contribute to its superiority for external defibrillation.



ORAL CONTRIBUTIONS

883 Primary Angioplasty in Acute Myocardial Infarction: Adjunctive Therapy

Wednesday, March 20, 2002, 8:30 a.m.-10:00 a.m.
Georgia World Congress Center, Room 256W

8:30 a.m.

883-1

Optimal Reperfusion In Evolving Myocardial Infarction: Does Abciximab Improve Outcomes in Stent Treated Patients?

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Background. Primary angioplasty (PTCA) has been found to yield better outcomes than thrombolysis in the early hours of acute myocardial infarction (MI). The role of stenting in this setting remains controversial. Similarly, the effect of GP IIb/IIIa inhibitors -now under intense scrutiny- remains to be clarified.

Objective. To assess whether a combined strategy consisting in stent implantation and GP IIb/IIIa inhibition provides better long-term outcomes than stent alone.

Methods. Two meta-analysis were conducted. The first included 2844 patients enrolled in 8 randomized trials comparing balloon PTCA and stenting in acute MI (FRESCO, ZWOLLE, GRAMI, PAMI, PASTA, STENTIM-2, PSAAMI, and CADILLAC). The second involved 3 randomized trials (n=1738) on stent placement with either adjunctive abciximab or placebo (ISAR-2, ADMIRAL, CADILLAC). End point was the composite of death/non fatal re-MI, and target vessel revascularization (TVR) at 6 months.

Results. Primary end-point was achieved in 14% of patients treated with stent and 26% of those treated with balloon PTCA (OR 0.45; 95% CI 0.37-0.55, $p < 0.0001$). This translates into 120 events prevented per 1000 patients treated. Adjunctive use of abciximab in stent treated patients resulted in an event rate of 12% vs 16.6% without abciximab (OR