Use of Cardiocerebral-Protective Drug Cocktail Prior to Countershock following Prolonged Ventricular Fibrillation

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Introduction: This is the third study in a series exploring the use of a "drugs-first" approach to treating prolonged ventricular fibrillation (VF). The rationale behind this approach is to prime the heart and brain prior to countershock and reperfusion.

Hypothesis: That the use of a cardiocerebral-protective cocktail would produce superior rates of return of spontaneous circulation (ROSC) and one-hour survival, when compared to a magnesium only and a concurrent control group treated with standard advanced cardiac life support (ACLS).

Methods: Twenty-four female, mixed-breed, domestic swine (mean mass 22–25 kg) were used in this prospective, blinded, randomized, experimental trial. Animals were sedated (ketamine/xylazine), anesthetized (alpha-chloralose), paralyzed (pancuronium), mechanically ventilated on room air, and instrumented with ECG, arterial pressure, and Swan-Ganz catheters. VF was induced with a 3s, 60 Hz, 100 mA transthoracic shock, and remain untreated for eight minutes. One minute of basic life support followed (standardized by use of a mechanical device). At nine minutes, animal were treated with one of three regimens: Group 1) cardiocerebral-protective cocktail (the antioxidant U-74389G [3.0 mg/kg], epinephrine [0.2 mg/kg], lidocaine [1.0 mg/kg], bretylium [5.0 mg/kg], magnesium [2.0 g], and propranolol [1.0 mg]); Group 2) magnesium [2.0 g]; and Group 3) standard ACLS. Groups 1 and 2 received drugs at minute nine (first countershock at minute 11), while Group 3 received first countershock at minute nine. Data were analyzed with two-tailed Fisher's Exact Tests, alpha = 0.05.

Results: ROSC was achieved in Group 1, 7/7 (100%); Group 2, 3/9, (33%; p vs. Group 1 = 0.01); and Group 3, 3/8 (38%; p vs. Group 1 = 0.02). One-hour survival was attained in Group 1, 7/7 (100%); Group 2, 3/9 (33%; p vs. Group 1 = 0.01), and Group 3, 1/8 (13%; p vs. Group 1 = 0.001).

Conclusion: Cardiocerebral-protective drugs given prior to countershock produced superior rates of ROSC and one-hour survival compared to singular drug therapy (Group 2) and ACLS (Group 3).

Relative Risk of Injury by Hispanic Status

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Hypothesis: The relative risk of injury by mechanism differs between Hispanics and nonHispanics treated by a southwestern urban EMS system.

Methods: *Design*—retrospective analysis of consecutive case series transported to a level-I trauma center over 28 months in a southwestern metropolitan area, population 680,000. Patients were identified from EMS records. A total of 4,451 patients were studied. Surname and injury mechanism were abstracted from the trauma-center registry. Hispanic status was assigned by matching surname with the 1980 census Spanish Surname List. Proportions of injured/evaluated for Hispanics vs. nonHispanics, relative risk (RR), p-value by Chi-square test, and the 95% confidence interval (CI) were calculated.

Results:

Mechanism	Hispanic/Non	RR	95% CI	p-value
Gunshot	.10/.04	1.61	1.30–1.99	0.000
Stabbing	.06/.04	1.53	1.16–2.02	0.003
Assault, blunt	.07/.06	1.13	0.89–1.43	0.313
Pedestrian struck	.07/.06	1.15	0.91–1.46	0.254
Motor vehicle	.51/.51	0.99	0.93–1.06	0.868
Fall	.06/.08	0.75	0.59–0.96	0.021
Motorcycle	.05/.09	0.55	0.43–0.72	0.000
Bicycle	.01/.04	0.39	0.24–0.63	0.000

Conclusion: Hispanic's relative risk of penetrating trauma is high compared to the general population. Culturally relevant injury prevention interventions targeted to this at-risk population are needed.