

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

David Seaberg, MD, \*James J. Menegazzi, PhD, Brian Check, BS, EMT-P, Bruce MacLeod, MD, Donald M. Yealy, MD

Mercy Hospital of Pittsburgh, Center for Emergency Medicine of Western Pennsylvania, Division of Emergency Medicine, University of Pittsburgh, Pittsburgh, Pennsylvania

**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

\*Terence D. Valenzuela, MD, Daniel Judkins, RN, Lani L. Clark, BS, Mark Fritz, BA, David R. Hampton, PhD, Daniel W. Spaite, MD, Bruce E. Jarrell, MD

Department of Surgery, University of Arizona, Tucson, Arizona

**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	<i>p</i> -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.