

Predictors of Survival of Therapeutic Hypothermia Based on Analysis of a Consecutive American Inner City Population over 4 Years

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Abstract : Background: Therapeutic hypothermia (TH) is the international standard of care for all comatose patients after cardiac arrest, but criticism focuses on poor outcomes. We sought to develop criteria to identify American urban patients more likely to benefit from TH. Methods: Retrospective chart review of 107 consecutive adults undergoing TH in downtown New Orleans from 2010-2014 yielded records for 99 patients with all 44 survivors or families contacted up to four years. Results: 69 males and 38 females with a mean age of 60.2 showed 63 dead (58%) and 44 survivors (42%). Presenting cardiac rhythm was divided into shockable (Pulseless Ventricular Tachycardia, Ventricular Fibrillation) and non-shockable (Pulseless Electrical Activity, Asystole). Presenting in shockable rhythms with ROSC <20 minutes were 21 patients with 15 (71%) survivors (p=.001). Time >20 minutes until ROSC in shockable rhythms had 5 patients with 3 survivors (78%, p=0.001). Presenting in non-shockable rhythms with ROSC <20 minutes were 54 patients with 18 survivors (33%, p=.001). ROSC >20 minutes in non-shockable rhythms had 19 patients with 2 survivors (8%, p=.001). Survivors of shockable rhythms showed 19 (100%) living post TH. 15 survivors (79%, n=19, p=.001) had CPC score 1 or 2 with 4 survivors (21%, n=19) having a CPC score of 3. A total of 25 survived non-shockable rhythm. Acute survival of patients with non-shockable rhythm showed 18 expired <72 hours (72%, n=25) with long-term survival of 4 patients (5%, n=74) and CPC scores of 1 or 2 (p=.001). Interestingly, patients with time to ROSC <20 minutes exhibiting more than one loss of sustained ROSC showed 100% mortality (p=.001). Patients presenting with shockable >20 minutes ROSC had overall survival of 70% (p=.001), but those undergoing >3 cardiac rhythm changes had 100% mortality (p=.001). Conclusion: Patients presenting with shockable rhythms undergoing TH had overall acute survival of 70% followed by long-term survival of 100% after 4 years. In contrast, patients presenting with non-shockable rhythm had long-term survival of 5%. TH is not recommended for patients presenting with non-shockable rhythm and requiring greater than 20 minutes for restoration of ROSC.

Keywords : cardiac rhythm changes, Pulseless Electrical Activity (PEA), Therapeutic Hypothermia (TH)

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