IN-HOSPITAL CARDIOPULMONARY ARREST: QRS DURATION AS A PROGNOSTIC MARKER OF SURVIVAL TO DISCHARGE

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Background: In-hospital cardiopulmonary arrests (CA) account for up to 700,000 deaths annually in the US. Survival to discharge is less than 30%; with, at best, moderate improvement over the past 25 years. We report initial results from an observational study of telemetry monitoring of in-hospital CA, and evaluate increase in QRS duration on telemetry as a prognostic marker.

Methods: We evaluated all “Code Blue” events at Ronald Reagan UCLA Medical Center, a 520 bed tertiary care hospital, from April 2010 to September 2011, and included all adult CA cases with at least 3 hours of telemetry data preceding CA. We analyzed up to 24 hours of telemetry data gathered prior to CA for progressive increase in QRS duration, and reviewed charts to determine probable cause, success of resuscitation efforts, and survival to discharge.

Results: 48 cases met inclusion criteria. 6 (13%) were ventricular tachycardia/fibrillation (VT/VF), 9 (19%) bradycardic, and 33 (69%) pulseless electrical activity (PEA) arrests. 31 (65%) were successfully resuscitated, but only 12 (25%) survived to discharge. Survival to discharge was 3/6 (50%) for VT/VF, 2/9 (22%) for bradycardic, and 7/33 (21%) in PEA arrests. Based on the probable cause of CA, the survival to discharge was 0/5 (0%) in patients with arrest due to cardiopulmonary failure, 0/13 (0%) in hemorrhagic shock, 0/13 (0%) in multiorgan failure, 2/5 (40%) with metabolic acidosis, 6/12 (50%) in respiratory failure, 3/3 (100%) with drug-related adverse events, and 1/5 (20%) with other causes. 12/48 (25%) cases had progressive QRS prolongation on telemetry, beginning 1 to 10 hours before CA. Of these 5 (42%) had bradycardic arrest, 7 (58%) PEA arrest; while 6 (50%) were successfully resuscitated, 0 (0%) survived to discharge, giving QRS prolongation a sensitivity of 33%, and specificity of 100% for predicting failure to survive to discharge.

Conclusion: Survival to discharge remains poor for in-hospital cardiac arrests, except when related to respiratory failure or drug related. Progressive QRS prolongation during the 24 hours prior to CA implies a very poor prognosis.