Treatment of out-of-hospital cardiac arrest patients with electrocardiographic ST segment elevation myocardial infarction: differences in rates of emergent cardiac catheterization between receiving hospitals with and without on-site cardiac catheterization capacity.

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Introduction: We sought to determine the impact of on-site cardiac catheterization (CATH) capacity on the treatment of patients with out-of-hospital cardiac arrest (OHCA) and evidence of ST-segment elevation on the initial electrocardiogram (ECG) following return of spontaneous circulation (ROSC).

Hypothesis: We hypothesized that among patients who survive to hospital or CATH laboratory admission, those presenting to hospitals with on-site CATH facilities are more likely to undergo emergent CATH.

Methods: This study was a retrospective chart review of patients with OHCA presenting to twenty-one emergency departments between 2007 and 2011. Only patients surviving to hospital admission or transfer were included in the analysis. In addition to recording standard pre-hospital predictors of outcome (witnessed arrest, bystander CPR, initial rhythm, pre-hospital ROSC), abstractors determined if patients received CATH (along with the timing of that intervention), revascularization, implantable defibrillator placement or therapeutic hypothermia. Outcome was determined using a dichotomized cerebral performance category score (CPC) at hospital discharge and six months following hospital admission. Good neurologic outcome was defined as a CPC score of 1 or 2, and poor outcome was defined as a CPC score of 3, 4 or 5. Power analysis required 39 patients per sample for 80% power and alpha 0.05 to detect a 30% absolute increase over a baseline CATH rate of 50%.

Results: A total of 793 patients met inclusion criteria, of which 93 (12%) had evidence of ST-segment elevation on the initial post-arrest ECG. Forty-four (47%) patients presented to a hospital with on-site CATH capacity. A total of 51 (55%) patients underwent emergent CATH with a revascularization rate of 75%. Thirty-six (71%) CATH procedures were performed on-site at the receiving facility. Patients presenting to hospitals with on-site CATH capacity were more likely to undergo emergent cardiac catheterization (36 of 44 [82%] versus 15 of 49 [31%], OR = 6.8, 95% CI 2.8 to 16.6), but were not statistically more likely to have a good neurologic outcome at hospital discharge (15 of 44 versus 12 of 49, OR = 1.6, 95% CI 0.6 to 3.9).

Conclusions: We conclude that patients with OHCA and ROSC initially presenting to hospitals with on-site CATH capacity are more likely to undergo CATH in the setting of ST-segment elevation on ECG. This sample was not powered to detect an effect of this treatment on survival with good neurologic outcome.