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Influence of early coronary angiography and percutaneous coronary intervention on intrahospital survival after out-of-hospital cardiac arrest - retrospective cohort study

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Introduction: Out-of-hospital cardiac arrest (OHCA) as a leading cause of death in developed countries is mainly caused by acute myocardial infarction. Coronary angiography (CAG) helps to establish the diagnosis of coronary artery disease and altogether with percutaneous coronary intervention (PCI) might improve survival in these patients. However, there are no exact randomized data, especially concerning time threshold for CAG in this group of patients.

Purpose: The aim of the present study was to determine whether coronary angiography and PCI improves intrahospital survival rate in patients with OHCA, especially when performed within 24h.

Methods: This research was conducted as a retrospective cohort study and included 376 patients who were admitted after OHCA, from January 2007 until October 2017. Only patients who survived for more than 60 minutes after admission were included. We recorded whether CAG was performed or not, whether it was early (=24 hours of admission) and whether the PCI was performed. The objective of this study was to access intrahospital survival rate.

Results: This research included 376 patients, 237 (63%) of them were male with mean age 65.3±13.2. CAG was performed in 158 (42%) patients. Early CAG (=24 hours of admission) was performed in 113 (30.1%) patients, and PCI was performed in 106 (28.2%) patients. Compared to patients without CAG (n=218), patients who underwent CAG (n=158) were younger (61.2 vs. 68.2; p<0.01), with witnessed cardiac arrest (91.1% vs. 73.4%; p<0.01), more likely to have received bystander cardiopulmonary resuscitation (45.2% vs. 24.8%; p<0.01), prehospital defibrillation (86% vs. 51.6%; p<0.01), and with initial shockable rhythm (79.6% vs. 43.8%; p<0.01). CAG is more frequently performed when Glasgow Coma Scale (GCS) at admission was = 8 compared to GCS <8 (68.3% vs. 34.7%; p<0.01). Early CAG was significantly more performed in STEMI patients compared with NSTEMI and ECG without ischemia (70.6% vs. 34.5% vs. 3.3%, respectively; p<0.01). The overall intrahospital survival was 43.6% (n=164). Survival to discharge was significantly higher when early CAG was performed (65.5% vs. 20.7%; p<0.01) and when PCI was performed as well (72.6% vs. 32%; p<0.01). The survival rate was significantly higher in patients undergoing CAG irrespective of initial GCS scale, namely in patients with GCS <8 (66.7% vs. 14.6%; p<0.01) and in patients with GCS=8 (89.3% vs. 68%; p=0.019) as well.

Conclusions: In our study, patients with OHCA who underwent early CAG and PCI had significantly higher intrahospital survival rate when compared to patients without CAG. Survival improved in both comatose and non comatose patients when CAG was performed. However, the optimal timing for CAG and PCI is not established yet, since in our study, like in any other non randomized trial, clinical presentation, ECG, as well as GCS at admission, took the main role in decision-making and timing of CAG and PCI.