One-Year Mortality of Patients Admitted to the Intensive Care Unit after In-Hospital Cardiac Arrest

The results of a retrospective pilot study

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Purpose: Little is known about long-term survival after In-Hospital Cardiac Arrest (IHCA). The purpose of this study is to report the one-year survival of patients after IHCA and to identify predicting factors.

Methods: a single-center retrospective chart study of all adult in-hospital CPR attempts conducted between January 2003 and February 2014 in a tertiary teaching hospital in Amsterdam (NL). The demographic and clinical variables of patients were obtained at 24 hours pre-arrest, during CPR and post-CPR. All patients were tracked one year after discharge from hospital.

Results: CPR was performed for IHCA on 417 patients during the study period. Return of spontaneous circulation (ROSC) was achieved in 283 (68%) patients, 234 were admitted to ICU. The survival rate of patients who were admitted to ICU after IHCA was 38% (89/234) at hospital discharge and 26% (61/234) at one year. Overall, 95 (23%) patients survived one year after discharge. Univariate analysis showed numerous variables are associated with one-year survival, for example comorbidity index and time to ROSC.

Discussion: One-year survival of patients who were admitted to the ICU after IHCA was 26%. Survival of this group was associated with patient and pre-arrest, CPR characteristics and severity of diseases at ICU admission reflected by clinical scores.

*Cause of death could be directly related (n=44) (e.g., post-anoxic encephalopathy, traumatic bleeding), indirectly related (n=58) (usually also a cause of the initial cardiac arrest such cardiogenic shock, respiratory insufficiency), not related (n=21) (e.g., subsequent infection) or unknown (n=22) (no relation could be either proven or excluded).

	One-year survivors n=61	One-year non-survivors n=173	p
Patient characteristics			
Age >80 years	16.0%	24.2%	.218
Age-combined comorbidity Index (ACCI)			.014
0-4 points	16.4%	5.8%	
5-7 points	39.3%	33.5%	
>8 points	44.2%	60.7%	
Admission type			.003
Non- cardiology	34.4%	56.6%	
Cardiology incl. cardio-thoracic surgery	65.6%	43.4%	
Arrest-related factors			
Time to ROSC (min, median)	8 (5-10)	10 (5-18)	.012
Primary Arrest Rhythm			.002
Shock	39.7%	17.3%	
Non-shock	60.3%	78.0%	
ICU-related factors			
APACHE-IV Predicted mortality	80%	91%	.000
Glasgow Coma Scale Upon admission	12 (3-15)	3 (3-14)	.000

Take Home Messages:

- Research on long-term outcomes after in-hospital cardiac arrest is scarce.
- One-year survival after cardiac arrest was 23% in this study.
- The prognosis of patients admitted to ICU after in-hospital cardiac arrest is poor.
- One-year survival is associated with age, comorbidity and severity of disease.