Time from collapse to defibrillation on favorable neurological outcomes patients with out-of-hospital cardiac arrest

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Objective

The aim of this study was to evaluate the relationship between time intervals from patient collapse to defibrillation by emergency medical service (EMS) onto favorable neurological outcomes.

Methods

A retrospective observational study was conducted with out-of-hospital cardiac arrest (OHCA) cases from Jan 1st, 2006 to Dec 31th, 2015 (n=1,197,046) by nationwide Utstein style OHCA registry in Japan.

The eligible 26,622 cases were extracted with witnessed cardiogenic cardiac arrest and time interval of collapse to EMS defibrillation 3 to 20 minutes. We excluded with bystander defibrillation.

The primary outcome was favorable neurological outcomes (Cerebral Performance Category 1 or 2) one month after cardiac arrest.

Logistic regression was conducted to examine the relationship between outcomes and time interval of collapse to EMS defibrillation.

Results

The mean interval of collapse to EMS defibrillation was 11.8 (standard deviation, 3.3) minutes. The longer interval of collapse to EMS defibrillation was associated with lower percentage of neurologically favorable one-month survival (crude odds ratio for each 1-minute increase, 0.87; 95% confidence interval, 0.86 to 0.87).

Patient Selection

Rates for favorable neurological outcomes and Number of patients

Conclusion

Although bystander CPR, PAD, and ALS by EMS are important for favorable neurological outcomes, time factor is also important. In this study, we found that the shorter collapse to EMS defibrillation time was associated with good favorable neurological outcomes for OHCA patients. All EMS in Japan should try to fast EMS arrive even for a minute.