The Association Of Time To First Epinephrine Administration With Neurological Outcomes In Out of hospital Cardiac Arrest In Japan: Sos-kanto 2012 Study Report

Yosuke Homma, Hiraku Funakoshi, Takashi Shiga, Tokyo Bay Urayasu/Ichikawa Medical Ctr, Chiba, Japan; Dai Miyazaki, Japanese redcross maebashi hospital, Maebashi, Japan; Naohiro Yonemoto, Natl Ctr of Neurology and Psychiatry, Tokyo, Japan; Yoshio Tahara, Natl Cerebral and Cardiovascular Ctr, Osaka, Japan; Ken Nagao, Surugadai Nihon Univ Hosp, Tokyo, Japan; Arino Yaguchi, Tokyo Women's Medical Univ, Tokyo, Japan; Naoto Morimura, Yokohama City Univ Medical Ctr, Yokohama, Japan; Atsushi Sakurai, Nihon Univ Sch of Med, Tokyo, Japan; SOS-KANTO 2012 study group

Introduction: The clinical effectiveness of the timing of first epinephrine administration (EA) including prehospital setting has not been established, especially in regards to neurological outcomes in patients subsequently receiving intensive care after admission.

Study Objectives: The aim of this study was to evaluate the effectiveness of time to first EA on neurological outcomes following OHCA.

Methods: This was a multicenter retrospective cohort study in Japan from January 2012 to March 2013. We used data from the Survey of Survivors after Cardiac Arrest in the Kanto Area in 2012 (SOS-KANTO 2012) database. All adult patients who were registered in this database and were administered epinephrine were included; unwitnessed OHCA and initial asystolic rhythms were excluded. Collected variables included age, gender, activities of daily living, witnessed status, bystander CPR, first documented rhythm, cause, and intensive care after admission. Multivariate logistic regression was performed to investigate the association between time to first EA and 1) ROSC, 2) 1-month survival, and 3) 1-month favorable neurological outcome.

Results: Of 16,452 OHCAs, 5,281 met the inclusion criteria (male, 63.1%; mean age, 71.5 years). Mean time between call to first EA is 33.7min. 1,501patients (28.4%) had ROSC. Multivariate logistic regression showed that the earlier the EA, the better chance of ROSC if initial documented rhythm was both VF/VT (adjusted odds ratio [OR] for one minute delay, 0.98; 95% confidence interval [CI], 0.97-0.99) and Asystole/PEA (adjusted OR, 0.97; 95%CI, 0.97-0.98). In contrast, the earlier the EA, the better chance of 1-month survival if initial documented rhythm was only Asystole/PEA (adjusted OR, 0.95; 95%CI, 0.93-0.98). There were no significant differences between early EA and good neurological outcomes (VF/VT, 1.01 [95% CI, 0.97-1.04] and Asystole/PEA, 1.01 [95% CI, 0.96-1.05]).

Conclusions: If initial documented rhythm was VF/VT, early EA was associated with increased chance of only ROSC. In contrast, early EA was associated with increased chance of ROSC and 1 month survival if initial documented rhythm was Asystole/PEA. Time to first EA was not associated with good neurological outcomes in any initial documented rhythm.