

Assessment of the 2015 cardiopulmonary resuscitation guidelines for patients with out-of-hospital cardiac arrest: results from the All-Japan Utstein registry

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Background: The 2015 cardiopulmonary resuscitation (CPR) guidelines have stressed that high-quality CPR improves survival from cardiac arrest (CA). In particular, the guidelines recommended that it is reasonable for rescuers to perform chest compressions at a rate of 100 to 120/min in adult CA patients. However, it is unknown whether the 2015 guidelines contributed to favorable neurological outcome in adult CA patients. The present study aimed to clarify the effects of the 2015 guidelines in adult CA patients, using the data of the All-Japan Utstein Registry, a prospective, nationwide, population-based registry of out-of-hospital CA (OHCA).

Methods: From the data of this registry between 2011 and 2016, we included adult witnessed OHCA patients due to cardiac etiology, who had non-shockable rhythm as an initial rhythm. We excluded patients who received prehospital care in 2015 because it was difficult to distinguish prehospital care based on either 2010 CPR guidelines or 2015 CPR guidelines. We also excluded patients who received bystander CPR by citizens because we cannot assess the quality of bystander CPR in this registry.

Study patients were divided into five groups based on different years (figure). The endpoint was the favorable neurological outcome at 30 days after OHCA. Potential confounding factors based on biological plausibility and previous studies were included in the multivariable logistic regression analysis. These variables included the age, sex (male, female), advanced airway or not, the administration of adrenaline or not, the administration of saline or not, instructed by dispatcher or not, and time interval from call EMS to scene.

Results: The figure showed favorable neurological outcomes at 30 days. In the multivariate analysis, the adjusted odds ratio for 30-day favorable neurological outcome in OHCA patients in 2016 as compared to in 2011 was 1.32 (95% CI: 1.04–1.68, $p=0.022$). On the other hands, there were no significant differences from 2011 to 2014.

Conclusion: In the OHCA patients with non-shockable rhythm, the 2015 guidelines were superior to the 2010 guidelines, in terms of neurological benefits.

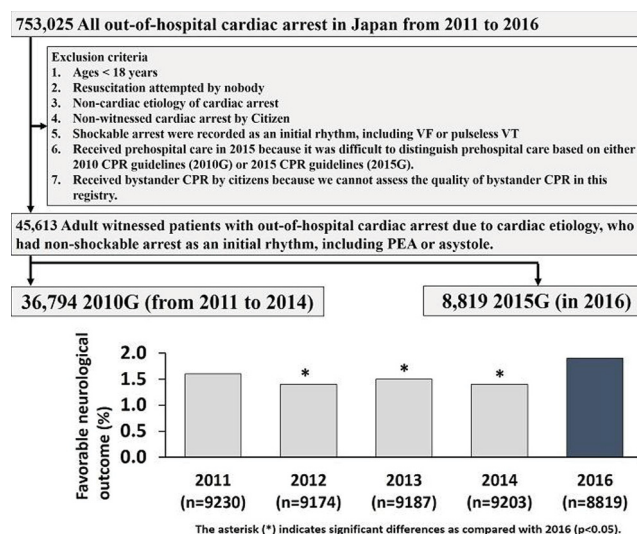


Figure 1