

Editorial



Recent Update in Out-of-Hospital Cardiac Arrests in Korea

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The current issue of the *Korean Circulation Journal* by Roh et al.¹⁾ is valuable in reporting the incidence of out-of-hospital cardiac arrest (OHCA) in Korea. Nationwide evaluation of disease epidemiology is not easy, and it would be more difficult if the object is a clinical event itself. Roh et al.¹⁾ evaluated the epidemiologic features of OHCA in Korea. As the authors mention, it is crucial to understand the exact public health burden of OHCA, which is exactly unknown since considerable episodes are not reported in registry studies.

Roh et al.¹⁾ reported the incidence of OHCA per 100,000 patients increased steadily from 48.2 in 2008 to 53.8 in 2011, 60.1 in 2014, and 66.7 in 2017, with a 1-year survival rate of 8.2%. Age and sex-adjusted mortality rates have declined since 2009. Subgroups with ischemic-related OHCA were more likely to be older and have a higher prevalence of all comorbidities than those with non-ischemic OHCA. So, the authors concluded that the Korean nationwide population-based study showed that the incidence of OHCA in Korea had increased during the last decade and the post-OHCA 1-year mortality rate showed a poor outcome but had improved gradually.

At first, we need to review the definition of the event. Usually, researchers enrolled patients suffering from OHCA before EMS-arrival, who were resuscitated by a bystander or emergency medical services (EMS) personnel and then transported to hospitals. Roh et al.¹⁾ enrolled patients who had been assigned the codes for sudden cardiac arrest or had undergone cardiopulmonary resuscitation (CPR) in the emergency room. Therefore, there is a possibility that the patients with in-hospital cardiac arrest (IHCA) are necessarily mixed in the registry. An EMS data-based study by Ro et al.²⁾ and Roh et al.³⁾ revealed that the per 100,000 person-years OHCA incidence in Korea was 42.5 in 2008, 45.6 in 2009, and 46.8 in 2010. The results of the current issue showed a slightly higher incidence.¹⁾ So, I believe it might affect the difference of incidence. Also, among those who underwent CPR in the emergency room, cardiac arrest codes might not have been given even though they were actually OHCA, and the patients with CPR codes might have had IHCA at the emergency room.

Although the authors applied many efforts to raise the appropriate enrollment, there are basic limitations of studies using the health insurance system. Korean National Health Insurance System (NHIS) covers almost all hospital medical practices. So, the studies using

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NHIS can get an entire nationwide data of one nation. But, the data could be deviated or not reliable because the hospitals tend to do efforts to get reimbursement and do not pay attention to the coding task that is not related to insurance. Actually, the estimated accuracy of insurance data is known to be about 50% in OHCA.⁴⁾

In this study, Roh et al.¹⁾ analyzed the 1-year survival rate rather than survival discharge rates. The survival discharge rates in this cohort would be higher than the 1-year survival rate of 8.2%, that is a relatively high score. The reported survival discharge rates in Europe, North America, Asia, and Australia were 7.6%, 6.8%, 3.0%, and 9.7%, respectively.⁵⁾⁶⁾ So, the 8.2% of the 1-year survival rate in this study is obviously high score and doubts about appropriate enrollment can be raised. The Pan-Asian Resuscitation Outcomes Study (PAROS) analyzed the outcomes for OHCA in seven Asian countries from 2009 to 2012, and showed that the survival discharge rate in Korea was highest (8.5%) among all seven countries.⁷⁾ In addition, the survival discharge rate in 2005–2006 was 3.5% in an emergency room registry study by Ahn et al.,⁸⁾ but Korean data from National Emergency Department Information System for Cardiac Arrest (NEDIS-CA) registry by Yang et al.⁹⁾ showed a significant improvement in 2009 to 9.6%. In a word, the survival discharge rate is increasing as the results of this study.¹⁾

Regardless of data-collecting methods, since the current issue analyzed the temporal trends of OHCA in Korea, we cannot deny that it revealed 3 main findings: 1) The incidence of OHCA has increased steadily over the last 10 years. 2) Although the 1-year mortality rate has been decreasing gradually, it was still high. 3) Ischemic heart disease was the main cause of OHCA.

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