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Letter to the Editor

Are non-shockable initial rhythms always worse? Need for a detailed classification and stratified exploration of prognostic factors

To the Editor,

In the recent study by Havranek et al. published in RESUSCITATION (Oct 2022),[1] the authors clarified the association between initial shockable rhythm and favorable patient outcomes in refractory out-of-hospital cardiac arrest (OHCA) patients who underwent either standard or invasive treatment, including extracorporeal cardiopulmonary resuscitation (ECPR). To date, numerous studies have examined the associations of ECPR-related variables with prognosis in in-hospital cardiac arrest settings,[2] whereas such studies focusing on OHCA patients with non-shockable rhythm were scarce. Given its novelty and clinical relevance, we believe that this study is informative for many clinicians. However, in combination with our clinical experiences and the findings of this study, we would like to comment on two issues for future research.

The first issue is about the definition of the comparator. In this study, the exposure variable was the initial shockable rhythm, whereas the comparator was the non-shockable initial one. It is no doubt that shockable rhythm was a good prognostic factor in OHCA patients. However, this does not mean that all non-shockable rhythm was a bad prognostic factor for OHCA. For example, an initially non-shockable but subsequently converted to shockable rhythm might be a good predictor in OHCA patients.[3] Another study showed that initial asystole rhythm (but not pulseless electrical activity [PEA]) and subsequently converted to shockable rhythm was associated with better outcomes in OHCA settings.[4] These studies highlighted the importance of detailed classification of non-shockable initial rhythms, and another definition of the comparator, such as initially non-shockable PEA, might detect potential good prognostic rhythms in this study setting. Although this study could not discriminate detailed non-shockable initial rhythms due to limited sample size, further research should take such definitions of comparator into consideration.

In addition to the definition of comparators, we would like to focus on the heterogeneity of each rhythm on the prognosis in future research. As shown in this study, the clinical outcomes in shockable and non-shockable rhythms were quite different.[1] Therefore, we speculate that the prognostic factors vary depending on whether the initial rhythms are shockable or not, and those should be explored separately in the initial rhythms. Clinicians would like to know what characteristics of OHCA patients with non-shockable initial rhythm can benefit when either standard or intensive interventions are performed. If such studies are conducted in the future, obtaining some important but unmeasured prognostic factors in this study, such as short shock delivery time,[5] will make such a study well-designed and sophisticated.

Improving outcomes in OHCA is a major challenge globally. We believe that integrating the findings of this study and our comments will provide important information that will link to improved prognosis in patients with OHCA for future research.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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Hayato Mori

Department of Healthcare Epidemiology, Graduate School of Medicine and Public Health, Kyoto University, Yoshidakonoe-cho, Sakyo-ku, Kyoto 606-8501, Japan
Department of Surgery, Tokushima Prefectural Central Hospital, 1-10-3, Kuramoto-cho, Tokushima 770-8539, Japan

Tetsuro Aita*

Department of General Internal Medicine, Fukushima Medical University, 1, Hikarigaoka, Fukushima-shi, Fukushima 960-1295, Japan
Department of Clinical Epidemiology, Graduate School of Medicine, 1, Hikarigaoka, Fukushima-shi, Fukushima 960-1295, Japan
email address: gstetsuro@gmail.com

Keita Shibahashi

Tertiary Emergency Medical Center, Tokyo Metropolitan Bokutoh Hospital, 4-23-15, Kotobashi, Sumida-ku, Tokyo 130-8575, Japan

Mikio Nakajima

Emergency and Critical Care Center, Tokyo Metropolitan Hiroo Hospital, 2−34−10, Ebisu, Shibuya-ku, Tokyo 150-0013, Japan

Hiraku Funakoshi

Department of Emergency and Critical Care Medicine, Tokyobay Urayasu Ichikawa Medical Center, 3-4-32 Todaijima, Urayasu, Chiba 279-0001, Japan

* Corresponding author at: Department of General Internal Medicine, Fukushima Medical University, 1, Hikarigaoka, Fukushima-shi, Fukushima 960-1295, Japan. Department of Clinical Epidemiology, Graduate School of Medicine, 1, Hikarigaoka, Fukushima-shi, Fukushima, 960-1295, Japan.

Received 9 November 2022
Accepted 14 November 2022

https://doi.org/10.1016/j.resuscitation.2022.11.013