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Effect of ventricular tachycardia on the outcomes of patients undergoing continuous renal replacement therapy due to acute kidney injury

Seong Geun Kim[1], Donghwan Yun[2], Jayoun Kim[3], Jinwoo Lee[1], Yong Chul Kim[1], Dong Ki Kim[1], Kook Hwan Oh[1], Kwon Wook Joo[1], Yon Su Kim[1], Seung Seok Han[1]
[1]Department of Internal Medicine-Nephrology, Seoul National University Hospital, Korea, Republic of
[2]Department of Biomedical Sciences, Seoul National University College of Medicine, Korea, Republic of
[3]Department of Medical Research Collaborating Center, Seoul National University Hospital, Korea, Republic of

Objectives: Despite the best efforts of critically ill patients requiring continuous renal replacement therapy (CRRT) due to acute kidney injury, their mortality risk remains high. This worse condition may be attributable to the complications after starting CRRT such as arrhythmias. Herein, we addressed the occurrence of ventricular tachycardia (VT) and its relationship with the patient outcomes after starting CRRT due to acute kidney injury.

Methods: A total of 2,397 patients who started CRRT due to severe acute kidney injury were retrospectively collected from 2010 to 2020 at Seoul National University Hospital, Korea. The occurrence of VT was evaluated from starting to weaning from CRRT. The odds ratio (OR) of outcomes was measured using logistic regression model after adjustment of multiple covariates.

Results: The VT occurred in 150 (6.3%) patients after starting CRRT. Among them, 95 cases were defined as sustained VT (i.e., lasting 30 sec and more), and other 55 cases were defined as nonsustained VT (i.e., less than 30 sec). The occurrence of sustained VT was associated with higher mortality rate than the nonoccurrence (OR, 2.06 [1.23–3.45] for 1-week mortality; OR, 1.90 [1.14–3.18] for 2-week mortality; and 2.87 [1.67–5.04] for 1-month mortality). The mortality rates did not differ between patients with nonsustained VT and nonoccurrence. Certain trends of blood laboratory findings such as low pH (HR, 0.17 [0.03–0.87]), high potassium (HR, 1.24 [1.01–1.53]), and low bicarbonate (HR, 0.88 [0.84–0.92]) were associated with the subsequent risk of VT on CRRT.

Conclusions: The sustained VT occurrence after starting CRRT is associated with patient mortality. The monitoring of electrolyte and acid-base status during CRRT is essential because of its relationship with the risk of VT.