The Long Term Outcomes of Acute Kidney Injury Survivors from ICUs in Thailand: Result From Sea-aki Study

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Background: Acute kidney injury (AKI) is a common condition causing high morbidity and mortality during intensive care unit (ICU) admission. However, long-term outcome of patients with AKI in limited-resource countries remains unknown.

Objective: To determine long-term clinical outcome of AKI patients after survival from ICU.

Methods: The prospective multicenter observational study was conducted at 5 participating hospitals across Thailand from February 2013 to August 2017. All adult patients (aged >15) without prior end-stage renal disease (ESRD) who survived at ICU discharge were included. Clinical data were collected using web-based case record form. For long-term outcome, we searched the government administration database and Thailand Dialysis Registry using Thai 13-digit identification number to identify survival and dialysis status. The primary outcome was the composite outcome of all-cause mortality and dialysis dependence rate at 2 years after ICU admission. The secondary outcomes were all-cause mortality and the dialysis dependence rate at 2 years. Survival data was visualized using Kaplan-Meier plot. Multivariate Cox regression analysis was used to estimate adjusted hazard ratio (AHR) with 95% confidence interval (95% CI) of survival and other clinical parameters.

Results: Of the 1,730 patients who were survived at ICU discharge, 617 (35.7%) had AKI, with stage 1, 2, and 3 of 6.4%, 12.3%, and 17.0%, respectively. With a median follow up of 28.5 months, the primary composite outcome in AKI group was significantly higher than the non-AKI group, i.e. 51.7% vs 34.9%, p < 0.01. In multivariate survival analysis adjusted for potentially confounding clinical parameters, diagnosis, and comorbidities, patients with AKI had a higher risk for 2-year composite outcome of death and dialysis dependence than patients without AKI (AHR 1.27; 95%CI: 1.07-1.52, p<0.01). Importantly, the mortality risk increased by the stage of AKI, i.e. AHRs (95%CI) were 1.31 (95%CI: 1.04-1.65) and 1.44 (95%CI: 1.13-1.84) for AKI stage 2 and 3, P = 0.02 and <0.01, respectively.

Conclusion: Despite survival from the ICU, patients with AKI still have a high risk of long-term mortality and dialysis dependence, particularly, those with more severe stage of AKI. Therefore, following up of patients with severe AKI after hospital discharge is essential.

Keywords: Acute kidney injury(AKI), Long term outcomes, Survival, Dialysis dependency, Intensive care unit, Limited resource