Predictors of Mortality in Acute Kidney Injury
Required Renal Replacement Therapy

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Background: Acute kidney injury (AKI) is frequently encountered around 40% in critically ill patients. AKI has significant mortality and morbidity. Risk factors that associated with death in critically-ill patients with AKI include old age, prolonged hospitalization, high Acute Physiology and Chronic Health Evaluation (APACHE II) score, presence of comorbidities, oliguria, hypovolemia, metabolic acidosis, sepsis, multiple trauma, use of vasoactive drugs, and respiratory failure.

Objectives: To determine risk factors that associated with 28-day mortality in AKI patients with required renal replacement therapy (RRT).

Methods: We conducted a retrospective study in patients with AKI (aged > 18 years) who received RRT in medical and cardiac intensive care units from June 2014, to May 2015 at Srinagarind Hospital, Khon Kaen University, Thailand. An exclusion criterion was pre-existing end-stage renal disease. The 28-day mortality rate and survival time were analyzed. Cox-proportional hazard models were used for defining predictors of 28-day mortality after AKI diagnosis.

Results: We included 126 AKI patients who received RRT. The 28-day mortality was 55.5% (70 patients). For risk factors that associated with 28-day mortality, we found Sequential Organ Failure Assessment (SOFA) score before RRT, highest creatinine, base excess, and lactate greater than 18 mg/dL before 24-hour RRT were significantly associated to the 28-day mortality with hazard ratio (HR) of 1.11 (95%CI 1.02-1.22, p=0.021), 0.95 (95%CI 0.91-1.0, p=0.036), 0.84 (95%CI 0.71-1.0, p=0.036), and 4.22 (95%CI 1.22-14.57, p=0.023), respectively.

Conclusion: The mortality rate at 28-day after AKI diagnosis required RRT in ICU is high. SOFA score, highest creatinine, base excess, and lactate greater than > 18 mg/dL before RRT within 24 hours are significantly associated with 28-day mortality in critically-ill patients with AKI required RRT.

Keywords: Acute kidney injury, Renal replacement therapy, Risk factor, Mortality, Intensive care unit