Outcome of Administration of Vasopressors in Septic Shock

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Background: The pathophysiology of septic shock is complicated. Even though the advances in management of septic shock has been developing dramatically, the mortality remains unacceptably high. It is noteworthy that the key therapies such as appropriate antimicrobials and fluid resuscitation appear to reduce mortality rate, while appropriate time for vasopressors initiation is still ambiguous.

Objective: This study aimed to examine the association between early initiation of vasopressor therapy and improvement of survival in septic shock. The primary outcome was mortality rate.

Methods: We conducted a retrospective cohort study at Sing Buri Hospital between 30 June 2015 and 30 June 2017 to compare mortality rate of early versus delayed administration of norepinephrine in septic shock patients to determine length of hospital and ICU stay, duration of ventilator, renal support, and vasopressor dependence in both groups of patients. Eligible subjects were adult patients aged ≥18 years who were documented septic shock and treated with norepinephrine.

Results: In total, 442 patients met the definition of septic shock. Of these, 320 were suitable for analysis. There were 160 patients in both Early-NE and Late-NE groups. The overall mortality rate was 59.4%. Following the study, there was an obviously strong relationship between delayed initiation of norepinephrine administration and mortality. Mortality rate was 31.9% in the early-NE group and 86.9% in the late-NE group (P<0.000). By performing logistic binary regression, no endotracheal intubation (Adjusted OR=0.13; 95%CI=0.05-0.35; P<0.00), early-NE administration (Adjusted OR=0.07; 95%CI=0.01-0.17; P<0.00), decrease APACHE II score (Adjusted OR=0.90; 95%CI=0.85-0.95; P<0.00), shorten duration of hypotension (Adjusted OR=0.76; 95%CI=0.67-0.85; P<0.00), and community acquired infection (Adjusted OR=0.47; 95%CI=0.22-0.99; P=0.048) were positively associated with a decrease in mortality rate. No statistical significance in length of hospital and ICU stay, duration of ventilator support, renal support and vasopressor dependence was observed between the Early-NE and the Late-NE groups.

Conclusion: Early administration of norepinephrine in septic shock patients is associated with the decreased mortality rate.

Keywords: Norepinephrine, Septic shock, Mortality rate