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Impact of early initiation of continuous renal replacement therapy in critically ill patients with acute kidney injury

Sungyoon LIM, *Sang-kyung JO, Won yong CHO, Ji hyun YANG, Woori CHO, Yoon kyung CHOI, Tae yeon HWANG

Department of Internal Meidicine, Korea University Anam Hospital, Korea,South

Objectives : The optimal timing for initiation of continuous renal replacement therapy (CRRT) in critically ill patients with acute kidney injury (AKI) remains controversial. The generally accepted absolute indications for starting CRRT in critically ill patients include persistent hyperkalemia, severe acidosis and hypervolemia. Therefore, we compared the outcomes of patients who received CRRT without any of these indications with patients with one or more of these indications.

Methods : This was a retrospective cohort study of patients undergoing CRRT from 2015 to 2016 in a tertiary university hospital. We defined CRRT initiated without any absolute indications as early group and CRRT initiated in the presence of any of these indications as late group. Patients with chronic kidney disease stage 5 or on dialysis were excluded. The primary clinical outcome variables were renal recovery, and 90-day mortality.

Results : Out of 118 patients treated with CRRT, 34 (28.8%) patients initiated CRRT after meeting at least one absolute indication (late group) whereas 84 (71.2%) patients started without any indications (early group). The late group had lower renal recovery than the early group (8.8 vs. 28.9% late vs early, p=0.019). At 90 days after CRRT, the mortality rate in the late CRRT group was 79.4% and that in the early group was 57.1% (P=0.023). Delayed initiation of CRRT was independently associated with greater odds of mortality and renal recovery in multivariate cox regression analysis. (hazard ratio : 1.729 95% CI 1.017-2.941, P=0.043)

Conclusions : Our study could suggest that initiating CRRT in critically ill patients with AKI should not be delayed until fulfillment of urgent indications.

Keywords : continuous renal replacement therapy; Acute Kidney Injury; Timing