Clinical characteristics of acute kidney injury survivors on continuous renal replacement therapy

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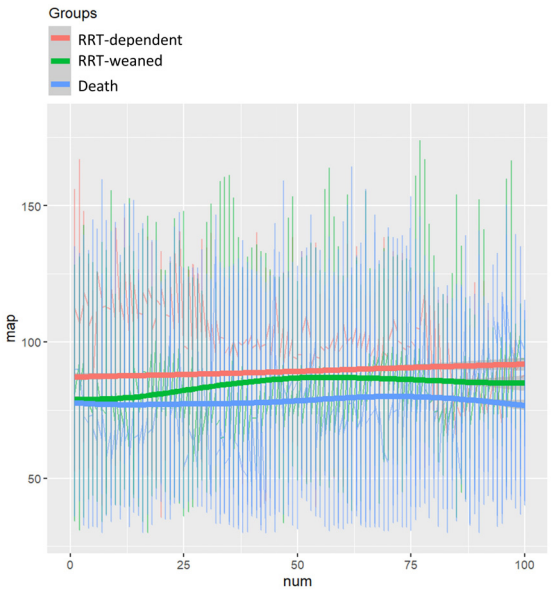
Background/Aims: Acute kidney injury (AKI) commonly occurs in critically ill patients and is often severe, requiring renal replacement therapy (CRRT). AKI contributes to high mortality, dialysis dependence, and chronic kidney disease progression. Given residual renal impairments could exist after recovering from underlying disease, long term prognosis of AKI is crucial for the management of patients with AKI.

Methods: We initially screened patients who underwent CRRT for >24h in Inha University from 2018 to 2021. We analyzed the clinical characteristics of AKI patients receiving CRRT according to the mortality and renal survival.

Results: Of total of 443 patients who received CRRT, 263 patients died before weaning from CRRT and 145 patients were successfully weaned from CRRT while 35 patients were dependent on renal replacement therapy at discharge. Total duration of RRT was 3.5 ± 10.8 days and 22.0 ± 20.3 days in patients with successful weaning and dependent on RRT, respectively. The duration of CRRT was also significantly longer in patients dependent on RRT at discharge (11.3 ± 13.4 vs. 5.3 ± 5.6 days). Age, sex, initial vital signs, and Charlson comorbidity index were not different between the two groups. The cause of AKI was not different as well, showing sepsis-induced AKI was most common cause in both groups (45.7% and 52.4%). However, serum creatinine at the initiation of CRRT was significantly higher in the RRT-dependent group, which indicates more severe renal insult and might be the presence of underlying chronic kidney disease. Patterns of mean arterial pressure (MAP) during were also different; MAP continued to decrease in non-survivors, decreased after an initial increase in RRT-weaned patients, and continued to increase in RRT-dependent patients, possibly reflecting volume status.

Conclusions: Our data showed the clinical characteristics of critically ill patients with AKI on CRRT according to the clinical scenario of RRT-weaning. Predicting kidney outcomes of these severe AKI patients could be help clinicians make decisions about renal managements. Demonstrating modifiable clinical parameters for kidney outcomes are warranted for future studies.



Variables	RRT-dependent (n=35)	RRT-weaned (n=145)	P-value
Age (years)	72.3 ± 14.4	68.6 ± 14.9	0.188
Male Sex (%)	15 (42.9%)	83 (57.2%)	0.179
RRT duration	22.0 ± 20.3	3.5 ± 10.8	0
CRRT duration	11.3 ± 13.4	5.3 ± 5.6	0.014
Systolic blood pressure	122.7 ± 22.3	115.9 ± 24.2	0.133
Diastolib blood pressure	63.3 ± 14.8	63.0 ± 15.0	0.923
Mean arterial blood pressue	103.6 ± 19.2	100.0 ± 19.6	0.333
Body mass index	22.4 ± 6.1	23.9 ± 5.7	0.18
Serum creatinine at CRRT initiation	6.3 ± 4.8	3.6 ± 2.7	0.002
Hypertension	27 (77.1%)	83 (57.2%)	0.048
Diabetes	21 (60.0%)	76 (52.4%)	0.536
Charlson cormorbidity index	2.5 ± 1.7	2.9 ± 2.3	0.321
AKI cause			0.894
Sepsis	16 (45.7%)	76 (52.4%)	
Nephotoxin	3 (8.6%)	14 (9.7%)	
Ischemia	5 (14.3%)	12 (8.3%)	
Postoperative	3 (8.6%)	15 (10.3%)	
Others	8 (22.8%)	28 (19.3%)	