



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Prognostic Value of the Shock Index for In-Hospital Mortality and Kidney Recovery in Patients with Acute Kidney Injury Undergoing Continuous Renal Replacement Therapy: A Multicenter Cohort Study

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Objectives : Despite the substantial healthcare burden of dialysis-requiring acute kidney injury (AKI-D), reliable prognostic markers remain limited. In this multicenter cohort study, we evaluated the association of the shock index (SI) with mortality and kidney recovery in AKI-D patients.

Methods : We retrospectively enrolled AKI-D patients who received continuous renal replacement therapy (CRRT) in the intensive care units of two tertiary care hospitals in Korea between January 2006 and December 2021. The primary endpoints were in-hospital death and RRT dependence at discharge. The SI, calculated as heart rate divided by systolic blood pressure, was obtained at the time of CRRT initiation.

Results : Among a total of 2,677 patients, 1,539 died, while among AKI-D survivors, 180 remained RRT-dependent and 958 showed renal recovery. Patients in the death group were older and had higher APACHE II and SOFA scores. In Cox proportional hazards analysis, a higher SI was associated with increased mortality when modeled as a continuous variable (HR 2.22; 95% CI, 1.95–2.54). When categorized into tertiles, mortality risk increased progressively across higher SI quartiles, with HRs of 1.26 (95% CI, 1.10–1.43) and 1.72 (95% CI, 1.51–1.97) for tertile 2 and tertile 3, respectively, compared with tertile 1. Moreover, Among survivors, a steeper decline in SI was independently associated with kidney recovery at discharge. In multivariable logistic regression analysis, SI slope was significantly associated with kidney recovery (odds ratio [OR], 0.83; 95% confidence interval [CI], 0.69–0.99; P = 0.04).

Conclusions : These findings suggest that the Shock Index in AKI-D patients provides valuable prognostic information regarding both mortality and renal recovery, and may serve as a useful predictive marker for clinical outcomes in this population.

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Characteristic	Linear			Median(factor)			Tertile(factor)			Tertile(trend)		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
SI_baseLine2	1.95	1.70, 2.23	<0.001									
age	1.01	1.00, 1.01	<0.001	1.01	1.00, 1.01	<0.001	1.01	1.00, 1.01	<0.001	1.01	1.00, 1.01	<0.001
sex	1.06	0.95, 1.17	0.3	1.08	0.97, 1.19	0.2	1.07	0.96, 1.18	0.2	1.07	0.96, 1.18	0.2
cre	1.04	1.02, 1.06	<0.001	1.04	1.02, 1.06	<0.001	1.04	1.02, 1.06	<0.001	1.04	1.02, 1.06	<0.001
sofa	1.09	1.07, 1.11	<0.001	1.10	1.08, 1.11	<0.001	1.09	1.08, 1.11	<0.001	1.09	1.08, 1.11	<0.001
bun	0.99	0.98, 1.01	0.3	1.0	0.98, 1.01	0.4	1.00	0.98, 1.01	0.5	1.00	0.98, 1.01	0.5
lhm	0.90	0.80, 1.01	0.073	0.89	0.79, 0.99	0.035	0.89	0.80, 1.00	0.057	0.89	0.80, 1.00	0.055
vent	1.35	1.18, 1.55	<0.001	1.35	1.18, 1.54	<0.001	1.35	1.18, 1.54	<0.001	1.35	1.18, 1.54	<0.001
lab_alb	0.70	0.64, 0.76	<0.001	0.69	0.64, 0.75	<0.001	0.69	0.63, 0.75	<0.001	0.69	0.64, 0.75	<0.001
lab_hb	0.97	0.95, 1.00	0.018	0.98	0.96, 1.00	0.070	0.97	0.95, 1.00	0.026	0.97	0.95, 1.00	0.026
lab_crp	1.0	0.99, 1.00	0.035	1.0	0.99, 1.00	0.034	0.99	0.99, 1.00	0.023	0.99	0.99, 1.00	0.022
AKI_cause	0.97	0.94, 1.01	0.094	0.97	0.93, 1.00	0.073	0.97	0.94, 1.01	0.13	0.97	0.94, 1.01	0.11
SI_median												
Low												
High				1.50	1.34, 1.66	<0.001						
SI_tertile												
T1												
T2							1.26	1.10, 1.43	<0.001			
T3							1.72	1.51, 1.97	<0.001			
SI_tertile_sum										1.32	1.23, 1.41	<0.001

Abbreviations: CI = Confidence Interval, HR = Hazard Ratio