



SERPINA3 IN PREDICTING RENAL RECOVERY FROM ACUTE KIDNEY INJURY IN CRITICALLY COVID-19 PATIENTS

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BACKGROUND

The reported incidence of acute kidney injury is from 50% to 90% in critically-ill Covid-19 patients. Numerous studies have suggested a possible role for AKI biomarkers in predicting renal recovery after renal replacement therapy (RRT). We recently reported the urinary Serpin-A3 excretion (uSerpA3) as an early marker of AKI and fibrosis.



AIM

Investigate the urinary uSerpA3 as a **biomarker for renal recovery** at 90 days in critically-ill COVID-19 patients and AKI on invasive mechanical ventilation (IMV) after RRT.

Patients

Cohort study of COVID-19 patients in ICU and IMV.

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*CKD stages 4 or 5 and kidney transplant were excluded.

COVID-19 Diagnosis

Pneumonia diagnosed by CT chest scanner and/o RT-PCR for SARS-CoV-2

Samples

Urinary SerpinA3, KIM-1 and HSPS-72.

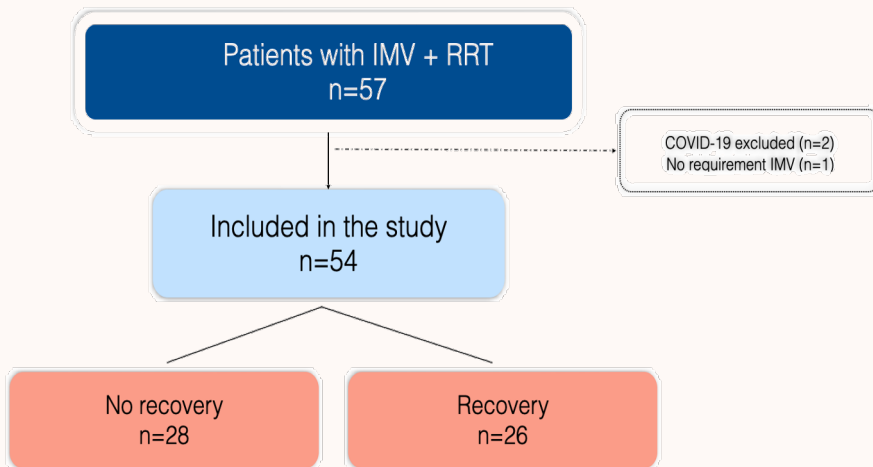
Renal recovery

RRT independence at 90 days.

day 0 (RRT start) and days 1,3,7 and 14 days.

RESULTS

1 Flowchart of the studied population.



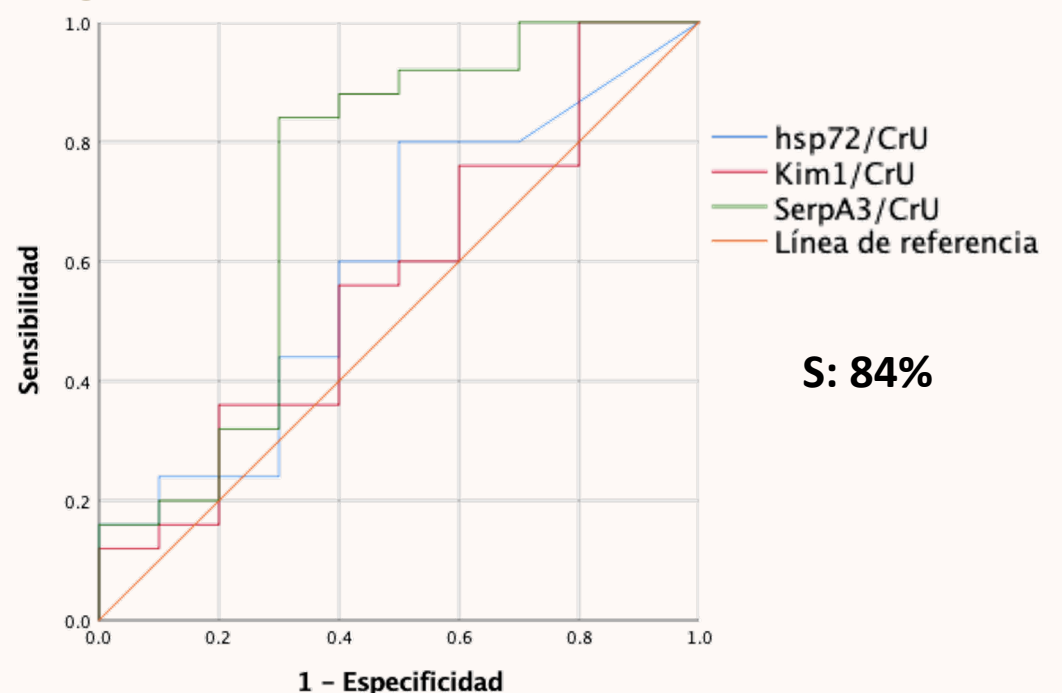
2 Clinical characteristics.

Characteristic	No-recovery n=28	Recovery n=26	p value
Demographics			
Age, years	59 (47-65)	49 (41-57)	0.59
Male, n(%)	24	17	0.14
Comorbidities			
Body mass index, kg/m ²	29.7 (27.1-35.2)	31.3 (29-38.1)	0.7
Charlson index, n(%)	2 (0-3)	1 (0-2)	0.31
Diabetes, n(%)	12 (43)	8 (31)	0.41
Hypertension, n(%)	11 (39)	9 (35)	0.78
Laboratory			
Leukocytes, x1000/mm ³	11.9 (9.1-24.3)	11.2 (8.6-17)	0.78
C-reactive protein, mg/dL	20.31 (13.1-36.2)	15.47 (10.33-33)	0.41
Ferritin, ng/mL	1120 (587-7811)	985 (334-7342)	0.78
PaO ₂ /FiO ₂ ratio	116 (101-179)	146 (107-260)	0.18
SOFA Score	10 (9-11)	10 (8-11)	0.64
APACHE II	17 (15-20)	16 (14-18)	0.1
SAPS II	43 (38-48)	42 (35-46)	0.78
Vasopressor, n(%)	24 (86)	19 (73)	0.32
Outcomes			
Length of hospitalization (days)	21 (13-29)	33 (20-43)	0.19
Mortality at 90 days, n(%)	100%	0%	-
Renal recovery at 90 days, n(%)	0%	100%	-

3 AUC biomarkers.

Urinary biomarker	Time point	AUC	95% IC	p value
HSP-72	Day 0	0.49	(0.28-0.69)	0.90
	Day 1	0.58	(0.38-0.78)	0.43
	Day 3	0.56	(0.35-0.77)	0.60
	Day 7	0.60	(0.39-0.81)	0.37
	Day 14	0.43	(0.48-0.98)	0.08
SerpinA3	Day 0	0.51	(0.32-0.70)	0.92
	Day 1	0.61	(0.42-0.80)	0.29
	Day 3	0.61	(0.40-0.83)	0.29
	Day 7	0.72	(0.51-0.94)	0.04
	Day 14	0.73	(0.48-0.98)	0.13
KIM-1	Day 0	0.71	(0.54-0.88)	0.04
	Day 1	0.60	(0.40-0.80)	0.32
	Day 3	0.61	(0.40-0.82)	0.33
	Day 7	0.57	(0.35-0.79)	0.11
	Day 14	0.49	(0.23-0.76)	0.58

4 AUC on day 7.



CONCLUSION

In this study, we found that uSerpA3, a novel urinary biomarker, is useful to predict recovery at 90 days after a severe AKI episode that required RRT in critically ill COVID-19 patients.