

Abstract Title: CORRELATION OF CLINICAL AND BIOCHEMICAL CHARACTERISTICS OF ACUTE KIDNEY INJURY IN PATIENTS WITH COVID-19: A SINGLE CENTER EXPERIENCE

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INTRODUCTION

Acute kidney injury (AKI) develops in 20 to 70 % of patients with COVID-19. The exact mechanism of acute kidney injury in patients with COVID-19 is unclear. This retrospective study was aimed at exploring incidence, severity and outcome of AKI in patients admitted with COVID-19.

It was a retrospective and descriptive study carried out in Symbiosis University Hospital and Research Centre, Pune. We collected clinical and laboratory data of 456 in patients with COVID-19. Patients presenting with AKI or on dialysis at arrival to hospital were excluded. It predominantly consists of patients who developed AKI during their stay in hospital.

Key words: COVAKI, renal replacement therapy, COVID-19, acute kidney injury

Research question:

What is the incidence of AKI in patients with SARS-COV-2 infection?

What is the impact of acute kidney injury on various patient outcomes in COVID-19?

Is there any correlation between rise of inflammatory markers and occurrence of AKI in COVID patients?

OBJECTIVES

Primary Objective:

1. To understand the clinical and biochemical profile of patients admitted with COVID-19 developing acute kidney injury

Secondary Objectives:

1. To correlate the severity and outcomes of COVID-19 associated acute kidney injury (COVAKI) with inflammatory markers
2. To understand the impact of COVAKI on the outcomes in patients admitted with COVID-19.
3. To distinguish different phenotypes of AKI evident in patients with COVID-19

Gender	Male		Female		P-value
	Mean	Std. Dev.	Mean	Std. Dev.	
Age	47.6	15.6	49.5	16.3	0.195
CRP	35.4	160.5	17.0	25.8	0.116
Ferritin	520.8	1396.5	114.3	152.8	0.0001
Albumin	0.2	0.8	0.1	0.5	0.070
IL 6	-	-	-	-	--
D-Dimer	58.1	648.8	72.7	411.2	0.784
HCO3	22.8	5.4	26.2	5.2	0.030
Sodium	135.2	6.1	137.2	3.9	0.159
Potassium	4.1	0.8	3.7	0.6	0.123
Calcium	-	-	-	-	
Magnesium	-	-	-	-	
Days in hospital	10.2	3.4	10.3	3.9	0.327
Days in ICU	1.1	3.2	1.0	2.8	0.616
Days on ventilator	0.5	2.3	0.3	1.5	0.325
HFO2	1.9	0.2	1.93	0.2	0.863
LFO2	1.7	0.4	1.8	0.3	0.109

Limitations:

It was observed that there were differences in the presentation, complications and outcomes in the community acquired AKI and COVID-19 associated AKI (COVAKI). Due to small sample size and difficulties in capturing data in community acquired AKI, this study is not sufficient to highlight the differences or similarities.

RESULTS AND CONCLUSIONS

Result:

COVAKI was associated with diabetes mellitus (R=24, P=0.001), hypertension (R=28, P=0.001) and CAD (R=7, P=0.01). However, chronic airway disease (P: 0.05) was not associated with development of COVAKI. Advanced age was a risk factor for development of AKI. Mean age of patients having COVAKI was 59.3 years and those not having AKI was 47.2 years (p< 0.0001).

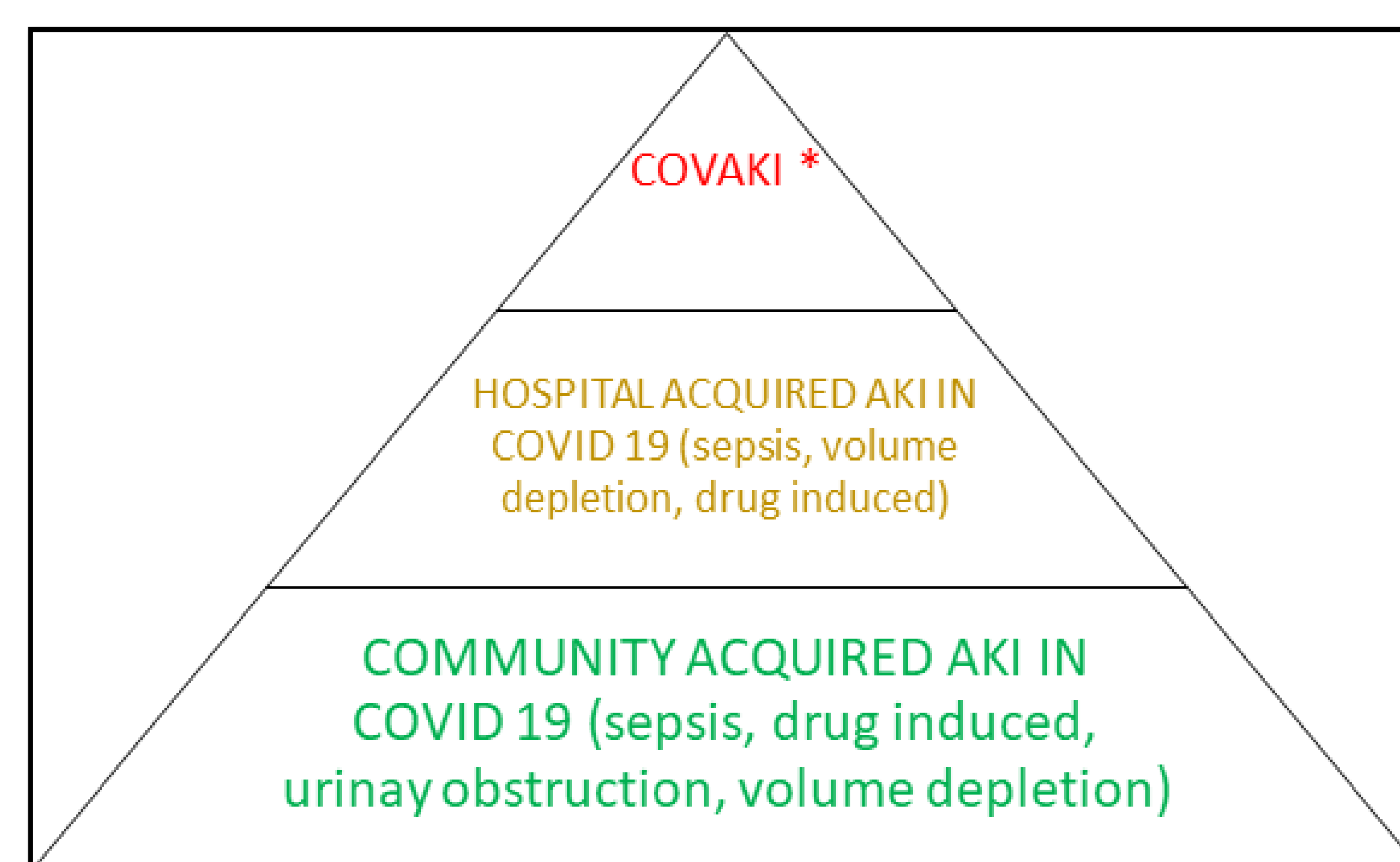
CRP was elevated in patients with COVID-19 associated with AKI (COVAKI) (78.87) but was not statistically significant (p< 0.003). Ferritin was elevated significantly (1619.19) in patients with AKI (p< 0.0001). Similarly, higher levels of D-dimer (426.35) and lower serum albumin (1.86) were associated with COVAKI (P< 0.0001). Average ICU stay was 6 days for patients with AKI and 0.37 days for patients without AKI. Days on the ventilator were 3.3 days for patients with AKI and 0.11 days for non AKI patients. There were 12 deaths of COVID patients out of these 9 who had AKI which was statistically significant (p< 0.0001).

Conclusion:

The phenotype COVAKI was associated with high mortality, prolonged hospital stay, days on ventilator and higher oxygen requirement. Low Serum albumin was observed without a corresponding proteinuria or liver dysfunction. Urinalysis did not show any significant abnormality like active sediment, proteinuria or leukocytes. The development of COVAKI during the hospital stay was associated with use of glucocorticoids, HCQS, and heparin. Such sub-phenotyping of AKI might be helpful for management and prognostication of a significant complication of AKI in patients with COVID-19.

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