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**Acute kidney injury and its outcomes in patients with Covid -19–A
Prospective cohort at a single center in Pakistan**

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Objectives: There is continuous experience that AKI is very common in COVID-19 patients and that SARS-CoV-2 specifically invades the kidneys with poor outcome. To date no data has been found from Pakistan on outcome of AKI with Covid -19 infection. Therefore this study was conducted to help determine the outcome and associated risk factors in this part of the world.

Methods: This is a prospective cohort of Covid -19 adult patients with AKI admitted in Indus Hospital COVID ICU from March 2020 to September 2020. History, clinical examination, laboratory investigations, and ultrasound imaging of the kidneys was acquired from the Health Management Information System (HMIS) record of the patients. The data was analyzed in SPSS version 21. Association between outcomes of AKI with different variables was assessed by applying Chi square test. P value of less than 0.05 was considered significant.

Results: There were total 208 patients with AKI in our study, in which 146 (70.2%) were male while 62(29.8%) were female. The mean age was 60.3± 12.7 years and the most prevalent comorbid was HTN 147(70.7%) in our patients, while the most common cause of AKI was sepsis 188(90.4%) and on the same way, oliguria was the most common symptoms of AKI 76(36.5%). Death was the most frequent outcome of our patients 147(70.7%) as compared to recovery 47(22.6%). There was male predominance in patients, who died with AKI as compared to female 112(76.2%) and 35(23.8%) respectively. Also treatment didn't show any benefit on worst outcome. Similarly 124(59.6%) patients needed ventilatory support in which 118(95.2%) died while only 5 (4%) recovered (p <0.001)

Conclusions: Renal involvement in SARS-COV-2 infection is more common than initially thought and has been associated with increased morbidity and mortality. We have found significant association of AKI in covid-19 with outcome variables.

Table1



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Table:1 Demographic and clinical parameters of Covid patients with AKI	
Variables	N=208 (%) / Mean±Std
Gender	
Male/Female	146(70.2)/62(29.8)
Age (years)	60.3 ± 12.7
Cause of AKI	
Sepsis	188(90.4)
Volume depletion	10(4.9)
Cardiogenic shock	10(4.8)
Sign and symptoms	
Diastolic Blood pressure	72.7±16.5
Systolic Blood pressure	126.8±26
Respiratory rate	25.2± 6.9
Oliguria	76(36.5)
Anemia	60(28.8)
Confusion	63(30.3)
Dehydration	30(14.4)
Drowsiness	58(27.9)
Pedal edema	39(18.8)
Edema	35(16.8)
Vomiting	25(12)
Anorexia	19(9.1)
Nausea	13(6.3)
Hematuria	13(6.3)
Periorbital swelling	9(4.3)
Seizures	2(1)
Coma	1(0.5)
Fever	12(5.8)



Table 2



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Table : 2 Association of demographic and clinical parameters with outcome of AKI						
Variables		Outcome of AKI n=208 (Column %)				
		Recovered 47(22.6)	CKD 14(6.7)	Death 147(70.7)	Total	p value
Age	≤ 50 years	9(19.1)	5(35.7)	25(17)	39(18.8)	0.46
	51 - 64 years	25(53.2)	5(35.7)	72(49)	102(49)	
	≥ 65 years	13(27.7)	4(28.6)	50(34)	67(32.2)	
Gender	Male	27(57.4)	7(50)	112(76.2)	146(70.2)	0.012
	Female	20(42.6)	7(50)	35(23.8)	62(29.8)	
Type of AKI	Hospital acquired	18(38.3)	3(21.4)	94(63.9)	115(55.3)	<0.001
	AKI at arrival	29(61.7)	11(78.6)	53(36.1)	93(44.7)	
Comorbid conditions						
DM	Yes	26(55.3)	7(50)	78(53.1)	111(53.4)	0.932
	No	21(44.7)	7(50)	69(46.9)	97(46.6)	
HTN	Yes	33(70.2)	10(71.4)	104(70.7)	147(70.7)	0.995
	No	14(29.8)	4(28.6)	43(29.3)	61(29.3)	
IHD	Yes	12(25.5)	4(28.6)	34(23.1)	50(24)	0.869
	No	35(74.5)	10(71.4)	113(76.9)	158(76)	
Complications of covid 19						
ACS	Yes	1(2.1)	2(14.3)	8(5.4)	11(5.3)	0.2
	No	46(97.9)	12(85.7)	139(94.6)	197(94.7)	
CCF	Yes	4(8.5)	4(28.6)	11(7.5)	19(9.1)	0.054
	No	46(97.9)	12(85.7)	139(94.6)	189(90.9)	
PVD	Yes	2(4.3)	0(0)	6(4.1)	8(3.8)	0.999
	No	45(95.7)	14(100)	141(95.9)	200(96.2)	
CVA	Yes	2(4.3)	1(7.1)	13(8.8)	16(7.7)	0.672
	No	45(95.7)	13(92.9)	134(91.2)	192(92.3)	

AKI Acute kidney injury, DM Diabetes mellitus, HTN Hypertension, IHD Ischemic heart disease, ACS Acute coronary syndrome, CCF Congestive cardiac failure, PVD peripheral vascular disease, CVA cerebrovascular event