

# COVID-19 CAUSED CHRONIC KIDNEY DISEASE

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- Delayed presentation to the health care unit and symptomatic illness at admission also significantly contributed to mortality in the second wave of covid.
- No conflict of interest

**POS-916**

**MORTALITY RATE AND ASSOCIATED RISK FACTORS IN HOSPITALISED COVID-19 PATIENTS WITH KIDNEY DISEASE**



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**Introduction:** After 2 years, the COVID-19 virus continues to ravage the world. Initial studies have shown increased susceptibility of chronic kidney disease patients to severe infection and mortality. We aim to determine the risk factors for inpatient mortality amongst hospitalised COVID-19 patients with kidney disease.

**Methods:** This is an observational cohort study involving all patients diagnosed with COVID-19 infection with kidney disease in the first quarter of 2021. Kidney disease refers to end stage kidney disease, chronic kidney disease and acute kidney injury. Relevant clinical and demographic data was extracted from the electronic medical records and statistical analysis was conducted using SPSS version 26. Multivariate logistic regression was performed to determine risk factors associated with mortality amongst patients with kidney disease.

**Results:** Of 414 COVID-19 patients, 165 (39.9%) had kidney disease [25.5% end stage kidney disease (ESKD), 4.2% chronic kidney disease (CKD) and 70.3% acute kidney injury (AKI)]. 56 of them died, giving an inpatient mortality rate of 33.9% in patients with kidney disease compared to 17.1% from all COVID-19 admissions. Although statistically not significant, ESKD had the highest mortality rate at 42.9% followed by AKI, 31% and CKD, 28.6% ( $p = 0.365$ ). In those with AKI, significantly fewer patients died (64.3% vs 73.4%,  $p = 0.008$ ). Majority of patients with kidney disease who died, were of older age group ( $66 \pm 10.4$  vs  $54 \pm 14.6$ ,  $p < 0.001$ ), male (78.6% vs 61.5%,  $p = 0.035$ ) and presented with category 5 infection (28.6% vs 19.3%;  $p = 0.009$ ). A higher proportion were Chinese, 44.2% followed by Malays, 31.9% and Indians, 27.8% ( $p = 0.340$ ). 66.1% were on mechanical ventilation while 51.8% were managed in the intensive care unit. Significant associations to death in kidney disease include lethargy with an odds ratio (OR) of 2.11 (1.09-4.09);  $p = 0.026$  and low nadir absolute lymphocyte count [OR 0.197 (0.080-0.486),  $p < 0.001$ ]. Others are raised serum creatinine [OR 1.001(1.00-1.001),  $p = 0.02$ ], peak serum sodium [OR 1.127(1.061-1.196),  $p < 0.001$ ], C-reactive protein [OR 1.004(1.001-1.008),  $p = 0.007$ ] and ferritin [OR 1.0 (1.0-1.0),  $p = 0.007$ ]. A significant number of patients with kidney disease who died also sustained myocardial infarction compared to the survivors (12.5% vs 3.7%,  $p = 0.046$ ). Multiple logistic regression predicted older age, premorbid CKD & ESKD, raised peak serum sodium, admission category of illness 4 & 5, mechanical ventilation and unknown epidemiology link to increase mortality risk (Table 1) in patients with COVID-19 infection with kidney disease.

Table 1. Multiple logistic regression of risk factors for mortality due to COVID-19 infection in patients with kidney disease.

Factor	aOR	95% CI	p-value
Age	1.107	1.062 - 1.155	<0.001
Premorbid CKD & ESKD	4.545	1.556 - 13.279	0.006
Admission Category 4 & 5	3.070	1.137 - 8.289	0.027
Peak Serum Sodium	1.126	1.039 - 1.220	0.004
Mechanical Ventilation	4.980	1.784 - 13.903	0.002
Epidemiology Link Unknown	2.946	1.166 - 7.446	0.022

aOR: adjusted odds ratio, CI: confidence interval, ESKD: End stage kidney disease, CKD: Chronic kidney disease

**Conclusions:** COVID-19 mortality rate remains high amongst those with ESKD, CKD and AKI. Older age, premorbid kidney disease, raised peak serum sodium, higher category of illness, mechanical ventilation and unknown epidemiology link increases its risk. Future studies should evaluate the incidence and outcome of COVID-19 infection in patients with kidney disease post vaccination.

No conflict of interest

**POS-917**

**COVID-19 CAUSED CHRONIC KIDNEY DISEASE**



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**Introduction:** COVID-19 pandemic is a global condition where respiratory disorders caused by SARS-CoV-2 infection are novel things and caused multi-organ damage. This including kidney damage even after negative SARS-Cov2 by swab. COVID-19 occurred inflammation conditions that could worsen kidney.<sup>1</sup> It is very important to consider the condition of patients who hospitalized with COVID-19 became a chronic kidney disease (CKD) and elevated creatinine serum. It was reported from a study at Yale University in March 2021, that patient after recovery from COVID-19, has decreased kidney function up to 32% and increased staging of AKI.<sup>2</sup>

**Methods:** We present the case of a 51years-old man with complaint is swelling of the body. The patient has a history of suffering from COVID-19 with swab PCR about 3 months prior being diagnosed as kidney disorders. In January 2021, he was admitted for COVID-19 for 2 weeks in Boejasin Hospital Pleihari, Indonesia, until the swab was negative. He complained his body get bigger and increased of fatigue after COVID-19. He came to Ulin Hospital Banjarmasin, April 17, 2021, the blood pressure was 180/100 mmHg, without dyspnea, and normal of oxygen saturation. The hemoglobin level was 8.7 g/dl, urea 254 mg/dl, and creatinine 22.8 mg/dl. The urinalysis was proteinuria 2+, glycosuria 1+, microscopic hematuria 1+, leukocyte sediment 4-8, and erythrocyte sediment 3-5. In January 2021, the ultrasound showed normal kidney, and current ultrasound showed blurriness in parenchymal cortex of kidney that indicated a chronic parenchymal disease bilateral. Patient was diagnosed a CKD stage V and underwent renal replacement therapy with hemodialysis.

Table 1. Laboratory Examination

Blood Test				Urine Test		
Laboratory	14/4/21	15/4/21	17/4/21	14/4/21	Reference	
<b>HEMATOLOGY</b>						
Hemoglobin	8.7			14.0-18.0	g/dL	
Leukocyte	5.7			4.0-10.5	k/uL	
Erythrocyte	2.97			4.10-6.00	k/uL	
Hematocrite	25.4			42.0-52.0	vol%	
Thrombocyte	118			150-000	/uL	
MCV	85.5			75.0-96.0	fL	
MCH	29.3			28.0-32.0	pg	
MCHC	34.3			33.0-37.0	g/dL	
<b>DIFF. Count</b>						
Basophile%	0.3			0 - 1	%	
Eosinophile%	13.1			1.0-3.0	%	
Neutrofil%	52.5			50.0-81.0	%	
Limfosit%	14.3			20.0-40.0	%	
Monosit%	9			2.0-8.0	%	
<b>ELECTROLYTE</b>						
Ureaum	254	179	80	0-50	mg/dL	
Creatinine	22.8	15.05	5	0.72-1.25	mg/dL	
<b>URINALYSIS</b>						
<b>MACROSCOPIC</b>						
Colour	Yellow			Yellow	Reference	
Clearance	Cloudy			Clear		
Specific gravity	1.015			-		
pH	7.0			-		
Ketone	Negative			Negative		
Protein	2+			Negative		
Albumin						
Glucose	1+			Negative		
Bilirubin	Negative			Negative		
Blood	1+			Negative		
Nitrite	Negative			Negative		
Urobilinogene	0.2			0.1-1.0		
Leukocyte	1+			Negative		
<b>Urine Sediment</b>						
<b>Reference</b>						
Leukocyte	4-8			0-3		
Erythrocyte	3-5			0-2		
Epithelia	1+			+1		
Crystal	Negative			Negative		
Cylinder	Negative			Negative		
Bacteria	Negative			Negative		
Other	Negative			Negative		



Figure 1a. Abdominal Ultrasound January 2021 showed normal kidney

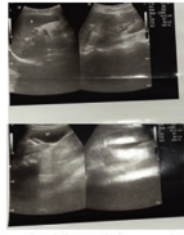


Figure 1b. Abdominal ultrasound April 2021 on admission showed chronic parenchymal bilateral

**Results:** In COVID-19 there is inflammatory reaction caused by the cytokine storm during infection.<sup>1</sup> Those infected cells can be recognized by T-cells and B-cells, and it can trigger an apoptosis to protect the body from virus. This inflammation produces vasoactive mediators in the form of increased angiotensin II and decreased nitrite oxidation which reduces nephron function.<sup>3</sup> The urinalysis results supported the inflammatory conditions in the patient's tubulointerstitial and glomerulointerstitial. The decline of GFR will be even more severe and leads to decrease functional of tubulo- and glomerulo-interstitial, so makes salt retention and edema. Patient's age and his hypertension history could worsen kidney condition after the COVID-19. Inflammation after COVID-19 causes stiffness of the aorta and blood vessels so that blood flow will be disrupted and exacerbated cardiovascular disorders that have previously occurred.<sup>4</sup>

**Conclusions:** Patient after COVID-19, even after being declared negative from COVID-19, may have occurred and worsen condition with multiple organs of body effects. COVID-19 caused the CKD and underwent to routine hemodialysis, likely in this case.

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No conflict of interest

**POS-918**

**ADVERSE EVENTS OF COVID-19 VACCINES IN RENAL TRANSPLANT RECIPIENTS**

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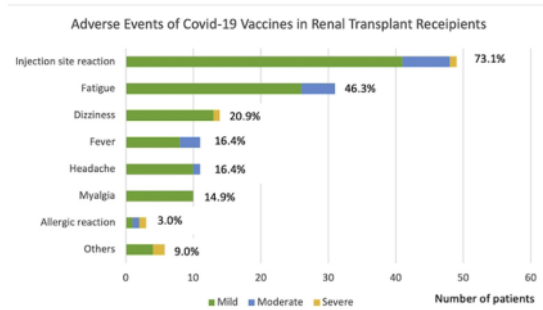
**Introduction:** Immunocompromised patients are particularly at increased risk of getting severe Covid-19 infection and this includes patients with renal transplant. Thus, it is pivotal for this group of patients to receive Covid-19 vaccination which was shown to reduce morbidity and mortality. However, this cohort of patients may have vaccine hesitancy as these vaccines were not tested among renal transplant recipients in clinical trials. There

were also reports of acute renal allograft rejection following Covid-19 vaccination. It is the aim of this study to evaluate the adverse events of Covid-19 vaccines and their severity among renal transplant recipients.

**Methods:** All renal transplant recipients under follow-up in Selayang Hospital who had completed Covid-19 vaccination were included in this study. The demographic data and details of these patients were recorded. Phone calls were made between 15<sup>th</sup> to 19<sup>th</sup> September 2021 to conduct the interview. They were asked to report any adverse events within the first week after first and/or second dose of vaccination. The severity of each symptom was also recorded. Mild adverse events were regarded as discomfort that did not limit oneself from performing usual daily chores, moderate adverse events were those that limited daily activities whilst severe adverse events were those that required medical treatment. Presence of biopsy-proven acute rejection within the first three months following Covid-19 vaccination was also recorded.

**Results:** Out of a total of 151 renal transplant recipients, 67 were managed to be contacted and consented to take part in this study. There were 38 male (56.7%) and 29 female (43.3%) patients with a mean age of 47.7 (SD 14.2) years old. Forty-seven percent was Malay, 43% was Chinese while 10% was Indian. Among them, 92.5% were on prednisolone, 92.5% on calcineurin inhibitors, 71.6% on mycophenolic acid, and 29.9% on everolimus. A majority of 94% patients received Pfizer-BioNTech Covid-19 vaccine (Comirnaty) while 6% received Sinovac Covid-19 vaccine (CoronaVac).

The three most common adverse events reported were injection site reaction (73.1%) followed by fatigue (46.3%) and dizziness (20.9%). Besides, patients also experienced fever (16.4%), headache (16.4%) and myalgia (14.9%). Only 3% of the patients had allergic reaction while 9% experienced other adverse events such as acute renal allograft rejection and infections.



A total of five patients (7.5%) developed severe adverse events. The first patient developed borderline T-cell-mediated rejection six weeks after second dose of Comirnaty vaccine. The second patient sustained left arm cellulitis at the site of vaccine administration, one week after second dose of Comirnaty vaccine. The third patient had shingles over left T11 dermatome, four days after second dose of Comirnaty vaccine. The fourth patient developed allergic rash a few hours following second dose of Comirnaty vaccine. The last patient developed dizziness and had a fall a few hours after his second dose of CoronaVac vaccine. He did not sustain any fracture or haematoma from the fall.

**Conclusions:** Most of the adverse events that occurred following Covid-19 vaccination were mild in nature. However, further study with more patients were needed to evaluate the risk of severe adverse events resulted from Covid-19 vaccination among renal transplant recipients.

No conflict of interest

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