



CLINICAL PROFILE AND OUTCOMES IN CHRONIC KIDNEY DISEASE STAGES PATIENTS ON DIALYSIS HOSPITALIZED WITH COVID-19 INFECTION

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BACKGROUND

The CKD5D patients with reduction in kidney function are vulnerable to COVID-19-related critical illness, marked by multisystem organ failure, thrombosis, and a heightened inflammatory response. Understanding the outcomes of COVID-19-infected patients with and without ESRD is important because this information would help risk-stratify patients with ESRD to certain therapies for COVID-19 as they arrive at the hospital.

METHODS

- RESEARCH DESIGN: Prospective Observational Descriptive study
 - RESEARCH SETTING: Tertiary care hospital
 - NUMBER OF PATIENTS: 60
- The study enrolled 30 CKD5D patients on maintenance hemodialysis and 30 Non-CKD patients with qualitative reverse transcription polymerase chain reaction (RT-PCR) or rapid antigen test (RAT) positive for SARS-CoV-2 on a nasopharyngeal or oropharyngeal swab, and compared their clinico-laboratory profile and outcomes in terms of mortality or discharge or time to COVID negative.

Exclusion Criteria:

- Patients on immunosuppressive chemotherapy
- Patients living with HIV-AIDS (PLHIV)
- Patients with known malignancy
- Patients with Obstructive airway disease and known coronary artery disease

Outcome was recorded as

- Recovery- time to discharge or covid negative status was recorded from symptoms onset
- Deterioration or
- Death.

STATISTICAL ANALYSIS

- Quantitative data was expressed in mean or median and standard deviation and student's t-test or Z test was applied.
- Proportions for categorical variables was compared using the chi square or Fisher exact test.
- A logistic regression multivariate model to adjust factors associated with confirmed COVID-19 was made.
- "p" value <0.05 was considered as statistically significant.

RESULT

In the presented study, the mean age was lesser among CKD5D patients. The most common comorbidity was hypertension (83.33% in CKD5D patients and 70% in non-CKD group) followed by diabetes mellitus (70% in CKD5D patients and 50% in non-CKD patients) in both the groups. There was no significant difference between the two groups based on the comorbidity profile. The most common symptom being cough in both the CKD 5D (73.33%) and non-CKD (83.3%) group.

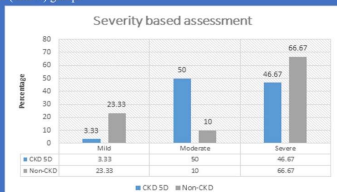


Figure 1: The proportion of patients with moderate disease was significantly higher in the CKD patients (50% vs 10%).

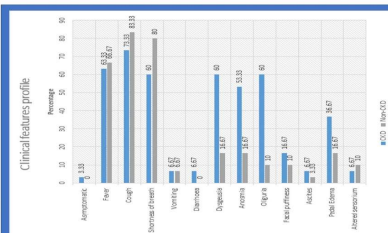


Figure 2: The proportion of patients with CKD 5D having dysgeusia (60% vs 16.67%) and anosmia (53.33% vs 16.67%) was significantly higher compared to the non-CKD group of patients.

LABORATORY PARAMETERS

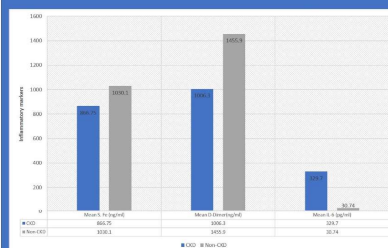


Figure 3: The mean levels of serum ferritin and D dimer were slightly higher for the non-CKD group whereas the average IL-6 levels were higher for the CKD 5D groups of patients (329.7 pg/ml vs 30.74 pg/ml).

Among CKD5D patients, the higher IL-6 and D-dimer levels were associated with increased severity of COVID-19.

The CKD 5D patient with higher D-dimer levels (977.5 vs 574.5 ng/ml, P<0.01) required critical care.

There was no significant difference in terms of Neutrophil-Lymphocyte ratio.

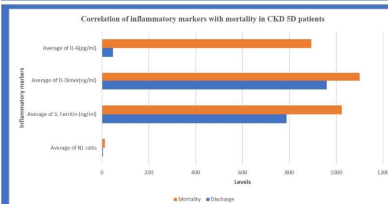


Figure 4: A higher IL-6 (894.27 vs 474.1pg/ml, P=0.0214), NL ratio (12.35 vs 5.03, P=0.0013) and lower lymphocyte count (9.70 u/L vs 19.50 u/L) was significantly associated with increased mortality.

CKR findings	Discharge(%)	Mortality(%)	P value
ATYPICAL	6 (30)	4 (40)	0.5902
TYPICAL	14 (70)	6 (60)	
Grand Total	20	10	

Figure 5: Although the above table shows higher number of discharged patients with typical and dead patients with atypical findings on chest x-ray, the difference was not statistically significant.

OUTCOME

Mortality was higher in the CKD 5D group (33.33% in CKD5D vs 23.33% in non-CKD, p=0.3940).

A significantly higher number of patients who experienced mortality had ICU stay and invasive mechanical ventilation.

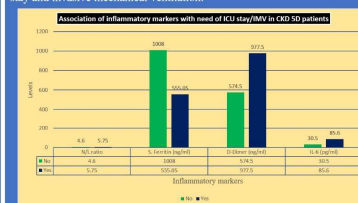


Figure 6: A significantly higher D-dimer levels were found in those CKD 5D patients who required critical care with ICU stay and higher support of ventilations- NIV (BiPAP)/invasive mechanical ventilation during hospitalisation (977.5 vs 574.5, P<0.01). Also these patients, had higher IL-6 levels and NL ratio with lower ferritin levels but the difference was not statistically significant.

The mean duration to discharge or death was significantly higher for the CKD 5D group (27.10 days vs 16.20 days, P=0.0004).

The CKD 5D group had longer duration of hospital stay (8-58 days).

The CKD5D patients needed 26±11.14 days to turn COVID negative and recover, significantly higher than 15.39±7.79 days among non-CKD patients

CKD AS A PREDICTOR OF MORTALITY (MULTIVARIATE REGRESSION)

- The CKD 5D patients were associated with 3.3 times higher odds of death (aOR=3.386) compared to the non-CKD patients after adjusting for age and gender.
- The CKD 5D patients on dialysis were associated with 3.2 times higher odds of death (aOR=3.188) compared to the non-CKD patients after adjusting for age, hypertension, and diabetes.
- It was observed that CKD was associated with 7.19 times higher odds (aOR= 7.19) for mortality compared to the non-CKD patients after adjusting for age and biochemical parameters (including the major inflammatory parameters- IL-6, Neutrophil and lymphocyte levels).

Patients with diabetes had a 1.77 times elevated risk of death (aOR=1.773) compared to the non-diabetic patients after adjusting for age, hypertension, and CKD.

The patients with hypertension were associated with 14% lower odds of death (aOR=0.861) after adjusting for the age, DM, and CKD status.

SURVIVAL ANALYSIS

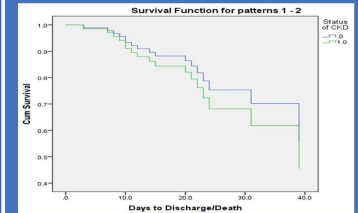


Figure 7: shows the survival function of the CKD stage 5 patients on dialysis hospitalized with COVID-19 infection depicted with green line. It is continuously lower than the non-CKD patient's survival function line (blue line) suggestive of lower survival for a particular given duration of hospital stay.