



CLINICAL PROFILE OF CKD PATIENTS IN COVID 19 DISEASE

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ABSTRACT **Aims And Objectives-** To study the clinical profile of CKD patients in covid 19 disease.

Methods- This study included patients admitted with COVID 19 positive status and underlying Chronic kidney disease. Total of 50 patients were included and clinical and laboratory data were retrospectively obtained through review of medical records. It was an observational study. The study was conducted at Department of General Medicine, Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, Uttar Pradesh, India.

Results- Patients with CKD and COVID 19 disease have increased risk of mortality. Patients with additional comorbidity such as diabetes and hypertension also contribute to the same. Age also seems to play an important factor in the mortality with increased rate among those who are > 50 years of age (87%). Females have more deranged renal profile than males and also increased levels of inflammatory markers as compared to males.

Conclusion- This study reveals there is increased risk of mortality among CKD patients with COVID 19 disease. There is increased risk of mortality among females as compared to males. Older adults with age >50 years also more prone for severe disease as compared to younger adults. There is a need for further study in this area, extending the study to a larger group.

KEYWORDS : Covid 19, CKD, Renal Profile, Hemodialysis

INTRODUCTION

Globally, as of 25 October 2021, there have been 243,260,214 confirmed cases of COVID-19, including 4,941,039 deaths, reported to WHO. (1)

In India, from 3 January 2020 to 25 October 2021, there have been 34,189,774 confirmed cases of COVID-19 with 454,712 deaths, reported to WHO. (1)

Since detection of SARS-CoV-2 in early December 2019 in Wuhan, China, there has been many studies on epidemiological, demographic, and clinical features of this pandemic virus. However, it is still not well established whether the patient's sex, age, or comorbid diseases were associated with greater risk of SARS-CoV-2 induced severe adverse clinical outcome, for example, mortality. Due to rapid spread all over the world, it can be predicted that patient's sex, age, and comorbidity might render these patients more vulnerable to either increased mortality or increased risk of infection. (2)

Patients with renal diseases, including the whole spectrum from kidney transplant (KT) to maintenance hemodialysis (MHD) patients, are at high risk for infection and pneumonia, both bacterial and viral. (3,4)

In a recent publication, the Global Burden of Disease collaboration suggested that worldwide, CKD is the most prevalent risk factor for severe COVID-19 infection. Moreover, the distribution of risk factors for COVID-19 mortality appears to be different in patients with CKD when compared with the general population. The high prevalence of CKD in combination with the elevated risk of mortality from COVID-19 in CKD demands urgent action for this group of patients. (5)

The Global Burden of Disease (GBD) collaboration, recently addressed the prevalence of risk factors for severe COVID-19 worldwide (6,7). The GBD produces age, sex and country specific health estimates using highly standardized, validated approaches applied to all available data sources and adjusting for major sources of bias. The GBD estimated the number of individuals who are at increased risk of severe COVID-19 by age, sex and country for 188 countries using 2017 prevalence data and UN population estimates for 2020. This study estimated the global population at high risk for severe COVID-19 to be 22% of the global population, of whom 349 million would require hospital admission if infected. The most prevalent risk factor for severe COVID-19 worldwide was found to be CKD (6). It was the most common risk factor and as frequent as CVD at any age.

In this study we are trying to study the clinical profile of CKD patients

in covid 19 infection using clinical and laboratory parameters.

METHODS-

This was an observational study. Cases include patients admitted with COVID 19 positive status and underlying Chronic kidney disease. The present study was conducted at department of General Medicine, Shri Ram Murti Smarak Institute of Medical Sciences Bareilly, Uttar Pradesh, India.

Inclusion Criteria

Patients with Chronic kidney disease with or without maintenance hemodialysis.
· Patients with Positive COVID 19 RTPCR test.

Exclusion Criteria

· Age < 18 yrs of age.
· Patients with Negative COVID 19 RTPCR test.

The study protocol has been evaluated and approved by the department and institutional review committee.

Methodology

A retrospective study was done on all patients admitted in hospital with Chronic kidney disease and having covid 19 positive status. Clinical and laboratory data were retrospectively obtained through review of medical records. Variables included were age, sex, comorbidities, laboratory parameters and outcomes. Testing for presence of the SARS-CoV-2 virus was done using qualitative reverse transcription PCR (RT-PCR). Confirmed COVID-19 ((+) COVID-19) corresponds to a patient with positive PCR SARS-CoV-2 assay of a specimen collected on a nasopharyngeal swab or bronchoalveolar lavage.

Statistical Analysis

The results were analyzed using SPSS software. Values were expressed as a percentage of each group or as mean $\pm$ SD unless otherwise stated. t Test was used to test the difference between two means. On the basis of p value, we defined the significance of above mentioned statistical variables. P value < 0.05 was taken to be significant.

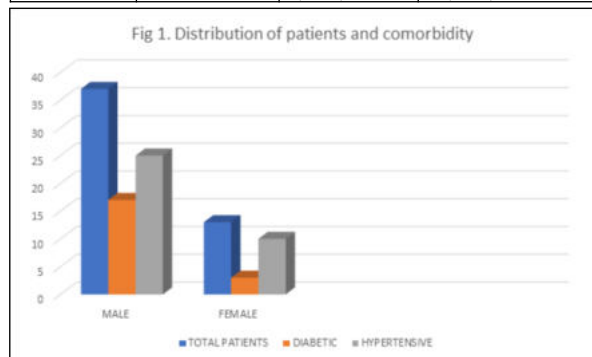
RESULTS-

Total patients studied were 50. Out of which 37 patients were male (74%) and 13 were female (26%). Out of these 20 patients were found to be/ or had prior history of diabetes mellitus (40%) and 35 patients were found to be/ or had prior history of hypertension (70%). (Fig. 1)

Different characteristics of patients were assessed and following data

was obtained. Values expressed are mean values with respective standard deviation associated with them.

GENDER	TOTAL PATIENTS	DIABETES	HYPERTENSION
MALE	37	17(45%)	25(67%)
FEMALE	13	3(23%)	10(76%)

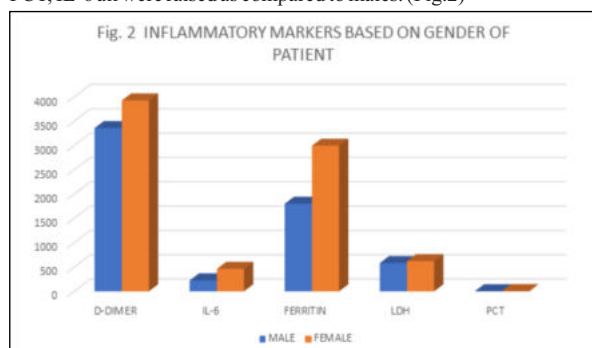


CHARACTERISTICS		MALE(n=37)	FEMALE(n=13)
AGE		52.94(±14.27)	52.08(±16.21)
COMORBIDITY	T2DM	17	25
	HTN	25	10
LABORATORY VALUES	Hb	9.0(±2.03)	9.60(±1.751)
	TLC	12477.3(±6320.6)	13169.2(±4971.82)
	PLATELET	2.346(±0.91)	2.236(±0.936)
	UREA	124.8(±44.3)	145.69(±43.75)
	CREAT	7.21(±3.54)	8.715(±4.029)
	SODIUM	134.40(±19.06)	137.23(±6.747)
	POTASSIUM	4.99(±0.933)	5.184(±0.952)
	URIC ACID	6.52(±1.786)	6.603(±1.845)
	CALCIUM	8.218(±1.90)	8.91(±1.45)
	PHOSPHORUS	6.253(±1.86)	6.55(±2.103)
	DDIMER	3355.51(±5004.82)	3922(±3595.7)
	IL6	225.77(±402.59)	461.26(±755.92)
	FERRITIN	1800.89(±2589.06)	2992.6(±4662.46)
	LDH	582.284(±183.926)	620.75(±200.07)
	PCT	3.266(±3.027)	4.204(±4.71)
HEMODIALYSIS		20(54%)	8(61%)
DEATH		4(10%)	3(23%)

All the patients were hospitalized and were covid 19 positive. Patients were managed in wards and ICU according to the clinical condition of the patient. Total 28 patients underwent hemodialysis (56%), of which 20 were males and 8 were females.

The three major symptoms observed in these patients were fever, cough and dyspnea. Other common symptoms included myalgia and swelling of both lower limbs.

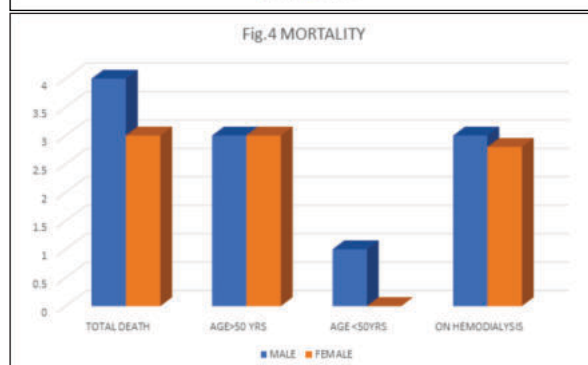
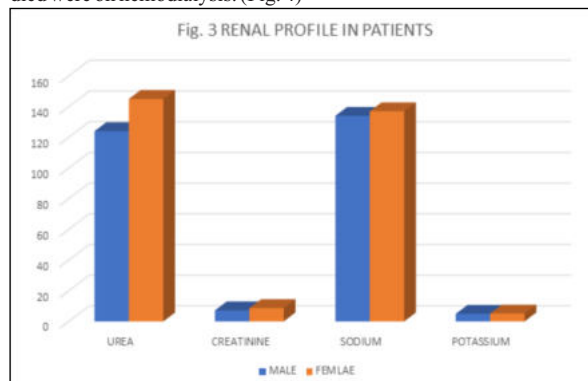
Females showed increased levels of inflammatory markers as compared to males. Serum levels of D-DIMER, LDH, FERRITIN, PCT, IL-6 all were raised as compared to males. (Fig.2)



Renal profile of patients also showed greater derangement in females as compared to males. (Fig. 3)

Total of 7 patients suffered mortality out of which 4 were male(57%) and 3 were female (43%). When compared age wise, mortality was significantly higher in patients with age group > 50 yr (87%). Patients on hemodialysis also suffered greater risk of mortality, 6 patients who

died were on hemodialysis. (Fig. 4)



DISCUSSION-

With the growing number of cases worldwide and in India there is a need for understanding the risk factors which can lead to mortality in severe covid 19 infection.

COVID-19, currently a pandemic, produces high morbidity in the elderly and in patients with associated comorbidities. Because of their existing comorbidities, repeated unavoidable exposure to hospital environment and immunosuppressed state due to CKD-5, patients on hemodialysis are vulnerable group. These patients are therefore not only more prone to acquire infection but also develop severe diseases as compared to general population.(8)

This study observed that female patients having Chronic kidney disease had more deranged renal profile and increased mortality than male patients. Age also seems to play an important factor, as patients with age > 50 years were more affected than patients with age < 50 years of age.

Various studies have been done in over last 2 years, studying various aspects of covid 19 infection but limited work has been done in studying the associated comorbidities and risk factors.

According to one study, if we rely on only reported deaths, combining waves 1 and 2, as of May 15, while India reported a total of nearly 25 million cases and 270 thousand deaths, the estimated number of infections and deaths stand at 491 million (36% of the population) and 1.21 million respectively, yielding an estimated (combined) infection fatality rate of 0.25%.(9)

In a study conducted by Zhu L, She Z-G, Cheng X, Qin J-J, Zhang X-J, et al. patients with type 2 diabetes were also more likely to have increased severity of COVID-19. In a study of 7337 patients with COVID-19 with and without type 2 diabetes, it was shown that those with type 2 diabetes required increased interventions for their hospital stay versus those that were nondiabetic. (10)

In a study conducted by Biswas M, Rahaman S, Biswas T, K, Haque Z, Ibrahim B, it was shown that patients with age ≥ 50 years were at a significantly massive risk of mortality compared to those aged < 50 years. Mortality was significantly higher in those patients with kidney disease, cerebrovascular disease, cardiovascular disease, respiratory disease, diabetes, hypertension, and cancer.(11)

CONCLUSION-

In this study we concluded that most of the patients had complaints of

fever and cough. Female patients were at higher risk of mortality although overall mortality was also higher if compared to nationwide case fatality rate of covid 19 disease. Inflammatory markers were significantly elevated in both males and females. Old patients with age > 50 years of age had significantly higher mortality than young patients. Patient on hemodialysis are also associated with increased risk than patients who were not on hemodialysis.

Conflict Of Interest Statement

The author declare no conflict of interest.

Funding Sources

No funding was available for this research

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