

COVID-19 Infection in Kidney Transplant Recipients: A Single Centre Study from Northern India

Chris Tucker*

Editorial Office, Journal of Kidney, Brussels, Belgium

Corresponding Author*

Chris Tucker
Editorial Office, Journal of Kidney, Brussels, Belgium
E-mail: info@longdom.org

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Abstract

The 2019 Coronavirus Disease (COVID-19) has caused substantial morbidity and mortality throughout the world. COVID-19 outcomes in transplant patients can be influenced by pre-immunosuppression as well as other co-morbidities. This was a single-center prospective cohort research of Kidney Transplant Recipients (KTRs) who received a kidney transplant between December 2012 and November 2020, were followed up at our center, and were diagnosed with COVID-19 disease between April 1 and November 30, 2020. Due to their immunosuppression, patients who have had a kidney transplant are at a significant risk of contracting COVID-19. Initial symptoms in COVID-19-positive KTRs are comparable to those seen in the general population. In comparison to the general population, KTRs have a greater mortality rate.

Keywords: COVID-19 • Immunocompromised • Immunosuppression • Kidney transplant recipient • Morbidity • Mortality

Introduction

The novel coronavirus (severe acute respiratory syndrome coronavirus-2) was originally discovered as the source of a new viral respiratory ailment, coronavirus disease 2019, in Wuhan, Hubei Province, China, before the end of 2019. (COVID-19) [1]. Despite international efforts to restrict COVID-19, additional cases were discovered throughout the world by January 2020, prompting the World Health Organization to declare COVID-19 a pandemic in March 2020 [2]. On January 30, 2020, the first case of COVID-19 in India, which originated in China, was recorded [3]. On March 12, a 76-year-old man with a history of travel to Saudi Arabia became India's first COVID-19 fatality [4]. Since then, the number of patients has climbed at an exponential rate across the country. As the COVID-19 pandemic spreads, evidence of severe morbidity emerges on a daily basis, as evidenced by increased hospitalization rates in Intensive Care Units (ICUs) and high fatality rates. Because of immunosuppressive (IS) drug usage and pre-existing co-morbidities such as diabetes, hypertension, and cardiovascular disorders, solid organ transplant patients, including Kidney Transplant Recipients (KTRs), are at a very high risk of significant COVID-19 consequences.

Methods

This is a prospective cohort research involving all patients who had a kidney transplant at our institution between December 2012 and November 2020 and were diagnosed with COVID-19 illness between April 1 and November 30, 2020. The goal of this study was to look at the prevalence, demographics, co-morbidities, clinical and functional characteristics, and survival rates of COVID-19 illness in a group of kidney transplants. A positive result on a real-time Polymerase Chain Reaction (PCR) test of nasal and/or pharyngeal swab specimens was characterized as COVID-19 positivity. A second nasopharyngeal swab was conducted if the patient had a clinical presentation or radiologic imaging consistent with COVID-19

infection after a first negative quantitative RT-PCR. Patients were either hospitalized or sent home depending on the severity of their initial appearance. Demographics, recent exposure history, immunosuppression changes, clinical signs and symptoms, and laboratory data were manually evaluated in all charts. Patients were classified as mild, moderate, severe, or critical, according to WHO guidelines, and their baseline characteristics were compared. The following criteria for inclusion and exclusion were followed.

- All live and deceased donor KTRs were included in the study
- You must be at least 18 years old
- All KTR patients who were currently being followed up on
- COVID-19 illness patients admitted to the hospital and those who chose home care

Patients who had graft failure and had to return to dialysis were excluded.

This prospective study, done at our institution, aims to gain a better knowledge of COVID-19 illness in immunocompromised post-renal allograft patients. Obesity, diabetes, and hypertension are all independently linked to COVID-19 illness in kidney transplant recipients, according to our findings. Other research throughout the world have come up with similar results [5]. These risk variables have also been linked to COVID-19 infection in the general population [6]. COVID-19 illness was not associated with any particular age group, sex, ABO blood group, or cigarette smoking in our analysis, which was comparable to earlier investigations [5]. COVID-19 illness was shown to be more prevalent in various blood groups in other research including the general population [7]. Patients with COVID-19 are more likely to get organs from live donors (95.1%), owing to the fact that dead donor transplantation is less common in our region and nation than living donor transplantation. In investigations conducted at Columbia (80%), Paris (97%) and New York (77%) who were infected with COVID-19, KTRs from deceased donors were found to be more numerous, although [8] found that live donors were 50% and deceased donors were 40%.

Because of the positive outcomes reported in the general population, Remdesivir was employed widely in our study. It was utilized in 64.5% of instances, with the majority of them being of moderate-to-severe severity. As the epidemic progressed, so did its usage. It was utilized less often in other research [1] found that it was utilized in just 3% of instances. It was provided in 8% of instances according to them [9]. In our study, tocilizumab was provided in 3.2% of patients. In comparison to it was reported that it was provided in 20% of instances [10] reported that it was given in 30% of cases, and reported that it was given in 5% of cases [11]. It was provided in just 2% of instances according to a Paris research [12]. The variation in the number of cases where it was provided might be attributed to the precise indication of its use.

Results

COVID-19 positivity was found in 62 kidney transplant patients. Their median age ranged from 19 to 61 years old. Males were the ones that got affected the most (87.1%) [13]. The most prevalent symptom was fever (77.42%). Thirteen (20.9%) had a mild type of the condition, 32 (51.6%) had a moderate form, and 17 (27.4%) had a severe form [14]. Based on the initial symptom, 18 (29.03%) received home therapy, 29 (46.7%) received isolation ward treatment, and 15 (24.1%) received critical care unit treatment [15]. Reduced immunosuppressant doses (antimetabolites in 67.7%, calcineurin inhibitor in 22.5%) were used as the first line of therapy in the majority of cases [16]. Remdesivir was prescribed in 64.5% of cases, while anticoagulant medication was prescribed in 54.84%. In our investigation, the mortality rate was 14.5%.

Conclusion

COVID-19 is more likely to occur in people who have had organ

transplants. Because of the reduced immunosuppression, we believe that KTRs infected with COVID-19 should be continuously watched. Symptoms are identical to those experienced by non-transplant recipients. Each case must be carefully assessed and handled based on age, risk factors, infection severity, IS regimen, immunological condition, and side effects.

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