Doubtful Clinical Benefit of Casirivimab-Imdevimab Treatment for Disease Severity Outcome of High-Risk Patients with SARS-CoV-2 Delta Variant Infection

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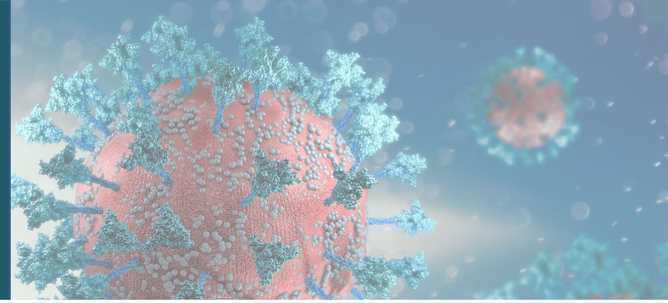

BACKGROUND

The ongoing coronavirus disease 2019 (COVID-19) pandemic continues to be a global threat. REGEN-COV, a combination of 2 neutralizing monoclonal antibodies, casirivimab and imdevimab has been shown to reduce the viral load, shorten the symptoms duration, reduce the need for hospitalization and the risk of death in high-risk non-hospitalized patients. Delta variant became a variant of concern by World Health Organization (WHO) on May 11, 2021,but there are only sparse data on Casirivimab/imdevimab therapy clinical benefit against the Delta variant and specifically with respect to its effect among vaccinated patients.

AIMS

To explore Casirivimab/Imdevimab therapeutic effect on COVID-19 severity outcome in terms of room air saturation <93% within 14 days of initial presentation and 45-day all-cause mortality among high-risk patients with SARS-CoV-2 Delta variant infection and compare its effect between vaccinated and unvaccinated patients.

METHODS

We conducted a retrospective cohort study at a tertiary care medical center between 6/2021 and 9/2021 and included patients who presented with a positive PCR for SARS-CoV-2 and fulfilled the criteria for Casirivimab/Imdevimab treatment.

RESULTS

TABLE 1 Comparison of epidemiological and clinical characteristics of patients with and without severe disease outcome

Characteristic	No severe disease outcome (n=309) (N, %)	Severe disease outcome (n=50)(N, %)	P value
Age (mean±SD)	57.5±20.9	68.7±19.6	**<0.001**
Sex (female)	167 (53.8)	23 (46.0)	**0.53**
Vaccination status			
At least one dose	183 (66.3)	26 (55.3)	**0.18**
≥2 doses	180 (58.3)	23 (46.0)	**0.12**
3 doses	51 (16.5)	6 (12.0)	**0.53**
Recovered	10 (3.7)	2 (4.2)	**>0.99**
Risk factors			
Heart disease	72 (23.3)	17 (34.0)	**0.11**
Lung disease	51 (16.6)	8 (16.0)	**>0.99**
Diabetes Mellitus	74 (23.9)	19 (38.0)	**0.05**
Chronic kidney disease	25 (8.1)	12 (24.0)	**0.002**
Immunosuppression	100 (32.5)	14 (28.0)	**0.62**
Pregnancy	32 (10.4)	3 (6.0)	**0.44**
Days from symptoms onset (mean±SD)	3.7±2.6	4.7±3.2	**0.01**
Days from positive PCR (mean±SD)	2.7±2.6	3.0±2.9	**0.40**
Symptoms	266 (86.9)	38 (84.4)	**0.64**
Vital signs (mean±SD)			
Pulse (bpm)	84.1±16.7	91.0±13.4	**0.06**
Saturation (%)	96.9±2.0	94.4±3.5	**<0.001**
Systolic Blood Pressure (mmHg)	132.0±20.8	134.4±21.3	**0.46**
Diastolic Blood Pressure (mmHg)	74.8±12.4	73.4±13.1	**0.48**
Body temperature (Celsius)	37.3±0.7	37.6±0.9	**0.008**
Laboratory results (mean±SD)			
WBC (K/uL)	7.6±9.2	9.5±13.8	**0.23**
Neutrophil/lymphocytes ratio	4.9±5.8	7.0±7.6	**0.03**
CRP (mg/dL)	36.3±45.3	73.7±57.0	**<0.001**
CXR positive findings at presentation	80 (39.6)	35 (77.8)	**<0.001**
Casirivimab/Imdevimab treatment (yes)	92 (29.8)	24 (48.0)	**0.01**
Other treatment during hospital stay			
Anticoagulation	24 (7.8)	31 (62.0)	**<0.001**
Steroids	39 (12.5)	16 (34.8)	**<0.001**
Abx	20 (6.5)	13 (26.0)	**<0.001**
LOS (days) (mean±SD)	3.7±6.3	6.6±6.7	**0.01**

RESULTS

Of the 359 suitable patients (52% female, median age 63 years), 116 were treated with Casirivimab/Imdevimab and 243 were not. Two-hundred and one patients (56%) had received at least 2 SARS-CoV-2 vaccinations. Casirivimab/Imdevimab treatment was not an independent protective factor of COVID-19 severity outcome (multivariable analysis). Chronic kidney disease (aOR=3.51 [95%CI: 1.34-9.20], *P*=0.01), lower saturation levels (aOR=0.7 [95%CI: 0.58–0.85], *P*<0.01), abnormal chest x-ray findings (aOR=2.92, [95%CI: 1.24–6.87, *P*=0.01), and higher C-reactive protein levels (aOR=1.01 [95%CI: 1.00–1.01], *P*=0.008) were independent risk factors of COVID-19 severity. Positive immunization status was an independent protective factor (aOR=0.33 [95%CI: 0.14–0.77], *P*=0.01). A sub analysis of patients treated with Casirivimab/Imdevimab revealed no significant difference in COVID-19 severity between vaccinated and unvaccinated patients.

CONCLUSIONS

We found no added benefit to the administration of Casrivimab/Imdevinab monoclonal antibody therapy to a mostly vaccinated high-risk population with an early delta variant of SARS-COVID-19 infection. Additional studies of new variants in the vaccination era are needed to explore the effect of monoclonal antibody therapy on the severity of disease outcome.