Evaluating the effects of casirivimab-imdevimab in mild-to-moderate COVID-19 disease: a matched cohort study

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Background

- The coronavirus disease 2019 (COVID-19) pandemic has negatively impacted the lives of millions of people around the world and has overwhelmed healthcare systems
- In November 2020, the FDA issued an Emergency Use Authorization (EUA) for casirivimab-imdevimab (CAS-IMD) for the treatment of mild to moderate COVID-19 in certain high risk patients
- CAS-IMD is a monoclonal antibody cocktail that binds to COVID-19 spike protein receptor. Delta was the predominant strain in the US at the time

Study Objective

- To evaluate if the administration of CAS-IMD to COVID-19 patients in the ED resulted in fewer hospitalizations and ED re-admissions

Outcomes

Primary Outcome

- Percentage of COVID-19 patients who returned to the ED or were admitted to the hospital with COVID-19 related symptoms within 30 days of ED discharge

Secondary Outcomes

- Vaccination status
- Subset analysis of severity of illness: (ICU vs non-ICU status, requiring mechanical ventilation, receipt of remdesivir +/- tocilizumab in hospitalized patients

Study Design and Methods

- Multicenter retrospective chart review of ED encounters between June 2021 and December 2021

Inclusion Criteria

- Patients ≥18 years of age
- First presentation to the ED for COVID-19 symptoms <10 days and tested positive within 72 hours
- Discharged home with treatment or received CAS-IMD (IV or SC)
- Met local restriction criteria for CAS-IMD according to EUA

Exclusion Criteria

- COVID-19 symptoms >10 days
- EUA exclusion for CAS-IMD

Statistical Analysis

- Continuous variables: Two-sample t-test or Wilcoxon rank sum test
- Categorical variables: Pearson's chi-square test or Fisher's exact test
- Analyses were performed based on an overall significance level of 0.05, using SAS software

Results

- Patients (N = 176) were matched 1:1 in each group. The odds of hospitalization in the CAS-IMD group were 81% lower than the control group. After adjustment of covariates, the adjusted odds ratio remained significant

Results

Baseline Characteristics

Factor	Control (n=88)	Case (n=88)	P-value
Age	54.9 ± 20.2	56.3 ± 17.5	0.62
BMI	27.0 [23.8, 33.0]	29.7 [26.6,35.2]	**0.010**
HTN	28 (31.8)	42 (47.7)	**0.031**
DM	16 (18.2)	17 (19.3)	0.82
Asthma	12 (13.6)	11 (12.5)	0.85
COPD	5 (5.7)	3 (3.4)	0.72
Race Categories			0.90
Gender			0.36

Primary Outcome

Primary Outcome	Control (n=88)	Case (n=88)	Statistics
Readmission within 30 days	36 (40.9)	11 (12.5)	OR 0.19, 95% CI: (0.081-0.46) P-value <0.001 Adjusted covariates OR 0.12, 95% CI: (0.025 -0.57) p=0.008

Secondary Outcomes

Secondary Outcomes	Control (N=88)	Case (N=88)	p-value
Vaccination status	23 (26.1)	30 (34.1)	0.25
Hospital LOS	3.0 [2.0, 6.0]	4.0 [3.0, 5.0]	0.57
ICU admission	2 (6.1)	0 (0.00)	0.99
Mechanical ventilation	1 (3.0)	0 (0.00)	0.99
No additional treatment	20 (62.5)	8 (88.9)	0.40
Remdesivir	11 (34.4)	1 (11.1)	
Remdesivir-Tocilizumab	1 (3.1)	0 (0.00)	

Conclusion

- CAS-IMD use for mild-to-moderate COVID-19 infection in ED patients was associated with lower ED readmissions and hospitalizations
- Due to the EUA being rescinded, CAS-IMD is no longer available to be used as a COVID-19 treatment option
- Implementing a monoclonal antibody in the ED for COVID-19 treatment had a positive clinical impact

References

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Disclosure

The investigators declare no conflicts of interest.