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Descriptive Analysis of MAB Administration for Pregnant Patients with SARS-CoV-2 Infection

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INTRODUCTION

- COVID-19 hospitalization and case-fatality rates in pregnant women are significantly higher than those in similar age adults.
- While treatment with monoclonal antibodies (MAB) has been shown to decrease the risk of progression to severe COVID-19, robust pregnancy-specific data is lacking.
- This study serves to add to the current knowledge regarding the safety and efficacy of MAB usage against COVID-19 infection during pregnancy.

METHODS

- This was a cross-sectional descriptive multi-center study of one healthcare system in suburban New York.
- Inclusion criteria: Pregnant women who received MAB against mild COVID-19 Infection from January 2021 to January 2022
- Data was collected through electronic medical chart review.
- The primary outcomes assessed were infusion-related adverse events and 30-day all-cause mortality. Infusion-related adverse events were graded as per the National Cancer Institute Common Terminology Criteria for Adverse Events.
- The secondary outcomes assessed were hospitalization for COVID-19 infection, ICU admission for COVID-19 infection, and pregnancy outcomes within 1 month of MAB infusion.
- Data for 30-day all-cause mortality and data for 30-day pregnancy adverse outcomes was available on 88.7% (125) of the subjects due to lack of follow-up within the Health system's EMR.

OUTCOMES	PATIENTS (N = 141)
Product of monoclonal antibody infused – No. (%)	
CasiriviMAB/imdeviMAB	105 (74.5)
BamlaniviMAB/eteseviMAB	1 (0.7)
SotroviMAB	33 (23.4)
BebteloviMAB	0 (0)
TixageviMAB/cilgaviMAB	0 (0)
Unknown	2 (1.4)
Median number of days from onset of symptoms or documented positive COVID-19 test to MAB administration (IQR) in days	4 (3 – 6)
Adverse infusion-related reactions – No. (%)	
Yes	4 (2.8)
No	137 (97.2)
Type of Infusion-based adverse reaction – No. (%)	
Shortness of breath	2 (1.4)
Fever	1 (0.7)
Rash	1 (0.7)
Pruritis	1 (0.7)
Other adverse outcomes including dizziness or nausea or vomiting or diarrhea or injection site reaction or anaphylaxis	0 (0)
Pregnancy outcomes within 1 month of MAB infusion – No. (%)	
No adverse outcome	111 (78.7)
Delivery within 1 week after MAB infusion	5 (3.5)
Premature rupture of membranes	2 (1.4)
Premature delivery < 37 weeks	1 (0.7)
Preeclampsia or gestation hypertension	2 (1.4)
Hospital evaluation for decreased fetal movement	1 (0.7)
Polyhydramnios	2 (1.4)
Induction of labor	2 (1.4)
Emergency C-section	3 (2.1)
Other adverse outcomes including postpartum hemorrhage or miscarriage or fetal growth restriction or gestational diabetes or vaginal bleeding or placental abruption or oligohydramnios	0 (0)
Unknown	19 (13.5)
Hospitalization due to COVID-19 – No. (%)	1 (0.7)
ICU admission during hospitalization for COVID 19 – No. (%)	0 (0)
All-cause mortality at 30 days – No. (%)	
Alive	125 (88.7)
Dead	0 (0)
Unknown	16 (11.3)

RESULTS

- The median age was 33 years, and the median BMI was 28.9.
- 49.6% of the subjects received at least one dose of the vaccine, 36.1% were fully vaccinated and 7% received the booster dose of the vaccine at the time of the study.
- Of the four subjects had a reaction to the infusion of MAB, two were grade-2 reactions (requiring infusion interruption with a rapid resolution to symptomatic treatment) and two were grade-1 reactions (mild reaction, not requiring infusion interruption).
- There was no 30-day all-cause mortality. Only one subject (0.7%) was hospitalized for COVID-19 infection, and she was neither hypoxic nor required ICU admission.
- Five subjects had delivered within four weeks of MAB administration, however, four of those subjects were of gestational age > 37 weeks.
- Of the two subjects (1.4%) who had premature rupture of the membrane, one of them (0.7%) had premature delivery within 30 days of receiving MAB. Two subjects had preeclampsia (1.4%) and one (0.7%) was admitted for evaluations of decreased fetal movements.

CONCLUSION

- Administration of MAB was observed to be safe during pregnancy.
- Infusion reactions related to MAB infusion in pregnant women were mild and did not require hospitalization in our study.
- The 30-day pregnancy adverse outcomes was below the mean background rate.
- The safety and efficacy of MAB against COVID-19 infection warrants further research with case-control or randomized control studies.