Single site experience of the use of monoclonal antibodies for the treatment of COVID-19 in high-risk pediatric patients

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Introduction

- Monoclonal antibodies have been authorized for emergency use for the treatment of mild to moderate COVID-19 disease in high-risk populations
- While data exist regarding the safety and efficacy of monoclonal antibodies in adults, there is a paucity of evidence regarding monoclonal antibody administration in pediatric patients

Methods

- Retrospective chart review of 104 high risk patients who received monoclonal antibody therapy for treatment or post-exposure prophylaxis for COVID-19
- Patient demographics, co-morbid conditions, infusion related adverse events, and outcomes were reported with standard descriptive summaries

Results

Patient demographics and clinical characteristics

Characteristics	Number of Patients (percentage), unless otherwise specified N=104
Age in years, mean ± standard deviation	17.5 ± 3.2
Male sex	44 (42.3%)
Race or ethnic group	
Native American/Alaska Native	1 (0.96%)
Asian	2 (1.9%)
Black	12 (11.5%)
Middle Eastern	2 (1.9%)
White	86 (82.7%)
Mixed Race	1 (0.96%)
Hispanic	2 (1.9%)
Body Mass Index, mean ± standard deviation	28.8 ± 19.9
Immunocompromised	76 (73%)
Cardiac disease	9 (8%)
Diabetes mellitus	6 (5.7%)
Obesity	28 (26.9%)
Pulmonary disease	8 (7.7%)
>1 Co-Morbid Condition	33 (31.7%)
Time between COVID diagnosis and MAB treatment in days; mean ± standard deviation	1.6 ± 1.3 7 (6.7%)
Vaccinated (at least two doses of vaccine received)	43 (41.3%)
Received for post-exposure prophylaxis	7 (6.7%)
Monoclonal Antibody treatment	94 (90.4%)
Bamlanivimab or bamlanivimab-etesivimab	14 (13.5%)
Casirivimab-imdevimab	54 (51.9%)
Sotrovimab	26 (25%)

- The most common co-morbidity was "immunocompromised status" (73%)
- 33 patients (31.7%) had more than one co-morbid condition

Adverse events and subsequent events requiring medical attention

Adverse Events (anaphylaxis, infusion reactions)	N=10 (10.6%)
Grade I	6 (60%)
Grade II	3 (30%)
Grade III	1 (10%)
Adverse events with bamlanivimab or bamlanivimab-etesivimab	**2 (14.3%)**
Adverse events with casirivimab-imdevimab	**7 (12.9%)**
Adverse events with sotrovimab	**1 (3.8%)**
Subsequent event requiring medical attention	**15 (15.9%)**
ED/Urgent Care	4 (4.2%)
Primary care provider	3 (3.2%)
Escalation of care in patient already admitted	3 (3.2%)
Subsequent hospitalization related to ongoing COVID symptoms	5 (5.3%)

Outcomes

Within 90 days of infusion

- 13.5% of patients had worsening of symptoms with re-access of the medical system
- 5.3% required hospitalization

Adverse Events

- 10.6% of patients experienced some form of infusion related reaction

Discussion

- No specific antibody conferred a higher risk for breakthrough need for care
- No specific underlying condition was associated with need for re-access of the medical system
- While we noted a higher incidence of infusion-related events and need for hospitalization post-monoclonal antibody than has been reported in the adult literature, our study suggests that monoclonal antibody therapy is generally well tolerated

Conclusions

Monoclonal antibody administration to adolescents for the prevention and treatment of COVID-19 is generally safe and may be effective to decrease the progression of COVID-19 disease