OUTCOMES AFTER SARS-COV-2 VACCINATION AMONG CHILDREN WITH A HISTORY OF MULTISYSTEM INFLAMMATORY SYNDROME

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Background: MIS-C is a rare, yet potentially life-threatening hyperinflammatory condition. The exact mechanism(s) by which MIS-C occurs remains unclear, leading to hesitation to vaccinate this subset of children against SARS-CoV-2. We aimed to evaluate outcomes following SARS-CoV-2 vaccination in patients previously diagnosed with MIS-C.

Materials/Methods: The case series was formed from retrospective review of medical records of MIS-C patients to determine those subsequently vaccinated against SARS-CoV-2. Following vaccination, patients were queried regarding side effects.

Results: In December 2020, both the U.S. Food and Drug Administration and the Italian Drug Agency (Agenzia Italiana del Farmaco) provided emergency use authorization of the Pfizer-BioNTech SARS-CoV-2 vaccine for individuals aged ≥ 16 years. In May 2021, the vaccine became available in both countries to individuals ≥12 years. A total of 169 patients were treated for MIS-C at Texas Children's Hospital (Houston, Texas) between May 2020 and June 2021; 56 patients were eligible for SARS-CoV-2 vaccination. A total of 24 patients were treated for MIS-C at Gaslini Children's Hospital (Genova, Italy) between April 2020 and June 2021; 7 patients were eligible for SARS-CoV-2 vaccination In total, 11 of 63 eligible patients (17.5%) were vaccinated. The patients presented between July 2020 and February 2021 with a febrile illness, and all fulfilled the case definition for MIS-C established by the U.S. Centers for Disease Control and Prevention. Cardiac involvement was present in 10 (91%). Intensive care was required for 6 patients (55%) after 8 (73%) presented in shock; 3 (27%) needed vasoactive support and 2 (18%) invasive mechanical ventilation. All 11 patients were treated with corticosteroids, 9 (82%) received high dose immunoglobulin, and 6 (55%) additional immunomodulation (anakinra). The patients were vaccinated an average of 203 days from MIS-C presentation. A median of 113 days has elapsed since the patients completed their indicated vaccinations. No patients have developed a recurrence of MIS-C or any hyperinflammatory condition.

Conclusions: The patients treated for MIS-C after COVID-19 tolerated vaccination against SARS-CoV-2 without the development of hyperinflammation, or reoccurrence of MIS-C up to 6 months after vaccination. This study provides critical information as the COVID-19 pandemic continues, and as SARS-CoV-2 vaccination becomes available to children in the age range most at risk of developing MIS-C.

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