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 life-threatening hyperinflammatory condition. The exact mechanism(s) by which MIS-C occurs remain unclear, leading to hesitation to vaccinate this subset of children against SARS-CoV-2 for fear of recurrence. We aimed to evaluate outcomes following SARS-CoV-2 vaccination in patients previously diagnosed with MIS-C after SARS-CoV-2 infection.

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. A total of 169 patients were treated for MIS-C at Texas Children's Hospital 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.

Results: The Pfizer-BioNTech SARS-CoV-2 vaccine was approved for emergency use by both the U.S. Food and Drug Administration and the Italian Drug Agency for individuals aged ≥ 16 years in December 2020 and for those ≥12 years since May 2021. In total, 14 of 63 eligible MIS-C patients (22%) were vaccinated. All patients presented between July 2020 and May 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 13 (92%). Intensive care was required for 9 patients (64%) after 11 (79%) presented in shock; vasoactive support was needed for 5 (36%) and 2 (14%) needed invasive mechanical ventilation. All 14 patients were treated for MIS-C with corticosteroids, 10 (71%) received high dose immunoglobulin, and 9 (64%) additional immunomodulation (anakinra). The patients were vaccinated an average of 193 days from MIS-C presentation. Patients reported minimal vaccine reactogenicity (64% pain, 36% headache, 36% fatigue). No patients have developed a recurrence of MIS-C or any hyperinflammatory condition.

Conclusions: These patients treated for MIS-C after SARS-CoV-2 infection tolerated subsequent vaccination against SARS-CoV-2 without the development of hyperinflammation or reoccurrence of MIS-C up to 8.5 months after vaccination. This study provides critical information as the SARS-CoV-2 pandemic continues, and now that SARS-CoV-2 vaccination is available to the younger age range most at risk of developing MIS-C.

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