

Examining Multisystem Inflammatory Syndrome in Children (MIS-C) Amidst the SARS-CoV-2 Pandemic

Matthew Harris ¹, Dibyadyuti Datta ², Katrina Co ², Samina Bhumbra ², Chandy John ²

¹*Indiana University School of Medicine*, ²*Ryan White Center for Pediatric Infectious Disease and Global Health, Department of Pediatrics, Indiana University School of Medicine, Indianapolis, Indiana*

Background/Objective: Multisystem Inflammatory Syndrome in Children (MIS-C) is a novel and rare pediatric post-infectious complication associated with SARS-CoV-2 infection. First described in April 2020, our scope of understanding is limited but rapidly growing. Our objective was to construct a literature repository containing MIS-C patient data from available publications to serve as a curated collection of literature on the topic. This collection facilitates direct comparison of data from various sources, allowing for informed discussions of MIS-C.

Methods: A database search strategy was developed for locating primary literature on MIS-C available on PubMed, medRxiv, and bioRxiv databases. Literature searches were conducted from June 26, 2020 to July 10, 2020. Search results were tested against several criteria before inclusion in the repository. Intrinsic limitations for each publication were identified during quality review. Data from each source was organized in a standardized format for analysis.

Results: 26 publications met inclusion criteria, 9 (35%) in pre-print status. 742 cases of probable or confirmed MIS-C were reported. Individuals ranged from 7 months to 20 years old and 58% were male. By SARS-CoV-2 PCR testing, 257/707 (36%) were positive while 485/597 (81%) were positive by SARS-CoV-2 serology testing. Common presenting symptoms included fever, one or more gastrointestinal symptoms, and rash. Laboratory testing varied, but elevated C-Reactive Protein was the most common finding (411/689, 60%), followed by elevated D-Dimer (214/470, 46%). Echocardiogram findings included coronary artery dilation in 38/414 (9%) and decreased ejection fraction in 177/330 (54%). Treatments offered included intravenous immunoglobulin (486/742, 65%), followed by steroids (376/742, 51%). 450/577 (78%) required ICU care. Patient outcomes were generally favorable, with 11 (1%) fatalities at the time of publication.

Conclusion/Impact: Our repository of MIS-C literature compiled patient reports to identify common clinical presentations and laboratory findings. Future literature reviews are necessary to elucidate mechanisms associated with MIS-C and establish diagnostic criteria.