

ER doctors report what they learned treating four early cases of COVID-19-related children's illness

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In a study published in the *American Journal of Emergency Medicine*, Mount Sinai researchers describe some of the earliest cases of a COVID-19-related illness newly identified by the U.S. Centers for Disease Control (CDC) as multi-system inflammatory syndrome in children, or MIS-C. The study was published on May 23.

The case series details four previously healthy pediatric patients who presented at The Mount Sinai Hospital's Pediatric Emergency Department with a rare, exaggerated inflammatory response. The children tested negative for COVID-19 infection via a nasal swab test but their previous exposure to the disease was confirmed through serologic antibody testing. The four patients, all of whom required admission to Mount Sinai's Pediatric Intensive Care Unit, were among the first MIS-C cases to be seen in the United States.

"Severe manifestations of COVID-19 infection in children remain uncommon. However, some healthy children are becoming critically ill due to a rare, exaggerated inflammation response produced several weeks after a COVID-19 infection, even if that infection was very mild," says study co-author Jennifer E. Sanders, MD, Assistant Professor of Emergency Medicine, and Pediatrics, Icahn School of Medicine at Mount Sinai.

"Our case series underscores the need for emergency physicians to maintain a high clinical suspicion for COVID-19 post-infectious cytokine release syndrome, even in children who initially appear well. This syndrome appears to be its own entity but patients are presenting with symptoms similar to Kawasaki disease, characterized by fever, rash, and conjunctivitis, along with abdominal pain and diarrhea for many. They then deteriorate in a manner similar to that seen in toxic shock syndrome. Vigilance in assessing for these

symptoms will be critical to help identify these patients early in the clinical course," says study co-author Temima Waltuch, MD, a pediatric emergency medicine fellow at the Icahn School of Medicine at Mount Sinai.

The children, ages 5, 10, 12, and 13, all shared an exaggerated cytokine storm, an abnormal auto-immune response to COVID-19. They were treated with [intravenous immunoglobulin](#) and tocilizumab, an [immunosuppressive drug](#) commonly used to treat rheumatoid arthritis, as an attempt to attenuate the inflammatory response.

"As we continue to learn more about this syndrome, it is important for parents to be aware of the signs and symptoms to look out for in their children and to seek immediate care if they are concerned, but to also remember that thus far this still appears to be a rare event in children following a recent COVID-19 infection," says Dr. Waltuch.

"For emergency department physicians, there are many observations from these cases that will be relevant. First, we recommend a low threshold for laboratory testing, including inflammatory and cytokine markers. We also recommend admission and monitoring for all [children](#) with laboratory evidence of a significant [inflammatory response](#). Be cautious of patients who at first appear well as they may quickly decompensate and require fluid resuscitation, pressor support for blood pressure control, and possibly intubation," says Dr. Sanders.

More information: Temima Waltuch et al. Features of COVID-19 post-infectious cytokine release syndrome in children presenting to the emergency department, *The American Journal of Emergency Medicine* (2020). DOI: [10.1016/j.ajem.2020.05.058](https://doi.org/10.1016/j.ajem.2020.05.058)

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