PERFORMANCE OF THE BRIGHTON CASE DEFINITION FOR MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C) AMONGST A LARGE SINGLE CENTER COHORT

Jessica M Nguyen[1], Isabella Osuna[1], Sridevi Devaraj[2], Eyal Muscal[1], Kristen S Sexson Tejtel[3], Marietta M DeGuzman[1], Flor Munoz[4], Tiphanie P Vogel[1]

[1] Baylor College of Medicine, Department of Pediatrics, Rheumatology

[2] Baylor College of Medicine, Department of Pathology & Immunology, Pathology

[3] Baylor College of Medicine, Department of Pediatrics, Cardiology

[4] Baylor College of Medicine, Department of Pediatrics, Infectious Diseases

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Background: Multisystem Inflammatory Syndrome in Children (MIS-C) is a life-threatening, hyperinflammatory condition following SARS-CoV-2 infection. Whether MIS-C can also follow SARS-CoV-2 vaccination is not clear, and monitoring for post-vaccine MIS-C is complicated by clinical overlap with other febrile conditions. A case definition for MIS-C was created with the Brighton Collaboration (BC) for evaluation of adverse events following immunization (AEFI), but has not yet been validated in patient cohorts. We determined the performance of the BC definition in a large, single-center cohort of children who developed MIS-C after primary coronavirus disease 19 infection.

Materials/Methods: This study was conducted with Institutional Review Board approval (H-48161). A retrospective review of MIS-C cases diagnosed at Texas Children's Hospital by a multi-disciplinary team using the CDC definition was conducted to collect age, presentation, laboratory results, and cardiac studies. Cases were then analyzed to determine which also fulfilled the BC definition, which factors in age, days of fever, at least 2 specific clinical features, laboratory evidence of inflammation, at least 2 select measures of disease activity, and evidence of prior SARS-CoV-2 infection.

Results: Of the first 100 cases of MIS-C diagnosed using the CDC definition, 94 also fulfilled the BC definition. All 100 patients were <21 years and had fever, elevated inflammatory markers, and SARS-CoV-2 antibodies at presentation. Of the 6 patients who did not fit the BC definition, 1 was excluded due to significant respiratory symptoms and 5 did not fulfill obligatory criteria: 4 had only 1 clinical feature and 1 had no measures of disease activity. Among the 94 patients that met the BC definition, 87 (93%) met definite (Level 1) criteria. Of the 7 probable MIS-C cases (Level 2), 6 had only 1 measure of disease activity and 1 reported only 1 day of fever.

Conclusions: The BC MIS-C case definition identified MIS-C following acute COVID-19 in a large cohort of patients. The CDC definition was generated for surveillance, not diagnosis, and it is possible that the 6 patients that fulfilled the CDC but not BC definition did not have MIS-C, but an alternative febrile illness. Our data support use of the BC definition as a diagnostic tool. We conclude that the BC MIS-C case definition could be adopted in all resource areas to distinguish MIS-C from other febrile conditions and support its use in the adjudication of MIS-C as a possible AEFI.

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