Multisystem Inflammatory Syndrome in children — Initial Therapy and Outcomes

N Engl J Med. 2021 Jun 16

Background & Objectives: Because MIS-C appeared to be a rare syndrome, with cases following sporadic waves of Covid-19, randomized trials of treatment strategies have been impeded. The assessment of real-world effectiveness of immunomodulatory medications for multisystem inflammatory syndrome in children (MIS-C) may guide therapy. **The objective of this study was to describe patterns of immunomodulatory medication use in patients with MIS-C in the United States and do an assessment of the relative effectiveness of IVIG plus glucocorticoids, as compared with IVIG alone, in the initial treatment of MIS-C.**

Methods: MIS-C data was analyzed on inpatients younger than 21 years of age and were admitted to 1 of 58 U.S. hospitals between March 15 and October 1, 2020. The effectiveness of initial immunomodulatory therapy (day 0, indicating the first day any such therapy for MIS-C was given) with intravenous immune globulin (IVIG) plus glucocorticoids, as compared with IVIG alone, was evaluated with propensity-score matching and inverse probability weighting, with adjustment for baseline MIS-C severity and demographic characteristics.**The primary outcome was cardiovascular dysfunction (a composite of left ventricular dysfunction or shock resulting in the use of vasopressors) on or after day 2. Secondary outcomes included the components of the primary outcome, the receipt of adjunctive treatment (glucocorticoids in patients not already receiving glucocorticoids on day 0, a biologic, or a second dose of IVIG) on or after day 1, and persistent or recurrent fever on or after day 2.**

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet

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Results: Total of 518 patients with MIS-C (median age, 8.7 years) received at least one immunomodulatory therapy; 75% had been previously healthy, and 9 died. In the propensity-score–matched analysis, initial treatment with IVIG plus glucocorticoids (103 patients) was associated with a lower risk of cardiovascular dysfunction on or after day 2 than IVIG alone (103 patients) (17% vs. 31%; risk ratio, 0.56; 95% confidence interval [CI], (0.34 to 0.94). The risks of the components of the composite outcome were also lower among those who received IVIG plus glucocorticoids: left ventricular dysfunction occurred in 8% and 17% of the patients, respectively (risk ratio, 0.46; 95% CI, 0.19 to 1.15), and shock resulting in vasopressor use in 13% and 24% (risk ratio, 0.54; 95% CI, 0.29 to 1.00). The use of adjunctive therapy was lower among patients who received IVIG plus glucocorticoids than among those who received IVIG alone (34% vs. 70%; risk ratio, 0.49; 95% CI, 0.36 to 0.65), but the risk of fever was unaffected (31% and 40%, respectively; risk ratio, 0.78; 95% CI, 0.53 to 1.13).

Conclusion: Among children and adolescents with MIS-C, initial treatment with IVIG plus glucocorticoids was associated with a lower risk of new or persistent cardiovascular dysfunction than IVIG alone.

Key Message: This study builds on the existing data on treatment of MIS-C and sheds light on the possible benefits of a combination therapy with glucocorticoids and IVIG in the outcomes of these children with a primary focus on cardiovascular complications.

EXPERT COMMENT

“With the ongoing pandemic and variants of concern of the SARS-CoV-2 virus, continued outbreaks of MIS-C are inevitable. This study beckons further investigation on standard treatment of MIS-C in the form of an RCT. For the time being, combination therapy with steroids and IVIG however, seems to be the evolving standard of care, more so in children with cardiovascular dysfunction or other indicators of severe disease.”

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With warm regards,

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HON. SECRETARY GEN. 2021 - 22

Reference

Son MBF et al. Overcoming COVID-19 Investigators. Multisystem Inflammatory Syndrome in Children - Initial Therapy and Outcomes. N Engl J Med. 2021 Jun 16. doi: 10.1056/NEJMoa2102605.