



Multisystem inflammatory syndrome in children after vaccination against SARS-COV-2

Síndrome inflamatória multissistêmica em crianças após vacinação contra SARS-COV-2

DOI: 10.56238/isevmjv2n5-019

Receipt of originals: 02/10/2023

Publication Acceptance: 20/10/2023

Bruno Souza Santana

Lattes: 2171407158080006

Post-Graduation in Higher Education Teaching from FAVENI SP

E-mail: rev.bsantana@hotmail.com

Stefanie Cristine Araujo Ferreira

Undergraduate student in Medicine, University Center of Votuporanga- UNIFEV

E-mail: stecristine98@hotmail.com

Maria Eduarda Almeida Lobo

Lattes: 0848037170220084

Undergraduate student in Medicine, Faculdade Metropolitana de Manaus - FAMETRO

E-mail: mariaeduarda.alobo@gmail.com

Lucas Moraes de Moraes

ORCID: 0000-0002-4595-6108

Graduated in Nursing from Faculdade dos Carajás (2021)

Medical Student 5th period

E-mail: lucasmoraes806@gmail.com

Renata de Alencar Nogueira

LATTES: 2985149377635326

Undergraduate student in Medicine, Uninovafapi

E-mail: renataanogueira@yahoo.com.br

Ingrid Jordana Bernardes Ferreira

LATTES: 3431807909321703

Undergraduate student in medicine

E-mail: ingridjordanaa@gmail.com

ABSTRACT

COVID-19 in some children has caused severe consequences, such as multisystem inflammatory syndrome in children (MIS-C). Since December 2020, the mRNA vaccine against SARS-CoV-2 has been available with a good safety profile. However, evidence on safety and vaccination strategies in children with MIS-C is still lacking.

Keywords: COVID-19, Vaccination, Pediatrics.



1 INTRODUCTION

COVID-19 in some children has caused severe consequences, such as multisystem inflammatory syndrome in children (MIS-C). Since December 2020, the mRNA vaccine against SARS-CoV-2 has been available with a good safety profile. However, evidence on safety and vaccination strategies in children with MIS-C is still lacking.

2 OBJECTIVES

To address whether current COVID-19 vaccines have a protective effect on the development of MIS-C.

3 METHODS

This is an integrative review of the literature, researched studies from 2020 to 2023, written in English, with free access in the following databases: PubMed, Virtual Health Library and Google Scholar. The descriptors used were: multisystem inflammatory syndrome and covid 19 and vaccine. A total of 17 articles were included after the use of the filters.

4 RESULTS

In 14 (82.3%) studies, COVID-19 vaccination was found to be associated with reduced incidence of MIS-C, especially if 2 doses are administered. Vaccination offers protection against SARS-CoV-2 infection, putting fewer children and adolescents at risk of developing MIS-C. However, 3 (17,6) studies have reported vaccination as a potential trigger for MIS-C in pediatric patients, and additional surveillance is needed for these rare cases as an adverse event of COVID-19 vaccination.

5 CONCLUSION

Continuous evaluation of the evidence is needed to assess the changing epidemiological landscape and to provide a solid basis for medical guidance and clinical decision-making.



REFERENCES

- AVCU, Gulhadiye et al. Quantitative Antibody Levels Against SARS-CoV-2 Spike Protein in COVID-19 and Multisystem Inflammatory Syndrome in Children. *Viral Immunology*, v. 35, n. 10, p. 681-689, 2022.
- BUCHHORN, Reiner et al. Autoantibody release in children after corona virus mRNA vaccination: a risk factor of multisystem inflammatory syndrome?. *Vaccines*, v. 9, n. 11, p. 1353, 2021.
- CORTESE, Margaret M. et al. Surveillance for Multisystem Inflammatory Syndrome in US Children Aged 5–11 Years Who Received Pfizer-BioNTech COVID-19 Vaccine, November 2021 through March 2022. *The Journal of Infectious Diseases*, p. jiad051, 2023.
- HAMAD SAIED, Mohamad et al. The protective effect of COVID-19 vaccines on developing multisystem inflammatory syndrome in children (MIS-C): a systematic literature review and meta-analysis. *Pediatric Rheumatology*, v. 21, n. 1, p. 1-10, 2023.
- IYENGAR, Karthikeyan P. et al. Multisystem inflammatory syndrome after SARS-CoV-2 vaccination (MIS-V), to interpret with caution. *Postgraduate medical journal*, v. 98, n. e2, p. e91-e91, 2022.
- JAIN, Eisha et al. Multisystem inflammatory syndrome in children after SARS-CoV-2 vaccination. *Emerging Infectious Diseases*, v. 28, n. 5, p. 990, 2022.
- LIGUORI, Valerio et al. Multisystem Inflammatory Syndrome in Children Following COVID-19 Vaccination: A Sex-Stratified Analysis of the VAERS Database Using Brighton Collaboration Criteria. *Pharmaceuticals*, v. 16, n. 9, p. 1231, 2023.
- LIU, Ting-Hui et al. Effectiveness of COVID-19 vaccination against multisystem inflammatory syndrome in children: A systematic review and meta-analysis. *Journal of Microbiology, Immunology, and Infection= Wei Mian yu gan ran za zhi*, p. S1684-1182 (23) 00154, 2023.
- LUDWIKOWSKA, Kamila M. et al. COVID-19 mRNA BNT162b2 vaccine safety and B-cell and T-cell reactivity among children with a history of paediatric multisystem inflammatory syndrome temporally associated with COVID-19 (PIMS-TS)-preliminary study. *Vaccine*, v. 41, n. 13, p. 2289-2299, 2023.
- MINOIA, Francesca et al. Approaches to SARS-CoV-2 and other vaccinations in children with a history of multisystem inflammatory syndrome (MIS-C): An international survey. *Frontiers in Pediatrics*, v. 10, p. 1030083, 2022.
- NYGAARD, Ulrikka et al. Incidence and clinical phenotype of multisystem inflammatory syndrome in children after infection with the SARS-CoV-2 delta variant by vaccination status: a Danish nationwide prospective cohort study. *The Lancet Child & Adolescent Health*, v. 6, n. 7, p. 459-465, 2022.
- PIECHOTTA, Vanessa et al. Safety and effectiveness of vaccines against COVID-19 in children aged 5–11 years: a systematic review and meta-analysis. *The Lancet Child & Adolescent Health*, 2023.



ROSTAD, Christina A. et al. Functional antibody responses to severe acute respiratory syndrome coronavirus 2 variants in children with coronavirus disease 2019, multisystem inflammatory syndrome in children, and after two doses of BNT162b2 vaccination. *The Journal of Infectious Diseases*, v. 226, n. 7, p. 1237-1242, 2022.

WANGU, Zoon; SWARTZ, Hannah; DOHERTY, Meaghan. Multisystem inflammatory syndrome in children (MIS-C) possibly secondary to COVID-19 mRNA vaccination. *BMJ Case Reports CP*, v. 15, n. 3, p. e247176, 2022.

YOUSAF, Anna R. et al. COVID-19 Vaccine Reactogenicity and Vaccine Attitudes Among Children and Parents/Guardians After Multisystem Inflammatory Syndrome in Children or COVID-19 Hospitalization: September 2021—May 2022. *The Pediatric Infectious Disease Journal*, v. 42, n. 3, p. 252, 2023.

ZAMBRANO, Laura D. et al. BNT162b2 mRNA Vaccination Against Coronavirus Disease 2019 is Associated With a Decreased Likelihood of Multisystem Inflammatory Syndrome in Children Aged 5–18 Years—United States, July 2021–April 2022. *Clinical Infectious Diseases*, v. 76, n. 3, p. e90-e100, 2023.