

Clinical Characteristics and Outcomes of Post-COVID-19 Multisystem Inflammatory Syndrome in Children: A Systematic Review

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INTRODUCTION

Pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 is a new, post-infectious hyper-inflammatory complication of SARS-CoV-2 infection in children [1]. In Europe, it has been reported in healthy children since April 2020 and the syndrome itself is clinically reminiscent of Kawasaki disease and toxic shock syndrome [2]. MIS-C is not common but a highly critical complication of COVID-19 infection in pediatrics resulting in life-threatening illnesses [3].

METHODS

A systematic review was conducted according to the PRISMA guidelines by two independent researchers. Electronic search was carried out from 2020-2022 on PubMed and Science Direct platforms. Search keywords were “Multisystem Inflammatory Syndrome in Children”, “MIS-C”, “Covid-19”, “SARS-CoV-2”. Inclusion criteria: hyperinflammatory syndrome meeting the case definition of MIS-C in children with a temporal association with confirmed COVID-19, English language. Exclusion criteria: patients with incomplete MIS-C criteria, studies concerning adults or lacking necessary data. The risk of bias was assessed using the Cochrane Risk of Bias Tool [4].

CONCLUSIONS

Fever, gastrointestinal and respiratory symptoms, rash, conjunctivitis, and echocardiographic abnormalities are the most common symptoms in children with MIS-C. They must be carefully identified and monitored over time, as more than half of MIS-C patients go into shock, and are admitted to the PICU, and unfortunately, 2% of them die.

AIM

The aim of this study was to determine the most common clinical features and treatment as well as severity of MIS-C post Covid-19 infection in relation to the number of patients requiring intensive care and their mortality.

RESULTS

After an initial search in electronic databases, 132 articles were shown, and 13 articles were included in this review with a total of 696 patients [1; 5-16]. The average days for hospitalization were 8.38 days. The most common clinical presentation was fever (90,7%), followed by gastrointestinal symptoms (81%), rash (41%) and conjunctivitis (40%). 62% of patients out of 9 articles experienced shock and 42% out of 11 articles - respiratory symptoms. Echocardiographic abnormalities were present in 40% of patients, the most common ones were coronary artery dilatation or aneurysm, left ventricle dysfunction and pericardial effusion. 73% of children were given IVIG and 57% received corticosteroids, 29% needed inotropic support, 25% required mechanical ventilation. Out of 549 children included in 10 studies, 67% were hospitalized in the PICU and required intensive care. The average length of stay in the intensive care unit were 6.1 days and we noticed that children treated in the PICU had significantly greater levels of troponin, NT-proBNP and D dimer as well as more arrhythmias and left ventricle dysfunctions. They also had lower numbers of albumin, hemoglobin, and platelets. Mortality rate reached 16 out of 696 with more deaths occurring in the lower-income nations.