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Case Report

Dermatological manifestation of Multisystem Inflammatory Syndrome in Children (MIS-C)- Case Report

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Abstract

A small subset of pediatric patients develop a newly emerging syndrome associated with post COVID-19 infection. Termed multisystem inflammatory syndrome in children (MIS-C), this syndrome shares characteristics with Kawasaki disease (KD), including fever, elevated inflammatory markers and multisystem involvement (cardiac, neurological, ocular, dermatological, mucocutaneous and gastrointestinal). MIS-C can have mixed presentation, creating a diagnostic challenge. We present this case of Multisystem Inflammatory Syndrome in Children wih dermatological manifestation to highlight the dermatological presentation of this syndrome in children with an aim to spread awareness of this syndrome among the treating clinician.

Keyword: *Multisystem inflammatory syndrome in children (MIS-C), Intravenous Immunoglobulin (IVIG), COVID-19.*

Introduction

Multisystem Inflammatory Syndrome in children (MIS-C), also called Pediatric Multi-System Inflammatory Syndrome (PMIS or PIMS) [1]. MIS-C has varied symptoms that affect several organs and systems in the body [1]. Multisystem inflammatory syndrome in children (MIS-C) is a condition where different body organs including heart, lungs, kidneys, brain, skin, eyes or gastrointestinal organs can be inflamed.[2] Some children have signs of excessive blood clotting, gastrointestinal symptoms, kidney injury, neurologic symptoms, or heart inflammation with impaired heart function[3]. These symptoms can occur in different combinations [4].

Case Report

A 8 years old male child presented with complaints of fever since 5 days with maculopapular rash and conjunctival congestion. Maculopapular rash was mainly over trunk and leg region which appeared after 2 days of onset of fever. There was no history of any drug allergy in child. Investigation showed raised CRP level of 12.85 mg/dL (normal value <0.5mg/dl) . There was positive history of COVID infection in family

members 25 days back; hence, in view of that COVID-19 IgG antibody level was done in this child, which came positive with value of 5.86 s/co (normal value < 1.4 s/co). Rest of the fever workup was normal. In view of positive COVID-19 antibody, inflammatory markers were sent, which showed raised NT Pro-BNP - 2494, D-dimer - 2748, Ferritin - 86.25, hence a diagnosis of post-COVID syndrome (MIS-C) was made as per WHO criteria.1 Fever got subsided after 2 days of admission but rash persisted even after 7 days of admission. Rash was itchy, maculopapular and urticarial type. The child treated with pulse methylprednisolone therapy but in view of rising trend of inflammatory marker and persistent of rash, intravenous immunoglobulin (IVIG) was given (2 g/kg). Child improved over the next 72 hours after giving intravenous immunoglobulin. Inflammatory markers came back to the normal range over a period of 5 days. Child discharged after 14 days of hospital stay. On follow up the child was doing well, asymptomatic with no positive signs and symptoms.

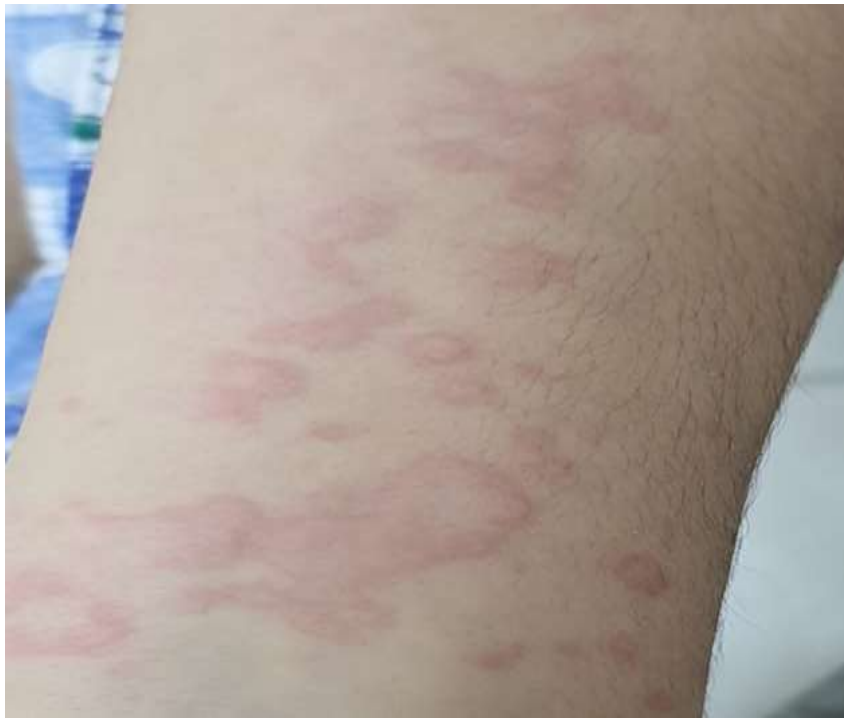

Figure 1: Maculopapular Rash on the legs. (Photo Credit- Dr. Vineetranjan Gupta)

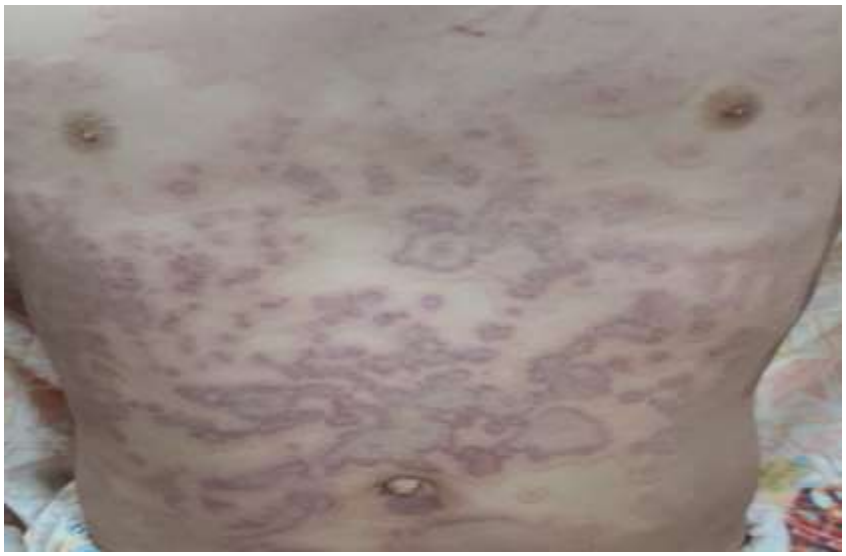

Figure 2: Rash before treatment (Photo Credit- Dr. Vineetranjan Gupta)

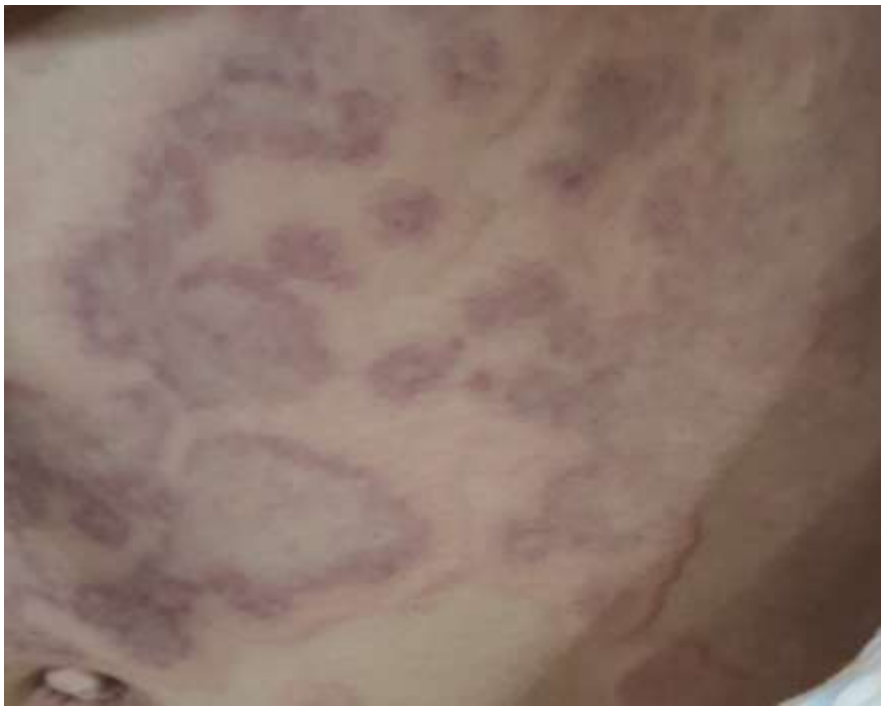

Figure 3: Rash after treatment (Photo Credit: Dr. Vineetranjan Gupta)

Discussion

Cutaneous manifestations are important in the diagnosis of various infectious diseases, such as toxic shock syndrome, meningococcemia, rickettsial diseases, measles, and scarlet fever. As COVID-19 has a tendency to produce asymptomatic cases for up to 14 days after infection, cutaneous manifestations may serve as an indicator of infection, aiding in timely diagnosis.[5] Furthermore, Clinician's awareness of the cutaneous symptoms related to COVID-19 infection is critical in preventing misdiagnosis of disease. The mechanisms of COVID-19 cutaneous disturbances are not yet well known, but some common theories are prevalent. It can be postulated that the viral particles present in the cutaneous blood vessels in patients with COVID19 infection could lead to a lymphocytic vasculitis similar to those observed in thrombophilic arteritis induced by blood immune complexes that activate cytokines. Keratinocytes may be a secondary target after Langerhans cells activation, inducing a spectrum of different clinical manifestation.[6]

Given the current collection of evidence, it is suggested that COVID-19 can have dermatological manifestations. As a result, Clinician should be aware of these important clinical manifestations that may aid in the timely diagnosis of post COVID-19 infection in Children.

In view of MIS-C, we administered IV immunoglobulin along with systemic steroids. Most of the case reports and case series describing MIS-C have used the aforementioned drugs and have shown good clinical improvement [7]. However, further studies are needed in this age group to prove their efficacy.

Conclusion

Typical clinical features may be absent, a highy index of clinical suspicion is warranted. The hallmark of MIS-C is widespread inflammation across multiple organ system. Left untreated, this inflammation can cause long-term morbidity and increased mortality. Hence the need for prompt intensive medical treatment that includes close monitoring and supportive care. This usually involves the delivery of intravenous fluids and medications including prophylactic antibiotics, with goal of reducing fever, keeping blood pressure and perfusion up and eliminating any underlying bacterial infections. The symptoms of MIS-C are caused by the body own exaggerated immune response, there is need to administer medications to temporarily suppress the body's immune system. Medication commonly used in children with MIS-C includes steroids and IVIG. Prompt diagnosis with institution of appropriate therapy is the key for favourable outcome.

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