# Chapter 14
# Cutaneous Lesions and Multisystem Inflammatory Syndrome in Children (MIS-C)


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A 10-year-old male patient applied to the pediatric emergency department with fever, diarrhea and respiratory distress. He has had fever and diarrhea for one week. He was tachypneic, tachycardic and hypotensive upon arrival therefore, he was hospitalized in the pediatrics ward with the diagnosis of Multisystem Inflammatory Syndrome in Children (MIS-C). His vitals were: a body temperature of 38.7 °C, a heart rate of 130 beats per minute and a blood pressure of 70/50 mm mercury. Other systemic examinations revealed hepatosplenomegaly and a rash. His past medical history was unremarkable. His family history revealed that his mother has had SARS-CoV-2 infection one month ago.

The laboratory examination revealed leukocytosis with lymhopenia (white blood cells 16,300/mm$^3$, lymphocyte 500/mm$^3$), increased C-reactive protein (156 mg/L), increased b-natriuretic peptide (1963 pg/ml) yet the echocardiography was normal, increased D-dimer (21.94 mg/L) and increased ferritin levels (421 ng/ml). SARS-Cov-2 PCR test was negative but anti-SARS-CoV-2 IgG serology test was positive. The patient was diagnosed with MIS-C by the pediatrics department given the Anti SARS-CoV-2 IgG positivity and the cardiac and gastrointestinal manifestations. Treatment with intravenous immunoglobulin (IVIG), systemic steroids (prednisolone 2 mg/kg/day), low molecular weight heparine (2x0.4 mg/day), combined antibiotherapy with teicoplanin, cephotaxime and amikacine, milrinone, noradrenaline, n-acetyl-cysteine and vitamin-C was initiated immediately upon the diagnosis.

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T. M. Lotti, F. Arcangeli (eds.), *Clinical Cases in Middle-Years Pediatric Dermatology*, Clinical Cases in Dermatology, https://doi.org/10.1007/978-3-030-91529-2_14

Non-invasive ventilation with mask was provided for the respiratory distress. The fever, respiratory and cardiac symptoms subsided upon the second day of treatment. The patient fully recovered by the seventh day of treatment.

Dermatology consultation was requested due to the skin findings. The dermatologic examination revealed multiple annular erythematous plaques with central clearing and inner trailing collaret desquamation on the thorax and the abdomen shown in Figs. 14.1 and 14.2. The lesions were pruritic; have been present for several days, started singly and then distributed to the thorax and abdomen.

**Based on the Case Description and the Photographs, What Is Your Diagnosis?**

- Urticaria
- Pytriasis rosea like lesions due to SARS-CoV-2
- Insect bite
- Erythema multiforme

## Diagnosis

The patient was diagnosed as pityriasis rosea like lesions due to SARS-CoV-2. The lesions subsided in a week with the daily use of topical steroid ointment.

**Fig. 14.1** Multiple annular erythematous plaques with central clearing and inner trailing desquamation located on the chest are noticed

**Fig. 14.2** Multiple annular erythematous plaques with central clearing and inner trailing desquamation located on the back are seen

## Discussion

The SARS-CoV-2 infection is either asymptomatic or has a mild course in the pediatric population. However, it can have a severe, even fatal, course in minority of cases, which often are admitted to intensive care units. Multisystem inflammatory syndrome (MIS-C) in children is one of these severe presentations [1]. The constellation of fever, severe illness, involvement of two or more organ systems and the laboratory or epidemiologic evidence of SARS-CoV-2 infection is called MIS-C and it resembles Kawasaki disease, toxic shock syndrome and secondary hemophagocytic lymphohistiocytosis in its presentation [2]. The most commonly involved organ system is the gastrointestinal system, thus abdominal pain and diarrhea are very common. Cough and respiratory distress often occur as well [3]. The pathogenesis of MIS-C relies upon post-infectious immune dysregulation [2]. Cutaneous symptoms occur with MIS-C as well [1–3].

Cutaneous manifestations of the SARS-CoV-2 reported in the pediatric population are chilblain-like lesions, erythema multiforme, urticaria, vesicular lesions, morbiliform rash, petechia-purpura, erythematous exanthema and pityriasis rosea like eruptions [3]. The most commonly reported cutaneous manifestation of the

SARS-CoV-2 infection in patients with MIS-C is erythematous exanthema [4]. However, the cutaneous manifestations are nonspecific and any kind of eruption may be seen in patients with MIS-C [5, 6].

Pityriasis rosea has been associated with the infection or re-activation of the human herpes viruses 6 and 7 (HHV-6 and HHV-7). Pityriasis rosea-like eruptions have previously been reported with other viral infections and vaccination. The typical eruption is multiple erythematous annular plaques with collarets of trailing scale distributed in a Christmas tree like pattern along the cleavage lines. Pityriasis rosea-like eruption has been reported in association with the SARS-CoV-2 infection as well, presenting along with gastrointestinal symptoms, similar to the child presented in this case. Topical corticosteroids is sufficient in the treatment of this cutaneous symptom [7].

**Key Points**

- The constellation of fever, severe illness, involvement of two or more organ systems and the laboratory or epidemiologic evidence of SARS-CoV-2 infection is called MIS-C; a disease that has a cutaneous component as well.
- The most common cutaneous manifestation of MIS-C is erythematous exanthema; however any kind of eruption may be seen.
- Pityriasis rosea like eruption is one of the cutaneous manifestations of the SARS-CoV-2 infection and it has been reported in the pediatric population as well as in the adults.

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