blood chemistry highlighted strong positivity for anti-double strain DNA (anti-dsDNA) and mild positivity for anti-nucleosomes and anti-histones antibodies. Past rheumatological ruled out signs of connective tissue disease and recommended annual follow-up.

Skin biopsy showed hyperkeratosis, superficial perivascular and perifollicular lymphocytic infiltration and vacuolization of the basement membrane.

Blood exams showed marked leukopenia and thrombocytopenia, complement consumption, increased anti-dsDNA, anti-Sm, and anti-nRNP and new positivity for anti-Ro/SSA, compared to the last panel of exams.

The histological characteristics, positivity to anti-Ro/SSA antibodies and clinical manifestations led to the diagnosis of SCLE.[2]

Suspecting a vaccine cause, we evaluated the probability of an adverse drug reaction using the Naranjo scale.[3] We considered timing, the absence of new drugs introduced or changes in habits and the previous case reports retrieved in literature, some of which have similar cases.[4] According to the Naranjo scale, we considered the SCLE onset as probably triggered by the SARS-CoV-2 vaccination.

We started systemic steroid treatment with a suboptimal prednisone dose (0.4 mg/kg/day) due to the increased infectious risk and daily furoate mometasone topical cream. After three weeks, therapy led to an almost complete resolution of the skin lesions, still with residual hypopigmentation on the back (Figs 1b and 2b).

We then referred the patient to the rheumatologist to evaluate the introduction of systemic hydroxychloroquine.

Among the possible explanations, we know that tumor necrosis factor-alpha (TNF-α) and interferon-gamma (IFN-γ) are increased by infections and vaccinations, which lead to cytokine release and CD4-type 1 helper T cell (Th1) recruitments. High levels of Th1 cells and inflammatory state have been reported in affected skin of patients with SCLE manifestations, which can explain flare episodes in predisposed patients.[5]

In this case, the patient had positive antibodies specific for LE (ds-DNA and anti-histones) but not anti-Ro/SSA. Until now, she had never manifested any clinical signs of LE except for an alteration of the hemogram, probably caused by splenomegaly secondary to portal hypertension.

With this case report, we aim to increase the awareness of the rare skin manifestations elicited by Sars-Cov-2 vaccines. We recommend dermatologists to carefully evaluate any skin reactions that may arise after a vaccination.

Conflict of interest

The authors have no conflict of interest to declare.

The patients in this manuscript have given written informed consent to the publication of their case detail.

Data availability statement

Data available on request from the authors.

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DOI: 10.1111/jdv.17827

COVID-19 cutaneous manifestations in pediatric patients: 24 multisystem inflammatory syndrome in children and six Kawasaki disease cases

To the Editor,

The scientific understanding of the dermatological implications of COVID-19 is rapidly evolving. A variety of cutaneous manifestations associated to COVID-19 have been described in recent reports published in the literature.[1]

Emerging evidence shows that children with COVID-19 can develop a condition called "multisystem inflammatory syndrome in children" (MIS-C), which is also known as "pediatric

inflammatory multisystem syndrome," temporally associated with COVID-19, that is clinically close to Kawasaki disease (KD).[1]

Kawasaki disease is a medium-sized vessel vasculitis and its clinical spectrum, and that of MIS-C, includes numerous cutaneous signs.[1]

There are no univocal diagnostic criteria to identify MIS-C yet, but the Centers of Disease Control and Prevention and the World Health Organization have listed preliminary case definition criteria to recognize this new entity.[2]

In this study we collected and summarized the clinical data of a cohort of hospitalized pediatric COVID-19 patients who presented skin manifestations from the Pediatric Cardiology Department of the University Hospital of Sulaimani (Iraq).

Thirty-two hospitalized pediatric patients with COVID-19 and cutaneous manifestations were identified (Fig. 1). The cutaneous lesions were protean and they included vesicular lesions, erythematous rashes, macular rashes, and papular lesions.

Three groups of patients were identified (Table 1): the first one included COVID-19 patients with cutaneous manifestations (two children), the second group COVID-19 patients with Kawasaki disease (six children), and the third group patients with MIS-C on top of COVID-19 (24 children).

Over the last months, the cutaneous manifestation of COVID-19 in children has received increasing interest from the scientific community worldwide.

Researchers have hypothesized that the cutaneous involvement of children with COVID-19 may be attributed to a T, B, and NK cell- predominant immune response in synergy with a weaker pro-inflammatory response and less ACE2 receptors compared to adults.[3]

A systematic review identified a total of 600 patients who developed MIS-C: these patients were older than the ones with Kawasaki disease and presented a higher incidence of respiratory, gastrointestinal, and cardiac signs and symptoms.[4] This applies to our cohort for certain manifestations (Table 1), but

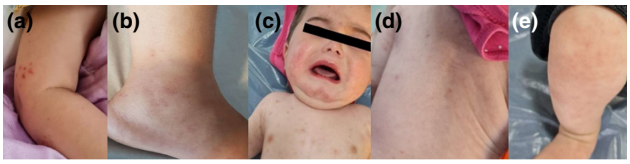

Figure 1 (a) Cutaneous lesions on the upper limb of a pediatric patient with multisystem inflammatory syndrome in children (MIS-C). The right arm of this patient presents a cluster of red vesicular lesions. (b) Cutaneous lesion on the ankle of a pediatric patient with MIS-C. The right ankle of the patient presents a purple-red macular rash. (c) Aculopapular rash on the face of a pediatric patient with MIS-C. (d) Maculopapular rash on the trunk of a pediatric patient with MIS-C. (e) Maculopapular rash on the limbs of a pediatric patient with MIS-C.

Table 1 Clinical characteristics of the pediatric patients with COVID-19 cutaneous manifestations

	COVID-19 cases (n = 2)	Kawasaki on COVID-19 cases (n = 6)	MIS-C cases (n = 24)
Age (mean) (years)	0.835	3.328	7.06
Males	2	1	14
Females	0	5	10
Coexisting conditions	0%	0%	4%
Chronic lung disease	0%	0%	4%
Congenital heart disease	0%	0%	0%
Fever	100%	100%	100%
Cough	0%	0%	20.8%
Cough days	0	0	1,08
Sore throat	0%	16%	20.8%
Chest pain	0%	0%	20.8%
Chest pain days (mean)	0	0	0.292
Sweating	0%	33%	54.2%
Sweating days (mean)	0	0.33	1.42
Diarrhea	100%	66%	54.2%
Diarrhea days (mean)	9.5	1.83	1.71
Nausea	50%	16%	8%
Nausea days (mean)	3.5	0.67	0.25
Vomiting	100%	50%	54.2%
Vomiting days (mean)	7	1.67	1.71
Abdominal pain	0%	33%	50%
Abdominal pain days (mean)	0	1.33	1.83
Headache	0%	33%	58,3%
Headache days (mean)	0	1.67	1.75
Irritability	100%	100%	50%
Irritability days (mean)	5	3	0.96
Myalgia	50%	66%	87.50%
Myalgia days (mean)	2.5	1.5	2.29
Skin rash	100%	100%	100%
Skin rash days (mean)	5	1.375	4.13
Swollen hand and feet	50%	83%	16.70%
Swollen hand and feet days (mean)	1.5	3.17	0.75
Lymphadenopathy	0%	83%	0.83%
Conjunctivitis	0%	100%	83.3%
Conjunctivitis days (mean)	0	3.67	3.38
Mucosal changes	0%	66%	58.30%
Mucosal changes days (mean)	0	3	2.38
WBC (mean)	14.4×10^3	13.61×10^3	12.1×10^3
PLT (mean)	486×10^3	162×10^3	251×10^3
ESR (mean) (mm/hr)	76	67.5	62
CRP(mean) (mg/l)	96.5	188.5	142
Ferritin (mean) (ng/mL)	1524	567.5	770.5
Pulmonary embolism	100%	67%	70.80%
Coronary involvement	50%	67%	8%
Myocardial dysfunction	0%	0%	8%
Valvular involvement	0%	0%	0.83%

Table 1 *Continued*

	COVID-19 cases (*n* = 2)	Kawasaki on COVID-19 cases (*n* = 6)	MIS-C cases (*n* = 24)
Complete recovery	50%	100%	96%
Death	50%	0%	4%

CRP, C reactive protein; ESR, erythrocyte sedimentation rate; PLT, platelets; WBC, white blood cells.

this finding is likely to have been influenced by the fact that way more cases of MIS-C were identified compared to the KD ones.

The data collected from published cases highlights a higher incidence of conjunctivitis, lymphadenopathy, and mucosal involvement in children with KD,[4,5] which is evident in our patients (Table 1).

The mechanism that leads to MIS-C is still under investigation, however many conjectures have been made: immune dysregulations and the ability of the novel coronavirus to halt interferon responses have been proposed as possible explanations for the appearance of this condition.[5]

Another matter that is still unsolved is the explanation behind the higher number of MIS-C cases seen in COVID-19 patient in Western countries compared to the ones reported in the East, given that KD is more prevalent in Asia.

The cutaneous manifestations of KD are well-known (polymorphous rash which is never vesicular that spreads from the trunk to the extremities and that disappears with fever resolution[6]), but the ones of COVID-19 and MIS-C are still being studied. Interestingly, MIS-C has been associated with nonspecific rashes, urticarial, petechial, purpuric, polymorphic, morbilliform, and maculopapular lesions, to name a few.[5] The localization of these manifestations is variable as well.[5]

Unfortunately, histopathological information regarding these lesions is not available yet because biopsies are generally not performed on children.[5]

We hope that our findings may provide further insight into the clinical and cutaneous characteristics of COVID-19 and MIS-C in children. However, we believe that further studies are needed to define the dermatological implications of COVID-19 and MIS-C as both are still being in the process of being unraveled.

Acknowledgements

The guardians of the patients in this manuscript have given informed consent to publication of their case details

Conflict of interest

Nothing to declare.

Funding sources

None.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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DOI: 10.1111/jdv.17828

Multisystem inflammatory syndrome in adults (MIS-A): a new addition to COVID-19 puzzle

Dear Editor,

The novel coronavirus (SARS-CoV-2) has crippled the world by its fatality and protean manifestations, of which multisystem inflammatory syndrome seems to be a relatively new trick under its sleeve. A myriad of dermatological manifestations with incompletely understood pathophysiology such as maculopapular rash, erythema multiforme-like lesions, vesicular and urticarial lesions, chilblains, livedo reticularis-like lesions have been reported in COVID-19.[1]

A 24-year-old male presented with a high-grade fever for 8 days accompanied by a subacute onset progressive holocranial headache, vomiting, malaise a day later followed by a generalized maculopapular rash, which appeared on the 5th day of fever, initially on his right arm and then gradually involved all the limbs