



Acral peeling as the sole skin manifestation of COVID-19 in children

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Abstract

Skin lesions in children with proven COVID-19 are not frequent in the literature apart from those associated with multisystem inflammatory syndrome. Fortunately, microbiologic testing for SARS-CoV-2 has become widely available not only for admitted patients but also for mild cases. We present a series of 6 children with mild erythema and desquamation of the fingertips and/or toes as the only skin manifestation of COVID-19. As all children had asymptomatic to mildly symptomatic disease, it is reasonable to consider this a sign of benign disease and favorable outcome.

KEYWORDS

COVID-19, pediatric dermatology, pulpitis, SARS-CoV-2, skin

1 | INTRODUCTION

Skin manifestations in patients with COVID-19 have been extensively reported, mostly in adults.^{1,2} Skin lesions in children with proven COVID-19 are much less frequent³ and may show specific features not seen in adults, such as those associated with the multi-system inflammatory syndrome in children (MIS-C).⁴

Once the microbiologic test for SARS-CoV-2 became widely available for all suspected cases in our institution (not only for admitted patients), we were able to diagnose the first case of acral pulpitis as an isolated sign of COVID-19 in children.⁵ Due to the mild nature of this presentation, in December 2020, we recruited similar cases through an advertisement on the "Spanish Primary Care Pediatric Association" website.

We present a series of six children infected with SARS-CoV-2 who presented with mild erythema and desquamation of the fingertips and/or toes as the only skin manifestation of COVID-19.

Otherwise, all children had asymptomatic to mildly symptomatic disease.

2 | CASE REPORTS

Data were collected anonymously. We recorded age, sex, personal history of previous diseases, previous treatments, epidemiologic background, skin symptoms, type and location of lesions, systemic symptoms, microbiological test performed, and therapies administered.

Approval from the institutional Ethics Committee and Board was obtained. Informed consent was obtained for recording images in all patients.

Six patients (four male and two female), age range 5-13 years, were included. Five had a positive microbiologic test for SARS-CoV-2 (three positive real-time polymerase chain reaction for SARS-CoV-2 and two positive rapid antigenic test). One patient had a negative

TABLE 1 Characteristics of patients included

Case	1	2	3	4	5	6
Gender	Female	Male	Male	Female	Male	Male
Age (y)	9	12	10	5	9	13
Previous conditions	None	Allergic rhinitis	None	Atopic dermatitis	None	Asthma
Previous treatment	None	None	None	None	None	None
Close contact with confirmed cases	No	Yes (parents)	Yes (parents)	Yes (parents)	No	Yes (brothers)
Systemic symptoms	Headache	Fever, cough, diarrhea	Fever, cough, anosmia, dysgeusia	None	None	Headache, myalgia
Duration of systemic symptoms	3 d	5 d	9 d	None	None	14 d
Site of involvement	Hands	Hands and feet	Hands	Hands	Hands	Feet
Cutaneous symptoms	Local pain and pruritus	None	None	Local pruritus	None	None
Duration of cutaneous symptoms	28 d	7 d	14 d	14 d	21 d	7 d
Treatments	None	Antipyretics	Antipyretics	Antihistamines, topical corticosteroids	Topical corticosteroids	None

microbiologic test but was included due to a high clinical suspicion of COVID-19 because of systemic symptoms (fever, cough, anosmia, and dysgeusia) and positive epidemiological context (close household contact with a positive confirmed case). Two of the six patients were completely asymptomatic and had been tested because of close contact with infected patients in one case and because of acral peeling in the other case.

Clinical characteristics of the cases are summarized in Table 1. None of the children had any prior acral scaling or desquamation; only one patient had history of atopic dermatitis. In patients with systemic symptoms, skin manifestations occurred 3 to 21 days after systemic symptoms. The skin lesions involved the fingers only in four cases, the toes only in one case, and both fingers and toes in one case. Mild erythema was followed by superficial desquamation. The lesions affected all fingers and/or toes in all patients (Figures 1,2). On the fingers, the eruption only involved the fingertips, sparing the rest of the palm. There was no involvement of the dorsal distal phalanges or the nail apparatus. The lesions only caused mild pruritus in one patient and local pain and pruritus in another one. The skin signs lasted 7 to 28 days and eventually disappeared without sequelae. No medical treatment was applied on the skin, aside from two patients who were treated with topical corticosteroids.

Due to the mild symptomatology of the patients, laboratory analyses and skin biopsies were not obtained.

3 | DISCUSSION

We describe six children infected with SARS-CoV-2 who presented with an acral, erythematous, peeling condition as the only skin manifestation of COVID-19. All cases had a favorable outcome in their



FIGURE 1 Mild erythema and superficial desquamation of the fingertips



FIGURE 2 Peeling of the toes

infection, and their skin lesions disappeared, mostly spontaneously, in 1 to 4 weeks. Treatment was usually not necessary.

This skin condition has been very rarely reported during the COVID-19 pandemic, and it is likely to have been overlooked. A reason for this may be that patients are asymptomatic or slightly symptomatic, and parents did not request medical attention. To our knowledge, only one case of desquamation of the distal phalanges of the hands and feet has been described in a 6-year-old girl with positive PCR for SARS-CoV-2 and generalized, giant urticaria.⁶

Erythema and edema of the hands and feet followed by intense and diffuse scaling mimicking keratolysis exfoliativa has been related to COVID-19 in children.⁷ However, PCR has been negative in such cases. Edema of the hands and feet is also a manifestation of MIS-C that can be later followed by acral desquamation.^{4,8} However, our patients did not have systemic signs of MIS-C and the acral peeling occurred without preceding edema and earlier than MIS-C, which is usually a late-onset complication of COVID-19.⁹

While the temporal relationship between acral peeling and COVID-19 appears well established, we cannot exclude that this cutaneous sign might be related to other conditions. Only one of our cases had a history of atopic dermatitis, and none had suffered acral peeling before COVID-19. In other conditions epidemiologically related to COVID-19, such as COVID toes, negativity for microbiological tests has been claimed as the main argument against a causal link.¹⁰ In the patients in our series, the demonstration of SARS-CoV-2 infection by PCR or rapid antigen test provides a strong support for a causal relation.

In the context of the COVID-19 pandemic, appearance of acral erythema and desquamation in a child should raise the possibility of SARS-CoV-2 infection; PCR testing must be obtained, and, if positive, close contacts should be quarantined. The suspicion is stronger if the patient presents other typical COVID-19 signs. The acral

desquamation in COVID-19 presented here is not associated with severe disease, and it is reasonable to consider this to be a sign of benign disease and favorable outcome. However, attention must be paid to other systemic signs of early MIS-C, and the patients should be considered potentially infectious.

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ETHICAL APPROVAL

From the institutional Ethics Committee and Board was obtained. Standard informed consents were obtained for recording images.

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