



SPECIAL ISSUE ARTICLE

Chilblain-like lesions in pediatric dermatological outpatients during the COVID-19 outbreak

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Abstract

In Spain, with full confinement measures and coinciding with the pandemic, pediatricians and dermatologists have received, through tele dermatology/teleconsultation and social networks, a barrage of diverse images, which have subsequently allowed us to approach some of them by direct physical examination of early and late skin manifestations associated with SARS-Cov-2 infection. We designed a retrospective, cross-sectional study to evaluate the dermatological care of all those patients under the age of 16 who consulted, in person or telematically, for acral lesions (chilblain-like or erythema multiforme-like) in the context of the Coronavirus disease (COVID-19) pandemic, since 15 March 2020 to 24 April 2020, both included in the health area of the Hospital Universitario San Cecilio de Granada. Of all the patients collected, 18 (66%) were male and the overall mean age was 14.44 years. All lacked a personal history of interest and denied previous episodes of chilblains or Raynaud's phenomenon/disease. The clinic was limited to purpuric lesions located on acral regions distributed on hands and feet. Dermatologists and pediatricians should be aware of the lesions associated with COVID-19 infection and their possible complications. It remains to be identified if there are different dermatological patterns in the pediatric and adult population.

KEYWORDS

chilblain-like lesions, COVID 19, pediatrics

In Spain, with full confinement measures imposed by the national government and coinciding with the pandemic, pediatricians and dermatologists have received, through tele dermatology/teleconsultation and social networks, a barrage of diverse images, which have subsequently allowed us to approach some of them by direct physical examination of early and late skin manifestations associated with SARS-Cov-2 infection.¹⁻⁴ In particular, acro-ischemic lesions, similar to chilblain (chilblain-like), have been highlighted in children and adolescents with little or no symptoms, located at fingers and toes. COVID + epidemiological environment has not always been able to be

proved.^{2,5} Even with a clear and well-established temporal relationship, there is no demonstrable evidence of infection in many cases.³ Many times the family's refusal to perform a histological examination that prevented us to obtain more data regarding this manifestation. In others, due to sanitary measures, it has not been possible to carry out serological or polymerase chain reaction (PCR) studies to confirm the infection, since they were not recommended in asymptomatic people. However, the skin has allowed us a privileged observation of the evolution of a sign, based on a morphology that is repeated in each focus of the pandemic. The causal relationship and the possibility that can be considered a later sign of the infection remain to be elucidated.

We designed a retrospective, cross-sectional study to evaluate the dermatological care of all those patients under the age of 16 who

This study has been approved by the Ethical Committee of Hospital Universitario San Cecilio de Granada, Spain with the Code HUSC-004, resolution available.

consulted, in person or telematically, for acral lesions (chilblain-like or erythema multiforme-like) in the context of the Coronavirus disease (COVID-19) pandemic, since 15 March 2020 to 24 April 2020, both included in the health area of the Hospital Universitario San Cecilio de Granada. Inclusion criteria were the presence of acral skin lesions as the reason for consultation. Exclusion criteria included another type of cutaneous lesions and lack of clinical data. The variables collected included, sex, age, personal history of chilblain/Raynaud's disease, type of lesions, symptoms, location (hands/feet), tests for SARS-Cov-2 (PCR, Ig M, Ig A, Ig G), noncutaneous clinic, family affected by the SARS-Cov-2 infection, and treatment for skin lesions. All parents signed an informed consent before the inclusion of the patient in the present study.

All the results obtained are reflected on Table 1. Of all the patients collected, 18 (66%) were male and the overall mean age was 14.44 years. All lacked a personal history of interest and denied previous episodes of chilblains or Raynaud's phenomenon/disease. The

TABLE 1 Characteristics of the sample of pediatric patients with chilblain-like skin lesions in our health care area

	n = 27
Age	14.4-year-old
Sex	Male (n = 18; 66%)
Personal history of chilblain	None
Personal history of Raynaud disease/ phenomenon	None
Type of lesions	
Chilblain-like	25/27 (92.6%)
Erythema multiforme-like	2/27 (7.4%)
Symptoms	
Asymptomatic	67% (n = 18)
Pruritus	11% (n = 3)
Mild pain	22% (n = 6)
Location	
Hands	22% (n = 6)
Feet	74% (n = 20)
Both	4% (n = 1)
Duration of skin lesions	14.6 days
Tests for SARS-Cov-2	
PCR	Negative (n = 2)
Ig M	Negative (n = 9)
Ig A	Negative (n = 9)
Ig G	Negative (n = 9)
Noncutaneous clinic	Diarrhea 4%
Family affected by the SARS-Cov-2 infection	
No family affected	74% (n = 20)
Asymptomatic	26% (n = 7)
Hospitalization	0%
Treatment	None (n = 27)

Abbreviation: PCR, polymerase chain reaction.

clinic was limited to purpuric lesions located on acral regions distributed on hands and feet (Figures 1-3), asymptomatic or associated with pruritus (11%) or mild pain (22%). Regarding systemic symptoms related to SARS-Cov-2 infection, no respiratory symptoms were observed and only one of them had suffered an episode of diarrheal outbreak coinciding with the skin symptoms. No need of administration of local or systemic treatment was necessary and the lesions resolved spontaneously without sequelae.

COVID-19 is spreading quickly across the world with a significant global concern. Many clinical signs of this virus have been described including new cutaneous manifestations. It is not uncommon for viral infections to cause skin rashes, for example, measles, rubella, and dengue fever all-cause viral exanthems.⁶ However, cutaneous manifestations are considered an infrequent presentation of COVID-19. Recalcati¹ reported the first large analysis on the skin manifestations of 148 COVID-19 positive patients in Lecco Hospital in Italy. The author described cutaneous symptoms in 20.4% of patients with three



FIGURE 1 Chilblain-like lesions on hands (patient no. 7)



FIGURE 2 Chilblain-like lesions on feet (patient no. 9)



FIGURE 3 Erythema multiforme-like lesion (patient no. 22)

main patterns: erythematous rash, urticaria, and chickenpox-like lesions. Since then, subsequent case reports and case series have described COVID-19 associated skin lesions, to highlight the epidemic of cases of vasculopathy-related skin manifestations in healthy young patients. The lesions typically occur in children and adolescents and they mainly affect the feet and sometimes the hands. They appear as red-violet macules, which can cause blisters and usually evolve favorably. These acute self-healing acro-ischemic lesions are different from other chronic conditions such as acrocyanosis, perniosis, or vasculitis. Although they could be the expression of secondary microthrombosis due to endothelial damage,² its clinical implication and relation to COVID-19 remains unclear. Early recognition, especially on the pediatric population, of cutaneous manifestations is important for the monitoring and surveillance of younger patients.

Our series is focused on pediatric patients, whose parents have consulted in the southern area of Granada with a reference population of approximately 250 000 inhabitants. The results differ from some published series^{7,8} where multiforme-like erythema eruptions seem to occur in a younger population, although in our case most of the consulted cases were identified as chilblain-like. It is difficult to establish a relationship with SARS-Cov-2 infection and even the few tests performed offer negative serological results. Currently, the serological panel has been expanded to Citomegalovirus, Epstein-Barr Virus, Parvovirus B19, and *Mycoplasma pneumoniae* to try a better understanding regarding the appearance of these lesions in the

current epidemiological context, as a high number of incident pediatric cases at this season is an uncommon fact. It would have been desirable to obtain samples for histological study in these patients.

Dermatologists and pediatricians should be aware of the lesions associated with COVID-19 infection and their possible complications. It remains to be identified if there are different dermatological patterns in the pediatric and adult population. However, this will require further studies to develop protocols applicable to clinical practice.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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