Recent outbreak of chilblain-like lesions is not directly related to SARS-CoV-2 infection

Editor

Throughout March and April 2020, dermatologists have observed an outbreak of chilblains despite climatic conditions not conducive to their apparition. These lesions have occurred simultaneously to the COVID-19 epidemic, suggesting a relationship between their onset and SARS-CoV-2 infection.

Here we describe a series of 10 patients presenting chilblain-like lesions in whom we have searched for evidence of SARS-CoV-2 infection.

Between 17 and 29 April 2020, we have included patients successively referred to our Department for chilblain-like lesions. Present and past medical history were recorded along with complete skin examination. Blood samples were collected for blood cell count, CRP, liver and renal parameters, antinuclear antibodies (anti-ENA and anti-DNA antibodies if positive immunofluorescence), complement components, ANCA, cryoglobulins, anti-prothrombinase, anticoagulilopin antibodies, coagulation factors and D-dimers. Serological status concerning human immunodeficiency virus, hepatitis viruses and SARS-CoV-2 were established using automated assays performed on an Abbott ARCHITECT i2000 (Abbott Diagnostics, Rungis, France). Two biopsies were performed on lesional skin for diagnosis by light microscope examination and for SARS-CoV-2 search by RT-PCR test targeting the RNA-dependent RNA polymerase gene (https://www.who.int/docs/default-source/coronaviruse/real-time-rt-pcr-assays-for-the-detection-of-sars-cov-2-institut-pasteur-paris.pdf). We also searched for SARS-CoV-2 on a nasopharyngeal swab using RT-PCR.

Ten patients were included [median age: 33 years (11–57), sex-ratio 1 : 1]. All had erythematous, livedoid and purplish patches and papules on fingers or toes, evolving towards erosions, pigmentation and scaling (Fig. 1, Table 1). In eight patients, lesions began with a burning pain, which shifted towards pruritus in five patients. Lesions started 26.5 days prior to consultation (14–52) and healed within 35 days (27–45) without sequelae in seven patients. Five patients experienced short-duration viral symptoms without fever, anosmia nor ageusia. None of them had contact with a confirmed COVID infected person. Biopsies showed (Fig. 1) inconstant epidermal lesions (apoptotic keratinocytes, epidermal necrosis, basal layer vacuolation, mild spongiosis and parakeratosis), an upper dermis oedema, and a perivascular and peridendral lymphohistiocytic infiltrate. Vascular lesions were prominent with angiocentrism, angiotropism and endothelium swelling, capillary ectasia and fibrinoid thrombi. All blood sample examinations were normal except for three patients who had positive antinuclear antibodies with anti-nucleolar or anti-centromere patterns. SARS-CoV-2 research on nasopharyngeal swabs and on skin biopsies was negative, and no SARS-CoV-2–specific IgG was detected in any case.

We present a series of 10 consecutive patients with typical clinical and pathological chilblains occurring during the peak of COVID-19 infection. In our area, the weather was warm at that time and all patients lived under lockdown in well-heated houses. In all patients, we failed to demonstrate neither a current nor recent COVID-19 infection nor SARS-CoV-2 presence in skin. The absence of respiratory symptoms and the known rapid clearance of SARS-CoV-2 in moderate infections could explain the negativity of RT-PCR analysis. The absence of specific IgG suggests that a reaction due to COVID-19 is unlikely even though these patients could have only specific IgM. However, IgM peak between days 5 and 12 after infection\(^1\) whereas IgG reach peak concentrations after day 20 and most patients were

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tested after 20 days of evolution of skin lesions. Furthermore, the sensitivity\(^2\) of our test is 100% after day 17. Three of these patients had positive antinuclear antibodies suggesting an undiagnosed autoimmune disease (scleroderma or lupus) but no one presented other clinical symptoms.

Chilblain-like lesions have been reported for several weeks\(^3\)–\(^5\) in patients COVID infected or not, suggesting that they could be induced by SARS-CoV-2. Our data do not confirm a direct role of SARS-CoV-2 or an immunological hit-and-run mechanism. Some of these patients might have an authentic systemic disease, fortuitously detected. To conclude, our results do not support a direct effect of SARS-CoV-2 in the observed outbreak of unusual chilblain lesions during the COVID-19 pandemic.

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**Conflicts of interest**

None reported.

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**Author contributions**

Dr Rouanet had full access to all of the data of the case series and takes responsibility for the integrity of the data and the accuracy of the data analysis. Acquisition, analysis or interpretation of data: All authors. Drafting of the manuscript: Rouanet and D’Incan. Critical revision of the manuscript for important intellectual content: All authors. Supervision: Rouanet and D’Incan.

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| Patient | Age/Sex | Relevant Medical History | Associated Viral Symptoms | Time between 1st Symptoms and Consultation (days) | Skin Symptoms | Clinical Symptoms | Associated Laboratory Results | Notes |
|---------|---------|-------------------------|---------------------------|-------------------------------------------------|--------------|------------------|-------------------------------|-------|
| 1       | 60/F    | Raynaud's disease       | None                      | 26                                              | Purplish macule | 28               | Negative                      | /     |
| 2       | 32/H    | Asthenia                | None                      | 25                                              | Erythematous and purplish patches | 35               | Negative                      | Negative |
| 3       | 11/H    | /                       | Asthenia, headaches       | 28                                              | Erythematous and purplish patches | 22               | Negative                      | Negative |
| 4       | 18/H    | /                       | Asthenia, headaches       | 16                                              | Erythematous and purplish patches | 16               | Positive (1/640) anti-centromere antibodies | Negative |
| 5       | 34/F    | Raynaud's disease, chilblains | None                      | 32                                              | Purplish and livedoid patches | 22               | Positive (1/2560) nucleolar fluorescence | Negative |
| 6       | 57/F    | /                       | Asthenia                  | 52                                              | Purplish macule     | 52               | Positive (1/160) dense cytoplasmic fluorescence | Negative |
| 7       | 24/H    | /                       | Asthenia                  | 22                                              | Erythematous patches | 22               | Negative                      | Negative |
| 8       | 50/F    | Raynaud's disease, chilblains | Headaches                | 37                                              | Purplish and livedoid patches | 45               | Negative                      | Negative |
| 9       | 40/F    | Raynaud's disease, chilblains | Headaches                | 24                                              | Purplish and livedoid patches | 24               | Negative                      | Negative |
| 10      | 14/H    | Cough, asthenia, headaches, myalgia, arthralgia | None                      | 35                                              | Erythematous livedoid and purplish patches | 43               | Negative                      | Negative |
Acute acral cutaneous manifestations during the COVID-19 pandemic: a single-centre experience

Editor

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), was first reported in China on December 2019. Almost 5 months into the pandemic, little is still known about cutaneous manifestations in COVID-19. In fact, the prevalence of cutaneous signs varies greatly in the literature, ranging from 0.2% to 20.4%.1,2

Given their potential association with COVID-19, acral lesions have received special attention worldwide, both in the medical literature and the media. Our aim is to share our

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Figure 1 Acral lesions in patients with negative nasopharyngeal PCR and serology for COVID-19: (a) Petechial and purpuric macules on the dorsal aspect of the toes in a 19-year-old male. (b) Erythema and oedema on multiple toes in a 19-year-old male. (c) Purpuric macules with haemorrhagic vesicle on the fingers of a 41-year-old male. (d) Erythema and oedema on multiple toes in a 19-year-old male.