Non-acral skin manifestations during the COVID-19 epidemic: COVIDSKIN study by the French Society of Dermatology

Dear Editor,

A variety of skin manifestations occurring during the COVID-19 pandemic have been reported since March 2020. The most reported were chilblain-like lesions, widespread urticaria, maculopapular eruptions, vesicular eruptions and vascular lesions such as livedo or necrosis. Cutaneous manifestations are rare with a frequency estimated around 2% of patients with a biologically confirmed COVID-19.4–7 A national survey, COVIDSKIN study of the French Society of Dermatology, was carried out from March 30 to June 11, 2020, asking hospital and private physicians to report, using a standardized questionnaire, cases of skin manifestations in patients with COVID-19 clinically suspected. We report skin manifestations excluding acral manifestations, described separately. We aimed to describe the characteristics, the skin manifestations and the biological diagnostic tests’ results of suspected COVID-19 patients.

Among the 492 collected cases, after excluding 311 patients with acral manifestations and 65 for whom no COVID-19 tests were performed, we included 116 patients: 52 had positive COVID-19 tests (45 positive RT-PCR, eight positive serology; including one patient positive for both) and were then considered as ‘confirmed COVID-19 group’ and 64 who had negative tests (15 with negative RT-PCR and 49 with negative results for both RT-PCR and serology) but who were clinically suspected, then considered as ‘unconfirmed COVID-19 group’. The available photographed manifestations were classified by four dermatologists according to Galván Casas et al. (maculopapular eruptions, urticaria, vesicular rash, necrosis/livedo and other eruptions).

The overall median age was 38 [interquartile range (IQR) 28–52]. All the hospitalized patients were in the confirmed group (25/52) except for two patients with negative RT-PCR. Four patients were died, all from the COVID-19-confirmed group. Median time between the first infectious symptoms when present (n = 86) and RT-PCR was 6 days (IQR 3–13) and median time to serology was 26.5 days (IQR 13–33.3). Median time between the first infectious symptoms and cutaneous manifestations was 7 days (IQR 3–16). Patients’ and characteristics and biological tests’ are summarized in Table 1.

Pictures of the lesions were available for 71 patients (Fig. 1). The most common manifestation was maculopapular eruption. The frequency and distribution of the types of skin manifestations did not significantly differ between the confirmed and unconfirmed COVID-19 patients (P = 0.199), as summarized in Table 1.

### Table 1 Dermatologic manifestations in patients with confirmed and unconfirmed COVID-19

| Manifestation                      | Confirmed COVID-19 patients, n = 52 | Unconfirmed COVID-19 patients, n = 64 |
|------------------------------------|-------------------------------------|--------------------------------------|
| **Overall population, n = 116**    |                                     |                                      |
| Age in year, median (IQR)          | 44.5 (30.3–63.5)                    | 36 (25–44.5)                         |
| Male patient                       | 31 (60)                             | 40 (62)                              |
| Anosmia/ageusia                    | 21 (41)                             | 10 (16)                              |
| At least one symptom               | 46 (88)                             | 40 (62)                              |
| Time between date of first infectious symptoms and: |                                    |                                      |
| RT-PCR in days, median (IQR)       | 5 (2.25–9)                          | 7.50 (4–26)                          |
| Serology in days, median (IQR)     | 28 (26.5–31)                        | 25 (10–33)                           |
| Cutaneous manifestations in days, median (IQR) | 7 (4.75–13.8) | 8 (0–23)                             |
| Deaths                             | 4 (8)                               | 0                                    |
| **Patients with available pictures, n = 71** |                                    |                                      |
| Maculopapular rash                 | 20 (53)‡                            | 21 (64)                              |
| Facial                             | 2 (5)                               | 12 (48)                              |
| Diffuse                            | 12 (32)                             | 16 (48)                              |
| Thoracic plaque                    | 4 (10)                              | 0                                    |
| Erythema multiforme                | 1 (3)†                              | 1 (3)†                               |
| Pityriasis rosea                   | 1 (3)                               | 0                                    |
| Vesicular rash                     | 1 (3)                               | 2 (6)                                |
| Urticaria                          | 8 (21)†                             | 1 (3)                                |
| Purpura/livedo                     | 3 (8)†                              | 2 (6)                                |
| Other                              | 6 (16)                              | 7 (21)†                              |
| Asymmetric periflexural exanthem of childhood | 1                                   | 0                                    |
| Erythema nodosum                   | 0                                   | 2†                                   |
| Eczema                             | 1                                   | 3†                                   |
| Impetigo                           | 1†                                  | 0                                    |
| Tongue angiomatosis                | 1                                   | 0                                    |
| Grover’s disease                   | 1†                                  | 0                                    |
| Lipodermatosclerosis               | 1†                                  | 0                                    |
| Pityriasis lichenoides             | 0                                   | 2†                                   |

Data are presented as n (%) unless otherwise indicated.

†Histologically confirmed diagnosis. ‡Deceased patients: maculopapular rashes, n = 2; urticaria, n = 1; purpura/livedo, n = 1.
Table 1, although urticarial eruptions seemed more frequent among confirmed patients. In the confirmed group, the frequency and distribution of the types of manifestations did not differ between hospitalized and non-hospitalized patients.

Previously, two large retrospective series classified respectively 304 COVID-19 and 126 cases found the following types of non-acral manifestations’ frequencies: 58–61% maculopapular eruptions; 21–24% urticaria; 11–14% vesicular eruptions; and 7–9% livedo/necrosis. We observed these manifestations in similar proportions, especially among patients with confirmed COVID-19 (Table 1). We could not exclude the possibility of false negative for some patients, specifically for those who reported anosmia/ageusia and when RT-PCR was not followed by serological testing, while this probability was low for RT-PCR and seronegative patients. Indeed, asymptomatic COVID-19 patients have a similar rate of seroconversion than symptomatic patients and the 58 serologies performed had a sensitivity and specificity above 98% in the timeframe they were performed.

As previously stated, given the dermatological manifestations’ heterogeneity, possible differential diagnoses, classification bias and the absence of gold-standard test to exclude COVID-19, it was not possible to determine which cutaneous manifestations are directly related or not to the infection. Further prospective studies with systematic dermatological examination of patients with proven COVID-19 are needed to establish a formal association between infection and specific cutaneous manifestations.

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R. Guelimi,1,2 R. Salle,1,2 L. Dousset,3 H. Assier,1,2 S. Fourati,4 Z. Bhujoo,5 S. Barbarot,6 C. Boulard,7 C. Cazanave,8 A. Colin,1,2 E. Kostrzewa,9 C. Lesort,10 A. Levy Roy,11 F. Lombart,12 J. Marco Bonnet,13 L. Marty,14 J.B. Monfort,15 L. Riffaud,16 M. Samimi,17 M. Tardieu,18 E. Sbidian,1,2 P. Wolkenstein,1,2 L. Le Cleach,1,2,* M. Beylot-Barry3,19

1Dermatology Department, Hôtel Henri Mondor, APHP, Créteil, France, 2EA 7379 EpiDermE, UPEC, Créteil, France, 3Dermatology Department, University Hospital Bordeaux, Bordeaux, France, 4Department of Virology, Hôpital Henri Mondor, Université Paris-Est, Créteil, France, 5Dermatology Department, Grand Hôtel de l’Est Francilien, Jossigny, France, 6Dermatology Department, Nantes Université, University Hospital of Nantes, UMR 1280 FrVAN, INRAE, Nantes, France, 7Department of Dermatology, Le Havre Hospital, Le Havre, France, 8Infectious and Tropical Diseases Department, CHU Bordeaux, Bordeaux, France, 9Dermatology Department, Hôpital Robert Boulain, Libourne, France, 10Dermatology Department, Edouard Herriot Hospital, Hospices Civils de Lyon, Lyon, France, 11Private Practice, Lambsc, France, 12Dermatology, Amiens University Hospital Centre, Amiens, France, 13Private Practice, Montrouge, France, 14Private Practice, Latresne, France, 15AP-HP, Dermatology and Allergology Department, Hôpital Tenon, Sorbonne Université, Sorbonne Université, Paris, France, 16Oncopôle, Toulouse, France, 17Dermatology Department, University Hospital of Tours, INRA-University of Tours, ISP1282, Tours, France, 18Dermatology Department,
University Hospital of Grenoble Alpes, Grenoble, France, French Society of Dermatology, Paris, France.

*Correspondence: L. Le Cleach. E-mail: laurence.le-cleach@aphp.fr

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