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Long COVID in the skin: a registry analysis of COVID-19 dermatological duration



Since the start of the COVID-19 pandemic, multiple studies have reported that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is associated with dermatological manifestations.¹ However, data on duration of signs and symptoms for the myriad dermatological manifestations of COVID-19 are lacking. Patients infected with SARS-CoV-2 who experience prolonged symptoms have been termed “long-haulers”² or are said to have “long Covid”,³ with studies reporting that 66–87% of patients continued to have one or more COVID-19 symptoms 60 days after PCR positivity.^{4–6} Using an international registry of COVID-19 dermatological manifestations, we evaluated the duration of dermatological signs and symptoms of COVID-19 and assessed the presence of patients with persistent skin manifestations.

In collaboration with the International League of Dermatological Societies and the American Academy of Dermatology, we established an international registry for COVID-19 dermatological manifestations in April, 2020.⁷ Physicians and other health-care providers entered information on confirmed or suspected COVID-19 cases with dermatological manifestations, including PCR test results, antibody test results, and total sign and symptom duration when known. Additionally, providers were contacted in June and August to update COVID-19 laboratory test results and COVID-19 dermatological sign and symptom duration. Laboratory tests for SARS-CoV-2, including nasopharyngeal swab PCRs and serum antibody tests (IgM, IgG, and IgA), were reported when available. We defined long-haulers as patients with dermatological signs of COVID-19 that persisted for more than 60 days.⁴ Data were analysed descriptively with medians and IQRs using Stata (version 16). Duration of skin signs was calculated separately for each dermatological condition and plotted using a boxplot to illustrate IQRs and outliers.

From Apr 8, 2020, to Oct 8, 2020, 1030 total cases and 331 laboratory-confirmed or suspected COVID-19 cases with dermatological manifestations were reported in the registry from 41 countries. Of these cases, 234 total cases and 96 laboratory-confirmed cases reported data for

dermatological sign and symptom duration (appendix p 1). Median duration of signs was 13 days (IQR 7–21) for all patients, and 7 days (IQR 5–14) for the subset of patients with laboratory-confirmed disease (appendix p 2). Morbilliform lasted a median of 7 days (IQR 5–10) and urticarial eruptions lasted a median of 4 days (IQR 2–10) among patients with laboratory-confirmed COVID-19, with a maximum duration of 28 days. Papulosquamous eruptions lasted 20 days (IQR 14–28) in laboratory-confirmed cases, with one case having a confirmed long-hauler eruption lasting 70 days. Pernio lasted a median of 15 days (IQR 10–30) in patients with suspected COVID-19, and 12 days (IQR 7–23) in laboratory-confirmed cases.

Seven (6.8%) of the 103 cases with pernio were long-haulers with pernio lasting for more than 60 days, of whom two cases were laboratory-confirmed. One long-hauler patient who presented with 20 days of cough and fatigue and 13 days of pernio lesions initially tested negative for COVID-19 by SARS-CoV-2 nasopharyngeal PCR, serum IgM, and IgG. The patient seroconverted to anti-SARS-CoV-2 IgM positivity within 6 weeks after pernio onset, and continued to experience severe pernio and fatigue for over 133 days (detailed case timeline is shown on appendix p 2). Additional ELISA-based testing of banked serum drawn 24 days after symptom onset showed IgA reactivity to SARS-CoV-2 full spike protein and spike protein receptor binding domain, consistent with reported IgA immunoreactivity detected in other COVID-19-associated cohorts of patients with pernio (appendix p 3).^{8,9} This finding increases our confidence that this patient had a true SARS-CoV-2 infection. Another long-hauler patient who developed pernio and livedo reticularis 1 month after exposure to a SARS-CoV-2 nasopharyngeal PCR-positive family member tested positive for SARS-CoV-2 serum IgG 1 month after pernio lesion onset, and continued to experience pernio and livedo reticularis lesions for over 150 days.

A limitation of this registry-based study is that providers might have entered data at only one timepoint, often soon after seeing the patient, when the full-time course of disease had not yet been observed.



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We attempted to overcome this issue by proactively requesting case updates. This challenge probably biased our results towards inclusion of cases with a shorter duration of dermatological signs and symptoms. Indeed, 58% of providers reported that patients had ongoing COVID-19 dermatological manifestations at the time of case entry. Therefore, the duration of dermatological manifestations reported here probably underestimates both average duration and the number of long-hauler patients.

Since the onset of the COVID-19 pandemic, appreciation for persistent morbidity beyond the acute phase of disease has increased.^{4,10} To our knowledge, our data represent the largest dataset to date on persistent skin signs and symptoms of COVID-19 and the duration for several distinct skin manifestations. Urticarial and morbilliform eruptions were relatively ephemeral, whereas papulosquamous eruptions, and particularly pernio, were longer-lasting. Our analysis revealed a previously unreported subset of patients who experience long-hauler symptoms in dermatology-dominant COVID-19, raising questions about persistent inflammation even in patients who initially experienced relatively mild COVID-19.

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