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Chilblains is a common cutaneous finding during the COVID-19 pandemic: A retrospective nationwide study from France

To the Editor: Coronavirus disease 19 (COVID-19), a pneumonia associated with severe acute respiratory syndrome coronavirus 2 (SARS-Cov2), was first identified in Wuhan, China, in December 2019, and was characterized as a pandemic by the World Health Organization on March 11, 2020. Fever, dry cough, dyspnea, fatigue, anorexia, ageusia, and anosmia are common symptoms of COVID-19. Reported skin manifestations of COVID-19 include erythematous lesions, sometimes with dengue-like petechiae,[1] and urticaria and chickenpox-like vesicles.[2]

We performed a retrospective observational nationwide study of skin lesions encountered during the COVID-19 pandemic in France from March 18 to April 9, 2020, in an outpatient setting of French private practices. Patients gave informed consent for the publication of their photographs. The study enrolled 277 patients, half were male, and the median age was 27 years (range, 2-98 years).

The lesions were classified into 6 categories: urticarial in 26 (9%; Fig 1, *A*), vesicular in 41 (15%; Fig 1, *B*), acral in 142 (51%; Fig 1, *C*), morbilliform in 25 (9%; Fig 1, *D* and *E*), petechial in 7 (3%), livedo reticularis in 4 (1%), and other types in 41 (15%). Some patients presented with cutaneous signs fitting in multiple categories (detailed in Table I). Acral lesions were unexpectedly common (n = 142). Chilblain-like lesions were the most frequent of the acral lesions (106 of 142 [75%]; Fig 1, *C*; Supplemental Fig 1, available via Mendeley at https://doi.org/10.17632/2f9rpvh9vd.1). Vesicular acral (dyshidrosis-like) lesions were reported in 20 patients (14%). Acrodynia was present in 18 patients (6%), sometimes isolated.

Among the 277 patients, 34 had a SARS-Cov2 polymerase chain reaction (PCR) test, of which 25 (74%) were positive, and 7 of these 25 (28%) had acral lesions. Among the patients without a positive PCR test, 115 patients had suggestive extracutaneous symptoms (detailed in Table I) or reported a close contact with a patient with COVID-19, or both. In addition, 59 patients had isolated chilblains (without any past history of chilblains and in the absence of cold exposure), without associated extracutaneous symptoms; this may suggest cutaneous symptoms of COVID-19, because this finding has been documented in some patients with a positive SARS-Cov2 PCR test in our case series and in 2 recently published case reports.[3,4] Histologic examination of 3 chilblain-like lesions showed a lichenoid dermatitis with a perivascular and eccrine mononuclear infiltrate and vascular microthrombi in 2 cases.

Owing to the retrospective, outpatient setting and the limited number of available SARS-Cov2 PCR tests in France to date, most patients were not tested. However, the number of observed chilblain-like lesions in patients without significant past medical history is extremely unusual during the spring season in France, especially because people are staying inside, and may suggest a link with COVID-19.

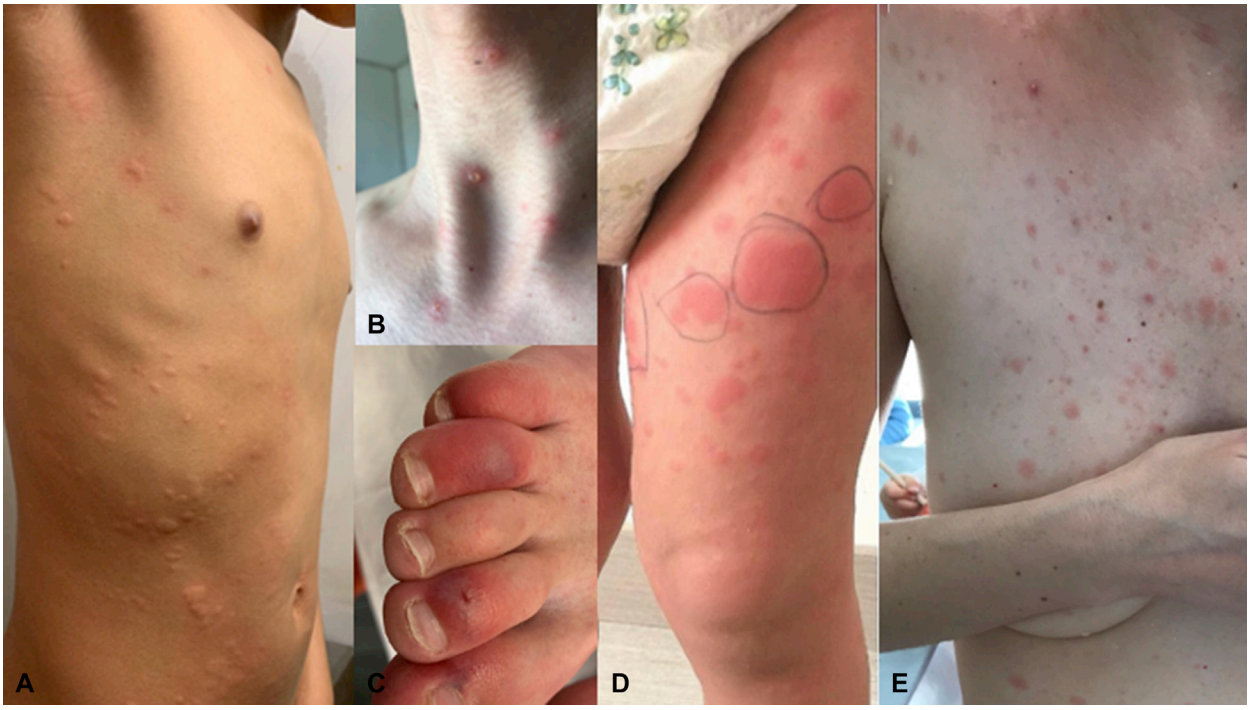

Fig 1. Different types of skin rashes observed during the COVID-19 pandemic: (**A**) urticaria-like; (**B**) vesicular or chickenpox-like; (**C**) chilblains; (**D**) maculopapular; and (**E**) pityriasis rosea-like.

Finally, the presence of microthrombi in patients with chilblains is consistent with the altered coagulation status observed in patients with severe COVID-19.[5] Although the number of tested patients does not allow us to draw firm conclusions regarding a direct link between SARS-Cov2 and these skin lesions, the unexpected outbreak of acral skin lesions in this epidemic context requires further investigation.

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Table I. Characteristics of the patients

Characteristic*	No. (%) or median (range)
All patients	277
Male sex	129/259 (50)
Age, y	27 (2-98)
SARS-Cov2 PCR test	34/277 (12)
Positive PCR test	25/34 (74)
Contact with a patient with COVID-19	31/277 (11)
Suggestive extracutaneous symptoms†	103/277 (37)
Fever	48/277 (17)
Respiratory symptoms	44/277 (16)
Anosmia/ageusia	18/277 (6)
Digestive symptoms	16/277 (6)
Acrodynia	18/277 (6)
Morbilliform lesions	25/277 (9)
Male sex	10/21 (48)
Age, y	29 (2-70)
Location of lesions	
Trunk or limbs	25/25 (100)
Face	2/25 (8)
Acral lesions	142/277 (51)
Male sex	67/132 (51)
Age, y	27 (6-73)
Type of lesions	
Chilblains	106 (75)
Dyshidrosis-like lesions	20 (14)
Other	16 (11)
Location of lesions	
Hands	23/34 (68)
Feet	18/34 (53)
Vesicular lesion	41 (15)
Male sex	22/38 (58)
Age, y	43 (8-74)
Type and location of lesions	
Vesicles/varicella-like lesions of the trunk and limbs	21 (51)
Acral dyshidrosis-like lesions	20 (49)
Livedo reticularis	4 (1)
Male sex	1/2 (50)
Age, y	15
Urticarial lesions	26 (9)
Male sex	13/23 (57)
Median age (range)	3 (2-23)
Location of lesions	
Trunk and limbs	24 (92)
Face	2 (8)
Petechial lesions	7 (3)
Male sex	5/7 (71)
Age, y	21 (5-70)
Location of lesions	
Diffuse	3/7 (43)
Acral	2/7 (29)
Limbs	2/7 (29)
Other types of lesions‡	41 (15)
Male sex	11/36 (31)
Median age (range)	40 (1-98)
Location of lesions, n (%)	
Trunk and limbs	33/41 (80)
Face	8/41 (20)

PCR, Polymerase chain reaction; *SARS-Cov2*, severe acute respiratory syndrome coronavirus 2.

*Some patients presented with cutaneous signs fitting in multiple categories.

†There were 19 patients who reported suggestive extracutaneous symptoms and contact with a patient with COVID-19.

‡Including eczema-like, angiomatous, and annular lesions.

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Association of outdoor activity restriction and income loss with patient-reported outcomes of psoriasis during the COVID-19 pandemic: A web-based survey

To the Editor: Under the circumstances of the COVID-19 epidemic, patients with psoriasis or other chronic diseases have been confronted with limited accessibility to health care and medicine. Some underwent income loss or unemployment, which placed them at additional risks of adverse health outcomes.[1] The impacts of COVID-19 varied across subgroups of people, and we used outdoor activity restriction and loss of income as the proxy measures of the impacts. We investigated the associations of these impacts with the patient-reported outcomes of psoriasis through a web-based survey in China between February 25, 2020, and March 6, 2020.

Outdoor activity restriction was categorized as unaffected, restricted, and quarantined. Loss of income was categorized as complete loss, reduced, and unaffected. The primary outcome was the exacerbation of disease, determined by the Global Rating of Change. Secondary outcomes included perceived stress (visual analog scale),[2] symptoms of anxiety (2-item Generalized Anxiety Disorder) and depression (2-item Patient Health Questionnaire), adherence to treatment, and health care use. Covariates included sex, age, educational level, annual income, marital status, type of psoriasis, course of disease, body surface area of lesions, and comorbidities. Details of the measures are provided in the supplemental materials (available via Mendeley at http://doi.org/10.17632/gtmhpx4g2f.1). The data were analyzed with R, version 3.5.2 (R Core Team, Vienna, Austria). Multivariable logistic regression was used to estimate the associations with adjustments. The effect size is presented as adjusted odds ratio (aOR) and 95% confidence interval (CI). *P* values of less than .05 were considered statistically significant.

A total of 926 valid questionnaires was collected. One reported confirmed infection with COVID-19. The mean age of the patients was 33.1 ± 12.2 years, and 36.9% were female. The characteristics of

Table I. Associations of outdoor activity restriction with patient-reported outcomes of psoriasis

Patient-reported outcomes	Unaffected (n = 512)		Restricted (n = 291)				Quarantined at home or in hospital (n = 123)			
	n (%)	OR	n (%)	OR (95% CI)	aOR (95%CI)*	*P*	n (%)	OR (95% CI)	aOR (95%CI)*	*P*
Deteriorated psoriasis	194 (37.9)	1	139 (47.8)	1.50 (1.12-2.01)	1.39 (1.03-1.88)	.034	72 (58.5)	2.31 (1.55-3.46)	2.08 (1.38- 3.15)	.001
Perceived stress (VAS, ≥7)	76 (14.8)	1	64 (22.0)	1.62 (1.12-2.34)	1.48 (1.01-2.18)	.044	30 (24.4)	1.85 (1.15-2.99)	1.51 (0.92-2.71)	.107
Anxiety (GAD-2, ≥3)	321 (62.7)	1	199 (68.4)	1.29 (0.95-1.75)	1.16 (0.85-1.60)	.346	94 (76.4)	1.93 (1.23-3.04)	1.66 (1.04-2.64)	.033
Depression (PHQ-2, ≥3)	327 (63.9)	1	209 (71.8)	1.44 (1.06-1.97)	1.23 (0.89-1.71)	.219	95 (77.2)	1.92 (1.21-3.04)	1.60 (1.00-2.59)	.053
Nonadherence to treatment	344 (67.2)	1	204 (70.1)	1.15 (0.84-1.56)	1.04 (0.76-1.45)	.793	86 (69.9)	1.14 (0.74-1.74)	1.06 (0.68-1.65)	.804
No health care use	339 (66.2)	1	198 (68.0)	1.09 (0.80-1.48)	1.09 (0.80-1.50)	.580	68 (55.3)	0.63 (0.42-0.94)	0.66 (0.44-1.00)	.049

aOR, Adjusted odds ratio; *CI,* confidence interval; *GAD-2,* 2-item Generalized Anxiety Disorder; *OR,* unadjusted odds ratio; *PHQ-2,* 2-item Patient Health Questionnaire; *VAS,* visual analog scale.

*Adjusted for age, educational level, annual income, marital status, history of hypertension, type of psoriasis, and income loss.