Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Elisa Molinelli, MD PhD student,^a Valerio Brisigotti, MD, PhD,^a Anna Campanati, Prof,^a Claudia Sapigni, MD,^a Alfredo Giacchetti, MD,^b Carlo Cota, MD,^b and Annamaria Offidani, Prof^a

From the Dermatological Unit, Department of Clinical and Molecular Sciences, Polytechnic Marche University^a; and Dermatologic Unit, INRCA IRCCS, Ancona, Italy.^b

Funding sources: None.

Conflicts of interest: None disclosed.

IRB approval status: Not required.

Reprints not available from the authors.

Correspondence to: Elisa Molinelli, Dermatological Unit, Department of Clinical and Molecular Sciences, Polytechnic Marche University, Ancona, Italy

E-mail: molinelli.elisa@gmail.com

REFERENCES

1. Offidani A, Molinelli E, Sechi A, et al. Hidradenitis suppurativa in a prepubertal case series: a call for specific guidelines. *J Eur Acad Dermatol Venereol*. 2019;33:28-31.
2. Brocard A, Knol AC, Khammari A, Dréno B. Hidradenitis suppurativa and zinc: a new therapeutic approach. A pilot study. *Dermatology*. 2007;214:325-327.
3. Hendricks AJ, Hirt PA, Sekhon S, et al. Non-pharmacologic approaches for hidradenitis suppurativa - a systematic review. *J Dermatolog Treat*. 2019;4:1-8.
4. Hessam S, Sand M, Meier NM, Gambichler T, Scholl L, Bechara FG. Combination of oral zinc gluconate and topical triclosan: an anti-inflammatory treatment modality for initial hidradenitis suppurativa. *J Dermatol Sci*. 2016;84:197-202.
5. Dhaliwal S, Nguyen M, Vaughn AR, Notay M, Chambers CJ, Sivamani RK. Effects of zinc supplementation on inflammatory skin diseases: a systematic review of the clinical evidence. *Am J Clin Dermatol*. 2020;21:21-39.

<https://doi.org/10.1016/j.jaad.2020.04.092>

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.

The authors thank all of the dermatologists of the French National Union of Dermatologists-Venereologists (SNDV), general practitioners, and pediatricians, who provided data and pictures, and the patients involved in this study.

Adèle de Masson, MD, PhD,^{a,b} Jean-David Bouaziz, MD, PhD,^{a,b} Luc Sulimovic, MD,^{a,c} Charles Cassius, MD,^{a,b} Marie Jachiet, MD,^a Marius-Anton Ionescu, MD, PhD,^a Michel Rybojad, MD,^a Martine Bagot, MD, PhD,^{a,b} and Tu-Anh Duong, MD, PhD,^d on behalf of the SNDV (French National Union of Dermatologists-Venereologists)

From the Department of Dermatology, Saint-Louis Hospital, Assistance Publique-Hôpitaux de Paris, Paris^a; Human Immunology, Pathophysiology and Immunotherapy, Institut National de la

Santé et de la Recherche Médicale U976, Université de Paris, Paris^b; the French National Union of Dermatologists-Venereologists (SNDV)^c; and the Department of Dermatology, Mondor Hospital, Assistance Publique-Hôpitaux de Paris, Chaire Avenir Santé numérique, Equipe 8 Institut Mondor de Recherche Biomédicale, Human Immunology, Pathophysiology and Immunotherapy, Université Paris Est Créteil, Créteil, France.^d

Drs Bagot and Duong share last authorship.

Collaborators: Dominique Denjean, Marie-Pierre Labarthe, Maud Bézier, Marie Risbourg, Geneviève Payan, Sabrina Alain, Frédéric Mathivon, Anny Cohen-Letessier, Delphine Kerob, Jean-Philippe Hellier, Christelle Comte, Fabielle Keller, Caroline Brue, Paul Lestang, Laurence Allanore, Eliane Pierkarski-Carp, Anne Amoric, Hervé Serpier, Philippe Pruvost, Fabien Guibal, Damien Giacchero, Elisa Funck-Brentano, Sandrine Sierra Fortuny, Isabelle Gallay, Agnès Zavarro, Caroline Bider-Valle, Sylvie Lagrange, ETTY Grynberg, Florence Weill, Dominique Penso, Marie Gomel, Jean Schneider, Anne Larabelle, Philippe Bonhomme, Marie-Sophie Gautier, Jean Hatchuel, Imane Mourtada, Charlotte Fite, Catherine Oliveres-Ghouti, Elisabeth Domergue, Sabrina

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)
Acrodynea	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)

Continued

Table I. Cont'd

Characteristic*	No. (%) or median (range)
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.

Fourcade-Roch, Sylvie Lecanu, Nathalie Sebban, Bruno Halioua, Anne Bellut, Fabienne Keller, Isabelle Baratte, Françoise Lejoyeux, Laurence Ollivaud, Georges Abirached, Marielle Burnouf, Beatrix Reynayd-Mendel, Jean-Noël Dauendörffer, Joëlle Sebaoun, Anne Larabelle, Hervé Garrat, Marie-Martine Pomper, Anne-Marie Heudes, Isabelle Beaulieu, Hugues Cartier, Amélie Arsouze, Dominique Lons-Danic, Michèle Pelletier, Geneviève Payan, Valérie Galais, Valérie Piantade, Marlène Risbourg, Georges Reuter, Serge Daban, Murielle Creusot, Abdallah Kolli, Isabelle Egasse-Broca, Jean-Luc Rigon, Pascale Sabban, Hélène Flacher, Benoît Jaillard, Pierre André, Dominique Debjoux, Elodie Poirier, Bénédicte Solyga, Marc Perrussel, Sabrina Makhloufi, Bertrand Margnier, Clotilde Huzar, Laetitia Vandame, Hortense Thelu, Anne-Claire Chollet, Frédérique Marchal, Michael Naouri, Marion Nadaud, Elodie Boissy, Abdelhamid Lameche, Charles Berdougou, Olivo, Rosado, Berdougou, Hamelin, Audrey Rolland, Marie-Laure Fléchet, Gabriel Colonna, Boglio, Rafii, Lefevre, Delphine Jouannet, Isabelle Berdab, Trouche, Santos, Françoise Truchot, and Isabelle Lavallée.

Funding sources: None.

Conflicts of interest: None disclosed.

IRB approval status: Approved.

Reprints not available from the authors.

Correspondence to: Martine Bagot, MD, PhD, Department of Dermatology, Research Unit INSERM U976, Saint-Louis Hospital, Université de Paris, 1 avenue Claude Vellefaux, 75010 Paris, France

E-mail: martine.bagot@aphp.fr

REFERENCES

1. Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. *J Am Acad Dermatol*. 2020;82(5):e177.
2. Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. *J Eur Acad Dermatol Venereol*; 2020. <https://doi.org/10.1111/jdv.16387>. [e-pub ahead of print]. Accessed May 20, 2020.
3. Alramthan A, Aldaraji W. A case of COVID-19 presenting in clinical picture resembling chilblains disease. First report from the Middle East. *Clin Exp Dermatol*; 2020. <https://doi.org/10.1111/ced.14243>. [e-pub ahead of print]. Accessed May 20, 2020.
4. Kolivras A, Dehavay F, Delplace D, et al. Coronavirus (COVID-19) infection-induced chilblains: a case report with histopathological findings. *JAAD Case Rep*; 2020. <https://doi.org/10.1016/j.jdc.2020.04.011>. [e-pub ahead of print]. Accessed May 20, 2020.
5. Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. *J Thromb Haemost*. 2020;18(5):1094-1099.

<https://doi.org/10.1016/j.jaad.2020.04.161>

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.