immunosuppressed patients with MCL and CL because it is expected to decrease the duration of systemic treatment, reducing associated side effects, and is well tolerated with excellent aesthetic outcomes. ■

[1] Department of Dermatology,
[2] Department of Pathology, Miguel Servet University Hospital. IIS Aragon. Zaragoza, Spain
<pcerro@gmail.com>

Paulina A. CERRO[1]
Milagros SÁNCHEZ-HERNÁNDEZ[1]
Ana María MORALES-CALLAGHAN[1]
Natalia ESTRADA-MALLARINO[2]
Yolanda GILABERTE[1]

1. Bosch-Nicolau P, Ubals M, Salvador F, *et al*. Leishmaniasis and tumor necrosis factor alpha antagonists in the Mediterranean basin. A switch in clinical expression. *PLoS Negl Trop Dis* 2019; 13: 8.

2. Von Stebut E. Leishmaniasis. *J Dtsch Dermatol Ges* 2015; 13: 191-200.

3. Morton CA, Szeimies R-M, Basset-Séguin N, *et al*. European Dermatology Forum guidelines on topical photodynamic therapy 2019 Part 2: emerging indications – field cancerization, photorejuvenation and inflammatory/infective dermatoses. *J Eur Acad Dermatol Venereol* 2020; 34: 17-29.

4. Pérez-Laguna V, García-Malinis AJ, Aspiroz C, Rezusta A, Gilaberte Y. Antimicrobial effects of photodynamic therapy. *G Ital Dermatol E Venereol* 2018; 153: 833-46.

5. Silva MLF, Alves PM, Souza DM, *et al*. Analysis of macrophage activation markers in an experimental model of cutaneous leishmaniasis treated with photodynamic therapy mediated by 5-aminolevulinic acid. *Photobiomodulation Photomed Laser Surg* 2019; 37: 298-304.

6. Akilov OE, Kosaka S, O'Riordan K, Hasan T. Parasiticidal effect of delta-aminolevulinic acid-based photodynamic therapy for cutaneous leishmaniasis is indirect and mediated through the killing of the host cells. *Exp Dermatol* 2007; 16: 651-60.

7. Slape DR-M, Kim EN-Y, Weller P, Gupta M. Leishmania tropica successfully treated with photodynamic therapy. *Australas J Dermatol* 2019; 60: e64-5.

8. Sainz-Gaspar L, Rosón E, Llovo J, Vázquez-Veiga H. Photodynamic therapy in the treatment of cutaneous leishmaniasis. *Actas Dermosifiliogr* 2019; 110: 249-51.

9. Fink C, Toberer F, Enk A, Gholam P. Effective treatment of cutaneous leishmaniasis caused by Leishmania tropica with topical photodynamic therapy. *J Dtsch Dermatol Ges* 2016; 14: 836-8.

10. Johansen MB, Jemec GBE, Fabricius S. Effective treatment with photodynamic therapy of cutaneous leishmaniasis: a case report. *Dermatol Ther* 2019; 32: e13022.

doi:10.1684/ejd.2020.3921

Risk of COVID-19 infection among lupus erythematosus patients and rheumatoid arthritis patients: a retrospective study in Hubei, China

Since both lupus erythematosus (LE) and rheumatoid arthritis (RA) patients need long-term treatment with immunosuppressive medications [1], they may have an increased risk of viral infection, including SARS-CoV-2 [2, 3]. Hydroxychloroquine (HCQ), a conventional drug for LE or RA, could effectively inhibit SARS-CoV-2 *in vitro*, while its clinical efficacy remains unclear [4]. Although a randomized trial showed that HCQ cannot prevent symptomatic infection after SARS-CoV-2 exposure [5], more studies are required to investigate the risk of SARS-CoV-2 infection among LE/RA patients with immunosuppressive medications. Furthermore, according to recommendations by the EULAR, the maintenance of immunomodulating and immunosuppressive therapies is suggested during the COVID-19 pandemic to avoid disease relapse. Limited data are available on the adherence to therapy in patients with LE or RA during the COVID-19 pandemic. Therefore, we explored the risk of COVID-19 infection in LE and RA patients, the possible effect of different treatments on the clinical manifestation of COVID-19, and adherence to therapy in Wuhan, China.

We conducted a retrospective cohort study in Wuhan Union Hospital via electronic medical records and one-to-one telephone correspondence during follow-up from 22nd March 2020 to 25th March 2020. A total of 338 hospitalized patients diagnosed with LE/RA from 1st January 2019 to 13th March 2020 were included (*supplementary table 1*). Three patients were admitted with severe COVID-19. One patient had close contact with a confirmed COVID-19 case, whereas the other two did not according to their self-reports. Two systemic lupus erythematosus (SLE) patients treated with HCQ were in a critical condition with COVID-19, and one RA patient without HCQ had severe pneumonia (*table 1*). One patient with SLE, concurrent with nephritis, died of respiratory failure because of COVID-19. Although it was not possible to confirm an association between autoimmunity and COVID-19, the overall occurrence of COVID-19 in our study (3/338; 0.89%) appears to be higher than Wuhan's overall infection rate (0.46%; 50,340/10,000,000 based on city-wide testing; up to June 23rd, 2020).

The incidence of COVID-19 in LE/RA patients and critical condition of three COVID-19 patients might be attributed to several factors. Firstly, these patients received long-term immunosuppressive therapy. We wonder whether their immunocompromised status may have led to COVID-19. We compared the rate of COVID-19 infection between LE/RA patients with and without immunosuppressive medications ($p>0.05$). It suggested that immunosuppressive drugs do not increase the risk of COVID-19 infection, which is consistent with previous reports [6]. A larger sample size and multicentre studies are needed to draw a definitive conclusion regarding the effect of immunosuppression therapy against COVID-19. Secondly, all of the patients were resident in Wuhan or had potential COVID-19 exposure; their onset occurred during the early stage of the epidemic in Wuhan, suggesting that patients' awareness of protection may have been lacking at that time.

In our study, 211 patients including two COVID-19 patients received HCQ at a dose below 5 mg/kg (medium duration of HCQ treatment: 11 months) (*supplementary table 2*). Due to the small sample size and retrospective method, we failed to establish a relationship between COVID-19 infection and LE or RA in patients treated with HCQ.

Thirty-two RA/LE patients discontinued previous treatments and half of them suspended treatment due to city lockdown for COVID-19. Compared with patients who adhered to medication therapy, discontinuing medication positively correlated with worse LE or RA clinical out-

Table 1. Demographic and clinical data of the three patients diagnosed with COVID-19.

	Patient 1	Patient 2	Patient 3
Age	62 years	47 years	62 years
Sex	Female	Female	Female
Disease type	SLE	SLE	RA
Virus nucleic acid test	Positive	Negative	Positive
Chest X-ray performed	Positive	Positive	Positive
Clinical confirmation	Yes	Yes	Yes
Confirmed date of admission	1/22/2020	1/17/2020	2/3/2020
Length of hospitalization	42 days	9 days	23 days
Severity of pneumonia	Critical	Critical	Severe
Close contact with a COVID-19 patient	Denied	Denied	Admitted
Concomitant diseases	Interstitial pneumonitis	Nephrotic syndrome, hypertension	Hypertension
Hydroxychloroquine	400 mg/day from March 2019 to the present	200 mg/day from October 2019 up to death	No
Glucocorticoids	Prednisone, 10 mg/day for LE; high-dose glucocorticoid therapy for COVID-19	Prednisone, 30 mg/day	No
Clinical outcome	Discharged on 3/4/2020	Died of respiratory failure on 1/25/2020	Discharged on 2/27/2020
Infected family member	None	None	None

Table 2. Relationship between medication withdrawal and clinical outcome score.

	Discontinuation due to COVID-19 *n*=15	Discontinuation not due to COVID-19 *n*=17	Continuation *n*=306	*p* value[a]	*p* value[b]
Outcome score, (mean ± SD) [†]	2.86 ± 1.12	1.88 ± 0.86	1.82 ± 0.96	<**0.001**	**0.004**
Clinical outcome, n (%)					
Complete remission	2 (13.33)	6 (35.29)	130 (42.48)	0.229	**0.030**
Partial remission	4 (26.66)	8 (47.06)	137 (44.77)	0.291	0.193
Stable disease	3 (20.00)	2 (11.76)	9 (2.94)	0.645	**0.014**
Progressive disease	6 (40.00)	1 (5.88)	23 (7.52)	0.033	**0.001**
Death	0 (0)	0 (0)	7 (2.29)	1.000	1.000

[†] *Outcome score of RA/LE at follow-up: 1: complete remission; 2: partial remission; 3: stable disease; 4: progressive disease; 5: death.* [a] *Comparison between discontinued due to COVID-19 and discontinued not due to COVID-19.* [b] *Comparison between discontinued due to COVID-19 and continued.*

comes (clinical outcome score: 2.86 ± 1.12 vs 1.82 ± 0.96; $p < 0.001$) (*table 2*). Commonly, interruption of slow-acting disease-modifying antirheumatic drugs, after one to two weeks, is less concerning due to relatively long half-lives [7]. In the COVID-19 group, treatment was interrupted after four weeks to several months. Therefore, we speculated that long-term interruption of immunosuppressive therapy would worsen their clinical outcomes. These findings call for vigilance by healthcare providers regarding patient adherence to previous therapy during the COVID-19 pandemic.

Our study reveals that RA/ LE patients developed severe COVID-19, and immunosuppressive medications could be continued during the COVID-19 pandemic. Hence, medical institutions need to enhance their awareness of self-protection through public campaigns and routine patient education, providing online medical consultation and medication via postal services to make sure patients receive timely treatment. Multicentre trials with a larger sample size and case-control studies are needed to confirm the relationship between COVID-19 and RA/LE.

Acknowledgments and disclosures. *Acknowledgments: we would like to thank Biling Jiang, Yangxue Fu, Ganglin Xu, Xiaoping Miao, Chun Zhang, Rong Du, Wang xue, Li Qianru, Lou Yuchen, Wang bingbing, Sha shanshan, Su Xingyu, Song Zexing, Wang Yifei, Huang Qiuyi, Xia Yuting, Yang liu, Nie Wenjia, Liu Yan, Gao Lixie, Yin Taoyuan for their clinical follow-up support in this paper. Funding: This work was supported by HUST COVID-19 Rapid Response Call Program (2020kfyXGYJ056) and Hubei Provincial Emergency Science and Technology Program for COVID-19 (2020FCA037). Conflicts of interest: none. Ethics approval: the study was reviewed and approved by the Wuhan Union Hospital Ethics Committee (0064-1).*

Supplementary data. *Supplementary data associated with this article can be found, in the online version, at doi:10.1684/ejd.2020.3926.*
Table S1: Demographic features of study participants.
Table S2: Demographic features of study participants, grouped by hydroxychloroquine exposure.

Department of Dermatology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, and Hubei Engineering Research Center for Skin Repair and Theranostics, Wuhan, China
[a]These authors contributed equally to this work.
<2018xh0170@hust.edu.cn>
<tjhappy@126.com>

Jingjing WEN[a]
Huinan SUO[a]
Yamin ZHANG
Juan TAO

1. Durcan L, O'Dwyer T, Petri M. Management strategies and future directions for systemic lupus erythematosus in adults. *Lancet* 2019; 393: 2332-43.
2. Sawalha AH, Zhao M, Coit P, Lu Q. Epigenetic dysregulation of ACE2 and interferon-regulated genes might suggest increased COVID-19 susceptibility and severity in lupus patients. *Clin Immunol* 2020; 215: 108410.
3. Bozzalla Cassione E, Zanframundo G, Biglia A, Codullo V, Montecucco C, Cavagna L. COVID-19 infection in a northern-Italian cohort of systemic lupus erythematosus assessed by telemedicine. *Ann Rheum Dis* 2020; 79: 1382-3.
4. Alia E, Grant-Kels JM. Does hydroxychloroquine combat COVID-19? A timeline of evidence. *J Am Acad Dermatol* 2020; 83: e33-4.
5. Boulware DR, Pullen MF, Bangdiwala AS, *et al.* A randomized trial of hydroxychloroquine as postexposure prophylaxis for Covid-19. *New Eng J Med* 2020; 383: 517-25.
6. Monti S, Balduzzi S, Delvino P, Bellis E, Quadrelli VS, Montecucco C. Clinical course of COVID-19 in a series of patients with chronic arthritis treated with immunosuppressive targeted therapies. *Ann Rheum Dis* 2020; 79: 667-8.
7. Yazdany J, Kim AHJ. Use of hydroxychloroquine and chloroquine during the COVID-19 pandemic: what every clinician should know. *Ann Intern Med* 2020; 172: 754-5.

doi:10.1684/ejd.2020.3926

Self-improving dominant dystrophic epidermolysis bullosa: phenotypic variability associated with *COL7A1* mutation p.Gly2037Glu

Dystrophic epidermolysis bullosa (DEB) is one of the four major types of inherited epidermolysis bullosa, the prototypic skin fragility disorder [1]. DEB is characterized by blister formation below the lamina densa of the cutaneous basement membrane zone (BMZ) and by mutations in the *COL7A1* gene, encoding type VII collagen (colVII). DEB is inherited as a dominant or recessive trait and several subtypes are distinguished based on clinical features. A peculiar subtype, self-improving DEB (previously referred to as "bullous dermolysis of the newborn"; OMIM #131705), is characterized by major improvement or complete resolution of skin fragility within the second year of life [1]. Self-improving DEB blisters are predominantly acral and heal with no or minimal scarring. Laboratory diagnostic features are granular colVII deposits within the epidermis, and specific cytoplasmic inclusions (stellate bodies) in keratinocytes [2, 3]. Self-improving DEB can be dominantly or recessively inherited [1].

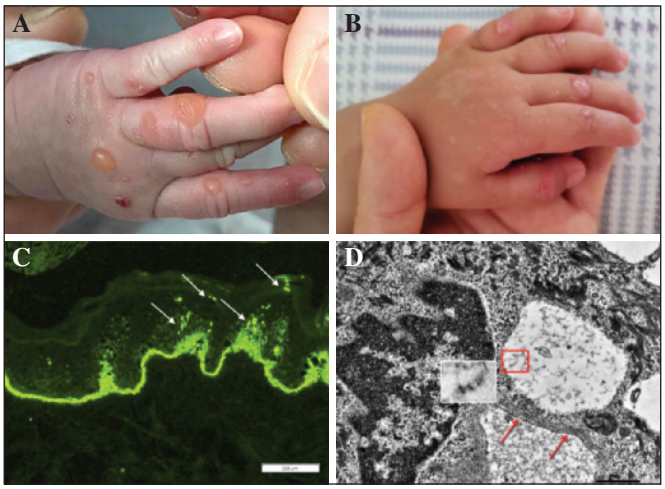

Figure 1. A) Clear blisters on the dorsum and fingers of the left hand at one month. **B**) Numerous milia and hypopigmented patches on the fingers and dorsum of the left hand at 17 months. **C**) Indirect immunofluorescence of a perilesional skin biopsy performed at three months of age showing granular labelling for type VII collagen scattered throughout the epidermis up to the horny layer (arrows), together with bright linear staining along the cutaneous basement membrane zone. **D**) Ultrastructural examination showing paranuclear inclusions bound by rough endoplasmic reticulum (arrows) within a suprabasal keratinocyte; these have a granular content with some elongated dense structures, in part, presenting a cross-banded pattern (insert). Bars: (**C**) 100 μm, (**D**) 500 nm.

We describe the clinical, immunopathological and ultrastructural features of a case of self-improving dominant DEB (SI-DDEB) due to the glycine substitution p.Gly2037Glu in colVII and discuss the phenotypic variability associated with this mutation.

A full-term female infant, the third child of healthy non-consanguineous Chinese parents, developed tense blisters on the extremities from the fifth day of life (*figure 1A*). The oral mucosa was also affected and subungual haemorrhages were present. Lesions healed with milia and minimal atrophic scarring. Muco-cutaneous fragility rapidly improved in the first months of life. Following informed consent, a skin biopsy and blood sample were taken at three months of age. Immunofluorescence mapping (IFM) showed colVII-positive granular deposits within the epidermis, and linear labelling at the BMZ (*figure 1C*). Ultrastructural examination demonstrated cleavage below the lamina densa and a few rudimentary anchoring fibrils. Rough endoplasmic reticulum (RER)-bound perinuclear inclusions were present mainly within suprabasal keratinocytes (*figure 1D*). These were partially filled with granular content and some elongated electron-dense structures, compatible with stellate bodies (*figure 1D*). Molecular testing performed in the patient and healthy parents revealed a *de novo* heterozy-