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.

for patient travel. The increase in median thickness of melanomas and absolute number of pT3/pT4 lesions (>50% increase) referred for surgical evaluation raises concerns for delay in diagnosis. Although this study is limited as a single-institution study over a short period, further study is warranted to better define the impact of the pandemic on melanoma care nationally.

The authors acknowledge support in part by the University of Pennsylvania Skin Disease Research Center (NIAMS P30-AR057217).

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Funding sources: None.

IRB approval status: Not applicable.

Reprints not available from the authors.

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Conflicts of interest

None disclosed.

REFERENCES

1. Richards M, Anderson M, Carter P, Ebert BL, Mossialos E. The impact of the COVID-19 pandemic on cancer care. *Nat Cancer*. 2020;1:565-567.
2. Maringe C, Spicer J, Morris M, et al. The impact of the COVID-19 pandemic on cancer deaths due to delays in diagnosis in England, UK: a national, population-based, modelling study. *Lancet Oncol*. 2020;21(8):1023-1034.
3. Bartlett EK, Karakousis GC. Current staging and prognostic factors in melanoma. *Surg Oncol Clin N Am*. 2015;24(2):215-227.

https://doi.org/10.1016/j.jaad.2020.12.034

Characteristics and outcomes of COVID-19 in patients with autoimmune bullous diseases: A retrospective cohort study

To the Editor: Autoimmune bullous diseases (AIBDs) are a group of blistering conditions the management of which is mostly based on immunosuppressive drugs, and evidence on their outcomes is limited in the COVID-19 era.[1]

This retrospective cohort study on 704 AIBD patients was conducted in a dermatology referral hospital in Tehran, Iran, from April 17 to May 29, 2020. After ethics approval, history of COVID-19 and characteristics and history of AIBD treatments (ie, rituximab and prednisolone) were collected from 704 AIBD patients by an online survey, face-to-face visits, or phone calls.

The diagnosis of COVID-19 was based on typical clinical findings and positive real time (RT) polymerase chain reaction (PCR) for SARS-CoV-2 or lung involvement compatible with COVID-19 on chest computed tomography (CT) scan, as suggested by World Health Organization guidelines.[2] Patients with typical signs and symptoms of COVID-19 not confirmed by RT PCR or CT scan, were defined as highly suspicious.

Results are expressed as relative risk (RR) with 95% confidence intervals (CI). After univariate log-binomial models, inverse probability weights (IPW) were calculated to minimize the effect of confounding factors. The individual predicted probabilities of rituximab (RTX) and prednisolone history were estimated with a multivariable logistic regression model, and weight was assigned for each subject. The effect of each variable was estimated using the multivariable log-binomial model.

Among 704 patients, 21 (2.98%) had COVID-19; 15 of them had been hospitalized and 7 needed intensive care facilities (including high flow or mechanical ventilation), of which, 3 (14.28%) died. All had pulmonary involvement on CT. SARS-CoV-2 was detected in 13 (61.9%) patients by RT PCR and was negative in 2 (9.6%) patients. Fourteen (66.7%) had received RTX during the last 12 months. The median time from the last RTX infusion to COVID-19 diagnosis was 3.5 (interquartile range [IQR]:1.8-5.0) months. Ten (47.6%) patients were receiving prednisolone doses greater than 10 mg/d, 8 (38.1%) were on 10 mg/d or less, and 3 (14.3%) were off prednisolone. Additionally, 35 cases were highly suspicious of COVID-19 (Table I).

Multivariable analysis with IPW found an RR of 5.31 for subjects on greater than 10 mg/d prednisolone in cases diagnosed as COVID-19 (95% CI, 2.39-11.81) and 8.01 in the hospitalized group (95% CI, 3.32-19.68). Furthermore, the RR of getting COVID-19 and being hospitalized decreased by 38% (95% CI, 18%-57%) and 45% (95% CI, 15%-72%) with each passing month from the last RTX infusion, respectively. Including patients with highly suspicious COVID-19 in our analysis yielded similar results (Fig 1).

Table I. Demographic and disease characteristics of patients with AIBDs

Demographics and disease characteristics of AIBDs patients	All AIBDs patients (n = 704)	Total suspicious and diagnosed COVID-19 patients (n = 56)	
		Highly suspicious COVID-19 (n = 35)*	Diagnosed COVID-19 by PCR/chest CT (n = 21)
Mean age ± SD, y	48.8 ± 13.4	46.2 ± 11.4	47.7 ± 11.6
<45 y	291 (41.3)	17 (48.6)	8 (38.1)
≥45 y	413 (58.7)	18 (51.4)	13 (61.9)
Male: Female	314: 390	15: 20	8: 13
Median body mass index [IQR], kg/m^2	26.6 [24.1-29.8]	25.6 [24.5-30.1]	26.6 [25.0-27.7]
Smoking- no. (%)	70 (9.9)	4 (11.4)	1 (4.8)
Suspicious contact history,† n (%)	61 (8.7)	14 (40)	6 (28.6)
Bullous disease type, n (%)			
Pemphigus	620 (88.1)	32 (91.4)	20 (95.2)
Bullous pemphigoid	54 (7.7)	1 (2.9)	0 (0)
Mucous membrane pemphigoid	24 (3.4)	1 (2.9)	1 (4.8)
Linear IgA disease	3 (0.4)	0 (0)	0 (0)
Epidermolysis bullosa acquisita	2 (0.3)	1 (2.9)	0 (0)
Gestational pemphigoid	1 (0.1)	0 (0)	0 (0)
Median duration bullous disease [IQR], y	4.0 [2.0-8.0]	4.0 [2.0-7.0]	3.0 [1.0-8.0]
Comorbidities, n (%)			
Hypothyroidism	81 (11.5)	6 (17.1)	2 (9.5)
Obesity (BMI>30)	172 (24.4)	9 (25.7)	1 (4.8)
Diabetes	105 (14.9)	5 (14.3)	2 (9.5)
Cardiovascular disease	150 (21.3)	6 (17.1)	7 (33.3)
Pulmonary disease	20 (2.8)	1 (2.9)	0 (0)
Bullous disease status, n (%)			
No relapse	380 (54)	13 (37.1)	11 (52.4)
Bullae ≤ 7 d	148 (21)	12 (34.3)	3 (14.3)
Bullae > 7 d	176 (25)	10 (28.6)	7 (33.3)
History of rituximab use, n (%)	571 (81.1)	29 (82.9)	17 (81)
From April 2019, n (%)	337 (47.9)	15 (42.9)	14 (66.7)
From October 2019, n (%)	225 (32)	11 (31.4)	13 (61.9)
Daily prednisolone dosage last 3 months, n (%)			
≤10 mg	578 (82.1)	27 (77.1)	11 (52.4)
>10 mg	126 (17.9)	8 (22.9)	10 (47.6)

BMI, Body mass index.

*Highly suspicious cases: Typical clinical findings of COVID-19 without PCR or chest CT scan.

†Using χ^2 analysis, there was a significant relationship between suspicious contact history with total COVID-19 ($P < .001$) and confirmed COVID-19 ($P = .002$) after excluding highly suspicious cases.

By reviewing the literature, prednisone dose greater than 10 mg was suggested as a risk factor for hospitalization and mortality of COVID-19,[3] whereas a randomized, controlled trial in the United Kingdom found low-dose systemic dexamethasone decreased the mortality rate in patients on a ventilator or oxygen.[4] Similarly, opinions regarding the safety of RTX in COVID-19 are contradictory partly due to the controversies about the role of B cells in defending against SARS-CoV-2.[5]

The retrospective design, patient admissions in different hospitals, and undetected mild cases were our limitations. We found a higher risk of COVID-19 and hospitalization with prednisolone doses of greater than 10 mg/d. In addition, we showed each passing month from the last dose of RTX decreased these risks. Therefore, patients on long-term prednisolone and recent RTX should be monitored closely. Moreover, physicians should be more vigilant when deciding for RTX administration.

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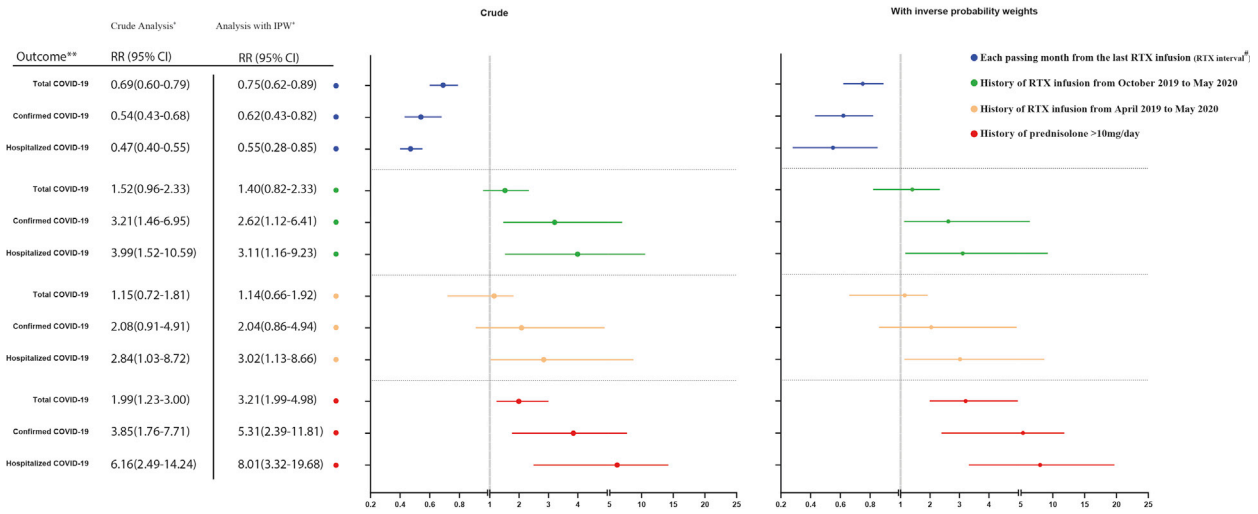

Fig 1. Univariate and multivariate analysis with IPW. Association between prednisolone and rituximab infusion with COVID-19 in patients with autoimmune bullous diseases. Asterisk indicates all 704 patients were included in the total COVID-19 analysis. For the diagnosed COVID-19 analysis, highly suspicious cases were excluded from the cohort. Likewise, both highly suspicious and nonhospitalized COVID-19 cases were excluded from the cohort in the hospitalized COVID-19 analysis. Double asterisk indicates outcomes: Total COVID-19 including diagnosed and highly suspicious cases; diagnosed COVID-19 cases; hospitalized COVID-19 cases. Hashtag indicates RTX interval was analyzed for patients who received RTX after April 2019 and was defined as the interval from the last dose of RTX to either the date of contracting COVID-19 or May 2020. The blue line shows the relative risk of outcomes with each passing month from the last RTX infusion with a 95% CI.

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Funding sources: This research was supported by Tehran University of Medical Sciences and Health Services grant number 99-1-161-47611.

IRB approval status: IR.TUMS.VCR.REC.1399.189.

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Conflicts of interest

None disclosed.

REFERENCES

1. Kasperkiewicz M, Schmidt E, Fairley J, et al. Expert recommendations for the management of autoimmune bullous diseases during the COVID-19 pandemic. *J Eur Acad Dermatol Venereol*. 2020.
2. Organization WH. Use of chest imaging in COVID-19: a rapid advice guide, 11 June 2020. World Health Organization; 2020.
3. Gianfrancesco M, Hyrich KL, Al-Adely S, et al. Characteristics associated with hospitalisation for COVID-19 in people with rheumatic disease: data from the COVID-19 Global Rheumatology Alliance physician-reported registry. *Ann Rheum Dis*. 2020;79(7):859-866.
4. RECOVERY Collaborative Group, Horby P, Lim WS, et al. Dexamethasone in hospitalized patients with Covid-19 — preliminary report. *N Engl J Med*. Published online July 17, 2020. https://doi.org/10.1056/NEJMoa2021436
5. Guilpain P, Le Bihan C, Foulongne V, et al. Response to: 'Severe COVID-19 associated pneumonia in 3 patients with systemic sclerosis treated with rituximab' by Avouac et al. *Ann Rheum Dis*. 2020.

https://doi.org/10.1016/j.jaad.2020.12.043

The magnitude of COVID-19's effect on the timely management of melanoma and nonmelanoma skin cancers

To the Editor: The coronavirus disease 2019 (COVID-19) pandemic substantially reduced patient volumes or caused full closings of many US dermatology practices.[1,2] Given reduced access to care and National Comprehensive Cancer Network guidelines to defer surgical management,[3] concerns have been raised that patients with potential skin cancers had