pandemic, 2020. Accessed October 11, 2020. Available at: https://www.nccn.org/covid-19/pdf/NCCN-NMSC.pdf
4. Conic RZ, Cabrera CI, Khorana AA, Gastman BR. Determination of the impact of melanoma surgical timing on survival using the National Cancer Database. *J Am Acad Dermatol*. 2018;78(1):40-46.e7.
5. Shanthi N, Alam M, Ozog DM, et al. American Society of Dermatologic Surgery Association (ASDSA) and American Society for Laser Medicine & Surgery (ASLMS) guidance for cosmetic dermatology practices during COVID-19. Accessed October 11, 2020. Available at: https://www.asds.net/skin-experts/news-room/press-releases/asdsa-and-aslms-partner-to-develop-guidance-for-cosmetic-dermatology-practices-during-covid-19

https://doi.org/10.1016/j.jaad.2020.12.003

The impact of the COVID-19 pandemic on the presentation status of newly diagnosed melanoma: A single institution experience

To the Editor: The COVID-19 pandemic has had a significant impact on cancer care.[1] Some have projected up to a 10% increase in mortality for specific malignancies due to delays in care caused by the COVID-19 pandemic, but the pandemic's impact on melanoma has yet to be defined.[2,3] Delays in diagnosis could result in thicker melanomas at presentation and profound effects on patient outcomes. This study evaluates the presentation status of melanoma lesions before and after a period of pandemic restrictions, which limited dermatologic evaluation to define the pandemic's impact on melanoma care.

Patients referred to the University of Pennsylvania's Dermatopathology Department for pathologic slide review and/or Division of Endocrine and Oncologic Surgery (handling most of the institutional resection volume) for definitive resection of nonmetastatic primary melanomas were identified from a 2-month period after clinical resurgence at our institution (June 15-August 15, 2020; the COVID-19 era cohort) and a corresponding period in the pre–COVID-19 era (June

Table I. Patient and tumor characteristics of all melanomas examined by dermatopathology and oncologic surgery from June 15 to August 15, 2019 and June 15 to August 15, 2020

	Pre–COVID-19 N = 172 (52.9%)	COVID-19 N = 153 (47.1%)	*P* value
Age (median, IQR)	68 (16.5)	68 (18)	.518
<50 y	24 (14.0)	23 (15.0)	
50-59 y	22 (12.8)	30 (19.6)	
60-69 y	48 (27.9)	38 (24.8)	
70-79 y	56 (32.6)	43 (28.1)	
≥80 y	22 (12.8)	19 (12.4)	
Sex			.757
Male	96 (55.8)	88 (57.5)	
Female	76 (44.2)	65 (42.5)	
Race			.257
White	138 (80.2)	116 (75.8)	
Black	2 (1.2)	0 (0.0)	
Asian	0 (0.0)	1 (0.7)	
Unknown	32 (18.6)	36 (23.5)	
Immune compromise	1 (0.6)	4 (2.6)	.137
Tumor depth (median, IQR)	0.5 (0.7)	0.6 (0.9)	.171
pT staging group			.900
1/2	147 (85.5)	130 (85.0)	
3/4	25 (14.5)	23 (15.0)	
Clark level			.880
Level II	57 (33.1)	47 (30.7)	
Level III	52 (30.2)	41 (26.8)	
Level IV	56 (32.6)	58 (37.9)	
Level V	4 (2.3)	4 (2.6)	
Unknown	3 (1.7)	3 (2.0)	
Lymphovascular invasion	6 (3.5)	4 (2.6)	.092
Unknown	5 (2.9)	0 (0.0)	
Ulceration	14 (8.1)	22 (14.4)	.165
Unknown	3 (1.7)	4 (2.6)	
Tumor-infiltrating lymphocytes			.537
Brisk	18 (10.5)	14 (9.2)	
Nonbrisk	92 (53.5)	88 (57.5)	
Unknown	28 (16.3)	17 (11.1)	
Vertical growth	114 (66.3)	98 (64.1)	.673
Unknown	8 (4.7)	5 (3.3)	
Regression	48 (27.9)	32 (20.9)	.162
Unknown	4 (2.3)	8 (5.2)	
Satellitosis	0 (0.0)	6 (3.9)	.001*
Unknown	5 (2.9)	14 (9.2)	
Perineural invasion	3 (1.7)	4 (2.6)	.080
Unknown	8 (4.7)	1 (0.7)	
Mitotic count			.240
None	97 (56.4)	79 (51.6)	
≤1	33 (19.2)	24 (15.7)	
>1	42 (24.4)	50 (32.7)	
Residual tumor	50 (29.1)	47 (30.7)	.691
Unknown	58 (33.7)	56 (36.6)	
Source			.587
Dermatopathology only	104 (60.5)	97 (63.4)	
Surgery	68 (39.5)	56 (36.6)	

IQR, Interquartile range.
*Indicates significance.

Table II. Patient and tumor characteristics of all melanomas examined by oncologic surgery from June 15 to August 15, 2019 and June 15 to August 15, 2020

	Pre–COVID-19 N = 68 (54.8%)	COVID-19 N = 56 (45.2%)	*P* value
Age (median, IQR)	65 (19)	66.5 (14.5)	.699
<50 y	11 (16.2)	7 (12.5)	
50-59 y	10 (14.7)	12 (21.4)	
60-69 y	22 (32.4)	17 (30.4)	
70-79 y	18 (26.5)	17 (30.4)	
≥80 y	7 (10.3)	3 (5.4)	
Sex			.504
Male	36 (52.9)	33 (58.9)	
Female	32 (47.1)	23 (41.1)	
Race			.085
White	59 (86.8)	54 (96.4)	
Black	2 (2.9)	0 (0.0)	
Asian	0 (0.0)	1 (1.8)	
Unknown	7 (10.3)	1 (1.8)	
Immune compromise	0 (0.0)	3 (5.4)	.053
Tumor depth (median, IQR)	0.8 (1.0)	1.4 (3.0)	.013*
pT staging group			.037*
1/2	55 (80.9)	36 (64.3)	
3/4	13 (19.1)	20 (35.7)	
Clark level			.006*
Level II	14 (20.6)	3 (5.4)	
Level III	23 (33.8)	11 (19.6)	
Level IV	28 (41.2)	36 (64.3)	
Level V	3 (4.4)	3 (5.4)	
Unknown	0 (0.0)	3 (5.4)	
Lymphovascular invasion	0 (0.0)	2 (3.6)	.130
Unknown	2 (2.9)	0 (0.0)	
Ulceration	12 (17.7)	15 (26.8)	.327
Unknown	1 (1.5)	0 (0.0)	
Tumor-infiltrating lymphocytes			.764
Brisk	11 (16.2)	6 (10.7)	
Nonbrisk	38 (55.9)	36 (64.3)	
Unknown	10 (14.7)	7 (12.5)	
Vertical growth	50 (73.5)	46 (82.1)	.492
Unknown	6 (8.8)	4 (7.1)	
Regression	24 (35.3)	12 (21.4)	.239
Unknown	1 (1.5)	1 (1.8)	
Satellitosis	0 (0.0)	5 (8.9)	.029*
Unknown	1 (1.5)	0 (0.0)	
Perineural invasion	2 (2.9)	3 (5.4)	.734
Unknown	2 (2.9)	1 (1.8)	
Mitotic count			.018*
None	29 (42.7)	12 (21.4)	
≤1/mm^2	15 (22.1)	11 (19.6)	
>1/mm^2	24 (35.3)	33 (58.9)	
Residual tumor	24 (35.3)	24 (42.9)	.390
Pathologic stage			.183
I	51 (75.0)	34 (60.7)	
II	13 (19.1)	13 (23.2)	
III	4 (5.9)	9 (16.1)	
SLNB performed	44 (64.7)	45 (80.4)	.054
Positive SLN	3 (4.4)	5 (8.9)	.308

IQR, Interquartile range; *SLN*, sentinel lymph node; *SLNB*, sentinel lymph node biopsy.
*Indicates significance.

15-August 15, 2019). Patient and tumor characteristics were analyzed by univariate analyses. All tests were 2-sided, and P values less than .05 were considered statistically significance. Analyses were performed in Stata for Windows version 16.1.

Of all melanomas evaluated at our institution, 358 and 298 patients were evaluated in the pre–COVID-19 era cohort and COVID-19 era cohort, respectively. There were no differences in patient characteristics and tumor type (invasive melanoma versus melanoma in situ) between the 2 cohorts. After exclusion of melanoma in situ lesions, 172 and 153 patients with invasive melanoma were evaluated in the pre–COVID-19 and COVID-19 era cohorts, respectively (Table I). Patients in the COVID-19 era cohort were more likely to have satellitosis (3.9% vs 0%, $P = .001$) compared with pre–COVID-19 era patients. Among patients evaluated by the oncologic surgery department, specifically, COVID-19 era (N = 56) patients had higher median tumor Breslow depth (1.4 mm vs 0.87 mm; $P = .013$) and a higher proportion of patients with mitotic count greater than 1/mm^2 (58.9% vs 35.3%; $P = .018$), satellitosis (8.9% vs 0%; $P = .029$), and pT3/pT4 tumors (35.7% vs 19.1%; $P = .037$) compared with pre–COVID-19 era patients (N = 68) (Table II).

During the COVID-19 pandemic, to reallocate clinical resources and control viral transmission, outpatient health care services were limited for patients from March to mid-June. We investigated whether absence of routine dermatologic evaluation during this time resulted in advanced tumor presentation status after clinical resurgence. There was no difference noted in median thickness or pT staging group in melanomas evaluated overall. Among surgical patients specifically, there was an increase in median tumor depth, the proportion of pT3/pT4 lesions, and lesions with satellitosis. This finding may reflect a goal among clinicians to remove thin melanomas at clinics locally, minimizing the need

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).

Adrienne B. Shannon, MD,[a] Cimarron E. Sharon, MD,[a] Richard J. Straker III, MD,[a] John T. Miura, MD,[b] Michael E. Ming, MD,[c] Emily Y. Chu, MD, PhD,[c,d] and Giorgos C. Karakousis, MD[b]

From the Departments of Surgery,[a] Dermatology,[c] and Pathology and Laboratory Medicine[d] and the Division of Endocrine and Oncologic Surgery,[b] Hospital of the University of Pennsylvania, Philadelphia.

Funding sources: None.

IRB approval status: Not applicable.

Reprints not available from the authors.

Correspondence to: Adrienne Shannon, 3400 Spruce St, 4 Maloney, Philadelphia, PA 19104

E-mail: Adrienne.shannon@pennmedicine.upenn.edu

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).