

Discussion | Although the number of cases of NUC in the study is small, the condition affected a high percentage of women receiving anticoagulation therapy, adding further support to the body of evidence that sex and anticoagulant use are 2 important risk factors for NUC. Warfarin, in particular, has been hypothesized to promote NUC by inhibiting vitamin K-dependent carboxylation of matrix Gla protein, decreasing inhibition of local calcification.⁴

The estimated 1-year survival rate for all patients with calciphylaxis has previously been reported as 45.8%⁵; and patients with ulceration fare worse, with an estimated 80% mortality.⁶ Patients in the present study had a high survival rate (75%) despite the fact that all patients had ulceration. One possible reason for this improved survival rate is the frequent use of sodium thiosulfate, with 63% of patients (n = 10) in our analysis receiving this form of therapy. This finding contrasts with the 48% survival rate previously reported among NUC patients²; notably, none of these patients received sodium thiosulfate, suggesting a possible benefit associated with sodium thiosulfate therapy for NUC.

A limitation of the study is that only patients who had a skin biopsy were included. The diagnosis of calciphylaxis is often made on clinical grounds, particularly in the setting of end-stage renal disease, and a skin biopsy is not always performed.

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Understanding Perceived Barriers of Minority Medical Students Pursuing a Career in Dermatology

As the US population becomes increasingly diverse, the specialty of dermatology has not followed this trend; it is the least diverse medical field, after orthopedics.¹ Although African Americans

Table 1. Survey Participant Demographic Information

Characteristic	Students, No. (%)
Medical school geographic regions	
Northeast	86 (55.5)
Midwest	46 (29.7)
South	5 (3.2)
West	1 (0.6)
Puerto Rico	1 (0.6)
Foreign	14 (9.0)
Expected graduation year	
2018	47 (30.3)
2019	25 (16.1)
2020	37 (23.9)
2021	38 (24.5)
2022	2 (1.3)
Physician in family?	
Yes	99 (63.9)
No	56 (36.1)
Prior dermatology experience	
Yes	43 (27.7)
No	112 (72.3)
First language	
English	123 (79.4)
All others	32 (20.6)
Race	
African American	24 (15.5)
White	65 (41.9)
Asian	42 (27.1)
Middle Eastern and/or North African	11 (7.1)
Multiple races	6 (3.9)
Other	6 (3.9)
Ethnicity	
Hispanic/Spanish/Latino	14 (9.0)
Non-Hispanic/Spanish/Latin	139 (89.7)
Country of birth	
Other	45 (29.0)
United States	110 (71.0)
LGBTQIA	
Yes	17 (11.0)
No	137 (88.4)
Average household income growing up, \$	
>100 000	71 (45.8)
80 000-100 000	23 (14.8)
60 000-80 000	17 (11.0)
40 000-60 000	15 (9.7)
20 000-40 000	17 (11.0)
<20 000	9 (5.8)

Abbreviation: LGBTQIA, lesbian, gay, bisexual, transgender, queer, intersex, and asexual.

and Hispanics compose 12.8% and 16.3% of the American population, respectively, each group represents less than 5% of dermatologists (<https://www.census.gov/prod/cen2010/cph-1-1.pdf>).² The representation of minorities improves patient care because race-concordant visits are associated with longer visits and greater patient satisfaction.^{3,4} Recently, several calls to action have endorsed evidence-based research to understand barriers to minority students pursuing dermatology.^{1,5,6}

Methods | All research activities for this study were deemed exempt from ethical review by the institutional review board of Albert Einstein College of Medicine (IRB 2017-8705); nonetheless,

Table 2. Survey Results by Race, Ethnicity, and Household Income Using a Likert Scale^a

Characteristic	Likert Value, Mean (SD)												
	Pre-clinical Grades	Clinical Grades	Honors/Awards/Distinctions	USMLE Step 1	USMLE Step 2	Lack of Evident Diversity	Ability to Gain LOR/Networking	Poor Accessibility to Mentors	Burden of Research Year	Socio-economic Barriers	Risk of Not Matching	Perceived Exclusivity of the Field	Negative Perceptions of Minority Students by Residency Programs
Race													
African American	3.46 (1.47)	4.71 (0.62)	4.38 (0.88)	4.83 (0.57)	4.00 (0.93)	4.13 (1.15)	4.46 (0.78)	4.63 (0.71)	4.54 (0.88)	4.25 (1.03)	4.71 (0.62)	4.54 (0.72)	3.96 (1.16)
White	3.28 (1.59)	4.78 (0.48)	4.55 (0.81)	4.95 (0.21)	3.91 (1.07)	3.25 (1.36)	4.35 (0.86)	4.03 (1.03)	4.17 (1.00)	3.55 (1.37)	4.32 (0.94)	3.98 (1.17)	2.46 (1.40)
Asian	3.12 (1.58)	4.71 (0.64)	4.21 (1.09)	4.88 (0.40)	4.33 (1.00)	3.60 (1.25)	4.50 (0.83)	4.14 (0.98)	4.27 (0.98)	4.24 (1.02)	4.66 (0.58)	4.17 (0.97)	3.20 (1.35)
MENA	3.09 (1.64)	4.82 (0.41)	4.73 (0.47)	4.91 (0.30)	4.18 (0.60)	3.64 (1.29)	4.64 (0.51)	4.55 (0.93)	4.64 (0.51)	4.36 (0.81)	4.73 (0.47)	4.36 (0.81)	3.27 (1.49)
Multiple races	3.17 (1.47)	4.17 (0.75)	4.33 (0.52)	5.00 (0.00)	4.33 (1.03)	3.67 (0.52)	4.17 (0.75)	4.17 (0.75)	4.33 (0.52)	4.00 (0.63)	4.67 (0.52)	4.33 (0.52)	3.00 (0.89)
Other	3.50 (1.05)	4.00 (0.63)	4.17 (0.88)	4.83 (0.41)	4.33 (0.52)	4.33 (0.82)	4.00 (0.89)	4.67 (0.52)	4.17 (1.33)	4.50 (0.84)	4.67 (0.52)	4.83 (0.41)	4.17 (1.17)
P value ^b	.96	.01 ^c	.34	.68	.34	.05	.58	.08	.51	.02 ^c	.13	.13	<.001 ^c
Ethnicity													
Hispanic/Spanish/Latino	3.29 (1.49)	4.36 (0.75)	4.50 (0.65)	4.93 (0.27)	4.43 (0.51)	4.50 (0.65)	4.29 (0.83)	4.79 (0.43)	4.54 (0.66)	4.15 (1.14)	4.69 (0.48)	4.62 (0.51)	4.00 (1.08)
Non-Hispanic/Spanish/Latino	3.22 (1.55)	4.73 (0.56)	4.40 (0.91)	4.91 (0.36)	4.04 (1.02)	3.47 (1.29)	4.42 (0.81)	4.16 (0.98)	4.27 (0.96)	3.92 (1.22)	4.51 (0.78)	4.17 (1.03)	2.96 (1.44)
P value ^b	.87	.09	.70	.82	.17	<.001 ^c	.56	<.001 ^c	.33	.51	.41	.13	.005 ^c
Household income, \$													
>100 000	3.13 (1.61)	4.72 (0.54)	4.55 (0.77)	4.92 (0.33)	3.86 (1.13)	3.13 (1.38)	4.21 (0.86)	3.96 (1.05)	4.18 (1.00)	3.59 (1.29)	4.38 (0.83)	4.10 (1.07)	2.56 (1.36)
80 000-100 000	3.00 (1.51)	4.70 (0.64)	4.09 (1.08)	4.96 (0.21)	4.35 (0.83)	3.61 (1.08)	4.57 (0.79)	4.26 (0.92)	4.17 (0.94)	3.65 (1.40)	4.30 (0.97)	4.00 (1.28)	3.30 (1.26)
60 000-80 000	3.18 (1.51)	4.59 (0.62)	4.47 (0.94)	4.71 (0.69)	4.12 (0.78)	3.71 (1.11)	4.59 (0.80)	4.41 (0.71)	4.35 (1.06)	4.35 (0.79)	4.88 (0.33)	4.18 (0.81)	3.06 (1.35)
40 000-60 000	3.33 (1.50)	4.73 (0.46)	4.20 (1.15)	5.00 (0.00)	4.20 (0.68)	4.00 (1.13)	4.33 (0.82)	4.07 (1.03)	4.13 (0.99)	4.33 (0.90)	4.67 (0.49)	4.33 (0.72)	3.27 (1.53)
20 000-40 000	3.71 (1.49)	4.71 (0.59)	4.47 (0.94)	4.94 (0.24)	4.29 (0.69)	4.41 (0.87)	4.59 (0.71)	4.71 (0.59)	4.69 (0.60)	4.56 (0.73)	4.75 (0.58)	4.50 (0.82)	4.19 (1.17)
<20 000	3.33 (1.41)	4.67 (1.00)	4.33 (1.00)	4.89 (0.33)	4.78 (0.44)	4.22 (0.97)	4.78 (0.44)	4.89 (0.33)	4.89 (0.33)	4.78 (0.44)	4.89 (0.33)	4.67 (0.50)	3.67 (1.41)
P value ^b	.77	.98	.32	.20	.40 ^c	.004 ^c	.12	.01 ^c	.15	.004 ^c	.03 ^c	.38	<.001 ^c
Total Likert value, mean (SD)	3.24 (1.54)	4.70 (0.59)	4.42 (0.88)	4.91 (0.35)	4.09 (0.99)	3.56 (1.28)	4.41 (0.81)	4.22 (0.96)	4.29 (0.95)	3.95 (1.20)	4.53 (0.76)	4.19 (1.00)	3.04 (1.43)

Abbreviations: LOR, letter of recommendation; MENA, Middle Eastern and/or North African; USMLE, US Medical Licensing Examination.

^a Likert scale (1 = not important, 2 = slightly important, 3 = important, 4 = fairly important, 5 = very important).

^b By analysis of variance (ANOVA) or 2-sided t test.

^c P value significant after Benjamini-Hochberg adjustment for multiple comparison with FDR (false discovery rate) = 0.10.

all survey respondents provided written informed consent before completing the survey. A survey was conducted between January and April 2018 to investigate the lack of diversity and barriers to applying for a dermatology residency. The survey was electronically sent to 35 medical schools. Demographic information was collected, and participants were asked to rate survey items on a Likert scale (1, not important to 5, very important). Minorities were defined as nonwhite persons, and lower-income students were defined as those with annual household incomes below \$40 000. Analysis was performed with SPSS Version 24.0 (IBM Corp).

Results | The survey was completed by respondents from 28 of 35 medical schools (school response rate, 80%). It was accessed by 242 medical students and completed by 155 of them (student

response rate, 64%). Demographic characteristics are detailed in **Table 1**. Of the participants 43.2% (n = 67) expressed an interest in applying for a dermatology residency. Overall, participants cited the following factors as the most important (mean [SD] Likert score) to applying for a dermatology residency: US Medical Licensing Examination Step 1, 4.91 (0.35); clinical grades, 4.70 (0.59); and risk of not matching, 4.53 (0.76) (**Table 2**).

Students with lower incomes and ethnic minorities cited the lack of diversity in dermatology as a significant factor; the highest scores were among Hispanic/Spanish/Latino students (4.50 [0.65]) and those with household incomes between \$20 000 and \$40 000 (4.41 [0.87]) (**Table 2**). Students reported negative perceptions of minority students by residency programs, such as expecting lower performance, to be important; the highest scores were among those identifying

as “other” race (4.17 [1.17]), African Americans (3.96 [1.16]), Hispanic/Spanish/Latinos (4.00 [1.08]), and those with household incomes between \$20 000 and \$40 000 (4.19 [1.17]). Racial minorities and low-income students were more likely to cite socioeconomic barriers, such as lack of loan forgiveness. The highest values were reported by those identifying as other races (4.50 [0.84]) and those with household incomes less than \$20 000 (4.78 [0.44]). Hispanic/Spanish/Latino students (4.79 [0.43]) and those with household incomes less than \$20 000 (4.89 [0.33]) reported the highest scores for poor accessibility to mentors, especially with which students can identify.

Study limitations included calculating accurate response rates (medical student respondents/number of medical students who received survey); participants may not represent all US medical students; and not all minority groups are under-represented in medicine. Asians were included as minorities because 50.0% of respondents were born outside of the United States (n = 21), and 37.5% (n = 15) had a first language other than English. These participants are likely to have an “additional distance traveled,” a higher likelihood of addressing health care disparities, and may demonstrate “grit” compared with their peers.⁶ Study strengths include a diverse cohort representing many medical schools.

Discussion | Overall, participants cited US Medical Licensing Examination Step 1, clinical grades, and the risk of not matching as the most important barriers to applying for a dermatology residency. However, minority students reported the lack of diversity, perceived negative perceptions of minority students by residencies, socioeconomic factors, and lack of mentors as major barriers. The perceived barriers differ by the racial, ethnic, and socioeconomic backgrounds of students and highlight the need to actively recruit and mentor students of all backgrounds. Furthermore, efforts should be made to increase minority students’ exposure to dermatology by incorporating it into the curriculum, providing research opportunities, and reducing the cost of “visiting electives” by providing stipends.

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OBSERVATION

Recalcitrant Vulvar Lichen Sclerosus Treated With Erbium YAG Laser

Lichen sclerosus (LS) is a chronic condition affecting the anogenital region in women. Symptoms range from none at all to severe pruritus. While most LS is atrophic and culminates in scarring, there is a less common variant that is hyperkeratotic. This presentation is typically refractory to standard-of-care super-potent topical steroids, likely owing to decreased penetration. On rare occasions, if left partially or completely untreated, LS can progress to squamous cell carcinoma, highlighting the importance of monitoring and treating this condition.¹ We report 2 cases women with hyperkeratotic LS refractory to conventional treatment with super-potent topical steroids that was successfully treated with fractionally ablative laser therapy (Er:YAG; erbium-doped yttrium aluminium garnet).

Report of Cases | *Case 1.* A 58-year-old woman presented with biopsy-proven severe LS that had been previously bullous and well controlled with intralesional triamcinolone acetonide injections and daily topical clobetasol ointment. She subsequently developed discrete hyperkeratotic plaques at the bilateral labia minora that were refractory to treatment with intralesional triamcinolone acetonide, super-potent topical steroids, and tazarotene (Figure 1A). She underwent 1 fractionally ablative Er:YAG laser treatment (2940 nm) to a depth of 750 μm, a density of 11% with 3 passes (thus, total treatment surface area was 33%), and a