structure encroaching at least 0.5 mm into the arterial lumen or having a thickness greater than 50% of the surrounding intima-media thickness.

Table I exhibits the anthropometric, clinical, and biochemical data of participants.

To our best knowledge, this is the first study to evaluate the presence of femoral atherosclerotic plaques as a screening test for atherosclerosis in patients with psoriasis. The prevalence of femoral plaques but not carotid plaques was significantly higher in the patients with psoriasis than in age-, sex-, and body mass index–matched controls ($P < .006$), whereas the prevalence of femoral plaques among the patients was 2-fold higher than that of carotid plaques ($P < .008$) (Fig 1). According to the present findings, ultrasound study of femoral arteries is more useful than the study of carotid arteries to identify atherosclerosis in patients with psoriasis.

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REFERENCES

1. Mehta NN, Azfar RS, Shin DB, Neimann AL, Troxel AB, Gelfand JM. Patients with severe psoriasis are at increased risk of cardiovascular mortality: cohort study using the general practice research database. *Eur Heart J*. 2010;31(8):1000-1006.
2. Lerman JB, Joshi AA, Chaturvedi A, et al. Coronary plaque characterization in psoriasis reveals high-risk features that improve after treatment in a prospective observational study. *Circulation*. 2017;136(3):263-276.
3. Laclaustra M, Casasnovas JA, Fernández-Ortiz A, et al. Femoral and carotid subclinical atherosclerosis association with risk factors and coronary calcium: the AWHS study. *J Am Coll Cardiol*. 2016;67(11):1263-1274.
4. Arias-Santiago S, Orgaz-Molina J, Castellote-Caballero L, et al. Atheroma plaque, metabolic syndrome and inflammation in patients with psoriasis. *Eur J Dermatol*. 2012;22(3):337-344.
5. Dalager S, Falk E, Kristensen IB, Paaske WP. Plaque in superficial femoral arteries indicates generalized atherosclerosis and vulnerability to coronary death: an autopsy study. *J Vasc Surg*. 2008;47(2):296-302.

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Early-stage melanoma and hematopoietic stem cell transplantation outcomes

To the Editor: Hematopoietic stem cell transplantation (HSCT) is an important treatment option for both malignant and autoimmune conditions, but it requires exposure to profoundly immunosuppressive agents and/or radiation. Unlike in patients who receive a solid organ transplant, restoration of a functional immune system and eventual discontinuation of immunosuppressive medications is the ultimate goal in HSCT. How such treatments may affect the risk of a second or recurrent melanoma in patients who had a melanoma before receiving their transplant is not clear.

We searched Duke University Medical Center's historical database of 4528 adult HSCT patients from 1996 to 2017 for patients who had a melanoma before receiving their transplant. One patient whose indication for HSCT was metastatic melanoma was excluded from this study. We included 23 patients (0.5%) with a total of 27 pre-HSCT melanomas (Table I). A total of 7 patients (30%) underwent allogeneic HSCT, whereas the rest received an autologous transplant. A total of 13 patients (56.5%) were exposed to ionizing radiation (Table II).

Only 1 patient (4.3%) developed a new melanoma (in situ) 3.1 years after allogeneic HSCT and 32.0 years after the initial melanoma. This patient did not have graft-versus-host disease (GVHD), had only 1 primary melanoma before HSCT, received a nonablative preparative regimen, and was successfully treated with local excision.

There were no recurrences of melanoma. At the median follow-up time of 2.0 years (range 0.02-13.1 years) after HSCT, 5 patients (26.1%) had died (none owing to melanoma). GVHD occurred following HSCT in 42.9% of patients who underwent allogeneic HSCT. This rate was not significantly

Table I. Patient and tumor characteristics of patients with pre-HSCT melanoma

Characteristic	All patients (N = 23)	Allogeneic HSCT (n = 7)	Autologous HSCT (n = 16)	*P* value*
White race, n (%)	23 (100%)	7 (30.4%)	16 (69.6%)	1.0
Male sex, n (%)	12 (52.2%)	3 (42.9%)	9 (56.3%)	1.0
Median age at HSCT, y (range)	64.5 (36.3-75.6)	63.1 (36.3-75.6)	65.5 (49.2-74.3)	.3
Median follow-up time from HSCT, y (range)	2.0 (0.02-13.1)	1.2 (0.02-13.1)	2.1 (0.5-8.8)	.8
Median time from most recent melanoma to HSCT, y (range)	10.9 (0.1-36.6)	9.2 (3.1-29.0)	11.3 (0.2-36.6)	.6
Median time from most recent melanoma to last follow-up, y (range)	11.4 (2.1-42.1)	11.2 (4.7-42.1)	12.9 (2.1-37.9)	.9
Total melanomas before HSCT, n	27	7	20	N/A
Melanoma in situ, n (%)	24 (77.8%)	6 (85.7%)	18 (90.0%)	.1
Melanoma stage I, n (%)	2 (7.4 %)	1 (14.3%)	1 (5.0%)	.6
Melanoma stage II, n (%)	1 (3.7%)	0 (0%)	1 (5.0%)	.4
2 Melanoma diagnoses before HSCT, n (%)	4 (17.4%)	0 (0%)	4 (25%)	.5
Head and neck location primary, n (%)	5 (18.5%)	1 (14.3%)	4 (20.0%)	.7
Post-HSCT new primary melanoma, n (%)	1 (4.3%)	1 (14.3%)	0 (0%)	.3
Ablative conditioning before HSCT, n (%)	14 (60.9%)	4 (57.1%)	10 (62.5%)	.8
GVHD, n (%)	3 (13.0%)	3 (42.9%)	0 (0%)	.02
Alive, n (%)	18 (78.3%)	4 (57.1%)	14 (87.5%)	.1

GVHD, Graft -versus-host disease; *HSCT*, hematopoietic stem cell transplantation.
*Comparison between the allogeneic and autologous HSCT groups through use of a *t* test or chi-square test.

Table II. Immunosuppression, phototherapy, and radiation exposure for patients with pre-HSCT melanoma

Therapy	All patients (n = 23)	Allogeneic HSCT (n = 7)	Autologous HSCT (n = 16)	*P* value*
Cyclosporine, n (%)	2 (8.7%)	1 (14.3%)	1 (6.3%)	.5
Tacrolimus, n (%)	6 (26.1%)	4 (57.1%)	2 (12.5%)	.05
Sirolimus, n (%)	1 (4.3%)	1 (14.3%)	0 (0%)	.3
Mycophenolate mofetil, n (%)	2 (8.7%)	2 (28.6%)	0 (0%)	.1
Azathioprine, n (%)	1 (4.3%)	1 (14.3%)	0 (0%)	.3
Voriconazole, n (%)	4 (17.4%)	3 (42.9%)	1 (6.3%)	.07
Narrowband phototherapy, n (%)	2 (8.7%)	2 (28.6%)	0 (0%)	.1
Melphalan, n (%)	17 (73.9%)	1 (14.3%)	16 (100%)	<.01
Radiation, n (%)	13 (56.5%)	6 (85.7%)	7 (43.8%)	.1

HSCT, Hematopoietic stem cell transplantation.
*Comparison between the allogeneic and autologous HSCT groups through use of a *t* test or chi-square test.

different from the rate of 32.0% among the patients who underwent allogeneic HSCT without a history of melanoma ($P = .69$ with use of a chi-square test).

Our cohort had a wide range of follow-up times from their most recent pretransplant melanoma to their last post-HSCT visit (median, 11.4 years; range, 2.1-42.1 years). Other authors have estimated the risk of a second melanoma at 10 years to be 5% to 12%,[1,2] but this rate was increased in those who had risk factors such as a family history of melanoma (14%), a thin primary melanoma, and a history of other cancers. In all, 25% of our cohort had more than 1 pre-HSCT melanoma. The 10-year risk of development of a third melanoma in patients with 2 previous melanomas has been estimated at 27.7%.[2] Other studies, as well as our unpublished data, have suggested that GVHD increases the risk for secondary cutaneous malignancies, likely as a result of increased immunosuppression. There was, however, no significant difference in the GVHD rate between our cohort and the rest of our allogeneic HSCT population. Finally, roughly 75% of the cohort was still alive at the 2.0-year follow-up, which was similar to the previously reported 1- (~80%) and 3-year (~60%) survival rates following HSCT.[3]

Although limited by its small size, short median duration of post-HSCT follow-up, and single-center and retrospective nature, our study is notable in that both patients who had received allogeneic transplants and patients who had received autologous transplants had low rates of a second primary or recurrent melanoma despite having significant risk factors.[4,5]

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REFERENCES

1. Slingluff CL Jr, Vollmer RT, Seigler HF. Multiple primary melanoma: incidence and risk factors in 283 patients. *Surgery*. 1993;113(3):330-339.
2. Doubrovsky A, Menzies SW. Enhanced survival in patients with multiple primary melanoma. *Arch Dermatol*. 2003;139(8):1013-1018.
3. Bhatia S, Francisco L, Carter A, et al. Late mortality after allogeneic hematopoietic cell transplantation and functional status of long-term survivors: report from the Bone Marrow Transplant Survivor Study. *Blood*. 2007;110(10):3784-3792.
4. Bradford PT, Freedman DM, Goldstein AM, Tucker MA. Increased risk of second primary cancers after a diagnosis of melanoma. *Arch Dermatol*. 2010;146(3):265-272.
5. Zalaudek I, Horn M, Richtig E, Hodl S, Kerl H, Smolle J. Local recurrence in melanoma in situ: influence of sex, age, site of involvement and therapeutic modalities. *Br J Dermatol*. 2003;148(4):703-708.

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Trends in the dermatology residency match from 2007 to 2018: Implications for the dermatology workforce

To the Editor: Dermatology services remain undersupplied in the United States, stemming from both the limited number and geographic distribution of dermatologists.[1,2] As an important determinant of workforce growth, the quantity of dermatology residency positions may be a constraining factor.

To identify match trends, we analyzed National Resident Matching Program (NRMP) Main Residency Match data from 2007 to 2018 and all Charting Outcomes reports (available only for 2007, 2009, 2011, 2014, and 2016). For each year, we collected data on applicants, positions, and educational characteristics of matched US allopathic seniors in dermatology and in all specialties. Applicants were considered dermatology applicants if dermatology was the first or only specialty ranked. All statistical analyses were conducted by using Microsoft Excel (Microsoft Corp, Redmond, WA). The University of Pennsylvania Institutional Review Board exempted this study from review.

Between 2007 and 2018, increases in total applicants and US allopathic senior applicants for all categorical and preliminary specialties (32.8% and 23.8%, respectively) exceeded those for dermatology (12.4% and 10.8%, respectively) (Table I). The numbers of total applicants per position and US allopathic senior applicants per position remained relatively constant for all categorical and preliminary specialties but declined from 2007 to 2012 before stabilizing for dermatology. Similarly, US allopathic senior match rates for dermatology increased from 61.7% in 2007 to 82.7% in 2012 before plateauing. The fill rates for dermatology ranged from 97.0% to 100.0%.

Among matched US allopathic seniors, the mean number of abstracts, presentations, and publications more than doubled for all specialties (increasing from 2.2 to 4.7) and for dermatology (increasing from 5.7 to 11.7) (Table II). Within dermatology, PhD degrees became slightly less common (decreasing from 11.6% to 8.0%), whereas other graduate degrees became more common (increasing from 6.8% to 12.8%).

Our findings indicate that the proportion of US seniors failing to match in dermatology remains substantial, despite earlier improvement in match rates and the number of applicants per NRMP-filled position. In addition, growth in the quantity of presented and published works among matched dermatology applicants has outpaced that among all matched applicants.

The fact that there are more publications among matched dermatology applicants suggests increased interest in research and pressure to publish.[3,4] Still, whether higher scholarly activity in applications reflects any higher likelihood to pursue an academic career is unclear.[5] The increasing prevalence of non-PhD graduate degrees may reflect either greater enrollment in combined degree programs such as an MD/MPH or MD/MBA program, or advanced training before medical school.

Our study is limited by exclusion of positions filled outside the NRMP. The likely primary driver of the improved match rate from 2007 to 2012 was slower than overall growth in the number of dermatology applicants. Along with fill rates near