



Knowledge Gaps Among Dermatologists Regarding Immunotherapy for Non-melanoma Skin Cancer

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BACKGROUND: Advanced nonmelanoma skin cancer (NMSC) is a sometimes unrecognized public health burden. The development of immune checkpoint inhibitors (ICIs), such as those affecting programmed cell death protein-1 (PD-1), have dramatically changed the management of advanced NMSC. Dermatologists need to be knowledgeable about these therapies given their key role in diagnosing, treating, and comanaging NMSC. The purpose of this study was to assess the knowledge base and identify knowledge gaps that dermatologists may have regarding ICIs and assess advanced NMSC referral patterns. **METHODS:** A 10-question survey was emailed to United States-based dermatologists in July 2021 assessing knowledge of ICI therapy and referral patterns for metastatic cutaneous squamous cell carcinoma (mcSCC) or locally advanced basal cell carcinoma (laBCC) management. **RESULTS:** At their current knowledge level, respondents averaged 40.6 out of 100 (95% CI [35.1, 46.0]) when asked how comfortable they feel counseling a patient on the risks and benefits of an ICI. Seventy-one percent reported that having more information about treatment for mcSCC or laBCC would be helpful in their practice. Being in practice for less than 10 years was not significantly associated with desiring more information about treatment. The respondents reported that the highest number of annual average referrals out for mcSCC or laBCC were made to Mohs surgeons. Fifty-four percent of respondents received referrals for mcSCC or laBCC, and of the providers receiving referrals, 40 percent of them came from general dermatology. **CONCLUSION:** These results demonstrate that a knowledge gap exists for dermatologists in treating mcSCC and laBCC with immunotherapy. There is a need among all dermatologists, regardless of years in practice, to receive this information. **KEYWORDS:** Non-melanoma skin cancer, immunotherapy, locally advanced basal cell carcinoma, metastatic squamous cell carcinoma, immune related adverse drug reactions

Advanced nonmelanoma skin cancer (NMSC) is a sometimes unrecognized public health burden and it is estimated that 4,360 people will die from it this year.¹ The development of immune checkpoint inhibitors (ICIs), such as those affecting programmed cell death protein-1 (PD-1), have dramatically changed the management of advanced NMSC. Cemiplimab is now approved by the United States Food and Drug Administration (FDA) for both metastatic cutaneous squamous cell carcinoma (mcSCC) and locally advanced basal cell carcinoma (laBCC).² Despite the efficacy of ICIs, these agents may have serious immune-related adverse drug reactions (irADRs) including fatal outcomes. Ruggiero et

al³ stresses the importance of educating oncologists regarding ICIs after reviewing the pharmacovigilance data. However, dermatologists also need to be knowledgeable about these therapies given their key role in diagnosing, treating and comanaging NMSC. The purpose of this study was to assess the knowledge base and identify potential knowledge gaps among dermatologists regarding ICIs and assess advanced NMSC referral patterns.

METHODS

A 10-question survey was emailed to United States-based dermatologists in July 2021; the survey assessed knowledge of ICI therapy and referral

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patterns for mcSCC or laBCC management. Question types included multiple choice questions, open-ended questions, and a numeric rating scale. Data were analyzed in Microsoft Excel® using descriptive statistics with 95-percent confidence intervals (CIs) and chi-square testing with a threshold of $p < 0.05$ for statistical significance.

RESULTS

Data were analyzed from 132 respondents (Table 1). At their current knowledge level, respondents averaged 40.6 out of 100 (95% CI [35.1, 46.0]) when asked how comfortable they feel counseling a patient on the risks and benefits of an ICI. Seventy-one percent reported that having more information about treatment for mcSCC or laBCC would be helpful in their practice. Being in practice for less than 10 years was not significantly associated with desiring more information about treatment $X^2(1, N=132)=2, p=0.15$.

Mean number of NMSC seen per year and average referral patterns are presented in Table 2. The respondents reported that the highest number of annual average referrals out for mcSCC or laBCC were made to Mohs surgeons (17.9 [95% CI 10.6, 25.3]). Fifty-four percent of respondents received referrals for mcSCC or laBCC, and of the providers receiving referrals, 40 percent of them came from general dermatology.

DISCUSSION

Cemiplimab is approved for patients with laBCC previously treated with a hedgehog pathway inhibitor or for whom a hedgehog pathway inhibitor is not appropriate.² Dermatologists play a key role in that decision, therefore, they need to be fully knowledgeable of all facets of advanced NMSC to be able to effectively refer, treat, and counsel these patients. Forty percent of patients with advanced NMSC receive multidisciplinary care based on a long-term survivorship study, demonstrating that the oncologist is not the sole provider in the clinical setting.⁴ Our study demonstrated that educational gaps exist for dermatologists with regard to ICIs for the treatment of mcSCC and laBCC and, given the critical role that they play in these diseases, enhancing their knowledge base in this area is critical. The dermatology community has recently recognized the importance of this knowledge, given the two continuing medical education articles that were

TABLE 1. Survey respondent demographics

DEMOGRAPHIC ITEM	PERCENT, CURRENT SURVEY	PERCENT, AAD US MEMBERSHIP*
Length of practice		
Practicing for > 10 years	82%	73%
Practice for < 10 years	18%	27%
Practice Type		
Academic/government/university	16%	15%
Solo/group practice or health system practice	84%	79%
Average percentage of practice makeup		
Medical dermatology	58%	63%
Surgical/oncological dermatology	25%	25%
Cosmetic dermatology	9%	12%
Dermatopathology	3%	N/A
Pediatric dermatology	6%	N/A

(n=132)
 *Sources: Practice Models in Dermatology. August 2020. https://assets.ctfassets.net/1ny4yoirqia/1msGYR-RlqVuy8VNhEI1kME/94294769ff3c%207a30a397e50bb-04d8a15/Practice_Models_White_Paper_V231.pdf; Litchman, G., Marson, J., & Rigel, D. The Ongoing Impact of COVID-19 on US Dermatology Practices. *SKIN The Journal of Cutaneous Medicine*. 2021;5(1):29–33.

published in the *Journal of the American Academy of Dermatology* on ICI related adverse events.^{5,6}

Our study demonstrated that dermatologists in practice less than 10 years did not have a higher demand for information about these therapies. Therefore, both younger and more experienced dermatologists should be targeted for educational endeavors.

Limitations. The limitations of this study includes sample size, selection bias, and respondent bias.

CONCLUSION

These results demonstrate that a knowledge gap exists for dermatologists in treating mcSCC and laBCC with immunotherapy. There is a need among all dermatologists, regardless of years in practice, to receive this information. Educational programs developed to meet these needs would be useful in filling this gap.

TABLE 2. Number of nonmelanoma skin cancer seen and referral patterns on average per year

	MEAN SEEN PER YEAR	95% CI
BCC/SCC	952.3	(468.0, 1436.6)
mcSCC/laBCC	8.7	(6.4, 10.9)
NUMBER OF REFERRALS TO OTHER SPECIALTIES FOR mcSCC OR laBCC		
SPECIALTY	MEAN NUMBER OF PATIENTS REFERRED OUT PER YEAR	95% CI
Hematology/Oncology	3.7	(1.5, 5.3)
Surgical Oncology	6.7	(2.9, 9.6)
Mohs Surgery	17.9	(10.6, 25.3)
Plastic Surgery	2.8	(1.7, 5.5)
Other	4.0	(0, 9.6)

CI: Confidence interval; BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma; mcSCC: Metastatic cutaneous squamous cell carcinoma; laBCC: locally advanced basal cell carcinoma

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REFERENCES

1. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer Statistics, 2021. *CA Cancer J Clin*. 2021;71(1):7–33.
2. LIBTAYO (cemiplimab-rwlc) injection full U.S. prescribing information. Regeneron Pharmaceuticals, Inc., and sanofi-avent.
3. Ruggiero R, Fraenza F, Scavone C, et al. Immune Checkpoint inhibitors and immune-related adverse drug reactions: data from Italian pharmacovigilance database. *Front Pharmacol*. 2020;11:830.
4. Data on file. Regeneron Pharmaceuticals, Inc.
5. Geisler AN, Phillips GS, Barrios DM, et al. Immune checkpoint inhibitor-related dermatologic adverse events. *J Am Acad Dermatol*. 2020;83(5):1255–1268.
6. Barrios DM, Do MH, Phillips GS, et al. Immune checkpoint inhibitors to treat cutaneous malignancies. *J Am Acad Dermatol*. 2020;83(5):1239–1253. **JCAD**