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Kathleen M Nemer

Tyler M Bauman

M Laurin Council

Eva A Hurst

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Original Research

Surveyed dermatologists are less likely to curette invasive squamous cell carcinoma in solid organ transplant recipients ☆

Kathleen M. Nemer, MD, Tyler M. Bauman, MD, M. Laurin Council, MD, Eva A. Hurst, MD *

Division of Dermatology, Washington University School of Medicine, St. Louis, MO, United States

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ABSTRACT

Background: The risk of squamous cell carcinoma (SCC) is increased in solid organ transplant recipients (OTRs), and preferential treatment modalities vary among clinicians.
Objectives: The purpose of this study was to survey dermatologists regarding practice patterns for electrodesiccation and curettage (EDC) of SCC in OTRs and nontransplant patients.
Methods: An 18-question survey was sent to dermatologist members of the International Transplant Skin Cancer Collaborative, Association of Professors of Dermatology, and American College of Mohs Surgery. Differences in EDC practice patterns for treatment of SCC in OTRs and nontransplant patients were evaluated.
Results: Dermatologists in this study ($N = 227$) were more likely to treat SCC with EDC in nontransplant patients (67.4%) than in OTRs (48.0%; P = .0003).

Dermatologists who perform EDC in both groups ($n = 108$) were unlikely to use EDC on the H-zone of the face; they were more likely to EDC tumors on non-H-zone areas of the face and neck in nontransplant patients compared to OTRs ($P = .0007$). Dermatologists were more likely to use EDC over surgery in nontransplant patients compared to OTRs with the following demographics: dementia or psychiatric disease ($P = .04$), multiple medical comorbidities ($P = .03$), or anticoagulation medications ($P = .02$).
Conclusions: In OTRs with SCC, 48% of clinicians would consider EDC. The main factors that affect the decision to perform EDC include tumor location and patient comorbidities.

Introduction

The number of solid organ transplantations continues to rise, with more than 33,000 transplantations performed in the United States in 2016 (OPTN/SRTR 205 Annual Data Report, 2017). Because of the necessary immunosuppressive regimens in solid organ transplant recipients (OTRs), the incidence of cutaneous malignancy is increased, with more than half of OTRs experiencing at least one type of cutaneous malignancy (Euvrard et al., 2003). Unlike the general population, where the incidence of basal cell carcinoma is highest, the most common cutaneous malignancy among OTRs is squamous cell carcinoma (SCC) (Garrett et al., 2017). SCC in solid organ transplant patients presents at a younger age and with more aggressive features, including a higher risk for local recurrence, metastases, and mortality (Carucci et al., 2004; Chockalingam et al., 2015). These features often make management of SCC in this patient population more challenging.

SCC in transplant patients is commonly treated with surgical excision or Mohs micrographic surgery (MMS). However, recent evidence suggests that a number of clinicians also use destructive methods such as electrodesiccation and curettage (EDC) for lower risk lesions (Zwald and Brown, 2011). The purpose of this study was to electronically survey dermatologists regarding their practice patterns for treatment of SCC in OTRs versus non–organ transplant patients. Furthermore, we aimed to specifically delineate differences in dermatologist practice patterns regarding use of EDC for SCC in OTRs versus nontransplant patients. Our hypotheses were that dermatologists are (1) less likely to use EDC for invasive SCC in transplant patients compared with nontransplant patients and (2) are less likely to use EDC in high-risk areas of the body in transplant patients compared with nontransplant patients.

☆ Human subjects were included in this study. No animals were used in this study. All portions of this study were conducted as a part of an Institutional Review Board–approved study at Washington University School of Medicine; IRB #201506014. All information presented in this study is HIPAA compliant.

* Corresponding author.
E-mail address: hurste@wustl.edu (E.A. Hurst).

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Methods

An 18-question voluntary survey was electronically administered to members of the International Transplant Skin Cancer Collaborative (ITSCC), the Association of Professors of Dermatology (APD), and the American College of Mohs Surgery (ACMS) (Supplemental Document). The survey was approved by the Washington University School of Medicine Institutional Review Board. Providers were asked the same set of questions regarding treatment of biopsy-proven SCC with EDC in OTRs versus nontransplant patients. The study population included dermatologists with membership in any of the three organizations: ITSCC, APD, or ACMS. In analysis of intrasubject variability for EDC practice patterns for OTR and nontransplant patients, dermatologists who responded "never" to EDC on transplant patients were excluded. To detect a 20% difference between dermatologists who would consider EDC in (1) transplant patients and (2) nontransplant patients, assuming $\alpha = 0.05$ and power = 0.80, we would need 92 dermatologists per group. A χ^2 analysis was used to compare the rate of EDC for solid organ transplant patients between private and academic dermatologists. McNemar's test was used to evaluate intrasubject variability between EDC practice patterns for solid organ transplant and nontransplant patients based on tumor and patient characteristics.

Results

A total of 227 surveys were returned, including 120 (52.9%) from dermatologists in an academic setting and 107 (47.1%) from private practice. The combined approximate active membership of the ITSCC, the APD, and the ACMS is 2200 to 2300 members. Therefore, the survey response rate approximates 10%, which is an underestimate because a significant percentage of physicians are members of more than one of the organizations. Of the 227 dermatologists in this study, 118 (52.0%) would never use EDC for invasive SCC in an OTR versus 74 (32.6%) who would never use EDC for invasive SCC in a nontransplant patient (Table 1). Interestingly, one physician would use EDC for invasive SCC in OTRs but not in nontransplant patients. Overall, dermatologists were more likely to treat a biopsy-proven SCC with EDC in nontransplant patients than in OTRs ($P = .0003$). There was no difference in the rate of EDC use for treatment of SCC in OTRs between private and academic dermatologists ($P = .67$).

Among dermatologists who would consider performing EDC for treatment of SCC in both OTRs and nontransplant patients ($n = 108$), there was no difference in practice patterns for SCC located on the H-zone of the face (defined as forehead, periorbital area and temples, nose, cutaneous lip, and ears) ($P = .22$), extremities ($P = .50$), or trunk ($P = .68$) (Table 2). Dermatologists were more likely to perform EDC for treatment of SCC on other areas of the face and neck in nontransplant patients (29.6%) compared with OTRs (15.7%; $P = .0007$). There was no difference in practice patterns between the two groups of patients based on histology of SCC, including well differentiated ($P = 1.00$), moderately differentiated ($P = .16$), and poorly differentiated ($P = 1.00$) SCC.

In clinical practice, some clinicians may perform a biopsy on a lesion and treat with EDC on the day of biopsy. In cases where the final pathology report upstaged the lesion, clinicians were asked if they would employ surgical excision or MMS based on the final pathologic diagnosis. The decision to pursue further excision or MMS after EDC did not differ between OTRs and nontransplant patients based on the following pathology findings: SCC in situ ($P = 1.00$), well-differentiated ($P = .68$), well-differentiated ($P = .68$), moderately differentiated ($P = .77$), and poorly differentiated ($P = .77$) SCC.

Dermatologists were more likely to treat SCC with EDC over surgical intervention in nontransplant patients compared with OTRs with the following demographic characteristics: significant dementia or psychiatric disease ($P = .04$), multiple medical comorbidities ($P = .03$), or blood thinners in addition to or stronger than 81 mg aspirin ($P = .02$). There was no difference in practice patterns based on patients with a history of staphylococcal infection ($P = 1.00$).

Table 1
Clinician practice patterns for the management of SCC in OTRs and nontransplant patients ($n = 227$ clinicians).

	Solid organ transplant patients	Nontransplant patients	*P*
Frequency of EDC for SCC			0.0003
Never	118 (52.0%)	74 (32.6%)	
Rarely (<10% of the time)	67 (29.5%)	84 (37.0%)	
Sometimes	39 (17.2%)	63 (27.8%)	
Frequently (>75% of the time)	3 (1.3%)	6 (2.6%)	

EDC, electrodesiccation and curettage; OTR, organ transplant recipient; SCC, squamous cell carcinoma.

Table 2
Practice patterns for the management of SCC in OTRs and nontransplant patients in clinicians who would consider EDC in both patient populations ($n = 108$ clinicians).

	Solid organ transplant patients	Nontransplant patients	*P*
Consider EDC of invasive SCC based on tumor characteristics			
H-zone of face	4 (3.7%)	8 (7.4%)	0.22
Other face/neck	17 (15.7%)	32 (29.6%)	0.0007
Extremities	97 (89.8%)	103 (95.4%)	0.50
Trunk	103 (95.4%)	105 (97.2%)	0.68
Well-differentiated SCC	107 (99.1%)	106 (98.1%)	1.00
Moderately differentiated SCC	15 (13.9%)	20 (18.5%)	0.16
Poorly differentiated SCC	0 (0.0%)	1 (0.9%)	1.00
Further surgical excision after EDC if upstaging on pathology			
SCC in situ	2 (1.9%)	3 (2.8%)	1.00
Well-differentiated SCC	15 (13.9%)	13 (12.0%)	0.68
Moderately differentiated SCC	58 (53.7%)	58 (53.7%)	0.77
Poorly differentiated SCC	75 (69.4%)	82 (75.9%)	0.07
Perineural SCC or depth > 4 mm	76 (70.4%)	83 (76.9%)	0.07
Consider EDC over surgical intervention based on patient demographic characteristics			
Elderly (>85 years old)	86 (79.6%)	89 (82.4%)	0.75
Multiple medical comorbidities	80 (74.1%)	89 (82.4%)	0.03
Dementia/psychiatric disease	82 (75.9%)	90 (83.3%)	0.04
Anticoagulation	22 (20.4%)	31 (28.7%)	0.02
History of staphylococcal infections	9 (8.3%)	10 (9.3%)	1.00
Nursing home resident	36 (33.3%)	39 (36.1%)	0.25
No effect of above factors	16 (14.8%)	13 (12.0%)	0.50

EDC, electrodesiccation and curettage; OTR, organ transplant recipient; SCC, squamous cell carcinoma.

Discussion

More than 33,000 patients received a solid organ transplant in 2016, and the number of transplantations has steadily increased over the last decade (OPTN/SRTR 2015 Annual Data Report, 2017). Potent immunosuppressive medications are required after solid organ transplant to prevent transplant rejection. Likely because of immunosuppression, there is a noted increase in cancer

risk independent of infection (Engels et al., 2011). Among all malignancies, the most common cancer after solid organ transplant is SCC, with an incidence of 812 per 100,000 person-years (Garrett et al., 2017). Risk factors for post-transplant skin cancer include history of pretransplant skin cancer, male sex, white race, older age at time of transplant, and a more recent transplant (Garrett et al., 2017).

Important differences between SCC in transplant and nontransplant patients have been noted. SCC tumors in OTRs are also more likely to metastasize than SCC tumors in nontransplant patients (Chockalingam et al., 2015). Interestingly, whereas the face and neck are high-risk zones for SCC in the general population, there is a noted increase in the risk of metastasis of the extremities and trunk in immunosuppressed patients (Rowe et al., 1992). The often aggressive phenotype of SCC in OTRs makes management difficult, and it is expected that clinicians will vary in practice patterns for treatment of these lesions. No studies to date have evaluated dermatologists' use of EDC for treatment of SCC in OTRs.

Our first hypothesis was supported by our data, which stated that clinicians were less likely to use EDC for invasive SCC in OTRs compared to nontransplant patients. Among dermatologists who would consider EDC in both patient populations, the only tumor characteristic that differentially influenced management decisions between the two groups was tumor location; clinicians were more likely to treat SCC with EDC on non–H-zone areas of the face and neck in nontransplant patients compared with OTRs. However, the overall rate of EDC in this location was low in both groups, weakening support for the second hypothesis, which stated that clinicians were less likely to use EDC in high-risk areas of the body in OTRs compared to nontransplant patients.

For both OTRs and nontransplant patients, there was a trend of decreasing EDC use with increasing pathologic severity (from well-differentiated to moderately to poorly differentiated SCC). No one surveyed would use EDC for poorly differentiated SCC in an OTR, and only one respondent would use EDC for poorly differentiated SCC in a nontransplant patient. Because of this trend, we were likely underpowered to detect any differences in management between OTRs and non-OTRs based on pathologic severity. Patient demographic characteristics that differentially affected management of SCC in OTRs versus nontransplant patients included multiple medical comorbidities, significant dementia or psychiatric disease, and anticoagulation.

EDC is a reasonable approach for many localized skin tumors, with well-documented efficacy in the literature (Goldman, 2002; Reschly and Shenefelt, 2010). However, there are no randomized controlled studies that evaluate EDC for treatment of SCC in OTRs. Based on available data, Stasko et al. (2004) have introduced a simple algorithm for managing SCC in OTRs. Aggressive EDC is an option for superficial, slowly growing SCC, whereas surgical excision or MMS is preferred for larger tumors and SCC of the face or neck. The results herein are consistent with these recommendations. Not surprisingly, clinicians in our study were unlikely to perform EDC in the H-zone area of the face (forehead, periorbital area and temples, nose, cutaneous lip, and ears) regardless of transplant status, because EDC is not considered the standard of care in these areas. Although EDC is used in both transplant and nontransplant populations for SCC, some aggressive SCCs require more definitive surgical treatment with margin assessment to reduce the chance of residual tumor and subsequent metastasis and mortality.

The primary limitations of this study are inherent to studies using surveys, including selection and recall bias. In addition, we are unable to calculate the exact response rate to our survey because many physicians are members of more than one of the surveyed organizations, but we are able to estimate a 10% response rate. This is obviously a small proportion of all practicing dermatologists. Among our respondents, the proportion of dermatologists in academic practice was larger than the general dermatology workforce, and overrepresentation of academia may have influenced our results. However, there was no difference in the rate of EDC for treatment of SCC in OTRs in academia compared with private practice, making a large effect from academic overrepresentation unlikely. Additionally, we did not categorize surveyed dermatologists by their primary practice pattern (e.g., general dermatology, medical dermatology, surgical/procedural dermatology), as use of EDC may differ based on subspecialty type. Finally, although it is clear from our results that a sizable portion of clinicians would consider EDC for treatment of SCC in OTRs, there are no studies that directly compare outcomes of EDC to excision or MMS in this population. Further prospective studies would be helpful to stratify OTRs diagnosed with SCC for optimum definitive therapy.

Conflict of Interest

None

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Study Approval

The authors confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

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