6.6%-8.0%), and postoperative experience (2.8%; 95% CI, 2.4%-3.3%) were less frequently mentioned. Negative comments regarding scar primarily focused on concern that excess tissue was taken. Additional concerns included length, shape, or texture. Perceived experience comments more frequently pertained to physicians than staff (72% vs 23%, with 5% unspecified).

The study has several limitations. We could not confirm that reviewers interacted with the reviewed surgeon. Each review could be counted as multiple comments, so they were not independent. Patients who undergo Mohs micrographic surgery may be less technologically inclined and less likely to complete online reviews. Despite these limitations, we reported on more than 12,000 quantitative and 5000 qualitative reviews to identify the most important factors influencing patient satisfaction after Mohs micrographic surgery.

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REFERENCES

1. Xu S, Atanelov Z, Bhatia AC. Online patient-reported reviews of Mohs micrographic surgery: qualitative analysis of positive and negative experiences. *Cutis*. 2017;99:E25-E29.
2. Gao GG, McCullough JS, Agarwal R, et al. A changing landscape of physician quality reporting: analysis of patients' online ratings of their physicians over a 5-year period. *J Med Internet Res*. 2012;14:e38.
3. Lagu T, Hannon NS, Rothberg MB, et al. Patients' evaluations of health care providers in the era of social networking: an analysis of physician-rating websites. *J Gen Intern Med*. 2010;25:942-946.

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Epidemiology, treatment, survival, and prognostic factors of cutaneous mucoepidermoid carcinoma: A distinct entity with an indolent clinical course

To the Editor: Primary cutaneous mucoepidermoid carcinoma (cMEC) is a rare neoplasm with mucus-secreting and epidermoid cells on histology.[1] Its etiopathology remains unclear, and it is postulated to arise de novo or from pre-existing nevus sebaceous, sweat glands, or ectopic salivary glands.[2] Clinically, cMEC may mimic basal cell carcinoma, particularly if ulcerated, and dermatologists must first rule out metastatic disease, salivary origin, and distinguish cMEC from the more aggressive cutaneous adenosquamous carcinoma. Current literature on cMEC is limited to case reports and single-institution studies. Given the rarity of this tumor, lack of established treatment guidelines, and uncertain aggressiveness, which may be partly due to misdiagnosis as cutaneous adenosquamous carcinoma, an in-depth national study can better characterize pertinent epidemiologic and prognostic factors associated with cMEC.

After approval by the Yale Human Investigation Committee, and with adherence to Strengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines, data on patients with a diagnosis of primary cMEC (histology code 8430/3) were obtained from the Surveillance, Epidemiology, and End Results database for the years 1973 to 2016. Data were collated and analyzed as reported previously.[3]

A total of 89 patients with cMEC were identified. Most cases occurred in individuals of white race (80.0%), with a slight preponderance of males (55.1%), and mean age of diagnosis of 63.4 years (range, 23-94 years). Most patients (68.6%) presented with local (stage I) disease and with low grade lesions (75.5%). The most frequent site of presentation was the face (84.3%). Surgery was performed in 81.8% of patients. Detailed descriptive statistics are provided in the Supplemental material (available via Mendeley at https://doi.org/10.17632/3gg58dntvd.1).

Patients with cMEC had a 5-year overall survival (OS) of 68.2% as defined by vital status and disease-specific survival (DSS) of 76.0% as defined by censoring deaths attributable to other causes (Fig 1). Predictors of survival on univariate analysis included older age (shorter OS and DSS), high lesion grade (shorter OS), face as the lesion site (longer OS and DSS), and surgical resection (longer OS and DSS). In risk-adjusted models, independent

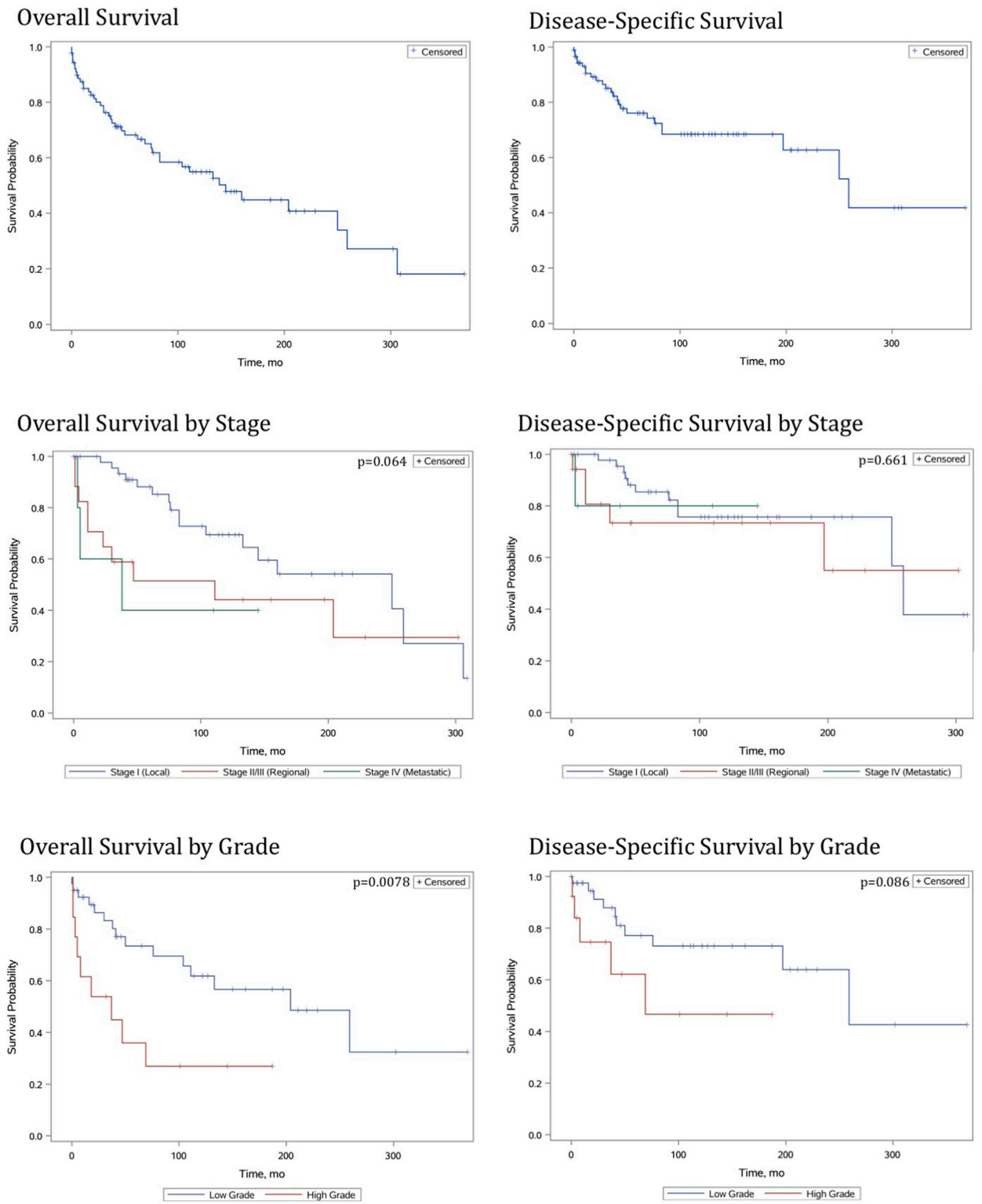

Fig 1. Malignant cutaneous mucoepidermoid carcinoma. Kaplan-Meier survival analysis.

predictors of survival were older age and high grade (shorter OS and DSS), lesion location on the face (longer OS and DSS), and receipt of surgery (longer DSS) (Table I).

Our study provides insight into nationwide epidemiology, prognosis, and treatment trends for cMEC. On the risk-adjusted model, surgical resection was a predictor of DSS, supporting its use in

Table I. Univariate and multivariate analysis of overall and disease-specific survival

	Overall survival		Disease-specific survival	
Characteristic	**HR* (95% CI)**	***P* value**	**HR* (95% CI)**	***P* value**
Univariate†				
Year of diagnosis (advanced)	1.01 (0.98-1.05)	.60	1.03 (0.98-1.08)	.27
Age (older)	1.07 (1.04-1.10)	<.0001	1.07 (1.03-1.10)	<.0001
Sex (male)	1.35 (0.73-2.51)	.34	1.20 (0.54-2.65)	.65
Race (white)	1.03 (0.43-2.50)	.94	0.98 (0.33-2.88)	.96
Residency demographic (rural)	1.00 (Reference)		1.00 (Reference)	
Urban	0.47 (0.21-1.06)	.06	0.60 (0.24-1.51)	.27
Metro	0.66 (0.32-1.37)	.27	0.31 (0.11-0.89)	.03
Stage (higher)	1.50 (1.04-2.17)	.03	1.24 (0.70-2.19)	.46
Grade (high)	3.02 (1.28-7.14)	.01	2.62 (0.85-8.07)	.09
Body site (trunk or extremities)	1.00 (Reference)		1.00 (Reference)	
Face	0.33 (0.14-0.76)	.009	0.27 (0.10-0.72)	.009
Surgery (performed)	0.38 (0.19-0.77)	.007	0.22 (0.10-0.53)	.0006
Multivariate†‡				
Year of diagnosis (advanced)	1.01 (0.95-1.07)	.76	1.05 (0.96-1.14)	.28
Age (older)	1.09 (1.05-1.14)	<.01	1.08 (1.03-1.14)	<.01
Sex (male)	0.48 (0.17-1.35)	.17	0.40 (0.11-1.54)	.18
Grade (high)	8.49 (2.46-29.3)	<.01	6.86 (1.40-33.63)	.02
Body site (face)	0.11 (0.03-0.45)	<.01	0.08 (0.01-0.45)	<.01
Surgery (performed)	0.56 (0.19-1.64)	.29	0.23 (0.06-0.86)	.03

CI, Confidence interval; *HR*, hazard ratio.
*Because age is defined as a continuous variable in this data set, the HR reflects the increased risk of death for each additional year of life.
†Category in parentheses defines the strata the HR represents.
‡Variables were chosen for the multivariate model using forward and backwards stepwise selection using an entry of 0.3 and stay of 0.15.

management, whereas the understanding of the utility of chemotherapy or radiotherapy is limited based on unmeasured biases in coding these specific data. Our data also support literature demonstrating that cMEC is an overall low-grade neoplasm distinguishable from more aggressive cutaneous adenosquamous carcinoma and that patients may benefit from surgical resection.[4,5] In particular, Nouri et al[4] reported success with the use of Mohs micrographic surgery for treatment of cMEC on the face.

Limitations in this study design include a potential for absent or incorrect reporting of retrospective data, including misclassification bias from potentially overlapping cancer terms, migration of patients in and out of the Surveillance, Epidemiology, and End Results registry areas, potential over-representation of data from academic centers, and changes in coding practices over time.

Despite such limitations, to our knowledge, our study presents the first available population-level data on cMEC. Determinants of survival include age, cancer grade, lesion location, and receipt of surgical intervention. Although a rare tumor, physicians should be cognizant of the pertinent epidemiologic, therapeutic, and prognostic factors that may guide management.

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REFERENCES

1. Friedman KJ. Low-grade primary cutaneous adenosquamous (mucoepidermoid) carcinoma report of a case and review of the literature. *Am J Dermatopathol*. 1989;11(1):43.
2. Yen A, Sanchez RL, Fearneyhough P, Tschen J, Wagner RF. Mucoepidermoid carcinoma with cutaneous presentation. *J Am Acad Dermatol*. 1997;37(2):340-342.
3. Mirza F, Tuggle C, Zogg C, Mirza H, Narayan D. Epidemiology of malignant cutaneous granular cell tumors: a US population-based cohort analysis using the Surveillance, Epidemiology, and End Results (SEER) database. *J Am Acad Dermatol*. 2017;78(3):490-497.e1.
4. Nouri K, Trent JT, Lowell B, Vaitla R, Jimenez GP. Mucoepidermoid carcinoma (adenosquamous carcinoma) treated with Mohs micrographic surgery. *Int J Dermatol*. 2003;42(12):957-959.
5. Riedlinger W, Hurley M, Dehner L, Lind A. Mucoepidermoid carcinoma of the skin: a distinct entity from adenosquamous carcinoma: a case study with a review of the literature. *Am J Surg Pathol*. 2005;29(1):131-135.

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Improvement of 11 patients with nail psoriasis with apremilast: Results of an investigator-initiated open-label study

To the Editor: Among patients with psoriasis, 80% to 90% are estimated to have nail psoriasis during their lifetimes.[1] Apremilast is an oral phosphodiesterase 4 inhibitor approved for treatment of moderate to severe plaque psoriasis and psoriatic arthritis.[2] In the study to Evaluate Safety and Effectiveness of Oral Apremilast (CC-10004) in Patients With Moderate to Severe Plaque Psoriasis (ESTEEM) 1 and ESTEEM 2 trials, Nail Psoriasis Severity Index (NAPSI) scores were examined as secondary end points after apremilast treatment (30 mg twice daily), and NAPSI decreased by 43.6% and 60.0%, respectively, at week 32.[2]

An investigator-initiated, open-label, single-arm study was conducted to evaluate efficacy and safety of treating nail psoriasis using apremilast (30 mg twice daily) for 52 weeks. Eleven otherwise healthy white adults (6 men; mean age, 47.7 years) with psoriasis (mean Psoriasis Area and Severity Index, 4.5) demonstrating nail involvement (≥1 fingernail with a modified NAPSI [mNAPSI][3] ≥5 and Nail Pain Visual Analog Scale ≥4) were recruited. The mNAPSI is a validated tool with high inter-rater reliability for assessing nail psoriatic involvement.[4,5] Those on phototherapy as well as other systemic or topical therapies were excluded from this study.

The primary end point was the mean percentage change of mNAPSI at week 36 compared with baseline for all nails. The mNAPSI[3] scores range from 0 (no nail disease) to 130 (complete nail involvement in all 10 nails). Six completed the study to week 36, and a per-protocol analysis showed a reduction of mNAPSI by 64.1% (95% confidence interval, 46.5%-81.7%) from 33.8 to 12.3. Sustained reductions of oil spot and onycholysis were visible as early as week 8 (Fig 1). Analysis using a paired *t*-test at a 2-sided significance level of 5%, showed there was a minimum of 90% power to detect a paired mean difference of 21.5% assuming a SD of 10.89% (equivalent to effect size of 1.973; actual power of 96.71%).

For secondary end points, a modified intention-to-treat analysis was performed with inclusion of patients who received at least 1 dose of apremilast and had at least 1 postbaseline mNAPSI assessment. Missing data were handled using the last observation carried forward method. The mean percentage change in mNAPSI of the target nail (nail with highest baseline mNAPSI) at weeks 12, 24, 36, 48, and 52 compared with baseline decreased significantly at all time points (Fig 2). Proportions of patients achieving an mNAPSI ≥75% reduction over baseline mNAPSI (mNAPSI 75) response, were calculated (Table I). Six patients discontinued the study by week 52. Reasons for discontinuation and reported adverse effects are listed in Table I.

Adalimumab is currently the only treatment with United States Food and Drug Administration-approved indication for nail psoriasis. However, it is immunosuppressive, and alternatives are needed for patients with existing risk factors for life-threatening infections. Patients treated with 52 weeks of apremilast, an oral drug without notable immunosuppressive effects, demonstrated significant improvement in nail psoriasis, measured by mNAPSI of all nails and of the target nail. Improvement was seen with apremilast as early as week 12.

This study's limitations include its small number of patients and high rate of patient dropout. A large randomized clinical trial will be ideal for further investigation. Gastrointestinal adverse events were common, as expected, and should be discussed with patients.

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