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Patients With Lichen Planopilaris are at Increased Risk of Skin Cancer

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INTRODUCTION

Patients with inflammatory alopecias face a potentially greater risk of cutaneous neoplasms in affected areas, likely due to chronic inflammation and reduced hair coverage.[1] While there have been isolated reports of scalp non-melanoma skin cancers (NMSC), particularly among women with lichen planopilaris (LPP), comprehensive evidence from large-scale studies is lacking.[2] To assess the risk for subsequent scalp NMSCs in LPP patients, we conducted a retrospective cohort study using data extracted from a global anonymized healthcare network (TriNetX Network, 2005-2025).

Three distinct alopecia cohorts were created, based on the specificity of ICD codes: LPP, androgenetic alopecia (AGA), and alopecia areata (AA), for comparative analysis.[3] Each alopecia cohort was matched with a healthy control for age, sex, race, and ethnicity. Odds ratios (OR) were calculated to evaluate risk for subsequent skin cancers, including basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma (MM), and melanoma in situ (MIS) (Tables 1 and 2).

Across all cohorts, women (LPP 72%, AA 60%, AGA 54%) and white patients were predominant (LPP 62%, AA 49%, AGA 62%; Table 1). Patients with LPP exhibited a significantly heightened likelihood of developing subsequent scalp and neck NMSCs (BCC: OR 2.03, CI 1.67-2.48; SCC: OR 2.03, CI 1.53-2.71) compared to controls (Table 2). LPP patients also had an increased risk of NMSC on all body sites, but no significant associations with MM or MIS. In comparison, patients with AA demonstrated modestly increased risks for SCC, while those with AGA showed a lower risk specifically for scalp and neck BCC. Interestingly, both the AA and AGA cohorts demonstrated protective effects against MM/MIS overall, not mirrored in the LPP cohort.

These findings suggest an association between LPP and increased risk of subsequent NMSCs, which was not observed in the AA and AGA cohorts. We could not verify the clinical observation that NMSCs predominantly manifest in affected scalp areas, primarily due to constraints imposed by the ICD code merging "neck and scalp" into a singular anatomical

TABLE 1.

Patient Demographic Information for Lichen Planopilaris, Alopecia Areata, and Androgenetic Alopecia Cohorts[a]

	LPP (n=42,459)	AA (n=101,650)	AGA (n=102,273)
Age, mean (SD) years	57 (16)	33 (21)	46 (18)
Gender, no (%)			
Female	30,625 (72)	61,235 (60)	54,894 (54)
Male	10, 047 (24)	37,971 (37)	44,308 (43)
Race, no (%)			
White	26,182 (62)	49,670 (49)	62,967 (62)
Black/African American	5,020 (12)	14,401 (14)	8,163 (8)
Asian	2,360 (6)	6,724 (7)	6,790 (7)
Other	1,298 (3)	6,518 (6)	5,378 (5)
Unknown	7,269 (17)	23,212 (23)	17,877 (17)
Ethnicity, no (%)			
Not Hispanic or Latino	29,254 (69)	57,659 (57)	66,109 (64)
Hispanic or Latino	2,223 (5)	15,481 (15)	7,373 (7)
Unknown	10,982 (26)	28,510 (28)	28,791 (28)

Abbreviations: AA, alopecia areata; AGA, androgenetic alopecia; LPP, lichen planopilaris; no, number of patients; SD, standard deviation.
ICD 10 codes for alopecias are as follow: LPP = L66.1; AA = L63; AGA = L64.
[a]The discrepancy in cohort sizes reflects the relative prevalence of each alopecia subtype in the general population, as well as the nature of real-world data acquisition through the TriNetX.

TABLE 2.

Skin Cancer Risk in Patients With Lichen Planopilaris, Alopecia Areata, and Androgenetic Alopecia After Propensity Score Matching

Skin Cancer Type	LPP (n=42,459)	AA (n=101,650)	AGA (n=102,273)
BCC, overall	1.53* (1.41-1.66)	0.97 (0.88-1.06)	0.97 (0.91-1.04)
Scalp and Neck BCC	2.03* (1.67-2.48)	1.03 (0.81-1.32)	1.27* (1.07-1.51)
SCC, overall	1.76* (1.59-1.94)	1.21* (1.07-1.38)	0.83* (0.75-0.91)
Scalp and Neck SCC	2.03* (1.53-2.71)	1.50* (1.06-2.12)	0.99 (0.77-1.28)
MM, overall	1.04 (0.87-1.25)	0.64* (0.53-0.78)	0.58* (0.50-0.68)
Scalp and Neck Malignant Melanoma	1.04 (0.60-1.83)	1.17 (0.54-2.52)	0.70 (0.41-1.19)
MIS, overall	1.12 (0.93-1.36)	0.65* (0.53-0.81)	0.71* (0.60-0.84)
Scalp and Neck MIS	1.59 (0.87-2.92)	1.2 (0.52-2.78)	1.48 (0.85-2.57)

*Indicates statistical significance against age, sex, race, and ethnicity matched control cohort.
Abbreviations: AA, alopecia areata; AGA, androgenetic alopecia; BCC, basal cell carcinoma; CI, confidence interval; LP, lichen planus; LPP, lichen planopilaris; MIS, melanoma in situ; MM, malignant melanoma; n, number of patients; OR, odds ratio; SCC, squamous cell carcinoma.
Odds ratios were calculated for the development of each skin cancer outcome following a previous diagnosis of LPP, AA, or AGA for each separate case cohort compared to its respective healthy control cohort. These values were adjusted for multiple hypothesis testing using the false discovery rate adjustment method.
ICD codes for diagnoses of skin cancers are as follow: LPP = L66.1; AA = L63; AGA = L64; Overall BCC: C44.01, C44.11, C44.21, C44.31, C44.41, C44.51, C44.61, C44.71, C44.81, C44.91; Scalp and Neck BCC = C44.41; Overall SCC = C44.02, C44.12, C44.22, C44.32, C44.42, C44.52, C44.62, C44.72, C44.82, C44.92; Scalp and Neck SCC = C44.42; Overall MM= C43; Scalp and Neck MM = C43.4; Overall MIS = D03; Scalp and Neck MIS = D03.4.

category. Nevertheless, the data not only highlights an elevated risk for NMSCs on the scalp and neck but also overall in LPP patients. Due to the limitations of the dataset, we were unable to collect information on confounding variables such as environmental risk factors, frequency of dermatologic visits, concomitant medications, or Fitzpatrick skin types (though race was a criterion for cohort matching). Future research will serve to elucidate whether this heightened risk is from the inflammatory processes inherent in LPP, such as IL17, or an unintended effect of therapy, primarily local and/or systemic immunomodulators.[4,5] In a separate parallel analysis of patients with lichen planus, we observed a similar elevated risk of NMSCs (overall BCC: OR 1.21, CI 1.14-1.28; overall SCC: OR 1.68, CI 1.57-1.79; scalp/neck BCC: OR 1.78. CI 1.55-2.03; scalp/neck SCC: OR 1.73 CI 1.46-2.05), reinforcing the broader oncologic risk associated with lichenoid inflammatory diseases. We advise dermatology providers to have heightened acuity for cutaneous malignancies in patients with LPP, particularly in the scalp.

DISCLOSURES

The authors have no conflicts of interest to declare.

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