Reprint requests: Won Soo Lee, MD, PhD, Department of Dermatology and Institute of Hair and Cosmetic Medicine, Yonsei University Wonju College of Medicine, 20 Ilsan ro, Wonju 26426, Republic of Korea

E mail: leewonsoo@yonsei.ac.kr

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Psoriasis and the risk of migraines in the United States

To the Editor: Psoriasis is a chronic inflammatory skin and systemic disease that affects approximately 3% to 4% of the US population.[1] Migraines are severe, disabling headaches that affect approximately 20% of Americans.[2] Both psoriasis and migraines have been associated with metabolic syndrome, diabetes mellitus, hypertension, and elevated body mass index (BMI).[3] Additionally, an association between these 2 disease entities has been established in several international cohorts.[4,5]

Data from the 2003-2004 National Health and Nutrition Examination Survey were examined. The history of psoriasis was ascertained by a "yes/no" item. Migraines were ascertained based on the "yes/no" response to having severe headaches or migraines in the past 3 months.

The covariates in our study were age, gender, BMI, cigarette smoking, diabetes mellitus, and hypertension. Covariates were self-reported except for BMI, which was obtained from examinations that each participant underwent and was maintained as a continuous variable in analyses.

We used t tests to analyze continuous variables and the χ^2 test or Fisher exact test for categorical variables for univariate analyses and logistic regression models for multivariate analyses. Stata statistical analysis software version 15.0 (StataCorp LP, College Station, TX) was used for data analysis. We used the complex survey function for the National Health and Nutrition Examination Survey population data. This function accounts for sample weights applied to the surveyed population and the complex sampling design to draw inferences about the generalized US population. All statistical tests were 2-tailed and the significance level was $P < .05$.

A total of 3131 respondents answered questions about psoriasis and migraines. In our weighted sample, 3.2% of individuals had psoriasis and 29.2% of individuals had migraines. Compared with patients without psoriasis, those with psoriasis did not differ significantly in terms of age, gender, smoking status, presence of diabetes, or presence of high blood pressure, but they did have higher BMIs ($P < .03$) (Table I).

Univariately, psoriasis was not significantly associated with a history of migraines ($P < .24$). Psoriasis was significantly associated with a history of migraines in the multivariable model (odds ratio, 3.97; 95% confidence interval, 1.76-8.95; $P < .003$) (Table II). Male gender was a protective factor and was associated with a 60% lower odds of migraines compared with women (odds ratio, 0.4; 95% confidence interval, 0.29-0.55; $P < .001$) (Table II).

This US cross-sectional study revealed an increased risk of migraines in patients with psoriasis, controlling for age, gender, BMI, hypertension, diabetes, and smoking. In our model, psoriasis was the predictor associated with the greatest magnitude of increased risk of migraines. This corroborates the findings of several international studies.[4,5] Both conditions have been associated with multiple cardiovascular risk factors, all of which involve inflammation as a component of the pathophysiology.[3]

Our study is limited by the cross-sectional survey design and the use of self-reported questionnaires. Furthermore, severe headache and migraine could not be separated. Moreover, our sample size was relatively small.

This cross-sectional US study demonstrates that individuals with psoriasis are at an approximately 4-fold increased risk of migraines. Although further study is needed to better understand this relationship, individuals with psoriasis should be monitored and appropriately treated for migraines.

Alexa B. Steuer, MPH, Jeffrey M. Cohen, MD, Priscilla W. Wong, MS, and Roger S. Ho, MD, MS, MPH

Table I. Weighted baseline features of patients with and without psoriasis

Variable	History of psoriasis (n = 77)	No history of psoriasis (n = 3054)	*P* value*
Age, mean (y)	41	39	.19
Male sex (%)	48.6	49.2	.93
BMI (kg/m²), mean	31	28.1	.03
History of hypertension (%)	79.8	74.6	.59
History of smoking,† (%)	52.7	49.4	.51
History of diabetes mellitus, (%)	0.6	5.3	.18
History of migraines, (%)	31.6	25	.24

BMI, Body mass index (calculated as weight in kilograms divided by height in meters squared).
*Based on *t* test for continuous variables and χ^2 or Fisher exact test for categorical variables.
†Smoking at least 100 cigarettes in lifetime.

Table II. Risk factors for migraines in the multi-variable model

Variable	Odds ratio (95% confidence interval)	*P* value
Male sex	0.4 (0.29-0.55)	<.001
Age	0.98 (0.96-0.997)	.027
BMI	0.99 (0.97-01.02)	.49
History of hypertension	1.23 (0.75-2.02)	.38
History of smoking	1.22 (0.84-1.77)	.28
History of diabetes mellitus	1.11 (0.66-1.87)	.68
History of psoriasis	3.97 (1.76-8.95)	.003

BMI, Body mass index (calculated as weight in kilograms divided by height in meters squared).

From the Ronald O. Perelman Department of Dermatology, New York University School of Medicine, New York.

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Correspondence to: Roger S. Ho, MD, MS, MPH, Ronald O. Perelman Department of Dermatology, New York University School of Medicine, 240 E 38th St, 12th floor, New York, NY 10016

E mail: Roger.Ho@nyumc.org

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Association between micronutrient deficiency dermatoses and clinical outcomes in hospitalized patients

To the Editor: Macronutrient deficiencies in the hospital setting are highly prevalent and under-diagnosed, and they increase patient mortality.[1] There is a paucity of data on the prevalence and impact of inpatient micronutrient deficiencies, such as vitamins A, B2, B3, B6, and C; copper; and zinc, which manifest cutaneously. Cutaneous manifestations of micronutrient deficiencies are likely underrecognized in hospitalized patients because dermatologic conditions are frequently misdiagnosed by nondermatologist inpatient providers.[2,3] In this matched case-control study, we evaluated the impact of micronutrient deficiencies with cutaneous findings on hospitalized patient outcomes.

Patients were queried from The Ohio State University Wexner Medical Center Information Warehouse. Inclusion criteria were (1) admission date between January 1, 2011, through December 31, 2017; (2) admission to the main or ancillary hospitals of the medical center; and (3) an International Classification of Diseases revision 9 or 10 code for skin disease during hospitalization.