



Patients with Isolated Nail Psoriasis Are at Increased Risk for Asthma Compared to Controls in a Retrospective Cohort Study at a Single Academic Institution

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Introduction

Nearly all patients with psoriasis have nail changes during their lifetimes, with 5%-10% having isolated nail psoriasis (NP), with limited or no cutaneous involvement (<5% body surface area [BSA]) [1]. Previous studies demonstrated an association between psoriasis and asthma [2-4], but isolated NP patients were either not included or not specified. Therefore, we sought to analyze the relationship between NP and atopic conditions.

Case Presentation

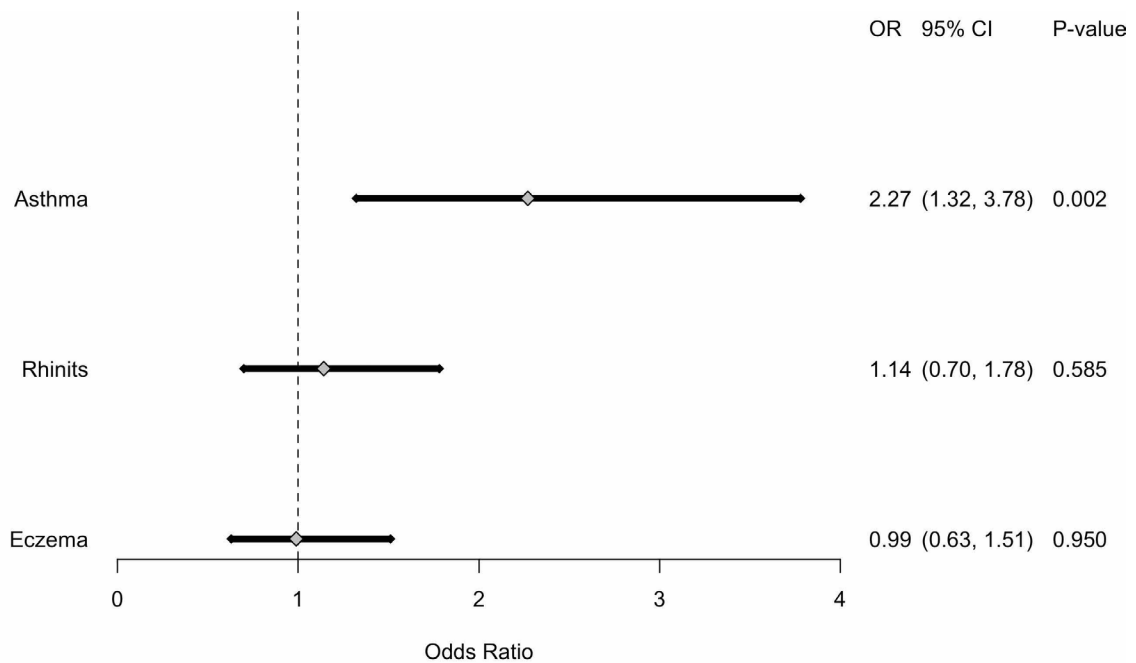
Following Institutional Review Board approval, Weill Cornell Medicine's EPIC database was queried for isolated NP patients and a control group of patients without psoriasis with

previous encounter for total body skin examination. Outcome variables included history of asthma, chronic rhinitis, and atopic dermatitis (AD). Categorical data was described as frequencies and percentages. Continuous data was described as median and interquartile range (IQR). Chi-square and Kruskal-Wallis Rank Sum tests compared NP patients vs. controls for categorical and continuous variables, respectively. Logistic regression was performed and reported as odds ratios (OR) with 95% confidence intervals (CI). Age at diagnosis and sex were used as adjustment variables. P values <0.05 were considered statistically significant.

A total of 266 isolated NP and 1000 control patients were included (Table 1). Median age at diagnosis for the NP cohort was 43 years [IQR 33.00-55.00], with 56.9% female, which was similar to the control cohort (P = 0.967 and P = 0.455, respectively). The cohorts differed by race and

Table 1. Study Population

	Nail	Controls	P-Value
Study Population*			
N	266	1000	
Age at Diagnosis (median [IQR])	43.00 [33.00, 55.00]	42.00 [32.00, 60.00]	0.967
Male sex, N (%)	62 (43.1)	394 (39.4)	0.455
Race, N (%)			<0.001
White	55 (37.9)	609 (60.9)	
Asian	9 (6.2)	51 (5.1)	
Black	5 (3.4)	35 (3.5)	
Other	9 (6.2)	74 (7.4)	
Unknown	67 (46.2)	231 (23.1)	
Ethnicity, N (%)			<0.001
Hispanic or Latino	11 (7.6)	69 (6.9)	
Not Hispanic or Latino	63 (43.4)	626 (62.6)	
Declined or Unknown	71 (49.0)	305 (30.5)	
Unadjusted Outcomes			
Asthma, N (%)	21 (14.5)	70 (7.0)	0.003
Rhinitis, N (%)	25 (17.2)	156 (15.6)	0.701
Eczema, N (%)	29 (20.0)	204 (20.4)	0.999



Age at the time of diagnosis and sex were included as adjustment variables.

Figure 1. Adjusted outcomes between patients with nail psoriasis and patients presenting for TBSE. The following terminology was used as part of the chart review to identify patients with relevant diagnoses: “asthma, asthmatic, inhaler,” “rhinitis,” and “eczema, eczematous, atopic dermatitis.”

ethnicity (both $P < 0.001$). NP versus controls were more often diagnosed with asthma (OR 2.27, 95% CI 1.32-3.78, $P = 0.002$), with no differences in odds of rhinitis (OR 1.14, 95% CI 0.70-1.78, $P = 0.585$) or AD (OR 0.99, 95% CI 0.63-1.51, $P = 0.950$) (Figure 1).

Conclusions

We report on the novel finding that isolated NP patients had increased odds of asthma compared to controls, which builds on prior studies showing an association between psoriasis

and asthma [2-4]. For example, in a National Health and Nutrition Examination Survey study of 17,518 adults, psoriasis vs. non-psoriasis patients were 1.67 times more likely to have asthma (95% CI 1.26-2.21) [2]. Similarly, in a meta-analysis of six studies, psoriasis patients were 1.32 times as likely to have asthma vs. the general population (95% CI 1.20-1.46, $P < 0.00001$) [3]. In a retrospective study of 5165 patients with psoriasis and 230,386 matched controls without psoriasis, psoriasis vs. non-psoriasis patients were 2.22 times more likely to have asthma (95% CI 2.08-2.37) and 2.57 times more likely to have allergic rhinitis (95% CI 2.42-2.73) [4].

Limitations include retrospective study design, and lack of control for comorbidities and lifestyle risk factors. We were unable to match for race/ethnicity due to missing data.

In summary, we showed that isolated NP patients were more likely to have asthma co-diagnosis compared to controls. We suggest that NP patients be counseled on potential increased risk for asthma. Large, prospective studies are needed to compare prevalence of asthma, rhinitis, and AD in patients with isolated NP, psoriasis, and patients with both NP and psoriasis to define the burden of atopic comorbidities in these patient populations. Future studies are needed to examine whether psoriasis and NP severity predicts asthma risk.

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References

1. Chang MJ, Lee D, Desai AD, Lipner SR. The untold burden of isolated nail psoriasis: Delayed diagnosis and significant risk of psoriatic arthritis in a retrospective study at an academic center. *J Am Acad Dermatol.* 2023;88(5):1192-1194. DOI: 10.1016/j.jaad.2022.12.031. PMID: 36621466.
2. Martin A, Thatiparthi A, Liu J, Ge S, Egeberg A, Wu JJ. Association between psoriasis and asthma among United States adults in the 2009-2014 National Health and Nutrition Examination Survey. *J Am Acad Dermatol.* 2022;86(3):709-712. DOI: 10.1016/j.jaad.2021.04.027. PMID: 33882277.
3. Wang J, Ke R, Shi W, et al. Association between psoriasis and asthma risk: A meta-analysis. *Allergy Asthma Proc.* 2018;39(2): 103-109. DOI: 10.2500/aap.2018.39.4109. PMID: 29490768. PMCID: PMC5827153.
4. Joel MZ, Fan R, Damsky W, Cohen JM. Psoriasis associated with asthma and allergic rhinitis: a US-based cross-sectional study using the All of US Research Program. *Arch Dermatol Res.* 2023;315(6):1823-1826. DOI: 10.1007/s00403-023-02539-z. PMID: 36707438.