Director of Immunology at ARUP Laboratories, for assistance with interpretation of TIF-1γ testing and results.

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REFERENCES

1. Qiang JK, Kim WB, Baibergenova A, Alhusayen R. Risk of malignancy in dermatomyositis and polymyositis. *J Cutan Med Surg*. 2017;21:131-136.
2. Trallero-Araguas E, Rodrigo-Pendas JA, Selva-O'Callaghan A, et al. Usefulness of anti-p155 autoantibody for diagnosing cancer-associated dermatomyositis: a systematic review and meta-analysis. *Arthritis Rheum*. 2012;64:523-532.
3. Fujimoto M, Hamaguchi Y, Kaji K, et al. Myositis-specific anti-155/140 autoantibodies target transcription intermediary factor 1 family proteins. *Arthritis Rheum*. 2012;64:513-522.
4. Mahler M, Betteridge Z, Bentow C, et al. Comparison of Three Immunoassays for the Detection of Myositis Specific Antibodies. *Front Immunol*. 2019;10:848.
5. Espinosa-Ortega F, Holmqvist M, Alexanderson H, et al. Comparison of autoantibody specificities tested by a line blot assay and immunoprecipitation-based algorithm in patients with idiopathic inflammatory myopathies. *Ann Rheum Dis*. 2019;78:858-860.
6. ARUP Laboratories®. Extended Myositis Panel. Available at: https://ltd.aruplab.com/Tests/Pub/3001781. Accessed December 8, 2019.

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Smoking and risk of adult-onset atopic dermatitis in US women

To the Editor: Atopic dermatitis (AD) is common in adults, but few studies have examined risk factors for adult-onset AD.[1] Cross-sectional and case-control studies suggest that smoking is associated with AD, but there is insufficient data on the temporality of the association.[2-4] In this study, we examined the association between smoking and risk of incident AD in adult women in the Nurses' Health Study II cohort.

Smoking status and AD were assessed by self-report. In 1989, participants were asked about their lifetime history of 20 or more packs of cigarettes. Smoking status (never, past, or current) was updated biennially. AD was assessed by self-report in 2013. Participants were asked if they ever received a diagnosis of "eczema (atopic dermatitis)" by a clinician and what year this occurred. In 2017, participants who reported a diagnosis of AD were sent a questionnaire to reaffirm their self-report. We excluded prevalent cases of AD at baseline (1995; n = 4575) and participants who had an unknown diagnosis date or reported having AD but did not confirm their report in 2017 (n = 42).[5] We calculated person-years from the return date of the 1995 questionnaire to the first of the AD diagnosis date or the end of follow-up (June 2013).

We used Cox proportional hazards models to calculate age- and multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) for the association between smoking and AD. Covariates included age, race (white vs nonwhite), body mass index (kg/m^2), physical activity (metabolic equivalent of task hours/week in quintiles), alcohol intake, asthma, and hay fever. All statistical tests were 2 tailed, and the significance level was set at $P < .05$. We used SAS, version 9.4 (SAS Institute, Inc, Cary, NC).

We included 76,701 women in the analysis. Baseline characteristics of the participants according to smoking status are presented in Table I. Overall, 7,497 (9.8%) participants were current smokers, 17,847 (23.2%) were past smokers, and 51,357 (66.8%) had never smoked. During 1,357,932 person-years of follow-up, we identified 463 incident cases of AD. In our multivariable analysis, neither current (HR, 1.21; 95% CI, 0.86-1.68) nor past smoking (HR, 1.02; 95% CI, 0.82-1.26) were significantly associated with AD compared to never smoking (Table II). Among current smokers, there was no apparent dose-response relationship for the number of cigarettes smoked daily, neither smoking 1 to 14 (HR, 1.25; 95% CI, 0.81-1.94) nor 15 or more (HR, 1.15; 95% CI, 0.72-1.86) cigarettes daily was associated with AD. Among current smokers, risk for AD may have been slightly higher with 25 or more pack-years (HR, 1.25; 95% CI, 0.77-2.01) compared to less than 25 pack-years (HR, 1.18; 95% CI, 0.76-1.82) when both were compared to never

Table I. Age-standardized characteristics of study participants by smoking status in 1995: The Nurses' Health Study II*

Characteristics	Smoking status		
	Never (n = 51,357)	Past (n = 17,847)	Current (n = 7497)
Age,† y, mean (SD)	40.0 (4.7)	41.2 (4.5)	40.8 (4.5)
Pack-years, mean (SD)	0.0 (0.0)	9.3 (7.3)	18.6 (10.5)
White, %	94.8	97.4	97.1
Body mass index, kg/m^2, mean (SD)	25.6 (5.8)	25.8 (5.8)	25.4 (5.4)
Physical activity, metabolic equivalent hours/week, mean (SD)	20.5 (26.3)	22.2 (28.6)	19.8 (27.6)
Alcohol intake, g/day, mean (SD)	2.7 (5.3)	4.9 (7.9)	5.6 (9.4)
Personal history of asthma, %	8.6	9.5	7.1
Personal history of hay fever, %	23.8	24.5	20.5

SD, Standard deviation.
*Values are standardized to the age distribution of the study population.
†Values are not age adjusted.

Table II. Age- and multivariable-adjusted HRs for atopic dermatitis by current cigarettes consumed daily, age at smoking initiation, and pack-years in the Nurses' Health Study II (1995-2013)

Exposure variables	Case number	Person-years	Age-adjusted		Multivariable, adjusted*	
			HR	95% CI	HR	95% CI
Smoking status						
Never smoked	301	904,122	1.00	Referent	1.00	Referent
Past smoker	122	349,310	1.06	0.86-1.31	1.02	0.82-1.26
Current smoker	40	104,500	1.21	0.87-1.68	1.21	0.86-1.68
Current smoker, 1-14 cigarettes daily	22	54,768	1.26	0.82-1.95	1.25	0.81-1.94
Current smoker, 15+ cigarettes daily	18	49,145	1.15	0.71-1.85	1.15	0.72-1.86
Age, y, at smoking initiation						
Never smoked	301	904,122	1.00	Referent	1.00	Referent
Ever smoked, initiated at ≤19	105	306,288	1.04	0.84-1.31	0.90	0.66-1.23
Ever smoked, initiated at 20+	55	139,023	1.24	0.93-1.66	1.13	0.81-1.57
Smoking status, pack-years						
Never smoked	301	904,122	1.00	Referent	1.00	Referent
Past, <10	60	190,799	0.95	0.72-1.26	0.92	0.69-1.22
Past, 10-19	44	106,478	1.27	0.92-1.74	1.21	0.88-1.67
Past, 20+	18	52,033	1.05	0.65-1.69	1.00	0.62-1.63
Current, <25	22	58,956	1.19	0.77-1.84	1.18	0.76-1.82
Current, 25+	18	45,545	1.24	0.77-1.99	1.25	0.77-2.01

CI, Confidence interval; *HR*, hazard ratio.
*Adjusted for age (continuous variable), race (non-Hispanic white, African American, Asian, or other race), alcohol drinking (none, <4.9, 5.0-9.9, 10-14.9, 15-29.9, or ≥30.0 g/day), body mass index (continuous variable), physical activity (metabolic equivalent hours/week in quintiles), personal history of asthma, and personal history of hay fever.

smokers. We found no significant interaction between smoking and asthma on risk of AD ($P = .45$).

In this large cohort of US women, we did not find a significant association between current smoking and incident AD. The positive direction of the association was consistent with previous observational studies. Our findings were imprecise, and future cohort studies in different populations are warranted.

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Reprints not available from the authors.

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REFERENCES

1. Lee HH, Patel KR, Singam V, Rastogi S, Silverberg JI. A systematic review and meta-analysis of the prevalence and phenotype of adult-onset atopic dermatitis. *J Am Acad Dermatol*. 2019;80(6):1526-1532.
2. Kantor R, Kim A, Thyssen JP, Silverberg JI. Association of atopic dermatitis with smoking: a systematic review and meta-analysis. *J Am Acad Dermatol*. 2016;75(6):1119-1125.
3. Lee CH, Chuang HY, Hong CH, et al. Lifetime exposure to cigarette smoking and the development of adult-onset atopic dermatitis. *Br J Dermatol*. 2011;164(3):483-489.
4. Kim SY, Sim S, Choi HG. Atopic dermatitis is associated with active and passive cigarette smoking in adolescents. *PLoS One*. 2017;12(11):e1087453.
5. Drucker AM, Cho E, Li WQ, Camargo CA Jr, Li T, Qureshi AA. Diagnosis validation and clinical characterization of atopic dermatitis in Nurses' Health Study 2. *J Eur Acad Dermatol Venereol*. 2019;33(3):588-594.

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COVID-19 outbreak and autoimmune bullous diseases: A systematic review of published cases

To the Editor: Autoimmune bullous diseases (AIBDs) are potentially life-threatening disorders requiring long-term immunomodulatory therapies.[1,2] As the coronavirus disease 2019 (COVID-19) has emerged as a widespread public health emergency since December 2019,[3] we have published recommendations for their management during the outbreak.[4] However, there is currently only sparse evidence-based information on how the pandemic affects this special patient population, considering that AIBDs are rare conditions and that it is difficult to collect large cohorts. Therefore, a rapid systematic review of published cases has been conducted.

Literature was comprehensively screened using the PubMed database from inception to July 28, 2020. Search terms were "pemphigus" or "pemphigoid" or "bullous" or "blistering" combined with "COVID-19" or "SARS-CoV-2" or "coronavirus." Inclusion criteria were English-language clinical and epidemiologic reports related to AIBD cases in association with the COVID-19 outbreak and indexed in the mentioned database. Pure review/recommendation articles and articles not related to both AIBDs and COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) were excluded. The main endpoints were the proportion of patients with AIBDs with COVID-19 symptoms and confirmed COVID-19 as well as the rate of related hospitalizations and deaths. Screening and review of articles were performed in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Fig 1).

Eight articles (7 case series and 1 case report) with a pooled total of 732 patients with AIBDs (211 pemphigus, 112 pemphigoid, 409 not specified) from 3 countries were included in the final analysis (Table I). Except for 1 report, all information was collected via telephone/telemedicine visits that have been performed instead of in-person encounters during the COVID-19 outbreak. COVID-19 symptoms were reported in 70 (9.5%) patients, and in 16 (2.1%) patients the diagnosis was confirmed. Six (0.8%) patients had severe symptoms requiring