Association of atopic dermatitis with rheumatoid arthritis and systemic lupus erythematosus in US adults

Alexander Hou, BS[1], Jonathan I. Silverberg, MD, PhD, MPH[2]

[1]Department of Dermatology, Feinberg School of Medicine, Northwestern University.
[2]Department of Dermatology, George Washington University School of Medicine, Washington D.C., USA https://orcid.org/0000-0003-3686-7805 Twitter: @JonathanMD

Background: There have been conflicting studies about the association of atopic dermatitis (AD) and autoimmune disorders, e.g. rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE). Little is known about which subsets of AD patients have increased likelihood to develop autoimmune disorders.

Objective: We sought to determine whether AD with or without atopic comorbidities is associated with RA and SLE, and which subsets of adults have increased likelihood of RA and SLE.

Methods: Data were analyzed from the 2012 National Health Interview Survey, a representative United States population-based cross-sectional survey study (n=34,242 adults age ≥18 years).

Results: In bivariate and multivariate weighted logistic regression models, RA was associated with AD overall (adjusted odds ratio [95% confidence interval]: 1.65 [1.27-2.16]), and AD with comorbid asthma (2.27 [1.46-3.52]), hay fever (1.76 [1.03-3.02]), food allergy (2.05 [1.23-3.42]), or respiratory allergy (1.75 [1.14-2.68]). RA was associated with AD without atopic comorbidities in bivariate models, but not in multivariate models adjusting for sociodemographic characteristics (1.44 [0.95-2.19]). Similarly, SLE was associated with AD overall (2.62 [1.40-4.90]), and AD with comorbid asthma (2.75 [1.13-6.70]), food allergy (6.58 [2.71-16.0]), or respiratory allergy (5.34 [2.21-12.9]), but not AD alone (1.44 [0.59-3.50]) or AD with comorbid hay fever (1.37 [0.33-5.75]).

Conclusion: A subset of adult AD patients, particularly those with comorbid atopic disease, have higher prevalences of RA and SLE. AD is characterized by type 2 inflammation, while autoimmune diseases, e.g. RA and SLE, are characterized by type 1 and/or 3 inflammation. The overlap of atopic and autoimmune comorbidities may represent a distinct immune-profile and patient-subset. Further investigation is needed to understand the mechanisms and management of these overlapping disorders.