Real-world burden of comorbidities of atopic dermatitis in the U.S. adult population

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Background: Previous studies focusing primarily on inpatient populations have found systemic comorbidities associated with atopic dermatitis (AD), an intensely pruritic, inflammatory skin disease. Limited data are available on the burden of comorbidities of AD in the real-world, U.S. adult population. Understanding the burden of associated diseases can provide important perspectives into the systemic nature of AD and help guide management of AD patients.

Objective: To assess the extent of comorbidities associated with adult AD using a real-world, national claims database.

Methods: We queried the MarketScan Commercial Claims database from January 1, 2017 to December 31, 2017 to identify U.S. patients between the ages of 18 to 64 years with diagnosis of AD and their matched controls, with at least 3 months of continuous enrollment during the study period. AD patients were required to have 2 or more medical/pharmacy claims for AD (ICD-10-CM: L20*). Multivariable logistic regressions were performed to compare various categories of comorbidities in AD vs. age- and sex-matched controls. The threshold for statistical significance was set *a priori* at 0.001 to control for multiplicity.

Results: A total of 39,779 adult AD patients and 353,743 controls were identified. The average age of AD patients was 42.5 (SD 13.7) years, and the majority (63.9%) were female. Adult AD was associated with increased odds of mental health disorders including obsessive-compulsive disorder (OR=2.01, 95% CI=1.76, 2.29), schizophrenia (OR=1.45, 95% CI=1.23, 1.72), anxiety (OR=1.44, 95% CI=1.41, 1.48), and mood disorder (OR=1.31, 95% CI= 1.27, 1.35). Adult AD patients had increased odds of several infections, including HIV (OR=2.00, 95% CI=1.68, 2.36), MRSA (OR=3.92, 95% CI=3.44, 4.47), and herpes simplex *(*OR=2.24, 95% CI=2.13, 2.35). Adult AD patients had higher likelihood of several autoimmune conditions, including alopecia areata (OR=6.01, 95% CI=5.36, 6.74), vitiligo (OR=4.44, 95% CI=3.72, 5.29), and dermatomyositis (OR=3.54, 95% CI=2.47, 5.08). They also had higher odds of several dermatologic and allergic conditions, including eczema herpeticum (OR=30.4, 95% CI=19.3, 47.9), food allergy (OR=10.6, 95% CI=9.20, 12.3), urticaria (OR=7.25, 95% CI=6.92, 7.61), and allergic rhinitis (OR=4.03, 95% CI=3.93, 4.13). Adult AD was associated with higher odds of lymphoid/hematopoietic malignancy (OR=1.91, 95% CI=1.68, 2.18), malignant melanoma (OR=1.52, 95% CI=1.24, 1.86) and non-melanoma skin cancers (OR=2.00, 95% CI=1.87, 2.14) compared to age- and gender-matched controls. Finally, AD patients had higher likelihood of metabolic syndrome (OR=1.47, 95% CI=1.33, 1.62), atherosclerosis/peripheral vascular disease (OR=1.67, 95% CI=1.58, 1.81), and chronic obstructive pulmonary disease (OR 1.52, 95% CI=1.42, 1.63). For all findings, $p<0.001$.

Limitations: Retrospective study design, use of healthcare claims data in which we could not control for other potential confounders such as race and ethnicity, as well as AD severity. The study population also consisted of insured patients, which limits the generalizability of our findings. Finally, it is possible that the patients in this study may have comorbidities for which they do not seek care, thus are not represented by the healthcare claims data.

Conclusions: Atopic dermatitis in adults is associated with a wide range of psychiatric, dermatologic, and extracutaneous comorbidities in real-world, highlighting the systemic nature of this inflammatory skin disease. Increased awareness of the comorbidity burden and modifiable risk factors in AD can help guide the effective workup and management of these patients.