Evaluating the longitudinal course of atopic dermatitis severity in clinical practice

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Background: Atopic dermatitis (AD) is a heterogeneous disease associated with variable severity, extent and distribution of skin lesions and disease persistence. AD severity may fluctuate over time with acute flares and remissions, and chronic relapses. However, little is known about the longitudinal course of AD lesional severity in clinical practice.

Objective: To evaluate the longitudinal course and predictors of AD signs and severity in children and adults with AD.

Methods: A prospective, dermatology practice-based study was performed (n=402). Patients were assessed at baseline, and follow-up visits at approximately 6, 12, 18 and 24 months. AD severity assessments included the clinician-reported outcomes Eczema Area and Severity Index (EASI) and objective Scoring Atopic Dermatitis (objective-SCORAD). Repeated-measures linear regression models were constructed to examine AD severity over time. Models included Numeric Rating Scale (NRS) worst-itch, NRS skin pain, and time as fixed-effects. Covariables included age (continuous), sex (male/female), race (white/non-white), and insurance (Private/Medicaid/Medicare/Uninsured).

Results: Overall, 46.5% and 19.4% of patients had moderate (6.0-22.9) or severe (23.0-72.0) EASI scores at any visit, respectively; only 1.2% and 0% had persistent (≥3 visits) moderate or severe scores. Similarly, 41.0% and 28.6% of patients had moderate (24.0-37.9) or severe (38.0-83.0) objective-SCORAD scores at any visit, respectively; only 0.5% and 0.8% had persistent (≥3 visits) moderate or severe scores. Among patients with baseline moderate (6.0-22.9) or severe (23.0-72.0) EASI scores, 22.4% and 18.6% continued to have moderate or severe scores at ≥1 follow-up visits, respectively. Only, 3.2% or 10.0% of patients with baseline moderate or severe AD had mild or mild-moderate disease at all follow-up visits. Similarly, among patients with baseline moderate (24.0-37.9) or severe (38.0-83.0) objective-SCORAD scores, 21.2% and 25.5% continued to have moderate or severe scores at ≥1 follow-up visits, respectively. Only, 3.0% or 4.7% of patients with baseline moderate or severe AD had mild or mild-moderate disease at all follow-up visits, respectively. Severe objective-SCORAD scores were significantly higher in patients who had public insurance ($P<0.05$); moderate objective-SCORAD scores were not associated with any of the variables examined. Both EASI and objective-SCORAD significantly improved over time (Kruskal-Wallis, $P<0.0001$). In longitudinal regression models, EASI was significantly associated

with NRS-itch (adjusted beta [95% confidence interval]: 1.312 [0.901, 1.723]), male sex (4.746 [1.290, 8.201]) and Medicare insurance (8.311 [2.307, 14.315]). Whereas, objective-SCORAD was associated with NRS-itch (1.822 [1.354, 2.291]), NRS-pain (0.634 [0.095, 1.173]) and male sex (5.29 [0.952, 9.633]) over time.

Conclusion: AD lesional severity had a heterogeneous longitudinal course. Many patients had fluctuating lesional severity scores over time. Only a minority of patients had persistently moderate or severe disease over time. However, most patients with moderate and severe disease at baseline were unable to achieve persistent clearance of their skin lesions. These results indicate that there are unmet needs in the treatment of AD in clinical practice.