The heterogeneous characteristics of itch vary by atopic dermatitis severity and differentially impact quality of life in children and adults: a prospective cohort study

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Background: Itch is well-recognized as the universal and most burdensome symptom in atopic dermatitis (AD). Though, little is known about the heterogeneous characteristics of itch in AD.

Objectives: To examine the heterogeneous characteristics of itch and their associations in AD.

Methods: A prospective dermatology practice-based study of children and adults with AD (diagnosed by Hanifin-Rajka criteria) was performed using standardized, validated questionnaires and skin examinations. Severity of AD was assessed with Scoring AD (SCORAD), objective-SCORAD, Eczema Area and Severity Index (EASI), Investigator Global Assessment (IGA), worst-itch verbal rating scale (VRS), average-itch VRS, Patient-reported Global Assessment (PtGA), hours spent itching, intensity of itch, and body surface area (BSA). Quality of life (QOL) was measured by the Dermatology Life Quality Index (DLQI). Latent class analysis (LCA) was used to identify dominant clinical patterns of itch-descriptors. The best-fitting model was selected by minimizing the Bayesian and Akaike information criteria. Multivariate logistic regression models were constructed to examine the relationship of latent class membership with AD severity (adjusting for age and gender) or DLQI scores (adjusting for age, gender, and SCORAD).

Results: Of 489 participants with AD, 307 (62.8%) reported ≥1 itch-descriptor, most commonly stinging (30.1%), painful (24.5%), burning (23.9%), tingling (23.1%), sensitive (21.7%), crawling (20.2%), warm (14.7%), pinprick (13.7%), tight (12.1%), throbbing (11.2%), sharp (9.6%), biting (9.2%), and/or shooting (3.5%). Participants who endorsed one or more of these itch-descriptors had more severe (verbal rating scales for average or worst itch), frequent and extensive itch, and worse overall AD severity (SCORAD, objective-SCORAD, EASI, IGA, PtGA) (all P ≤0.001). All of the itch-descriptors were more likely to be endorsed with increasing severity of itch and AD. LCA identified 3 distinct patterns of itch-descriptors: A) high conditional probabilities for nearly every itch-descriptor; B) intermediate probabilities for burning, crawling, painful, sensitive, stinging, and tingling; C) lowest probabilities for all itch-descriptors. Latent class membership was strongly associated with AD severity; Class A was associated with highest, class B with moderate, and class C with mildest severity of itch and AD (all P <0.0001). Class A (adjusted odds ratio [95% confidence interval]: 12.19 [2.14-231.29]) and B (4.02 [2.25-7.31]) were also associated with higher odds of moderate-severe impairments in DLQI scores compared to Class C, even after adjusting for AD severity.
Conclusions: Itch is a heterogeneous symptom of AD and can be experienced differently by AD patients. Many patients describe their itch as having qualities of pain (e.g., stinging, burning) and sensory disturbances (e.g., tingling, crawling), and not purely itch. Patients who described their itch using one or more these characteristics had more severe itch and AD and worse QOL. Clinicians caring for patients with AD should recognize the heterogeneous characteristics of itch and their burden on QOL. Future studies are needed to determine whether these distinct characteristics of itch have different underlying mechanisms or responses to therapy.

Keywords: adult; atopic dermatitis; child; itch; quality of life; severity