Published in final edited form as:

J Allergy Clin Immunol. 2013 November ; 132(5): 1139–1140. doi:10.1016/j.jaci.2013.08.028.

Do children really outgrow their eczema, or is there more than one eczema?

Katrina Abuabara, MD, MA[a] and **David J. Margolis, MD, PhD**[a,b]

[a]Department of Dermatology, Perelman School of Medicine, University of Pennsylvania.

[b]Department of Biostatistics and Epidemiology, Perelman School of Medicine, University of Pennsylvania.

Keywords

Eczema; atopic dermatitis; epidemiology; adult; child

Surprisingly little is known about the epidemiology of eczema in adults. The report in this month's issue by Silverberg and Hanifin[1] is the first population-based prevalence estimate of eczema exclusively for adults in the United States. The data come from the 2010 National Health Interview Survey. The National Health Interview Survey is a multipurpose health survey conducted by the National Center for Health Statistics and the Centers for Disease Control and Prevention that is a household-based interview administered under contractual agreement by the US Census Bureau. Information is collected through personal household interviews. It is important to realize that the National Health Interview Survey uses a weighted sample technique so that results can be extrapolated to the general population of the United States. On the basis of this process, the 1-year self-reported prevalence of eczema in adults of 10.2% (95% CI, 9.7% to 10.5%) noted by Silverberg and Hanifin[1] should generalize to the full United States.

Conventional clinical teaching is that eczema is primarily a disease of childhood developing during the first 2 years of life and remitting in the majority of children by age 10 to 12 years.[2, 3] If this were true, it would be reasonable to expect that the yearly prevalence of eczema in adults should be very small compared with that in children or that adults with eczema have a disease that is different from that in children. A national survey of parent-reported eczema found a national prevalence of 10.7% among children less than 18 years of age in the United States.[4] The similarity between the US population-based childhood and adult estimates highlights the fact that adult eczema might be more prevalent than previously believed and raises the following question: Is adult eczema different from childhood eczema, or have we been wrong about the conventional teaching about the duration of childhood eczema?

Corresponding author: David J. Margolis, MD, PhD, 901 Blockley Hall, 423 Guardian Dr, Philadelphia, PA 19104. margo@upenn.edu.

Disclosure of potential conflict of interest: D. J. Margolis declares that he has no relevant conflicts of interest.

An understanding of the natural history of eczema is complicated by the lack of clarity around the definition of eczema, especially among adults. The 1980 Hanifin and Rajka diagnostic criteria have been widely used in clinical trials of eczema but are impractical for large-scale population-based studies. Moreover, questionnaire-based instruments designed for childhood eczema, such as those from the United Kingdom Working Party and the International Study of Asthma and Allergies in Childhood, might not perform well among adults.[5, 6] Most population-based studies of adults use self-reported responses to general questions about an itchy rash, such as that used in the National Health Interview Survey and reported by Silverberg and Hanifin[1]: "During the past 12 months, have you had dermatitis, eczema, or any other red, inflamed skin rash?" This question is likely to overestimate the prevalence of eczema by capturing other entities, such as contact or irritant dermatitis or psoriasis, and might include patients with only transient mild disease. Silverberg and Hannifin[1] also created composite variables based on an affirmative response to the previous question and a self-reported 1-year history of asthma, hay fever, or both. Outcome measures requiring a history of atopy yield lower prevalence rates, although these might be overly specific. For example, studies of children with atopic dermatitis have shown that only between 40% and 60% will also have a history of these atopic illnesses.[1, 2] The importance of other biomarkers, such as the association between increased IgE levels and eczema or other atopic diseases, remains an active area of research.

If Silverberg and Hannifin's population-based study[1] is correct and the prevalence of eczema in adults and children is not as discordant as previously believed, there are a variety of plausible explanations. Childhood eczema could wane over time, and adult-onset eczema could be a different entity developing in a new set of subjects. In fact, diagnostic criteria often specify that symptoms should begin at an early age, implying that adult-onset disease might be distinct. Moreover, descriptive studies suggest that adults might be more likely to present with different clinical features, such as head-and-neck or hand eczema, rather than involvement of the flexural creases, as classically seen in children.[7] However, a real concern exists if adults with eczema are different than children with eczema because the majority of human tissue–based studies on the pathophysiology of eczema used tissue from adults. If adults and children have a different disease process, then the adult studies might not generalize to children.[8, 9]

Alternatively, childhood eczema could follow a chronic relapsing and remitting course throughout a patient's lifetime, with flares triggered by changes in the environment, skin care, stress, or other factors.[10–13] This hypothesis is supported by genetic evidence for the role of immune dysregulation and reduced barrier function in patients with eczema. Studies have shown that subjects with filaggrin mutations are more likely to have severe persistent disease.[14, 15]

Prospective, population-based cohort studies examining disease onset and persistence are necessary to understand the relationship between childhood and adult eczema. Longitudinal cohorts that focus on disease onset during infancy and early childhood might overestimate the percentage of children who "outgrow" their eczema if there is not adequate follow-up during the teen years and adulthood. Moreover, study designs that use different methods for diagnosis during childhood and adulthood might bias the results, especially among patients

with less severe disease. For example, parents of a child might be much more likely to recall an itchy rash within the last year of its initial onset than the now teen child when asked about symptoms over the preceding 12 months. Although clinical examinations would lead to the most specific estimates, they could miss patients with latent disease and are generally impractical for longitudinal population-based studies. Ideally, studies need to take into account the waxing and waning nature of the eczema by having frequent measures of disease severity and current treatment beginning in childhood through adulthood. It is also important to capture risk factors for both incident disease and disease flares and to consider the effectiveness of treatments over time.

Understanding the differences between adult and childhood disease is important for a number of reasons. Eczema is a relatively prevalent disease with significant quality-of-life and economic effects. In addition, much of what we know about the biology of eczema comes from adult tissue, and as new systemic treatments are developed, they are likely to be tested in adults first. Clarifying whether adult eczema is truly the same entity as childhood eczema is essential to guiding intervention efforts in both children and adults.

Acknowledgments

K. Abuabara has been supported by a training grant from the National Institutes of Health (5T32AR007465-30).

REFERENCES

1. Siverberg J, Hanifin J. Adult eczema prevalence and associations with asthma and other variables: a US population-based study. J Allergy Clin Immunol. 2013; 132:1132–1138. [PubMed: 24094544]
2. Bieber, T.; Bussman, C. Atopic dermatitis. In: Bolongia, J.; Jorizzo, J.; Schaffer, J., editors. Dermatology. 3rd ed. Amsterdam: Elsevier Health Sciences; 2012. p. 203-217.
3. Rystedt I. Long term follow-up in atopic dermatitis. Acta Derm Venereol Suppl (Stockh). 1985; 114:117–120. [PubMed: 3859160]
4. Shaw TE, Currie GP, Koudelka CW, Simpson EL. Eczema prevalence in the United States: data from the 2003 National Survey of Children's Health. J Invest Dermatol. 2011; 131:67–73. [PubMed: 20739951]
5. Lan CC, Lee CH, Lu YW, Lin CL, Chiu HH, Chou TC, et al. Prevalence of adult atopic dermatitis among nursing staff in a Taiwanese medical center: a pilot study on validation of diagnostic questionnaires. J Am Acad Dermatol. 2009; 61:806–812. [PubMed: 19595479]
6. Simpson EL, Keck LE, Chalmers JR, Williams H. How should an incident case of atopic dermatitis be defined? A systematic review of primary prevention studies. J Allergy Clin Immunol. 2012; 130:137–144. [PubMed: 22424882]
7. Katsarou A, Armenaka M. Atopic dermatitis in older patients: particular points. J Eur Acad Dermatol Venereol. 2011; 25:12–18. [PubMed: 20569298]
8. Suarez-Farinas M, Dhingra N, Gittler J, Shemer A, Cardinale I, de Guzman Strong C, et al. Intrinsic atopic dermatitis shows similar TH2 and higher TH17 immune activation compared with extrinsic atopic dermatitis. J Allergy Clin Immunol. 2013; 132:361–370. [PubMed: 23777851]
9. Fierro MT, Banche G, Marenco F, Novelli M, Allizond V, Mandras N, et al. Functional and phenotypical impairment of polymorphonuclear cells in atopic dermatitis: an additional cause for the known susceptibility to infections? Dermatology. 2012; 224:323–330. [PubMed: 22710427]
10. Ballardini N, Kull I, Lind T, Hallner E, Almqvist C, Ostblom E, et al. Development and comorbidity of eczema, asthma and rhinitis to age 12: data from the BAMSE birth cohort. Allergy. 2012; 67:537–544. [PubMed: 22335548]

11. Langan SM, Bourke JF, Silcocks P, Williams HC. An exploratory prospective observational study of environmental factors exacerbating atopic eczema in children. Br J Dermatol. 2006; 154:979–980. [PubMed: 16634905]

12. Rod NH, Kristensen TS, Lange P, Prescott E, Diderichsen F. Perceived stress and risk of adult-onset asthma and other atopic disorders: a longitudinal cohort study. Allergy. 2012; 67:1408–1414. [PubMed: 22943607]

13. Wuthrich B. Clinical aspects, epidemiology, and prognosis of atopic dermatitis. Ann Allergy Asthma Immunol. 1999; 83:464–470. [PubMed: 10582732]

14. Irvine AD, McLean WH, Leung DY. Filaggrin mutations associated with skin and allergic diseases. N Engl J Med. 2011; 365:1315–1327. [PubMed: 21991953]

15. Margolis DJ, Apter AJ, Gupta J, Hoffstad O, Papadopoulos M, Campbell LE, et al. The persistence of atopic dermatitis and filaggrin (FLG) mutations in a US longitudinal cohort. J Allergy Clin Immunol. 2012; 130:912–917. [PubMed: 22951058]