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Original Investigation

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Phenotypes of Atopic Dermatitis Depending on the Timing of Onset and Progression in Childhood

Caroline Roduit, PhD^{1,2}; Remo Frei, PhD^{2,3}; Martin Depner, PhD⁴; [et al](#)

□ Author Affiliations

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Key Points

Question Are there different clinical phenotypes of atopic dermatitis depending on the onset and progression of the disease in childhood?

Findings In this cohort study, we identified 2 phenotypes with early onset within the first 2 years of life (transient and persistent progression) and a late phenotype, with onset after the age of 2 years. Children with an early phenotype of atopic dermatitis, especially with persistent symptoms, were most at risk to develop respiratory allergy and food allergy.

Meaning Children developing symptoms of atopic dermatitis in the first 2 years of life, especially those with food allergy, should require special attention for respiratory allergy prevention.

Abstract

Importance Atopic dermatitis is an inflammatory, pruritic skin disease that often occurs in early infancy with a chronic course. However, a specific description of subtypes of atopic dermatitis depending on the timing of onset and progression of the disease in childhood is lacking.

Objective To identify different phenotypes of atopic dermatitis using a definition based on symptoms before age 6 years and to determine whether some subtypes are more at risk for developing other allergic diseases.

Design, Setting, and Participants The Protection Against Allergy Study in Rural Environments (PASTURE) is a European birth cohort where pregnant women were recruited between August 2002 and March 2005 and divided in 2 groups dependent on whether they lived on a farm. Children from this cohort with data on atopic dermatitis from birth to 6 years of age were included.

Exposures Atopic dermatitis, defined as an itchy rash on typical locations from birth to 6 years.

Main Outcomes and Measures The latent class analysis was used to identify subtypes of atopic dermatitis in childhood based on the course of symptoms. Multivariable logistic regressions were used to analyze the association between atopic dermatitis phenotypes and other allergic diseases.

Results We included 1038 children; of these, 506 were girls. The latent class analysis model with the best fit to PASTURE data separated 4 phenotypes of atopic dermatitis in childhood: 2 early phenotypes with onset before age 2 years (early transient [n = 96; 9.2%] and early persistent [n = 67; 6.5%]), the late phenotype with onset at age 2 years or older (n = 50; 4.8%), and the never/infrequent phenotype (n = 825; 79.5%), defined as children with no atopic dermatitis. Children with both parents with history of allergies were 5 times more at risk to develop atopic dermatitis with an early-persistent phenotype compared with children with parents with no history of allergies. Both early phenotypes were strongly associated with food allergy. The risk of developing asthma was significantly increased among the early-persistent phenotype (adjusted odds ratio, 2.87; 95% CI, 1.31-6.31). The late phenotype was only positively associated with allergic rhinitis.

Conclusions and Relevance Using latent class analysis, 4 phenotypes of atopic dermatitis were identified depending on the onset and course of the disease. The prevalence of asthma and food allergy by 6 years of age was strongly increased among children with early phenotypes (within age 2 years), especially with persistent symptoms. These findings are important for the development of strategies in allergy prevention.

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