microbe and potential driver of autoimmune disease. Moreover, it provides direct evidence of a mechanistic link between these 2 components of the microbiota and the selective disruption of a specific immunomodulatory mechanism by which the risk of developing an autoimmune disease, specifically T1D, could increase. Future research should be focused on establishing specific causes of detrimental changes in the composition of gut microbiota, understanding its full range of implications, and developing strategies to favor the presence of protective microbes in an attempt to modify the increasing incidence of autoimmune and allergic diseases.

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Elevated Blood Eosinophils in Early Infancy Are Predictive of Atopic Dermatitis in Children With Risk for Atopy

Rossberg S, Gerhold K, Geske T, et al. *Pediatr Allergy Immunol*. 2016;27(7):702–708

PURPOSE OF STUDY. To investigate the association between serum eosinophil levels and the development of atopic dermatitis (AD) in a birth cohort of patients at risk for atopic disease.

STUDY POPULATION. This study included pediatric patients from a German randomized placebo-controlled trial for primary prevention of AD by using Pro-Symbioflor, an oral bacterial lysate treatment (ISRCTN60475069), conducted between 2002 and 2007.

METHODS. Study participants were randomly assigned to receive either Pro-Symbioflor or placebo, from 5 weeks until 7 months of age. Blood samples were collected at 4 weeks (preintervention) and 7 months of age (postintervention) and were used to measure blood eosinophil counts. The infants were evaluated by trained pediatricians for the development of AD until 3 years of life. Disease severity was assessed by using Scoring Atopic Dermatitis criteria. The study authors defined elevation of blood eosinophils as >5% of total leukocytes and used 2×2 tables and odds ratio analyses to assess for the association between elevated blood eosinophils (EEs) and the occurrence of AD.

RESULTS. Blood samples were collected from 559 infants at 4 weeks and 467 infants at 7 months of age who met study inclusion criteria. The eosinophil counts for the total study population ranged from 0.9% to 15.1% of total leukocytes at 4 weeks of life; the 50th percentile was 4%. This value was similar among all subgroups (1 or both parents with atopy, single or double heredity). In the overall study population, EEs observed at 4 weeks of life were associated with the development of AD at ages 7 months ($P = .007$), 1 year ($P = .004$), 2 years ($P = .007$), and 3 years ($P = .006$). EEs had a positive predictive value of 23.9%, sensitivity of 52.3%, and a specificity of 63.3% for the development of AD in the overall study population. Subjects with EEs at 4 weeks of life were predicted to develop AD 12 weeks earlier than infants with normal eosinophil levels. EEs at 7 months of life were not found to be associated with an increased development of AD. However, when the study authors performed receiver operating characteristic curve analysis for sensitivity and specificity at a lower elevated eosinophil cutoff (>4.5%), there was an association between EEs at 7 months of age and the development of AD: $P = .005$, 1 year ($P = .039$), 2 years ($P = .033$), and 3 years ($P = .034$).

CONCLUSIONS. EEs at 4 weeks of life is associated with the early onset of AD in infants and young children with a family history of atopy. Early eosinophil counts may prove useful in identifying at-risk infants, and providing those families with early interventions could reduce morbidity associated with AD.

REVIEWER COMMENTS. The authors of this study prospectively evaluated a birth cohort of infants at high risk for atopy by using blood eosinophil levels to predict the development of AD. The use of biomarkers in predicting atopic risk is emerging in several studies and could be a potential tool for helping clinicians identify high-risk patients. More studies are necessary to validate and justify the use of eosinophil counts as screening tools. Earlier identification of children at risk for AD could help clinicians implement earlier interventions (ie, skin care regimens) and potentially reduce disease severity.

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ENVIRONMENTAL EXPOSURES AND TOBACCO SMOKE

Domestic Dog Exposure at Birth Reduces the Incidence of Atopic Dermatitis

Thorsteinsdottir S, Thyssen JP, Stokholm J, Vissing NH, Waage J, Bisgaard H. *Allergy*. 2016;71(12):1736–1744

PURPOSE OF THE STUDY. To investigate the longitudinal effect of dog exposure on the risk of atopic dermatitis (AD) in children during the first 3 years of life. The study also evaluated the relationship between parental atopic disease, number of dogs, and cluster of differentiation 14 or filaggrin mutation genotypes on the development of AD.

STUDY POPULATION. The Copenhagen Prospective Studies on Asthma in Childhood (COPSAC) are ongoing prospective clinical birth cohort studies. Data from 411 children born

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