

## Serum Immunoglobulin A Concentration in Infancy is Associated with Atopic Manifestations Later in Life

The production of immunoglobulin A (IgA) is a marker of the maturation of the immune system in infancy. In the paper summarized below, Pesonen et al. show that increased serum IgA concentration at 2 months of age is associated with the development of subsequent allergic symptoms and sensitization in childhood and adolescence, while IgA concentrations in maternal milk are not.

Below is a summary of a paper by Pesonen et al. The full reference for the article is: *Pesonen M, Kallio MJT, Siimes MA, Savilahti E, Ranki A. Serum immunoglobulin A concentration in infancy, but not human milk immunoglobulin A, is associated with subsequent atopic manifestations in children and adolescents: a 20-year prospective follow-up study. Clin Exp Allergy 2011; 41, 688-696.*

The main humoral effector of mucosal immunity is immunoglobulin A (IgA). Serum IgA level has been shown to increase rapidly in early infancy, while secretory IgA in human milk is an essential mediator of the passive antimicrobial protection provided by breastfeeding. The present study was motivated by previous inconsistent studies on serum IgA levels and the development of allergic symptoms and sensitization.

The research group carried out a 20-year follow-up study based on measurement of serum (at the age of 2 and 6 months) and human milk (in colostrum and at the age of 2 and 6 months) IgA concentrations, personal interview, clinical examination, and skin prick testing (SPT) of a cohort of 200 unselected full-term newborns. Subjects with respiratory allergic symptoms at the age of 5 years and allergic symptoms at the age of 20 years had a higher serum IgA concentration at the age of 2 months than did the symptom-free subjects ( $p=0.001$  and  $p=0.02$ , respectively). Children with allergic symptoms and SPT positivity at the age of 11 and 20 years had a higher serum IgA concentration at the age of 2 months than did the symptom-free and SPT-negative children ( $p=0.03$  and  $p=0.01$ , respectively). An elevated total immunoglobulin E at the age of 11 years was associated with an elevated IgA concentration at the age of 2 months ( $p=0.02$ ). The results remained statistically significant after the Holm-Bonferroni correction. Total IgA concentrations in human milk, measured at birth and at

2 and 6 months of lactation, were similar in atopic and in non-atopic mothers.

The authors speculate that they studied the association of serum IgA in infancy with atopic manifestations at a considerably later age (5, 11 and 20 years) than in the previous studies, which indicated low levels of serum IgA to be a risk factor for allergy development. Furthermore, the cohort infants received exclusive breastfeeding from birth (the majority of the infants being exclusively breastfed at the age of 2 months) and the serum IgA was measured at an earlier age than in previous studies, which explains, in part, the divergence in the results.

The authors conclude that there may be a particularly vulnerable period in the postnatal maturation of the gut immune system in early infancy, when exposure to foreign antigens might more easily induce sensitization and subsequent clinical symptoms.



The first author, Maria Pesonen, is a dermatologist at the Finnish Institute of Occupational Health, Helsinki, Finland. The study is a part of a nutritional follow-up study that was initiated in 1981.

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