

Early Life Determinants of Atopy. A 20-year Prospective Follow-up Study on Unselected, Healthy Newborns

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Dr Maria Pesonen from the Department of Dermatology, Allergology and Venereology, University of Helsinki, Finland, defended her PhD thesis on 11 April 2008 in Helsinki. The opponent was Docent Johannes Savolainen from the University of Turku. The thesis was co-supervised by Professors Annamari Ranki and Martti A. Siimes.



Atopy-related allergic diseases, i.e. allergic rhinoconjunctivitis, atopic dermatitis and asthma, have increased in frequency in the industrialized countries. In order to reverse this trend, effective preventive strategies need to be developed. This requires a better understanding of the early-life events leading to the expression of the atopic phenotype.

The aim of the present study was to define early-life factors and markers associated with the subsequent development of allergic diseases in a cohort of 200 healthy, unselected Finnish newborns prospectively followed up from birth to 20 years of age. Their mothers were encouraged to start and maintain exclusive breastfeeding as long as it was nutritionally sufficient for the infant. Consequently, all the infants received some duration of exclusive breastfeeding, 58% of the infants were on exclusive breastfeeding for the first 6 months of life, and 18% received this feeding for at least the first 9 months. Of the infants, 42% had a family history of allergy. After the first year of follow-up, the children were re-assessed at ages 5, 11 and 20 years with clinical examination, skin prick testing, and parental and personal interviews.

Exclusive breastfeeding for over 9 months was associated with atopic dermatitis and symptoms of food hypersensitivity at age 5 years, and with symptoms of food hypersensitivity at age 11 years in the children with a familial allergy. Subjects with allergic symptoms or a positive skin prick test in childhood or adolescence had lower retinol concentrations during their infancy and childhood than others. An elevated cord serum immunoglobulin E concentration predicted subsequent atopic manifestations, although with modest sensitivity. Children and adolescents with allergic symptoms, skin prick test positivity and an elevated IgE had lower total cholesterol levels in infancy and childhood than the non-atopic subjects.

In conclusion, prolonging strictly exclusive breastfeeding for over 9 months was not of help in prevention of allergic symptoms; instead, it was associated with increased atopic dermatitis and food hypersensitivity symptoms in childhood. Due to the modest sensitivity, cord serum IgE is not an effective screening method for atopic predisposition in the general population. Retinol and cholesterol concentrations in infancy were inversely associated with the subsequent development of allergic symptoms. Based on these findings, it is proposed that there may be differences in the inborn regulation of retinol and cholesterol levels in children with and without a genetic susceptibility to atopy, and these may play a role in the development of atopic sensitization and allergic diseases.

The thesis publication is available at:
<http://urn.fi/URN:ISBN:978-952-10-4596-7>.

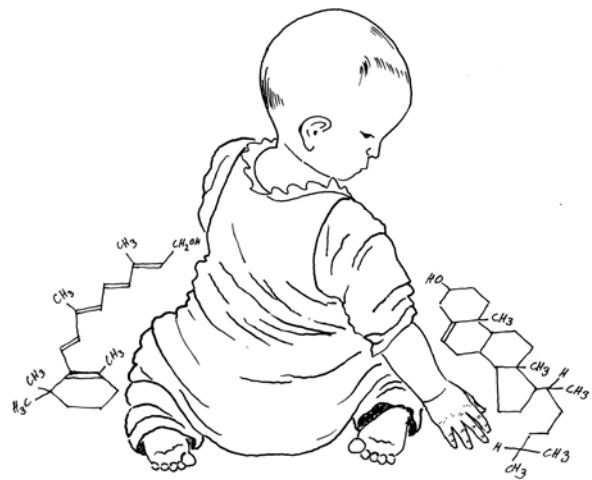


Fig. The cover figure of Maria Pesonen's thesis.