Infant feeding and allergy in children

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SAMMANFATTNING

Despite intensive research, the knowledge on causes behind the increase in allergic diseases among children is incomplete. Altered environmental exposures and changes in lifestyle have been hypothesised to play a role, including dietary intake. The association between breastfeeding and allergic disease has been extensively studied with diverging results. A focus has also been on vitamins, antioxidants and fatty acids, in particular from fish. However, methodological limitations in many of these studies hamper the possibility to draw conclusions on causal relationships.

The overall aim of this thesis was to study different aspect of infant feeding and the association with allergic diseases up to four years of age, in particular to asses the effect of breastfeeding, regular fish consumption and early supplementation of vitamin A and D based in peanut oil or as water-miscible.

A prospective birth cohort (BAMSE) of 4,089 infants was followed for 4 years using parental questionnaires at ages 2 months, 1, 2 and 4 years to collect information on exposures and health outcomes. The response rate at 4 years was 91%. Among these children a clinical investigation was performed in 73%, which included peak flow measurement and blood sampling for analysis of specific IgE to common food and airborne allergens. A classification into transient, late onset and persistent disease was used to denote symptoms present up to 2 years of age, at 4 years of age only and in both periods, respectively. To reduce the risk of disease related modification of exposure children with onset of eczema and recurrent wheeze during the first year of life were excluded in the majority of the analyses.

Breastfeeding: Exclusive breastfeeding for at least four months reduced the risk of transient (OR 0.53, 95% CI 0.36-0.78) and persistent asthma, (OR 0.43, 0.27-0.68) but not of late onset asthma OR 0.84, 054-1.30). A similar picture was seen for eczema: reduced risk of transient eczema (OR 0.76, 0.58-0.99), and persistent eczema (OR 0.59, 0.45-0.77) but not of late onset eczema (OR 1.07, 0.77-1.49). However, the risk of sensitisation against common inhalant or food allergens was not reduced by breastfeeding (OR 0.93, 0.70-1.22).

Fish consumption: Both parental allergic disease and onset of eczema or recurrent wheeze during the first year of life delayed introduction of fish in the child's diet. Fish consumption at least twice a months at 1 year of age reduced the risk of persistent eczema, (OR 0.48, 0.32-0.68), late onset and persistent rhinitis (OR 0.67, 0.46-0.97 and OR 0.43, 0.23-0.79, respectively). The risk reduction appeared particularly pronounced for those with multiple allergic disease, i.e. two or three diseases in combination, (OR 0.56, 0.35-0.89). A risk reduction of borderline statistical significance was observed for allergic sensitisation to common food and airborne allergens in relation to regular fish consumption, OR 0.76, 0.57-1.0. IgE sensitisation to fish was only present among 18 of the 2,614 children.

Supplementation of vitamin A and D in peanut oil: Children who regularly received oil-based vitamin A and D during the first year of life had a reduced risk of persistent asthma and allergic rhinitis (OR 0.37, 0.23-0.60, and OR 0.43, 0.25-0.71, respectively), as well as of sensitisation to food and inhalant allergens (OR 0.65, 0.45-0.92 and OR 0.59; 0.41-0.84,

respectively). The risk reduction was most pronounced for multiple disease, (OR 0.48, 0.33-0.72).

In conclusion, certain aspects of infant feeding, such as breastfeeding for at least four months, regular fish consumption at 1 year of age and supplementation with vitamin A and D in peanut oil during the first year of life appear to offer protection in relation to allergic disease and/or sensitisation in children.