

Epidemiology and prevention of allergy

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Atopic diseases (bronchial asthma, allergic rhinitis and conjunctivitis, atopic eczema, allergic urticaria and gastrointestinal allergy) are common and seem to increase in privileged countries. The cumulated prevalence of these diseases in adolescents is 25-35 %, while the prevalence is around 20 % (1). A considerable number of subjects have prominent symptoms of atopic disease. There is still underdiagnosis and undertreatment of these diseases, notably of bronchial asthma. The prevalence of asthma in childhood is now 3-4 %

Many factors seem important for the development of allergy/atopic disease ("atopy"). Coexistence of two or more factors may act potentiating. Genetic factors determine not only the general propensity for atopy but also the type of disease and at what age symptoms start.

Smoking or use of a B-blocking agent (metoprolol) during pregnancy both seem to increase cord blood IgE concentrations and also the prevalence of atopic symptoms in infants and young children. A history of perinatal stress and early operations is overrepresented among asthmatic children. Early exposure to inhalant allergens such as animal dander and mites increases the risk for atopic disease. Children who are born during or

immediately before the peak of a pollen season develop allergy to the particular pollen more often than children born during other months of the year.

Early introduction (before 6 months of age) of allergenic food (such as cow's milk) more readily induces sensitization as compared to introduction later during infancy. Breast feeding for 6 months or more, on the other hand, seems to delay the development of atopic disease. Maternal intake of cow's milk, fish and egg during lactation was recently shown to increase the prevalence and severity of atopic eczema, as compared to when mothers avoided these foods.

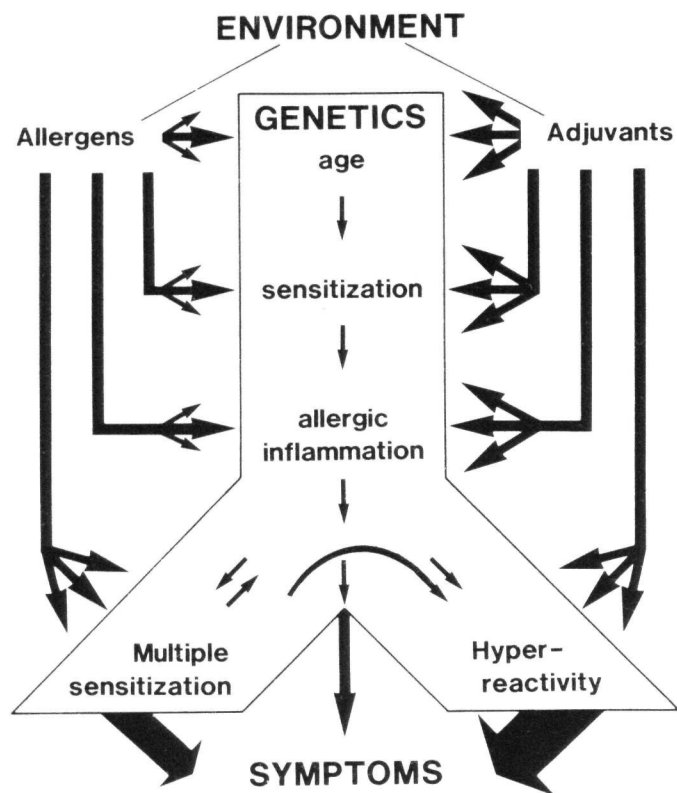
Viral infections (especially RSV) during infancy are known to increase the risk for subsequent atopic disease. Parental smoking increases atopic respiratory disease including bronchial asthma. Indoor climate problems and outdoor pollution were recently shown to increase the risk for atopic sensitization towards birch pollen and various symptoms of respiratory allergy/hyperreactivity. Sensitization to mites seems to increase with increasing content of mite allergen in house dust.

A family history of atopic disease, a high neonatal serum IgE concentration, a low functional T-cell count at 1 month of age or high levels of IgE antibodies to foods during infancy all indicate a significantly increased risk for atopic disease (2, 5). Subjects with a propensity for atopic disease seem to be particularly sensitive to environmental influence, e.g. season of birth, early feeding and exposure to polluted environment (10). The cooperation between allergens and adjuvants in eliciting sensitization and symptoms at subsequent contact is illustrated in the figure:

Table 1

The polygenic inheritance is demonstrated in the table

Atopic family members	% atopic children
None	5-15
One sibling	25-35
One parent	20-40
Parent and sibling	40-45
Both parents	40-75



Prevention of allergy/atopic disease

Before pregnancy: A family history of allergy is, of course, no indication to advise against pregnancies. On the other hand general recommendations against smoking during pregnancy should be stressed when there is such a family history. It may also be appropriate to recommend allergic families not to keep and especially not to buy furred pets when planning a child.

During pregnancy: There seems to be no need for a diet unless required for the well-being of the mother-to-be. Smoking should be completely avoided (8). The home should be planned for low exposure to mites and animal dander in families at risk of allergy.

At the maternity ward: Occasional and small amounts of cow's milk formula should be avoided. Breast feeding should be encouraged and supported. Smoking has to be avoided.

At home: The following recommendations are given to *high allergy risk infants* (i.e. with two or more atopic family members or one member

with severe atopic disease, or when there is a high neonatal IgE concentration in serum): breast milk should be given for 6 months (or more), supplemented, if necessary for the thriving in the infant, with a formula proven to be hypoallergenic such as hydrolysed casein (9). Beikost should be introduced not earlier than 4 (-6) months of age. Egg and fish should be introduced only after 12 months of age. There should be no indoor furred pet animals, no indoor smoking and if there is a high indoor humidity, steps should be taken to reduce it. Wall-to-wall carpets are not recommended.

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