

Aspects of nutritional management of food allergy

Wahn U. Aspects of nutritional management of food allergy.
Pediatr Allergy Immunol 2001; 12(suppl 14): 75–77. © Munksgaard 2001.

Ulrich Wahn

Department of Pediatric Pneumology and Immunology, Humboldt University, Berlin, Germany

Ulrich Wahn, Department of Pediatric Pneumology and Immunology, Charité, Humboldt University, Augustenburger Platz 1, 13353 Berlin, Germany

Proteins from food sources represent the first allergens which lead to allergic sensitisation by inducing IgE responses early in infancy. Several investigations, including the prospective birth cohort study in Germany (MAS), suggest that approximately 6% of all infants develop elevated serum IgE levels to proteins from hen's eggs or cow's milk. Although the majority of these children never experience clinical symptoms of food allergy, early IgE responses to food proteins must be considered as markers for the subsequent atopic march, suggesting that a significant percentage of infants with sensitisation to food proteins will continue to produce IgE antibodies to indoor or outdoor allergens and will develop allergic airway symptoms later in life.

The conflicting data in the literature on the prevalence of food allergy in infancy and childhood are explained mainly by differences in diagnostic criteria. The prevalence of food allergy in young children as assessed by strict diagnostic criteria including challenge tests does not appear to exceed 1–2%.

Natural history

The incidence of food allergy is highest during infancy. In almost all clinical studies, hen's egg and cow's milk have emerged as the main causes of allergic reactions to food followed by soy, sea

food and peanuts. With increasing age, exposure to less prevalent allergens may result in sensitisation and allergy to other sources, for example exotic fruits. From longitudinal, non-interventional studies it can be concluded that a food allergy during infancy will persist for several years before tolerance develops and clinical remission can be observed. Therefore, any intervention is likely to be necessary for only a limited period. Long-term prognosis seems to be particularly good for cow's milk allergy, while egg allergy tends to persist in some cases until adolescence, and allergy to fish and nuts may persist throughout life.

Dietary intervention

The established diagnosis of food allergy will, in general, be followed by the introduction of some kind of diet, since attempts to control food allergy symptoms by pharmacotherapy (oral disodiumchromoglycolate) have not led to encouraging results.

The main principle of dietary management is avoidance of proteins which have been proven to cause clinical symptoms. While in many older children and adults this can be achieved without affecting the patient's quality of life, it may be a problem in infants and younger children, where nutrition is based on a limited range of food

sources, and the risk of any kind of dietary intervention for growth and development of the child is high. Some diseases associated with food allergy in infancy are known to lead to impaired growth (1), therefore any avoidance diets should not affect growth and development additionally. The easiest dietary intervention is substituting the identified food component by a different protein source which is accepted by the child and guarantees adequate nutrition. One example of this is the substitution of cow's milk proteins by soy proteins. The products are, in general, available at a reasonable price and do not cause major compliance problems due to bad taste. Other milk substitutes such as goat's milk, horse milk, etc. either cross-react with cow's milk proteins, and thus may still lead to IgE-mediated reactions, or are nutritionally inadequate so that they require supplementation.

Whether there is a minimum age for the therapeutic introduction of soy milk instead of cow's milk is currently being debated. Obviously soy milk is not suitable for atopy prevention and the concern is that the introduction of soy milk into the diet of children with cow's milk allergy before the end of the sixth month of life may be associated with a significant risk of sensitisation. This deserves further study.

If soy products are either not accepted or contraindicated due to a concomitant sensitisation to soy products, extensively hydrolysed formulae derived from casein or whey should be considered as the next best alternative (2, 3). The nutritional value has been demonstrated to be sufficient for normal growth and development. The bitter taste of some products may cause some problems, but in the vast majority of cases introduction of a diet based on extensively hydrolysed products during the first 6 months of life will be accepted. With increasing age the taste of dietary products may lead to more compliance problems.

There are rare cases when infants or younger children have developed a high degree of sensitisation so that even residual peptides and minute amounts of undigested proteins in hydrolysate may lead to clinical symptoms. For these special cases the use of amino acids is appropriate and their safety has been demonstrated by longitudinal studies. Their taste is generally well accepted. In some countries reimbursement by health-care providers is not guaranteed, so that the high price has become a constant on its prescription. However, since the introduction of amino acids is the only approach which guarantees symptom-free growth and development of certain children, allergists should not accept the

reluctance of some health insurers to reimburse for this product where it is needed.

Prerequisite for dietary intervention

Any diet during infancy or early childhood represents a major intervention for the child. Therefore, unreasonable dietary "experiments" which are not based on scientific evidence and in many cases are related to ideological beliefs and traditions should be avoided for ethical reasons.

The gold standard for establishing the diagnosis of food allergy is the outcome of a double-blind, placebo-controlled food challenge. Evidence for immediate type hypersensitivity by skin test or specific serum IgE levels is in most cases not sufficient to justify dietary intervention. Only very high serum levels of specific IgE antibodies have been demonstrated to be associated with a positive response in almost 100% of challenge tests. These specific cases justify elimination diets without challenge tests. Recently the atopy patch test has been described as helpful in children with atopic dermatitis who show late responses to allergens upon oral challenge. This reduces the number of cases which have to undergo challenge procedures. A clearcut history of immediate type reaction after obvious exposure to specific allergenic sources as well as mild cases of atopic dermatitis without any evidence for any food-related problems should be considered as a contraindication for challenge tests.

The question of whether double-blind, placebo-controlled challenges should be carried out for any given child has been debated recently in the literature (4). Clearly, the avoidance of a placebo control will increase the percentage of false positive tests and reduce the specificity of challenge tests. Therefore, particularly in patients with moderate or severe atopic dermatitis, placebo-controlled challenges should be strongly recommended. During the follow-up of food-allergic children titrated oral challenges are less time-consuming and less costly and appear to be sufficient for the evaluation of an ongoing clinical relevance of food allergy.

References

1. HØST A, KOLETZKO B, DREBORG S, et al. Dietary products used in infants for treatment and prevention of food allergy. *Arch Dis Child* 1999; 81: 80–4.
2. NIGGEMANN B, REIBEL S, WAHN U. The atopy patch test (APT) – a useful tool for the diagnosis of food allergy in children with atopic dermatitis. *Allergy* 2000; 55: 281–5.
3. AGOSTONI C, GRANDI F, SCAGLIONI S, et al. Growth

- pattern of breastfed and non-breastfed infants with atopic dermatitis in the first year of life. *Pediatrics* 2000; 106: 6.
4. BUSINCO L, DREBORG S, EINARSSON R, et al. , in cooperation

with Björkstén B, Kjellmann NM, Sampson H, Zeiger R. Hydrolysed cow's milk formulae: allergenicity and use in treatment and prevention. An ESPACI position paper. *Pediatr Allergy Immunol* 1993; 4: 101–111.