

# Education for Food Allergy

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Food allergy is an adverse immune response reaction to food and estimated to affect nearly 3–8% of children in America.<sup>1)</sup> In Korea, the prevalence of food allergies in children aged 6–12 years in Korea has increased from 10.9% in 1995 to 8.9% in 2000 and to 12.6%.<sup>2,3)</sup> In 2005, a survey of children living in Seoul showed that 11.7% experienced a food-related allergic reaction more than once.<sup>4)</sup> Food allergy presents a variety of symptoms on the skin (urticaria, dermatitis, eczema, angioedema, itching) and in the gastrointestinal tract (vomiting, diarrhea, abdominal cramping) and respiratory tract (rhinitis, asthma, laryngeal edema).<sup>5)</sup> Food-induced anaphylactic shock is the most frightening symptom that is acute in onset, occurring within minutes or hours, and may lead to death if prompt treatment is not administered.<sup>6)</sup> Major food allergens among children are eggs, cow's milk, wheat, walnut while peanuts, tree nuts, fish and crustaceans are common among adults.<sup>5,7)</sup>

The most basic principle of food allergy is avoidance of causative foods. However, since food allergy has various problems due to food avoidance, it is necessary to consider nutrition, age, environment and psychology of the patient. Achieving successful avoidance and proper reactionary treatment can be complex and involves a variety of members beyond a patient and his or her family, including schools, the workplace, the food industry, government agencies, public health authorities, and others.<sup>8)</sup> Regarding allergen avoidance, a high level of education is needed to maintain safety. Food allergy education is based on the following.

## Avoid foods that cause allergic reactions

With regard to dietary management, strict avoidance is usually advised. The avoidance of the causative food is limited only to the diagnosed food. Allergies can worsen symptoms in very small amounts. When avoid the food, it is necessary to strictly limit not only the raw material form but also the food contained in the form of processed

food. Therefore, food labels on processed foods must be checked accurately. In food avoidance, you also need to consider the part of the cross-reaction. Therefore, food avoidance education should also provide information on how to label food and cross-reacting food.

However, approximately 70% of children with milk and egg allergy can tolerate these foods when extensively heated in bakery goods.<sup>9)</sup> Patients strictly avoiding milk or egg must be carefully evaluated, such as by using supervised oral food challenge (OFC), to determine whether they can tolerate the baked forms because severe allergic reactions are possible. Ingestion of the baked forms, for those who are able, might result in faster resolution of the allergy<sup>10)</sup>, although the evidence is not firm. Although strict avoidance is a principle, the level of avoidance can vary depending on the severity of symptoms. The appropriate avoidance diet must be tailored to each patient. The clinician should recognize that a proper diet can vary from regular exposure to some modified proteins (eg, a baked egg- or baked milk-tolerant patient) to strict avoidance of allergen.

## **Nutrition problems due to allergen avoidance diets should be solved**

Unlike adults, pediatrics is a period of growth and development, so nutrition should be managed to induce normal growth. Allergen avoidance diets can result in nutritional deficiencies. For example, in a study of 245 children with a mean age of 4 years avoiding 1 to 7 foods, those less than 2 years of age had lower weight-for-length percentiles and those age 2 years and older had lower body mass index profiles compared with healthy control subjects.<sup>11)</sup> Depending on what foods are restricted or how many foods are restricted, the risk of malnutrition can vary. Differences were especially pronounced for those avoiding milk or multiple foods. A systematic review of 6 studies emphasized risks for malnutrition and reduced height and noted that children with food allergies who did not receive nutritional counseling were more likely to have inadequate calcium and vitamin D.<sup>12)</sup> Nutritional counseling and growth monitoring are recommended for children with food allergy.

## **Suggest a variety of alternative foods**

Alternative foods should be nutritionally similar in value. In order to prevent malnutrition due to food eliminations, foods that have nutritional value similar to those of eliminated foods should be substituted. Because the food group is based on nutritionally similar foods, when choosing an alternative food, you can choose an alternative food within the same food group. For example, if you are limiting milk, you can choose calcium

fortified soy milk that belongs to the same food group. Calcium–fortified soymilk can be considered to have similar nutritional value because it can replace calcium in milk. If food management is done only for therapeutic or nutritional management and the desire to eat is too limited, continuous management is not possible. Therefore, alternative foods should be presented in terms of taste as well as alternative foods in terms of nutrition. The most difficult situation in food restrictions is when there are restrictions on several foods. Use nutritional supplements if you are replacing other foods that are nutritionally similar and difficult to replace.

## **Understand the psychological stress of the child according to food avoidance**

The feelings that children with food allergy typically experience are fear, sadness, anger, loneliness and alienation, and the two most fundamental feelings they have are often anxiety and depression. Because psychological stress can cause problems with psychological behavior, you need to find ways to understand and help.

## **Anaphylaxis recognizes that life can be dangerous and prepares for emergencies**

Since food is the most common cause of anaphylaxis, there is a risk of death due to careless or unintentional ingestion. Where food is available, food allergies must be managed, including how to deal with emergencies.

Food allergy education starts with an accurate diagnosis and needs to understand knowledge related to food allergy. Food allergy education should contain easily understood contents and a class teaching real–life skills, such as how to read a food label or shop for safe ingredients. Education should be planned considering the subject's symptoms, age and eating environment. It also requires a variety of accessible materials and media for food allergies, and a well–established community management system. A comprehensive educational program can prevent and manage serious consequences of food–allergic reactions. In addition, a multidisciplinary approach (e.g. physician, clinical nurse specialist, dietitian) should be taken to allow patients to achieve competence in managing their food allergy.

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