



# Guideline for diagnosis and treatment of food allergy in children by the “academia of pediatric allergy and asthma society”

Nihat Sapan, Esen Demir, Zeynep Tamay, Necla Akçakaya, Nermin Güler, Mehtap Yazıcıoğlu, Özkan Karaman, Ahmet Akçay, Ülker Öneş

*The “Academia of Pediatric Allergy and Asthma Society” Administrative Board, Istanbul, Turkey*

## Summary

Food allergy is defined as type 1 hypersensitivity reaction of IgE antibodies against food proteins. As its frequency increases in the world, food allergy is becoming more common in our country. Infants, who have allergic rhinitis, bronchial asthma, atopic dermatitis and food allergy in their families, have a high risk of food allergy. Therefore defining a protocol will be helpful for correct diagnosis and treatment in high risk infants. The aim of this protocol prepared by the “Academia of Pediatric Allergy and Asthma Society” is to assist family physicians and pediatricians for the diagnosis and treatment of food allergy as a resource and guideline. (*Turk Arch Ped* 2013; 48: 270-274)

**Key words:** Allergy, child, food allergy

## Introduction

The prevalence of food allergy is gradually increasing in our country as in the whole world as the prevalence of all allergic diseases. The aim of this protocol is to assist family physicians and pediatricians for the diagnosis and treatment of food allergy as a resource and guideline.

Food allergy is defined as type 1 hypersensitivity reaction mediated by specific IgE antibodies against food proteins. Different allergic mechanisms other than specific IgE antibodies can also be responsible of food allergy. Babies whose mothers, fathers or siblings have any disease based on allergic etiology including allergic rhinitis, bronchial asthma, atopic dermatitis and food allergy are in the high-risk group in terms of food allergy.

Generally, food allergy is more common in the first 1-2 years in infants. The most common foods which lead to food allergy include cow's milk, egg white, dried fruits including hazelnut, peanut and walnut and seafood. As the age advances, tolerance develops against allergic foods. In

addition, food allergy is observed commonly in infants with atopic dermatitis and worsens the clinical picture.

Food allergies may occur with different clinical findings belonging to many systems.

### Clinical pictures related with food allergies

**Gastrointestinal system:** Oral allergy syndrome, gastrointestinal anaphylaxis, food protein-induced proctocolitis and enterocolitis, enteropathy syndrome.

**Skin:** Atopic dermatitis, urticaria, angioedema.

**Respiratory:** Rinorrhea, nasal obstruction, acute asthma findings, laryngospasm.

**General:** Anaphylaxis, food-induced anaphylaxis related with exercise, Heiner syndrome (food-induced pulmonary hemosiderosis), severe colic and restlessness persisting after the third month.

### Diagnostic methods in food allergy

Food allergy should be considered in presence of all findings which may be related with allergy belonging to various systems including anaphylaxis which is known to occur by way of type I hypersensitivity and especially

in presence of findings which may be related with allergy occurring after food intake in the history. Foods may also lead to allergic findings related with the upper and lower respiratory tract as well as allergic findings related with the skin and gastrointestinal system. However, occurrence of respiratory findings alone is rare in food allergies.

#### **History and physical examination**

**History:** The relation of the findings with foods which may be responsible should be questioned carefully. Occurrence of findings related with multiple systems supports the diagnosis in food allergy.

**Physical examination:** Evaluation of the details which can be overlooked by a careful physical examination is very important in the diagnosis. However, systemic examination is not diagnostic.

#### **Methods related with detection of the responsible food substance**

**Skin prick test:** This test can be performed in children of any age. It supports the diagnosis. However, it is recommended that it should be evaluated together with the history. It is not diagnostic by itself alone.

**Specific IgE measurement:** This is an expensive test. It is recommended to be performed in the form of multiple food screening tests at the first step. They should be evaluated together with the history as with skin prick tests. It is not diagnostic by itself alone. Since some of the food allergies may occur by non-IgE-mediated mechanisms, normal allergy tests do not exclude the diagnosis of "food allergy". Therefore, it is more important to evaluate the relation of clinical findings with food intake.

**Food elimination:** Disappearance of findings with elimination of the food substance which is thought to be responsible from the diet may be useful in the diagnosis of food allergy. The most common cause of food allergy in the 0-1 year-age group is cow's milk protein allergy. A flowchart which can be used for patients with allergy against cow's milk protein is shown in Table 1.

**Food challenge:** This is important in the diagnosis of food allergy. Double-blind placebo-controlled food challenge test is the gold standard in the diagnosis of food allergy. However, it is difficult to perform. Single-blind or open food challenge tests are also diagnostic. These tests should be performed by experienced personnel and in settings where necessary precautions have been taken because of the risk of anaphylaxis.

#### **Tests which are not recommended**

Tests performed by measurement of "allergen specific IgG4" which reflects natural exposure to food and shows natural immune response should not be used in the diagnosis of food allergy.

Prevention and treatment of non-acute allergic reactions which occur because of food allergy.

### **Treatment recommendations in food allergy**

#### **Diet:**

In patients who are found to have food allergy, the responsible foods should be eliminated from the diet primarily. In addition, responsible food or foods should also be eliminated from the diet of the nursing mother, since they can be excreted into breastmilk. In children with another allergic disease including atopic dermatitis or bronchial asthma, elimination of potential foods which might cause to allergic disease is not recommended unless food allergy is proved.

#### **Nutrition:**

Growth and development should be followed up carefully, nutritional status should be monitored and necessary supplements should be given in all children who are being followed up with a diagnosis of food allergy and in whom diet is recommended. Among children with cow's milk allergy who are not breastfed, amino acid-based elemental formula is recommended for the ones with anaphylactic reaction and fully hydrolyzed or amino acid-based elemental formula are recommended for the ones with allergy findings of other types. Partially hydrolyzed (HA) formula are not recommended in infants with a diagnosis of cow's milk allergy.

#### **The importance of food labels**

The label contents of all food substances sold in general stores should be read carefully. Allergic food substances should be questioned. Information about food contents should be required from attendants during consumption of food prepared in settings other than houses including restaurants etc. and hidden contamination should be watched for. One should be more careful especially in patients in whom findings of systemic anaphylaxis are observed.

#### **Follow-up in food allergy**

The age, clinical findings and history should be evaluated together and the patients should be re-evaluated with intervals of 6 month or one year (skin prick test, specific IgE measurement, food elimination and food challenge tests should be performed again). In patients in whom anaphylactic reaction has developed as a result of accidental exposure to the responsible food, the tests can be postponed for 6 months, since hypersensitivity continues.

### **Medical treatment in prevention of food-induced allergic reactions**

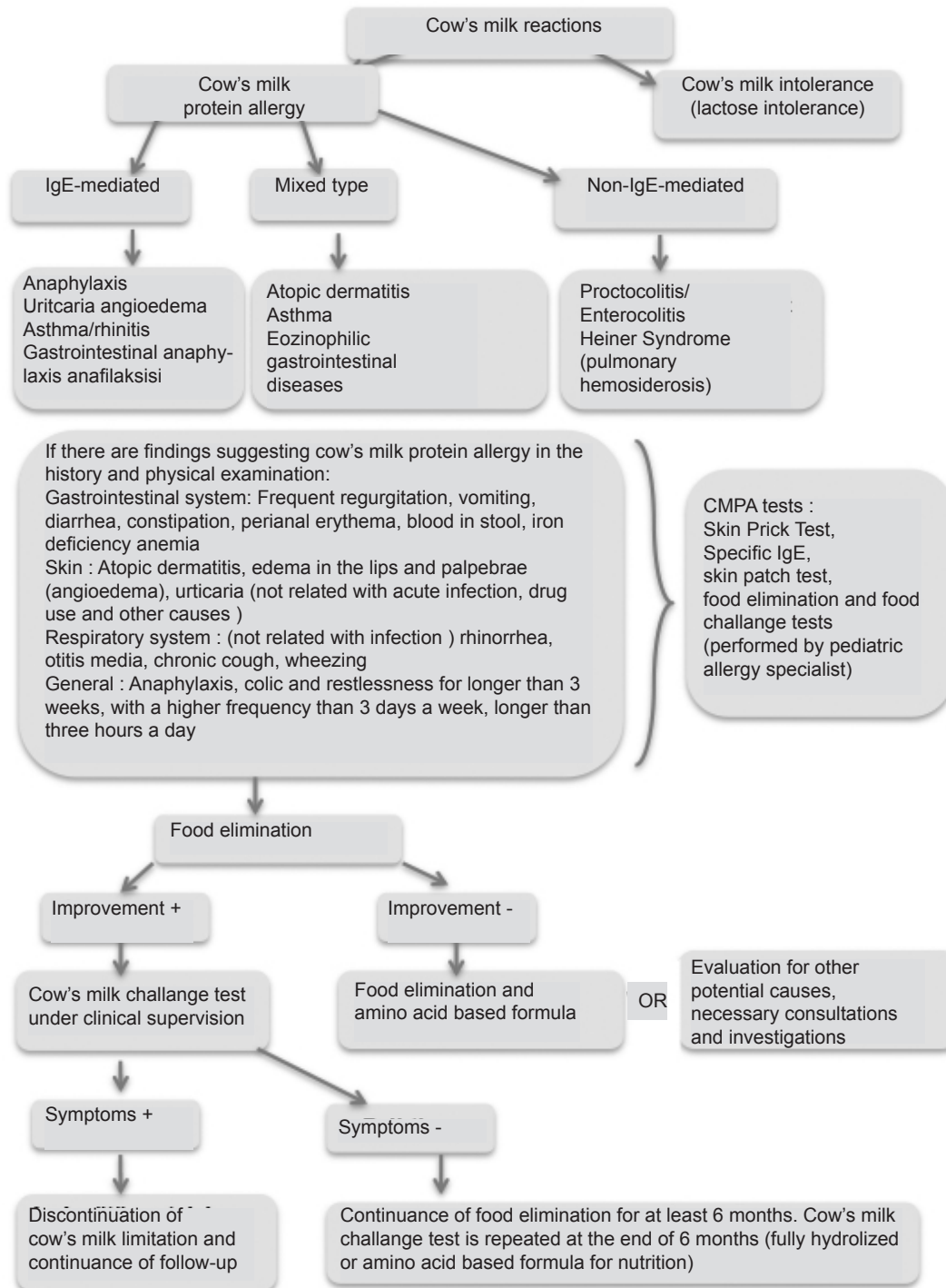
#### **IgE-Mediated Reactions**

There is no medical treatment approach which can be used to prevent occurrence of findings in children who are found to have food allergy or any drug which can be used for prevention.

Increasing the quality of life in patients with food allergy

The families of children who are found to have food allergy should be given information about the necessary follow-up and treatment recommendations. In addition, they should be instructed carefully about what they should do in urgent treatment steps in case of an urgent anaphylaxis.

**Table 1. Sample of flowchart which may be used in patients who are thought to have cow's milk protein allergy**



Patients who have a risk of anaphylaxis should be made to carry "single-use adrenaline auto-injectors". It is important that children who have a risk of anaphylaxis are made to carry a marker in the form of a bracelet to wear on their wrist or a necklace to wear on their necks so that anaphylaxis reactions which may occur in the absence of families are recognized and treatment is started.

#### **Administration of childhood vaccines in children with egg allergy**

In patients in whom anaphylactic reaction has been found to develop with egg, administration of vaccines prepared in chicken embryo which contain egg proteins (influenza etc.) may lead to allergic reactions, though rarely. Children with a history of anaphylaxis with egg should be referred to a pediatric allergy specialist.

#### **Immunotherapy**

In patients in whom cow's milk allergy has been proved and adaptation has not been developed, milk desensitization (cow's milk immunotherapy) can be performed only in experienced pediatric allergy centers and by taking all precautions related with anaphylaxis.

#### **Approach for infants with a high risk of food allergy**

#### **Protection from inhalant allergens in infants who carry a risk**

Infants whose mothers, fathers or siblings have any disease based on allergic etiology including allergic rhinitis, bronchial asthma, atopic dermatitis and food allergy and who are in the high-risk group in terms of food allergy need not be protected from inhalant allergens.

#### **Prevention of food allergy:**

#### **Application of diet in the mother in pregnancy and lactation**

Currently, evidence-based data do not support application of diet in the mother in pregnancy and lactation.

#### **Breastmilk**

Exclusive breastfeeding is recommended for all infants for at least four months unless there is a contraindication.

#### **Special diet in infants**

Hydrolyzed infant formulas, cow's milk formulas or breastmilk

Partially hydrolyzed formulas (HA) are recommended for protection in case of decreased or ceased breastmilk in infants who are in the high risk group in terms of cow's milk allergy. If cow's milk allergy findings and a diagnosis of cow's milk allergy is made, fully hydrolyzed or amino acid based formula are recommended.

#### **Time of addition of foods with high allergic property in infants**

Foods which may potentially lead to allergy should not be given before 4-6 months.

Diagnosis and treatment of food-induced anaphylaxis and other acute allergic reactions

#### **Definition of anaphylaxis**

Anaphylaxis is a severe allergic reaction which starts rapidly and may lead to death. It is typically a systemic clinical picture which occurs as a result of release of mediators from mast cells and basophils by mediation of food specific IgE.

Recognition of food-induced acute, severe allergic reactions with a risk of mortality

All healthcare providers including mainly physicians and nurses and the close surrounding including families and teachers of children with food allergy should have the knowledge to recognize the prominent symptoms of anaphylaxis. The time from intake of the responsible food substance to the occurrence of the symptoms is important.

Presence of asthma and other comorbid conditions which may affect treatment in children in whom anaphylaxis may occur with food allergy will increase the severity of the event. Anaphylaxis cannot be predicted with any laboratory method.

#### **Treatment in food-induced anaphylaxis**

First of all, treatment should be started in the setting where the patient is found and as rapidly as possible. The first-line treatment is administration of intramuscular adrenaline in the lateral side of the upper leg. Additionally, the patients should be placed in the supine position and his/her feet should be kept high. Afterwards, the patient should be referred to the closest healthcare institution for advanced steps of anaphylaxis treatment.

Points to consider in education of patients and families

- Avoiding allergen
- Recognition of the first signs of anaphylaxis
- Description of the actions to be taken in case of anaphylaxis
- Providing administration of intramuscular adrenaline at the appropriate time.
- Providing a marker in the form of a bracelet to wear on the wrist or a necklace to wear on the neck on which the name of the responsible food substance which may lead to anaphylaxis is written
- Giving education for prescription and use of adrenaline auto-injector
- Continuance of treatment by a pediatric allergy specialist after the patient is discharged

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