

FOOD ALLERGY AND ORAL ALLERGY SYNDROME. Part II. A review

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SUMMARY:

Food allergies differ from other allergic diseases through the variety of symptoms (some of them serious) they induce – skin and mucosal symptoms, digestive and respiratory symptoms, anaphylaxis and anaphylactic shock. The most interesting one for us, as dentists, is oral allergy syndrome. Diagnosis associates skin testing, specific IgE assays and, in most cases, oral challenge tests. Treatment is difficult and depends on the patient's symptoms. Very important for our everyday practice is the existence of cross reactions between foods and specific medical and dental products and materials.

Key words: food allergy, oral allergy syndrome

PRESENTING SYMPTOMS:

The various clinical features of food allergy are a result of rich etiology and different pathologic mechanisms. The true food allergy is characterized by a rapid onset following exposure to the food allergen, when IgE-mediated mechanism is involved – symptoms appear in a time period of several minutes up to 4 hours.

The symptoms of food allergy are:

- Skin and mucosal symptoms – urticaria, atopic and contact dermatitis, oral allergy syndrome, angioedema. The acute urticaria cases are usually connected with food allergy; rarely, chronic or recurrent urticaria is considered a manifestation of food allergy caused by different foodstuffs. Angioedema associated or not with urticaria, affects certain parts of the body: face, lips, tongue, and larynx. Atopic dermatitis is the most common manifestation of food allergy in the childhood; contact dermatitis of the adults is a result of employment in the food production – the chronic contact with certain foodstuffs affects through cell-mediated hypersensitivity mechanism.

Oral allergy syndrome is described in 1988 by Amlot et al. and Ortolani et al. as a Type I allergic reaction, affecting patients allergic to pollens and following the direct contact of oral mucosa with foodstuffs of plant origin mainly (apple, cherry, pear, peach, apricot, melon, kiwi, avocado, banana, hazelnut, carrot, tomato, potato, etc.). OAS is the most common clinical manifestation of so-called pollen-food

syndrome – 40% of Scandinavians and 25% - 30% of all the other Europeans, allergic to pollens, report for OAS after consumption of fresh fruits and vegetables. It is interesting to remember that only uncooked foodstuffs can cause OAS, because the heating process destructs their thermolabile allergens. In addition, OAS affects mostly people sensitized to wood pollens (birch) and seldom people sensitized to grass pollens. OAS is depicted also after consumption of foods of animal origin – eggs, poultry and seafood. The symptoms of OAS are oropharyngeal pruritus, smarting, papules and vesicles on the mucosa of the lips, labial swelling and a sensation of pharyngeal swelling. They appear very quickly, almost immediately, or a few minutes (15minutes) after contact with the foodstuff. The condition may be aggravated by the end of the first hour with urticaria, contiguous facial erythema, laryngeal swelling or even with anaphylactic shock. Digestive symptoms or rhino conjunctivitis rarely complete the clinical view of OAS.

Some authors present recurrent aphthous stomatitis as a manifestation of food allergy to certain fruits, milk, cheese, citric acid and colouring agents. But, it could also be an expression of histamine reaction after ingestion of fermented cheese or a symptom of bacterial or fungal infection in patients with chronic periodontitis.[1]

- Digestive symptoms – nausea, vomiting (frequently associated with allergy to cow's milk), stomach ache and diarrhoea (often precursor signs of serious anaphylaxis), constipation (a sign of allergy to milk again).

- Respiratory symptoms – rhinitis, associated or not with conjunctivitis, laryngeal spasm, bronchiospasm, asthma. The most common causal foodstuff is cow's milk. Respiratory symptoms may pursue the pollen-food syndromes, may be a response to daily taken foodstuffs or on the contrary, a result of rarely consumed ones – shrimps, lobsters, exotic fruits.

- Anaphylaxis and anaphylactic shock – it is a classical example of immediate hypersensitivity reaction, combining mucocutaneous, respiratory, digestive and cardiovascular symptoms. Anaphylactic shock in the infancy is connected mainly with allergy to cow's milk, while peanuts, hazelnuts, fish, crabs, shrimps, mussels and exotic spices are usually blamed for cause of anaphylaxis in bigger

children and adults. Acute anaphylaxis develops in 1 up to 30 minutes after food ingestion and in rare cases – several hours later. Food induced anaphylaxis usually has favourable exit – the percentage of deaths is about 1% in the adult population and probably lower in children.[2] On the other hand, foodstuffs are the cause of 25% of deaths due to acute anaphylaxis, all ages included.[3]

A peculiar form is anaphylaxis caused by physical exercise and the ingestion of food. In a few individuals suffering from food allergy, physical exercises may provoke anaphylactic shock 1 or 2 hours after eating a particular foodstuff like seafood, peanuts, poultry, fruits and vegetables, etc. Exercise induced food anaphylaxis is an IgE-mediated reaction in atopic individuals or patients from atopic families. Pathogenesis is still unclear, but low mast cell degranulation threshold is supposed and vegetative nervous system involvement.[4]

DIAGNOSTICS:

Food allergy diagnostics is one of the most difficult in allergology, especially when there is no clear connection between the development of the clinical features and the ingested food, or when food allergy takes atypical or chronic course. It is much easier when symptoms appear rapidly after exposure to the foodstuff.

The diagnostic methods can be divided into two groups: clinical and laboratory. Among the group of the clinical methods anamnesis (clinical history), eating habits investigation, skin tests and challenge tests are used for their high informative value. Trial elimination diets are also applied. The specific IgE-antibodies assay through CAP System (or RAST, yet) is the most important from the laboratory methods.

Clinical history contains details for the development of the clinical features – food eaten, symptoms, period of time between the taking of the food and the onset of the signs, sequence of the manifestations. It records as well the factors that increase the risk for food allergy incidence – atopic and/or allergic background, diseases of the digestive tract, sensibilization to pollens, house dust and latex, and continuous drug intake, modifying the common health state or the mucosal one. The examination of the dietary regimen and the eating habits of the sufferer guides us to abrupt nutrition changes (fast, starvation, diet), ingestion of non-specific and exotic foodstuffs and spices, presence of masked allergens or on the contrary, to dietary uniformity (the common foodstuffs eaten are responsible for food allergy).

Skin testing is the initial diagnostic step, accomplished through prick tests and patch tests. It has higher diagnostic value in cases of food allergy with cutaneous and respiratory manifestations, rather than in cases with digestive symptoms. Commercial extracts are

used for prick tests, determining allergy to peanuts, hazelnuts and peas, for example. The use of natural foodstuffs is advisable and more informative in the prick-plus-prick technique, applied for fruits and vegetables – the test is carried out by pricking into the foodstuff and then with the same needle/lancet into the patient's skin. Skin reactivity changes with age, but there is no lower age limit for using the test so long as skin reactivity has been checked with positive control. Antihistamine therapy, if such is prescribed, must be stopped at least 3 days before skin tests (except for Ketotifen for which the therapy must be stopped for 4 weeks). Prick tests are not carried out in areas of dermatitis or in areas where dermocorticosteroids or immunomodulating creams have been applied.

Food patch tests are introduced in the clinical practice more than 25 years ago and in the beginning they are applied to all patients with food allergy, proven by elimination diet and challenge test. Recently, they are used in infants with atopic dermatitis or digestive symptoms and are carried out with natural foodstuffs (cow's milk, hen's eggs, wheat flour, bananas, etc.). Patch tests, when applied solitarily are considered not enough informative, yet.

Even to this day, oral challenge tests remain the “gold standard” for food allergy diagnostics, especially the double-blind placebo-controlled oral challenges (when neither patient, nor physician knows the contents of the test). There are also open (both, patient and physician, know the contents of the test) and single-blind (only the physician knows) tests, but they present a higher risk for false positive results. The foodstuff (powdered or dry, packaged in capsules) is ingested in quantities which increase up to the dose normally eaten. The task is to reproduce and observe the clinical history of the allergy, with respect to time, quantity of foodstuff and symptoms.[5] Another form of oral challenge tests is labial challenge test – it is quick and easy to perform, but not always informative enough. The food (commercial food extract or fresh foodstuff) is placed on the external surface of the lower lip for between 10 seconds and 2 minutes and must not be swallowed.

Oral challenge tests are contraindicated in patients with history of anaphylactic shock or unstable asthma and individuals with infection.

Trial elimination diets are an alternative to challenge tests, but they are harder realizable.

Specific IgE assays are extremely important tool for diagnosing and monitoring food sensibilization or allergy. The assays confirm the results from the skin tests or replace the skin tests in cases of severe dermatitis, extensive demography or current antihistamine treatment of the patient. In the past specific IgE is detected through radioallergosorbent test (RAST) and now CAP System technique is used.

TREATMENT AND PREVENTION:

Food allergy treatment is symptomatic and etiological; it depends on the correctly set diagnosis and can be long and difficult. The basic therapeutic means are diet and drug treatment.

Elimination diet is aimed to avoid the contact with foodstuffs and food additives, identified as allergens for the patient, i.e. the etiology. The diet should be set up correctly in order to ensure adequate nourishment regarding calories, vitamins and minerals, and to prevent further extension of food allergy. Heavily restricting diet (almost full hunger) is recommended only in the acute phase of the food induced allergic reaction, due to risk for malnutrition. The suspected foodstuff is then regularly (in several months) reintroduced to find out possible stable recovery (in children during maturation).

The presenting symptoms of food allergy are treated with drugs from various groups:

- Antihistamines - they are prescribed in the oral form for treatment of mild cutaneous and respiratory symptoms: oral allergy syndrome, skin pruritus, urticaria, rhinitis and/or rhino-conjunctivitis; in the treatment plan of anaphylactic shock they are administered IV.

- Corticosteroids - they are used by oral route or injection (IM, IV) in cases with mucocutaneous (generalised

urticaria and oedema) and respiratory (conjunctivitis, rhinitis, asthma) manifestations; very rarely – in digestive symptoms cases. Steroids are prescribed when cell-mediated reactions are involved.

- Bronchodilators - administered for respiratory symptoms treatment (asthma).

- Adrenaline - in the emergency treatment of anaphylactic shock mainly. There are also ready-to-use self-injection pens (Anapen, Epipen, etc.), prescribed for life-threatening cases - IM application, twice in 15 minutes.

Certain steps for optimizing the diet and the digestive tract's health state are taken in the symptomless periods of food allergy.

There are also attempts for allergen immunotherapy, but with poor success.

Prevention of food allergy concerns atopic individuals and these from atopic families and patients with other allergic or digestive diseases. It comprises of measures for elimination of certain foodstuffs from the diet of pregnant women, high-risk children and food allergy sufferers. Some medication can be prescribed as well – cromolyn, antihistamine, antileukotriene. It is very important to educate these people and their families to choose correctly their food, the restaurants and the shops, to read carefully the labels and to search for masked allergens.

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