

# Epidemiology of food allergies



Cow's milk protein is the most common allergen in children under 3 years of age

Food allergies typically appear in *childhood*. Worldwide, about 2-3% of the population is allergic to certain foods. Up to 8% of food allergies are reported in childhood.

- Very different allergens cause food allergies depending on national traditions, climate or geographical location of the landscape.
- In the Czech Republic, allergies to *cow's milk proteins, eggs, flour, Czech fruits* (apples, peaches) and *vegetables* (carrots, celery, parsley), *spices* (dill, pepper, fennel), *Czech nuts* (hazelnuts, walnuts), *poppy seeds* and *freshwater fish*.
- A frequently discussed food is soy, which, as an alternative source of protein, has moved to the forefront among food allergens due to its widespread use.
- *Goat's milk* is not a suitable dietary food in case of proven or suspected allergy to cow's milk, because its protein composition is similar to protein from cow's milk and a **cross allergic reaction** may occur. This principle is often applied mainly to foods of plant origin. Examples of cross allergies:
  - *apple allergy crossed with pear, peach, cherry, plum, but also with kiwi or potatoes;*
  - *celery with parsley and carrots;*
  - *peanuts with soy and other legumes;*
  - *watermelon with banana and avocado;*
  - *dill with fennel or pepper.*

The occurrence of allergens in food, which the consumer would not expect, can be considered a major problem of current food hygiene: the problem is related to issues of food adulteration, when various substitutes are added to food, and in some cases even illegally.

- *meat products "adjusted" with flour - see gluten in the product and the resulting risk for people suffering from celiac disease.*
- *Soy yogurts with milk protein, etc. can be problematic for people suffering from lactose intolerance.*

## Clinical picture

- The difficulties have a different duration, from a few seconds, minutes, through hours, rarely even days.
- All kinds of digestive problems appear. There may be a simple loss of appetite, a feeling of bloating, pain in the abdominal area, diarrhea.
- Difficulties outside the digestive system appear when the protein from the food (allergen) is absorbed by the mucous membrane into the blood and a reaction with the antibody occurs:
  - in skin vessels - itchy hives or eczema may develop;
  - in the vessels of the mucous membranes of the respiratory system - swelling of the mucous membrane, fluid production will increase (stuffy nose, runny nose) and bronchoconstriction and, in connection with it, shortness of breath may also occur.
- The most turbulent is the systemic reaction that affects the organism as a whole.

## Establishing a diagnosis

- Allergic reactions are mainly caused by **protein components of food**.
- Food can also cause allergies through its **vapors** or **contact with the skin** ..
  - Very often, difficulties arise when peeling raw potatoes, cutting vegetables for soup, grating carrots, pressing fruit, burning plums or preparing Christmas carp.
- Food additives can also cause an allergic reaction.
- There may be a substance in the food that *by itself* will cause symptoms in the body ranging from allergic to unrecognizable. Such **non-allergic triggers** are, for example, substances contained in strawberries, pickles and mackerel.
- The sooner a reaction occurs after the first contact, the easier it is to determine the specific allergen.
- In the case of an allergy observed immediately after ingestion of the allergen (reaction directly in the mouth), it is usually an individual sensitive to the **proteins of pollen grains** - a *classic seasonal allergy sufferer*. The affected person will feel a burning sensation on the palate and lips, his mucous membranes will swell, and there will be difficulties in swallowing. The reaction most often occurs after eating fresh fruit, vegetables, nuts, or some types of spices.
- The difficulty in establishing the correct diagnosis is the duration of the problem. If they are limited to a certain type of unusual food, the diagnosis is easily established. However, if the food appears on the menu more often, or there are more such foods, neither the patient nor the doctor may be aware of the allergic

origin of the difficulties.

- Problems in the diagnosis arise if problems in the digestive tract escape attention and, on the contrary, *distant symptoms* such as an asthma attack are preferred .
- If the causative substance is suspected, we verify the diagnosis with **skin tests** and **laboratory examination of antibodies** .

## True food allergies

Laboratory examination of antibodies in 50% of cases reveals the classic **atopic type of** allergic reaction, when we find increased IgE in the blood.

- The mere existence of immunological sensitization (increased concentration of specific immunoglobulins of isotype E - sIgE) is not enough for diagnosis. A causal relationship between the laboratory finding, the ingestion of the suspected food and the patient's symptoms must be confirmed.

In another 50%, laboratory tests reveal a so-called **non-IgE allergic reaction** triggered by non-IgE immunological mechanisms, manifested as:

- late allergic inflammatory reactions involving cellular immunity with a predominance of T-lymphocytes or eosinophils;
- immunocomplex reactions .
- **Non-IgE** reactions with the essence of their immunopathological reaction cannot be confirmed by any common laboratory examination or skin testing. In this case, the diagnosis is more difficult, we rely on a detailed **history** and **elimination-exposure tests** ..

## True food intolerances

In cases where the carrier of the adverse reaction is neither cellular nor antibody immunity, we search for *pharmacological* or *enzymatic* causes. When they are successfully detected, we talk about true food intolerance (food intolerance).

## Psychogenic intolerance (psychogenic aversion)

Up to 20% of the population suffers from this suggestible aversion. It is the largest group, has a psychosomatic or psychogenic origin and occurs especially in labile individuals. It is typical for these cases that we do not find any objective laboratory correlate, allergological-immunological tests also remain mute, and even exposure tests do not confirm the assumption of allergy.

## Therapy

The type of food allergy depends on the age of the patient. Fortunately, food allergies tend to disappear, which is explained by the gradual maturation of the enzymatic and immunological equipment, from toddlers to the level of an adult.

- In childhood, the first allergens are proteins from cow's milk, followed by proteins from eggs, flour, soy products, fruits and vegetables, in short, what we give children most often. Therefore, any **diet is temporary** , usually limited to the infant and toddler age.
- With increasing age, allergies more familiar to adults appear (nuts, poppy seeds, celery, fruit, cheese, alcohol, spices and, last but not least, seafood). In these cases, the **diet is lifelong**. The diet strategy followed should be managed exclusively by a competent physician.
- Unfortunately, it is not always possible to include a complete elimination diet in the case of multiple allergies. It is not possible not to drink milk, not to eat dairy products, eggs, floury foods and raw fruits if you are allergic to all these.
- The patient, especially in the case of an imminent general reaction (anaphylaxis), should be provided with a tailor-made **emergency**, kit from their doctor , which should contain:
  - epinephrine – auto-injector *EpiPen® 0,3 mg* (adults and children weighing more than 30 kg) or *EpiPen Jr.® 0,15 mg* (children weighing 15 to 30 kg). The drug should be applied as soon as possible after the first signs of developing anaphylaxis in the anterior outer quadrant of the thigh;
  - corticosteroids in oral or suppository form (for example, *Prednison® tbl. 20 mg*, *Rectodelt®*, *Medrol®*);
  - an oral antihistamine (for example, *Dithiden® tbl.*, *Zyrtec® gtt.* etc.);
  - inhaled beta-2-sympathomimetic (for example , *Ventolin®*, *Berotec® aerosol*);
  - tourniquet, needle, disinfectant, syringe and necessary instructions for use.<sup>[1]</sup>

## Links

### related articles

- Allergy
- Food Allergy

## References

- KUDLOVÁ, Eva, et al. *Hygiena výživy a nutriční epidemiologie*. 1. edition. Praha : Karolinum, 2009. 287 pp. pp. 276-279. ISBN 978-80-246-1735-0.

## References

1.