

Allergy and Immunology

Non IgE-mediated food allergy

Food allergies may be divided into 2 types: IgE-mediated and non-IgE-mediated.

Non-IgE mediated food allergies are caused by a reaction involving other components of the immune system apart from IgE antibodies. The reactions do not appear immediately after the ingestion of the food and usually relate to reactions in the gastrointestinal tract such as vomiting, bloating and diarrhoea.

IgE-mediated means that IgE allergy antibodies are a cause of the allergic reaction to a food. By contrast the signs and symptoms of IgE mediated food allergy usually occur within minutes of ingestion and include hives, redness of the skin, vomiting and in more severe reactions, anaphylaxis.

The mechanism of non-IgE-mediated food allergy is not well understood. Although the immune system is presumed to be involved, IgE antibodies are not associated with this condition, hence the term "non-IgE-mediated" food allergy. This term is an umbrella term for a range of gastrointestinal food allergies that affect the full length of the gut.

How does non-IgE-mediated food allergy differ from IgE mediated food allergy?

Non-IgE-mediated food allergy is less well understood than IgE-mediated food allergy. Because the symptoms are usually delayed as compared to IgE mediated food allergy it is more difficult to make the association between offending food and the symptoms. The lack of easily accessible blood or skin tests also contributes to the problem. The most common causative foods for non-IgE-mediated food allergies are cow's milk and soy proteins in infants and wheat in older children. Unlike IgE mediated food allergy non IgE food allergies are very rarely life threatening because they do not result in anaphylaxis.

What are the common symptoms of non IgE mediated food allergy?

Common symptoms include abdominal discomfort, vomiting and diarrhoea. In some cases constipation or colic can be the presenting symptoms. The symptoms often take longer to develop (hours-days) rather than those of IgE mediated food allergies which frequently occur within 5 -30 minutes following food ingestion.

How is non IgE mediated food allergy diagnosed?

Unlike IgE mediated food allergy there are no blood or skin tests which have proved useful in general medical practice. Therefore the diagnoses must be suspected on the history and may be confirmed by observing that the symptoms improve when the suspected food is removed from the diet and return when the food is reintroduced into the diet. This process can take a number of weeks or months to complete properly and is termed the eliminate-rechallenge test. The rechallenge aspect of the test is very important to confirm the link between the offending food and symptoms since symptoms can resolve by chance. Sometimes the elimination-rechallenge sequence does not give a conclusive result and needs to be done a second time. Most clinicians recommend that the food be removed for 2 weeks. If symptoms resolve then the food is gradually reintroduced to assess whether symptoms recur. Only one food type at a time is removed. If more than one food type is removed we recommend that a dietician trained in allergy elimination diets is involved in the care of the patient.

Can non IgE mediated and IgE mediated food allergy occur in the same individual?

Yes children can have both types of food allergy. This can be the situation particularly in children with severe eczema.

Does my child need an adrenaline injector for non-IgE-mediated food allergy?

Adrenaline is used in severe reactions of IgE mediated food allergy (ie anaphylaxis) but are not used to treat non-IgE-mediated food allergies. In general non IgE mediated food allergy are not life threatening.

Can children grow out of non-IgE-mediated food allergy?

Yes however there is less information on the time course and number who grow out of non IgE mediated food allergy as compared with IgE mediated food allergy.

Are there any allergy tests for non IgE mediated food allergy?

There are no blood or skin allergy tests which have an established role. The diagnosis is established by removal of the suspected food(s) and rechallenge if the symptoms improve. Once a diagnosis is established the main step in treatment is avoidance of the relevant food. Your doctor may choose to perform a food challenge test after 12 months or so to see if the condition has resolved.

Are there any special types of non IgE mediated food allergy to be aware of?

Most nonIgE mediated food allergies affect the small intestine (an enteropathy) and Coeliac disease could be counted as one of these. Others eosinophilic esophagitis (EoE) (affecting the gullet or esophagus), FPIES (small intestine) and proctocolitis (large intestine).

Specific Gastrointestinal Food Allergy syndromes

Coeliac disease is caused by the body mounting an auto-immune response to gluten. It can be diagnosed by a blood test (a Coeliac screen) whilst receiving gluten (wheat, rye and barley) in the diet but ultimately needs confirmation by biopsy on gastroscopy.

Gluten Hypersensitivity is a condition that is poorly understood and not well defined. Patients with this condition have symptoms of diarrhoea and bloating that improve with removal of gluten from the diet however they have a negative Coeliac screen and do not have evidence of damage to the lining of the gut on biopsy.

Food protein induced enterocolitis syndrome (FPIES) is an uncommon type of non-IgE-mediated food allergy. This condition is usually seen in infants and consists of profuse vomiting 2-4 hours after ingestion of the food soon after it has been introduced into the infant's diet. The infant can become pale and floppy after severe vomiting and can also develop diarrhoea. Common triggers are cow's milk and soy milk in 50% of cases but can also occur with a large variety of other foods such as grains (in particular rice), meats and other foods less commonly associated with allergies. This condition is frequently misdiagnosed as a severe gastroenteritis or bacterial infection or as an acute surgical condition in the abdomen. There are often several reactions before the diagnosis is established. Children frequently can tolerate the offending food by 18-24 months of age. *For further information on this condition see the ASCIA website – www.allergy.org.au*

Another non-IgE-mediated food allergy is the condition called **Eosinophilic esophagitis** (EoE). This condition appears to be increasing. Symptoms include difficulty swallowing, vomiting and failure to thrive however the condition may be asymptomatic. Common foods include milk, egg, wheat, and soy. Diagnosis involves examination and biopsy of the oesophagus. Treatment includes removal of suspected foods from the child's diet.

Proctocolitis is a condition that predominantly occurs in infants. Usually the baby is well and thriving and presents with bloody diarrhoea. Symptoms usually resolve after removal of cow's milk and soy from the diet of the infant and mother if the latter is still breastfeeding. This condition can occur in fully breastfed babies since proteins from cow's milk can pass through the mother's milk and cause symptoms in her baby,