



Detecting Allergies

The prevalence of food allergy has been estimated as more than 1-2 % but less than 10 % of the general population based on objective diagnostic methods¹. Allergies are becoming more common. Unfortunately, there is confusion with regard to some diagnoses. This article explains the different factors involved when diagnosing allergy.

Individuals with coeliac disease are often diagnosed as having allergies but coeliac disease is not an allergy. Because of this confusion it is worthwhile defining coeliac disease before we look at allergies in detail.

Coeliac Disease

Coeliac disease is defined as an auto-immune disease in which the individual has an adverse reaction to wheat products and sometimes, rye and barley. The wheat component that causes the problem is gluten, a protein, it maybe the particular part of gluten called gliadin, another protein, that causes the main problem. Patients with coeliac disease can have a variety of symptoms, including diarrhoea, bloating, fatigue and sometimes mood changes. Coeliac Disease has been implicated in some cases of "Irritable Bowel Disorder" but is also implicated in some cases of depression and in behavioural disorders of children. There are specific tests to diagnose coeliac disease.

Depression and behavioural changes found in coeliac disease are believed to be a direct result of constituents of wheat (the polypeptide - gliadin) being absorbed into the blood stream, crossing the blood brain barrier and binding with opiate receptors in the brain¹⁰.

The mechanism of Coeliac Disease is not allergy (IgE) or food intolerance (IgG) but appears to be caused by autoimmune factors, this is associated with a number of genetic differences in the coeliac individual. Coeliac disease affects from 0.5% to 2% of the population depending on geographical area and other predisposing factors such as gut permeability in individuals with chronic gut inflammation.

Allergy

Conventionally allergy testing has concentrated on Ig E testing. IgE is short for immunoglobulin E, a type of antibody that plays a major role in allergic disease. Antibodies are proteins which recognise foreign invaders in the body.

They attach themselves to viruses and bacteria, and help to neutralize these infections. Unfortunately in some individuals every day substances are also considered to be invaders; house dust, dog hair, cat hair, peanuts and fish are some of the substances that can be identified wrongly as body invaders.

If someone with a peanut allergy eats even a small amount of peanut an IgE response follows which consists of an inflammatory response, causing, redness, swelling and often pain in different areas of the body. In the

lungs this can cause difficulty in breathing, sometimes severe. These inflammatory responses are, often very sudden and from time to time life threatening. Peanut allergies are particularly dangerous.

Common IgE allergies are found with milk, eggs, fish, peanuts, cats, dogs, house dust, bee stings and antibiotics such as penicillin.

IgE testing may be done by a skin prick test or by a blood test. To carry out skin testing effectively the doctor needs to be skilled in the testing procedure before he or she can get consistent results, therefore, skin testing tends to be done by specialists. In general practice we tend to use a blood test to determine IgE allergy. In Hong Kong this test is known as the "South China Test" because many of the allergens tested for are specific to this region.

The South China test checks allergens from the main foods such as milk, eggs, wheat, gluten, peanuts and different kinds of fish. It also gives information about house dust, cats, dogs and some other small pets, trees, plants and moulds seen in the South China area. In other countries a similar IgE test includes the plants and trees of that particular area.

IgE testing has been well established for many decades and with this testing we can usually detect all serious allergies in any patient, except in babies. Babies pick up antibodies from their mothers and IgE testing is based on antibody levels, so a positive IgE test in a baby may mean that they are not actually allergic but have picked up a particular antibody/antigen from their mother. This acquired allergy response will eventually disappear. From the age of two, IgE allergy testing should be reliable.

IgE allergies are on the whole quite serious, sometimes getting more severe with age. This type of allergy usually stays with the individual for life. Wherever possible avoidance of the allergy concerned is the main initial action to be taken. This is particularly difficult with house dust, which is an allergic response to the house dust mites, but partial avoidance of house dust mites using various techniques is possible. Treatment of IgE allergies are often carried out by using de-sensitisation, this is the injection of minute amounts of the allergen concerned which has the effect of changing the immune response and hopefully the degree of allergic reaction.

Are there more IgE allergies nowadays?

There is certainly a greater number of patients presenting with allergies today but the increase may not be due only to traditional allergies (IgE). The main increase may well be due to a different type of allergy (or food intolerance) from a different immunoglobulin, type G, (IgG).

In general practice nowadays we see a lot of patients with symptoms of an allergic nature. A lot of these patients are on permanent anti-histamines. Many of these patients have negative IgE tests, therefore they do not have an allergy. However, sometimes it is found that they have positive IgG tests which is termed food intolerance and not allergy. Anti-histamines do not work specifically against IgG food intolerance because this is not a histamine generating reaction.

Symptoms of food intolerance can include: headaches²; skin rashes; cough; asthma^{3, 4}; nasal discharge; sinus conditions; ear inflammation; intestinal disorders such as diarrhea or irritable bowel syndrome⁵; Hyperactivity and mood problems in children are also worth checking for food intolerances¹⁰.

So why should we test for IgG?

All of us know people who tell us that certain foods upset them in some way. Excluding the true allergic situations, there are many people who test negative to standard allergy tests but still have a problem with certain foods, and many learn to avoid these foods, but many others appear to be unaware that certain foods cause them problems. In this type of food reaction the symptoms are usually delayed in time, by a few hours or even days. The time delay means that the relation to food is not always obvious. The reaction is often only mild to moderate, again making the connection between the symptoms and food difficult to pinpoint.

Initially, it is difficult to make a specific diagnosis without testing but being aware of the whole concept of food intolerance, may result in a suspicion that a food or foods are responsible for the symptoms leading to a diagnosis.

In recent years a second type of allergy testing is available to define food intolerances. This is the IgG test which tests the Immunoglobulin G (IgG) antibodies in the blood. Only foods are tested and positive findings in IgG testing are defined as “food intolerance”, and is strictly not defined as allergy testing.

IgG testing has been around for many years, but remains controversial⁶.

It is appropriate to be concerned about overdiagnosis or misdiagnosis of food intolerances – exclusion of important food groups from ones diet (for example, dairy products) can have adverse consequences, from social stigma to nutritional deficiencies⁶.

So far, there is no gold standard proof that IgG dependant food intolerance actually exists, however, evidence is growing^{3, 5}.

Also, the amount of potentially useful data is growing, for example on the regional IgG sensitivities in China⁷.

An 11 year old girl had diarrhea approximately 8 times per 24 hour period over a period of 9 months. She had seen a number of doctors and started on various different treatments to control her diarrhea. She was exhausted and very distressed by the constant bathroom visits, which quite often interrupted her sleep. Her parents were reluctant to look at a possible food intolerance, because of the expense of the testing or the nuisance of doing an exclusion diet. On their second visit the 11 year old asked me how she could do her own exclusion test. A dairy exclusion test was suggested and she was fully briefed with the agreement of her mother. After 3 weeks of exclusion from all dairy products her diarrhea problem disappeared. At her one year follow up she still had normal bowel function and was an energetic youngster once more. (IgG testing 2 months after going on the exclusion diet showed that she had high IgG levels to cow’s milk).

When we test a patient for IgE allergies at our clinic we usually ask them to have IgG testing as well. The South China IgE test can be done at the same time as the IgG test, known at the laboratory we use, as the “York Test”. This particular test was developed in the City of York in England. There are similar tests available in Australia and the United States.

The management of food intolerances includes appropriate testing, discussion of food exclusion techniques, followed by a detailed explanation of any tests ordered. Recommendations on specific food exclusions and discussion on immunity to try and decrease the food intolerance for the individual are part of the follow up. Careful design of their diet is important to ensure that the individual gets the full range of nutrients as well as sufficient calories for their age and sex.

Any testing required can be carried out in Hong Kong and the results are usually available within 10 days.

What does the future hold?

Research is improving our understanding of these problems. Efforts range from simple things like the development of a structured dietary questionnaire to try to spot food intolerances⁸ to complex laboratory information from genetic testing. Component Resolved Diagnostics (CRD) use pure allergen proteins, produced by purification from natural allergen sources or recombinant expression of allergen-encoding complementary DNA to produce more 'pure' allergens for testing. It is not widely available yet, but is helping to reduce false-positive rates of conventional IgE testing⁹.

References

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