

# Medi Quest BRS Hospital

A monthly News letter from BRS Hospital

## FOOD ALLERGIES

### Part II

**Dr. S. Ramesh M.D., DCH (Pediatrician)**

Consultant Pediatrician

BRS HOSPITAL

Price Rs. 5/- Only

December - 2022

Medi - 17

Quest - 12

Yearly Subscription

Rs 50/- only

.....

### Editors

**Dr. B. Madhusudhan,**  
MS.MCh., DNB(Plastic)

**Dr. S. Ramesh, MD, DCh**

28, Cathedral garden Rd,  
Nungambakkam,  
Chennai - 600 034.

Phone:

044 - 61434250

044 - 61434230

Email:

brsmadhu@yahoo.co.in

Web:

www.brshospital.com

### How to diagnose food allergy ?

1. Clinical History and Physical Examination is CRITICAL in the diagnosis of Food allergy both IgE and non IgE mediated food allergy

2. Allergen specific IgE demonstration  
Specific IgE immune assay

Total IgE can be raised in atopic dermatitis, parasitic infection, neoplastic disease and immuno deficiency states and therefore, it's not a specific marker for allergies. Specific IgE assays have become the gold standard now.

3. Skin prick test

4. Challenge test - Determines whether exposure to the causative allergen orally will result in symptoms.

### Diagnostic tools for IgE mediated food allergy

Serologic tests for specific IgE

Skin prick test

### Serologic tests for specific IgE

Identifies and quantifies allergen specific IgE which can be a food or aeroallergen. The laboratory methods used are chemiluminescence, dot blot method, and

the enzyme immunoassay, which is the most validated test and will be discussed here.

### Fluorescent Enzyme Immunoassay (FEIA):

The test detects specific IgE against allergens. FEIA identifies aero allergens and food allergens.

ImmunoCap by Phadia Top laboratory a subsidiary of Thermos Fisher a Swedish company, is most widely used. FEIA test to detect specific IgE to wide variety of allergens. ImmunoCap Phadia top and FEIA in allergies are analogous to Xerox and Photocopying respectively.

The specific IgE to allergens are measured as kUA/L which is kilounits of allergen specific IgE per litre.

Based primarily upon studies performed in the United States in children with a history of food allergy and eczema older than two years of age, the 95 percent positive predictive levels for egg, milk, peanut, tree nuts, and fish are as follow

- Egg, 7 kUA/L (2 kUA/L for children less than two years of age)
- Milk, 15 kUA/L (5 kUA/L for children less than two years of age)
- Peanut, 14 kUA/L
- Tree nuts, approximately 15 kUA/L
- Fish, 20 kUA/L

Thus, **children** over two years old with a convincing history of egg allergy have a greater than 95 percent likelihood of experiencing an allergic reaction to egg upon challenge if their egg-specific IgE **exceeds** 7 kUA/L. Therefore, challenge is unnecessary in such children. Equivalent predictive positive levels for soy and wheat have not yet been established. To reiterate, these data were developed in children, and there are no recommendations regarding their interpretation in adults with food allergy.

### Food Component Analysis :

#### Component resolved diagnosis

The food items consist of different components that can be broadly classified as stable or as labile antigens. Stable allergens are generally associated severe systemic reaction. Labile allergens are associated with mild to moderate reactions, cooking food destroys these allergen.

Component resolved diagnosis lists the different components of the food item and gives their level in the blood. Based on these values patients can be advised whether they are at risk for anaphylaxis, whether they can safely eat it in the cooked state and whether they would outgrow it.

### Limitations of measurement of specific IgE

The level of specific IgE does not predict the severity of the reaction. It cannot be used to monitor the disease activity as the values remain high even in patients who have become tolerant to the allergies. Patients on immunotherapy may show no change in the levels of the allergens in spite of improvement in symptoms.

### Skin Prick Test (SPT)

The relevance of SPT is in the diagnosis of food allergy, allergic rhinitis and asthma.

SPT is the method for identifying the incriminating antigen. Skin testing is done by the widely practiced method using a lancet. SPT has high sensitivity, low specificity, greater selection of antigen, safer, less expensive, less painful than the intradermal test and with a reduced incidence of anaphylaxis. Food allergy can be diagnosed by a SPT but oral challenge test is the gold standard.

### Steps involved in Skin Prick Test (SPT):

1. Clean the forearm with spirit
2. A drop of different allergens is placed in different circles drawn on the forearm or on the back in young infants.
3. A lancet of steel is used to prick the epidermis. There should be no bleeding as it may lead to false positive results.
4. Wait for 20 minutes
5. Wheal formation of more than 3mm with negative saline control and more than 3mm Histamine control would be suggestive of allergy.

### Prick to Prick method:

Testing of any food substance that can be pricked with the lancet can be tested. The food is pricked and then the skin. It is safe, sterile and more reliable.

### SPT in food allergies

SPT has a negative predictive value of 95%. Hence a negative SPT excludes IgE mediated food allergy for the food tested and patient can safely consume the concerned food. SPT has a positive predictive value of less than 50%. In such case clinical co-relation has to be done and a oral food challenge test should be done. Larger SPT wheals correlate with a positive food challenge. If SPT wheals is  $> 8\text{mm}$  for milk, peanut and egg, then it has a 95% clinical reactivity. Normal subjects may show a reaction to foods consumed on a regular basis but SPT size  $\leq 3\text{mm}$ . Positive SPT in non allergic patients predisposes to future allergic disease. SPT will be negative in non IgE mediated food allergy.

**Both an SPT wheal  $< 3\text{ mm}$  and a food-specific IgE (sIgE)  $< 0.35\text{ kUA/L}$**  Kilounits of allergen-specific IgE per liter have a high specificity and negative predictive value (NPV) i.e. it effectively rules out an allergy, but poor sensitivity and positive predictive value (PPV). Sensitivity can be improved by using higher cutoffs, which vary depending upon the specific food.

### SPT in anaphylaxis:

SPT is done, if the cause of anaphylaxis is not known. The patient will be needed to be tested after complete recovery.

### SPT in Urticaria :

SPT is done in acute urticaria, if the reaction occurred within an hour of ingestion and lasts less than 24 hours or is severe. It is not recommended in chronic urticaria.

### Diagnosis of Non IgE mediated Food allergy

No specific lab tests - Diagnosis must be suspected on history

As many of non IgE mediated Food allergy have predominantly GI tract symptoms, diagnosis involves the Gastroenterologist and their armamentarium of endoscopy, colonoscopy and gastro intestinal biopsy

Confirmed by observing that the symptoms improve when the suspected food is removed from the diet and returning when the food is reintroduced into the diet. This is termed the eliminate rechallenge test.

Most clinicians recommend that the food being removed for two weeks. If symptoms resolve then the food is gradually reintroduced to assess whether symptoms recur.

### Treatment of Food allergies

#### **AVOIDANCE:**

**Strict avoidance of the offending food allergen is the basis of control.**

Based on component resolved diagnosis, certain allergic foods can be taken in the cooked form.

### Immunotherapy in food allergies:

Is in a nascent stage and restricted to research. The U.S. Food and Drug Administration recently approved the first oral immunotherapy drug, peanut allergen powder (Palforzia is the brand name), to treat children ages 4 to 17 years old with a confirmed peanut allergy. This medication is not recommended for people with uncontrolled asthma or certain conditions, including eosinophilic esophagitis.

### Patient Education:

The patient must be made aware of hidden allergens, allergic food in non food substances. They must read the food labels and be cautious when eating out.

### Hidden allergens

There are many ways for allergens to be hidden in food. Omission in the labels, misleading labels, foods listed by an uncommon term, ingredient switching, allergenic food contaminating safe foods.

### Allergic food ingredients in non-food substances

There are certain foods substances present in non-food substances which can provoke allergy.

Food allergen	Non-food substance
Egg protein	Vaccines shampoo
Casein	Anti stick agents
Lactose	Dry powder inhalers
Soy Lecithin	Asthma inhalers
Milk and milk ingredients	Cosmetics

### Food Labelling :

FDA in the USA has mandated that food manufacturers to list the eight common ingredients that trigger food allergy.

These eight foods are

Milk

Egg

Peanuts

Tree nuts (Almonds, Walnut)

Fish

Shell fish (Prawn, Crab, Lobster)

Wheat

Soy

Now sesame is induced as the ninth food.

### Precautions when eating out

Cross contamination of food is possible by sharing spoons and utensils. Many masalas and pastes have mixed ingredients.

### Does one out grow food allergies?

Children with milk, egg and soy allergy out grow these allergies.

The likelihood of outgrowing shellfish, tree nut and peanut allergies is significant lower. Other factors contributing to the outgrowing of allergic condition are milder reactions, being allergic to one food, and having eczema as the only symptom. Children with severe symptoms and multiple food allergy are less like to achieve tolerance.

**Nutritional counselling in Food Allergy Patients**

1. An elimination diet the mainstay in the management of Food allergies to prevent life threatening reactions.
2. A proper nutritional assessment done with appropriate intervention is needed to meet nutrient requirements and maintain appropriate growth
3. Removing a food with proven sensitivity may increase the risk of an acute reaction upon reintroduction or accidental ingestion after long term avoidance
4. Maintenance of a food diary.

**Management of Anaphylaxis in Food Allergies**

1. IM injection of Adrenaline is the mainstay of treatment for anaphylaxis following food allergies.
2. Auto Injectors of Adrenaline in following strengths for pediatric and adult group are available abroad 0.15 mg and 0.3mg for self or parent administration.

**Dosing of Adrenaline and other medications in Anaphylaxis.**

Age	Adrenaline	CPM	Hydrocortisone (5-10 mg/kg)	Ranitidine
12 years and Adult	0.5mg IM (0.5 ml of 1:1000 Soln)	10 mg Slow IV/IM	200 mg slow IV	50 mg
6-12 yrs	0.3 mg IM (0.3ml of 1: 1000 solution)	5 mg Slow IV or IM	100 mg slow IV or IM	1mg /kg IV
6 months to 6 yrs	0.1 mg IM (0.1ml of 1:1000 Solution)	2.5mg Slow IV or IM	50 mg Slow IV or IM	1mg/kg IV
Less than 6 months	0.1mg IM (0.1ml of 1:1000 Solution)	250 mcg/kg IM or slow IV	25 mg IM/Slow IV	

For past issues go to : <http://www.brshospital.com/BRS-Mediquest.php>

**BRS Hospital**

*wishes you a happy and prosperous*

*New Year 2023*

Owned and Published by Dr. Madhusudhan 28, Cathedral Garden Road, Chennai - 34.

Printed by S. Baktha at Dhevi Suganth Printers 52, Jani Batcha Lane, Royapettah, Chennai -14.

Publication on : Final week of every month posted on 29.12.2022