



Allergy – An Overview

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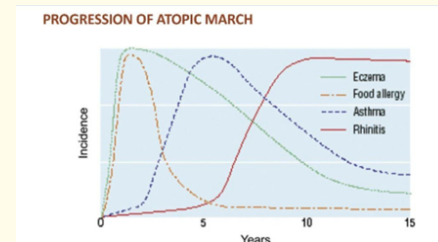
Is every reaction of our body to the environmental factors or food is Allergy? Can we offer any treatment for Allergy to our patients or anti histaminics is the only option available?

Allergy term was coined by Von Pirquet in 1906, and understanding of allergy and skin test for detecting Allergy dates back to 1921 when Prausnitz and Kustner conducted the skin test for passive transfer of substance in serum. However, the concept of allergy is still misunderstood at many levels and as commonly the term used, the more complex and less comprehended is the concept of it.

Allergy is an exaggerated and altered reaction to a harmless substance with immunological basis involving IgE antibody resulting in inflammation. It is progressive in nature. However, simply increased or normal levels of serum IgE or eosinophils in blood does not indicate the presence or absence of allergy respectively. Increased serum IgE only indicates overreactive immune function. It only has epidemiological significance and should not be the guiding factor for treatment of the patient.

The most important concept to be understood is that of Atopic March and Reverse Allergic March which explains the variations in forms and onset of Allergy at different age groups (Figure 1).

An Atopic person may be sensitised but may not be allergic to particular substances. The substances that usually trigger Hypersensitivity type 1 reaction elicit the allergic response. Atopic individuals have a systemic TH2 environment vs the normal TH1 system being dominant. TH2 system is responsible for IgE production and hence predisposes to various allergic conditions.

**Figure 1**

The basic defect in an atopic individual is the loss of epithelial integrity. It increases the epithelial membrane permeability allowing entry and thus promoting sensitisation to allergens. The genetic predisposition along with environmental factors dictate the manifestation of allergy. Epigenetics is thus an important concept to understand.

A patient may be suffering from Allergic Rhinitis, Non Allergic Rhinitis, Food Allergy, Oral Allergy Syndrome, Allergic Asthma, Drug Allergy, Skin Allergy.

Patient May Also Present With Ocular Allergy Symptoms Along With Allergic Rhinitis/Asthma. Atopic dermatitis is an eczematous chronic relapsing pruritic disease and marks the beginning of Atopic March. 85% of children develop.

Atopic dermatitis by the age of 5yrs and 50% of these children develop asthma in later life.

Food allergy (with immunological basis) is to be differentiated from food intolerance, which is non immunological. It is important

to identify thus prevent fatal anaphylaxis in children and also enable parents to understand the diet plan of child correctly. Food allergy is immunological and reproducible, and is characterised by urticaria/oral allergy syndrome/anaphylaxis. There is also cross reaction of fresh foods with pollens. Food allergy can be T cell mediated or IgE mediated or both. Food allergy has multi organ involvement and can be detected by Immunocap or skin test if IgE mediated. Provocation test for non IgE mediated food allergy is recommended.

The understanding of the United airway disease links the occurrence of Allergic Rhinitis and Allergic Asthma.

Itching and sneezing are the hallmarks of allergic rhinitis. It may be seasonal/perennial; mild/moderate – severe ; intermittent/per-sistent.

Allergic rhinitis is often associated with conditions like Allergic Conjunctivitis, Sinusitis, Asthma, Atopic Dermatitis, Oral Allergy Syndrome, Eustachian Tube Dysfunction, Obstructive Sleep Apnea.

Severe life threatening allergic reaction involving Type I hypersensitivity is called Anaphylaxis which involves multisystem failure and needs immediate treatment.

Allergic reactions occur as early or late reactions. Early reactions manifest between minutes to upto 2 hours. It involves the release of histamine through mast cell degranulation. Late reactions may occur after 6- 8 hours and persist longer and do not involve mast cell degranulation or release of histamine in response to the allergen re exposure.

To diagnose and identify type of allergy and its severity or impact on Quality of Life of the patient, a detailed history is thus the most important.

Allergy is mainly a nocturnal disease and risk factors include presence of Atopy- if parents or siblings are allergic; animal contact, exposure to dust mites, tobacco exposure, eczema, an important factor is the hygiene hypothesis, small family, IgE > 100 IU/ml at <6years of age.

There is an increasing evidence of prevalence and incidence of Allergy worldwide due to several factors viz lifestyle, urbanisation, population migration, diet changes, decreased physical activity, obesity, pollution, increase in indoor allergens, climate change, overuse of antibiotics, stress.

History gives us the clue to the type of allergy, severity of allergy, the effect of allergy on quality of Life of the patient, the trigger factors, the risk factors, the environmental factors, the probable causative allergens, understanding epigenetics, and thus helps customise plan of action for the patient. General Physical examination, ENT examination play an equally important role. The blood test for Allergy (Immunocap) is only done in specific conditions. Serum levels of Total IgE is not an indicator of presence or absence of Allergy and holds no significance clinically for diagnosis or treatment of the patient. SPT (Skin Prick Test) is the most reliable screening test for allergy. It helps to identify the degree of sensitisation of an individual to the specific allergens by detecting mast cell bound IgE that is responsible for histamine release and symptoms of allergy on allergen exposure. The presence of wheal, erythema, pseudo-pods indicate the degree of sensitisation of the patient to the specific allergens tested. Second history correlates symptoms with the skin test and helps identify which allergens are responsible for patient's symptoms.

Treatment can thus be directed towards the specific allergen responsible. Patient should be educated about the specific Avoidance measures to minimise exposure to the specific allergens.

Another important advancement is the CRD i.e. component resolved diagnostics which is now used for detecting antigenic determinants/components in allergens that cross react with other allergens. By this we can understand the component of Allergen responsible for the symptoms of the patient that maybe a constituent of more than one allergen causing cross reactivity. It is thus a very useful screening test and has specific indications and hence should only be recommended by an Allergy specialist.

General measures for allergy symptoms control or suppression include use of nasal sprays, (antihistaminics and INS), diet and lifestyle changes, avoiding triggers. OTC available antihistaminics would only suppress the symptoms for few hours and is only used

for acute control temporarily for early phase allergic reactions. They do not control late phase reactions.

Physical activity, stress management, diet and lifestyle changes are more important for long term benefit and good QOL than understood.

Avoidance of allergen and environmental control and Immunotherapy for the causative/responsible allergens play a pivotal role in treatment of allergy. Immunotherapy is known to halt the progression of allergic march in an individual and thus should be given if recommended in the specific situation. The candidate must fulfil the criteria to benefit from Immunotherapy and should be compliant and educated about the treatment process. AIT is known to modify the natural course of disease, prevent asthma in young individuals, prevent neo sensitisations; the effect variably lasting for 10-15 yrs or even more.

AIT targets T-reg cells and exert immediate action immunologically. AIT changes the TH2 systemic environment to TH1 system. Thus it decreases the Sensitisation to allergen and improves the medication score. It may be given Subcutaneously/sublingually/via bronchial route/via lymphatic route towards single or more than one allergen. 3-5 years is the usual time period recommended for AIT.

AIT candidate however is to be chosen wisely. Compliance is of great importance. Patients with severe long duration disease, non allergic disease with positive SPT, comorbidities, those with remodelling of airway are not good candidates for AIT.

Biologics can also be offered to patients for allergy not amenable to AIT or in conjunction with SCIT in selected cases.

Conclusion/Key points

The Allergic reactions are very specific with immunological basis and does not encompass every reaction of the body to any substance. Allergic reaction is to the protein content of the allergen responsible. Epigenetics, Atopic march, Environmental factors are important to understand and manage the patient aptly. Allergy is progressive and Allergic Rhinitis and Asthma are closely related. Skin test is the most ideal test and blood tests should not be done to diagnose allergy in routine cases. Treatment and good control

with halting or delaying the progression of Atopic march is possible with specific measures.

Thus the dictom to control and treat Allergy and therefore reduce the socioeconomic burden it causes would be “Test Early, Treat Early, Modify The Disease Process, Halt The March”.