FOOD ALLERGY IN PEDIATRICS

An Essay
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Abstract

Food allergy affect about ٦٪ of young children and about ٢٪ of general population . Relatively few foods are responsible for the vast majority of allergic reactions: milk, egg, peanuts, tree nuts, fish, shellfish. Food allergic reactions are responsible for a variety of symptoms involving the skin, GIT, respiratory tract and may be due to IgE mediated or non IgE- mediated. A systematic approach lead to correct diagnosis. Currently, management consists of education to avoid ingesting the responsible allergen and start therapy in case of unintended ingestion.

Key words:

(Food allergy- food intolerance – allergenic food – anaphylaxis)

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LIST OF ABBREVIATIONS

AAF	*Amino acid basd formula*
AAP	*American academy of pediatric*
AD	*Atopic dermatitis*
AEE	*Acute eosinophilic eosophagitis*
AEG	*Acute eosinophilic gastroenteritis*
AGEAMPS	*American gastroenterological association medial position statement*
AK	*Applied kinesiology*
APC	*Antigen-presenting cells*
B cell	*Immunity cell B*
Ca^{2+}	*Calcium ions*
CCR	*Chemokine receptors*
CMA	*Cow Milk Allergy*
COI	*Cost of illness*
COX-٢	*Cyclooxygenase-٢*
DBPCFCs	*Double blind, placebo-controlled oral food challenges*
DNA	*Deoxyribonucleic acid*
EAACI	*European academy of allergy and clinical immunology*
ECP	*Eosinophil cationic protein*
EHF	*Extensively hydrolysed formula*
EU	*European union*
FAHF-١	*Chinese herbal tee formula*
FAST	*Fluorescent allergy sorbent test*
FD& C yellow	*Tartrazine*
FDA	*Food and drug administration*
FEv_1	*Forced expiratory volume in 1^{st} minute*
GERD	*Gastro esophageal reflux diseases*
GIT	*Gastro intestinal tract*

HRQL	*Health- related quality of life*
IFN-γ	γ *interferon*
Ig (M,G,A)	*Immunoglobulin (M,G,A)*
IgE	*Immunoglobulin E*
IL	*Interleukins*
ISS	*Immunostimulatory sequences*
MHC	*Major histocompatibility*
MSG	*Monosodium glutamate*
NIH	*National institute of health*
NK	*Natural killer cells*
NSAID	*Non steroidal anti inflammatory drugs*
OAS	*Oral allergy syndrome*
OFC	*Open food challenge*
PgE٢	*Prostaglandin E٢*
PH	*Proteins hydrolysates*
PSTs	*Prick skin tests*
RASP	*Rdioallergosorbent procedure*
RAST	*Radioallergosorbent test*
RNA	*Ribonucleic acid*
SBFCs	*Single blind food challenges*
SBHR	*Spontaneous basophile histamine release*
State-٦	*Signal Transducer And Activator Of Transcription- ٦*
T cell	*Immunity cell T*
TGF	*Transforming growth factor*
Th	*T helper cells*
TR	*Regulatory T cells*
UK	*United kingdom*
US	*United state*
VCAM-١	*Organ –specific ligands*

Introduction and Aim of the Work

Food allergy is any adverse reactions to an otherwise harmless food or food component that involves the body's immune system. An adverse food reaction consists of any abnormal reaction to food, it is important to use the term "food allergy" or "food hypersensitivity" only when the immune system is involved in causing the reaction ***(Anderson. ١٩٩٤)***.

The terms food allergy and food intolerance are often used interchangeably and there is some confusion regarding as to how they differ. It is generally accepted that an allergy is a hypersensitivity reaction where symptoms appear rapidly following exposure to macromolecules (generally proteins) ***(Bruijnzeel-Koomen et al., ١٩٩٥)***. Other adverse reactions that do not involve the immune system known as "food intolerance". There are various types of food intolerance such as food poisoning, metabolic reactions and some unexplained causes of food adverse reactions ***(Taylor et al., ٢٠٠١)***.

Food poisoning occurs when food containing toxins are consumed. In some instances, food poisoning can mimic an allergic reaction. For example, in scombroid fish poisoning, spoiled tuna or other fish contain large amount of histamine produced by contaminating bacteria. When the spoiled fish is consumed, symptoms develop that closely resemble allergic reactions to food ***(Baldwin, ٢٠٠٠).***

Table (١): Key features of different adverse reaction to food:

	CLINICAL HISTORY	REACTION ON FOOD CHALLENGE		EVIDENCE OF IMMUNOLOGICAL REACTION
		Open	Double blind	
Food avoidance	+	-	-	-
Psychological intolerance	+	+	-	-
Food intolerance	+	+	+	-
Food allergy	+	+	+	+

(Warner et al., ١٩٩٤)

Allergy has become a major burden in westernized societies during ٢٠th century, and among allergic manifestations, food allergy account for a substantial part of morbidity rate. Patients with food allergy are handicapped by strict avoidance diet and a potentially life long- lasting disease. Furthermore, in some patients with exquisite food allergy, the risk of fatal reactions is present daily ***(Eigenmann, ٢٠٠٣).***

Surveys show that about ٤-٨٪ of young children are diagnosed with food allergies, most of which are evident in their first year of life and are often outgrown. Food allergies affect about ٦٪ of infants younger than ٣ years. Although any food may provoke a reaction, relatively few foods are responsible for the vast majority of food allergic reactions: milk, egg, peanuts, tree nuts, fish, and shellfish. Many of these food allergens have been characterized at a molecular level, which has increased our understanding of the immunopathogenesis of many responses and may soon lead to immunotherapeutic approaches ***(Sampson, ٢٠٠٣).***

Food allergies may be immunoglobulin E (IgE)- mediated or non IgE-mediated immune mechanisms ***(Bock, ١٩٨٧)***."Immediate hypersensitivity" is the most clearly understood. This reaction involves three primary components: food allergens, IgE and cells (mast cells and basophils) ***(Lemke and Taylor, ١٩٩٤).***

A food allergen is the part of a food that stimulates the immune system of food- allergic individuals. A single food can contain multiple food allergens, the majority of which are likely to be proteins, not carbohydrates or fats ***(Taylor et al., ١٩٩٩).***

People with food allergies produce increased amount of IgE, which is an antibody in the immune system. When allergic individuals eat certain food, their immune systems are stimulated by food allergens to make IgE specific bind to mast cells. Basophils and mast cells produce and store various substances such as histamine, which cause allergic symptoms ***(Taylor et al., ٢٠٠١)***.

Food hypersensitivity develop in genetically predisposed individuals and may be IgE- mediated disorders, cell mediated disorders and mixed IgE-cell mediated disorders that involve many body systems, gastrointestinal, respiratory, coetaneous and generalized “anaphylaxis” ***(Sicherer et al., ٢٠٠٠; Sampson, ٢٠٠٣).***

Understanding of food induced allergic reactions has increased dramatically in the last few years, especially in the area of diagnosis and management. Investigation of allergic food proteins and immunologic response has moved to molecular level and this knowledge now provides novel strategies for the laboratory diagnosis and immunomodulatory control of IgE-mediated food hypersensitivity. Food allergies are now recognized as

Conclusion and Recommendations

Food allergy is a commen disease with potentially severe or fatal reactions in some patient. The life of these patients is mostly impaired by a strict avoidance diet and a risk of accidental ingestions because of contamination in processed foods. An efficient treatment of food allergies is desperately needed in these patients. Although food allergen avoidance is the main methods for prevention and treatment. There are another options studies included the use of anti-IgE antibodies, immunomodulatory treatment. Further more , the potentially severe side effects of immunotherapy could be controlled by using modified or recombinant allergens.

We might hope that in that in the near future we should be able to provide our patients with food allergy with an efficient and safe treatment of their condition.

a worldwide problem in many nations, and like other atopic disorders, it appears to be on the increase. Food allergy remains a leading cause of anaphylaxis treated in emergency department in a number of countries, and the public has become increasingly aware of the problem ***(Munoz et al., ٢٠٠٤).***

The aim of diagnosis of food allergy is to establish a causal relationship between food ingestion and the clinical symptoms reported by the patient and to identify the immune mechanism of the reaction ***(American Gastroenterological Association medical position statement, ٢٠٠١)***. The diagnostic evaluation of reported adverse reactions to food should include a detailed clinical history and physical examination, diagnostic tests for IgE, elimination diets and oral food challenge.

The diagnostic tests for IgE include skin testing which remain a primary tool in the diagnosis and optimal performance of diagnostic tests for IgE for clinical food allergy which is useful in selecting the best cut-off (optimal operating) point to differentiate actual food allergy ***(Jesus et al., ٢٠٠٤)***.

Once the diagnosis of food hypersensitivity is established, the proved therapy remains elimination of the offending allergen, although a number of promising therapeutic modalities are on the horizon. The management of food allergies continues to consist of educating patients on how to avoid relevant allergens, to recognize early symptoms of an allergic reaction in case of an accidental ingestion, and to initiate the appropriate emergency therapy. However, the recent successful clinical trial of anti-IgE therapy in patients with peanut allergy and the number of immunomodulatory therapies