

The occurrence of food allergy in Children and Adults in Kerbala City

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ABSTRACT

Objective:Food allergies are a public health concern , People with food allergies are two to four times more likely to have asthma or other allergic conditions than those without food allergies.The prevalence of food allergies increased 18% during 1997–2007,We investigate the occurrence of food allergies in Children and adults in Al-Hussein Medical City. A total number of 60 Iraqi patients with symptoms of food allergy were included in the present study . The study was carried out during the period from October, 2013 May, 2014. Blood samples and laboratory investigation was done in teaching Laboratory of AL – Hussein Medical City to detect antibodies type IgE for food allergens(egg white ,egg yolk, cow's milk ,casein, bovine serum albumin ,wheat flour ,soybean, baker's yeast ,peanut ,hazelnut ,almond, orange, apple, banana , tomato ,carrot , celery ,onion ,mutton /lamb ,mustard ,shrimp ,cod fish,chicken meat , mango ,chocolate)using EUROLINE test kit. The Present study illustrated that the food allergy prevalence(measured by specific IgE concentration) in men is 65% and 35% in women, The Rate of occurrence of food allergy in children is (66.7%) while in adults is (33.3%) . Children and adults may be allergic to more than one food stuff. Banana, peanut and white egg recorded high rate of occurrence in food allergy ,lower rate occur in mango, chicken meat ,mutton /lamb. but no recorded allergy to onion and cod fish. Finally this study record that the highest concentration of specific IgE antibodies occur in response to shrimp and white egg. The present study demonstrated high prevalence of food allergy in male compared with female,and high frequency of food allergy in children compared with adults. There's no significant between children and adults in occurrence of food allergy for more than one food allergens.there for should be avoided some type of food which stimulate the immune system.

ظهور حساسية الأغذية في الأطفال والبالغين في محافظة كربلاء

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الخلاصة

تعد حساسية الغذاء مصدر قلق بالنسبة للأشخاص المصابين بحساسية الغذاء أكثر عرضة بمرتين إلى أربع مرات حدوث الربو أو أنواع الحساسية الأخرى التي ليس لها علاقة بالغذاء ،وكذلك فان نسبة انتشار حساسية الغذاء ازدادت بشكل سريع لتصل إلى 18% خلال الفترة من 1997 ولغاية 2007، لذلك صممت الدراسة للتحري عن انتشار حساسية الغذاء لدى الأطفال شملت الدراسة على 60 مريض يشكون من أعراض حساسية والبالغين في مدينة الحسين الطبية في محافظة كربلاء. الغذاء،ونفذت خلال الفترة من تشرين الأول (2013) حتى أيار(2014) . أجريت الفحوصات المختبرية في المختبرات التعليمية لمدينة الإمام الحسين الطبية في محافظة كربلاء باستعمال تقنية تسمى بفحص الامتزاز التحسسي المرتبط بالإنزيم للكشف عن الأجسام المضادة للأغذية المثيرة للتحسس(بياض البيض ،صغار البيض ،حليب البقر ، ألبومين المصل البقري، دقيق الحنطة ، فول الصويا ،خميرة الخبز ،الفسنق ، البنندق ، اللوز ،البرتقال ،التفاح ،الموز ،الطماطم ،الجزر

الكرفس، البصل، لحم الضأن، الخردل، الروبيان، قد السمك، المانجو، الشوكولاتة). وحسب الطرق القياسية المشار إليها من قبل الشركات المصنعة. سجلت الدراسة نسبة ظهور حساسية الغذاء 65% عند الرجال، أما عند النساء فسجلت 35%. وأوضحت الدراسة بان نسبة تحسس الأغذية لدى الأطفال بلغت 66.7% بينما البالغين فبلغت 33.3%، كما ولوحظ بان البالغين والأطفال قد يشكون من تحسس لأكثر من نوع واحد من الأغذية. بينت النتائج بان الموز، الفسق، بياض البيض هي الأغذية التي سجلت أعلى نسبة تحسس عند المقارنة مع بقية الأغذية، كما وأظهرت النتائج بان المانجو ولحم العجل ولحم الدجاج هي الأغذية التي سجلت أقل نسبة تحسس، وكذلك تسجل الدراسة أي ظهور لحساسية للبصل وقد السمك. أخيراً" بينت الدراسة إن بياض البيض والروبيان سجلت اعلي تركيز لمستوى الغلوبولين المناعي الخاص بتلك الأغذية. بينت الدراسة بان بان هناك ارتفاع في نسبة الذكور الذين يعانون من تحسس للأغذية مقارنة مع النساء، كذلك تبين إن هناك ارتفاع بنسبة الأطفال الذين يعانون من حساسية الأغذية عند المقارنة مع البالغين، وكذلك أظهرت الدراسة بأنة لا يوجد اختلاف بين البالغين والأطفال من حيث التحسس لأكثر من نوع واحد من الأغذية لذلك يجب تجنب بعض أنواع الأغذية التي تثير الجهاز المناعي.

1. INTRODUCTION

The term Allergy was originally defined by Clemens von Pirquet to mean the body's increased ability to react to a foreign substance. Today the term allergy means an oversensitivity to foreign substance which are normally harmless. Food allergies are a growing food safety and public health concern that affect an estimated 4%–6% of children in the United States. Children with food allergies are two to four times more likely to have asthma or other allergic conditions than those without food allergies.[1,2]

In developed countries they are about the most frequent chronic disease, reaching between 15% and 30% of the population [3]. In addition genetic predisposition, non-organic factors such as allergen exposure, nutrition status, existing chronic diseases or acute virus infection play a role in allergies [4]. Diet during early childhood and a parental history of atopy are important determinants of the development of allergy [3,5,6]

The most frequently occurring allergy is a type 1 hypersensitivity reaction, in which specific IgE antibodies are formed. The symptoms (e.g., redness, oedema, itching) generally occur shortly after contact with the allergen. Therefore, this type of allergy is called an immediate-type reaction. The prevalence in developed countries amounts to more than 15%. Allergies are, however, not exclusively due to airborne allergens. They can also be caused by ingested food.[5]

A food allergy is an IgE mediated reaction which leads to symptoms within hours of having ingested the food [7,8,9,10]. Possible symptoms are lip, tongue and throat burning or itching, nausea, abdominal cramps, diarrhea and erythema. Major symptoms can even include asthma, shortness of breath, fast heart rate, panic and confusion. In rare cases anaphylaxis can occur.[11]

Furthermore, there exist adverse reactions to food which are not IgE mediated. It is assumed that these adverse reactions are IgG-mediated and are caused by a delayed reaction to the particular food substance. They usually occur 24 to 120 hours after consumption of the food [7,17]. The symptoms are more generalized and tend to be chronic or recurrent and may persist for days [3].

Many allergens are glycoproteins and contain oligosaccharide side chains which are bound to the protein framework of the allergens. Some patients develop specific antibodies against these carbohydrate structures.

Aims of the study, to study prevalence of antibodies for food allergy, estimate the prevalence of IgE anti food allergy among children and adults and determine which types of food allergens are more frequent.

2. MATERIALS AND METHODS

2-1 Study grouping

The study was conducted on one groups the first study group included 60 blood sample taken from Children and adults patients whom referred to Al-Hussein Medical City in Karbala, unit of immunological test to detect cause of food allergy, age range was from 1 to 70 years .Sampling and laboratory investigation was in technical laboratories of the Al-Hussein Medical City of Kerbala during the period from October ,2013 May, 2014 .

2.2 Sample collection& assay procedure:

From each individuals ,3-5 ml of venous blood was collected .The blood was allowed to clot naturally at room temperature , then the sera were separated after centrifugation at 1500 rpm for 3-5 minutes .

Haemolysis was avoided and each serum was divided into 2-3 portions and placed into sterile plastic plain tubes using micropipette with sterile disposable tips .Each sample was then labeled by a serial number and the patient name .The sera were frozen at (-20 °C) and later thawed .Sample at one time was subjected to the following serological tests (repeated thawing was avoided) .The sample were achieved according EUROLINE test kit provides a semi – quantitative in vitro assay for human IgE antibodies to food allergens in serum or plasma .

Statistical analysis

In the current study we used statistical program of SPSS version (17.0) to study the frequency and significance between test in each type IgE anti allergens antibodies.

3. RESULTS

Table (3-1): Interpretation result distribution

Class	Result	Characteristics	Equal concentration [kU/l] by digital evaluation system
0 (0)	Negative ; No clinical significance	No band	<0.35 kU/l
+	Low allergen-specific IgE concentration ;partial clinical significance	Weak band signal	0.35 -3.5 kU/l
++ (2)	Moderate allergen-specific IgE concentration ;often with clinical significance	Clear band signal	3.5-17.5 kU/l
+++ (3)	High allergen-specific IgE concentration ; clinical symptoms in most cases	Intense band signal	17.5-100 kU/l

Table (3-2) distribution of patients according to the Gender (1:male ,2:female)

Table(3-1) showd the frequency of food allergy according to the gender ,The highest frequency was noticed in men (65%) compared to (35%) in women .

Gander					
		Freque ncy	Percent	Valid Percent	Cumulative Percent
Valid	1	39	65.0	65.0	65.0
	2	21	35.0	35.0	100.0
	Tota l	60	100.0	100.0	

Table (3-3) shown distribution of patients according to the age groups ,The rate of frequency of age group 1-14 year (66.7 %), age group14-70 (33.3) .

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-14 year	40.0	66.7	66.66	66.66
	14-70 year	20.0	33.3	33.33	100
	Total	60.0	100.0	100.0	

The high rate of frequency of weak band signal occur in banana and peanut while the low rate of weak band signal recorded in mango ,the high rate of frequency of clear band signal showed in banana and apple while the low rate occurred in egg white ,baker's yeast ,celery and chocolate , In the intense band group only soy bean and peanut recorded ,and in very intense band signal the egg white ,shrimp, peanut and soy bean only recorded .

Table (3-4) Show distribution of patients according the type of allergens.

Allergen	no band		weak band signal		Clear band signal		Intense band signal		Very intense band signal		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Egg white	46	76.7	10	16.7	1	1.7	-	-	3	5.0	60
Egg yolk	55	91.0	5	8.3	-	-	-	-	-	-	60
Cow's milk	50	83.3	6	10.0	4	6.7	-	-	-	-	60
Casein	54	90	6	10	-	-	-	-	-	-	60
Bovine serum albumin	58	96.7	2	3.3	-	-	-	-	-	-	60
Wheat flour	51	85	5	8.3	4	6.7	-	-	-	-	60
Soy bean	48	80	7	11.7	3	5.0	1	1.7	1	1.7	60
Baker's yeast	55	91.7	4	6.7	1	1.7	-	-	-	-	60

Peanut	38	63.3	18	30	2	3.3	1	1.7	1	1.7	60
Apple	43	71.7	11	18.3	6	10.0	-	-	-	-	60
Banana	31	51.7	20	33.3	9	15.0	-	-	-	-	60
Tomato	50	83.3	8	13.3	2	3.3	-	-	-	-	60
Carrot	48	80	8	13.3	4	6.7	-	-	-	-	60
Celery	57	95	2	3.3	1	1.7	-	-	-	-	60
Onion	60	100	-	-	-	-	--	-	-	-	60
Mutton /lamb	59	98.3	1	1.7	-	-	-	-	-	-	60
Mustard	56	93.3	4	6.7	-	-	-	-	-	-	60
Shrimp	54	90	2	3.3	2	3.3	-	-	2	3.3	60
Cod fish	60	100	-	-	-	-	-	-	-	-	60
Chicken meat	59	98.3	1	1.7	-	-	-	-	-	-	60
Mango	59	98.3	1	1.7	-	-	-	-	-	-	60
Chocolate	47	78.3	12	20	1	1.7	-	-	-	-	60
Indicator	-	-	-	-	-	-	-	-	60	100	60

4. DISSCUSION

The substance in foods that stimulate immune system is called the food allergen. When exposed to the food allergen, the IgE antibodies alert cells to release powerful substances, such as histamine, that cause symptoms that can affect the respiratory system, gastrointestinal tract, skin, or cardiovascular system and lead to a life-threatening reaction called anaphylaxis. This study focuses not on all food allergies but on food allergies associated with IgE because those are the food allergies that are associated with the risk of anaphylaxis.

In this study 60 patients detected with food allergies ,diagnosed by EAST technique for specific IgE. Present study illustrated that the food allergy prevalence in men is 65% and 35% in women, Children and adults may be allergic to more than one food.

The Banana ,Peanut ,White egg this food recorded high rate of occurrence in food allergy .These study concordance with previous studies conducted [19]. Lower rate occur in mango,Chicken meat ,Mutton /Lamb. but no occurred any immune response to onion and cod fish.

Finally this study recorded that the highest concentration of specific IgE antibodies occur in response to Shrimp and White egg. Previous study in this field have Peanut ,white egg ,Banana high rate occurrence[20].

There's no significant between children and adults in occurrence of food allergy for more than one food allergens.there for should be avoided some type of food which stimulate the immune system.

Conclusions

The present study demonstrated high prevalence of food allergy in male compared with female ,and high frequency of food allergy in children compared with adults. There's no significant between children and adults in occurrence of food allergy for more than one food allergens.there for should be avoided some type of food which stimulate the immune system.

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