

A Cross Sectional Study of Food Allergy Test in Chronic Urticaria Adult Patients

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Abstract:

Background: Chronic urticaria is a debilitating cutaneous allergy disease that can affect individuals of both adult and juvenile age groups physically and psychologically. It has a variety of clinical manifestations. One prevalent cause thought to be present in adult patients with chronic urticaria is food allergies. Reducing or eliminating the consumption of food allergens that cause symptoms is the best way to prevent it. Suspected food allergies should be evaluated clinically, diagnosed using a skin prick test and a blood test, and treated by a qualified medical professional.

Methods: This is a cross-sectional study that was carried out from February 2023 to January 2024 on 100 adult patients with chronic urticaria who were seen in the dermatology out-patient department at Gian Sagar Medical College and Hospital in Ram Nagar (Rajpura), Patiala, Punjab. Using a skin prick test with 32 food antigens, this study was carried out to determine the prevalence of food allergies in individuals with chronic urticarial infections.

Results: In patients with persistent urticaria, food allergies accounted for nearly 99 percent of cases. Haldi (16.2%), cashew nut (14.1%), mustard (12.1%), saunf (12.1%), milk and chicken (11.1%), garlic, ginger, gram, apple and fish (9.1%), banana and coffee (8.1%) were the top food allergens that caused complaints.

Conclusion: One of the most common causes of cutaneously upsetting conditions like chronic urticaria, which can harm a patient's physical and emotional health, is food allergies. Urticarial patients can benefit from specific diagnosis, evaluation, and treatment for the aforementioned illness. Haldi (16.2%), cashew nut (14.1%), mustard (12.1%), saunf (12.1%), milk and chicken (11.1%), garlic, ginger, gram, apple and fish (9.1%), banana and coffee (8.1%) were the top food allergens that caused complaints. One of the least expensive and reasonably useful methods for diagnosing chronic idiopathic urticaria is the skin prick test.

Keywords: Food allergy, Chronic urticaria (CU), Allergy testing, IgE, Skin prick testing (SPT).

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Introduction

The illness known as Chronic Urticaria (CU) is defined by the occurrence of spontaneous wheals that last longer than six weeks, either with or without edema. [1] Patients with chronic urticaria, a prevalent dermatological condition, endure significant physical and psychological burdens. [2] An unpleasant reaction resulting from a particular immunological response that happens consistently upon exposure to a certain food is called a food allergy. [3-5]

Atopic dermatitis, urticaria, and oral allergy syndrome are skin conditions that are associated with food allergies. [5]. When a patient is exposed to specific triggering food allergens, immunoglobulin (IgE) binds to mast cells and releases histamine along with other mediators, resulting in cutaneous reactions. It's still unclear how food antigens affect patients with chronic urticarial infections. Food

allergies are becoming more common in our nation, primarily as a result of the availability of a wide variety of meals with a vast number of ingredients and the overuse of food additives like coloring and flavoring during food processing.

Understanding the hidden allergens in our regular food and taking the appropriate steps to cut back on our intake may help treat cutaneous allergies like chronic idiopathic urticaria.

Material and Methods

This is a cross-sectional study that was carried out from February 2023 to January 2024 on 100 adult consenting patients who had chronic urticaria and were seen in the out-patient dermatology, venereology, and leprosy departments of Gian Sagar Medical College and Hospital in Ram Nagar (Rajpura), Patiala, Punjab. These individuals were chosen at

random and underwent a full medical examination, CBC, RFT, LFT, thyroid profile, absolute eosinophil count, and serum IgE, among other routine lab tests. individuals who met one or more exclusion criteria were excluded from the study.

In order to properly interpret the results of the food allergy test, patients who met the inclusion criteria were asked to stop taking systemic medications, such as calcineurin inhibitors, antidepressants, antihistamines, and topical and oral steroids, for three days before the test. Resuscitation tools and anaphylactic reaction prevention measures were kept on hand prior to the test.

An area free of previous skin lesions was used to perform the Skin Prick Test (SPT). The SPT was performed on the ventral side of the arm and forearm in all patients, approximately 1-2 cm from the antecubital fossae and 2-4 cm from the wrist, with a gap of more than 2 cm between 2 skin pick tests. This was done to prevent false positive results that could result from axon reflex or direct contamination of nearby tests. [6] The evaluation of the food allergy test began with the use of a negative control and was completed with a positive control.

The positive and negative controls were Histamine Phosphate (10 mg/ml) and Buffered Saline in Glycerol Base, respectively. A total of thirty-two distinct dietary allergens were shown to the patients. To prevent cross-contamination, a fresh needle was used for each allergy, and distinct cotton was utilized for wiping. A drop of pure allergen extract was used for each prick, which was made by puncturing the cleaned volar aspects of the forearm and arm without causing bleeding. Twenty minutes after application, all test results, including those of the positive and negative control groups, were read using a timer.

The wheal was measured with a regular ruler. Using a pen, the longitudinal and vertical diameters were noted. First, controls that are positive and negative are measured. Since both controls produced the predicted findings, the results are regarded as genuine positives. To verify the

validity of the results, the negative control should provide a negative result and the positive control, histamine, should produce a positive result.

We measured the maximum wheal diameter for each test, and a positive result was obtained if the wheal diameter was more than twice that of the negative control. If the diameter of the wheal was precisely twice that of the negative control, the data were recorded as dubious positive.

Included in the study were all adult chronic urticarial patients, regardless of gender, between the ages of 18 and 60 who did not use antihistamines or illicit drugs and complained of spontaneous wheals (urticaria) with or without angioedema symptoms that they had noticed for longer than six weeks.

Patients who have any other reason for developing urticaria, any other allergic diseases (like asthma, allergic rhinitis, allergic conjunctivitis, drug allergy, atopic dermatitis, anaphylaxis), any chronic or systemic illness (like respiratory, renal, cardiac, haematological, hepatic, thyroid, or other skin diseases, etc.), any age range between 18 and 60, expectant or nursing mothers, and active infections (like dental caries, sore throat, UTI, etc.) are all excluded from the study.

Qualitative data analysed using Proportion and analysed using mean and standard deviation.

Results

Of the 100 patients with chronic urticarial disease, 68.7% were female and 31.3% were male. The mean age of the patients was 36.80 ± 1.249 . The majority of patients tested positive for various fruits (23.2%) and vegetables (27.3%).

Haldi (16.2%), cashew nut (14.1%), mustard (12.1%), saunf (12.1%), milk and chicken (11.1%), garlic, ginger, gram, apple and fish (9.1%), banana and coffee (8.1%) were the most frequently offending food allergies in this study.

The 100 individuals with chronic urticaria had serum IgE levels that ranged from 283 to 1500 IU/mL, with an average of 833 IU/mL.

Table 1: Percentage of pattern of allergy to various foods

Food	Positive(%)	Doubtful positive (%)	Negative(%)
Cereals	17.2%	13.1%	69.7%
Vegetables	27.3%	21.2%	51.5%
Fruits	23.2%	24.2%	52.5%
Pulses	13.1%	10.1%	76.8%

Table 2: Frequency of food allergy to specific food

S. No	Food Allergen n=31	No of Patients (n=100) n=100 (%)		
		Positive (%)	Doubtful Positive (%)	Negative(%)
1	Apple	9.1	4	86.9
2	Banana	8.1	10.1	81.8
3	Black pepper	3.0	4.0	92.9

4	Cashew nut	14.1	11.1	74.7
5	Chicken	11.1	5.1	83.8
6	Coffe	8.1	4.0	87.9
7	Dal urud	6.1	5.1	88.9
8	Dal arhar	6.1	6.1	87.9
9	Dalmoong	3.0	2.0	94.9
10	Egg white	4.0	7.1	88.9
11	Fish	9.1	9.1	89.9
12	Garlic	9.1	9.1	81.8
13	Ground nut	7.1	4.0	88.9
14	Ginger	9.1	2	88.9
15	Gram	9.1	4.0	86.9
16	Haldi	16.2	8.1	75.8
17	Lemon	7.1	8.1	84.8
18	Mustard	12.1	10.1	77.8
19	Milk	11.1	5.1	83.8
20	Saunf	12.1	7.1	80.8
21	Orange	1.0	9.1	89.9
22	Onion	2.0	5.1	92.9
23	Pea	6.1	4.0	89.9
24	Prawn	3.0	8.1	88.9
25	Rice	5.1	5.1	89.9
26	Tea leaves	3.0	4.0	92.9
27	Tomato	4.0	3.0	92.9
28	Potato	3.0	4.0	92.9
29	Wheat	6.1	8.1	85.9
30	Bean	3.0	3.0	93.9
31	Maize	5.1	3.0	91.9

Discussion

In India, food allergies may become a major issue. Actually, it's starting to affect the entire world. A growing number of people are embracing a modern lifestyle and observing an increase in allergy disease rates across all age groups. Food allergies can result in potentially fatal illnesses like anaphylaxis, which can require emergency care at startlingly high rates.

Indian food is known for its wide range of unusual and diverse ingredients. It is also frequently blamed for skin allergies, most likely as a result of pseudo-allergic reactions to artificial preservatives, aromatic compounds, and additives used in everyday food consumption, particularly in restaurant food. The amount that must be consumed in order to start an attack is unknown.

Because chronic spontaneous urticaria (CSU) can flare up at any time, patients link foods, medications, and activities to potential exacerbation triggers. [7,8,9] Patients at CSU frequently relate the start of their symptoms to various tasks, drugs, or meals [8,10] that they were engaged in at the time of the reaction. This may result in needless restriction, which in turn may cause future nutritional inadequacies. In western countries, citrus fruits, tomatoes, eggs, strawberries, soy, wheat, and fish are the most commonly occurring food allergies

across all age groups, in order of prevalence. [11] According to reports, cashew nuts, coconuts, wheat, fish (particularly shellfish), peanuts, milk, eggs, meat, rice, etc. are prevalent food allergies in India. It is important to test for food allergies in individuals with chronic urticaria, as 99% of those who had their food allergies tested had been found to be allergic to one or more food allergens. [12] Without testing, the majority of patients (84%) are unable to determine which dietary item caused their allergy.

The majority of patients in our study had allergies to fruits (23.2%) and vegetables (27.3%). Haldi (16.2%), cashew nut (14.1%), mustard (12.1%), saunf (12.1%), milk and chicken (11.1%), garlic, ginger, gram, apple and fish (9.1%), banana and coffee (8.1%) were the most often offending particular food allergies. In India, the prevalence of citrus fruit and tomato allergies is lower than in the West. Upon subsequent visits to our department, we discovered that patients had experienced notable relief from their symptoms subsequent to eliminating the particular food from their diet that had triggered a positive response to a food allergy test. As a result, the treatment plan entails determining the cause, avoiding aggravating circumstances, and managing symptoms.

Conclusion

In order to prevent chronic idiopathic urticarial patients from needlessly avoiding foods, food allergy testing must be advised early in the medical evaluation process. A simple and safe way to identify dietary antigens in these people is the skin prick test.

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