

## A Hospital Based Prospective Study to Evaluate the Risk Factors for Chronic Urticaria Amongst Children

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### Abstract

**Background:** Urticaria is a disease characterized by erythematous, edematous, itchy and transient urticarial plaques, and covering the skin and mucous membranes. Also known as hives among people. The present study was conducted to evaluate the risk factors for Chronic Urticaria Amongst Children. **Materials and Methods:** This Hospital Based Prospective Study was conducted to evaluate the Risk Factors for Chronic Urticaria Amongst Children of age group 5 to 13 year-old. 2130 children were included in this study. The modified urticaria activity score (UAS) was used to assess disease severity. The presence of factors that might induce urticaria were also noted. Blood sampling was performed to measure white blood cell count, vitamin D, total eosinophil count (TEC), and total IgE levels. Statistical analysis was performed using SPSS version 22.0 (IBM Co, Armonk, NY, USA). **Results:** In the present study a total of 2130 subjects were included in the study in which 84.50% were control and 15.49% were having urticaria. Mean age of controls was 8.56yrs and urticaria was 8.40yr. The characteristics of the 324 subjects with urticaria, which included 267 subjects with acute urticaria and 57 with chronic urticaria. The maximum UAS for wheals and pruritus was significantly higher in subjects with chronic urticaria than in those with acute urticaria. Risk factors for acute urticaria was food (40.44%) followed by environmental changes 36.70%. Risk factors for chronic urticaria was food (31.57%) followed by warm exposure (28.07%). **Conclusion:** The present concluded that among 324 subjects with urticaria, which included 267 subjects with acute urticaria and 57 with chronic urticaria. The maximum UAS for wheals and pruritus was significantly higher in subjects with chronic urticaria than in those with acute urticaria. Risk factors for acute urticaria was food (40.44%) followed by environmental changes 36.70%. Risk factors for chronic urticaria was food (31.57%) followed by warm exposure (28.07%).

**Keywords:** Urticaria, Wheals, Pruritus, Urticaria Activity Score.

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### Introduction

Urticaria is a disease characterized by erythematous, edematous, itchy and transient urticarial plaques, and covering the skin and mucous membranes. Also known as hives among people. It is a very common entity. 8.8–20% of individuals in the community experience an attack of urticaria at least once in their lifetime[1]. Urticaria is classified as acute or chronic form based on the duration of illness. Chronic urticaria is diagnosed when disease has been continuously or intermittently present for at least 6 weeks[2]. The chronic and acute forms of urticaria differ in etiology, pathophysiology, and underlying mechanism[3]. Although urticaria most commonly presents in children as a single episode lasting several days or weeks, many infants and children suffer from persistent urticaria. Chronic urticaria (CU) in children is a complex condition that differs from that in adults[3,4]. Based on the limited published data available, the overall point prevalence of CU across all age groups is estimated at 0.7%[5,6].

This confirms that CU is a common disease. Interestingly, new data also show that the prevalence of CU in children is as high as or higher than in adults, estimated on average at 1%[7]. The present study was conducted to evaluate the risk factors for Chronic Urticaria Amongst Children.

### Materials and methods

This Hospital Based Prospective Study was conducted to evaluate the Risk Factors for Chronic Urticaria Amongst Children of age group 5 to 13 year-old. 2130 children were included in this study. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the patient after explaining the study. The modified urticaria activity score (UAS)[8] was used to assess disease severity. The presence of factors that might induce urticaria, such as exposure to specific foods, drugs, cold exposure (cold water or air), hot air (after a shower or exercise), common cold, changes in the environment, and stress were also noted[9]. Blood sampling was performed to measure white blood cell count, vitamin D, total eosinophil count (TEC), and total IgE levels (Phadia AB, Uppsala, Sweden). A subject was considered atopic if there was 1 or more positive reactions (wheal diameter > 3 mm) to any allergen in the SPT. Demographic details were noted. Statistical analysis was performed using SPSS version 22.0 (IBM Co, Armonk, NY, USA). The relationships of different parameters with urticaria were determined using Student's *t* test for continuous variables and Pearson's  $\chi^2$  test for dichotomous variables.

### Results

In the present study a total of 2130 subjects were included in the study in which 84.50% were control and 15.49% were having urticaria. Mean age of controls was 8.56yrs and urticaria was 8.40yr. The

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characteristics of the 324 subjects with urticaria, which included 267 subjects with acute urticaria and 57 with chronic urticaria. The maximum UAS for wheals and pruritus was significantly higher in subjects with chronic urticaria than in those with acute urticaria. Risk

factors for acute urticaria was food (40.44%) followed by environmental changes 36.70%. Risk factors for chronic urticaria was food (31.57%) followed by warm exposure (28.07%).

**Table 1: Demographic details**

Variables	Control	Urticaria
N=2130(%)	1806(84.78%)	324(15.21%)
Age(yr)	8.56±1.67	8.40±1.54

**Table 2: Urticaria activity scores of subjects with chronic and acute urticaria.**

Urticaria activity scores	Acute urticaria(n=267)	Chronic (n=57)
<b>Disease activity in wheals</b>		
Mild	205(76.77%)	32(56.14%)
Moderate	37(13.85%)	13(22.80%)
Intense	25(9.36%)	12(21.05%)
<b>Disease activity in pruritus</b>		
None	42(15.73%)	18(31.57%)
Mild	101(37.82%)	12(21.05%)
Moderate	95(35.58%)	14(24.56%)
Intense	29(10.86%)	13(22.80%)

**Table 3: Risk factors of acute and chronic urticaria.**

Risk factors	Acute urticaria N(%)	chronic urticaria N(%)
Food	108(40.44%)	18(31.57%)
Environmental changes	98(36.70%)	12(21.05%)
Warm	28(10.48%)	16(28.07%)
Cold	12(4.49%)	7(12.28%)
Stress	9(3.37%)	8(14.03%)
Infection	7(2.62%)	1(1.75%)
Drug	15(5.61%)	1(1.75%)

## Discussion

Urticaria manifests as wheals, angioedema, or both. A wheal is a central swelling of variable size, mostly surrounded by reflex erythema. It is accompanied by an itching or burning sensation and is transitory in nature. The skin returns to its normal condition within 2-24 hours after the appearance of symptoms. Angioedema is a sudden erythematous or skin-colored swelling of the lower dermis and subcutis, with frequent involvement below the mucous membrane, which may last up to three days[10].

In the present study a total of 2130 subjects were included in the study in which 84.50% were control and 15.49% were having urticaria. Mean age of controls was 8.56yrs and urticaria was 8.40yr. The characteristics of the 324 subjects with urticaria, which included 267 subjects with acute urticaria and 57 with chronic urticaria. The maximum UAS for wheals and pruritus was significantly higher in subjects with chronic urticaria than in those with acute urticaria. Risk factors for acute urticaria was food (40.44%) followed by environmental changes 36.70%. Risk factors for chronic urticaria was food (31.57%) followed by warm exposure (28.07%).

Foods often encountered as causes of urticaria include nuts, eggs, fish, seafood, chocolate, meat, cow's milk, fruits (citrus fruits, grapes, plums, pineapples, bananas, apples, and strawberries), vegetables (tomatoes, garlic, onions, peas, beans, and carrots), mushrooms, fermented foods, spices, and spirits. Preservatives such as azo dyes, benzoic acid derivatives, and salicylates and food dyes are also important causative factors. Urticaria is usually seen 1-2 h after ingestion. Food-related urticarial rashes are more common in children[11]. Although it is accepted that foods have a place in the etiology of acute urticaria, their roles in the etiology of CSU have been not proven yet. It is thought that mostly pseudo allergens are involved in CSU, and therefore, diet is recommended for these patients[12].

A study by James et al. found a positive correlation between chronic urticaria and other allergic diseases[13].

Drug which is taken for a long time is unlikely to cause urticaria. On the contrary even a small quantity of penicillin present in the dairy products may produce severe urticaria in a sensitive person[14]. Pollen, mold spores, mites, animal dandruff, and hairs may cause urticaria when taken through the respiratory tract[15].

## Conclusion

The present concluded that among 324 subjects with urticaria, which included 267 subjects with acute urticaria and 57 with chronic urticaria. The maximum UAS for wheals and pruritus was significantly higher in subjects with chronic urticaria than in those with acute urticaria. Risk factors for acute urticaria was food (40.44%) followed by environmental changes 36.70%. Risk factors for chronic urticaria was food (31.57%) followed by warm exposure (28.07%).

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