

Clinico-etiological study with response to specific treatment in childhood urticaria

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ABSTRACT

Background: Urticaria is a common dermatological manifestation in adults with relatively infrequent occurrence of chronic urticaria (CU) in childhood. The etiology of urticaria in childhood remains incompletely understood because of limited data on children. **Objective:** We carried out this retrospective data-based study to determine different etiological factors and response to treatment in pediatric patients presenting with urticaria. **Materials and Methods:** Eighty children (M : F 49 : 31) between the ages of 1 and 14 years, who presented with urticaria excluding patients of physical urticaria attending the Outpatient Department of Pediatrics and Dermatology were included in the study. Patients were evaluated after taking a detailed history, doing a thorough physical examination, and basic laboratory investigations. Specific *in vivo* and *in vitro* tests were performed after the initial evaluation and consent of patients. **Results:** Out of eighty patients, 35 (43.75%) presented with acute urticaria and 45 (56.25%) gave a history of chronic urticaria. CU. An underlying cause was suspected in 53 cases (66.25%), although a definite association with response to a specific treatment was correlated in 30 (37.5%). Infection was the most common underlying causative factor. Underlying thyroid dysfunction was observed in 12 patients, of whom two had thyroid anti peroxidase antibodies. Autologous serum skin test was positive in 17 patients. **Conclusions:** In the present study infections were the most common etiological factor for urticaria in children.

Key words: Children, clinical study, infections, retrospective study, urticaria

INTRODUCTION

Urticaria represents a transient edema within the dermis; the individual urticarial lesions characteristically clear within hours. It is a vascular reaction of the skin, triggered by many known as well as unknown factors that result in liberation of vasoactive substances such as histamine, prostaglandins, and kinins.^[1] Most lesions of urticaria are small, less than 10 mm, but individual large lesions of 6–10 cm may occur — the so-called giant urticaria. Clinically, urticaria is classified into the acute (duration < six weeks) and chronic (duration > six weeks) types.^[2] 'Episodic' urticaria, which occurs intermittently but recurrently over months or years, is also recognized.^[3] Acute urticaria in children can be treated symptomatically needing no further investigations, while chronic urticaria requires a detailed search for trigger factors. Chronic urticaria is relatively less frequent in children compared to adults, with only occasional documentation of autoimmune urticaria. The

etiology of chronic urticaria (CU) in childhood remains incompletely understood because of limited data available on children. The objective of this retrospective study is to examine some of the possible etiology of urticaria and its response to specific treatment in children, after evaluation of available data.

MATERIALS AND METHODS

A retrospective hospital data-based study was conducted in children who had attended the Out-Patient departments of Dermatology and Pediatrics from June 2005 to May 2010. 80 patients suffering from urticaria (excluding physical urticaria) between the ages of 1 and 14 years were examined. Detailed history of these children included food allergies, drug intake, personal and family history of atopy, insect bites, infections, and infestations. The initial evaluation consisted of a thorough history, detailed physical examination, and basic laboratory tests such as complete blood count, stool microscopy, and

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urine examination, to rule out a focus of infection. Specific tests including thyroid function tests, thyroid anti peroxidase antibodies, serum IgE levels, ASST, X-ray of paranasal sinuses, and investigations for Hepatitis A virus were done after baseline investigations. Specific tests for autoimmune diseases were not performed due to the high cost involved.

RESULTS

80 children, comprised 49 males and 31 females with majority (44, 55%) of children under the age group of eight and eleven years [Table 1]. Chronic urticaria was observed in 56.25% of these children and the remaining had acute urticaria. A majority of parents gave a preceding history of infections and the second most common observation of parents was aggravation of urticaria after food [Table 2]. During detailed history taking, the various food materials found to be aggravating the urticaria were peanuts, eggs, cheese, and Chinese food in that order. Drugs aggravating urticaria were mefenamic acid, ibuprofen, nimesulide, ofloxacin, ampicillin, and cotrimoxazole. Personal / family history of atopy was present in 12 patients. Nine had history of a preceding insect bite. A complete blood count showed the hemoglobin to be less than 10 gm% in eight children. Leucocytosis and eosinophilia were present in 15 and 14 children, respectively.

Microscopic examination of the urine showed pus cells in 16 and ova / cysts were documented in the stool examination of

10 children. The autologous serum skin test was positive in 17 and thyroid dysfunction was documented in 12 patients. Out of the 12 patients four had hyperthyroidism and the remaining eight had hypothyroidism, two among the eight were positive for thyroid antiperoxidase antibodies. Raised serum IgE levels were present in 15. A majority of the children were treated with antihistamines; a definite association of suspected underlying cause with specific treatment was found in 16 (20%). Out of 16, five were treated for worms (albendazole), three received treatment for upper respiratory tract infection (two were given amoxicillin and clavulanic acid, one was given azithromycin), two each had received specific treatment for urinary tract infection (nitrofurantoin), hypothyroidism (thyroxine), and removal of an offending drug, and one each was treated for Hepatitis A virus and dental caries. A detailed investigative profile has been shown in Table 3.

DISCUSSION

Urticaria is commonly seen in children. For many the episode is short-lived and simply a nuisance, but for a few it may be a sign of a serious disorder. In contrast to the ease of its diagnosis, the etiological factors are often difficult to determine. The natural history of urticaria in children is distinct from that in adults. Urticaria is a common disease that can persist or recur over long periods of time, spanning years, causing distress, and at times can be life-threatening. As a cause is often not found, it presents the physicians with a diagnostic and therapeutic challenge.

Due to the scarcity of data regarding the etiological factors of urticaria in children, this retrospective data-based study was undertaken in an effort to determine various etiological factors of childhood urticaria. Urticaria in childhood is common; according to different studies, 15 – 20% of children suffer from at least one episode of urticaria by adolescence.^[4-7] In our study 56.25%

Table 1: Demographic features of patients

Age Group (years)	Females	Males	Total
1 – 5	0	2	2
5 – 8	6	11	17
8 – 11	18	26	44
11 – 14	7	10	17

Table 2: Detailed histories obtained

History	No. of patients
Fever	15
Sore throat	35
URI	7
Earache	17
Pain in abdomen	26
Intestinal Worm infestation	17
Dental infection	8
Aggravation after food (peanuts, eggs, cheese, Chinese food)	20
Drug intake (mefenamic acid, ibuprofen, nimesulide, ofloxacin, ampicillin, cotrimoxazole)	12
Atopy	12
Insect bite	9

Table 3: Detailed investigative profiles of patients

Investigations	No. of patients
Low hemoglobin	8
Leucocytosis / eosinophilia	29
Stool microscopy suggestive of ova / cysts	10
Pus cells in urine	16
Thyroid dysfunction	
Hyperthyroid	4
Hypothyroid	8
Thyroid antibodies (Antiperoxidase antibodies)	2 of 8 hypothyroid children
ASST positive	17
X ray PNS	Evidence of sinusitis 5
Raised IgE levels	15
Serology positive for Hepatitis-A	4

Table 4: Details of patients showing response to specific treatment

Response to treatment	No. of patients
Worms	5
upper respiratory tract infection	3
Urinary tract infection	2
Hypothyroidism	2
Dental caries	1
Hepatitis-A	1

had chronic urticaria; another study from a tertiary referral center from India reported that 80% children had CU out of 44 children.^[8] In this study, a definite association to an underlying cause was present in 37.5% of the patients, although suspicion was entertained in 66.25% of the patients, in the remaining there was no response seen on offering specific treatment. A review of 94 children with CU revealed that 58% became symptom-free for six months or more, whereas the cause in this study was determined in only 16%.^[9] In another report of 226 children (age: 1 – 14 years) with CU, only 21% were determined to have a causal factor.^[10] Only a few studies have been conducted on the etiological factors of urticaria in children and few of these studies in children showed that in more than 70% of the cases, the exact cause could not be identified.^[10,11]

In our study, ASST was positive in 17 of the 80 (21.25%) children; another study of ASST in children showed a positive reaction in 35.29% of the patients.^[12] In Western literature, a positive ASST was reported in 25 – 45% of adult patients with chronic idiopathic urticaria.^[13] A positive test is suggestive, but not the diagnostic of an autoimmune basis for a patient's urticaria. Confirmation is needed by *in vitro* testing of the patient's serum for anti-FcεR1 or anti-IgE autoantibodies.^[13] An autologous serum skin test is a fairly good baseline test for diagnosing suspected cases of autoimmune urticaria, particularly where a basophil histamine releasing test is not available. It has good sensitivity and an even better specificity for detecting autoantibodies, even in children.

Management of urticaria in children requires a detailed structured history, a complete review of systems, baseline investigations, and other specific *in vivo* and *in vitro* tests.

Various studies suggest that in a majority of pediatric patients, the history of a preceding infection, particularly respiratory infection, is obtained.^[5-7,13,14] In our study also, a majority (20% out of 32.25%) of the patients had infections as the underlying cause [Table 4].

Exhaustive work up with extensive laboratory, technical diagnostics, challenge tests and skin prick testing should be reserved for individual cases following detailed history. A well designed structured study is still in need to find the etiological factors of urticaria in children.

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