

Chronic idiopathic urticaria and atopy, is there any relation?

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ABSTRACT

BACKGROUND: The etiology of urticaria is known only in a minority of cases. Allergies to a wide variety of agents have been suspected, as well as hypersensitivity to food additives or drugs. Autoimmune reaction to immunoglobulin E (IgE) and to high-affinity IgE receptors on mast cells has been reported. The aim of this study was to evaluate serum IgE levels in the patients with chronic idiopathic urticaria, and its relation to atopy.

METHOD: 42 patients (19 males and 23 females), with an age range from 17 to 65 years, who suffered from chronic urticaria with a duration of 6 months to 5 years were included in this study. A history of atopy was documented for the patients and their relatives and serum IgE level was assessed.

RESULT: 24 patients (57.14%) had family history of atopy themselves or in their relatives. Twenty seven patients (64.29%) had elevated serum IgE levels. The range of IgE levels were 131-3474 U (geometric mean greater than 100 ku/l) and mean IgE level was 494.27 U.

CONCLUSION: The patients presenting with chronic idiopathic urticaria (CIU) along with elevated serum IgE should be investigated for atopy or other diseases that may be associated with elevated serum IgE.

KEYWORDS: Chronic idiopathic urticaria, Atopy, Atopic dermatitis, IgE,

INTRODUCTION

The etiology of chronic idiopathic urticaria (CIU) is unknown.^{1,2} There is no curative treatment for this disorder as we do not understand the mechanism that leads to the onset of the disease.¹ Several investigators suggested that an autoimmune mechanism might be involved in the pathogenesis of this disease.^{1,3} Hypersensitivity

to food additives or drugs, infections, gastric disorders have been regarded as possible etiologic factors in urticaria.⁴ Schocket AL⁴, reported that chronic idiopathic urticaria is an autoimmune reaction to immunoglobulin E (IgE) and later to high-affinity IgE receptors on mast cells.⁴ The degranulation of mast cells induced both by immunologic and non-immunologic mechanisms,

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followed by the release of histamine and different cytokines, seems to have an important role in the pathogenesis of chronic and recurrent urticaria.⁴ The similarity of symptoms and lesion pathology to allergen-induced skin reactions supports the idea that skin mast cell and blood basophil IgE receptor activation is involved. However, no exogenous allergen trigger has been identified.² The aim of this study was to evaluate serum IgE levels in the patients with chronic idiopathic urticaria, and its relation to atopy.

PATIENTS AND METHODS

42 patients were included in this study. Inclusion criteria included any patient who was clinically diagnosed as having chronic idiopathic urticaria. The patients were examined at the department of dermatology, Al-Hussein Hospital, at Al-Azhar University, from February 2006- to October 2007. Routine laboratory investigations including white blood cell count (WBC), hemoglobin (Hb), erythrocyte sedimentation rate (ESR), urine analysis and stool examination were done. The patients did not have any concomitant diseases or

infection and there was not any history of drug use. Total serum IgE levels of the patients were calculated. All the samples of blood for measuring of IgE were done in the same laboratory using the same equipment with similar protocols.

RESULTS

Forty two patients complaining of chronic urticaria with duration of 6 months to 5 years were included in the study. There were 19 (45.24%) male and 23 (54.76%) female, with an age range from 17 to 65 years; mean age of 33.59 years (Table 1). Routine laboratory investigations were negative or normal. No underlying disease was detected.

24 patients (57.14%) had family history of atopy such as atopic dermatitis, asthma or allergic rhinitis (Table 2). Twenty seven patients (64.29%) had elevated serum IgE levels (Table 3). The range of IgE levels were 151-3474 U (geometric mean greater than 100ku/1) and mean IgE level was 494.27 U. The remaining 15 patients (35.71%) had normal serum IgE levels.

Table 1 Relation between age and sex in patients with CIU

Age range / Sex	Male = 19	Female = 23
17 - 25	3	5
26 - 35	7	6
36 - 45	4	9
46 - 55	2	3
56 - 65	3	1

DISCUSSION

The majority patients with CIU appear to be atopic or suffer from an occult disease with elevated serum IgE levels. Immunoglobulin E is believed to be one of the major mediators of

immediate hypersensitivity reactions that underlie atopic conditions as well as urticaria.⁵ Twenty seven patients (64.29%) with CIU in our study had elevated serum IgE. In a study from Saudi Arabia, Serum IgE levels were also high in 57%

of patients with CIU.⁶

Earlier study from India had shown serum IgE levels to be significantly elevated in the allergic conditions as compared with healthy volunteers, indicated that IgE is an important mediator in allergic disorders.⁷

Total serum IgE concentrations were found to be high in patients suffering from atopic diseases (atopic dermatitis, asthma, allergic rhinitis), scabies, acute, chronic and physical urticaria, immediate-type allergies, psoriasis, pyogenic skin infections and alopecia areata.⁸ IgE-mediated allergic mechanisms are incriminated in certain cases of chronic urticaria, because elevated serum IgE levels are found in these patients.⁴ Episodes of acute urticaria / angioedema that occur in individuals with a personal or family history of asthma, rhinitis or eczema are presumed to be IgE dependent.⁹ A significant increase in both histamine and prostaglandins were seen when biopsy

specimens from urticaria patients and patients with a history of atopy were analyzed.⁴ Nassif A suggested that a high population of patients with chronic urticaria has an atopic background.¹⁰ The patients with CIU especially with family history of atopy and without concomitant diseases and associated with raised serum IgE should arouse suspicion of atopy because the atopy may cause chronic urticaria.

CONCLUSION

While the causes of CIU are seldom obvious, at least one of the causes may be atopy or other diseases that may be concealed and show high serum IgE. The patients present with CIU along with elevated serum IgE should be investigated for atopy or other diseases that may be associated with elevated serum IgE. However, a randomized control trial with more patients should be done to achieve the accurate results.

Table 2 Family history of atopy

S. No.	Type of Atopy	Number of patients with family history
1	Atopic dermatitis	7 (29.17 %)
2	Bronchial asthma	6 (25.00 %)
3	Allergic rhinitis	11 (45.83 %)
	Total	24 (100.00 %)

Table 3 Serum IgE level and atopic status in patients with CIU

IgE serum concentration	Number of CIU patients	Number of CIU patients with atopic history
Less than 100	15 (35.71%)	0 (00.00%)
100 - 199	7 (16.67%)	4 (16.67%)
200 - 3474	20 (47.62%)	20 (83.33%)
Total	42 (100.00%)	24 (100.00%)

REFERENCES

1. Ferrer M, Kaplan AP. Chronic urticaria: what is new, where are we headed. *Allergol Immunopathol* 2007; 35:57- 61.
2. Vonakis BM, Saini SS. New concepts in chronic urticaria. *Curr Opin Immunol* 2008; 20:709 -16.
3. Liutu M, Kalimo K, Uksila J, Kalimo H. Etiologic aspects of chronic urticaria. *Int J Dermatol* 1998; 37:515-9.
4. Schocket AL. Chronic urticaria: pathophysiology and etiology, or the and why. *Allergy Asthma Proc* 2006; 27:90-5.
5. Corry DB, Kheradmand F. Induction and regulation of the IgE response. *Nature* 1999; 405:B18-23.
6. Al-Nahdi M, Al-Qurain A. IgE level in Saudi Arabia. *Allerg Immunol(Paris)* 1989; 21:308-10.
7. Sharma S, Kathuria PC, Gupta CK, Nordling K, et al. Total serum immunoglobulin E levels in a case-control study in asthmatic/allergic patients, their family members, and healthy subjects from India. *Clin Exp Allergy* 2006; 36:1019-27.
8. Przybilla B, Ring J, Volk M. Total IgE levels in the serum in dermatologic diseases. *Hautarzt* 1986; 37:77-82.
9. Kaplan AP. Urticaria and angioedema. In:Wolff K, Goldsmith LA, Katz SI, Gilchrist BA, Stephen IG, Paller AS, Leffell DJ (Eds). In: *Fitzpatrick's Dermatology In General Medicine*, New York: McGrawHill; 2008:330-43.
10. Nassif A. Is chronic urticaria an atopic condition? *Eur J Dermatol* 2007; 17: 545-6.