

# Is There Correlation between Chronic Idiopathic Urticaria and Elevated Serum IgE? A Pilot Study

Mohammad Omidian, MD  
Ehsan Omidian, MD

Department of Dermatology,  
Jondishapour University of Medical  
Sciences, Ahwaz, Iran

Corresponding Author:  
Mohammad Omidian, MD  
Department of Dermatology, Jondishapour  
University of Medical  
Sciences, Ahwaz, Iran  
Email: momidian@yahoo.com

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## Abstract

**Background:** The etiology of urticaria is recognized only in a minority of cases. Allergies to a wide variety of agents have been suspected, as well as hyper reactivity to food additives or drugs. Recently, autoimmune reaction to immunoglobulin E (IgE) and later to high-affinity IgE receptors on mast cells has been reported. The aim of this study was to show elevated serum IgE levels in the patients with chronic idiopathic urticaria (CIU) so that the underlying disease and the cause of CIU may be atopic condition or an occult disease with raised serum IgE.

**Method:** Altogether, 57 patients (30 women and 27 men, with an age range from 14 to 75 years ; mean age of 35.86 years), who suffered from chronic urticaria with a duration of 3 months to 8 years were included in this study and serum IgE level was assessed.

**Result:** Thirty three patients had elevated serum IgE levels. The range of IgE levels were 114-3280 U (geometric mean greater than 100 ku/l) and mean IgE level was 411.39 U.

**Conclusion:** Although the causes of CIU are often not clear, at least one causes of CIU may be atopy or other diseases that may be hidden and show elevated 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. (*Iran J Dermatol* 2009; 12: 90-92)

**Keywords:** IgE, chronic idiopathic urticaria, urticaria

## Introduction

The etiology of chronic idiopathic urticaria (CIU) is unknown<sup>1-4</sup> and the causes of urticaria is recognized only in a minority of cases<sup>5</sup>, suggested that an autoimmune mechanism might be involved in the pathogenesis of this disease<sup>2-5</sup>. The etiology of allergies to a wide variety of agents have been suspected, as well as hyper reactivity to food additives or drugs. Hidden or overt infection, abdominal disorders, and in some cases, mental strain have also been regarded as possible etiologic factors in urticaria<sup>6</sup>. Recently, autoimmune reaction to immunoglobulin E (IgE) and later to high-affinity IgE receptors on mast cells has been reported<sup>6</sup>. The degranulation of mast cells induced both by immunologic and non-immunologic mechanisms, followed by the release of histamine and different cytokines, seems to have an important role in the pathogenesis of chronic and recurrent urticaria<sup>6</sup>. 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<sup>4</sup>. There is no curative treatment for this disorder and we do not understand the mechanism that lead to the onset of disease<sup>2</sup>. The aim of this study was to evaluate serum IgE levels in the patients with chronic idiopathic urticaria (CIU) so that the underlying disease and the cause of CIU may be atopic condition or other diseases that might be associated with elevated serum IgE.

## Patients and Methods

This pilot study was conducted on 57 patients. The patients were examined at the department of dermatology, Jondishapour university of medical sciences, Imam Hospital and private clinic during 2003-2005. Routine laboratory investigations including white blood cell count (WBC), hemoglobin(Hb), erythrocyte sedimentation rate(ESR), urine analysis and stool examination were negative or normal. Underlying disease was

not detected. 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 determined. All the samples of blood for measuring of IgE were done in the same laboratory using the same equipment with similar protocols. Inclusion criteria include any patient who clinically diagnosed as chronic idiopathic urticaria. The entire statistical analysis was carried out using the SPSS 13.

## Results

Fifty seven patients were included in the study, (30 (52.6%) women and 27 (47.4%) men, with an age range from 14 to 75 years ; mean age of 35.86 years), who suffered from chronic urticaria with a duration of 3 months to 8 years.

Thirty one patients (54.4%) had family history of atopy themselves or in their family such as eczema, asthma or allergic rhinitis. Thirty three patients (57.9%) had elevated serum IgE levels. The range of IgE levels were 114-3280 U (geometric mean greater than 100ku/1) and mean IgE level was 411.39 U. The remaining 24 patients (42.1%) had about normal serum IgE levels.

**Table 1.** Serum Ig E level in patients with CIU

N	Present	IgE unit Range
22	38,6	200-3280
11	19.3	100-199
24	42.1	Under 100
57 Total	100%	

## Discussion

Most patients with CIU that present here had elevated serum IgE. Serum IgE levels were also high in 57% of patients with CIU in Saudi Arabia <sup>7</sup>. It has been shown that most 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 such as urticaria <sup>8</sup>. The highest IgE concentrations were found in atopic disease (atopic eczema, extrinsic asthma, allergic rhinitis), scabies, ichthyosis vulgaris and disease of the prurigo group <sup>9</sup>. Furthermore, total IgE was elevated in acute, chronic and physical urticaria, immediate-type allergies, various kinds of eczema, in patients with characteristic features of atopy, psoriasis, pyogenic skin infections and alopecia areata <sup>9</sup>. In tropical countries, serum IgE levels have been attributed to

have a greater relation to intestinal helminthic infestation than to atopic disease <sup>10</sup>.

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 causes chronic urticaria. Suggested that a high population of patients with chronic urticaria have an atopic background <sup>11</sup>. Some triggers like food or medicine may stimulate the atopy and the symptom such as urticaria other than eczema or asthma may appears. IgE-mediated allergic mechanisms are incriminated in certain cases of chronic urticaria, because elevated serum IgE levels are found in these patients <sup>6</sup>. 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 <sup>12</sup>. 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 <sup>6</sup>. On the other hand, 80% of atopic patients have elevated serum IgE and 70% of them have family history of atopy <sup>13</sup>. Therefore, some of the patients with CIU may be atopic and do not have elevated serum IgE and without family history of atopy. Earlier studies in different world populations have 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 <sup>14</sup>. Criqui et al have also reported in an American population that men and women with first-degree relative of allergic subjects have higher IgE levels than healthy volunteers <sup>14</sup>.

Although the causes of CIU are often not clear, at least one of causes of CIU may be atopy or other diseases that may be hidden and show elevated 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. In this regard, it could be recommended that a randomized control trial with more patients should be done to reach more exact results in this area.

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