

ORIGINAL ARTICLE

Anti-thyroid Antibodies in Chronic Idiopathic Urticaria Patients

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ABSTRACT

Key words:

Chronic Idiopathic Urticaria (CIU), Anti-thyroid antibodies, Autoimmune Urticaria (AIU), Autoimmune thyroiditis

Background: Chronic Idiopathic Urticaria (CIU) is defined as recurrent hives occurring for at least 6 weeks. In the majority of cases, there is no identifiable underlying etiology despite extensive evaluation. It was reported an association between autoimmune thyroiditis and CIU. **Objectives:** This study was carried out to evaluate the relation between anti-thyroid antibodies and patients and chronic idiopathic urticaria. **Methodology:** This study was conducted in Allergy and Immunology unit in Zagazig University. In this study, 40 patients suffered from chronic idiopathic urticaria as a case group were selected and compared to a control group of 40 healthy individuals. The anti- thyroid antibodies, total IgE and ASST were studied in the both groups. **Results:** We reported significant difference regarding anti-thyroid antibodies, total IgE and ASST between the control group and the patient group (P=0.000). **Conclusion:** The prevalence of anti-thyroid antibodies was high in the patients suffering from chronic idiopathic urticaria.

INTRODUCTION

In 1769, William Cullen introduced the word "urticaria" as transient edematous papule with itching. Urticaria affects 25% of population¹. It is characterized by lesions named the wheals affecting the skin and mucous memberanes².

In chronic idiopathic urticaria (CIU), there is no identifiable circulating factor was found. Pathogenic mechanisms remain unclear but might involve local generation of mast cell-activating factors or mast cell dysfunction³.

The gold standard test for detecting these functional autoantibodies in the patients suffering from CIU is the basophil histamine release assay (BHR). This test is difficult to be standardized, time consuming and requires fresh basophils from healthy donors. ASST is a rapid, reliable in vivo test to differentiate between patients having circulating functional auto-antibodies and those without⁴.

50% of patients suffering from chronic urticaria exhibited significantly elevated levels of serum total IgE as compared to healthy control subjects. This raises the possibility that in CU, mast cells may be activated by allergens that bind to high affinity receptor of the specific IgE. But aeroallergens are not the common allergens of CU. Patients suffer from autoimmune urticaria (AIU) were found to be characterized by a lower serum IgE than others. The value of this finding is unclear⁵.

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Leznoff et al.⁶ reported an association between thyroid autoimmunity and CIU, and proposed that there is a 'syndrome' of autoimmune thyroid disease and CU and angio-oedema. The anti-thyroid antibodies could be found in 35% of these patients. There is association between AIU and autoimmune thyroiditis. Symptomatic thyroid disease, most frequently Hashimoto's thyroiditis, may be seen, while Graves' disease is less common⁷.

Patients might have clinical hypothyroidism, or hyperthyroidism. However, most patients are classified as euthyroid. Literature demonstrated segregation of anti-thyroid antibodies with AIU rather than CIU⁸.

Some authors suggest the genetic predisposition in that association. The particular major histocompatibility complex (MHC) alleles can contribute to the autoimmunity as they are inefficient at displaying self-antigens. As a result, this lead to impairment in the negative selection of T cells, also the peptide antigens presented by these MHC alleles fail to activate regulatory T cells⁷.

METHODOLOGY

Subjects:

This study was conducted at Allergy and Immunology unit in Medical Microbiology and Immunology Department, Faculty of Medicine, Zagazig University, during the period from 2014 and through 2015.

Our sample size was 80 subjects divided into 40 healthy individuals and 40 patients of CIU.

An informed written consent was taken from all subjects. Full medical history was taken with special stress on any evidence suggesting the cause of chronic

urticarial (CU). Thorough clinical examination was applied to all patients.

Methods:

All subjects in the study were subjected to the following: routine investigations (CBC, stool analysis, urine analysis, helicobacter pylori antibody, ALT, AST, creatinine, uric acid, TSH, ANA and anti-thyroid antibodies), intradermal skin test to rule out allergic causes of CU⁹, autologous serum skin test (ASST)¹⁰, and quantitative measurement of total IgE by using a commercial ELISA kit (Calbiotech, USA).

RESULTS

Data were collected, entered and analyzed by using SPSS version 22 (SPSS Inc., Chicago, Illinois, USA).

Half of the cases was negative for the anti-thyroid antibodies while all the controls were negative. The difference was statistically significant (P=0.000). The median of total IgE in the case group was higher than the control group. The difference was statistically significant (P=0.000). Majority of the cases was positive for ASST while majority of the controls was negative. The difference was statistically significant (P=0.000).

Table 1: Clinical characteristics of studied participants regarding anti-thyroid antibodies

Variable		Group		Cases No=40		Controls No=40		Chi-Square test	P-value
		Negative	Positive	No	%	No	%		
Anti-thyroid antibodies	Negative	20	50	40	100	26.667	0.000*		
	Positive	20	50	0	0				

Table 2: Clinical characteristics of studied participants regarding total IgE

Variable	Group	Cases No=40	Controls No=40	Mann-Whitney U test	P-value
Total IgE (IU/ml) Mean ± SD		178.26 ± 336.91	26.52 ± 18.58	368.000	0.000*
Median		70.30	29.00		
Range		(2060-1544.00)	(1.60-56.00)		

Table 3: Clinical characteristics of studied participants regarding ASST

Variable		Group		Cases No=40		Controls No=40		Chi-Square test	P-value
		Negative	Positive	No	%	No	%		
ASST	Negative	16	40	32	80	13.333	0.000*		
	Positive	24	60	8	20				

DISCUSSION

Nowadays, the theory of autoimmunity and disturbed functions of basophils are strongly recommended in the pathogenesis of CIU¹¹. ASST is the only screening test for functional autoantibodies in CIU patients. Moreover, the positive results of this test is suggestive but not diagnostic of the autoimmune basis¹².

24 out of 40 chronic urticaria patients was positive for ASST. This means that majority of the cases in this study was positive (60%), However, Verma et al.¹⁰ reported that ASST was found positive in 36(18%) patients. Anzelike and his co-workers¹³ found that ASST was positive in 43 (33.6%).

This difference in percent of ASST in our study and other authors could be explained by our small sample

size (n=40) and their large sample size (n=200, 128 respectively).

Anti-thyroid antibodies are the most common non-urticarial antibodies found in patients with CIU. Their presence is thought to demonstrate the propensity of these patients to develop functional autoantibodies. They are not thought to cause the disease although there have been case reports of urticaria resolution with thyroid hormone supplementation and their association with CIU may be an epiphenomenon without any clinical implication in the disease severity¹⁴.

In our study, the difference was statistically significant in the positivity of anti-thyroid antibodies among the case and control groups (P=0.000). This result is consistent with the findings of other studies^{8,14,15,16,17}.

This was explained by the segregation of anti-thyroid antibodies from IgE antibodies because of B-cells hyperreactivity. However, other authors did not detect a difference between them probably as a result of insufficient sample size as thyroid autoimmunity occurs in less than 6% of the general population⁶.

We found that 50% of CIU in our study had positive anti-thyroid antibodies. However, other studies reported that the prevalence of anti-thyroid antibodies ranged from 6% to 30 % in CIU^{6,14,15,17,18}.

The explanation for these mixed different results in the previous studies could be associated with the different duration of the disease in CIU patients¹⁷.

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