

Report

The relationship between *Helicobacter pylori* IgG antibody and autologous serum test in chronic urticaria

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Abstract

Background In chronic urticaria, suspicious factors are *Helicobacter pylori* (HP) infection and autoimmunity, as well as other etiologic agents. Autologous serum injection is the first step to identify autoimmune urticaria. Our study was performed to determine the prevalence of HP infection in patients with chronic urticaria, and to evaluate the results of autologous serum testing in chronic urticaria patients who had HP antibodies.

Methods HP immunoglobulin G (IgG) antibody was defined by an immunochromatographic method in 61 chronic urticaria patients and 15 healthy persons. Autologous serum testing was performed in 32 chronic urticaria patients.

Results HP IgG antibody was found to be positive in 41% of chronic urticaria patients and 26% of healthy controls ($\chi^2 = 7.82$, $P = 0.005$). Autologous serum testing was positive in 40% of chronic urticaria patients who had HP IgG antibody. This ratio was 14.3% in chronic urticaria patients who did not have HP IgG antibody ($\chi^2 = 9.23$, $P = 0.002$).

Conclusions In this study, autologous serum testing was found to highly positive in chronic urticaria patients with HP IgG antibody, but the relationship between autoimmunity and HP infection requires further investigations.

Introduction

Urticaria is one of the most ubiquitous of skin diseases: up to 15–25% of the population will have at least one bout of urticaria and one-quarter of these will experience an episode of the chronic form. Although urticaria is not life-threatening (in the vast majority of cases), patients are frightened by it and in considerable distress from the pruritus and uncomfortable and disfiguring lesions, all of which lead to a poorer quality of life and impairment of the ability to function and work. The condition is one of the most frustrating for both the primary care physician and the dermatologist as, although the diagnosis is straightforward, the etiology of urticaria is recognized only in a minority of cases. All too often, we feel compelled to refer the patients to an allergist, only to see them return with a regimen of steroids or antihistamines, without the causative agent having been identified. This situation emphasizes the need for better definition of the culprits and underlying causes of this troublesome disease.

A number of factors have been identified as possibly being important in the pathogenesis of chronic urticaria: allergies to a wide variety of agents, such as foods, food

additives, or drugs,^{1–4} hidden or overt infections,^{4–9} and autoimmune reaction to immunoglobulin E (IgE) and to high-affinity IgE receptors on mast cells.^{10,11}

A possible relationship between chronic urticaria and *Helicobacter pylori* (HP) infection of the upper gastrointestinal tract has recently been suggested. The present study was performed to determine the prevalence of HP infection in patients with chronic urticaria, and to evaluate the results of autologous serum testing in chronic urticaria patients who had HP IgG antibodies.

Materials and methods

Helicobacter pylori IgG antibody was identified by an immunochromatographic method¹² in 61 chronic urticaria patients and 15 healthy persons. Autologous serum testing was performed in 32 of these patients. Intradermal injections of 0.1 mL of autologous serum and 1 : 1 and 1 : 10 diluted autologous serum and physiologic saline were administered to the patients' forearms (flexor sides). An erythema size of 10 mm and a papule size of 5 mm or greater in diameter than the physiologic saline test area were accepted as positive.¹³

Table 1 *Helicobacter pylori* IgG antibody results

	<i>Helicobacter pylori</i> IgG (+)	<i>Helicobacter pylori</i> IgG (-)	Total
Patients	25	36	61
Controls	4	11	15

$\chi^2 = 7.82$; d.f.: 1; $P = 0.005$.

Table 2 The relationship between autologous serum testing and *Helicobacter pylori* IgG antibody

	Autologous serum test (+)	Autologous serum test (-)	Total
<i>Helicobacter pylori</i> IgG (+)	4	6	10
<i>Helicobacter pylori</i> IgG (-)	3	19	22

$\chi^2 = 9.23$; d.f.: 1; $P = 0.002$.

Results

Helicobacter pylori IgG antibody was found to be positive in 41% of the chronic urticaria patients and in 26.6% of the healthy controls. The difference between the groups was statistically significant (Table 1).

Autologous serum testing was positive in 40% of the chronic urticaria patients with HP IgG antibody and in 14.3% of patients without HP IgG antibody. The difference between the groups was statistically significant (Table 2).

Discussion

In the present study, HP IgG antibodies were found in 25 (41%) out of 61 patients with urticaria, compared to four (27%) of 15 controls. We used an immunochromatographic method (FlexSure HP) to detect antibodies against HP. This method is simple to perform and yields rapid and accurate qualitative results. It has a 94% sensitivity, an 88% specificity, and 91% accuracy relative to the [¹³C]urea breath test. It is well suited for screening studies like ours.

The role of HP infection of the upper gastrointestinal tract as a possible causative agent in chronic urticaria is still controversial. While several authors found a significantly higher prevalence of HP infection in patients with urticaria,^{9,12-18} others did not.^{15,19-21} Furthermore, several authors demonstrated that HP eradication was associated with a remission of urticaria, suggesting a possible role of HP in the pathogenesis of this skin disorder,^{9,16-18} while other researchers produced the opposite results, namely no

correlation between treatment and the remission ratio.^{14,15,20-22}

The following factors may explain the discrepancy between the results of these studies.

1 The different methods used for the detection and establishment of HP infection. While we used IgG antibodies, it is well known that HP can lead to IgA, IgM, or IgE, and no IgG antibodies; thus such an infection could escape detection.

2 HP antibodies are associated with active gastritis in only some patients; thus, the assessment of antibodies does not indicate active disease.

3 The resistance of HP to therapy and recurrences shortly after successful therapy might be the main reason for the lack of association between eradication therapy and remission of the urticaria.

We believe, however, that although urticaria is a very well-defined clinical entity, it has many different pathomechanisms and there are dissimilarities among patients. It would follow that the different results found by various groups of authors are not merely due to the use of different methods or assessment criteria, but may indicate true differences between populations.

We wish to emphasize that the lack of correlation between HP eradication and remission of urticaria found by other authors does not necessarily indicate a lack of a causal relationship between the two. Many drug-induced autoimmune diseases (e.g. systemic lupus erythematosus (SLE), pemphigus, psoriasis, etc.) continue to progress even after drug withdrawal. Once induced or triggered by a drug, the biological behavior and course of the disease do not differ from those of an idiopathic disease. The same might be true for chronic urticaria. HP infection might trigger the production of IgE antibodies by cross-reaction between HP antigens and gastric parietal cells, or by causing inflammation in the gastrointestinal tract, which might facilitate the absorption of antigens or unmask existing antigens. Once this occurs, the production of IgE antibodies responsible for the urticarial symptoms might continue even after the eradication of HP.

On the other hand, remission of urticaria after HP eradication does not necessarily point towards a causal relationship either, as the triple antimicrobial therapy might eradicate other infections as well.

One-third of patients with chronic urticaria have circulating functional autoantibodies against the high-affinity IgE receptor FcεRI, or IgE, and this forms the basis for a positive autologous serum skin test.²³ In our study, 40% of patients with HP IgG antibodies showed a positive autologous serum test, compared to 15% of patients without HP IgG antibodies, indicating that the presence of HP might predispose to the development of other associated autoimmune phenomena.

The results of the present study, together with those of previous ones, indicate that patients with chronic urticaria have a higher rate of HP infection. Although a causal relationship between HP infection and urticaria cannot be firmly established from the available data, they provide substantial evidence that otherwise unexplained cases of chronic urticaria might be associated with HP. We believe that the results also warrant the inclusion of screening for HP infection in the diagnostic management of chronic urticaria.

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