

Original Article

Association between Chronic Idiopathic Urticaria and *Helicobacter Pylori* Infection

S Akter¹, MAU Sikder², MAH Chowdhury³, SK Adhikary⁴, RLD Banik⁵, MMA Aziz⁶

Abstract:

Chronic idiopathic urticaria (CIU) is a recalcitrant skin disease characterized by pruritic wheals lasting more than six weeks in the absence of a physical cause. A case-control type of analytical study was conducted from January 2012 to August 2012 on patients of chronic idiopathic urticaria attending the outpatient department of Dermatology and Venereology, Bangabandhu Sheikh Mujib Medical University, Dhaka. The objective of the study was to see the association between chronic idiopathic urticaria and *Helicobacter pylori* infection. In serum, IgG positive individuals, female covers about two-thirds (14 respondents with 73.3%) than male counterparts (5 respondents with 26.3%). Among the IgG negative individuals, females were again more in percentage (63.6%) and males were 36.4%. Serum IgG for *H. Pylori* positive respondents were highest among the students (42.1%) followed by housewives (31.6%) and in IgG negative individuals, the same trend exists. When we considered education level for IgG positivity, it was found that graduate and above educated respondents showed higher results (42.1%) and SSC level showed next incidences (26.3%). In IgG negative group, the same trend exists. We found the same positivity for IgG of *H. pylori* among the different food intake, heat, and sunlight exposed history respectively whereas food intake history covers more in IgG negative individuals. Most of the IgG positive respondents were ill-looking (94.7%), though IgG negative individuals were also ill-looking. Chronic idiopathic urticaria is a disorder that often baffles dermatologists and allergists alike. Without a known cause, it is nearly impossible to prescribe an effective treatment.

Key words: Chronic idiopathic urticaria, *H. pylori*, IgG

Introduction:

Chronic idiopathic urticaria (CIU) is a frequent immunological skin disease. Several etiologies have been found though 17% of the cases remain obscure. The possibility of an autoimmune basis to chronic idiopathic urticaria (CIU) is now widely explored

affecting 15-20% of the population. Females are more commonly affected than males. Possible eliciting factors of CIU revealed focal infection as the cause of urticaria in 43% of the patients of which *Helicobacter pylori* (HP) was responsible for 60%¹. Some observations have suggested a possible aetiopathogenic role of HP in some cases of CIU. Some studies have shown a high (55-62%) prevalence of this infection among chronic idiopathic urticaria patients but there was no information regarding the prevalence rate in the general population². In some studies, the association between idiopathic chronic urticaria and *H.Pylori* remain unknown. If the urticaria regresses after the *H.Pylori* is eradicated then *H.Pylori* will be definite. There have been no response on the relationship between urticaria with a high titer of anti *H.Pylori* IgG antibodies in the serum and eradication therapy³. The pathogenesis of CIU is not completely understood. However, mast cell degranulation and histamine release have been thought to play a central role. Most patients with CIU have no specific allergic trigger for mast cell activation and when no causes can be identified, the final diagnosis is chronic idiopathic urticaria (CIU). This condition is thought to affect at least 0.1% of the population. The concept of autoimmune urticaria as one

1. Dr. Shireen Akter, FCPS (Dermatology and venereology), Assistant Professor, Department of Dermatology and venereology, Khulna Medical College.
2. Prof. Md. Akram Ullah Sikder, FCPS (Dermatology and venereology), Professor, Department of Dermatology & Venereology, Bangabandhu Sheikh Mujib Medical University, Dhaka.
3. Dr. M. Abu Hena Chowdhury, FCPS (Dermatology and venereology), Associate Professor, Department of Dermatology & Venereology, Bangabandhu Sheikh Mujib Medical University, Dhaka,
4. Dr. Sahadev Kumar Adhikary, FCPS (Dermatology and venereology), Medical Officer, Department of Dermatology and Venereology, Khulna Medical College Hospital.
5. Dr. Ratan Lal Dutta Banik, MBBS, MD (Dermatology), Assistant Professor (Skin & VD), Khulna Medical College.
6. Dr. Masood Mohammad Abdul Aziz, M.Phil. (Biochemistry), Assistant Professor and Head, Department of Biochemistry, Khulna City Medical College.

Address of correspondence :

Dr. Shireen Akter, FCPS (Dermatology and venereology), Assistant Professor, Department of Dermatology & Venereology, Khulna Medical College. E-mail: drsakterderm@gmail.com

of the causes of CIU has evolved over the past decade⁴. This is a subset of patients with CIU who processed functional antibodies against the high-affinity IgE receptor, or less commonly IgE in their blood. These autoantibodies were estimated to be present in at least 30-50% of patients with CIU. There were some reports of immunogenetic differences between Oriental and Caucasian populations, resulting in differences in the clinical presentation and frequency of autoantibodies detected in some autoimmune diseases⁵. A possible pathogenetic role of *H. pylori* infection has been suggested in a number of extra-intestinal diseases both vascular and autoimmune, cutaneous, and of other types. Because of the existence of some correlation between CIU and infection, a number of authors have addressed the possibility that *H. pylori* infection might be relevant in CIU⁶.

Methods and Materials:

A Case-control type of analytical study was conducted in the Department of Dermatology and Venereology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbagh, Dhaka. Patients of Chronic Idiopathic Urticaria (urticaria of >6 weeks) with no identifiable cause were selected as case and patient without urticaria was taken as control, attending the outpatient department of Dermatology & Venereology at Bangabandhu Sheikh Mujib Medical University, Dhaka. The total sample size was 60 out of the 30 were patients (Group A) and 30 were controls (Group B).

A purposive type of non-probability sampling method was followed in this study.

Results:

In Group A female was predominant than the male which is 21 and 9 respectively. Whereas, in Group B male is predominant than the female which is 16 and 14 respectively. In Group A 19 were tested positive for serum IgG for *H. pylori* which included 14 women and 5 men and 11 were tested negative among them 7 were female and 4 were male. On the contrary, in Group B 11 patients were tested positive and 19 were negative for IgG for *H. pylori*. Out of 35 women, 20 were tested positive and 15 were tested negative. Conversely, out of 25 men, 10 were tested positive and 15 were tested negative for serum IgG for *H. pylori* (Table-I).

Firstly, in age group under 20, 7 persons were the cases, whereas 10 persons were controls where 6 were tested positive and 11 were tested negative for serum IgG. Secondly, for the age group 21-30, in Group A had 12 and in Group B had 13 which had the highest participants where 8 were tested positive and 17 were

tested negative. Thirdly, age between 31 and 40 had 4 and 6 participants were in Group A and Group B respectively where 8 were tested positive and 2 were tested negative. Finally, patients over 41, surprisingly had 7 fold more cases than the control, unfortunately, all of them tested positive for serum IgG for *H. pylori* (Table-II).

While considering the occupation, students are the predominant in both groups, consisting 15 (8 tested positive) and 17 in the case and control respectively where 12 tested positive and 20 tested negative. The second-largest patients were housewives where 7 were cases (6 tested positive) and 6 were controls where 10 tested positive and 3 tested negative. Service holders were the third-largest group where 4 (2 tested positive) were in Group A and 6 were in Group B where 4 tested positive and 6 tested negative. Lastly, the businessmen were the smallest group where 4 (3 tested positive) patients in Group A compared to 1 in Group B where 4 tested positive and 1 tested negative for serum IgG for *H. pylori* (Table-III).

Table I: Distribution of patients according to sex (n=60)

Sex	Serum IgG for <i>H. pylori</i>		p value
	Positive	Negative	
Male	10 (33.3)	15 (50.0)	0.190
Female	20 (66.7)	15 (50.0)	
Total	30(100.0)	30(100.0)	

*Chi-square test was done to measure the level of significance. The figure within parentheses indicates in percentage.

Table II: Distribution of patients according to age group (n=60)

Age (Yrs)	Serum IgG for <i>H. pylori</i>		p value
	Positive	Negative	
20	6 (20.0)	11 (36.7)	0.001
21 – 30	8 (26.7)	17 (56.7)	
31 – 40	8 (26.7)	2 (6.7)	
41	8 (26.7)	0 (0.0)	
Total	30 (100.0)	30(100.0)	
Mean ± SD	31.10 ± 11.26	21.90 ± 6.49	

*t-test was done to measure the level of significance. Figure within parentheses indicates in percentage.

Table III: Distribution of patients according to the occupation (n=60)

Occupation	Serum IgG for <i>H. pylori</i>		p value
	Positive	Negative	
Service	4 (13.3)	6 (20.0)	0.047
Housewife	10 (33.3)	3 (10.0)	
Student	12 (40.0)	20 (66.7)	
Business	4 (13.3)	1 (3.3)	
Total	30 (100.0)	30 (100.0)	

*Chi-square test was done to measure the level of significance. Figure within parentheses indicates in percentage.

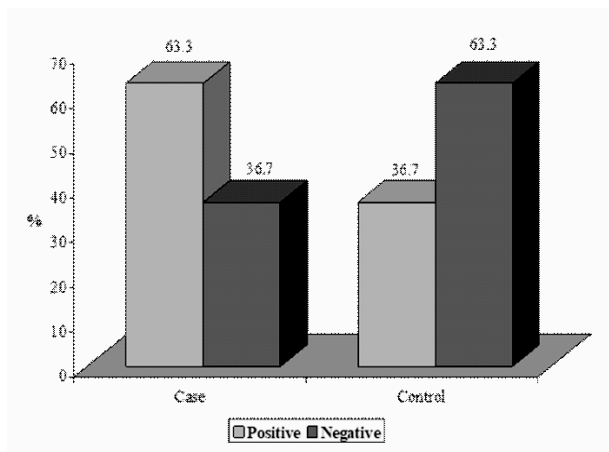


Figure 1: Bar diagram of patients according to Serum IgG for *H. pylori*

Discussion:

In our study, the distribution of patient according to sex shows, in Group A female is predominant than the male which is 21 (70.0%) cases and 9 (30.0%) cases respectively. In Group B male is predominant than the female which is 16 (53.3%) cases and 14 (46.7%) cases respectively. The difference between these two groups is not statistically significant (p=0.067). In Group A less than 21 years of age group belongs 7 (23.3%) cases, 12 (40.0%) cases in 21-30 years of age group, 4 (13.3%) cases in 31- 40 years of age group, and 7 (23.3%) cases in 41 to the above group. In Group B less than 21 years of age group belongs 10 (33.3%) cases, 13 (43.3%) cases in 21-30 years of age group, 6 (20.0%) cases in 31- 40 years of age group and 1 (3.3%) case in 41 to the above group. The Mean ± SD of Group A and Group B are in 28.86 ± 12.12 and 24.13 ± 7.37 years respectively. The difference between Group A and Group B is not statistically significant (p=0.073). Majid RM et al⁷. in their study two hundred patients were enrolled (100 cases and 100 controls). In both groups, 58% were male and 42% were female.

Regarding marital status, in Group A majority are single which is 19 (63.3%) cases, and married is 11 (36.7%) cases. In Group B majority are single which is 21 (70.0%) cases and married is 9 (30.0%) cases. The difference between Group A and Group B is not statistically significant (p=0.584). When we searched the positivity for IgG levels to detect *H. Pylori*, it was found that, in the case of serum IgG positive respondents, female respondents (66.7%) were just double than the male (33.3%) counterparts. When we searched the positivity for IgG levels to detect *H. Pylori*, it was found that, married persons (10 respondents with 52.6%) showed more positivity than the unmarried ones (9 persons with 47.4%). In Group A majority are student which is 15 (50.0%) cases followed by housewives, business and service holders which are 7 (23.4%) cases, 4 (13.3%) cases, and 4 (13.3%) respectively. In group B majority are student which is 17 (56.7%) cases followed by service, housewife, and business which are 6 (20.0%) cases, 6 (20.0%) cases and 1 (3.3%) case respectively. To know the incidence of serum IgG for *H. Pylori* amongst the different occupation of the respondents, it was seen that the students have the highest percentage (42.1%) of positive serum IgG followed by housewives (31.6%). Distribution of patients according to education shows higher graduate level in cases was 43.3% but in controls that were 33.3%. Then HSC level respondents were higher percentage in the control group which was 53.3% than cases (20%). A representative epidemiological study conducted by valsecchi R et al⁸ in Italy 31(62%) were positive with *H.pylori*.

Distribution of sex for positivity of IgG for *H. Pylori* shows more (14 persons with 73.7%) were in female respondents than male respondents (5 respondents with 26.3%). Among the 11 negative results, 7 respondents (63.6%) were females and 4 respondents (36.4%) were males. Whereas when we count the positivity of serum IgG for *H. Pylori*, it was found that, the higher educated persons were more positive (42.1%) for serum IgG (Graduate and above) followed by SSC levels where positivity was 26.3%. The primary level and the HSC level showed the same results (15.8%) respectively. One of our important diagnostic tools was to see the IgG level in serum to detect *H. Pylori* infestation among the patients, so this distribution of patients according to serum IgG for *H. pylori* shows that about 63.3% cases (19 respondents) were positive for IgG and 11 patients (36.7%) were negative. On the contrary, among the controls, 36.7% (11 respondents) were positive for IgG. Amongst the healthy individuals, serum IgG for *H. Pylori* infestation was found more in the case of average body built ones (78.9%) than the good body built ones (21.1%). The same type of inference can be drawn in the IgG negative individuals. Lab investigations among the total study population reveal Serum IgE (IU/ml) level was within

the normal range among the respondents. Mean IgE was 633.42 and SD was ± 575.92 . Distribution of cases according to lab investigations in case of serum IgG level for *H. Pylori* presents Serum IgE (IU/ml) level were mean 632.26 with SD ± 631.07 in positive IgG cases and mean 635.22 with SD ± 508.28 . Table and diagram depict the distribution of respondents according to the sex of IgG value for *H. Pylori* estimation that more female (14 respondents) were positive (73.7%) than male ones (26.3%). Among the cases, the highest number was found aged (≥ 41 years) about 36.8% followed by middle-aged (21 - 30 years) about 31.6%. And the control group shows middle-aged (21-30 years) about 54.5%. Distribution of cases according to marital status shows married persons were more positive (10 respondents; 52.6%) for IgG of *H. Pylori* than the single ones (9 respondents; 52%). In our study, major respondents were students (42.1%) who were positive for serum IgG for *H. Pylori* followed by housewives (31.6%). Business men were 15.8% and service personnels were 10%. The IgG levels for *H. Pylori* show all food intake, heat, and exposure to sunlight took the same percentage (89.5%) for positive to IgG than the negative results ones respectively. The serum IgG positive respondents were ill-looking (18 respondents, 94.7%) than the healthy one (1 respondent, 5.3%), though 10 respondents (90.9%) IgG negative patients were also ill-looking found in my study. The relationship with anemia and the IgG positivity for *H. Pylori* reveals that a significant number (14 respondents, 73.7%) were with normal Hb% and a few percentages (26.3%) were found anemic among the total IgG positive persons.

Conclusion:

Helicobacter Pylori have a role in patients with chronic idiopathic urticaria. The results of the study suggest that *H. Pylori* infection should be included in the diagnostic workup of patients with no response to habitual treatment for CIU. In this small case-control study, it was evident that chronic idiopathic urticaria patients were more associated with positive serum IgG for *H. Pylori* and female respondents had more association than the male counterparts.

References :

1. Allen PK. Urticaria and angioedema. Mid-delton's allergy principles and practice. 6th ed. Edinburgh: Mosby 2003; 1004-18.
2. Kaplan A. Urticaria and Angioedema. In: Middleton E Jr, Reed CE, Ellis EF, Adkinson NFJR, Yunginger JW, Busse WW, editors: Allergy Principles and Practice, Vol 5, 2nd ed, St Louis, 1998. p 105-8.
3. Yoshimasu T, Furukawa F. Eradication Therapy for urticaria with high titers of anti *H. Pylori* IgG antibody. Allergol. Int. 2014; 63:37-40.
4. Grattan CE, Sabroe RA, Greaves MW. Chronic urticaria. J Am Acad Dermatol. 2002; 46:645-57.
5. Koehn GG, Thorne EG. Urticaria and Viral hepatitis. Arch Dermatol. 1972; 106:422.
6. Ljunggren B, Moller H. Hepatitis presenting a transient urticaria. Acta Derm Venereol. 1971; 51:295.
7. Majid RM, Abbar Y, Nastaran SA, Nasrollah M, Sonia I. Relationship between *Helicobacter pylori* and chronic urticaria: effectiveness of *Helicobacter pylori* eradication. Postepy Dermatol Alergol. 2015 Feb; 32(1):15-20.
8. Valsecchi R, Pigatto P. Chronic urticaria and *Helicobacter pylori*. Acta Derm Venerol. 1998; 78:440-2.