

Frequency of Helicobacter pylori infection in patients of chronic spontaneous urticaria

Yousuf Abd Mallick, Sidra Akhlaq Hussain*

Dermatology Unit, The Indus Hospital, Main Campus-Korangi, Karachi

* Dermatology Unit, Abbasi Shaheed Hospital, Gulshan-e-Iqbal, Karachi

Abstract

Objective To calculate the frequency of Helicobacter pylori infection by stool antigen assays in patients of chronic spontaneous urticaria.

Methodology The study was cross-sectional & conducted in Dermatology outpatient department of Saifee Hospital Trust, Karachi, Pakistan. The duration of study was six months i.e. from July 1st 2017 to December 31st 2017. Clinically diagnosed, 130 adult cases of chronic spontaneous urticaria of either gender, age 18 years and above, having urticaria for 6 months or more were included via non-probability consecutive sampling technique. Stool for H pylori antigen assays were performed and results were recorded.

Results In our study, the mean age was 33.4 ± 13.0 years. Mean duration of symptoms was 1.5 years. Out of 130 patients, 98 (75.4%) were female and 32 (24.6%) were male with a female to male ratio of 3:1. In our study, those who have urticaria for longer duration (more than 1 year) were more likely to have H pylori infection as compared to those who have shorter duration ($P < 0.009$). Overall, stool for H pylori antigen test was positive in 39 (30%) patients with urticaria ($P < 0.001$).

Conclusion The number of cases with positive stool for H pylori antigen among chronic spontaneous urticaria patients is significantly higher and it is one of the main aetiopathogenic factors for this disease. Cases of urticaria should be routinely screened for H pylori infection and eradication therapy will be useful for control of disease.

Key words

Chronic spontaneous urticaria, H pylori, stool for H pylori antigen, frequency.

Introduction

Chronic spontaneous urticaria (CSU) is a common skin disorder and it's characterized by recurrent development of transient, itchy, erythematous weals (hives) daily or almost daily for at least 6 weeks duration.¹ It affects almost 0.5% to 5% of the world's population in

different studies.² The most commonly affected age group is between 20 to 40 years and women are slightly more commonly reported than men.³ There are various causes and factors associated with CSU like infections and infestations, drugs, autoimmune diseases, foods and food additives, dairy products, allergens, cosmetics, alcohol and genetic predisposition (HLA DR4 and HLA DR8).⁴

In the last two decades, many studies pointed towards association and possible link of Helicobacter pylori with pathogenesis of CSU. Helicobacter pylori (H pylori) is a ubiquitous bacterium. Nearly half of the world's population

Address for correspondence

Dr. Yousuf Abd Mallick, MBBS, FCPS
Consultant Dermatologist, Dermatology Unit
The Indus Hospital, Main Campus-Korangi,
Karachi, R-386, Sector 16 A, Buffer Zone
(Gulshan-e-Waseem), North Karachi, Karachi.
Ph: 03432687716
Email: Dryousuf2006@yahoo.com

is supposed to be carriers of *H pylori*.⁵ Majority of the infections with *H pylori* are acquired during childhood.⁶ The prevalence in developed countries is 20% to 40% while in developing countries it's 50% to 80%.^{7,8} It is observed that the prevalence of *H pylori* increases with lower socioeconomic status and with increasing age.⁷

The investigations which are used to diagnose *H pylori* infection are divided into invasive and non-invasive tests. The invasive procedure involves endoscopy and biopsy from the stomach, which can be used for histopathology, culture of *H pylori*, antibiotic susceptibility testing, rapid urease test and polymerase chain reaction (PCR) for detection of *H pylori* and its strains.⁹ Among the non-invasive ones; serology, urea breath test (UBT) and stool for *H pylori* antigen (SHPAg) tests are commonly used all over the world. The SHPAg tests can detect traces of *H pylori* antigen even in extremely small amounts in the feces. It is a reliable and very accurate means to detect active *H pylori* infection and also helps in confirmation of its cure after treatment.¹⁰

Aim of the study

The aim of this study was to calculate the frequency of *Helicobacter pylori* infection by using stool antigen assays in patients of chronic spontaneous urticaria in our population.

Methodology

This cross sectional study was conducted in OPD of Dermatology department, Saifee Hospital Trust, Karachi from 1st July 2017 to 31st December 2017. The cases were selected via non probability consecutive sampling technique. We took a sample of 130 adult subjects meeting the selection criteria for this study after written informed consent.

Cases of CSU were diagnosed clinically, age 18 years and above, of either gender with history of chronic urticaria for at least 6 months, and off from all types of treatment for at least 1 month were included. All these patients were otherwise healthy and had no known medical comorbidities. Patients already diagnosed with peptic ulcer, previously diagnosed *H pylori* cases, patients on proton pump inhibitors, H₂ receptor blockers, antihistamines, antibiotics, NSAIDs, steroids and immunosuppressive medicines, pregnant and lactating mothers were excluded.

Stool samples were collected in sterile containers and assayed qualitatively using the monoclonal fecal *Helicobacter pylori* antigen rapid test kit (Aria H. Pylori Ag Combo Rapid Test, Medtek, USA) based on the immunochromatography (ICT) assays. It has a sensitivity of 94.4% and specificity of 100%. The assay procedures were done according to the manufacturer's instructions.

The data feeding and analysis was performed on computer package SPSS (statistical package of social sciences) version 22.0. Clinical characteristics were summarized in terms of frequencies and percentages for qualitative variables (gender and SHPAg positivity). Mean±S.D for quantitative variables (age and duration of urticaria) was done. Stratification was done with regard to gender, age and duration of urticaria to see the effect of outcome and post-stratification Chi Square and Mann-Whitney U tests were applied. P value <0.05 was considered significant.

Results

A total of 130 patients were included in our study, out of which 98 (75.4%) were females and 32 (24.6%) were males. Mean age and duration of disease was 33.4±13 years and 1.5 years respectively. Stool samples of 39 (30%)

patients were found to be positive for H pylori while 91 (70%) patients had no infection (P <0.001).

Upon analysis; no differences were observed in age and duration of disease between both the genders. P value was found to be 0.799 and 0.342 respectively (Table 1). Also no significant difference in age was seen between patients having infection and those who have no infection. P value was 0.084 (Table 2).

However, duration of disease was found to be significantly longer in those who had H pylori infection compared to those who had no H

pylori infection. Median duration: 1.2 vs 1 years. P value was 0.009 which is significant (Table 2).

Our results showed that patients who had disease for more than one year, majority of them had positive H pylori infection as compared to those who had disease for 1 year or less (53.8% vs 46.2%). P value was 0.009 (Figure 1). Furthermore, higher proportion of women were found to have H pylori infection as compared to men (76.9% vs 23.1%); though the results were not statistically significant. P value was 0.790 (Table 2).

Table 1 Age and duration of urticaria in patients

	Gender		Total	P-value
	Female N=98	Male N=32		
<i>Age (year)</i>				
Mean ± SD	33.6 ± 13.5	32.9 ± 11.4	33.4 ± 13.0	
Median (IQR)	32 (24 - 42)	30 (25 - 41.5)	31.5 (25 - 42)	0.799**
Min - Max	18 - 65	18 - 60	18 - 65	
<i>Duration (year)</i>				
Mean ± SD	1.61 ± 1.7	1.13 ± 0.7	1.5 ± 1.5	
Median (IQR)	1 (0.7 - 2)	1 (0.7 - 1)	1 (0.7 - 2)	0.342*
Min - Max	0.5 - 10	0.5 - 4.0	0.5 - 10	

* Mann-Whitney U test

** Independent sample t test

Table 2 Analysis of H pylori stool antigen tests

	<i>Helicobacter pylori</i>		Total	P-value
	Positive N=39	Negative N=91		
<i>Age (year)</i>				
Mean ± SD	36 ± 12.6	32.3 ± 13	33.4 ± 13.0	
Median (IQR)	34 (30 - 44)	30 (24 - 41)	31.5 (25 - 42)	0.084 *
Min - Max	18 - 64	18 - 65	18 - 65	
<i>Duration (year)</i>				
Mean ± SD	1.7 ± 1.6	1.4 ± 1.5	1.5 ± 1.5	
Median (IQR)	1.2 (1 - 2)	1 (0.6 - 1.1)	1 (0.7 - 2)	0.009 *
Min - Max	0.5 - 10	0.5 - 10	0.5 - 10	
<i>Gender</i>				
Female	30 (76.9)	68 (74.7)	98 (75.4)	
Male	9 (23.1)	23 (25.3)	32 (24.6)	0.790 **
Total	39 (100)	91 (100)	130 (100)	

* Mann-Whitney U test

** Pearson's Chi Square test

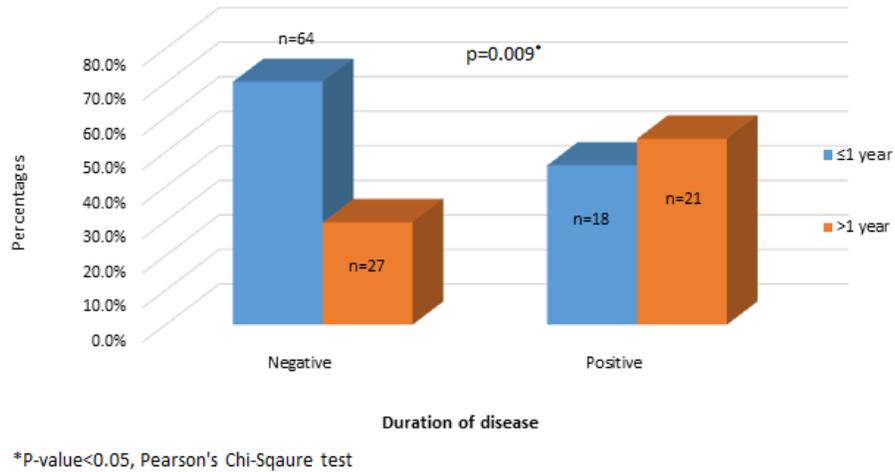


Figure 1 Distribution of duration in patients of C.S.U.

Discussion

Helicobacter pylori is a spiral-shaped, microaerophilic, Gram-negative bacterium that colonizes the gastric and duodenal mucosae.^{7,11} It produces various substances that induces a strong inflammatory response with release of many cytotoxic substances.¹² It is a recognized cause of gastritis, peptic ulcer, duodenal ulcer, gastric carcinoma and Mucosa Associated Lymphoid Tissue (MALT) lymphoma.^{6,11} *H pylori* has also been associated with a range of skin diseases. Most commonly reported cutaneous manifestations of *H pylori* infection are chronic urticaria, chronic pruritus, nummular dermatitis, prurigo chronica multiformis, rosacea and atopic dermatitis.¹³⁻¹⁶ Resolution of symptoms have been reported after standard *H pylori* eradication therapy in cases of CSU, psoriasis, alopecia areata and Henoch-Schoenlein purpura. This further supports the causal link between *H pylori* and cutaneous diseases.¹⁷ Stool for *H pylori* antigen tests are recommended by the American Gastroenterological Association as well as the American College of Gastroenterologists as the most accurate non-invasive means for detection of *H pylori* infection and its cure after eradication therapy.¹⁸

In our study, the mean±SD for age of CSU patients was 33.4±13 years. Similar age of patients was also reported by Muhemmed et al. from Iraq,¹⁹ Tareen et al. from Pakistan,²⁰ Mogaddam et al.¹⁰ and Rostamy from Iran,²¹ Ifeanyichukwu et al. from Nigeria⁵, Yadav et al. from India²² and Sianturi et al. from Indonesia.²³

In our study; 75.4% patients were females while 24.6% were males with a male to female ratio of 1:3. Nearly similar ratios are also reported by many others from Asia. Tareen²⁰, Muhemmed¹⁹, Sianturi²³, and Ifeanyichukwu⁵ reported ratios of 1:3, 1:2.2, 1:4.3, and 1:2.4 respectively in their studies which is consistent with our study.

In our study; the mean±SD for duration of disease was 17.96±18.24 months (approx. 1.5 years). Rostamy,²¹ Mogaddam¹⁰ and Tareen²⁰ reported duration of 27±36.43, 15.34±10.73 and 19±26 months respectively which is consistent with our study.

In our study, stool for *H pylori* antigen was positive in 30% of CSU patients. Studies assessing *H pylori* infection in CSU patients by stool antigen assays are not so many in the literature and show variable results as well. Mogaddam et al.¹⁰ from Iran and Ifeanyichukwu et al.⁵ from Nigeria reported SHPAg positivity

in 36% and 28.2% respectively. Tareen et al.²⁰ from Pakistan and Muhemmed et al.¹⁹ from Iraq reported SHPAg positivity in 59.8% and 69% respectively. Akashi et al.¹³ and Inoue et al.²⁴ both from Japan showed 30.5% and 59.8% SHPAg positivity in their patients respectively. Finally, Mosbeh et al.²⁵ from Egypt documented SHPAg positivity in 65%.

This huge difference is because of different types of study populations. The prevalence of H pylori is high in rural areas and in lower socioeconomic classes. Mogaddam, Akashi and Ifeanyichukwu⁵ performed studies in an urban society with better nutritional status and hygiene, that's why they had frequencies ranging from 28% to 36%. Same as in our study (i.e. 30% SHPAg positivity) as we conducted our research in an urban community with good nutritional, educational, wealth and health status.

Nevertheless, prevalence, H pylori remains a significant agent in the aetogenesis of CSU. Subjects having no obvious cause, with or without gastric symptoms should be screened for H pylori infection by different means. This is a potentially treatable disease. Eradication of H pylori will lead to resolution of symptoms in many cases and improve quality of life in patients of CSU.

Conclusion

CSU is frequently associated with H pylori infection. Presence of gastric symptoms like dyspepsia, retrosternal burning and reflux are not always found in cases of CSU. Detection of H pylori infection in such cases can be performed with confidence by using non-invasive, sensitive, specific and cheaper techniques like H pylori stool antigen. This is particularly helpful in developing countries where because of financial constraints; invasive techniques like gastric antral biopsy, urease test

and costly technique dependent non-invasive urea breath test are difficult to perform. We recommend that H pylori detection should be included in the diagnostic work up of all patients with CSU.

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