

Improvement of the quality of life following the eradication of *Helicobacter pylori* infection in patients with chronic idiopathic urticaria

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Abstract

Background: The current study hypothesized that the impairment of quality of life following the appearance of *Helicobacter pylori* (*H. Pylori*)-induced chronic idiopathic urticaria (CIU) might be effectively prevented by eradicating this bacterium.

Methods: Sixty patients (11 men and 49 women; mean age, 34.2 years) affected by diagnosed CIU came from a series of consecutive patients referred to the Dermatology private clinics. The patients were examined for the presence of IgG antibody to *H. pylori* using ELISA method. Those with seropositive results were scheduled for this clinical trial and received the eradication treatment consisting of bismuth subcitrate 120 mg plus metronidazole 250 mg plus tetracycline 250 mg qid plus omeprazole 20 mg bid (OBMT) at the time of diagnosis for 10-14 days and then assigned to the treated and the untreated groups. The quality of life of the two groups was assessed using the Dermatology Life Quality Index (DLQI).

Results: The mean of DLQI was unchanged in patients who were treated with *H. pylori* eradication treatment (from 28.67 ± 6.79 to 28.70 ± 7.90 , $p = 0.965$), but this score was significantly increased in the patients without the evidence of *H. pylori* eradication (from 27.50 ± 7.22 to 33.20 ± 8.14 , $p < 0.001$). Multivariable linear regression analysis showed that the positive response to anti- *H. Pylori* regimen could prevent unfavorable changes in life quality in the treated patients.

Conclusions: Eradicating *H. Pylori* bacterium in CIU patients is not only associated with better outcome of this chronic condition, it can improve the quality of life in treated patients.

Key words: chronic idiopathic urticaria, *Helicobacter pylori* infection, quality of life.

Introduction

Chronic life threatening gastric disorders induced by helicobacter pylori (*H. Pylori*) infection such as chronic active gastritis, B-cell gastric lymphoma, and gastric cancer might potentially result in unfavorable outcomes in these patients [1]. The relationship between *H. Pylori* infection with other extra-digestive conditions such as cardiovascular, immunological or skin diseases such as urticaria has been also revealed [2]. Moreover, in recent research, it has been hypothesized that some antibodies induced by *H. pylori* infection can be involved in the development of autoimmune diseases [3]. Chronic urticaria is a long-lasting skin disease with a complex pathophysiological feature and in a large number of patients with unknown etiology, which is called chronic idiopathic urticaria (CIU). In the recent decade, the role of *H. Pylori* infection as a main causal factor for CIU has been suggested and a higher prevalence of *H. Pylori* infection in patients with CIU compared to the general population has been proved [4]. Current summarizing of available studies that evaluated the course of chronic urticaria after proven *H. Pylori* eradication demonstrates a statistically significant benefit compared to untreated patients or *H. Pylori*-negative controls without urticaria [5-7]. In some research, antibiotic eradication of *H. Pylori* led to regression of CIU in up to 100 % of cases [8-10]. Therefore, it seems that the treatment of *H. Pylori* infection in those with CIU not only can be associated with better outcome of this chronic condition, but can positively influence the patient's life quality and even increase life expectancy. On the other hand, impairment of the psychological status as well as quality of life following the appearance of *H. Pylori*-induced chronic disorders, including CIU might be effectively prevented by eradicating this bacterium. Although several studies determined the prevalence of *H. Pylori* in CIU patients as well as considered the relationship between this infection and clinical features of CIU, few published studies are available regarding influence of *H. Pylori* eradication on patient's quality of life. Given this consideration and in an attempt to clarify the possible role of *H. Pylori* eradication treatment schedule in improvement of life quality in patients with CIU, a clinical trial was performed to assess changes in quality of life in CIU patients following routine anti- *H. Pylori* regimen in a sample of Iranians.

Material and Methods

Between August and December 2016, 60 patients (11 men and 49 women; mean age, 34.2 years) affected by diagnosed CIU were enrolled in this study. The study patients came from a series of consecutive patients referred to the Dermatology private clinics in Semnan city. The subjects who had received antibiotics within two months prior to the examination were excluded. Patients were also excluded if they were on chronic steroid treatment, were receiving any immunosuppressive medication, and had physical urticaria, cholinergic urticaria, exercise-induced urticaria, a history of atopic diseases and food allergy, or current or recent other serious diseases. On enrollment, each patient completed a standard questionnaire, which

included information about demographic factors such as sex, age, educational level, and occupation; and medical history, with particular reference to symptoms of upper gastrointestinal diseases. This study was approved by the research and ethics Committees of Semnan University and all subjects provided their written informed consent before entering the study.

Serum samples were collected from all the patients to examine for the presence of IgG antibody to *H. pylori* using ELISA method and patients with seropositive results were then scheduled for our clinical trial. The patients received the eradication treatment consisting of bismuth subcitrate 120 mg plus metronidazole 250 mg plus tetracycline 250 mg qid plus omeprazole 20 mg bid (OBMT) at the time of diagnosis for 10-14 days and were then assigned to the treated group (with the negative results of urea breath test (UBT) immediately after the treatment) and the untreated group. In all subjects, quality of life was assessed using the Dermatology Life Quality Index (DLQI). This questionnaire that was first developed in 1994 is a simple 10-question validated questionnaire which has been used in 33 different skin conditions. It consists of 10-questions. Scores range from 0 to 30 and a score of 10 or more indicates quality of life impairment. The patients' life quality score was determined by DLQI questionnaire immediately before and also after the finishing of treatment protocol to examine treatment effects on patients' quality of life in the treated and untreated groups.

Data were expressed as mean \pm standard deviation (SD) for quantitative variables and were summarized by absolute frequencies and percentages for categorical variables. Continuous variables between the treated and untreated groups were compared using t test or non-parametric Mann-Whitney U test whenever the data did not appear to have normal distribution or when the assumption of equal variances was violated across the groups. Categorical variables across the two groups were compared using the Chi-square test or Fisher's exact test if required. The changes in the DLQI scale in the two groups following treatment schedule were compared using paired t test. To determine the relationship between the changes of DLQI score and response to *H. pylori* eradication treatment regimen, multivariable linear regression analysis was used adjusting for probable cofounders such as demographic characteristics, education level and medical history. Results of this model were presented as Odds Ratio (OR) and 95% confidence intervals (95% CIs) for OR. P values of 0.05 or less were considered statistically significant. All the statistical analyses were performed using SPSS version 16.0 (SPSS Inc., Chicago, IL, USA).

Results

Eradication of *H. pylori* was achieved in 30 patients by the quadruple therapy. Baseline characteristics and medical history of treated and untreated patients are presented as Table 1. The two groups were similar in terms of sex ratio, mean age, education level as well as family history of urticaria or allergy. Although the mean of DLQI was unchanged in patients who were treated with *H. pylori*

Table 1: Baseline characteristics and medical history of study patients

Characteristics	Treated group (n = 30)	Untreated group (n = 30)	p-value
Female gender	24 (80.0)	25 (83.3)	0.739
Age (year)	34.63 ± 11.56	34.33 ± 13.16	0.926
Education level			
Illiterate	2 (6.7)	0 (0.0)	0.959
Primary level	4 (13.3)	5 (16.7)	
Secondary level	16 (53.3)	16 (53.3)	
Academic degree	8 (26.7)	9 (30.0)	
Family history of urticaria	13 (43.3)	12 (40.0)	0.793
Family history of allergy	12 (40.0)	9 (30.0)	0.417

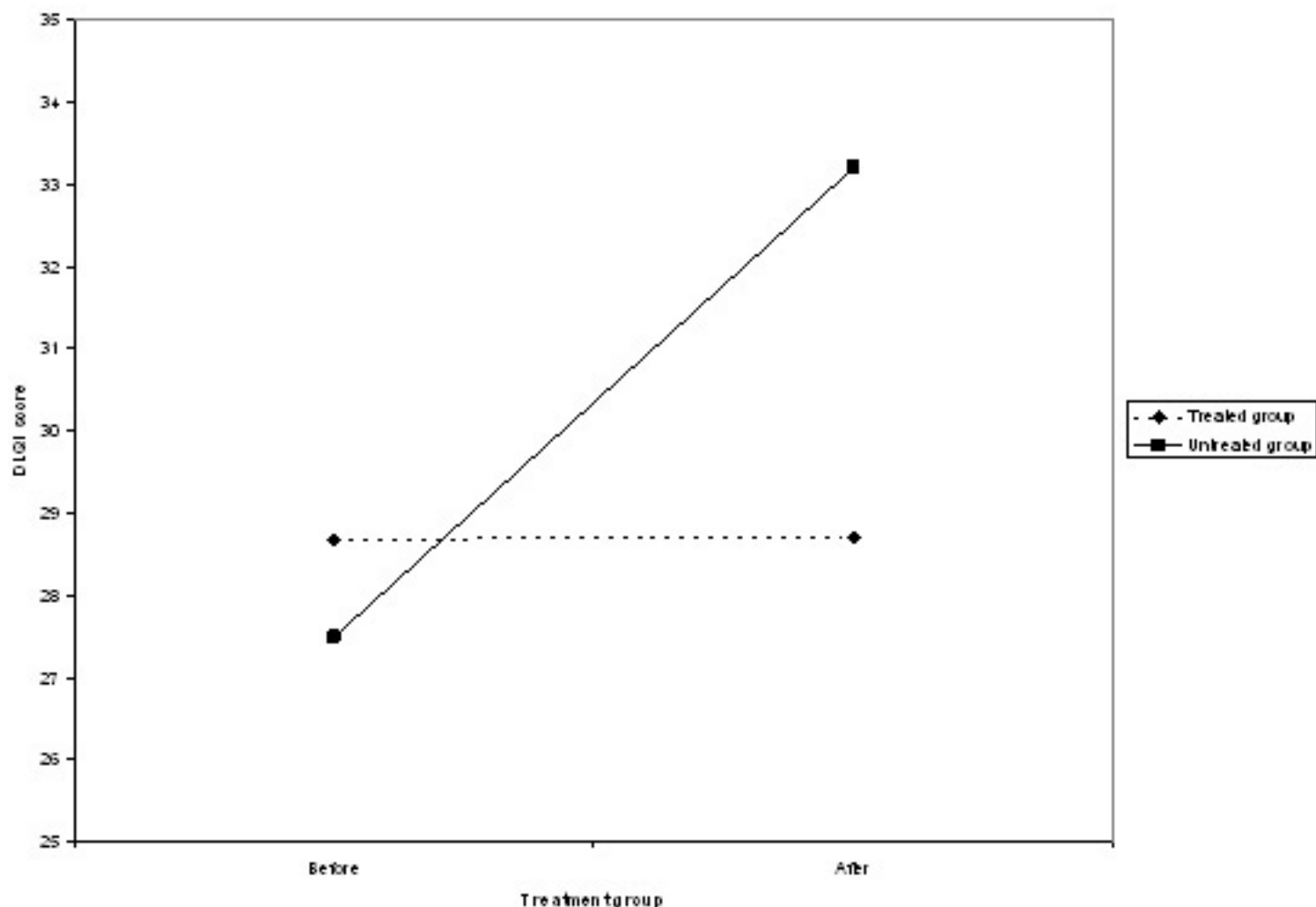
Data are presented as mean ± SD or number (%)

Table 2: Multivariate analysis of the relationship between the changes in quality of life score and anti- H. Pylori treatment result

Variable	Beta	Standard Error	p-value
Untreated vs. treated group	2.418	1.164	0.041
Female vs. male	2.173	1.394	0.123
Advanced age	0.066	0.053	0.215
Education level	0.489	0.816	0.550
Family history of urticaria	0.078	1.036	0.940
Family history of allergy	0.202	4.728	0.966

R square = 0.147

Figure 1: Changes of DLQI quality of life score in treated and untreated group with anti- H. Pylori treatment schedule



eradication treatment (from 28.67 ± 6.79 to 28.70 ± 7.90 , $p = 0.965$), this score was significantly increased in the patients without any evidence of *H. pylori* eradication (from 27.50 ± 7.22 to 33.20 ± 8.14 , $p < 0.001$) (Figure 1). There was also no significant difference in the mean of DLQI score between the treated and untreated group before the treatment protocol ($p = 522$), whereas this score was significantly higher in the untreated subjects after the treatment ($p = 0.034$). Multivariable linear regression analysis showed that the negative response to *H. pylori* eradication regimen in patients with chronic idiopathic urticaria had a relationship with quality of life impairment, whereas positive response to this regimen could prevent unfavorable changes in life quality in these patients (Table 2).

Discussion

Based on the current evidence for a relationship between *H. pylori* infection and chronic extra-digestive disorders, the European Helicobacter Study Group consensus 2007 recommended the eradication of this infection in affected patients. Lastly, one or few published reports have documented associations between *H. pylori* infection and autoimmune or inflammatory disorders, but these are only descriptive in nature [11]. In the present study, we conducted a clinical trial that examined changes in quality of life of patients with seropositive results of *H. Pylori* infection and who received anti- *H. Pylori* regimen and compared it between treated and untreated patients. Our study first showed a partially low success rate of clinical remissions of CIU after eradication therapy in patients with *H. Pylori* infection and half of the patients were categorized in the untreated group after the two-week anti-*H. Pylori* treatment. Although some early studies had shown a high success rate of clinical remissions of CIU following *H. Pylori* eradication regimens [12-15], some other recent studies failed to support the therapeutic effects of *H. Pylori* eradication for CIU [16-19]. In a study by Yadav et al. *H. Pylori* associated gastritis was present in 70.58% of CIU patients, out of whom 81.25% responded to eradication therapy and thus the response of *H. Pylori* eradication therapy in infected patients was significant [20]. In another study by Pliego et al. in the group with CIU, there were 52.8% of patients infected with *H. Pylori*, and in the control group only 11.1% [21]. Differences in eradication regimens may be associated with the various types of administered antibiotics, the dose of antibiotics and/or the duration of the treatment. It seems that the eradicating *H. Pylori* infection in CIU subjects with our studied routine, quadruple therapy for two weeks is not a standard regimen among our population with unacceptable response rate. It may be related not only to the virulence and resistance of the organism, but also on host and environmental factors [22,23]. Moreover, because in each population, especial drug regimens may be approved by the health insurance system for the eradication of *H. Pylori* [24,25], those approved regimens can be useful for eradicating *H. Pylori* in that population.

One of the issues, which was not addressed in previous studies, was the improvement of quality of life in patients who were treated with *H. Pylori* treatment schedule compared to those who remained untreated. In fact, *H. Pylori* eradication in our trial was in parallel to improvement of patient's life quality, but may not be dependent on the rate of *H. Pylori* eradication. It has been previously confirmed that the chronic forms of urticaria often adversely impact on quality of life. In a study by Poon et al [26], the patients with CIU without concurrent physical urticaria suffered moderate quality of life impairment whereas, the patients with CIU with concurrent delayed pressure urticaria suffered significantly higher quality of life impairment. In their study, disability in the CIU group based on the indices of DLQI questionnaire was greatest in the dimensions of work/study, symptoms/feelings and leisure. Thus, we think that although *H. Pylori* eradication using quadruple regimen for two-weeks may not be accompanied with low response rate, its high positive influence on improving different aspects of quality of life, especially on physical function and work status in treated patients is expected. However, for confirming the beneficial effects of *H. Pylori* eradication regimens on quality of life in CIU patients, more trials with the use of especial validated quality of life questionnaires on larger sample sizes is recommended. Also, according to the critical role of *H. Pylori* infection in impairment of quality of life affected subjects; regular diagnostic workup of patients with CIU should be considered.

References

- [1] Malfertheiner P, Megraud F, O'Morain C, Hungin AP, Jones R, Axon A, et al. Current concepts in the management of Helicobacter pylori infection—the Maastricht 2-2000 Consensus Report. *Aliment Pharmacol Ther* 2002;16:167–80.
- [2] Realdi G, Dore MP, Fastame L. Extradigestive manifestation of Helicobacter pylori infection: fact and fiction. *Dig Dis Sci* 1999;44:229-36.
- [3] Ohta M. Helicobacter pylori infection and autoimmune disease such as immune thrombocytopenic purpura. *Kansenshogaku Zasshi*. 2010 Jan;84(1):1-8.
- [4] Gaig P, García-Ortega P, Enrique E, Papo M, Quer JC, Richard C. Efficacy of the eradication of Helicobacter pylori infection in patients with chronic urticaria. A placebo-controlled double blind study. *Allergol Immunopathol (Madr)*. 2002 Sep Oct;30(5):255-8.
- [5] Wedi B, Raap U, Wiczorek D, Kapp A. Urticaria and infections. *Allergy Asthma Clin Immunol*. 2009 Dec 1;5(1):10.
- [6] Shiotani A, Kamada T, Kusunoki H, Hata J, Haruma K. Helicobacter pylori infection and allergic diseases. *Nippon Rinsho*. 2009 Dec;67(12):2352-6.
- [7] Sadighha A, Shirali R, Zahed GM. Relationship between Helicobacter pylori and chronic urticaria. *J Eur Acad Dermatol Venereol*. 2009 Feb;23(2):198-9. Epub 2008 Apr 24.
- [8] Tebbe B, Geilen CC, Schulzke JD, Bojarski C, Radenhausen M, Orfanos CE. Helicobacter pylori infection and chronic urticaria. *J Am Acad Dermatol* 1996;34:685-6.

- [9] Bonamigo RR, Leite CS, Bakos L. Association of *Helicobacter pylori* and chronic idiopathic urticaria. *Rev Assoc Med Bras* 1999;45:9-14.
- [10] Di Campli C, Gasbarrini A, Nucera E, et al. Beneficial effects of *Helicobacter pylori* eradication on idiopathic chronic urticaria. *Dig Dis Sci* 1998;43:1226-9.
- [11] Hernando-Harder AC, Booken N, Goerd S, Singer MV, Harder H. *Helicobacter pylori* infection and dermatologic diseases. *Eur J Dermatol*. 2009 Sep-Oct;19(5):431-44.
- [12] Wedi B, Wagner S, Werfel T, Manns MP, Kapp A. Prevalence of *Helicobacter pylori*-associated gastritis in chronic urticaria. *Int Arch Allergy Immunol* 1998;116:288-94.
- [13] Reborá A, Drago F, Parodi A. May *Helicobacter pylori* be important for dermatologists? *Dermatology* 1995;191:6-8.
- [14] Tebbe B, Geilen CC, Schulzke JD, Bojarski C, Radenhausen M, Orfanos CE. *Helicobacter pylori* infection and chronic urticaria. *J Am Acad Dermatol* 1996;34:485-6.
- [15] Di Campli C, Gasbarrini A, Nucera E, Franceschi F, Ojetti V, Sanz Torre E, et al. Beneficial effects of *Helicobacter pylori* eradication on idiopathic chronic urticaria. *Dig Dis Sci* 1998;43:1226-9.
- [16] Howden CW. No evidence for an association between *H. pylori* and idiopathic chronic urticaria. *Dig Dis Sci* 1999;44:485-6.
- [17] Wustlich S, Brehler R, Luger TA, Pohle T, Domschke W, Foerster E. *Helicobacter pylori* as a possible bacterial focus of chronic urticaria. *Dermatology* 1999;198:130-2.
- [18] Dauden E, Jimenez-Alonso I, Garcia-Diez A. *Helicobacter pylori* and idiopathic chronic urticaria. *Int J Dermatol* 2000;39:446-52.
- [19] Hellmig S, Troch K, Ott SJ, Schwarz T, Fölsch UR. Role of *Helicobacter pylori* Infection in the treatment and outcome of chronic urticaria. *Helicobacter*. 2008 Oct;13(5):341-5.
- [20] Yadav MK, Rishi JP, Nijawan S. Chronic urticaria and *Helicobacter pylori*. *Indian J Med Sci*. 2008 Apr;62(4):157-62.
- [21] Pliego Reyes CL, Jiménez Saab N, Gómez Vera J, López Tiro JJ, Cruz Parada M, Ahumada Trujillo J, Cisneros Sotelo L, Sampedro Carrillo E, Morales Villarruel P, Reyes Salinas A. Association between chronic urticaria and *Helicobacter pylori*. *Rev Alerg Mex*. 2007 Jul-Aug;54(4):111-5.
- [22] Valsecchi R, Pigatto P. Chronic urticaria and *Helicobacter pylori*. *Acta Derm Venereol* 1998;78:440-2.
- [23] Liutu M, Kalimo K, Uksila J, Kalimo H. Etiologic aspects of chronic urticaria. *Int J Dermatol* 1998;37:515-9.
- [24] Satoh K. Indications for *Helicobacter pylori* eradication therapy and first-line therapy regimen in Japan: recommendation by the Japanese Society for *Helicobacter pylori*. *J Gastroenterol* 2002; 37(Suppl 13):34-8.
- [25] Fukuda S, Shimoyama T, Umegaki N, Mikami T, Nakano H, Munakata A. Effect of *Helicobacter pylori* eradication in the treatment of Japanese patients with chronic idiopathic urticaria. *J Gastroenterol*. 2004 Sep;39(9):827-30.
- [26] Poon E, Seed PT, Greaves MW, Kobza-Black A. The extent and nature of disability in different urticarial conditions. *Br J Dermatol* 1999; 140 (4):667-71