

Relationship between *Helicobacter pylori* infection and psoriasis

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BACKGROUND AND OBJECTIVES: Psoriasis is a chronic inflammatory skin disease for which no specific reason has been found although various reasons have been suggested. *Helicobacter pylori* is a Gram-negative bacterium, which is essentially considered the cause of acute and chronic gastritis. Recently, several reports have suggested that *H pylori* could play a role in triggering psoriasis. The aim of this study was to determine the relationship between *H pylori* seropositivity and psoriasis.

DESIGN AND SETTINGS: This was a case-control study performed on patients with psoriasis vulgaris and healthy individuals in Fatemiye Hospital (referral center for the treatment of skin diseases), Semnan, Iran, during April 2011 to April 2012.

METHODS: A case-control study including 61 patients with psoriasis vulgaris (case group) and 61 healthy individuals (control group) without any known gastrointestinal complications were enrolled. All cases were tested for *H pylori* infection with serology (immunoglobulin G [IgG] anti-*H pylori*) using the enzyme-linked immunosorbent assay method.

RESULTS: Ten (16.4%) of the psoriatic patients and 8 (13%) of the control groups had an *H pylori* seropositive test result; the average of IgG serum level was 17.3 IU/ML in psoriatic patients and 16.1 IU/ML in the control group. The difference of serum level between the 2 groups was not meaningful ($P=.302$).

CONCLUSIONS: Our finding indicated that there was neither a significant relationship between psoriasis and the serum level of IgG anti-*H pylori*, nor a significant relationship between psoriasis severity and the serum level of IgG anti-*H pylori*. Further studies should be designed to find out whether infection with *H pylori* is one of the reasons causing or aggravating psoriasis.

Psoriasis is a common chronic inflammatory skin disorder characterized by sharply demarcated red scaly plaques, which may occur on any part of the body but preferentially at extensor areas. The prevalence is about 2% to 3% of the adult population and affects men and women equally and can be seen in all races.^{1,2} Psoriasis has grave impacts on the quality of life, even in patients with a mild disease.³ Researchers believe the disease is caused by genetic and environmental factors and is an autoimmune disease.⁴ The pathophysiology of psoriasis is characterized by an increase in antigen presentation, T-cell activation, and T-helper cell type 1 cytokines. Also, an increasing level of C-reactive protein levels and platelet activation factors has been observed.^{4,5} Heredity undoubtedly plays a role in causing psoriasis, and several psoriatic human

genes have been identified. However, environmental factors also play a role in the etiology of this disease.^{4,6} These factors include trauma, endocrine and metabolic factors, drugs, smoking, alcohol, sunlight, and some infections.^{2,4} The role of infectious agents Streptococci A has been demonstrated.⁶ Recent studies have shown that *H pylori* may also, like the Streptococcus hemolytic group A, be a trigger factor in psoriasis,⁷⁻¹⁰ although some other studies have refuted this relationship.^{11,12} *H pylori* is a Gram-negative micro-aerophilic spiral bacterium that resides in the gastric mucosa and plays a role in the pathogenesis of gastritis and peptic ulceration.^{13,14} Recent evidence suggests that *H pylori* infection plays roles in the pathogenesis of various skin diseases.^{15,16} The prevalence of *H pylori* infection is 30% in the United States and other developed countries and is over

80% in developing countries.¹⁷ The infection is acquired by oral ingestion of the bacterium and is mainly transmitted within families in the early childhood.¹⁸ Several methods are available for the detection of *H pylori* infection. Serology investigation is specific in more than 90% of the cases.¹⁹ *H pylori* Infection produces IgG and IgM against *H pylori*; IgM increases in the serum in acute infections and IgG increases in chronic infections. The ELISA method can be used to determine the level of antibodies especially for epidemiological studies, for the detection of infection in individuals.²⁰ *H pylori* infection develops gastrointestinal diseases and has recently been shown to develop extraintestinal diseases.²¹ Although psoriasis is not a life-threatening disease, and for those who are not suffering from it may not seem important, it can affect the quality of life of affected individuals. Due to the conflicting results regarding the relationship between psoriasis and *H pylori*, the aim of this study was to evaluate the relationship between the two.

METHODS

This case-control study was done on 61 patients with psoriasis vulgaris (cases) and 61 healthy individuals (controls) in Fatemiye Hospital (referral center for the treatment of skin diseases), Semnan, Iran, during April 2011 to April 2012. Before starting, the study was approved by the ethics committee of Semnan University of Medical Sciences, Iran. Otherwise healthy individuals that had visited the dermatologist for cosmetic problems (control group) and documented psoriasis vulgaris patients (case group) fulfilled the inclusion criteria. Patients with a history of gastrointestinal problem, those who used oral corticosteroid or β -Blockers, and who used topical and systemic medication for 2 and 6 months, respectively, were excluded. All patients submitted their voluntarily written consent for the study. On the first visit, all patients were examined by a dermatologist; then, checklists that included information about age, sex, medical history, and drug history were completed. Psoriatic patients were clinically assessed before treatment on the basis of the psoriasis area and severity index (PASI) score and percentage of body surface area involved. The PASI was used to determine the severity of skin disease. The effect of IgG against *H pylori* was examined in all patients using enzyme-linked immunosorbent assay (ELISA) kit (DRG Instruments, GmbH, Marburg, Germany) according to the manufacturer's protocol. The statistical analysis of the results was performed using paired student *t*; Chi-square, and logistic regression tests in SPSS, version 18 for windows. In this study, the significance level was set at *P* values of equal and less than .05.

RESULTS

About 33 (54%) of psoriasis patients and 37 (60%) of the controls were female. Both groups were matched for sex ($P=.464$). In psoriasis patients, the age ranged from 9 to 61 years with a mean (SD) 33.3 (13.7) years and in the control group, the age ranged from 17 to 60 years with a mean (SD) 28/3 (8.4) years; the difference was significant ($P=.017$). The mean (SD) number of years that have passed since the development of psoriasis in 61 patients was 9.8 (8.3) years, with a median of 8 years. The PASI score range was 2.7 to 16.8 in patients with a mean (SD) 6.6 (3.1). The mean (SD) serum IgG in psoriasis patients was 17.3 (10.1) IU/ML and in the control group, 16.1 (10) IU/ML. Distribution levels were not significantly different between the 2 groups ($P=.302$) (Figure 1). Due to the lack of homogeneity between the 2 groups in terms of age, the logistic revealed that there were significant differences ($P=.001$, CI=0.41-1.42) (Figure 2). Regression analysis to examine the relationship between PASI score and serum IgG showed no significant correlation ($P=.39$) (Figure 3).

DISCUSSION

The relationship between psoriasis and *H pylori* is a challengeable issue in dermatology and gastroenterology. Our study reported no significant relationship between anti-*H pylori* serum IgG levels and psoriasis. Also no significant differences were found between psoriasis severity and IgG levels against *H pylori*. However, we found a significant relationship between the duration of psoriasis and serum IgG anti-*H pylori* levels. Fabrizi et al¹¹ in Italy (in 2007) showed that 10% of people with psoriasis and 17% of the control group have *H pylori* Infection.¹¹ This study result is compatible with our study. In a study by Wedi and Kapp in Germany (in 2002), no relationship between psoriasis and *H pylori* was seen.¹² Additional studies are contrary to the results of this study; for example, in a study by Qayoom and Ahmad in India (in 2003), the incidence of *H pylori* infection in psoriatic patients was 44%, while in the control group it was only 10%.⁷ Also Halasz CL in 1996 showed that the prevalence of IgG against *H pylori* was in 54% of psoriatic patients, but this study had no control group for comparison.⁸ In a study by Onsun et al⁹ in 2012, 300 patients with psoriasis and 150 healthy individuals were enrolled. The PASI score in patients infected with *H pylori* was clearly higher, and simultaneous treatment of psoriasis and *H pylori* in patients with psoriasis was more effective than psoriasis treatment alone.⁹ In contrast to our study, they suggested that *H pylori* infection plays a role in psoriasis severity, and *H*

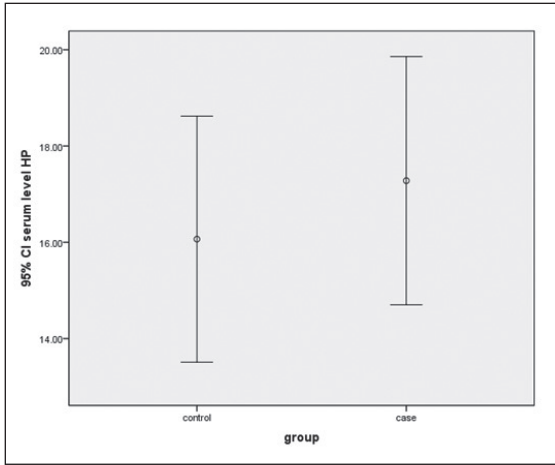


Figure 1. Mean (SD) serum IgG levels in the control group and psoriasis patients (case).

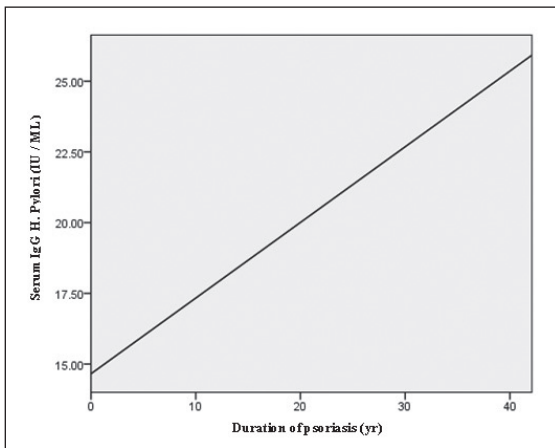


Figure 2. Regression analysis to examine the relationship between serum IgG and duration of psoriasis.

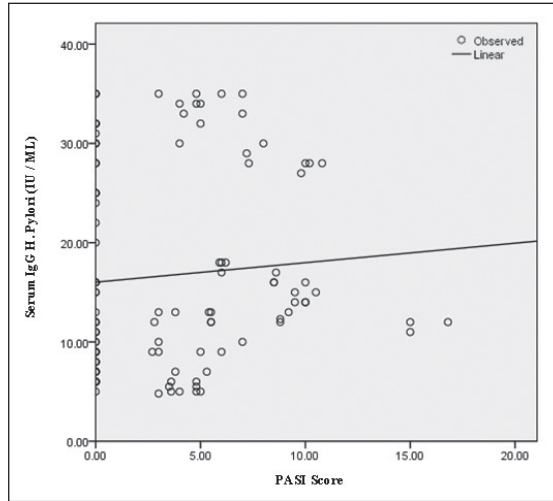


Figure 3. Regression analysis to examine the relationship between PASI score and serum IgG. PASI: Psoriasis area and severity index.

pylori treatment was effective in the treatment of psoriasis. In our study, the only significant relationship was seen between the duration of psoriasis and the serum IgG level against *H pylori*. This may be due to the use of topical or systemic immunosuppressive drugs over time that gave psoriatic patients greater susceptibility to *H pylori* infection. Today, the existing controversy about the relationship between psoriasis and *H pylori* infection is perhaps due to difference in sample sizes, severity of disease, and difference in the level of public health. So it appears that the relationship between psoriasis and *H pylori* infection is not clear. Finally more researches need to be done to clarify this issue.

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