Original Article

Relationship between Lichen Planus and *Helicobacter pylori* Infection

Ali Taghavi Zenouz 1* • Masoumeh Mehdipour 1 • Mohammad Jafari Heydarlou 2 • Narges Gholizadeh 1

1 Assistant Professor, Department of Oral Medicine, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran
2 Assistant Professor, Department of Oral Medicine, Faculty of Dentistry, Uremia University of Medical Sciences, Uremia, Iran

*Corresponding Author; E-mail: taghaviz_a@hotmail.com

Received: 30 June 2009; Accepted: 2 December 2009

J Dent Res Dent Clin Dent Prospect 2010; 4(1):17-20

This article is available from: http://dentistry.tbzmed.ac.ir/joddd

© 2010 The Authors; Tabriz University of Medical Sciences

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/3.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Abstract**

**Background and aims.** Lichen planus (LP) is a relatively common, chronic dermato-mucosal disease that often affects the oral mucosa. Among bacterial infections affecting LP, *Helicobacter pylori* has recently been proposed as an important etiologic factor. The present study was designed to evaluate the association of LP and *H. pylori* infection.

**Materials and methods.** This study included 30 patients with skin LP, 30 patients with oral LP and 30 healthy individuals without LP as control group. Patients and control group were selected from those referred to a dental and a dermatology clinic. Urea breathing test (UBT) was performed for all subjects. Descriptive statistic (frequency and percentage) were applied and chi-square test was employed to compare mean differences, using SPSS 13.0 computer software.

**Results.** UBT test were positive in 24 patients (80%) in oral LP group, 22 patients (73.3%) in skin LP group, and 20 individuals (66.7%) in the control group. No significant differences were found in the positive test results between the three groups (P = 0.50).

**Conclusion.** In this study, no significant association was found between LP and *H. Pylori* infection.

**Key words:** *Helicobacter pylori*, lichen planus, urea breathing test.

**Introduction**

Lichen planus (LP) is a relatively common, chronic dermato-mucosal disease that often affects the oral mucosa.\(^1\) LP has a worldwide distribution with no overt racial predisposition.\(^2\) Prevalence rates of oral lichen planus (OLP) vary from 0.5 to 2.2%. Females are more commonly affected than males. The mean age at the time of diagnosis is approximately 55 years and the lesions are considered premalignant.\(^3\) The disease has rarely been reported in children.\(^1\) LP can affect any part of the skin or mucosa but is most commonly seen in flexor surfaces of the wrists, the back and the ankles.\(^2\) Mucous membrane lesions are very common, occurring in 30–70% of cases. In 15% of the cases the lesions are limited to the oral mucosa.\(^2\)

Although the etiology and pathogenesis of LP is not fully understood, different causes including genetic susceptibility, stress and anxiety, depression,
hypo-sensitivity to drugs, metals and vaccinations, diabetes, hepatitis C, trauma, autoimmune diseases, and bacterial and viral infections may act as risk factors for LP. Among bacterial infections that may initiate LP, *Helicobacter pylori* infection has received attention as an important etiologic factor. There are reports that indicate *H. Pylori* may be the cause of peptic ulcers as well as non-gastrointestinal diseases such as psoriasis.

In a recent study based on urea breathing test (UBT), *H. Pylori* was seen to be significantly higher in patients with LP compared to individuals with other skin diseases. However, a previous study employing the same method had failed to show such a significant difference. In another study evaluating serum IgG, although *H. Pylori* infection was present in 66% of LP patients, no significant difference was seen in comparison with otherwise healthy controls.

Considering the controversy over the association of LP with *H. Pylori* infection in the limited available literature, the aim of the present study was to separately evaluate the association of oral and skin lichen planus with *H. Pylori* infection using UBT method.

**Materials and Methods**

The study subjects were selected from those referred to the Department of Oral Medicine at Tabriz University of Medical Sciences Faculty of Dentistry or to the Dermatology Clinic at Sina Hospital. Patients with history of using antibiotics, H₂ inhibitor agents or Omeperazole during the past 15 days, and bismuth during the past 1 month, and patients with concurrent oral and skin lichen planus lesions were excluded from this study.

Sampling was done by simple non-random method. Subjects included 30 patients with skin lichen planus, 30 patients with oral lichen planus and 30 healthy individuals without lichen planus as control group.

After taking medical history, a complete examination, filling out an initial checklist, and performing biopsies, UBT was performed for all the groups using Helkit IRO3 equipment (ISODIAGNOSTIKA, Edmonton, Alberta, Canada).

Descriptive statistic (frequency and percentage) were applied to data and chi-square test was employed to compare mean differences, using SPSS 14.0 computer software.

**Results**

Mean age of patients was 40 ± 12 years in the OLP group, 39 ± 9 years in skin LP group, and 37 ± 12 years in the control group. No statistically significant differences were found regarding age between the groups (P = 0.44, F(2, 87) = 0.81). The OLP group consisted of 15 males and 15 females; the skin LP group consisted of 17 males and 13 females and the control group consisted of 19 male and 11 females. No statistically significant differences were found between the groups regarding gender distribution (P = 0.58, df = 2, χ² = 1.08).

UBT test was positive in 24 patients (80%) in OLP group, in 22 patients (73.3%) in skin LP group, and in 20 individuals (66.7%) in the control group (Figure 1). The means of UBT titers were 14.3 ± 12.18 in the OLP group, 11.53 ± 10.13 in the skin LP group, and 12.22 ± 13.37 in the control group. No significant differences were found in the positive test results between the three groups (P = 0.50, df = 2, χ² = 1.36). Mean UBT titers between the groups also did not show any significant differences (P = 0.65, F(2, 87) = 0.43).

**Discussion**

*H. Pylori* species has been reported to have different prevalence rates in different countries, depending on oral hygiene status of the area. In developing countries, 80% of the populations are infected under the age of 20. This microorganism is rarely seen in children in the USA. The prevalence of *H. Pylori* is approximately 30% in the USA.

Invasive and non-invasive tests are available for identification of *H. Pylori*. Invasive tests require upper gastrointestinal endoscopy, which is not often performed in the initial management of young patients. Noninvasive *H. Pylori* testing is the common method if gastric cancer does not need to be excluded by endoscopy. The most consistent and
accurate test is UBT, which bears 100% sensitivity and 95% specificity. The stool antigen test is more convenient and potentially less expensive than the UBT. The simplest tests for ascertaining H. Pylori status are serologic assays measuring specific IgG level in serum. This test is not used to monitor treatment success, as the gradual drop in titer of H. Pylori-specific antibodies is too slow to be of practical use.

In the present study, approximately 66.7% of control group were infected with H. Pylori. However, since a positive UBT result indicates active infection, these results should be considered more carefully. With regard to the fact that H. Pylori is a normal micro-flora of the oral mucosa and not the skin, we separated OLP patients from skin LP cases in the present study. Patients with both oral and skin LP were excluded from the study, in order to allow for a separate evaluation of H. Pylori interaction with each type of lichen planus.

Previous studies have failed to evaluate the association of H. Pylori and each type of lichen planus separately. Vainio et al. \(^6\) studying the association of peptic ulcer and H. Pylori in patients with LP and other skin disorders, could not find a significantly higher level of H. Pylori infection in the test group including LP patients. This study could not attribute any etiologic role for H. Pylori in LP.

Riggio et al. \(^8\) evaluated H. Pylori in recurrent aphthous and OLP by polymerase chain reaction (PCR) in 28 patients with aphthous, 20 patients with OLP, and 13 healthy individuals as controls. Three patients with aphthous were positive for H. Pylori; however, this study could not attribute any etiologic role for H. Pylori in OLP.

Shimoyama et al. \(^9\) studied the association of H. Pylori and oral mucosal ulcerative disorder: 12 cases of recurrent aphthous stomatitis (RAS), 3 cases of erosive LP and 7 cases with herpes simplex virus (HSV). Serum IgG antibodies were examined against H. Pylori in all cases and samples were taken from the oral lesions, and cultured. In the latter study, all the RAS and LP cases were culture-negative for H. Pylori, while two cases of HSV were positive. The two culture-positive cases were also seropositive for the H. Pylori antigen. No relationship was found between H. Pylori and the various oral ulcers based on serum IgG levels against H. Pylori.

In a study on 61 patients with LP, 84 patients with psoriasis, and 58 healthy controls, \(^3\) 75.4% showed positive UBT with a mean titer of 35.46 and 74.1% of their controls showed positive UBT with a mean titer of 21.50, which shows no statistically significant differences between the patients and their controls. All the patients with OLP took therapeutic regimes for elimination of H. Pylori infection. In 3 subjects oral lesions extended, in 4 subjects no changes were observed and in 3 subjects lesions showed relative remission. This study also could not attribute any etiologic role for H. Pylori in LP. In another study, H. Pylori was evaluated in 43 patients with RAS and 44 non-RAS control group using UBT. \(^10\) 16 instances in the RAS patients (37.2%) and 14 individuals in the control group (31.8%) showed positive UBT. The difference was not considered statistically significant (P = 0.597).

However, the results of a recent study showed that UBT was positive in 82.5% of LP patients, while in the control group (with other skin disease) 61.25% had positive UBT. \(^4\) The mean titer was 202.2 in patients with LP and 105.1 in the control group. The difference between the patients with LP and the control group were statistically significant (P = 0.0001) and the pathogenic role of H. Pylori in LP was considered to be highly probable. \(^5\) The latter study was done on Iranian subjects, and our study was also conducted on Iranian subjects. The prevalence of H. Pylori is relatively high in Iran. Despite the association of H. Pylori and LP shown in the mentioned study, \(^4\) we could not demonstrate such a relationship. The prevalence of positive results in the control group in our study was 66.7% whereas the prevalence of positive results in the controls in the latter study was 61.25%. Most subjects (24 patients) in our study had ulcerative LP, whereas in that study most subjects had skin LP. We evaluated oral and skin LP separately. The differences between the results of the present study and the latter could be attributed to such differences in study design. Further studies are suggested with elimination treatment of H. Pylori in the UBT-positive case group and comparison of the mean differences with the control group.

**Conclusion**

According to results, no significant associations were found between OLP and H. Pylori in the study groups.

**Acknowledgements**

This study was supported by Faculty of Dentistry and Tabriz University of Medical Sciences Research Council. The staff and residents in the Dermatologic Clinic at Sina and Imam Reza Hospitals are acknowledged for their assistance.
References

1. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral & Maxillofacial Pathology, 3rd ed. St. Louis: WB Saunders Co; 2009:782-8.

2. Breathnach SM, Black MM. Lichen planus and lichenoid disorders. In: Burns T, Breathnach NC, Griffiths C, eds. Rook's Textbook of Dermatology, 7th ed. London: Blackwell Scientific Publications; 2004: 421-32.

3. Jontell M, Holmstrup P. Red and white lesions of the oral mucosa. In: Greenberg MS, Glick M. Burket's Oral Medicine: Diagnosis and Treatment, 11th ed. Ontario: BC Decker Inc; 2008: 89-97.

4. Moravvej H, Hoseini H, Barikbin B, Molekzdeh R, Razavi GM. Association of Helicobacter pylori with lichen planus. Indian J Dermatol 2008; 52:138-40.

5. Daudén E, Vázquez-Carrasco MA, Peñas PF, Pajares JM, García-Díez A. Association of Helicobacter pylori infection with psoriasis and lichen planus: prevalence and effect of eradication therapy. Arch Dermatol 2000; 136:1275-6.

6. Vainio E, Huovinen S, Liutu M, Uksila J, Leino R. Peptic ulcer and Helicobacter pylori in patients with lichen planus. Acta Derm Venereol 2000; 80:427-9.

7. Fauci AS, Kasper DL, Longo DL, Braunwald E, Hauser SL, Jameson JL, et al (eds). Harrison's Internal Medicine, 17th ed. Vol. 1. New York: McGraw-Hill; 2008: 1862-72, 946-9.

8. Riggio MP, Lennon A, Wray D. Detection of Helicobacter pylori DNA in recurrent aphthous stomatitis tissue by PCR. J Oral Pathol Med 2000; 29:507-13.

9. Shimoyama T, Horie N, Kato T, Kaneko T, Komiyama K. Helicobacter pylori in oral ulcerations. J Oral Sci 2000; 42:225-9.

10. Maleki Z, Sayyari AA, Alavi K, Sayyari L, Baharvand M. A study of the relationship between Helicobacter pylori and recurrent aphthous stomatitis using a urea breath test. J Contemp Dent Pract 2009;10:9-16.