

Prevalence of Hepatitis C virus infection with oral lichen planus in Andhra Pradesh population

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Abstract

Background: The association between oral lichen planus (OLP) and hepatitis C virus (HCV) infection is a matter of controversy. It is heavily influenced by geographical location. It is important to determine the association so that guidelines can be made for HCV testing in patients with OLP.

Aims: This study was conducted to determine the possible association between oral lichen planus (OLP) and hepatitis C virus infection (HCV) in Guntur, Andhra Pradesh population.

Materials and Methods: Blood samples were taken from 50 OLP patients and 50 healthy controls to screen for HCV infection. Moreover, the clinical characteristics of OLP were also observed, such as gender, age, chief complaint, clinical type and the sites involved.

Results: In the present study, 50 patients with OLP (30 females and 20 males) with mean age of 42.52 ± 13.04 years, and 50 healthy subjects (30 females and 20 males) with mean age of 40.42 ± 12.38 years were evaluated. HCV antibodies were detected in none of the subjects.

Conclusion: We could not detect any association between OLP and HCV. This may be due to lower occurrence of hepatitis C virus in comparison to hyper endemic countries for this virus or genotypic discrepancy of the virus or other factors contributing for these patients.

Keywords: Oral lichen planus, hepatitis C Virus, chronic hepatitis, extra hepatic, liver disease, geographic

Introduction

A wide range of systemic diseases are encountered in medicine that has manifestations in the oral cavity which makes it a window into the general health of the patient. Most of these manifestations are nonspecific but alert the dentist to the possibility of concurrent systemic disease or latent systemic disease that may develop subsequently. [1] Systemic conditions that have been reported to be associated with oral health include Diabetes, HIV, Anemia, Joint diseases, etc. Newer associations have been proposed that are still under investigation. One of such association is between oral lichen planus (OLP) and Hepatitis C Virus (HCV) infection.

HCV infection is the major cause of chronic liver disease globally, leading to 700,000 deaths annually mainly related to cirrhosis, end-stage liver disease, and hepatocellular carcinoma. It has become the leading indication of liver transplantation. HCV is an enveloped positive-stranded RNA virus of the family Flaviviridae that causes both acute and chronic hepatitis. India fosters 12-18 million HCV infected people which contributes significantly to the world wide HCV burden. [2]

OLP is a chronic mucocutaneous disease regularly encountered in dental practice. It is believed to represent an abnormal immune response in which epithelial cells are recognized as foreign, secondary to changes in the antigenicity of the cell surface. Patients with different forms of OLP visit dentist exhibiting symptoms ranging from slight discomfort to significant pain. Cutaneous lesions of lichen planus cause itching, whereas oral lesions are chronic and rarely undergo spontaneous remission and are potentially premalignant, often a source of morbidity. The disease affects 0.5 - 2% of the general population. This disease most commonly involves middle aged female patients. [3]

Recent studies suggest that there might be an association between HCV infection and oral lichen planus. It is still a matter of controversy. Prevalence of chronic hepatitis C in patients with OLP varies between 0.5-35% as reported by different authors for different geographical areas. The HCV related OLP association is supported by the fact that HCV viral sequences have been found in the serum of patients with OLP, and HCV was shown to occasionally replicate in oral lichen planus tissue possibly

contributing to the pathogenesis of mucosal damage. Recent data has shown that HCV-specific T cells can be found in the oral mucosa of patients with chronic hepatitis C and OLP. The association of OLP with HCV infection appears to be partially dependent on geographic factors. It may be explained by the differences in genetic factors controlling host immune responses. Though several studies have been conducted worldwide regarding this association, limited data is available with respect to the South Indian population. It is important to determine whether there is an association between OLP and HCV infection in this region, so that guidelines regarding the routine HCV testing of patients with OLP can be developed for clinicians. 15-30% cases of undiagnosed and untreated cases of chronic hepatitis caused by HCV infection can progress to cirrhosis or hepatocellular carcinoma over 30 years. [4, 5] So, this study was aimed to determine the prevalence of HCV infection in OLP patients in Guntur, Andhra Pradesh population.

Materials and methods

The study was conducted in the Department of Oral Medicine and Radiology, SIBAR institute of dental sciences, Guntur, Andhra Pradesh which is in south India. A total of 100 subjects were included with 50 patients with OLP as case group (WHO criteria 2003) [6] and 50 into control group where age and gender matched healthy subjects with no history of oral or skin lesions were included in this group. The study was approved by the Ethical Committee of SIBAR Institute of Dental Sciences. Prior to entering the study, patients signed an informed consent form.

Exclusion criteria: Case group: Patients with oral mucosal disorders other than OLP with clinical presentation of burning sensation or presence of lace like keratotic lesion or those who were under systemic medication. Control group: Patients who were not willing for screening or blood investigations and who were under systemic medication.

The subjects of the study group and control group were than tested for the seropositivity to HCV by the 4th Generation HCV TRI-DOT test (J.Mitra & Co. Ltd.) which was a simple and cost effective method. It has sensitivity of 100% and specificity of 98.9%. 1ml of blood was collected from the patient and was centrifuged. The centrifugation causes the separation of serum from plasma. Separated serum was then used for testing the pres-

ence of HCV antibodies by the 4th Generation HCV TRI-DOT test.

Statistical Analysis: To compare relative frequencies in Study and Control group, the chi-square test was used. For data with normal distribution, independent samples t-test was used to compare mean differences. Corresponding P-values were considered significant at values < 0.05. Other data, such as gender, types and locations of the OLP lesions, were expressed as percentages.

Results

The study group comprised of 50 OLP patients and the control group comprised of 50 individuals with apparently healthy oral mucosa. The average age of the patients was 42.52 ± 13.04 years and the average age of the controls was 40.42 ± 12.38 years. With regard to patients' gender, 30 (60%) were females and 20 (40%) were males. With reference to the types of OLP, 39(78%) patients had single type of lesion (i.e. reticular or erosive or papular) whereas 11(22%) patients had multiple types of lesion. (I.e. reticular-erosive; reticular-papular; reticular-plaque etc). Reticular type was the most common type of OLP found in our study in 33 (66%) patients followed by reticular-erosive in 6(12%) patients, erosive in 5(10%) patients, reticular-erosive-plaque in 2(4%) patients, atrophic in 1(2%) patient, reticular-plaque in 1(2%) patient, reticular-atrophic in 1(2%) patient and erosive-atrophic in 1(2%) patient. (Table: 1) The most common site of OLP was buccal mucosa in 33(66%) patients followed by buccal mucosa-tongue in 6(12%) patients, buccal mucosa-gingiva in 3(6%) patients, buccal mucosa-tongue-lips in 2(6%) patients, tongue in 1(2%) patient, lips-vestibule in 1(2%) patient, buccal mucosa-gingiva-lips in 1(2%) patient, tongue-palate in 1(2%) patient, buccal mucosa-vestibule in 1(2%) patient and buccal mucosa-tongue-vestibule in 1(2%) patient.(Table:2) A significant number of patients were found to be asymptomatic i.e.; 29 (58%) had no complaints, 6(12%) complained of discoloration of the mucosa and 15(30%) patients had burning sensation. (Table:3) The serum of the entire study sample was tested for hepatitis C antibodies with the 4th Generation HCV TRI-DOT test (J. Mitra & Co. Ltd.). It was found negative for both study and control groups.

Discussion

OLP is a chronic inflammatory mucocutaneous disorder of middle age and elderly females. [7] The mean age of patients in the present study was 42.52 years with 60% of them being females. The frequency of HCV prevalence

Table 1: Distribution according to the type of OLP

Type of OLP	Number	%
Single type		
Reticular	33	66%
Erosive	5	10%
Atrophic	1	2%
Multiple types		
Reticular-Erosive-Plaque	2	4%
Reticular –Erosive	6	12%
Reticular –Plaque	1	2%
Reticular –Atrophic	1	2%
Erosive - Atrophic	1	2%

Table 2: Distribution according to site of OLP

Site of OLP	Number	%
Single site		
Buccal mucosa	33	66%
Tongue	1	2%
Multiple sites		
Buccal mucosa-Tongue-ips	2	4%
Buccal mucosa-Tongue	6	12%
Lips-vestibule	1	2%
Buccal mucosa-Gingiva	3	6%
Buccal mucosa-Gingiva-Lips	1	2%
Tongue-Palate	1	2%
Buccal mucosa-Vestibule	1	2%
Buccal mucosa-Tongue-Vestibule	1	2%

Table 3: Distribution of samples according to chief complaints and gender

Chief complaint	Male (%)	Female (%)	Total (%)
No complaints	12 (41.3)	17 (58.6)	29 (58)
Discoloration	2 (33.3)	4 (66.6)	6 (12)
Burning sensation	6 (40)	9 (60)	15 (30)
Total	20 (40)	30 (60)	50 (100)

was significant in female patients before the age of 60, while the opposite was observed after 60 years in a study done in China population. [8] As the disease prevalence population for both OLP and HCV is same evaluating the potential clinical role of OLP in diagnosing HCV infection seems to be an extremely practical and pivotal task. The oral cavity is easy to observe and the presence

of OLP can potentially be used as a marker of HCV infection in asymptomatic patients, leading to proper diagnosis and early treatment and, possibly, a better prognosis of chronic hepatitis C. In addition, identifying extra hepatic manifestations of HCV infection has important implications for these patients' ongoing care. However, if the association is not valid, the routine testing of patients with OLP for HCV infection may lead to unnecessary costs and other harmful effects, such as increased anxiety among the people tested. Therefore, it is important to determine whether there is an association between OLP and HCV infection so that guidelines regarding routine HCV testing of patients with OLP may be introduced to clinicians. [9]

The present study showed that there was no association between OLP and HCV. None of the 50 patients with OLP were reactive for HCV TRIDOT testing. The absence of the association between OLP and HCV could be due to the low prevalence of HCV in the population which was assessed by testing 50 patients who matched with the age and gender of the study group and were without any oral mucosal lesions. Regional variation in the HCV prevalence may be the cause for lack of association between OLP and HCV. Another reason could be that the patients during the initial phase after contracting the infection do not exhibit HCV antibodies. [10]

The pathogenic role of HCV in the development of OLP is still unclear. Demonstration of HCV RNA in epithelial cells of oral mucosa and skin lesions of patients with LP would lead to the theory that direct action of the virus is involved. HCV could be a potential antigen presented by Langerhans cells, followed by activation and migration of lymphocytes resulting in damage to basal cells via cytokines of cytotoxic T cells. The virus may alter epithelial antigenicity at sites of mucocutaneous replication leading either to direct activation of cytotoxic T cells or to production of antibodies against epithelial antigens. Recently, differences in lymphocyte subpopulations between HCV positive OLP patients and HCV negative patients with OLP was demonstrated which could be attributed this to the chronic antigenic stimulation of HCV. [11]

The lack of association between OLP and HCV was also noted in the studies of Smitha Prabhu et al [12] whose study group was Calicut population and C. Udayashankar et al [13] whose study was in Pondicherry. However a positive correlation between OLP and HCV was found in studies conducted by Lodi et al [14], L.C. Figueiredo et al [15], Grossman et al [16] whose studies were done in Italy and Brazil respectively. The differences in respect to the

geographic area could be in relation to the different genetic susceptibility of the hosts, differences in genotypes of HCV and also differences in prevalence of HCV. [17]

Conclusion

Although our study was not conclusive in determining the association between the two entities we suggest further research on a large sample. Because chronic hepatitis C is an asymptomatic disease, which in many cases leads to severe consequences, the knowledge of its extra hepatic manifestations like OLP may help identify asymptomatic patients infected with HCV. Once OLP is confirmed as an extra hepatic manifestation of HCV, patients with OLP can undergo screening tests for HCV infection.

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