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Oral lichen planus in relation to transaminase levels and hepatitis C virus

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BACKGROUND: Elevation of transaminase levels was reported earlier in patients with oral lichen planus. The association between hepatitis C virus (HCV) and lichen planus had given positive and negative results. The controversies and uncertainties regarding the association of HCV and the liver function status (transaminase levels) in oral lichen planus inspired us to conduct this study.

PATIENTS AND METHODS: This study was performed on 40 patients with different types of oral lichen planus as a study group and 40 healthy cases as control group. All patients were subjected to routine blood test and urine analysis and the estimation of serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT) levels. The values of SGOT and SGPT levels ≤40 IU/l were considered within normal limits. Anti-HCV titer was estimated in all cases.

RESULTS: Fourteen patients (35%) with oral lichen planus had diabetes mellitus, while six (15%) cases of the control group had diabetes mellitus ($P = 0.04$). Regarding SGOT and SGPT levels, it was elevated in 19 cases (47.5%) and in 4 cases (10%) of the study group and control group, respectively ($P = 0.0002$). In relation to the type of oral lichen planus, out of 15 erosive cases, 80% (12 cases) showed elevated SGOT/SGPT levels. Out of 25 non-erosive cases, 7 (28%) patients showed elevated SGOT/SGPT levels ($P < 0.01$). Anti-HCV titer was negative in all cases.

CONCLUSION: We can conclude that diabetes mellitus and elevated transaminase levels might be related to the development of oral lichen planus lesions. There is a strong association between elevated SGOT/SGPT levels and detection of erosive type of such lesions. However, no correlation between oral lichen planus and HCV infection could be assessed in the present study.

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Keywords: hepatitis C virus; oral lichen planus; serum glutamic oxaloacetic transaminase/serum glutamic pyruvic transaminase levels

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Introduction

Lichen planus is relatively common, chronic inflammatory mucocutaneous disease. Oral lesions are characterized by raised multiform white lesions accompanied by areas of erosion and pigmentation (1). This mucocutaneous disease was first described by Wilson (1869) who reported 6% prevalence (2). Lichen planus is a disease of adulthood with age ranging from 30 to 70 years (3), but occasionally children are also affected (4, 5). Oral lesions are present in 70–77% of dermatological patients with lichen planus (6). The oral lesions are more pleomorphic than those of cutaneous counterpart, and are categorized as reticular, papular, plaque-like, atrophic, erosive, and bullous form. Malignant transformation of oral lichen planus, especially the erosive variety, has been documented, and about 0.5–2.5% transformation has been suggested, but the pre-malignant potential of lichen planus is still controversial (7).

Oral lichen planus can predispose to opportunistic infection by fungal microbes (8). A high prevalence of *Candida albicans* with oral lichen planus is thought to be related to impairment of cellular immunity (9). A number of investigators had reported a correlation between lichen planus and liver diseases. The prevalence of this association varies widely in the literature (10–12). Erosive lichen planus is particularly stated to appear in association with chronic liver diseases (13); therefore, it is advisable to perform liver function test in presence of lichen planus lesions (12, 14). In recent control studies (15, 16), anti-hepatitis C virus (anti-HCV) circulating antibodies were more common in patients with lichen planus than in controls.

Elevation of transaminase levels was reported in 40 of 187 patients with oral lichen planus (12). The relationship between oral lichen planus and HCV is controversial; while many studies gave positive results, (17–26) others reported negative results (27–29) regarding this association.

The controversies and uncertainties regarding the association of HCV and the liver function status (transaminase levels) in oral lichen planus inspired us to conduct this study. The aim of this study was to assess the relationship of oral lichen planus with elevated transaminase levels and HCV.

Patients and methods

This study was performed on 80 cases, and subdivided into two groups: study group and control group.

Study group:
consists of 40 patients with oral lichen planus, selected from the outpatient clinic of the Oral Medicine and Radiology Department within a period extending for about 3 months. These patients were selected from total attendance of 9360 (0.43%) individuals who visited the dental outpatient clinic during this period and representing all reported cases with lichen planus at that period (mean age 43.43 years, male:female ratio 1:3). All patients were subjected to histopathological examination for confirmation of the lesion.

Control group:
consists of 40 volunteers (matched both in age and sex distribution with the study group). These cases were selected from the 9360 individuals who reported to the dental outpatient clinic for routine dental examination at the same time.

Adequate consent was taken from all persons in both the groups for the study. A detailed history was taken, giving emphasis on their chief complaints and its duration, general health, previous drug therapy, ill-healthy habits (pan chewing, cigarette smoking, and alcohol consumption), dietary habits, oral hygiene status, and mouth cleaning habits. Alcohol consumption was scored based on the quantity (ounces) and quality (whisky, arrack, brandy, or others) of intake. A thorough clinical examination was carried out noting the type of the lesion, its extent and distribution, any associated skin lesions, and any other associated lesions. Routine blood test and urine examination were carried out in all the patients. All patients were subjected to the estimation of blood sugar (both fasting and random) and SGOT and SGPT levels. Subjects with fasting capillary glucose ≥100 mg/dl and/or random capillary glucose of ≥180 mg/dl were classified as having diabetes. The values of SGOT and SGPT levels ≤40 IU/l were considered within normal limits. Anti-HCV titer was estimated in all cases of both the groups, using the enzyme-linked immunosorbent assay (ELISA) technique SP NANBASE C-96.3.0. (General Biologicals Corporation, Taiwan).

Statistical analysis
All collected data were transferred into a master sheet and fed into computer for statistical analysis using student's *t*-test in the case of quantitative data and chi-square test in the case of qualitative data. *P*-value ≤ 0.05 and CI at 95% were considered statistically significant.

Results

Our sample consists of 80 cases, 20 males and 60 females, mean age 43.43 years. Forty patients with oral lichen planus were considered as study group and 40 volunteers as control group. Skin lesions were present in three cases of study group (7.5%) and all of them appeared after development of oral lesions (Fig. 1). Out of the three cases, two had erosive and one with reticular type of oral lichen planus.

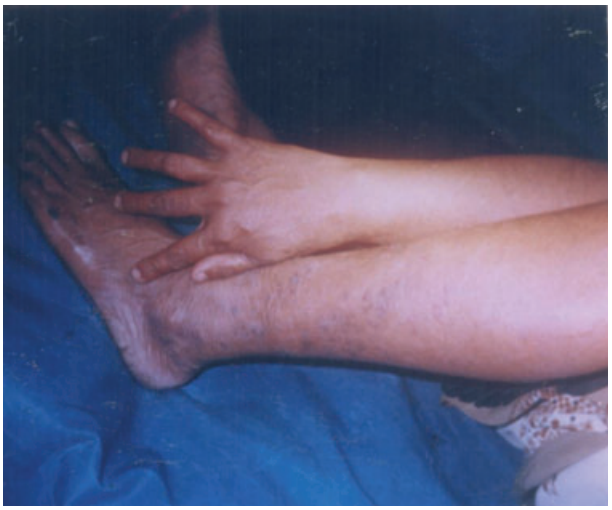

Figure 1 Cutaneous lesions in a patient with oral lichen planus.

Fourteen patients (35%) with oral lichen planus had diabetes mellitus, while six (15%) cases of the control group had diabetes mellitus. These differences were statistically significant ($P = 0.04$).

While considering the ill-healthy habits like pan chewing, cigarette smoking, and alcohol consumption, 14 (35%) out of 40 patients reported with one habit at least in study group. At the same time, there were only four patients (10%) with such history in the control group (Table 1). Of all patients with oral lichen planus, 25 cases had a chief complaint of burning sensation, 10 patients complained from discoloration of oral mucosa, while in 5 cases, lesions were noticed accidentally. Lesions were distributed on the buccal mucosa, tongue, palate, and gingiva in 35, 6, 2, and 2 cases, respectively. Clinically, 17 cases of oral lichen planus were reticular, 13 cases were erosive (Fig. 2), 3 cases were atrophic, and 1 case of vesicular type. In the other 6 cases, patients had multiple types of lichen planus.

Regarding SGOT and SGPT levels, it was elevated in 19 cases (47.5%) and in 4 cases (10%) of the study group and control group, respectively. These differences were statistically significant $P < 0.001$. From Table 2, it is seen that 9 (64.3%) out of 14 patients in the study

Table 1 The relationship between oral lichen planus and ill-healthy habits

	Study group		*Control group*		
Ill-healthy habits	*n*	*%*	*n*	*%*	*P-value*
Pan chewing	8	20	2	5	$P < 0.05$
Smoking	5	12.5	4	10	$P > 0.05$
Alcohol consumption	8	20	2	5	$P < 0.05$

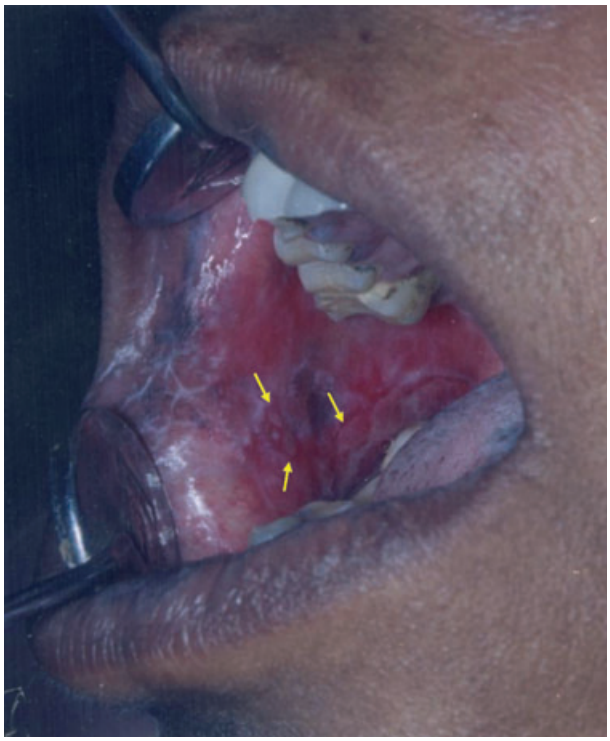

Figure 2 Erosive oral lichen planus (*yellow arrows*).

group with ill-healthy habits had elevated SGOT/SGPT levels, while 10 (38.5%) out of 26 patients with no habits had elevated SGOT/SGPT levels. In relation to the type of oral lichen planus, out of 15 erosive cases, 80% (12 cases) showed elevated SGOT/SGPT levels. Out of 25 non-erosive cases, 7 (28%) patients showed elevated SGOT/SGPT levels (Table 3). These differences were statistically significant ($P < 0.01$). The mean age of patients with elevated enzyme levels in the study group was (51.73 years) higher than those with normal enzyme levels (35.9 years). In the case of control group, the corresponding ages noted were 51.45 and 50.67 years, respectively. Anti-HCV titer was negative in all cases of both study group and control group.

Discussion

Oral lichen planus is a relatively common chronic mucocutaneous disorder that may affect any site of the oral mucosa. The clinical features of the study group patients with oral lichen planus were similar to other studies carried out in different countries worldwide (30–32). In the present study, extensive involvement of oral mucosa preceded the appearance of skin lesions. This is in agreement with the findings of another study (30).

The exact etiology of oral lichen planus is still unknown, although a variety of factors are proposed. These include anxiety, trauma, malnutrition, infection, and autoimmunity. Recently, an association between HCV and oral lichen planus was proposed (22, 24, 26).

An association between oral lichen planus and diabetes mellitus had been speculated for many years. In the present study, diabetes appeared more prevalent (35%) among patients with oral lichen planus, compared with that in the control group (15%). However, when we compare the correlation between oral lichen planus and diabetes mellitus with the incidence of diabetes mellitus in general population in the area of study (33, 34), results were found to be highly statistically significant ($P = 0.00001$). A high prevalence of diabetes mellitus was noted in the control group of this study. This might be either due to the high prevalence of diabetes mellitus in the area of study (33), or due to the methodology adopted for the study, or both (as we considered subjects with fasting capillary glucose ≥100 mg/dl and/or random capillary glucose of ≥180 mg/dl as having diabetes, while others (34) considered ≥110 mg/dl and/or ≥200 mg/dl for fasting and random capillary glucose levels, respectively).

A further analysis was also carried out to see whether any particular type of habit had increased influence for the development of oral lichen planus. It was observed that those with the habit of pan chewing/alcohol consumption had an increased chance of getting oral lichen planus compared with those with smoking habit. The statistical test appeared significant at this point (Table 1).

The prevalence of liver diseases in lichen planus varies widely in the literature, ranging from 0.1% to 35% in series based on occasional determinations of serum

Table 3 The SGOT/SGPT level in patients with erosive and non-erosive oral lichen planus

	SGOT/SGPT level				
	Elevated		*Normal*		
Type of lesion	*n*	*%*	*n*	*%*	*Total*
Erosive	12	80	3	20	15
Non-erosive	7	28	18	72	25

Table 2 The SGOT/SGPT level in patients of both groups vs. ill-healthy habits

	Ill-healthy habits												
	Present						*Absent*						
			SGOT/SGPT level						*SGOT/SGPT level*				
Group	*n*	*%*	*Normal*	*%*	*Elevation*	*%*	*n*	*%*	*Normal*	*%*	*Elevation*	*%*	*Total*
Study	14	35	5	35.7	9	64.3	26	65	16	61.5	10	38.5	40
Control	4	10	2	50	2	50	36	90	34	94.4	2	5.5	40

transaminase activity (11, 13, 35–38). In the present study, 19 patients (47.5%) with oral lichen planus showed elevated transaminase levels. Only four patients (10%) were detected with elevated enzyme levels in the control group. Thus, an association can be expected between elevated transaminase levels and detection of oral lichen planus, according to this study.

Attempts were made to see whether there is any association between ill-healthy habits and SGOT/SGPT levels. In the study group, out of 14 patients with ill-healthy habits, 9 (64.3%) had elevated transaminase levels. The corresponding percentage in the control group was 50%. No statistical significance in this case is noted in the present study. Upon evaluating each ill-healthy habit in particular, it was observed that the correlation between pan chewing and smoking habits with elevated SGOT/SGPT levels in the study group happened to be significant statistically. Although a numerical increase in percentage was noted between the study group and control group in relation to alcohol consumption, it appeared statistically insignificant. Although this difference is insignificant, alcohol consumption and other ill-healthy habits may give us the explanation for the elevation of transaminase levels among the four cases (10%) of control group.

Regarding the relationship between transaminase level and the type of oral lichen planus, 12 of 19 patients with elevated enzyme levels had erosive oral lichen planus and the rest seven had non-erosive oral lesions. The mean SGOT/SGPT values were higher (45.3 IU/l) in patients with erosive oral lesions compared with those with non-erosive lesions (39.4 IU/l). These findings may indicate that in the presence of greater liver alterations there is a correspondingly greater tendency toward development of aggressive oral lesions. Similar observation was reported earlier (12). The mean SGOT/SGPT levels were found higher in the study group (42.35 IU/l) compared with that in the control group (20.2 IU/l). From this observation, it can be inferred that the association of oral lichen planus with liver disorders is not a mere coincidence.

The association between lichen planus and HCV had been suggested in the recent decades. Several case reports world wide have supported the possible link between HCV and lichen planus (17–20, 22–24, 39). In the present study, attempts were also made to find the correlation, if any, between HCV and oral lichen planus. All studied cases were subjected to the estimation of Anti-HCV titer by the highly sensitive ELISA technique and all were found to be seronegative. This result was in agreement with other observations (21, 27). This seronegativity may be due to the fact that, these patients may be either in the initial phase or in the chronic phase of HCV infection at the time of visit, or the patient may be really seronegative, where transaminase elevation may be caused by factors other than HCV, which might trigger the development of oral lichen planus. Other studies (40, 41) reported that, during the early phase of HCV infection, or in patients with chronic disease, antibodies do not necessarily remain elevated.

In conclusion, the etiology of oral lichen planus might be related to elevated transaminase levels, diabetes mellitus, and probably to pan chewing and alcohol consumption. There is a strong association between elevated SGOT/SGPT levels and detection of erosive type of lesions. However, no correlation between oral lichen planus and HCV infection could be assessed in the present study.

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