

# Lichen Planus and Hepatitis C Virus Infection: A clinical Evaluation of 168 Cases

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## Abstract

**Introduction.** Hepatitis C virus (HCV) infection is one of the factors which can lead to a chronic liver disease and hepatocellular carcinoma. There have been several reports on the association of oral lichen planus with hepatic disorders, i.e. hepatitis C infection in particular. Considering the controversies about the association of lichen planus with HCV infection on one hand and considerable impact of hepatitis C on the occurrence of chronic liver disease on the other hand, we investigated the association between lichen planus and HCV infection in Sanandaj City.

**Methods.** This cross sectional study included 168 patients with lichen planus, who were referred to the Dermatology Clinic of Besat Hospital between 2014 and 2016. The diagnosis of lichen planus was made by our dermatologist and HCV antibody titer was determined for every patient. **Results.** Mean age of the patients was  $39.7 \pm 13.3$  years and mean duration of the disease was 14.8 months. 107 (63.7%) patients were men. The highest frequency of lichen planus was recorded in the housewives (30.4%). In 52 (31%) patients the genital area was involved and it was the most common site. In 6 (3.6%) patients the oral mucosa was involved and it was the least common site in our study. Only 4 (2.7%) patients had family history of lichen planus. None of 168 patients included in this study was found to have HCV infection. **Conclusion.** In this study, we found no relationship between lichen planus and HCV infection. Yet, the exact mechanism underlying the occurrence of lichen planus in the patients with HCV infection has not been determined. Therefore more studies on this subject are recommended.

**Key words:** Lichen Planus; Hepatitis C; Hepacivirus; Diagnosis; Cross-Sectional Studies; Comorbidity

## Introduction

Hepatitis C virus infection is one of the factors which can result in a chronic liver disease and hepatocellular carcinoma. The main way of transmission is through transfusion of blood and its products (1). Hepatitis C virus infection can lead not only to hepatic disorders but also to extrahepatic manifestations such as lichen planus, cryoglobulinemia, membranous glomerulonephritis, Sjogren's syndrome, rheumatoid arthritis (2). In general hepatitis C can be associated with autoimmune disorders. The question concerning the association between hepatitis C infection and oral lichen planus has been discussed for a long time (3, 4). Lichen planus is an inflammatory disorder with distinct clinical and

pathological findings which can involve skin, mucous membranes, nail and hair follicles (5). Different types of lichen planus including annular, atrophic, follicular, hypertrophic and linear ones have been identified (6). Lichen planus is considered to be an immunologically mediated disorder and cellular immunity has an essential role in the occurrence of clinical manifestations of lichen planus (7). The first case of lichen planus in a patient with hepatitis C was diagnosed in France and the diagnosis was confirmed by histopathological examination of a skin biopsy (5). Many studies have been carried out in different parts of the world and different results have been obtained about the association of lichen planus with hepatitis C and B infections (8-11).

**Table 1.** Frequency rate of lichen planus in Sanandaj City

Variables		Number	Percentage
Gender	Male	107	63.7
	Female	61	36.3
Occupation	Worker	19	11.3
	Civil servant	30	17.9
	House-wife	51	30.4
	Farmer	10	10
	Self-employed	6	3.6
	High school and university students	12	7.1
	Unemployed	6	3.6
	Others	28	16.7
	Genital area	52	31
Site of lesions	Forearm, hand, arm	33	19.6
	Leg and thigh	41	24.4
	Abdomen, chest, back	21	12.5
	Oral mucosa	6	3.6
	Scalp	7	4.2
Family history	Generalized	8	4.8
	Positive	4	2.7
	Negative	164	97.3
History of other diseases	Positive	48	28.5
	Negative	120	71.5
History of use of medications	Positive	40	25
	Negative	126	75
Stress	Positive	53	31.5
	Negative	115	68.5
Total	-	168	100

Considering different results of the studies on the association of lichen planus with hepatitis C and considerable impact of hepatitis C on the occurrence of chronic liver disease, we investigated the association between lichen planus and hepatitis C infection in Sanandaj City.

## Methods

This cross sectional study included 168 patients who were referred to the Dermatology Clinic of Besat Hospital in Sanandaj City between 2014 and 2016. Demographic data of the patients including age, gender, occupation and place of residence were recorded. The authors claim to have obtained all ap-

appropriate consent forms from the patients. The patients understood that their names and initials would not be published and due efforts would be made to conceal their identity (IR. MUK.REC.1397.5002). We also recorded the site of lesions, history of use of medications, and family history of lichen planus for every patient. Diagnosis of lichen planus was made by our dermatologist on the basis of clinical manifestations. In case of doubt, we took biopsy for histopathological examination. All the patients were tested for HCV antibody. We used Stata12 software for data analysis.

## Results

Mean age of the patients was  $39.7 \pm 13.3$  years and mean duration of the disease was 14.8 months. A hundred and seven (63.7%) patients were men. The highest frequency of lichen planus was recorded in the housewives (30.4%), and then in civil servants (17.9). In 52 (31%) patients the genital area was involved and it was the most common site. In 6 (3.6%) patients the oral mucosa was involved and it was the least common site. We found history of other diseases and use of medications in 28.5% and 25% of the patients, respectively. Only 4 (2.7%) patients had positive family history of lichen planus. We did not find any positive HCV antibody test in our study (Table 1). There was a significant difference between the location of the lesions of lichen planus and gender of the patients ( $P < 0.001$ ). However, the site of lesions had no significant sta-

tistical relationship with age, duration of lichen planus and history of any other disease ( $P > 0.05$ ) (Table 2).

## Discussion

In this study 107 (63.7%) patients were men and the highest frequencies of lichen planus was observed in the housewives (30.4%) and civil servants (17.9%). Prabhu's study included 48 women (73.4%), 15 men (25.3%) and 2 patients below the age of 12 years (12). A study performed by Gimenez (13) included 57 women (56.4%) and 44 men (43.5%). Neither of them is comparable with our study regarding the gender ratio.

According to the results of our study in 52 (31%) patient the genital area was involved and it was the most common site. The oral mucosa was found to be involved in 6 (3.6%) patients and it was the least common site involved by lichen planus. In a study performed by Kavooosi, the skin was involved in 45.1% of the patients, and the skin and mucous membrane were involved in 40.3% of the patients (7). In a Rabiei's study the most common sites involved by lichen planus lesions were the buccal mucosa and lower lip (14).

In another study conducted by Esfandiarpour the oral and genital mucosa were the most common sites involved by lichen planus (67.5%) and classic skin lesions were found in 65% of the patients (15). In one study performed in Italy, keratotic and reticular lichen planus were the most common variants and

**Table 2.** Frequency rates of the sites of skin lesions in relation to age, duration of disease, gender and history of other disease

Site of lesions Variables	Genital area	Forearm hand, arm	Leg, thigh	Abdomen, chest, back	Oral mucosa	Scalp	Generalized	P-value
Age (years)	37.5±11.1	42.8±14.5	41.9±14.3	39.3±15.1	34.3±14	40.1±10.5	35±11.9	0.398
Duration of disease (month)	12.9±15.1	11.7±20.2	22.1±34.4	10.6±14.7	5.6±3.7	27.7±36.5	9.4±15.9	0.171
Gender								<0.001
Male	49 (45.8)	14 (13.1)	24 (22.4)	8 (7.5)	3 (2.8)	5 (4.7)	4 (3.7)	
Female	3 (4.9)	19 (31.1)	17 (27.9)	13 (21.3)	3 (4.9)	2 (3.3)	4 (6.6)	
History of any other disease								0.754
Positive	12 (25)	12 (25)	14 (19.2)	5 (10.4)	2 (4.2)	2 (2.1)	2 (4.2)	
Negative	40 (33.3)	21 (17.5)	27 (22.5)	16 (13.3)	4 (3.3)	6 (5)	6 (5)	

the most common site of involvement was the buccal mucosa (16). In some studies the most common sites involved by lichen planus were the buccal mucosa and gums followed by the lips (17-19). In one study 16% of the patients with skin lesions of lichen planus and 30% of the patients with mucosal lichen planus had positive HCV antibody tests (20).

In our study none of the patients had positive HCV antibody tests. Parabhu included 65 patients in one study and Boker recruited 48 patients with lichen planus in another study. The results of these studies revealed negative HCV antibody tests which were compatible with the findings of our study (12, 21).

Out of 57 patients with oral lichen planus included in the study performed by Daramola and his colleagues in Nigeria, 9 patients were found to have positive HCV antibody tests while all of the participants in their control group had negative HCV antibody tests (22). Klanrit and his colleagues tested 60 patients with oral lichen planus, for HCV antibody and found 5 (8.23%) patients with positive HCV antibody tests. However, none of the subjects in their control group had positive HCV antibody tests (23). In one study performed by Luis, 2.77% of the patients with oral lichen planus had HCV infection (24). Another study showed a significant relationship between lichen planus and HCV infection (25, 26). Lichen planus is an autoimmune disease. Controversies over the results of different studies on the association between lichen planus and HCV infection may be related to variations in immune response of the individuals and also different genotypes of hepatitis C virus in different parts of the world (27).

## Conclusion

In our study we found no relationship between lichen planus and HCV infection. Yet, the exact mechanism underlying the occurrence of lichen planus in the patients with hepatitis C infection has not been understood. Therefore, further studies on this subject are recommended. Early diagnosis of hepatitis C can lead to effective control and treatment of this disease. Therefore determination of HCV antibody titer in the patients with mucosal or skin manifestations of lichen planus may be useful for early diagnosis of HCV infection.

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## Lihen planus i virusna infekcija hepatitisom C – klinička procena 168 slučajeva

### Sažetak

**Uvod.** Infekcija virusom hepatitisa C je jedan od faktora koji mogu da dovedu do hronične bolesti jetre i hepatocelularnog karcinoma. Postoji nekoliko radova o vezi između oralnog lihen planus sa poremećajima jetre, pogotovo infekcijom virusom hepatitisa C. Uzimajući u obzir kontroverze o vezi između lihen planus i infekcije virusom hepatitisa C, s jedne strane, i značajnog uticaja hepatitisa C na pojavu hroničnog oboljenja jetre, s druge strane, mi smo ispitivali vezu između lihen planus i infekcije virusom hepatitisa C u gradu Sanandaj. **Metode.** Ova studija poprečnog preseka obuhvatila je 168 pacijenata sa lihenom planus koji su upućeni na Dermatološku kliniku Besat bolnice između 2014. i 2016. godine. Dijagnozu lihen planus postavio je naš dermatolog i titar antitela na virus hepatitisa C određen je za svakog pacijenta. **Rezultati.** Prosečna starost naših pacijenata bila je  $39,7 \pm 13,3$  a

prosečno trajanje bolesti bilo je 14,8 meseci. Među pacijentima, muškaraca je bilo 107 (63,7%). Najviša frekvencija lihen planus zabeležena je kod domaćica (30,4%). Kod 52 pacijenta (31%) bila je obuhvaćena genitalna regija – to je i bilo najčešće mesto. Kod šest (3,6%) pacijenata bila je obuhvaćena oralna mukoza – to je bilo najređe mesto u našoj studiji. Samo četvoro pacijenta (2,7%) imalo je porodičnu anamnezu lihen planus. Od 168 pacijenata obuhvaćenih ovom studijom, ni kod jednog nije nađena HCV infekcija. **Zaključak.** U ovoj studiji mi nismo pronašli povezanost između lihen planus i infekcije virusom hepatitisa C. Ipak, tačan mehanizam koji je u osnovi pojave lihen planus kod pacijenata sa infekcijom virusom hepatitisa C nije ustanovljen. Stoga se preporučuje dalje proučavanje ovog problema.

**Ključne reči:** Lihen planus; Hepatitis C; Hepacivirus; Dijagnoza; Studije preseka; Komorbiditet

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