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Original Research Article

Hepatitis C seropositivity in lichen planus: a case control study in a tertiary care hospital

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ABSTRACT

Background: Lichen planus (LP), an immune-mediated disorder, has been reported as an extra-hepatic manifestation of Hepatitis C virus (HCV) infection, especially in HCV hyper endemic areas such as southern Europe and Japan. In India, the association between LP and HCV is documented in many studies. The aim of this study was to investigate hepatitis C virus infection in patients with lichen planus from an epidemiological standpoint and determine the sero-positivity of hepatitis C virus in patients with lichen planus and also to describe clinical profile of lichen planus in patients with hepatitis C virus infection.
Methods: This hospital-based case control study was conducted over 167 patients and 167 controls, evaluation included detailed history, cutaneous examination, routine blood tests and ELISA test for seropositivity.
Results: In this case control study 5.4% of the total study population presented with hepatitis c infection. Hepatitis C infection was more common in oral LP out of all the HCV positivity obtained in LP patients. Male to female ratio was 1:2.2. Prevalence of HCV infection was found to be slightly more in cases (6.6%) than controls (4.2%) but there is no statistically significant difference in the prevalence of HCV infection among cases and controls.
Conclusions: In conclusion, from the evaluation of our epidemiological data, any etiological link between LP and HCV could not be found in our population and an etiological link between LP and HCV cannot be inferred solely by epidemiological data.

Keywords: ELISA, Hepatitis C, Lichen planus, Lichenoid lesions

INTRODUCTION

Lichen Planus (LP) is an idiopathic, sub-acute or chronic dermatosis which mainly involves the skin, mucous membrane, hair follicles and nails. It is characterized by small flat topped, shiny, polygonal, violaceous papules that may coalesce into plaques.

LP is a stereotype cell mediated reaction to a variety of extrinsic antigen, altered self-antigens or super antigens. Among the extrinsic factors, several infective agents, including some viruses and *Helicobacter pylori* have been linked with lichen planus.[1] Lichenoid eruptions include drug induced, chemical, bacterial and post bone marrow transplantation.

HCV is a single stranded RNA flavivirus that replicate in hepatocytes and peripheral blood mononuclear cells. Diagnosis is based on detection of antibodies against HCV (anti-HCV). The third generation ELISA has 99% sensitivity in detecting total antibodies with 94% specificity and can be confirmed by direct detection using HCV RNA. HCV prevalence in a study in Gujarat was 0.28%.[2]

Although biologically plausible, the link between LP and HCV remains questionable on clinical grounds. It appears

to be proven only in some geographical areas, such as Japan and southern Europe.[3-9] Recent reports from other low HCV prevalence regions have instead found no significant associations between these two conditions.[10,11] LP appears to be related to the pattern of immune dysregulation induced by HCV. The mechanism of HCV-induced LP is possibly related to viral replication in lymphocytes.[12] And it is well known that one of the characteristic histological features of LP is band like lymphocytic infiltrate in the papillary dermis, possibly HCV is related in a way or another to the basal cell layer of the epidermis to which lymphocytic band like infiltrate seems to be directed and once these cells are destroyed, the infiltrate descends down to the upper dermis.

In India, as the association between LP and HCV is documented in regions of Hyderabad and Bangalore.[13] This study is done to observe whether there is any association between LP and HCV infection attending the OPD of department of dermatology of Sri Siddhartha medical college, Tumkur. Any association between LP and HCV infection established during this study, may help in early diagnosis, evaluation and management of patients with LP.

METHODS

This hospital-based case-control study was performed at Sri Siddhartha Medical College, Tumkur, Karnataka from January 2017 to June 2018, on 334 patients, subdivided into two groups: study group and control group.

Study group

167 patients attending the dermatology OPD with clinical features of lichen planus irrespective of gender, duration, type, severity and treatment status were included as cases.

Control group

167 age and gender matched patients with dermatological disorder other than lichen planus were included as controls.

Exclusion criteria

Patient having lichenoid or photo lichenoid eruption, with known syphilis, herpes simplex 2, amoebiasis, chronic bladder infection, blood transfusion, helicobacter pylori and human papilloma virus were excluded.

Due consent was taken from all patients in both the groups for the study. Patients were thoroughly explained regarding the nature and purpose of the study. A questionnaire based detailed history was taken. A thorough clinical examination was carried out noting the type of the lesion, its extent and distribution, any associated skin lesions, involvement of mucosa and any other associated lesions. Routine blood test and urine examination were carried out in all the patients. Anti-HCV titre was estimated in all patients of both the groups, using the Enzyme-Linked Immunosorbent Assay (ELISA) technique.

Statistical analysis

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

RESULTS

A total of 167 cases of lichen planus and 167 age and gender matched controls were included in the study. Of the total 334 patients studied 32.3% were males and 67.7% were females. Male to female ratio was 1: 2.2.

Age of LP patients ranged from 19 years to 80 years, however maximum number of cases were between the age 35-45 years. In this study, majority of cases (38.3%) had lichen planus of more than 1-year duration. The duration of patients with LP and HCV positive LP cases are given in Table 1.

Table 1: Duration of LP and HCV positive LP cases.

Duration (months)	Number of LP patients	Number of LP patients with HCV
<2	27	1
≥2-4	40	0
≥4-6	12	0
≥6-8	19	2
≥8-10	5	1
≥10-12	4	2
≥12	60	5
Total	167	11

Out of 167 cases, 47 patients presented with classical type of lichen planus, which contributed about 28.1% of the patients with lichen planus (Figure 1).

Figure 1: Classical LP lesions with Koebnerisation.

Table 2: Types of LP and HCV positivity.

Lesion type	HCV positive LP	Frequency	%
Classical type	3	47	28.1
Hypertropic type	1	27	16.2
Generalised type	1	37	22.2
Actinic type	0	5	3.0
Annular	0	1	0.6
Linear	1	11	6.6
Atrophic	0	6	3.6
Follicular	0	3	1.8
Lichen Planus Pigmentosus	0	4	2.4
Oral [reticular]	2	48	28.7
Oral [erosive]	3	9	5.4
Nail	0	1	0.6
Total	11	199	

In this study, 65.8% of cases had only cutaneous involvement. Cutaneous and mucosal involvement in 19.2% cases and only oral lesions in 15% of cases.

Table 3: Cutaneous and mucosal involvement in LP.

Type	No of cases	%
Cutaneous	110	65.8
Cutaneous and mucosal	32	19.2
Mucosal	25	15
Total	167	100

Figure 2 shows follicular LP lesions over the scalp. (Figure 2).

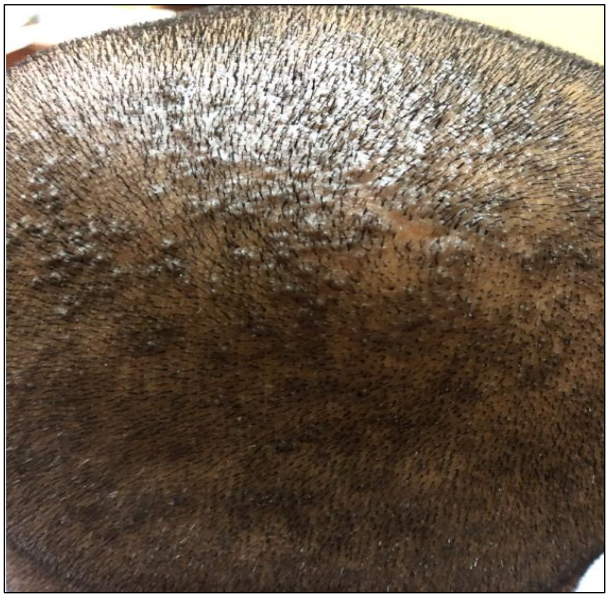

Figure 2: Follicular LP lesions over the scalp.

Considering oral LP, erosive pattern of oral lichen planus was found to be more common than reticular pattern. In this case control study 5.4% of the total study population presented with hepatitis c infection.

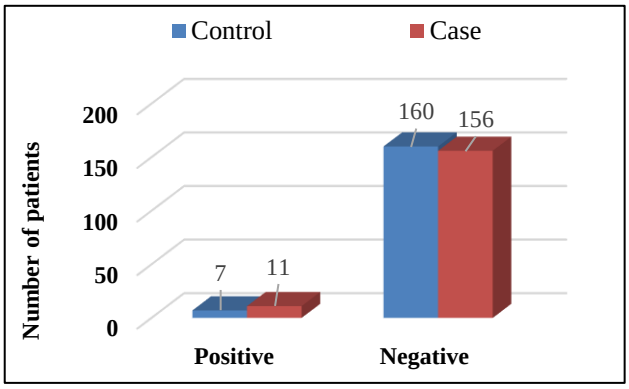

Figure 3: Overall prevalence of hepatitis c infection in case and control.

Prevalence of HCV infection was found to be low in case (6.6%) and controls (4.2%).

There is no statistically significant difference in the prevalence of HCV infection among cases and controls group.

DISCUSSION

The association between lichen planus and chronic hepatic disease has been described since 1978.[14] The first case of a patient with LP confirmed by biopsy and active HCV hepatitis was described in France in 1991 by M. Mokni et al.[15]

Studies suggest that skin and mucosal lesions may be caused by direct action of the virus or by an induced immunological response, especially when erosive oral lesion are present.[16]

However, the literature data vary with regard to the prevalence of hepatitis C in patients with lichen planus. The figures obtained range from 4% in France to 65% in Japan.[16] Controlled studies conducted in Italy and Germany demonstrated the relation between HCV and LP suggesting that HCV may be involved in the development of this skin condition, mainly of the oral subtype.[17,18] The prevalence of HCV infection among OLP patients varies widely between countries, reaching the highest percentage in HCV hyper endemic areas such as southern Europe and Japan. It should also be mentioned that in the regions with a higher prevalence, HCV infection is more frequent in individuals older than 40 years and uncommon in those ages under 20 years. This study did not show any such age variation in HCV positive LP patients.

Concurrently, a low prevalence of HCV infection in patients with LP was found in studies in England and India.[19,20] This is in concordance with this study. No statistically significant association was also found between oral LP and HCV in a study done by Donempudi et al in Maharashtra.[21]

Some authors suggest that the association between lichen Planus and hepatitis C may result from infection with particular form of HCV that is found only in certain geographical areas. It is also worth discussing the identification method of HCV infection that is based on serologic evidence of antibodies against HCV. However, this method is known to be subject to errors and false-positive and false-negative results may occur. A study with Italian patients found a significant association between HCV and exclusively oral LP and HLA-DR6 allele, suggesting that more than the virus itself, the host factors are important in the progression of disease and this could also explain the geographical variation.[22]

This study results indicate that an investigation for HCV infection need not necessarily be performed in all patients with LP. The rest of the statistical analysis based on age distribution showed that most of the patients were in the age group between 35-45 years. On the sex distribution, the present study showed a predilection for females 67.7% when compared to males 32.3%. Other studies have shown similar observations.

Comparing the clinical forms, in the present study, 63% of patients had cutaneous involvement and 19.2% had cutaneous and mucosal lesion. 17.3% Patients had only mucosal involvement. The studies of Stojanovic et al, Sehgal et al, Kachhawa et al reported 98%, 70.6%, 67.3% with only skin involvement, 68%, 20.4%, 10% with skin and mucosal involvement and 7%, 12.2%, 72% with only mucosal involvement.[23-25] majority of our patients had oral, classical and generalized LP followed by hypertrophic and linear variant (Figure 4 and 5). None of the patients had bullous variant of LP. This was unlike a study done in Nigeria.[26]

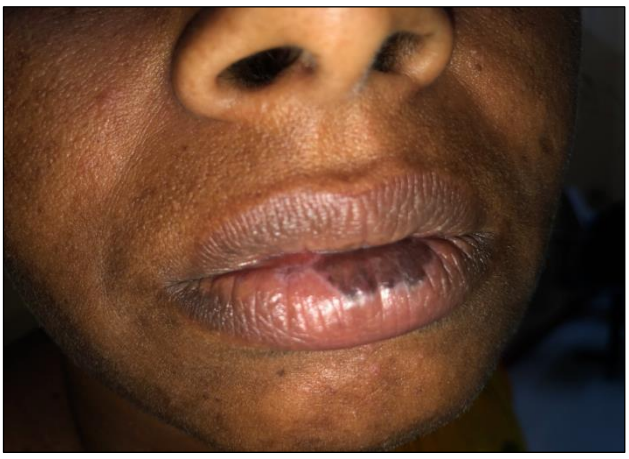

Figure 4: Annular LP on lip.

Figure 5: hypertrophic LP.

CONCLUSION

Any etiological link between LP and HCV could not be found in our population. Nevertheless, the controversy is still open and a waits answers from other standpoint also; It is recommended, to verify the origin of the patients studied, conduct more case control studies, use PCR techniques to confirm the diagnosis of HCV infection, investigate the relation between treatment of Hepatitis C and the progression of Lichen Planus lesions and to study the relation between different gene types of HCV and Lichen Planus in different countries.

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Ethical approval: The study was approved by the institutional ethics committee

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