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Original Article

Frequency of dyslipidaemia among patients of lichen planus presenting to tertiary care setting

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Abstract

Background Lichen planus (LP) is a chronic inflammatory disorder that affects skin and/or mucous membranes. It is a T-cell-mediated inflammatory disorder which causes lipid metabolic aberrations and is associated with increased risk of cardiovascular diseases.

Objective To assess the prevalence of dyslipidemia in patients of lichen planus which presents to the Dermatology Department at a tertiary care setting.

Methods In this cross sectional survey, 80 cases of lichen planus were included after clinical and histopathological confirmation. Presence or absence of dyslipidemia was confirmed by fasting lipid profile. Patients taking lipid lowering drugs, patients of diabetes, hypothyroidism (TSH >4.2mIU/ml), hypertension or ischemic heart disease, patients with BMI more than 30 kg/m^2, patients with family history of dyslipidemia and early cardiac death, were excluded. Stratification of dyslipidemia with regards to age, gender and area of involvement was carried out.

Results There were 47 (58.8%) males and 33 (41.2%) females. Mean age of the patients was 39.00±11.76 years. Cutaneous lichen planus was seen in 32 (40%) patients, mucosal in 28 (35%) patients and both (cutaneous and mucosal) in 20 (25%) patients. Dyslipidemia was present in 48 (60%) patients. Stratification of dyslipidemia with regard to age and gender was not significant but with regard to mucosal and cutaneous involvement it was significant.

Conclusion Lichen planus is significantly related to dyslipidemia according to this study. Therefore meticulous screening for dyslipidemia is needed in patients of LP.

Key words
Frequency; Lichen planus; Dyslipidemia.

Introduction

Lichen planus (LP) is an autoimmune disease caused by chronic mucocutaneous inflammation, having widespread red to violet coloured papules of different shapes with surface, having Wickham striae, commonly on flexor surfaces of the limbs.[1] It effects 1% of the population worldwide and its etiopathogenesis, is poorly understood.[2,3]

Pathogenesis of LP is multifactorial having genetic factors, autoimmune mechanisms, and various other factors, such as drugs, infections and stress.[4] As far as treatment is concerned, there are many treatment options available depending on the severity and the location but mainstay of treatment are topical or oral steroids, retinoids and light therapy. [5]

Since lichen planus is a chronic inflammatory disease, it may predispose patients to other

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inflammatory diseases, the most notable being cardiovascular disorders. Various studies across the world have indicated that lichen planus is a risk factor for dyslipidemia and other components of metabolic syndrome.[6] Similarly, patients with LP have more chances to have various comorbidities like obesity, various metabolic disorders, diabetes and hypertension.[7-9]

Dyslipidemia is the presence of high total Cholesterol levels, raised triacylglyceride levels, increased low density lipoprotein levels and reduced high density lipoproteins levels. There is a correlation of serum total and low density lipoprotein (LDL), cholesterol with probability of chronic heart disease. Early onset coronary heart diseases are usual in patients with abnormalities of serum lipids.

There are studies that indicate an association between LP and dyslipidemia,[10,11] however some studies have not shown any association.[12] So, it was worthwhile to conduct a study to observe if there is any correlation between dyslipidemia and LP in patients coming to the Dermatology unit of our teaching hospital.

Methods

This study was a cross sectional analysis carried out in the Dermatology Department Unit-I, Jinnah Hospital Lahore. After getting approval from the Ethical Review Committee, 80 patients of both genders, aged 16 to 60 years and having clinical diagnosis of lichen planus were enrolled. Diagnosis was confirmed by histopathology whenever required. Patients taking lipid lowering drugs determined by history and medical record were excluded. Patients already diagnosed with diabetes, hypothyroidism (TSH >4.2 mIU/ml), hypertension or ischemic heart disease or any other disease likely to affect serum lipid levels as determined by history and medical record were not included in this study. Patients with BMI more than 30 kg/m^2 were not enrolled. Patients with any family history of dyslipidemia and early cardiac death determined by history (first degree relatives, males aged less than 55 years, females aged less than 65 years) were exempted from the study.

All demographic statistics were recorded in a predesigned proforma. Following well informed consent, fasting lipid levels were performed by Pathology lab of Allama Iqbal Medical College, (after 8-hours fasting). Results were recorded in the proforma. Privacy was maintained. Presence of an abnormality in any one of the following lipid profile parameters was labeled as dyslipidemia: high serum level of cholesterol above 200 mg/dl, triglycerides above 150 mg/dl, HDL less than 35 mg/dl and LDL above 130 mg/dl.

Data was entered and analyzed using SPSS version 27.0. Descriptive statistics were used to analyze the study variables like gender and age. Numerical variables were presented as mean and standard deviation. Qualitative variables i.e. sex and dyslipidemia were presented as frequencies. Data was stratified for age, type of LP and gender to see the role of effect modifiers. To check post stratification significance, chi square test was used. A p-value of ≤ 0.05 was taken as statistically significant.

Results

There were 47 (58.8%) male patients and 33 (41.2%) female patients. The mean age of patients was 39.00±11.76 years. Cutaneous lichen planus was present in 32 (40%) patients, mucosal lichen planus was seen in 28 (35%) patients and both (cutaneous and mucosal) were present in 20 (25%) patients. Dyslipidemia was present in 48 (60%) patients of lichen planus **(Figure 1)**. Stratification of dyslipidemia with regard to age, gender, mucosal and cutaneous LP was carried out **(Tables 1-3)**.

Table 1 Stratification of dyslipidemia with respect to gender (n = 80).

Gender	*Presence of Dyslipidemia*		*Total*
	Yes	*No*	
Male	29	18	47
Female	19	14	33
Total	48	32	80

p-value: 0.711.

Table 2 Stratification of dyslipidemia with respect to age (n = 80).

Age	*Presence of Dyslipidemia*		*Total*
	Yes	*No*	
≤ 40 years	28	14	42
>40 years	20	18	38
Total	48	32	80

p-value: 0.201.

Table 3 Stratification of dyslipidemia with respect to cutaneous and mucosal LP (n = 80).

Type of LP	*Presence of Dyslipidemia*		*Total*
	Yes (%)	*No (%)*	
Cutaneous only	29 (90.6)	3 (9.3)	32
Mucosal Only	11(39.2)	17 (60.7)	28
Muco-Cutaneous	8 (40)	12 (60)	20
Total	48 (60)	32 (40)	80

p-value: 0.000.

Post stratification, it was found that presence of dyslipidemia was not significantly associated with age group (p-value=0.201). There was no significant association between gender and dyslipidemia (p-value=0.711). However cutaneous LP as compared to mucoal LP was significant (p value=0.000) associated with dyslipidemia.

Discussion

Dyslipidemia is frequently associated with lichen planus. In the current study dyslipidemia was present in significant proportion (60%) of patients with lichen planus. Startification of dyslipidemia with respect to gender and age was not significant; however, with respect to localization of lichen planus, the results were significant. 90.6% patients of cutaneous disease, 39.2% of patients with mucosal disease and 40% of patient with mucocutaneous involvement had

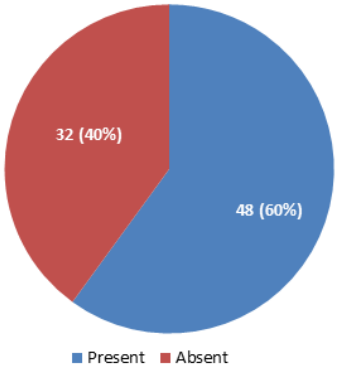

Figure 1 Frequency of dyslipidemia among patients of LP.

dyslipidemia.

Arshad Z *et al*.[13] conducted a study in 2021 in Pakistan, that showed dyslipidemia was observed in 39.6% of patients of lichen planus. In their study 96 patients were enrolled.

Similarly, another study conducted in Pakistan in 2021, by Khan S *et al*.[14] showed that dyslipidemia was present in 70% of patients of lichen planus. These results were comparable with our results. However, they found significant impact of age and duration of disease, patients in age groups 20-35 and having disease duration of less than 5 months had higher risks of dyslipidemia. No such effect was noted in the results of this study.

A Turkish study conducted by Özkur E *et al*.[4] in 2020 observed that the LP group serum lipid levels were higher than the healthy group, however, and as stated by NCEP ATP III criteria, this difference was not statistically important. In LP group, 67.3% of the patients and in control group, 64.6% of the patients had dyslipidemia. Dyslipidemia risk rate was calculated as 1.128. With reference to age, sex, tobacco consumption and hypertension, no noteworthy differences were seen between LP patients and controls. However their results were not comparable with the current study as they had 49 patients of lichen planus and included

patients with other co-morbidities like diabetes as well as hepatitis B and C. The current study did not have a control group. But its results may pave the way for further research in this group of patients.

Another study, conducted by Azeez *et al*.[15] in India in 2019 showed that 63.8% of patients in LP group had dyslipidemia in comparison of age and sex matched comparison group (48.9%), although the result was not statistically significant at 5% level. These results were comparable with the current study.

In another study done in Iran in 2019 by Nasiri S *et al*.[16] 81.4% of patients having lichen planus had dyslipidemia as compared to 13.9% in people without lichen planus and this difference was important. These results were similar to the current study, however they also observed other parameters like metabolic syndrome and raised CRP. Also LP patients with dyslipidemia had high incidence of common carotid wall thickness as compared to patients without dyslipidemia.

In a study in India by Kumar SA *et al*.[17] in 2019, 34.6% of patients with LP showed increased triglycerides levels and 14.66% of them had high LDL levels compared with 18.66% and 3.4% controls, respectively, which was statistically significant. Their results also emphasized on the increased risk of dyslipidemia with lichen planus as our study.

Conclusion

This study highlighted the importance of dyslipidemia and its screening in patients of lichen planus as they may be at risk of cardiovascular, disease-related or treatment co-morbidities especially in the Asian population. Treatment of the disorder may further aggravate the metabolic derangements and should warrant regular check on these levels to ensure better holistic management of patients.

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