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Original Article

Lipid Profile in Patients with Lichen Planus in a Tertiary Care Hospital

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Abstract

Background

Lichen planus is an immune mediated disease that affects the skin and the mucous membranes. Although the etiology and pathogenesis are not fully understood, it is believed that lichen planus represents a T-cell-mediated inflammatory disorder which produces disturbances of lipid metabolism.

Material and Methods

Patients with the clinical diagnosis of lichen planus were included in the study after taking informed written consent and getting the approval from institutional review committee. In total 40 patients were included in the study. Serum lipid profile was performed in the medical laboratory of Nobel Medical College Teaching Hospital. Data were entered in Microsoft Excel and analyzed.

Results

Out of 40 patients, 13(32.5%) patients had dyslipidemia. Overall dyslipidemia was seen more in female patients (53.8%) than in male patients (46.2%). In our study, hypertrophic (32.5%) followed by eruptive (27%) and mucosal (25%) lichen planus were the most common variant.

Conclusion

This study demonstrated that about one-third of lichen planus patients showed deranged lipid levels in blood so for patients presenting with lichen planus physicians should consider screening them for dyslipidemia.

Keywords: *Lichen Planus, Dyslipidemia, Metabolic Syndrome*

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Introduction

Lichen planus (LP) (Greek leichen 'tree moss', latin planus 'flat') is a unique chronic inflammatory disorder of the skin, mucous membranes, nails, and hairs, characterized by violaceous, pruritic, polygonal flat-topped papules usually distributed bilaterally and symmetrically, more on the extremities. Estimates between 0.14% and 0.80% have been reported worldwide and approximately 0.44% in the United States [1]. It is reported in ~1–2% of all dermatologic patients [2]. It typically affects middle-aged adults of both sexes. It can occur at any age; however, more than two-thirds of patients with LP are aged between 30 and 60 years [3].

It is known that psoriasis, another common inflammatory skin disease, mediated by T-cells is associated with an increased risk of hypertension, diabetes mellitus, obesity, metabolic syndrome, and dyslipidemia. Several cytokines like tumor necrosis factor [TNF] alpha, interleukin-2 [IL-2] and IL-6 have been implicated as the cause of increased lipid levels in patients with psoriasis. In LP, also a T-cell-mediated inflammatory disorder, lymphocytes infiltrate into the epidermis and attack keratinocytes. The keratinocytes produce more cytokines that attract more lymphocytes. These cytokines like tumor necrosis factor-α (TNF-α), interleukin- 6 (IL6), IL10, and IL4 are involved in the pathogenesis of LP and may explain the relationship with dyslipidemia [4-6].

Few recent studies have shown an association between LP and dyslipidemia [7-10], whereas few studies have not [11]. LP is quite a common disease in our set up, so this study which is being conducted is an attempt to find out the association between LP and dyslipidemia in our country where we have different lifestyles, dietary habits, disease pattern than in the west. Patient with LP might be candidates for screening dyslipidemia to prevent metabolic syndrome. Early detection of dyslipidemia and timely management may reduce the cardiovascular morbidity and mortality.

Materials and Methods

This is a comparative study done prospectively in Nobel Medical College and Teaching Hospital, Biratnagar from August 2019 to September 2020. This study was started after acquiring approval from the Institutional Review Committee of Nobel Medical College. Written consent was acquired after the patient was explained about the study. All patients presenting with lichen planus in dermatology OPD were included in the study. Patients who were less than 16 years of age, patients having disease known to be associated with dyslipidemia and pregnant and lactating mothers were excluded from the study.

Using $n = Z(1-\alpha)\sqrt{\{2p(1-p)\}} + Z(1-\beta)\sqrt{\{p1(1-p1)\} + p2(1-p2)\}^2 / (p1-p2)^2}$ sample size was calculated to be 25. Total number of patient taken into study was 80. All the patients presented with features of lichen planus were diagnosed clinically. Data such as age, gender, height, weight, blood pressure, BMI, duration of illness, drug history, other concomitant disease, site of involvement, clinical variant were collected and information was recorded. Total cholesterol (TC), Triglyceride (TG), High Density Lipoprotein (HDL), and Low Density Lipoprotein (LDL) were the four parameters taken as lipid profile. The presence of dyslipidemia was defined if one of the following parameters were present: triglycerides 150 mg/ dL, total cholesterol 200 mg/dL, LDL-C 130 mg/dL, or the patient received treatment for dyslipidemia. Data collected was entered in MS Excel and mean, median, standard deviation etc were analyzed using SPSS 22.0.

Results

Fifteen (37.5%) males and 25(62.5) females with LP were enrolled in the study. Mean age of onset of lichen planus in male was found to be 34.40 years while it was 41.76 years in female. The most common age group was found to be age ranging from 46-55 years. In this study the age of onset of the disease was earlier in male than in female. Out of 40 patients, 13(32.5%) patients had dyslipidemia. Overall dyslipidemia was seen more in female patients (53.8%) than in male patients (46.2%). A total of 12 (30%) patients had positive history of smoking and five (12.5%) patients had family history of cardiovascular disease.

The mean value of TC in male (184.67mg/dl) was higher than female (176.44mg/dl), similarly LDL in male (113.93mg/dl) was higher than female (108.60mg/dl), TG in male (134.60mg/dl) was higher than female (118.12mg/dl), weight in male(65kg) was higher than female (56.40kg), me (165.07cm) were taller than female (149.12cm) but HDL in female (45.20mg/dl) was higher than male (45.12mg/dl) and BMI in female (25.49) was higher than male (23.92) [Table 1].

Table 1: Mean and Standard deviation of Lipid profile, BMI, Wt and Ht in case

	Gender	n	Mean	SD
TC (mg/dl)	M	15	184.67	30.04
	F	25	176.44	33.47
HDL(mg/dl)	M	15	45.12	9.59
	F	25	45.20	8.57
LDL(mg/dl)	M	15	113.93	24.54
	F	25	108.60	26.20
TG(mg/dl)	M	15	134.60	85.29
	F	25	118.12	56.73
BMI(kg/m^2)	M	15	23.92	3.03
	F	25	25.49	5.04
Wt(kg)	M	15	65	8.25
	F	25	56.40	10.42
Ht(cm)	M	15	165.07	7.37
	F	25	149.12	6.42

Table 2: Mean and Standard deviation of Lipid profile, BMI, Wt and Ht in control

	Gender	n	Mean	SD
TC(mg/dl)	M	15	149.44	34.15
	F	25	177.29	42.25
HDL(mg/dl)	M	15	38.69	5.67
	F	25	44.04	11.20
LDL(mg/dl)	M	15	91.44	23.77
	F	25	106.96	27.73
TG(mg/dl)	M	15	93.38	42.23
	F	25	130.42	110.20
BMI(kg/m^2)	M	15	22.83	3.74
	F	25	25.83	4.32
Wt(kg)	M	15	61.88	9.80
	F	25	58.29	7.95
Ht(cm)	M	15	164.81	5.53
	F	25	150.71	6.81

In male most common site of involvement was trunk/upper limbs/lower limbs (33.3%) where as in female it was found to be lower limbs (36%) [Table 3].

Table 3: Site of involvement of lichen planus in male and female

Site	Gender		Total n(%)
	Male n(%)	Female n(%)	
Face	0(0)	1(4)	1(2.5)
Oral Mucosa	3(20)	5(20)	8(20)
Genital Mucosa	2(13.3)	0(0)	2(5)
Upper Limbs	3(20)	4(16)	7(17.5)
Lower Limbs	2(13.3)	9(36)	11(27.5)
Trunk/Upper Limbs/Lower Limbs	5(33.3)	6(24)	11(27.5)
Total	15(100)	25(100)	40(100)

Out of 5 patients having duration of illness >2years, 3 patients accounting 60% had dyslipidemia showing that dyslipidemia was more common with patients having longer duration of lichen planus.

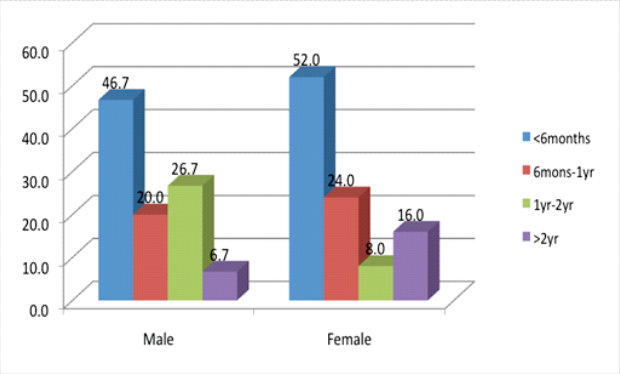

Figure 1: Bar diagram showing duration of lichen planus in male and female given in percentage (%)

In this study hypertrophic lichen planus found to be the most common clinical variant with a percentage of 32.5% followed by eruptive (27.5%), mucosal(25%), other variant(12.5%) and Lichen planus pigmentosus (2.5%)

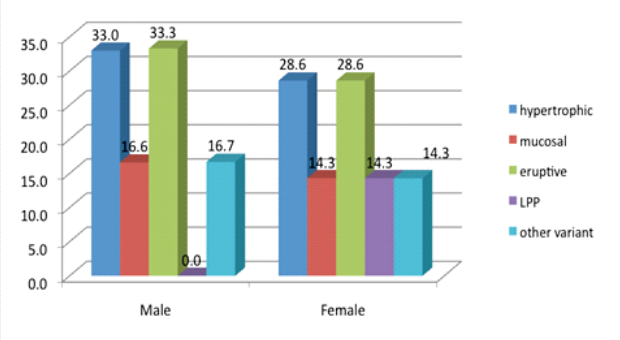

Figure 2: Bar diagram showing dyslipidemia and clinical variant of LP in male and female given in percentage (%)

Discussion

Inflammation plays a very important role in the development of dyslipidemia. Patients with chronic diseases like psoriasis and systemic lupus erythematous have shown dyslipidemia with a positive correlation with cytokine levels. A recent study done by Pia Lopez et al [7] showed higher prevalence rate of dyslipidemia 58% among the oral lichen planus group and 50% in the control group. In another study conducted by Arias – Santiago et al [6] dyslipidemia was seen more in patients with lichen planus (61.3%) than in controls (32.5%). In a similar study done by J. Dreiher et al [4] showed that the prevalence of dyslipidemia was significantly higher in case group (42.5%) than in control group (37.8%). The prevalence rate of dyslipidemia was also higher (61%) in cases with lichen planus than controls (33%) in a study carried out by Arias- Santiago et al [12]. These findings were consistent with our study showing higher prevalence rate of dysli-

pidemia in patients (30%) than in controls (25%) with lichen planus, although it was not statistically significant (p=1.000). The mean age of onset among the females with lichen planus was 41.5 years which was not significantly higher (p=0.492) than the mean age of males (34.6 years) with lichen planus. This finding was also consistent with a Spanish study which demonstrated mean age of 48.5 years in females and 47.3 years in males [6].

Pia Lopez – Jornet et al [7] reported that men with lichen planus had higher TC (206mg/dl vs 205.3mg/dl), LDL (126.8mg/dl vs 124mg/dl) and TG (122.3mg/dl vs 113.7mg/dl) than women with lichen planus. Similarly, Arias- Santiago et al [6] reported that men with lichen planus had higher TC (199.2mg/dl vs 196.1mg/dl), LDL (125mg/dl vs 116.4mg/dl), TG (157.2mg/dl vs 134.4mg/dl) than women with lichen planus. These finding were similar with our result showing men having higher TC (183.69mg/dl vs 175.92mg/dl), LDL (113.75mg/dl vs 109.25mg/dl) and TG (133.19mg/dl vs 112.50mg/dl) in men than women with lichen planus. While comparing TG and HDL in male and female with lichen planus in another study done by Arias – Santiago et al [12] found that higher TG in male (159.4mg/dl) than female (139.5mg/dl) but lower HDL in male (50.3mg/dl) than female (58.8mg/dl). This result was consistent with our finding showing higher TG in male (133.19mg/dl) than female (112. 50mg/dl) as well as higher HDL in male (45. 31mg/dl) than female (45.13mg/dl).

Arias-Santiago et al [12] reported that 68% male patients with lichen planus and 54% female patients with lichen planus had dyslipidemia. Another study done by Arias-Santiago et al [6] also showed dyslipidemia in 67.5% male patients and 55% female patients with lichen planus. The result of both the studies done by Arias-Santiago et al was similar with our study which also showed the association between lichen planus and dyslipidemia to be higher in male (37.5%) than in female (25%).

Conclusion

In this study, a disrupted lipid profile was observed in about one-third LP patients. Hence we propose measuring lipid levels prior to commencing the treatment in all known cases of lichen planus so as to preclude cardiovascular diseases if there is a problem with the lipid profile.

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Conflicts of interests: None

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