Original Research Paper Dermatology

Lichen planus and metabolic syndrome- a case controlled study

Dr. Nidhi Rana	M.B.B.S , M.D.(resident) Department of Dermatology and Venereology . Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala India , Aggarwal Hospital Ambala City. Haryana.
Dr. Aneet Mahendra	M.B.B.S, MD. Department of Dermatology and Venereology. Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala India, Aggarwal Hospital Ambala City. Haryana.
Dr. Sanjeev Gupta	M.B.B.S , M.D., D.N.B Department of Dermatology and Venereology . Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala India* , Aggarwal Hospital Ambala City. Haryana. **Corresponding Author
Dr. Manik Aggarwal	M.B.B.S. Department of Dermatology and Venereology . Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala India , Aggarwal Hospital Ambala City. Haryana.

ABSTRACT

Background and objectives:
Lichen Planus (L.P) is a chronic inflammatory mucocutaneous disease affecting 0.22 to 5% of the general population. Recent data suggests its association with systemic disorders such as hypertension, dyslipidemia, hepatic disorders and diabetes mellitus (DM). Relationship between L.P and Metabolic Syndrome (MS) is not yet taken into account. MS and DM have been associated with increased risk of cardiovascular diseases. These conditions, if detected and treated early could potentially decrease mortality and improve the quality of life in these patients.

Aims and Objectives
To evaluate the association of metabolic syndrome and lichen planus and to compare the various components of metabolic syndrome in cases and controls.

Methodology:
All cases of LP were investigated for Fasting Blood Glucose (FBS) and lipid profile. 50 age matched controls were included. MS was diagnosed as per SAM-National Cholesterol Education Program's Adult Treatment Panel III.

Results:
Out of 50 cases, 46% were males and 54% were females. Subjects were in age ranging from 18 to 70 years. Most of the cases presented with classical type of L.P (54%) followed by hypertrophic L.P (20%). 48% of patients showed raised FBS level as compared to 18% controls (p-0.001)Triglycerides were raised in 50% of L.P patients as compared to 30% of controls (p-0.003). MS was more prevalent in cases than in controls (46% versus 26% respectively, (p-0.038).

Conclusion:
DM, dyslipidemia and MS are seen more commonly in L.P patients. Hence, these patients should be evaluated properly for these systemic disorders and treated accordingly.

KEYWORDS : Incidental gallbladder disease & routine surgical pathology

INTRODUCTION

LP is derived from Greek word - leichenwhich means "tree moss" and Latin word - planus meaning "flat". L.P is a chronic inflammatory mucocutaneous disease of unknown etiology which typically manifests as pruritic, faintly erythematous to violaceous, flat-topped, polygonal papules distributed mainly over the flexural areas of wrists, arms, and legs.1Reports from different countries suggest an incidence varying from 0.5 to 1% among patients with skin diseases.[2,3]The disease most commonly affects the people in the age range of 20-49 years.[2] Females appear to be more commonly affected than men.

It is evident that immunologic mechanisms almost certainly mediate the development of L.P. No consistent alterations in immunoglobulins (Igs) have been shown in L.P, and alteration humoral immunity most likely is a secondary response in the immunopathogenesis. Cell-mediated immunity, on the other hand, plays the major role in triggering the clinical expression of the disease.[4]

Patients with L.P are more likely to have a number of systemic and behavioral comorbidities than those without L.P. There have been few studies in the past which show correlation of L.P with obesity, hypertension, hyperlipidemia, hepatic disorders like primary biliary cirrhosis, primary sclerosing cholangitis and chronic hepatitis and DM,5,6CVD among patients with L.P.[7]Of emerging significance is the relationship between L.P and Metabolic Syndrome (MS).[8]

The metabolic syndrome (syndrome X, insulin resistance syndrome) consists of a constellation of metabolic abnormalities that confer increased risk of cardiovascular disease (CVD)and diabetes mellitus (DM). The criteria for the metabolic syndrome have evolved since

the original definition by the World Health Organization in 1998, reflecting growing clinical evidence and analysis by a variety of consensus conferences and professional organizations. The major features of metabolic syndrome include central obesity, hypertriglyceridemia, low HDL, high cholesterol, hyperglycemia and hypertension.

As both lichen planus and metabolic syndrome are proinflammatory conditions and common inflammatory mediators are present in both including TNF alpha and IL-[6,9,10] It is hypothesized that presence of both conditions in an individual may influence each other. The aim of the present study is to find a possible relationship between the lichen planus and metabolic syndrome.

MATERIAL AND METHODS

A total of 100 patients (50 cases of L.P and 50 controls of either sex) attending the skin OPD at at Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala (Haryana) were enrolled in the study. Patients with cutaneous lichen planus of duration more than 6 months. And those of more than 18years of age were included in study. Patients with signs of Lichenoid drug eruption, on oral medications like steroids, retinoids and methotrexate and Patients with history of familial dyslipidemia and patients on lipid lowering drugs were excluded in study.The participation was totally voluntary and an informed consent was taken from all the patients willing to participate in the study. Clinical cases of lichen planus were biopsied and confirmed histopathologically. A detailed medical history along with physical examination was undertaken and findings recorded in the proforma like the age, gender, weight, height, BMI (Quetelet's index)[weight (kg)/ height (m2)], waist circumference, blood pressure, smoking, alcohol consumption, hypothyroidism, personal or family history of cardiovascular disease.Controls were patients with insignificant complaints and attendants of patients visiting the hospital. Controls were age and sex matched before enrolment into the study.

Metabolic syndrome was diagnosed as per criteria of the South Asia modified National Cholesterol Education Program, Adult Treatment Panel III (SAM-NCEP ATP III).

Analysis was done to find out the association between lichen planus and MS.After all the data was collected, it was tabulated and analysed. Chi square test was used to determine significance of various parameters. The statistical analysis was done and a p value of <0.05 was considered significant.

RESULTS

A total of 100 patients (50 cases of Lichen Planus and 50 controls of either sex) were studied. In both cases and controls of the patients 46% males and 54% of the patients were females. Majority of the patientsi.e16(32%) were in the age group of 31-40years. The mean age of presentation was 40.01 years., 62.5% patients in the age group of 51-60 years had metabolic syndrome followed by 43.75% patients in the age group of 31-40.Thirty-six of the patients had L.P for 1-2 years. Only 2% had L.P for more than 10 years.All the patients having L.P for 6-10 years or more than 10 year had metabolic syndrome. Whereas only 46.15% of patients having L.P for 3-5 years had MS.Fifty-four percent cases presented with classical type of L.P. Second commonest type of L.P was hypertrophic L.P which was seen in 20% of patients. Lower limbs (36%) were the most commonly affected area followed by upper limbs (28%), trunk and face (16%). Oral mucosa and Genital mucosa were involved in 8% and 4% of patients respectively. Only 2% patients had nail involvement. In patients having metabolic syndrome, 3 (60%) patients had body surface area involvement to the extent of 21-25% followed by 4 (57%) having 16-20% BSA involvement. Only 5 (38.4%) had 1-5% BSA involvement.

As per SAM-NCEP ATP III, 38% L.Ppatients and 20% control group had fasting plasma glucose ≥100mg/dl. 54% LP patients and 44% control group had raised waist circumference.60% of patients of both the groups i.e cases and control had low HDL levels. 50% of LP patients and 30% of patients in control group were having raised triglycerides levels. Raised blood pressure were present in 32% LP patients and in 24% in control group.

DISCUSSION

Lichen planus is achronic, inflammatory mucocutaneousdisease which so far was supposed to be restricted to the skin, but the growing data has identified specific links between L.P and MS. It has been associated with various systemic and metabolic diseases. Increased expression of inflammatory mediators in L.P may be the cause of possible association with other diseases.In the present study, prevalence of MS in patients of L.P is 46% cases as compared to 26% in controls. This difference was statistically significant (P-0.038)

Our study was conducted in northern india at MMIMSR, mullana, ambala.Fifty patients of LP and 50 age and sex matched controls in the age group of 18 to 70 years were enrolled and evaluated to study the association of metabolic syndrome and L.P. The patients were assessed for MS by using SAM NCEP-ATPIII criteria.

Out of 50 cases, 46% were males and 54% were females. A slightly higherfemale preponderance with M: F ratio 1:1.2 was seen in our study.The age of participants ranged from 18 to 70 years. The mean age of patients at time of presentation was 40.01 years. Maximum number of cases (32%) were in age group of 31-40 years.

We observed that after the age of 50 years, 62.5% patients of L.P were having MS whereas only 43% patients were having MS in less than 40 years of age. Overall an increasing trend was observed in prevalence rate of MS with increasing age.

As the current study, was conducted in a rural tertiary care hospital. most of the patients (42%) were illiterate. In our study, majority of patients (54%) were found to have classical type of L.P.majority of patients i.e36% had disease of 1-2 years duration. Only 2% patients had L.P for more than 10 years. The mean duration of disease in the present study was 2.5 years.

Overall as the disease duration of L.P increased, number of patients having MS also increased.

In the present study, mean triglycerides value was 144.73mg/dL in cases as compared to 124.74 mg/dL in controls. The triglycerides ranged from 62-213 mg/dlin cases and 28-234 mg/dl in controls. In our study, 34% of dyslipidemia patients fulfilled the SAM-NCEP ATP III criteria for M.S.

The next most common abnormal metabolic parameter in cases was high fasting blood sugar. 48% cases and 18% controls (p-0.001) showed elevated fasting blood glucose level(FBS≥100mg/dl) as per SAM-NCEP ATP III criteria..On defining DM as FBS> or equal to 126mg/dL (Harrison), DM was diagnosed in 10% of cases and 2% of controls in our study.10% patients of DM had MS in the present study.

Low HDL(Males<40, Females <50mg/dl) were found in 20% of cases and 30% of controls but the difference was not statistically significant.

Another important parameter of MS that was deranged was Blood pressure(≥130/85 mm Hg)as per SAM-NCEP ATP III criteria.Mean BP values were 127.84/82.32mm/Hg in cases and 122.2/79.55 mm/Hg in controls. In the present study, Hypertensioni.e Blood pressure is ≥ 140/90 mmHg (Harrison), was observed in 18% cases and in 10% of controls. These results were not found to be statistically significant (p-0.005).

Other component of MS was waist circumference. Higher WC(Male≥90 cm, Female≥80 cm) were present in 43.75 % male patients and in 56.25% female patients. Mean WC values were 84.48 cm in cases to 83.75 cm in controls. Abdominal obesity was found to be

higher in control group (44%) as compared to cases (36%) but it was not statistically significant..

UsingSAM-NCEP ATP III criteria,MS was diagnosed in 46% cases and 26% controls in our study. A significant association between MS and L.P was seen (p-0.038).

In the present study, disturbances in TG profile (50%) , high FPG levels (48%) and high BP (32%) were the most important factors leading to the increased prevalence of MS.

Distribution of patients of LP with MS according to individual parameters of MS

Metabolic Syndrome Parameters in Cases	Male Patients with MS (n= 11)	Female Patients with MS (n=12)	Total
Waist Circumference (Male≥90 cm, Female≥80 cm)	7 (43.75 %)	9 (56.25 %)	**16 (100 %)**
Hypertrigliceridemia (TG ≥ 150mg./dl)	11 (64.71 %)	6 (35.29 %)	**17 (100 %)**
Low HDL (Males<40, Females <50mg/dl)	6 (37.5 %)	6 (37.5 %)	**16 (100 %)**
High BP (≥130/85 mm Hg)	7 (58.33 %)	5 (41.67 %)	**12 (100 %)**
High FPG (≥100 mg/dl)	9 (47.37 %)	10 (52.63 %)	**19 (100 %)**

Distribution of patients in control group with MS according to individual parameters of MS

Metabolic Syndrome Parameters in Controls	Male Patients with MS (n= 6)	Female Patients with MS (n=7)	Total
Waist Circumference (Male≥90 cm, Female≥80 cm)	0(0%)	6(100%)	**6(100%)**
Hypertrigliceridemia (TG ≥ 150mg./dl)	5(50%)	5(50%)	**10(100%)**
Low HDL (Males<40, Females <50mg/dl)	5(41.67%)	7(58.33%)	**12(100%)**
High BP (≥130/85 mm Hg)	4(50%)	4(50%)	**8(100%)**
HighFPG (≥100 mg/dl)	2(40%)	3(60%)	**5(100%)**

References

1. Finn JA and Arndt KA. Lichen planus. In DJ D. Clinical Dermatology. Philadelphia: Harper and Row; 1985. p. 1-17.
2. López-Jornet P and Camacho-Alonso F. Quality of life in patients with oral lichen planus. J EvalClinPract. 2010;16(1):111-3.
3. Sampogna F, Picardi A, Chren MM, et al. Association between poorer quality of life and psychiatric morbidity in patients with different dermatological conditions. Psychosom Med. 2004;66(4):620-4.
4. Dreiher J, Shapiro J, Cohen AD. Lichen planus and dyslipidemia: a case-control study. Br J Dermatol. 2009;161(3):626-9.
5. Sharma A, Białynicki-Birula R, Schwartz RA, Janniger CK. Lichen planus: an update and review. Cutis. 2012;90(1):17-23.
6. Finn JA and Arndt KA. Lichen planus. In DJ D. Clinical Dermatology. Philadelphia: Harper and Row; 1985. p. 1-17.
7. Arias-Santiago S, Buendía-Eisman A, Aneiros-Fernández J, et al. Cardiovascular risk factors in patients with lichen planus. Am J Med. 2011;124(6):543-8.
8. Padhi T and Garima. Metabolic syndrome and skin: psoriasis and beyond. Indian J Dermatol. 2013;58(4):299-305.
9. Bhattacharya M, Kaur I, Kumar B. Lichen planus: a clinical and epidemiological study. J Dermatol. 2000;27(9):576-82.
10. Omal P, Jacob V, Prathap A, Thomas NG. Prevalence of oral, skin, and oral and skin lesions of lichen planus in patients visiting a dental school in southern India. Indian J Dermatol. 2012;57(2):107-9.