



Metabolic Syndrome in Patients with Lichen Planus: A Case-Control Study.

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Abstract

Background:

Lichen planus is a chronic inflammatory disorder that has been increasingly associated with metabolic abnormalities.

Aim:

To assess the prevalence of metabolic syndrome in patients with lichen planus and compare it with that of healthy controls.

Methods:

This retrospective case-control study was conducted over one year and included 80 participants (40 cases and 40 age- and sex-matched controls). Clinical and biochemical parameters, including body mass index, blood pressure, fasting blood glucose, and lipid profile, were evaluated. Metabolic syndrome was defined using standard criteria. Statistical analysis was performed using SPSS software, and $p < 0.05$ was considered significant.

Results:

The mean age of participants was 42.6 ± 10.2 years in cases and 41.8 ± 9.7 years in controls. Metabolic syndrome was observed in 48% of lichen planus patients compared to 20% of controls ($p = 0.006$). Obesity, hypertension, diabetes, and dyslipidemia were significantly higher in cases.

Conclusion: Lichen planus is significantly associated with metabolic syndrome.

Recommendation:

Routine screening for metabolic syndrome in patients with lichen planus is recommended to reduce long-term cardiovascular risk.

Keywords: Lichen planus, metabolic disorders, obesity, hypertension, dyslipidemia.

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Introduction

A persistent inflammatory condition that affects the skin and mucous membranes is called lichen planus. Although the precise cause is yet unknown, immune-mediated processes are thought to be crucial. (1). Middle-aged adults are frequently affected by lichen planus, which can affect the skin, scalp, nails, and oral mucosa.

Central obesity, hypertension, dyslipidemia, and impaired glucose metabolism are among the metabolic disorders that

make up the metabolic syndrome. It is linked to a higher risk of type 2 diabetes mellitus and cardiovascular disease.

Psoriasis, lichen planus, and other chronic inflammatory diseases have been more frequently associated with metabolic syndrome. Insulin resistance and lipid abnormalities may be exacerbated by immunological dysregulation and chronic inflammation. (2).

According to earlier research, lichen planus patients are more likely than the general population to have metabolic



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syndrome. Early intervention and the avoidance of cardiovascular problems depend on the identification of this connection. (3).

The current study used a retrospective case-control approach to assess the relationship between lichen planus and metabolic syndrome.

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Materials and Methods

Study Design

This was a retrospective case-control study conducted to evaluate the association between lichen planus and metabolic syndrome.

Study Setting

The study was conducted at Dharanidhar Medical College and Hospital, Keonjhar, Odisha, India, a tertiary care center providing dermatology and general medical services to a predominantly rural population.

Study Duration

The study was carried out over a period of one year.

Study Population

The study included patients diagnosed with lichen planus attending the dermatology outpatient department and age- and sex-matched healthy controls.

Sample Size

A total of 80 participants were included, comprising 40 cases and 40 controls. The sample size was determined based on feasibility and availability of eligible subjects during the study period.

Sampling Method and Recruitment

Cases were selected from patients clinically diagnosed with lichen planus in the dermatology outpatient department. Controls were selected from healthy individuals attending the hospital for routine check-ups or minor complaints. Convenient sampling was used.

Matching

Cases and controls were matched for age and sex using frequency matching to reduce confounding.

Inclusion Criteria

Cases included adults aged above 18 years with clinically diagnosed lichen planus. Controls included age- and sex-matched healthy individuals without any known chronic inflammatory or metabolic disorders.

Exclusion Criteria

Participants with pregnancy, chronic systemic illness, autoimmune disorders, or those on lipid-lowering drugs were excluded.

Definition of Metabolic Syndrome

Metabolic syndrome was defined according to the **National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III)** criteria. A diagnosis was made if three or more of the following were present:

- Waist circumference >102 cm in men or >88 cm in women
- Triglycerides \geq 150 mg/dL
- HDL cholesterol <40 mg/dL in men or <50 mg/dL in women
- Blood pressure \geq 130/85 mmHg
- Fasting blood glucose \geq 100 mg/dL

Data Collection and Measurements

Data on age, gender, body mass index, blood pressure, fasting blood glucose, triglycerides, and HDL cholesterol were collected. Blood samples were analyzed using standard laboratory methods in the hospital laboratory. All measurements were performed using uniform procedures for both cases and controls.

Bias Control

Selection bias was minimized by applying uniform inclusion and exclusion criteria. Matching was done to control confounding by age and sex. Standardized methods were used for measurements to reduce information bias.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of Dharanidhar Medical College and Hospital. As this was a retrospective study, patient confidentiality was maintained, and data were anonymized.



Statistical Analysis

Data were analyzed using SPSS software. Continuous variables were expressed as mean \pm standard deviation, while categorical variables were expressed as frequencies and percentages. The chi-square test was used to assess associations between variables. A p-value <0.05 was considered statistically significant.

Results

A total of 95 individuals were assessed for eligibility, of which 80 met the inclusion criteria

and were included in the study. Fifteen individuals were excluded due to incomplete data or not meeting the inclusion criteria.

Table 1 shows the demographic characteristics of study participants. There was no significant difference in age and sex distribution between cases and controls, indicating appropriate matching. However, a significantly higher proportion of cases had BMI >25 compared to controls ($p = 0.04$).

Table 1: Demographic Characteristics

Variable	Lichen Planus (n=40)	Controls (n=40)	p-value
Mean Age (years)	42.6 \pm 10.2	41.8 \pm 9.7	0.72
Male	18 (45%)	17 (43%)	0.85
Female	22 (55%)	23 (57%)	0.85
BMI >25	22 (55%)	14 (35%)	0.04

Table 2 shows the comparison of metabolic syndrome components between cases and controls. Metabolic syndrome, hypertension, diabetes, dyslipidemia, and central obesity were significantly more prevalent among lichen planus patients.

Table 2: Components of Metabolic Syndrome

Parameter	Lichen Planus	Controls	p-value
Metabolic Syndrome	19 (48%)	8 (20%)	0.006
Hypertension	18 (45%)	10 (25%)	0.04
Diabetes	14 (35%)	6 (15%)	0.03
High Triglycerides	20 (50%)	9 (23%)	0.01
Low HDL	16 (40%)	8 (20%)	0.04
Central Obesity	22 (55%)	12 (30%)	0.02

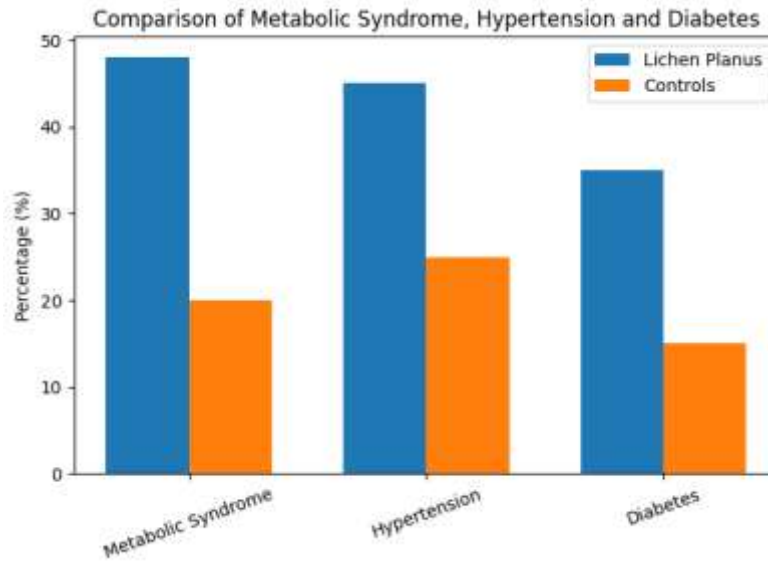


Figure 1: Comparison of metabolic syndrome, hypertension, and diabetes

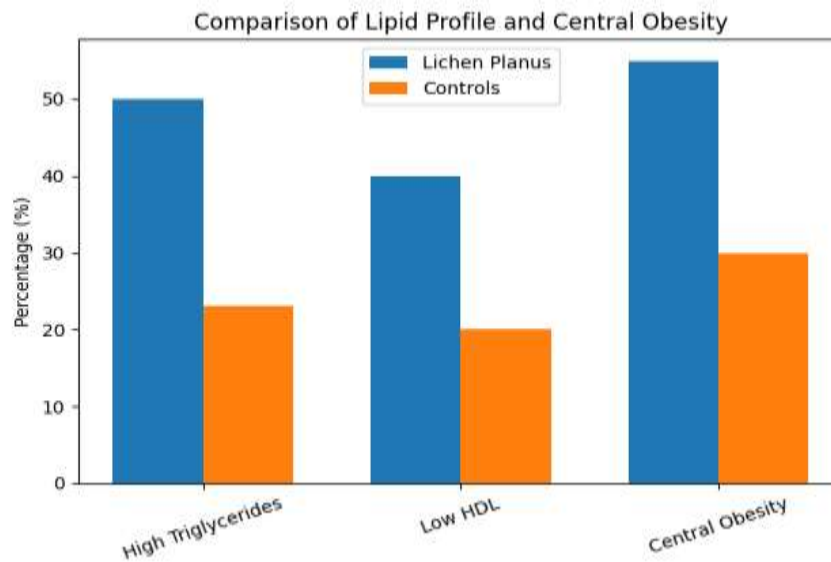




Figure 2: Comparison of lipid profile and obesity

Discussion

Lichen planus and metabolic syndrome are significantly correlated, according to this retrospective case-control study. Given that just one-fifth of healthy controls had metabolic syndrome, nearly half of lichen planus patients had this diagnosis, suggesting a close connection between the two conditions. This link is further supported by the higher prevalence of central obesity, dyslipidemia, diabetes mellitus, and hypertension among cases. (4).

All metabolic indicators were consistently greater in the lichen planus group than in the controls, as the bar graphs make evident. Along with higher rates of central obesity, poor HDL cholesterol, and high triglycerides were especially noticeable. These findings suggest an atherogenic lipid profile and a higher cardiovascular risk burden in patients with lichen planus. This link is unlikely to be a coincidence, as evidenced by the statistically significant differences found across several metabolic syndrome components.

Endothelial dysfunction, lipid abnormalities, and insulin resistance may all be influenced by chronic systemic inflammation, which is a major factor in the pathophysiology of lichen planus (5). The idea that lichen planus might be a systemic inflammatory disease rather than just a cutaneous one is supported by the clustering of metabolic risk variables in afflicted people.

Clinically speaking, our results emphasize how crucial routine metabolic screening is for lichen planus patients. In this population, early detection and treatment of obesity, diabetes, dyslipidemia, and hypertension may help lower long-term cardiovascular morbidity and death. (6).

In conclusion, the study's graphical and statistical analysis highlights the strong correlation between metabolic syndrome and lichen planus, emphasizing the necessity of a multidisciplinary approach to the patients' overall care. (7).

Generalizability

The findings of this study may be applicable to similar populations in tertiary care settings, particularly in regions with a high burden of chronic inflammatory skin diseases.

Limitations

This study has limitations, including a small sample size, a retrospective design, and a single-center setting. Additionally, lifestyle factors such as diet and physical activity were not assessed.

Recommendation

Routine screening for metabolic syndrome should be considered in patients with lichen planus to enable early intervention and reduce cardiovascular risk.

Conclusion

Lichen planus and metabolic syndrome are significantly correlated, according to this retrospective case-control study. Compared to controls, lichen planus patients had greater rates of obesity, hypertension, diabetes, and dyslipidemia. Reducing cardiovascular risk in people with lichen planus requires early metabolic syndrome evaluation and treatment.

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Abbreviations

BMI – Body Mass Index

HDL – High-Density Lipoprotein

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No funding was received for this study.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

SS: Concept and design

IS: Data collection

DS: Analysis and manuscript preparation



Data Availability

Data are available from the corresponding author upon reasonable request.

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Author Biography

Dr. Swati Sarangi is an Assistant Professor in Dermatology with research interests in inflammatory skin disorders and metabolic diseases.

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