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ORIGINAL ARTICLE

Examine the Frequency of Diabetes Mellitus and Glucose Intolerance in Patients with Lichen Planus

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ABSTRACT

Objective: The purpose of this study was to determine whether or not individuals with LP also had a high incidence of diabetic mellitus (DM) and/or glucose intolerance.

Study Design: Cross-sectional study

Place and Duration: This study was conducted at Abbottabad Medical Complex Hospital, Abbottabad in the duration from April, 2021 to October, 2021.

Methods: Total 67 patients of both gender had lichen planus were presented in this study. After getting informed written consent detailed demographics of enrolled cases included age, sex, body mass index and duration of LP were recorded. Fasting blood sugar levels between 100 and 125 mg/dL (5.6 and 7.0 mmol/L) were considered to be indicative of impaired fasting glucose (IFG). Frequency of DM and glucose intolerance were recorded. SPSS 23.0 was used to analyze all data.

Results: In this study, 36 (53.7%) were males and 31 (46.3%) were females. The mean age of the patients was 51.3±17.87 years and had mean BMI 26.08±12.63 kg/m^2. Mean duration of LP was 3.9±10.29 years. There were 28 (41.8%) cases had classic lichen planus, followed by ashy dermatosis, hypertrophic, oral lichen planus, nail and actinic. We found that 17 (25.4%) patients had diabetes mellitus type II and 20 (29.9%) cases had glucose intolerance. We found a significant relationship between LP and DM in our cases with p value <0.004.

Conclusion: We concluded in this study that the patients of lichen planus had higher frequency of DM type -2 and glucose intolerance. There was a close relationship between lichen planus and DM among all cases. There is need to evaluate patients early for treatment in hospitals.

Keywords: Glucose Intolerance, type-2 DM, Lichen planus

INTRODUCTION

The most common manifestations of lichen planus include involvement of the skin, mucous membranes, hair, and nails. This condition is the prototypical example of the lichenoid dermatitis group. In the adult population, variations of cutaneous lichen planus have been shown to occur with an incidence ranging from around 1% to 0.22%. [1] The pathogenesis of lichen planus demonstrates the importance of the cell-mediated immune system in causing damage to the basal keratinocytes and, its related disorders, which suggest the role of the immune system participation in its pathogenesis, such as diabetes. [2]

It has been observed that the prevalence of oral lichen planus in diabetics with type I diabetes is 5.7%, whereas the prevalence in diabetics with type II diabetes is 2.8%.[3]

Nonetheless, in diabetes type II, a direct correlation has not been detected; however, some studies have shown that some participation may be involved. While the function of the immune system is evident in diabetes type I, this is not the case in diabetes type II. The modulation of the immune system becomes disrupted in type II diabetes, and this may be a cause of the presentation of illness. [4-6]

In 2018-2019AD, the Department of Dermatology at Bir Hospital saw 32,395 new patients in its outpatient department (OPD) (2075 BS). A total of 459 (1.41%) of these patients were given a diagnosis of LP; 213 (46.40%) of them were men and 246 (53.59%) were women. It has been postulated that the endocrine dysfunction seen in diabetes mellitus may be linked to the immunologic deficit that is thought to play a role in the development of liver cirrhosis (LP). Insulin signalling, lipid and glucose metabolism, and adipose tissue development may all be affected by the inflammatory cytokines that have been linked to LP. [7]

Recent studies have shown the high prevalence of diabetes mellitus and decreased glucose tolerance in LP patients (14-85%). [8]

Incomplete knowledge persists on the origins and progression of lichen planus. The current school of thought is that lichen planus is an autoimmune disease produced by alterations in antigen presentation on the cell surface of the epithelium's basal layer. [9] In addition, epidermal cells have shown enzymatic activity inconsistencies and incorrect carbohydrate expression, both of which may have a connection with hormones essential to the metabolic process. Researchers have recently discovered a possible relationship between diabetes mellitus and changes in the immune system. Given these results, it's plausible that diabetes mellitus and lichen planus are related. [10] Several studies have reported abnormal results from glucose tolerance tests, and they all demonstrate that persons with lichen planus have a higher than average prevalence of diabetes mellitus (anything from 14–85 percent). However, not everyone accepted this claim. Oral lichen planus patients had a 40% higher risk of developing diabetes mellitus, as reported by Grinspan et al. (1966). [11] Diabetes mellitus has been documented in a wide range of people with lichen planus, however this variation may be due to differences in study design and diagnostic criteria. As an added complication, the prevalence of glucose intolerance in this group varies greatly, from 37% to 84%. [12] More study on the incidence of diabetes mellitus in people with lichen planus is strongly encouraged in light of the striking discrepancies in the results of previous studies. The purpose of this study was to assess the prevalence of diabetes mellitus and impaired glucose tolerance in a patient population afflicted by lichen planus.

MATERIAL AND METHODS

This cross-sectional study was conducted at Abbottabad Medical Complex Hospital, Abbottabad in the duration from April, 2021 to October, 2021 and comprised of 67 patients of lichen planus. Excluded were patients who smoked within the past 30 days, those with a history of neoplasia or malignancy, those undergoing radiotherapy or chemotherapy, those with autoimmune diseases like lupus erythematosus or rheumatoid arthritis, and those taking any systemic medication (including benzodiazepine, anti-depressive, steroidal steroid, oral contraceptive pill, corticosteroid repressing the immune

Included patients were aged between 20-80 years. All individuals diagnosed with LP by pathology during the study period were included. Fasting blood sugar levels between 100 and 125 mg/dL (5.6 and 7.0 mmol/L) were considered to be indicative of impaired fasting glucose (IFG). Frequency of DM and glucose intolerance were recorded. The information gleaned from the forms was loaded into SPSS version 23 for statistical analysis. We utilised mean standard deviation to characterise continuous data (SD). Categorical variables can be described using frequencies and percentages. The Mann-Whitney U-test, the Chi-square test, and the t-test were all utilised in our investigation for comparative purposes. The Chi2 test was performed to evaluate how well our results matched the previously reported prevalence. Statistical significance was defined as a p-value below 0.05.

RESULTS

In this study, 36 (53.7%) were males and 31 (46.3%) were females. The mean age of the patients was 51.3±17.87 years and had mean BMI 26.08±12.63 kg/m^2. Mean duration of LP was 3.9±10.29 years. Majority of the patients were had urban residency. 24 (35.8%) patients were literate. (table 1)

Table-1: The characteristics of the initial cohort of participants

Variables	Frequency	Percentage
Mean age (years)	51.3±17.87	
Mean BMI (kg/m^2)	26.08±12.63	
Mean Duration of LP (years)	3.9±10.29	
Gender		
Male	36	53.7
Female	31	46.3
Area of Patients		
Urban	40	59.7
Rural	26	40.3
Education Status		
Yes	24	35.8
No	43	64.2

There were 28 (41.8%) cases had classic lichen planus, followed by ashy dermatosis, hypertrophic, oral lichen planus, nail and actinic. (figure 1)

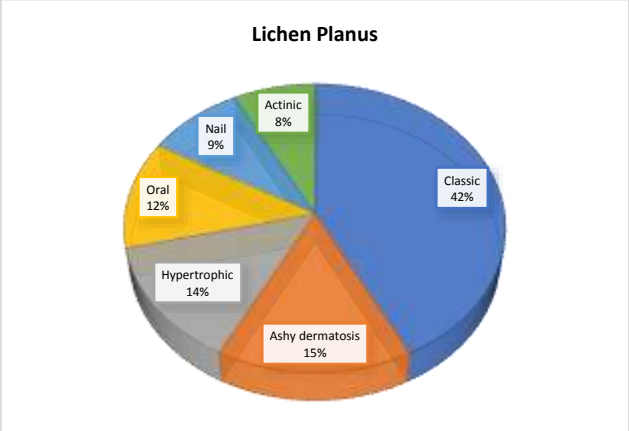

Figure-1: Presentation of lichen planus

We found that 17 (25.4%) patients had diabetes mellitus type II and 20 (29.9%) cases had glucose intolerance. (table 2)

Table-2: Association of DM and glucose intolerance

Variables	Frequency	Percentage
DM		
Yes	17	25.4
No	50	74.6
Glucose Intolerance		
Yes	20	29.9
No	47	70.1

We found a significant relationship between LP and DM in our cases with p value <0.004.(table 3)

Table-3: Relationship of LP with DM

Variables	Frequency	P value
Relationship		
LP (years)	4.8±6.26	
DM (years)	2.6±9.62	0.004

DISCUSSION

In this group of LP patients, there was an alarmingly high prevalence of diabetes mellitus. The easiest way to define LP is as an inflammatory keratosis with unknown origin. [13,14] In spite of the fact that study into the connection between DM and LP has improved over the course of the previous few decades, contradictory results have been obtained. [15] The overall findings should be viewed with caution due to variances in the research's methodologies as well as the criteria used to evaluate them. [16] Hyperglycemia brought on by insulin dysfunction is the defining feature of type 1 diabetes, and diabetic coma is the state that results from this condition. Sores on the skin are a symptom of an imbalance in diabetes-related micronutrients. [17]

In current study 67 patients were presented. 36 (53.7%) were males and 31 (46.3%) were females. The mean age of the patients was 51.3±17.87 years and had mean BMI 26.08±12.63 kg/m^2. Mean duration of LP was 3.9±10.29 years. Majority of the patients were had urban residency. 24 (35.8%) patients were literate. These findings were comparable to the previous studies. [18,19] In our study, 28 (41.8%) cases had classic lichen planus, followed by ashy dermatosis, hypertrophic, oral lichen planus, nail and actinic. All of the patients had cutaneous involvement, as stated by Panchal et al. (2015). Forty-five percent of the patients had classic lichen planus, thirteen percent had oral lichen planus, thirteen percent had hypertrophic type, ten and a half percent had pigmentosus type, nine and a half percent had planopilaris type, and six and a half percent had eruptive type. Two and a half percent of the patients had both oral and classic lichen planus [20] Manzoor et al. (2013) conducted a different study and discovered that 22.0% of patients displayed some sort of nail affection. [21]

We found that 17 (25.4%) patients had diabetes mellitus type II and 20 (29.9%) cases had glucose intolerance. Grinspan et al. [22] made the first announcement that the incidence of diabetes mellitus among patients with oral LP was forty percent. Recent years have seen an increase in the number of studies that focus on the connection between DM and LP [23]. Some of them found that the prevalence of diabetes among those who had LP was higher than in the general population. [24] We found no link between the distribution of lichenoid lesions and the incidence of diabetes, which is consistent with previous study [15]. We did not find any significant connection between gender and the prevalence of DM [16], despite the fact that female involvement was greater than male participation in the majority of the earlier study. [25]

In contrast to the findings of other studies [25], our investigation revealed a strong correlation between the length of LP sickness and DM. According to the findings of this study, the progression of the LP sickness was much more drawn out in diabetic patients. Even though there are conflicting reports concerning the prevalence of DM among patients with LP, the greater frequency of both DM and IFG in patients with LP demonstrates that the same aetiology may be the cause of both disorders, or that DM is one of the undiscovered aetiologies of LP. This is the case despite the fact that the frequency of DM and IFG is higher in patients with LP. [26]

CONCLUSION

We concluded in this study that the patients of lichen planus had higher frequency of DM type -2 and glucose intolerance. There was a close relationship between lichen planus and DM among all cases. There is need to evaluate patients early for treatment in hospitals.

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