Prevalence of Oral Lichen Planus in Patients with Diabetes Mellitus

Vivek Narayan, N Gnanasundaram, M Arvind

ABSTRACT
Diabetes mellitus is a metabolic disorder characterized by hyperglycemia due to absolute or relative deficiency of insulin. The exact etiology of lichen planus is not known and researchers have found that lichen planus might be associated with diabetes mellitus. Hence, the aim of the study is to find out the prevalence of oral lichen planus among diabetic patients.

Materials and methods: Among 2000 diabetes mellitus patients participated in the study. They were examined for the presence of oral lichen planus and all relevant information was recorded in a proforma.

Results: Among 2000 diabetic patients 15 cases (0.75%) of oral lichen planus were seen and these patients are type II diabetic. The oral lichen planus was confirmed histopathologically.

Conclusion: It was found that the prevalence of oral lichen planus among diabetics is 0.75% also they had hypertension, which suggests the existence of Grinspan’s syndrome. It has been proved that psychosomatic factors like stress and anxiety also are attributed to lichen planus and the diabetic patients might have got exposed to such factors thereby developing lichen planus.

Keywords: Oral lichen planus, Diabetes mellitus, Hypertension, Grinspan’s syndrome.


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Conflict of interest: None declared

INTRODUCTION
Diabetes mellitus is a metabolic and hormonal disease in which the carbohydrate metabolism is impaired with defective endocrine secretion of insulin from pancreas and this disease is characterized by hyperglycemia, glycosuria, polyuria, polydipsia and polyphagia due to the failure in utilization of sugar in the cellular metabolism. The conversion of sugar in the cell into energy and water is brought out by insulin.

Though, the metabolism of sugar is affected by insulin, sometimes insulin has not much relevance in the failure of utilization of sugar, hence diabetes is broadly classified as insulin and noninsulin dependent diabetes mellitus.

It has been found that diabetes patients are associated with dermal and oral lesions of lichen planus. Some diabetic patients are associated with lichen planus and hypertension which is called Grinspan’s syndrome. Lichen planus was first described by Erasmus Wilson in 1869. Lichen planus is a chronic inflammatory dermatologic lesion with characteristic oral mucosal changes. The dermal lesions appear as violaceous polygonal pruritic papules on the skin which rupture and form whitish lesion. On healing, it produces violaceous scar. In skin, the lesion exhibits Koebner’s phenomena.

Oral lichen planus is associated with burning sensation and the lesion appears in different forms clinically like reticular, papular, atrophic, erythematous and bullous types. Erosive lichen planus seems to have an association with chronic liver disease and erosive lichen planus is considered as a potentially malignant disorder.

It is reported, that the presence of lichen planus among diabetic patients and the presence of diabetes in patients who are suffering from oral lichen planus has a correlation. Diabetes is being treated with antidiabetic drugs and certain antidiabetic drugs can cause an allergic manifestation to produce lichenoid reaction.

The present research is taken with an aim of finding out the prevalence of lichen planus among diabetic patients.

MATERIALS AND METHODS

Materials
Individuals involved in the research are 2000 people in both sexes. These individuals are suffering from diabetes mellitus. Their diabetic status was confirmed by analyzing their blood and urine for the presence of sugar. All these patients were under treatment for diabetes mellitus. Their history of diabetes mellitus and further relevant information was recorded in a proforma. While selecting the diabetic patients, care was taken that the patient was not suffering from other diseases except diabetes related conditions. Instruments like mouth mirror, electric lamp for illumination, probe, tweezer, cotton, gauze were used for examining the oral cavity of these diabetic patients.

Methods
Each selected patient who is diabetic is examined under electric lamp for the evidence of oral lichen planus. To identify oral lichen planus the following criteria was used.
Bilateral lesion, white, reticulated, mucosal patch in the oral mucosa with characteristic Wickham’s striae for reticulated lichen planus (Fig. 1). Localized violaceous white patches in groups are for annular lichen planus. White irregular outline associated with mild ulceration with continuous burning sensation for erosive lichen planus (Fig. 2).

Patients with clinically confirmed oral lichen planus were subjected to incisional biopsy. The biopsy specimen was subjected to histopathological analysis to confirm oral lichen planus (Fig. 3).

**RESULTS**

Among the 2000 diabetes mellitus patients 614 (30.7%) are males and 1386 (69.3%) are females and 17 (0.85%) (Table 1 and Graph 1) patients are suffering from insulin dependent diabetes mellitus of which 23.2% are males and 76.47% are females and 1983 (99.15%) patients are non insulin dependent diabetes mellitus patients of which 30.76% are males and 69.23% are females. In the present study type II or noninsulin dependent diabetes mellitus patients are more in number (Table 2 and Graph 2).

In the present study, out of 2000 diabetic patients 15 (0.75%) patients were having oral lichen planus and all these 15 patients belonged to type II diabetes mellitus. No case of oral lichen planus was seen in type I diabetics. Among the 614 males three (0.48%) diabetic patients were having oral lichen planus. Among 1386 females, 12 diabetic patients (0.86%) were having oral lichen planus (Table 3 and Graph 3).

Among the three male diabetes mellitus patients with oral lichen planus, one (33.3%) patient was in the age group of 41 to 50 years and two (66.7%) were in the age group of 61 to 70 years. Among the 12 female diabetes mellitus patients with oral lichen planus, one (8.33%) patient was in the age group of 31 to 40 years, three (25%) patients was in the age group of 41 to 50 years, seven (58.3%) patients was in the age group of 51 to 60 years, one (8.33%) patient was in the age group of 61 to 70 years (Table 4 and Graph 4).

**DISCUSSION**

Grinspan in 1963 reported 23 patients having lichen planus associated with diabetes mellitus and found seven of them had hypertension. The three conditions constituted
Grinspan’s syndrome. This was named by Grupper and Avril in 1965.\textsuperscript{2} Diabetes mellitus is a metabolic disease in which the peripheral utilization of sugar is affected resulting in hyperglycemia, glycosuria, polyuria, polydipsia and polyphagia. The development of inflammatory dermatoses, the lichen planus in a metabolic disease like diabetes mellitus is surprising. Development of hypertension in diabetics is also not clearly explained.

Ricardo F Bhorgelli et al found the prevalence of lichen planus in 2260 patients as 0.47\%.\textsuperscript{12} Our observation is in accordance to Ricardo F Bhorgelli et al.\textsuperscript{12} More number of diabetics was recorded in females than males. This observation is also in accordance with the previous study by Ricardo F Bhorgelli et al.\textsuperscript{12}

In the present study insulin dependent diabetics were less than noninsulin dependent diabetics. C Petrou Amerikanou et al have recorded 139 insulin dependent diabetics and 353 patients with noninsulin dependent diabetes mellitus.\textsuperscript{15} Our observation is in accordance with

the study of C Petrou Amerikanou et al.\textsuperscript{15} In the present study, no lichen planus was recorded in type I but C Petrou Amerikanou et al has reported a prevalence of 5.76\%.\textsuperscript{15}

The present observation of oral lichen planus among 2000 individuals appears to be less compared to the previous study of Margot L Van Dis et al\textsuperscript{11} but the present study is in accordance with study of Ricardo F Bhorgelli et al\textsuperscript{12} who has recorded a prevalence of 0.55\%.

The present study reveals the existence of Grinspan’s syndrome as all the 15 cases had diabetes, lichen planus and hypertension.
The excess sugar in diabetes may not be a cause for lichen planus as nondiabetic patients also develop lichen planus, anxiety and stress seems to be associated with diabetes¹⁶ and this may be a reason precipitating lichen planus in diabetic patients.¹⁷

### REFERENCES


### ABOUT THE AUTHORS

**Vivek Narayan (Corresponding Author)**

Senior Lecturer, Department of Oral Medicine and Radiology, Saveetha Dental College, Chennai, Tamil Nadu, India, Phone: 9962866419
e-mail: vivek_narayan85@yahoo.com

**N Gnanasundaram**

Professor, Department of Oral Medicine and Radiology, Saveetha Dental College, Chennai, Tamil Nadu, India

**M Arvind**

Professor, Department of Oral Medicine and Radiology, Saveetha Dental College, Chennai, Tamil Nadu, India

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**Table 4: Number of oral lichen planus in different age groups for male and female**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Upto 30 years</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>31-40 years</td>
<td>1</td>
<td>6.67</td>
<td>–</td>
</tr>
<tr>
<td>41-50 years</td>
<td>4</td>
<td>26.7</td>
<td>1</td>
</tr>
<tr>
<td>51-60 years</td>
<td>7</td>
<td>46.7</td>
<td>–</td>
</tr>
<tr>
<td>61-70 years</td>
<td>3</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>71 years and above</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>0.75</td>
<td>3</td>
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