

Original Research

Oral lichen planus and diabetes: A clinical study

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Abstract

Background and Aims: Oral lichen planus (OLP) is an autoimmune chronic disease which is frequently related to some general diseases. The aim of this study is to analyze and compare the general features and clinical signs of OLP associated with diabetes mellitus. **Material and Method:** Twenty female patients suffering from OLP were enrolled in this study. They were examined and diagnosed following a clinical examination; and histologically, as well. The demographic and clinical features were collected from the medical charts. **Results:** In group 1 (OLP patients with diabetes) the oral complaints of pain and burning sensations were more frequently found compared to group 2 (OLP patients with nodiabetes). Diabetes patients showed an OLP clinical polymorphism – many clinical forms ($p < 0.05$). The ulcerative type of oral lichen planus was found in group 1 only (4 from 10 cases). **Conclusions:** This study showed there is a higher frequency of oral complaints and ulcerative clinical form of OLP in diabetes patients.

Keywords: diabetes, lichen planus, oral lesions.

Background and Aims

Lichen planus is a chronic mucocutaneous disease with unknown etiology. It affects middle aged-adults, with a higher frequency in women. The oral lichen planus (OLP) is the mucosal analogous of cutaneous lichen planus and has an incidence estimated up to 2.2% [1].

The OLP pathogenesis is not completely known. Immune cells such as type T, macrophages, and Langerhan cells which induce apoptosis of oral keratinocytes are involved in the pathogenesis and progression of the disease [2].

The oral symptoms vary from reduced symptomatic lesions such as keratosis with white papules, reticular, or plaque-like pattern to painful and disturbing lesions as atrophy, erosion, ulcers, or bullae [3].

The OLP has some periods of flare-up and remission of the oral lesions and symptoms during its evolution. Complete healing is rare and all-life follow-up of these patients is recommended in order to avoid malignant transformation of OLP (rate of 1–2%) [3].

There are described some risk factors for OLP such as stress and anxiety. Moreover, the association between OLP and some general diseases such as diabetes mellitus, autoimmune thyroiditis, hepatitis C, and other immune disorders are frequently found [2].

Even the OLP is an autoimmune disease and the keratinocytes showing alterations of the membrane, enzymatic activity, and carbohydrate expression; it is also suggestive for a metabolic hormonal connection [4].

The association between OLP and diabetes was first mentioned in the 1960s and was confirmed later in many studies [5]. The incidence



of diabetes in OLP patients ranges from 14–85% according to the methodological line of every study [4].

A meta-analysis of OLP prevalence in diabetes patients determined a strong link between both diseases. Moreover, the risk of OLP in diabetes patients was found higher than in controls [6]. This higher risk supports the hypothesis of related pathogenesis between both diseases. The association between OLP and diabetes is considered by other authors as being full of controversy [5]. This is based on the idea that drugs used for diabetes can induce oral lichenoid lesions. The difference between OLP and oral lichenoid lesions is based on clinical and histological features. On the other hand, the Grinspan's syndrome described as OLP with diabetes mellitus and hypertension has also some controversies about its pathogenesis and the drug involvement during the metabolic conversion [7]. However, speaking about diabetes mellitus only, there are some oral cavity disorders frequently associated with diabetes and observed in common dental practice such as fungal infections, salivary hypofunction or periodontal diseases [8].

Since there are some inconsistent findings regarding OLP and diabetes in the literature, the present study aims to emphasize some differences concerning OLP clinico-pathological aspects in diabetes patients compared to non-diabetic.

Material and Method

Study design and patients selection

This retrospective case-control study was developed on 20 female patients diagnosed with OLP who came in the clinic of Oral Pathology Discipline, Faculty of Dental Medicine, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania. The patients were divided in two groups: 1 – OLP patients who also suffered from diabetes mellitus and 2 – OLP patients who did not have diabetes. The main selection criteria were the gender and age: female, above 50 years. The diagnosis of OLP was established by clinical and histological criteria in order to exclude other diseases [1].

The plasma glucose and HbA1c were measured and included in the diagnosis criteria for diabetes mellitus. In case of patients previously diagnosed with diabetes, the medical records, including laboratory tests, were analyzed.

Cases of Grinspan's syndrome were excluded from the present analysis. Moreover, patients with dysplastic changes or malignant lesions were also excluded.

All the patients included in this study signed an informed consent form, in accordance with the principles of Helsinki declaration. The study protocol was also approved by the Ethic Committee of Carol Davila University.

Data collection

The demographic data (age, gender), medical history, clinical and histo-pathological features were collected from the medical records. The personal data and the medical (and or surgical) history such as education level, smoking habit, main reason for the first medical appointment, and the onset details of the OLP lesions (e.g., the exact location on the oral mucosa, the clinical type of OLP) were also collected from the medical records.

The clinical forms of OLP were classified as follows: keratotic (reticular and/or plaque-like lesions), associated (keratotic and atrophic lesions), atrophic (mostly atrophic lesions), and ulcerative. All lesions were photographed and stored for later evaluation.

The mycological exams (exudate) of the oral lesion were also analyzed. The main features of OLP such as hyperkeratosis, basal cell vacuolization in the epithelium, and a specific band-like lymphocyte infiltrate in the corion were followed in the histopathology. One main role of histopathology in OLP was to detect the lack of epithelial dysplasia.

Statistical analysis

The data were entered into a computer using SPSS software, version 16 (SPSS Inc., Chicago, IL, USA). The correspondence analysis was performed in order to establish a possible

link between diabetes mellitus and OLP clinical forms.

Results

The age of patients (women only) selected for this study ranged from 50–73 years; mean age was 62.9 years.

The main characteristics of the entire sample (both study groups) are shown in table no. 1.

Patients from the first group said they felt burning sensation (six cases), pain (three cases), and one of them had no symptoms. In group 2, six patients reported no symptoms, two had burning sensation and two had pain.

One patient had diabetes type 1 and nine had diabetes types 2 group 1, eight of them being previously known with type 2 diabetes and two were diagnosed during OLP investigations. Six diabetes patients from group no. 1 were not under medical monitoring.

There were also some other general diseases in this study that were associated with OLP. The main disease was tiroiditis. In this study tiroiditis was present in three patients of group no. 1 and five patients from group no. 2.

The fungal test was positive for *Candida* in six patients in group no. 1 and in three cases in group no. 2.

The OLP lesions were found as follows: on both side (right and left) of buccal mucosa (90%

Table 1: Characteristics of the 20 women enrolled in the study.

| Characteristics | N |
|-----------------|----|
| Age | |
| 50-60 years | 6 |
| 61-70 years | 8 |
| >71 years | 6 |
| Education* | |
| Medium | 16 |
| High | 4 |
| Location | |
| Urban | 19 |
| Rural | 1 |
| Diabetes | |
| Yes | 10 |
| No | 10 |
| Smoking habit | |
| Non-smokers | 14 |
| Former smokers | 4 |
| Smokers | 2 |
| Total | 20 |

*Medium – at least high school; High – university diploma

in group no. 1 and 70% in group no. 2), tongue mucosa (50% in group 1 and 40% in group 2) and on gingiva (Fig 1).

The figure no. 2 shows number of cases of every OLP type. The ulcerative form was the most

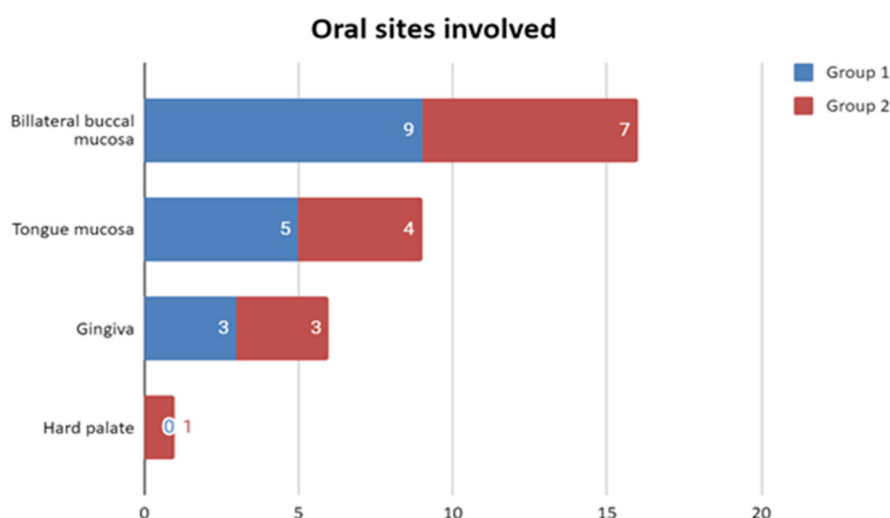


Figure 1: Oral sites involved in OLP lesions.

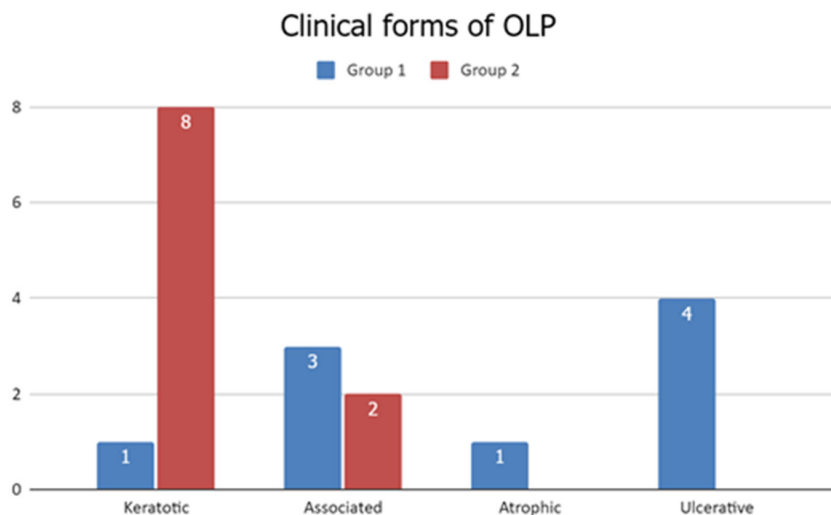


Figure 2: Clinical forms of OLP- number of cases.

common in group no. 1(40%) (Fig 3 a, b, c, d), followed by the associated type (30%). The keratotic form of OLP was the most frequently found in group no. 2(80%), (Fig 4 a, b, c).

Correspondence analysis was performed in order to establish a link between diabetes and OLP clinical forms. The polymorphism of OLP clinical forms (all four

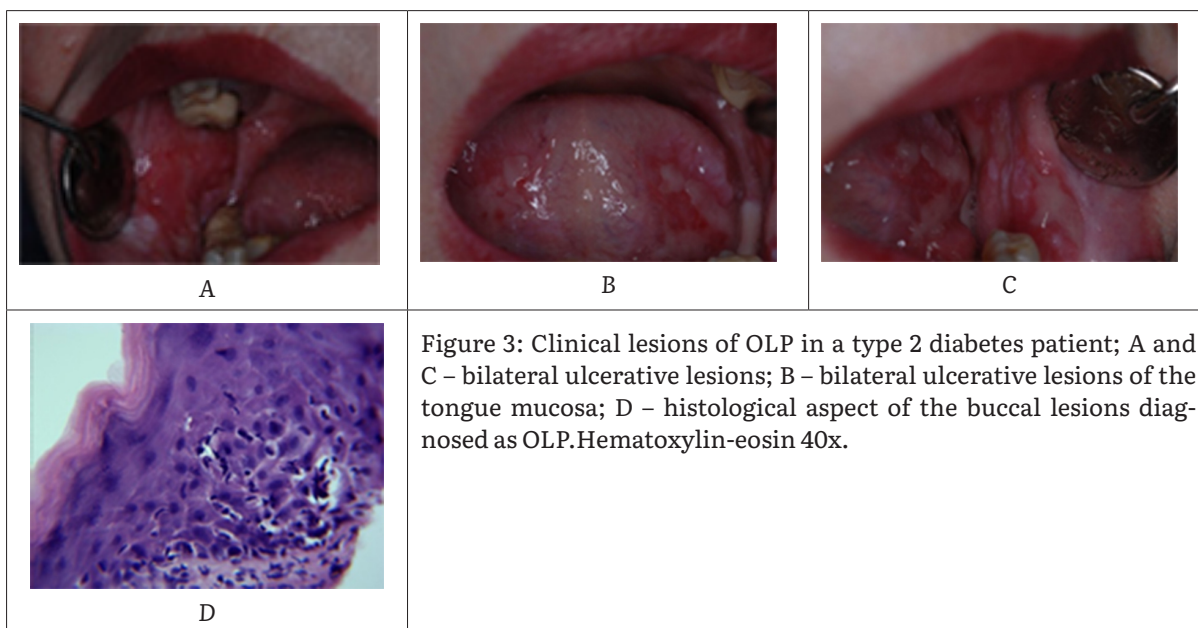


Figure 3: Clinical lesions of OLP in a type 2 diabetes patient; A and C - bilateral ulcerative lesions; B - bilateral ulcerative lesions of the tongue mucosa; D - histological aspect of the buccal lesions diagnosed as OLP.Hematoxylin-eosin 40x.

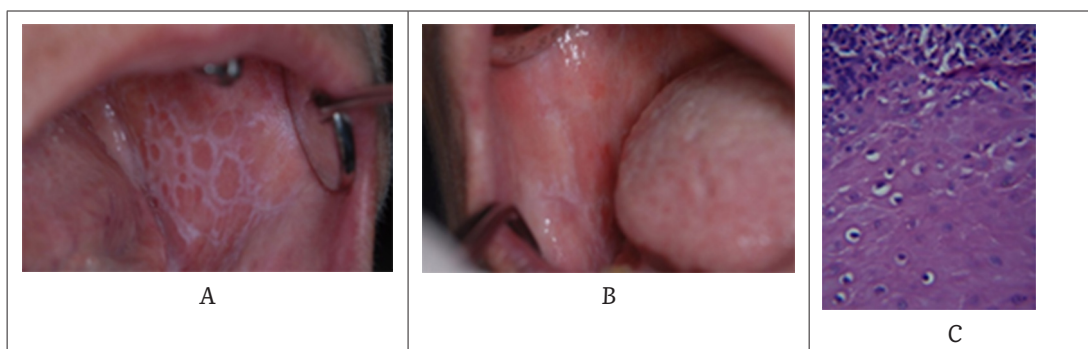


Figure 4: Clinical and histopathological images of OLP in a non-diabetes patient; A and B - bilateral keratotic lesions; C - Histopathological aspect of the OLP lesions. Hematoxylin-eosin 20x.

clinical forms) was present in diabetes patients ($p < 0.05$).

Discussion

OLP is a chronic autoimmune disease with few periods of remission when the lesions tend to regress. The main (global) prevalence of OLP is near 1% with a geographical variation [9].

Only women were selected for this study since women suffer more frequently from OLP [10]. Moreover, the diabetes in association with OLP was reported more frequently in women [11], and, as it is well known, type 2 diabetes is more common in women [12].

The prevalence of OLP in diabetes patients is reported to be lower (under 4%) [12], but the prevalence of diabetes in OLP patients varies between 0.5% and 9.3% [6].

Most patients enrolled in our study were retired and/or had a low level of education.

In the present study the smoking habit was found in 10%, smoking being a risk factor for OLP in diabetes patients [6].

Almost all of our patients had type 2 diabetes. Some authors suggest that type 1 diabetes is more characteristic to be in association with OLP, as it is considered to be an autoimmune disease.

Many studies showed that oral signs/complaints are very different [13]. These symptoms were found in most of our OLP patients with diabetes but only in few patients with OLP and no diabetes. The burning sensation of the oral mucosa was reported by some authors as the most frequent complaint in diabetes patients [8]. This is mainly connected with the peripheral neuropathic disturbances. The symptoms are very important because they determine the patient to ask for medical care and to receive an accurate diagnosis and a proper treatment. Another possible cause for these symptoms may be the oral candidiasis which can be frequently found in the OLP patients with diabetes compared to their counterparts. Moreover, the association between a reduced salivary flow rate and oral candidiasis are frequently noticed in diabetes patients [8].

The OLP clinical signs were frequently found in both groups on the buccal mucosa (bilateral) this being in line with other OLP studies [14] and considered to be typical for the OLP [3]. The tongue mucosa was the second most common site involved but no differences were found on this between both groups.

The ulcerative form of OLP was more frequently found in diabetes patients (four patients) when compared to non-diabetes patients. This finding is also noticed by Bagan et al. in their study developed on 72 patients where they reported a higher prevalence of atrophic and ulcerative lesions of OLP in patients with diabetes compared to patients with no diabetes [15]. A possible explanation for the presence of OLP ulcerative lesions in diabetes patients may be due to an increased period of healing which increase chances to be detected on time on the oral mucosa. Moreover, from six patients with uncontrolled diabetes, three of them presented ulcerative type of OLP.

The drug reaction is one of the important elements for the differential diagnosis of OLP in diabetes patients. It can appear on the oral mucosa as a side effect of medication for diabetes or antihypertensive medication. The clinical features show similarities with OLP but histopathology shows some important differences. In cases of lichenoid drug reaction, the inflammatory infiltrate of the connective layer has plasma cells and neutrophils [3]. The histopathology confirmed that all patients from our study suffered from OLP.

Conclusions

This study showed there is a higher frequency of oral complaints and ulcerative clinical forms of OLP in diabetes patients compared to non-diabetes. The frequency of oral sites involved was not influenced by the presence of diabetes. However, further investigation on a higher sample must be made.

Conflict of interest

The authors declare no conflict of interest.

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