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The investigation of concomitant dermal and oral lichen planus in patients referred to Zahedan University centres

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Abstract

Lichen planus (LP) is a prevalent chronic immunologic inflammatory epidermal and mucocutaneous condition which involves the oral mucosa, the skin, as well as occasionally both, and the leading reason of which is still unidentified. Because of the significance and frequency, this study was performed to measure the relationship of oral and dermal lesions in LP patients. In this descriptive study, a total number of 99 patients with involvement of LP in skin or mucosa were selected from 6510 patients who referred to the Dermatology Clinic and Department of Oral and Maxillofacial Diseases, Zahedan Dental School. The selected patients were exanimated completely and interviewed, and in case of presence of suspected lesions, the histopathologic tests achieved by biopsy were used for the assessment. After physical examination and taking history, a questionnaire was filled for each case. The study showed a 38 percent relation between oral and dermal lesions in the population of the study. In comparison, individual oral lesion was observed in 60.6 percent of patients and individual dermal lesions in 39.3 percent. The most common symptom of oral lichen planus was the Oral ulcer, and the most common site of involvement was the buccal mucosa was and the erosive form showed high prevalent. The most reported symptom of dermal lichen planus in this study was Itching, as well as Simultaneous hand and foot conflict was the main site of involvement and the Papular form was highly prevalent. The high prevalence of dermal and oral lichen planus relationship suggests attention to complete systemic examinations of the patients. Since this study was performed in the dermatology clinic, it appears that other studies in dental schools and all over the public will be essential to confirm the results. According to this study, no significant statistical relationship was determined between LP and other variables.

Keywords: oral lichen planus, dermal lichen planus, association, concomitant

1. Introduction

The oral lichen planus is a cutaneous and mucosal disease that can affect the skin of the oral mucosa and other mucous membranes. The etiology of (lichen planus) LP, an inflammatory disease, is unknown. Still, it has been attributed to an immune response (often related to CD_4^+ lymphocyte cells) to keratocystic antigens (1), which involves an IV hypersensitivity reaction to a variety of antigens in the mucosa and skin lining (2).

In 1866, Erasmus Wilson, an English physician, described the pathology of the lesion. He suggested that stress could be the cause of the lesion (3). Lowiswickhem was then able to describe the lesion as the Lichen planus. Then, the grey lines and spots on the lesion were called Wickham striae (1, 2).

OLP usually is present in the mouth for years and has periods of healing or deterioration. In the worsening phase of the lesion, pain, erythema, or ulcer areas are seen in the lesion. Patients feel relief after intense itching of the lesions. Trauma may exacerbate a disease known as the Koebner phenomenon. Other factors that can cause it to include mechanical trauma caused by dental processes, irritation and friction caused by sharp objects, rough dental restorations, heat and temperature stimulation by smoking, and oral habits such as chewing gum (1).

Clinical manifestations can range from painless keratotic lesions to painful wounds. The most commonly involved lesion site is the buccal mucosa, where the lesions appear bilaterally. According to Andreasen's division, lichen planus lesions appear in six different views:

1-Reticular, 2-Papular, 3-Plaque-like, 4-Erosive, 5-Atrophic, 6-Bullous (1).

Different types of dermal LP include hypertrophic lichen planus (LP), follicular LP, linear LP, actinic LP, pigmented LP, annular (ring-like) LP, atrophic LP, guttate LP, acute and subacute LP, and LP on hands and feet (4).

The demographic and clinical data of patients with oral

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lichen planus were not evaluated in this geographical area. Many discussions are found on the tendency of the disease to become malignant. In this regard, the present study aimed to assess patients' demographic and clinical characteristics with oral lichen planus.

2. Materials and Methods

A descriptive cross-sectional study was designed to evaluate the demographic and clinical characteristics of lichen planus patients referred to Zahedan Dental School and Dermatology Clinic. The study is approved by ethics committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1398.370, 2019.11.17).

In this regard, a form consisting of personal information such as age, sex, and types of LP (oral or dermal) was designed based on the clinical examinations, histopathology examination, and histopathologic manifestation of OLP. OLP is diagnosed through clinical findings as well as pathological appearance. Clinical signs of OLP are including 2 sections: red and white; the different surface features of the lesion contribute to the classification of OLP. The white and red components of the lesion may have the following surface features: network (reticular), plaque-like, papules, erythematous, bullous, and wounded. To differentiate the OLP, the reticular and papules components should be existing. The histopathologic features of OLP are containing the zones of hyperparakeratosis or hyperorthokeratosis characteristically with a thickening of the granular cell layer besides a saw-toothed appearance to the rete pegs; liquefaction degeneration or the basal cell layer necrosis; as well as an eosinophilic band that is below the basement membrane which is named eosinophilic coagulum. The patients were diagnosed according to the distinctive clinical and histological characteristics via a dental specialist. Therefore, the routine assessment of these cases is not useful in OLP diagnosis.

In papule biopsy, irregular acanthosis of the epidermis with compressed hypergranulosis is seen in the center. Besides, the granularized layer of cell infiltration thickens, which corresponds to the appearance of Wickham striae (2).

Reticular Oral Lichen Planus does not need any pathological examination; thus, patients with oral lichen planus do not undergo reticular biopsy. Further, the pathological diagnosis of dermal lichen planus was done in some cases with no clinical manifestation of typical lesions [EE3], then completed after taking a history, required examination, and checklist. The lesion site, the lesions' clinical form, the lesions' duration, and the patient's symptoms at the time of diagnosis are classified based on the table of variables; then, the extracted information is recorded in a checklist designed for this purpose.

The data were described after reviewing their quality in SPSS 24. For this purpose, tables of frequency distribution and statistical graphs such as bar graphs, box pie charts, and histograms were applied. Distance estimates for the proportion of lesions in each subgroup were also reported. The Kappa coefficient was used to evaluate the association between lesions; α equaled 5% in all analyses.

3. Results

The present study aimed to investigate the concomitant dermal lichen planus and oral lesions in patients referred to Zahedan University Centres during 2009-2010. So, 99 patients with dermal and oral lichen planus were included in the study, of which 60 patients had oral lichen planus, and 39 had dermal lichen planus. The value of the kappa coefficient was 0.35, which was statistically significant. Patients are divided into oral lichen planus (n=60, 60.6%) and dermal lichen planus groups (n=39, 39.4%). The mean age of patients with oral lichen planus was 84/8± 53/42; most patients with oral lichen planus were females (n=40, 66.7%).

Most patients with oral lichen planus had erosive lesions (n=49, 81.7%) (Table 1).

Table 1. The Frequency distribution of a clinical form of oral lesions in patients with oral lichen planus

The clinical form of lesions	Frequency	%
Erosive	49	81.7
Non-erosive	3	5.0
Concurrent erosive and non-erosive	8	13.3
Total patients	60	100

The mean duration of lesions in patients with oral lichen planus was 10.98±9.64 months (Table 2).

Table 2. The Frequency distribution of the presentation duration of lesions in a patient with oral lichen planus

Descriptive index	Mean	Standard deviation	Max.	Min.
Duration presence of lesion	10.98	9.64	36	1

The most common symptoms of patients with oral lichen planus were wounds (n=31, 51.7%) (Table 3).

Table 3. The frequency distribution of patients' symptoms at the diagnosis of a patient with oral lichen planus

Patients' symptoms	Frequency	%
Ulcer	31	51.7
Burning	6	10
Concomitant ulcer and burning	23	38.3
Total patient	60	100

The highest involvement of patients with oral lichen planus was related to cheek mucosal involvement [n=40 patients (66.7%)] (Table 4).

Table 4. The Frequency distribution location of oral lesions in a patient with oral lichen planus

Location of oral lesions	Frequency	%
Buccal mucosa	40	66.7
Dorsal of the tongue	7	11.7
Lateral of the tongue	13	21.7
Total patient	60	100

The mean age of dermal lichen planus involvement patients was 39±14.16 years (Table 5).

Table 5. The frequency of age distribution in a patient with Dermal lichen planus

Descriptive index	Mean	Standard deviation	Max.	Min.
Age	39.36±39	14.16	80	22

Most of the patients with dermal lichen planus were females (n= 33, 84.6%) (Table 6).

Table 6. The frequency of sex distribution in a patient with dermal lichen planus

Sex of patients	Frequency	%
Female	33	84.6
Male	6	15.4
Total patients	39	100

Based on the clinical form of lesion of patients with dermal lichen planus, the highest number of involvements was in patients with papules (n=16, 41%) (Table 7).

Table 7. The frequency of clinical forms of a skin lesion in a patient with dermal lichen planus

Clinical forms of skin lesions	Frequency	%
Papule	16	41
Plaque	10	25.6
Hyperpigmentation	1	2.6
Simultaneous conflict	12	30.8
Total patients	39	100

The mean period of lesions in patients with skin lichen planus was 23 ± 58.55 months.

The symptom of most patients with skin lichen planus involvement was itching (n=37, 94.9) (Table 8).

Table 8. The frequency distribution of patients' symptoms at the diagnosis of a patient with dermal lichen planus

Patients Symptoms	Frequency	%
Itching	37	94.9
Hair Loss	1	2.6
Itching and Hair Loss	1	2.6
Total patient	39	100

Most patients with dermal lichen planus had comorbidity lesions (n=22, 56.4%) (Table 9).

Table 9. The frequency distribution location of oral lesions in a patient with dermal lichen planus

Location of oral lesions	Frequency	%
Hand	2	5.1
Foot	13	33.3
Neck	2	5.1
Simultaneous conflict	22	56.4
Total patient	39	100

The kappa coefficient was equal to 0.35, which was statistically significant (P <0.001) (Table 10).

Table 10. Determine the amount of association between dermal and oral lichen planus

Type of lichen planus	Frequency	%
Oral lichen planus	60	60.6
Dermal lichen planus	39	39.3
Oral lichen planus and dermal lichen planus	38	38.3
Total patient	99	100

4. Discussion

LP is a chronic dermal mucosal disease with unknown etiology. The mean age of patients with this lesion is about 55 years, and its prevalence is higher in women (5). However, oral LP is white, bilateral, and sometimes ulcerative lesions with various clinical forms, including reticular, papular, plaque-like, bullous, erosive, and ulcerative (6).

Oral Lichen planus lesions take two forms: reticular and erosive. The reticular type is more common and asymptomatic. Malignant changes are a more common erosive type, especially if the lesion is on the tongue, palate, and floor of the mouth (7). Due to malignancy and the risks of these changes, the oral Lichen planus becomes important in oral diseases (8).

The study on the frequency and epidemiological changes of oral lichen planus lesion in Iran has been minimal, including the study of Pakfetrat et al. (9) in Mashhad (2008), in which the mean age of patients was 16.41 years, and 9 / 64% of them were female. Further, in 2.85% of patients, the cheeks were the most commonly involved area. The study of Esmaili et al. (10) in Tehran (2003) showed that oral LP is more common in men in their fourth decade. Furthermore, the study of Khalili et al. reported that the age of incidence of the lesion was 42 years, in the range of 5-83 years.

The clinical characteristics of patients in current study demonstrate many similarities and dissimilarities with previously reported studies. We detected that the males outnumbered the females (ratio M: F=1.61:1), which disagree with many other studies (11-13). In most studies, female predominance is reported. OLP is more predominant in the third decade of life according to this study (mean age of 36.9 years), which is lesser than the mean age stated in the central China [50.4 years], the Spain [56.4 years], the United Kingdom [52.0 years], and the Italy [56.7 years] (13-16). This was perhaps because of our cohorts' ethnic population as well as the geographic difference in comparison to the preceding reports. OLP in minor juveniles or children is rare, and in this study childhood form of the OLP was not detected. Though childhood OLP is very infrequent, early recognition is vital to make suitable treatment and relieve signs in little children (17, 18).

LP is a relatively common disorder that affects about 0.5-2% of the population. Besides the higher prevalence of OLP than the dermal type, it is more resistant to treatment.

In the present study, the demographic pattern and clinical profiles of patients with OLP were recorded. In this study, the incidence of OLP was higher in women than men, which is consistent with the results of some researchers [DroreEisen (12), Silverman (3), Bermejo-Fenoll (16), Mankapur (2), and Mozaffari (19)] but inconsistent with the Munde's (20) study on India's rural populations. According to the results of this study and most similar articles, OLP is more common in females. The inconsistency of Munde's study results (20) may

be due to the clinical features and lifestyle prevailing in that area.

Accordingly, the mean age of people with OLP was 42.53.

It was consistent with Mozaffari's study (19), in which the mean age of patients was 42.13, and was closely correlated with Mankapure's study (2), in which the mean age of patients was 45.4.

Based on the present study results and similar articles, we conclude that OLP occurs in the 5th and 6th decades of human life.

Based on the results of this study and all similar papers, the buccal mucosa is the most common site of OLP lesions, followed by the prevalence of OLP in the gums and tongue with a much lower percentage. On the other hand, relating to the clinical form of OLP lesions, it can be stated that in the present study, similar to that of Bermejo-Fenoll's (16), the erosive form of lesions with 49% OLP has the highest clinical form. This difference between the results of both studies is due to the lifestyle of patients living in Zahedan.

Patients with OLP have a variety of symptoms. Based on the present study results, the ulcer is one of the most common symptoms in 51.7% of patients, which is consistent with Mankapure's study (2).

Regarding the duration of OLP lesions, patients reported that lesions stay for 10.98. 9.64 months.

Among 39 patients with dermal lichen planus, 33 (846.3%) were female, indicating a higher disease prevalence in women, which is consistent with Boyd's theory that women are more likely to develop lichen planus than men (21).

In this study, the mean age of patients was 39± 14.16 years, consistent with that of Black's study on 200 patients with lichen planus, with a mean age of 4 decades (22).

The most common involved site reported in the present study was concomitant involvement of the hands and feet, accounting for 56.4% of all patients, and consistent with Black's study stated that the anterior wrist, lumbar region, and around the ankle (22) are the most commonly involved sites.

The most common clinical form of the present study was the papular pattern (41%) which was observed on the face, neck, and hands, confirming the ROOK theory stating that the maximum prevalence of actinic lichen planus is found in the Middle East, East Africa and India (23). In the present study, six men (1.1%) had genital zone involvement, lower than the 25% reported in Arndt's study (24).

It may be due to the small sample size of the present study or the impossibility of a full-body examination due to cultural problems. But the Annular (ring-like) lichen planus is found in only ten patients (2.9%), which is less than the 10% mentioned in the sources (5).

According to Boyd, 38 (38.3%) patients had concomitant dermal and oral involvement.

Merely about three patients developed an oral carcinoma and from them 2 were smokers and the other one was smok¬ers and drinker, which is lower than some other reports from malignant transformation rates (25, 26). Studies of the malignant potential of oral lichen planus (OLP) have been hampered by contradictions in the diagnostic criteria used for OLP (27), nevertheless, since most patients will have long-standing OLP, and possibly a risk of malignant transformation, it is crucial that such patients be wisely monitored through a well-experienced clinician in long term (28-30).

oral lichen planus is prone to the risk of malignancy (0.4-4.3%), and WHO considers it a pre-malignant lesion, it is essential to consider the follow-up of patients, the concomitant dermal and oral involvement and timely referral of patients with oral lesions to a dermatologist and those with dermal lesions to an oral and maxillofacial specialist.

There was concomitant dermal and oral lichen planus in patients referred to Zahedan University Centres. It is recommended to conduct a study with a larger sample size considering different age groups and sex in various types of mucosal LP and referral of patients with oral lesions to dermatologists and those with dermal lesions to oral and maxillofacial specialists.

Ethical statement

The study is approved by ethics committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1398.370, 2019.11.17).

Conflict of interest

None to declare.

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Authors' contributions

Concept: T.N., Design: T.N., A.N., Data Collection or Processing: A.P., A.N., Analysis or Interpretation: T.N., A.N., Literature Search: T.N., A.P., Writing: A.P., A.N.

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