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Oral lichen Planus; potential relation to oral hygiene practices and oral health status, Jazan, Kingdom of Saudi Arabia

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Abstract:
Background: *Oral lichen Planus (OLP) is a mucocutaneous disease affecting oral mucosa, skin and other surfaces. Presences of atrophic, erosive subtypes of OLP hinder oral hygiene maintenance and threaten periodontal health consequently.*
Aim: *To study the effect of Oral lichen Planuson oral hygiene practices and periodontal parameters.*
Materials and methods: *A cross sectional study was designed to evaluate potential effect of oral lichen Planuson oral hygiene and periodontal parameters. 46 subjects -aged 20-70years- attending college of dentistry, Jazan University kingdom of Saudi Arabia were included in the study. Oral lesions were identified both clinically and confirmed histologically in dermatology clinic before being referred to dental college. Statistical analysis was carried out using SPSS (Statistical package for social sciences) software version 20. To test the statistical significance, chi-square test was used P value ≤ 0.05 is considered significant.*
Results: *78.3 % of subjects were females whereas 21.7% were males giving a ratio of 3.6:1. More than 71% of the cases age range is from 40-70years old. 86.2% of the patients have no genetic background. Associated skin lesions were detected in (63%) patients, smoking or smoking with Khat chewing habits was observed in (47.8%) reticular lesions were most frequent type , followed by the erosive forms, buccal site is more prevalent followed by dorsum of the tongue. Only 15% of subjectswere not using any oral hygiene aid, 45.7% reported to have impact of the lesion on their oral hygiene practices, though 67.4% have plaque index 3, 65.2% of gingival index 3. And significant association was observed between plaque index and clinical presentation and frequency of brushing (p=0.04, 0.01respectively). But there was no statistically significant difference for gingival index and frequency of brushing (p=0.3).*
Conclusion:*The study showed that OLP hamper the efficiency of oral hygiene practices and negatively affect and periodontal health status.*

I. Introduction

Oral Lichen Planus (OLP) is one of the chronic mucocutaneousdisorders [1]. Its prevalence in Jazan Saudi Arabia was found to be 1.7% [2] which is in the same range of prevalence in general population0.1% to 4.0%.The etiology of this disease is considered to be immunologically mediated where T lymphocyte play central role [3]. LP may involve various mucosal surfaces either independently or concurrently [4].OLP occurs more frequently than the cutaneous form and tends to be more persistent and more resistant to treatment [5]. Many studies revealed the association of LP with diabetes and hypertension. The majority of patients is middle-aged 3rd to 6th decade of life and is more common in females than in males with a ratio of 2:1. The most commonly affected sites are the buccal mucosa, the tongue, the lipsthe gingiva, the floor of mouth and the hard palate.The clinical presentations are reticular, erosive, atrophic, plaque-like, papular and bullous [6]. The most common are the reticular and the erosive subtypes. The reticular lesions are asymptomatic bilateral and candidiasis may coexist. The erosive type is often associated with pain. OLP follow a chronic course with alternating periods of quiescence and flare [3].Malignant transformation to squamous cell carcinoma developing in areas of erosive OLP [7].Oral Lichenoid reaction (OLR) is a condition which is similar to OLP both histologically and clinically but it differs from OLP in the presence of causative factors which include direct contact with dental restoration materials[silver amalgam, gold, cobalt, palladium, chromium and even non-metals such as composite and denture material [3], drug-related lesions -NSAIDs, beta blockers, some antimalarial and other drugs, lesions associated to graft-versus-host disease and others[8].Approximately half of OLP patients suffer oral soreness and inability to eat which may affect quality of life; these complains are associated with the atrophic and erosive types[9]. Diagnosisof oral lichen Planus can be done directly through

history, clinical examination for the typical lesionbut biopsy is advised to differentiate it from other similar lesionsand rarely direct immunofluorescence if in doubt with other autoimmune diseases[10]. In the histological examination biopsy should show intense inflammatory infiltrate mainly T cell in the lamina propria, degeneration of basal layer, rete ridges show saw tooth appearance, hyperkeratosis and hyperplasia with thickening of granular cell layer [11].Gingival lesions of OLP may create difficulty in diagnosis and therapy as it is difficult to differentiate from other multiple disease manifestation [12]. Many studies suggest association of oral hygiene and symptomatic (painful) OLP [13]. And majority of the Atrophic and ulcerative forms were reported with greater plaque accumulation especially lesions in the gingiva; therefore, the painful symptoms may hamper the efficiency of oral hygiene procedures, resulting in greater plaque accumulation [14]. The plaque index, gingival index was found to be higher in extensive cases of OLP especially if gingiva is involved as well as strong association with more periodontal deterioration. [15]. Accumulation of dental plaque may influence the course of OLP and a vicious circle of dental plaque accumulation will be formed [12]. Oral hygiene maintenance can produce subjective and objective improvement of OLP, therefore Cooperation of dentists and dental hygienist is essential [16, 17]. The rate of transformation in individual studies ranged from 0 to 3.5 percent. So early diagnosis with timely management and regular follow-up is mandatory for these patients to avoid further complications [18]. Patients with OLP are susceptible to candidal infection, and the steroids and immune modulators used in treatment of OLP increase their risk therefore; antifungal therapy can help them [15]. As there is no cure of OLP, the treatment aim is to relief symptoms by maintain oral hygiene and reduce risk of malignant transformation & through different line of treatment [11]. Keratotic types are asymptomatic and do not require treatment. In contrast erosive and ulcerative types are treated with high potency topical steroids such as floucinonide ointment 0.5%, intra lesional injection of triamacinolone 10-20mg or short course of prednisolone tablets in severe cases. Other treatment modalities are retinoid, cyclosporine and hydroxychloroquine[3].

II. Material And Methods

Study population: 46subjects with an age range of 20-70 years old; who were previously diagnosed clinically and confirmed histopathologically in dermatology department. The patients were referred from dermatology clinics in Jazan area to college of dentistry, Jazan University in the period November 2015 to February 2016.This study was approved by ethics committee at the college of dentistry, Jazan University. Each patient signed informed consent.The information was collected through direct patient interviewing and examination. All data was recorded on special form. History was taken by direct patient interviewing. It included patient demographic data, social habits (smoking and gat chewing), medical history, and history of drug intake, history of the lesion, oral hygiene habits and whether oral hygiene was affected by lesion discomfort.Thorough oral examination was conducted including all the oral mucosa. The following information concerning the lesion was recorded; clinical presentation (reticular, atrophic, erosive and other), site of involvement, and the associated lesion symptoms. Severity was assessed by dividing into three categories; mild, moderate and severe. The oral clinical examination was performed by a calibrated investigator. The Periodontal examination including plaque index (PI) and gingival index (GI) assessment was done. All measurements were performed with a periodontal probe and the reading was recorded to the nearest 1mm. PI was used for evaluating the state of dental plaque adhesion and GI was used for evaluating the spread and severity of gingival margin inflammation.PI and GI were evaluated based on Silness and Loe(1964) and Loe and Silness(1963)methods respectively. Each jaw will be divided into 3 sextants, 4 surfaces per tooth were examined and the highest score of the sextantwas recorded. The mean of PI, GI of the patient was calculated by dividing the sum of the reading by number of surfaces examined.After recording of periodontal parameters patientswas informed; the relation of OLP to their wellbeing , oral health and oral hygiene practices and the role of oral hygiene maintenance in the improvement of oral lesions. Detailed oral hygiene instruction was given.

Inclusion criteria:

1. Patient with age range of 20-70 years
2. Patient with histopathologically confirmed diagnosis of OLP

The exclusion criteria:

1. Below the age of 20 years
2. Non Saudi patients and patients not residing in Jazan area
3. Patient with oral lichenoid drug reaction
4. Patient with infectious disease
5. Patients whom their diagnosis is not confirmed histologically.

Data was processed and analyzed by means of the Statistical Package for Social Sciences (SPSS version 20) using Chi-square test, and the significance was taken for P value ≤ 0.05. Analysis frequency and percent of all the

variables were done.Chi square test was done to correlate frequency of brushing to gingival index and plaque index. Plaque index to disease severity and clinical presentation.

III. Results

Our study involved 46subjects 78.2% of which were females with a ratio of (3.6:1). The highest peak of prevalence of OLPwas in the age range of 40-49 (28.3%). 30.4%were smokers, 6.5% were qat chewer while 41.3% of the subjects were not practicing any adverse habit. Adverse habits are shown in figure (1). (13%) of subjects were diabetic, 23.9% were hypertensive and 19.6% were having both diabetes and hypertension. Regarding drug history, (21.7%) of subjects were on antihypertensive drugs, (13%) have been taking anti-diabetics, (13 %) have been taking combination of both anti-diabetic and anti-hypertensive drugs, (6.5%) have been taking NSAID, and (4.3 %) were on combination of anti-hypertensive and NSAID while subjects without any drugs were (34.8%). 13% of the subjects have positive family history whereas 82.6% do not have family history of the OLP. Medical, drug and family history are shown in table (1). Concerning oral hygiene habits 32 % of the subjects brush their teeth twice or more. 69.6% of them use tooth brush. In spite of this good oral hygiene, 67.4% and 65.2% of the subjects have plaque index 3 and gingival index 3 respectively. None of the subjects with score zero for both plaque index and gingival index. High percent of participants (45.7%) reported to have impact of the lesion on their oral hygiene.A significant association was observed for plaque index with clinical presentation and frequency of brushing (p=0.04, 0.01respectively). On the other hand, there was no statistically significant difference for gingival index and frequency of brushing (p=0.3). Uses of tooth brush, frequency, impact of the lesion on tooth brushing are shown in table (2). Plaque index and gingival index are illustrated in figure (2) and (3) respectively.Buccal lesions, are the most predominant followed by buccal and dorsum of the tongue. Reticular and hyperpigmentation is the most predominant clinical presentation followed by erosive then erosive with other subtype. 63% of subjects have extra-oral lesion. Site of the lesion, clinical presentation and presence of extra-oral lesion are illustrated in Table (3). Presence and absence of symptoms have a slight difference being 54.3 for presence of symptoms and 43.5 for their absence. Treatment taken by our participants differs, some of them are on mouth wash or no treatment, and others are on prednisolone, topical steroid or intra-lesional steroid injections. Presence of symptoms, severity and treatment are shown in table (4).

Table number (1) medical history, drug history and family history of OLP:

Variable	Frequency	Percent
Medical history		
None	16	34.8
Hypertension	11	23.9
Diabetes	6	13.0
Both hypertension and diabetes	9	19.6
Hepatitis	1	2.2
Missing system	3	6.5
Family history		
Yes	6	13.0
No	38	82.6
Missing	2	4.3
Drug history		
None	16	34.8
Antihypertensive	10	21.7
Anti-diabetic	6	13.0
Anti-diabetic and antihypertensive	6	13.0
NAIDS	3	6.5
Antihypertensive and NAIDS	2	4.3

Table (2) oral hygiene practices, frequency of brushing, impact of the lesion on oral hygiene.

Variable	frequency	Percent
Oral hygiene practice		
None	7	15.2
Tooth brush	32	69.6
Msiwak	6	13.0
Both	1	2.2
Frequency of brushing		
None	2	4.3
Irregular	10	21.7
Once	5	10.9
Twice	15	32
More than 2	4	8.7
Impact of the lesion on oral hygiene		
Yes	21	45.7
No	20	45.8
Missing	5	10.9

Table (3) site of the lesion, clinical presentation and presence of extra-oral lesion:

Variable	Frequency	Percent
Site of lesion		
Buccal	24	52.2
Dorsum of the tongue	7	15.2
Buccal and dorsum of the tongue	10	21.7
Buccal and gingival	2	4.3
Buccal, gingival and dorsum of the tongue	1	2.2
Dorsum of the tongue and gingival	1	2.2
Gingiva	1	2.2
Clinical presentation		
Reticular and hyperpigmentation	16	34.8
Atrophic	6	13.0
Erosive	14	30.4
Erosive combined with other subtype	10	21.7
Presence of extra oral lesion		
Yes	29	63.0
No	17	37.0

Table (4) shows the frequency and percent of the disease symptom, severity and treatment.

Variable	Frequency	Percent
Presence of symptoms		
Yes	25	54.3
No	20	43.5
Treatment		
None or mouth wash	14	30.4
Topical steroid	6	13.0
Predinsolone	12	26.1
Intralesional steroid	3	6.5
Topical steroid with other therapy	11	23.9
Severity		
Mild	10	21.7
Moderate	15	32.6
Severe	10	21.7
Missing	11	23.9

Figure (1) adverse habits:

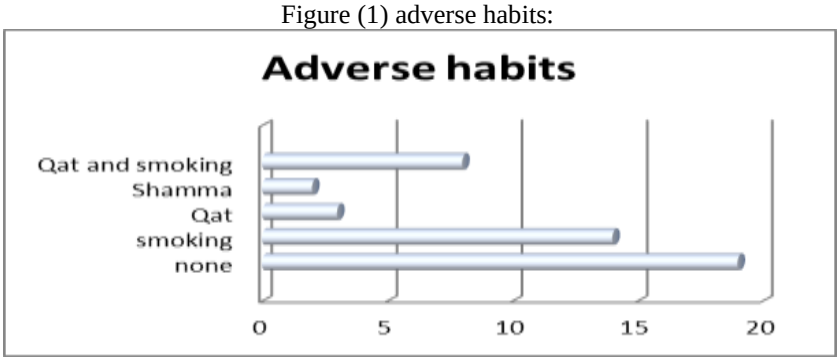


Figure (2) plaque index:

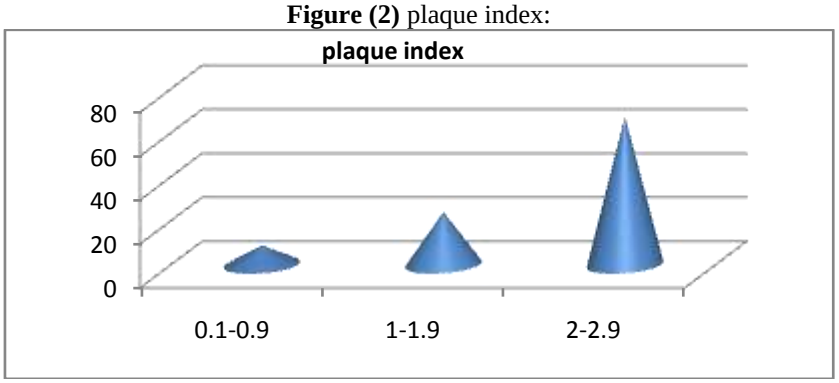
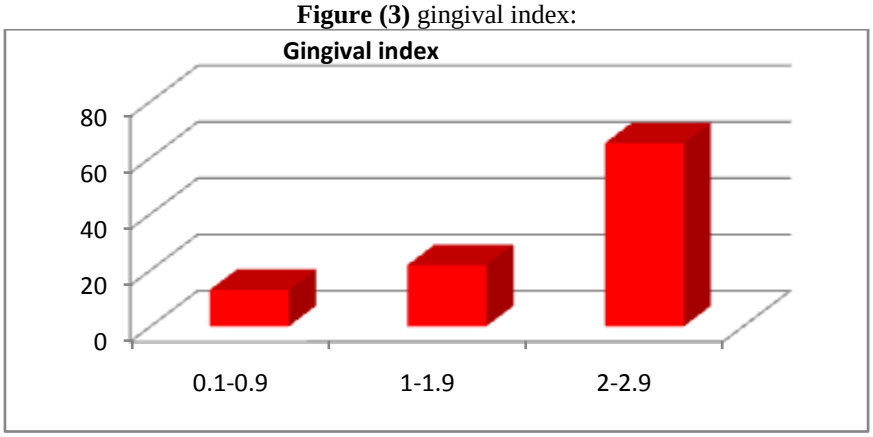


Figure (3) gingival index:



IV. Discussion

In our study 78.2% of our participants were females with a ratio of (3.6:1) although the previous study done in Jazan by(Salem et al) 63% of the participants were found to be males. Female to male ratio in oral lichen Planus was reported in most of the studies to be approximately 2:1, (Serrano et al) & and 3:2 by (Omal et al). Sharma et al 2015 report that hormonal changes during menopause may play role in presence of LP in females. This high percent of females can be explained by the fact that most of the males attended to the dermatological clinic during our study were with skin lesions and no oral subtype though they are excluded from the study. It was also known that males were less attendee to medical services than females who cares more for their well-being especially their mouth and oral health. But still the high percent of females with OLP presented by our study need to be studied in big sample size and longer period.

Among the age groups, highest peak of prevalence of oral lichen Planuswas in the age range of 40-49 (28.3%). And 82.6 % of our participants do not have positive family history. 41.3% of our study participants were not practicing any adverse habit. More than 65% of our patients are not smokers this is consistent with results in other studies that reported smoking is not prevalent in OLP patients Budimir V et al 2014.Concerning systemic health; 13% of participants were diabetic, 23.9% were hypertensive and 19.6% are having both diabetes and hypertension. Percent of hypertensive patients is consistent with high prevalence of hypertension in Saudi Arabia as found by Saeed A.A et al 2011. [19].(63%) of the study participants presented with extra oral lesion and only (37%) are without extra oral lesion. This may be because our patients are in fact referred from

dermatology clinic where skin problems will present for treatment. (54.3%) of our participants are found to have symptoms. This is because most of our patients have the erosive type this result is consistent with most of the studies; Budimir et al found almost half of patients were asymptomatic (44.2%)[9]. Site of the lesions -more than half of our participants presented with buccal mucosal lesions(52.2%) dorsum of the tongue lesions in 15.2% and 21.7% for lesions in both buccal mucosa and dorsum of the tongue- this results agree with Omal et al 2012 who reported buccal mucosa presentation 45% and 15% in the tongue. Concerning oral hygiene habits around half of the participants (32 %) brush their teeth twice or more. 69.6% of them use tooth brush. in spite of that, 67.4%,65.2% have plaque index 3 and gingival index 3 respectively for the participants. no body with score zero for both plaque index and gingival index. This can be only explained by suppressed oral hygiene maintenance due to eliciting of pain during brushing. There was a significant correlation between OLP and oral hygiene practices in spite of the optimum oral hygiene and low gingival lesions which has the greater impact on oral hygiene practices (15).

V. Conclusion

In the studied population the results showed that oral lichen Planus hamper the efficiency of oral hygiene practices and negatively affect periodontal health status.A female to male ratio in Jazan area, Saudi Arabia was found to be very high.

VI. Recommendation

Patientswith OLP should be instructed in meticulous oral hygiene maintenance and be informed on the importance of routine dental checkup. Dentist and dental hygienist must be part of the team treating patients with OLP. The high percent of females to males in Jazan area should find more attention and should be investigated in large scale samples.We hope that the information provided through this study will be taken up by the educator, specialist and health professional throughout Saudi Arabia and will be integrated in the decision making processes for such disease and development planning to improve awareness about the importance of oral hygiene maintenance for patients with OLP.

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