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Original Research

Clinical characteristics of oral lichen planus patients in northeastern Iran over a period of 13 years

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Aim: Oral lichen planus (OLP) is a relatively common chronic inflammatory mucocutaneous disease in middle-aged individuals that often affects the oral cavity, and its prevalence has increased in recent years. The aim of this study was, in addition to examining the epidemiological information on OLP, to investigate the referral pattern, the chief complaint of patients, and the clinical manifestations of the diseases in OLP patients in northeastern Iran. **Methods:** The records of OLP patients referred to the Department of Oral and Maxillofacial Diseases at the Faculty of Dentistry of Mashhad University of Medical Sciences in Iran from 2004 to 2017 were examined. The data were collected from the records by completing a checklist that included age, sex, education, place of residence, location and type of lesion (reticular, papular, plaque-like, atrophic, erosive and bullous), the patient's main complaint, referral pattern, and referral time. The data were analyzed using SPSS 22 and Chi-squared, Fisher's exact, and Kendall's Tau-b tests were used for data comparison. **Results:** The records of 504 OLP patients were evaluated. 68.3% of the patients were female and 31.7% were male with a mean age of 50.10 ± 13.99 years. 32.3% of the cases were referred by general dentists and 26% by specialist dentists. The most common area of involvement was the buccal mucosa (84.1%) and the most complaint was the burning sensation (59.5%). The patient complaints were significantly associated with the clinical manifestations of erosive and non-erosive lesions (P <0.001). In addition, dysplasia was observed in 4.6% of the patients with biopsy (in subsequent biopsy). Based on the history of treatment, the number of patients with skin involvement was significantly higher than that of patients without skin involvement (P = 0.045). Furthermore, 43.8% of patients with skin involvement referred within 6 to 12 months, which was significantly higher than the number of patients without skin involvement (P = 0.016). Here, the most referrals were made by general dentists and the most common clinical manifestation was erosive (nonkeratotic) lesions. **Conclusions:** The patient complaints were significantly associated with clinical manifestations, so that pain and burning sensation were more common in patients with erosive lesions. Knowledge of the main complaints and clinical manifestations helps dentists diagnose the disease at an early stage and refer patients to specialists in a timely manner.

Keywords: Lichen planus. Mouth. Referral and consultation. Iran.

Introduction

Oral lichen planus (OLP) is a relatively common chronic inflammatory mucocutaneous disease in middle-aged individuals that often affects the oral cavity and its prevalence has increased in recent years. Many general practitioners and even dentists are not yet familiar with the diseases of the oral mucosa, which results in patients undergoing inappropriate treatments before consulting specialists. This cost time and money and sometimes leads to irreparable consequences. On the other hand, the patient awareness of oral lesions leads to timely referral and diagnosis and, consequently, an appropriate, effective and inexpensive treatment. Since general practitioners and dentists are usually the primary health care providers, they should be familiar with the disease and its symptoms in order to diagnose patients and refer them to specialists.

In 2016, Varghese et al.[1] examined the epidemiology of OLP in southern India. The data came from 29,606 patients referred to the Kerala Dental School. The type of disease, number and location of the lesions, clinical manifestation, age and sex, duration of disease, habits and underlying systemic disease were examined in patients with OLP. In 122 patients, the prevalence was higher in women (79 women and 43 men). The most commonly observed lesion was the reticular. Bilateral involvement of the buccal mucosa was more common than in other locations.

A study by Chen et al.[2] in 2018 on OLP patients in Taiwan showed that the prevalence increased significantly over the previous 18 years and that the mean age of patients was on the rise. In addition, OLP was more common in women.

Lauritano et al.[3] described in 2016 the clinical features and prevalence of OLP in southern Italy. They examined demographic information and clinical data such as type and location of the disease, *etc.* in 87 patients (31 males and 56 females). The mean age of OLP involvement was 59.2 years and the most common clinical manifestation was the hyperkeratotic lesion. However, symptomatic OLP was observed in 26.8% of patients. The most affected areas were the buccal mucosa, the tongue, and the gingiva. The most common systemic diseases were diabetes, hypertension, and hepatitis C, and malignancy was observed in only one patient. The authors stated that their results were in agreement with previous studies and that the differences were due to the population and number of patients.

In 2013, Gumru[4] surveyed demographic information and clinical features of OLP patients in Turkey. They examined the data of 370 patients referred to Istanbul Dental School. Of the 370 patients, 260 were female (70.3%) and 110 were male (29.7%) with a mean age of 49.84 years. The lesions were asymptomatic in 63 patients (17%) and about half of the patients (47.6%) had multiple sites of involvement. 48.6% of patients were treated with topical steroids and only 1% were treated with systemic corticosteroids. No association was found between alcohol and tobacco consumption and OLP. They concluded that the clinical features in OLP patients were similar to other populations. Also, according to the referral pattern, many therapists have little knowledge of OLP.

Examining the epidemiological information on Oral lichen planus (OLP), to investigate the referral pattern, chief complaint of patients, clinical manifestations of the disease as well as the delay in diagnosis using data from the OLP patient records at the Department of Dental and Maxillofacial Diseases, Faculty of Dentistry at Mashhad University of Medical Sciences in Iran. Understanding the chief complaint of OLP patients, clinical manifestations, and referral pattern is essential for making timely diagnosis and effective treatment of the disease. In addition, timely recognition with no delay is crucial for detecting malignant transformation, as there is an elevated risk for the development of squamous cell carcinoma (SCC) in OLP patients.

Methods

In this descriptive cross-sectional study, the records of OLP patients referred to the Department of Oral and Maxillofacial Diseases of the Faculty of Dentistry at Mashhad University of Medical Sciences in Iran from 2004 to 2017 were examined. The records with complete data of the disease, which has been proven through clinical or histopathological examinations, were included in the study. Patients whose histopathological diagnosis was reported as lichenoid reactions were excluded. We used World Health Organization diagnostic criteria (1978) of oral lichen planus (OLP) for clinical diagnosis of OLP. The World Health Organization (WHO) diagnostic criteria for oral lichen planus (OLP), established in 1978 and later updated, require a combination of clinical and histopathological features to confirm the diagnosis[5]. These criteria are as follows:

Clinical Features (both must be present): 1. Bilateral, more or less symmetrical lesions: OLP commonly presents on the buccal mucosa but can also involve the tongue, gingiva, or other oral sites. 2. Reticular pattern or other characteristic clinical patterns: Reticular (white, lace-like lines or striae), Erythematous (atrophic), Erosive/ulcerative or bullous variants may also occur.

Histopathological Features (all must be present): 1. A well-defined band-like zone of lymphocytic infiltration in the lamina propria, mainly confined to the superficial part. 2. Hydropic degeneration of the basal cell layer of the epithelium. 3. Absence of epithelial dysplasia: This is important to distinguish OLP from precancerous conditions.

For all OLP patients, a referral form was also included. Patient's age, sex, type of lesion, referral pattern, chief complaint, *etc.* were recorded in a checklist. The data were analyzed using SPSS software version 22 and the variables, all of which were qualitative, were compared using Chi-squared, Fisher's exact and Kendall's Tau-b tests. The significance level was set at 5%. As this study was not conducted directly on patients, no informed consent was required. The study was approved by the Ethics Committee of the Mashhad University of Medical Sciences under the code IR.MUMS.DENTISTRY.REC.1399.031.

Results

This cross-sectional study was conducted on the records of 504 OLP patients who were referred to the Department of Oral and Maxillofacial Diseases of the Faculty

of Dentistry, Mashhad University of Medical Sciences, Iran, from 2004 to 2017. The Patients included 344 women (68.3%) and 160 men (31.7%) with a mean age of 50.10 ± 13.99 years and an age range of 11-88 years. The cases were assessed in terms of the type of lesion, referral pattern, patient's chief complaint, *etc.* The basic information of the patients is given in Table 1. The patients were almost evenly distributed among different age groups with a female-to-male ratio of around 2: 1.

Table 1. Demographic and clinical information of the cases studied.

Variable		Number (%)	Variable		Number (%)
Age (years)	<40	128 (25.4)	Treatment history	yes	229 (45.4)
	41-50	128 (25.4)		no	275 (54.6)
	51-60	132 (26.2)	Skin involvement	yes	32 (6.3)
	>60	109 (21.6)		no	472 (93.7)
	Unknown	7 (1.4)	Systemic disease	yes	259 (51.4)
Sex	Male	160 (31.7)		no	245 (48.6)
	Female	344 (68.3)	Dysplasia	no	481 (95.4)
Marital status	Married	481 (95.4)		mild	16 (3.2)
	Single	18 (3.6)		moderate	7 (1.4)
	Unknown	5 (1.0)	Biopsy	yes	101 (20.0)
Place of residence	Urban	471 (93.5)		no	403 (80.0)
	Rural	33 (6.5)	Education	no	87 (17.26)
				elementary	158 (31.49)
				diploma	139 (27.57)
				BSc	58 (11.50)
				MSc	6 (1.19)
				PhD	1 (0.19)

Referral pattern

Of the total of 504 cases, 32.3% were referred by general dentists, 26% by specialist dentists, 14.3% by specialist doctors, 10.5% by general practitioners, and 16.9% referred themselves.

Chief complaints

22% (n=111) of the cases had no complaints. Among 393 cases with complaints, the most common complaint was burning sensation (59.5%), followed by pain (24.9%) and ulcer (24.2%). The least common complaints were mucosal roughness (4.8%), followed by mucosal discoloration (16%) (Fig 1). Also, the frequency distribution of the complaints did not differ significantly in men and women (p = 0.110). The highest rate of complaints was for the burning sensation in both sexes. In addition, the highest rate of complaints was for the burning sensation in all age groups and there was no signif-

icant difference in their frequency distribution of complaints (p = 0.172). The majority of patients with no complaints were referred within more than 12 months and the frequency distribution of the referral times for people with and without complaint was significantly different (p <0.001) (Table 2).

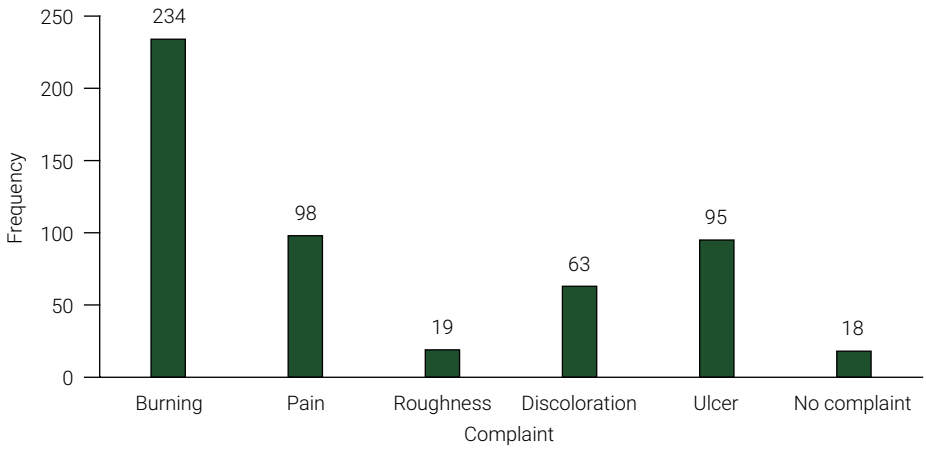

Figure 1. Frequency distribution of patient complaints on referral.

Table 2. Frequency distribution of complaints in terms of the clinical manifestations of the lesion.

Variable		Manifestation			Chi-squared test
		Erosive	non-erosive	total	
Complaint	no	67 (17.1)	44 (39.3)	111 (22)	χ^2=24.98 P<0.001
	yes	325 (82.9)	68 (60.7)	393 (78)	
	total	392 (100)	112 (100)	504 (100)	
Type of complaint	burning	208 (48.8)	26 (31.3)	234 (46)	χ^2=38.50 P<0.001
	pain	88 (20.7)	10 (12)	98 (19.3)	
	mucosal roughness	11 (2.6)	8 (9.6)	19 (3.7)	
	mucosal discoloration	39 (9.2)	24 (28.9)	63 (12.4)	
	ulcerative	80 (18.8)	15 (18.1)	95 (18.7)	
	Total	426 (100)	83 (100)	509 (100)	

Clinical manifestations

The clinical manifestation of 77.8% of the cases was erosive (nonkeratotic), while it was non-erosive (keratotic) in 22.2%.

The frequency distribution of the clinical manifestations in different age groups did not differ significantly (p = 0.68). On the other hand, in all age groups, the incidence of erosive lesions was higher than that of non-erosive lesions (Table 3). In addition, the frequency distribution of clinical manifestations in both sexes was not signifi-

cantly different (p = 0.278). Although in both sexes the incidence of erosive lesions was higher than that of non-erosive lesions, their frequency distribution did not differ significantly in men and women (p = 0.210).

Referral time

The most common referral times were less than 6 months (44.6%) and higher than 12 months (31.9%), respectively. In all age groups, the most common referral time was less than 6 months, and the frequency distribution of the referral time in different age groups did not differ significantly (p = 0.445). In both sexes, the most common referral time was less than 6 months. The frequency distribution of the referral time in men and women was not significantly different (p = 0.056).

Table 3. Frequency distribution of the clinical manifestation of the lesion and the referral time in terms of age.

Variable		Age (years)						Chi-squared test
		≤40	41-50	51-60	>60	unknown	Total	
Clinical manifestation	erosive	97 (75.8)	90 (70.3)	106 (80.3)	93 (85.3)	6 (85.7)	392 (77.8)	χ^2=8.75 P=0.068
	non-erosive	31 (24.2)	38 (29.7)	26 (19.7)	16 (14.7)	1 (14.3)	112 (22.2)	
	total	128 (100)	128 (100)	132 (100)	109 (100)	7 (100)	504 (100)	
Referral time (months)	<6	61 (47.7)	55 (43)	55 (41.7)	52 (47.7)	2 (28.6)	225 (44.6)	χ^2=7.89 P=0.445
	6-12	31 (24.2)	24 (18.8)	31 (23.5)	30 (27.5)	2 (28.6)	118 (23.4)	
	>12	36 (28.1)	49 (38.3)	46 (34.8)	27 (24.8)	3 (42.9)	161 (31.9)	
	total	128 (100)	128 (100)	132 (100)	109 (100)	7 (100)	504 (100)	

Patient habits

Table 4 shows that about 63% of men and 75% of women did not have any specific habits. The proportion of male tobacco users was about three times that of females. In addition, the proportion of male nonsmoking tobacco users was about four times that of female users. Mouth breathing was more than twice as common in women as in men, and grinding of teeth (bruxism) was almost equally common in both sexes. In general, the frequency distributions of habits were significantly different in men and women (p <0.001) (Table 4).

Table 4. Sex, habits, skin involvement, and systemic disease in the cases studied.

Variable	Sex			Chi-squared test
	Male	Female	total	

Habit	No	101 (63.1)	257 (74.7)	358 (71)	χ^2=29.24 P<0.001
	tobacco use	39 (24.4)	29 (8.4)	68 (13.5)	
	nonsmoking tobacco use	2 (1.3)	1 (0.3)	3 (0.6)	
	mouth breathing	8 (5)	39 (11.3)	47 (9.3)	
	Bruxism	10 (6.3)	18 (5.2)	28 (5.6)	
Skin involvement	Yes	11 (6.9)	21 (6.1)	32 (6.3)	χ^2=0.11 P=0.741
	No	149 (93.1)	323 (93.9)	472 (93.7)	
Systemic disease	Yes	73 (45.6)	186 (54.1)	259 (51.4)	χ^2=3.12 P=0.077
	No	87 (54.4)	158 (45.9)	245 (48.6)	
Dysplasia	No	148 (92.5)	333 (96.8)	481 (95.4)	χ^2=7.23 P=0.027
	Mild	10 (6.3)	6 (1.7)	16 (3.2)	
	Moderate	2 (1.3)	5 (1.5)	7 (1.4)	
Total		160 (100)	344 (100)	504 (100)	

Skin and mucosal involvements

6.3% of the cases had skin involvement, while none had genital involvement. Also, the frequency distribution of patients with skin involvement was almost the same in both sexes (p = 0.741). Concerning the history of treatment, the number of patients with skin involvement was significantly higher than that of patients without skin involvement (p = 0.045). Most of the cases with skin involvement (43.8%) were referred within 6 to 12 months (Table 5).

Table 5. Frequency distribution of having prior treatments and referral time in patients with and without skin involvement.

Variable		Skin involvement			Chi-squared test
		yes	No	total	
Prior treatments	yes	20 (62.5)	209 (44.3)	229 (45.4)	χ^2=4.01 P=0.045
	no	12 (37.5)	263 (55.7)	275 (54.6)	
Referral time (months)	<6	9 (28.1)	216 (45.8)	225 (44.6)	χ^2=8.28 P=0.016
	6-12	14 (43.8)	104 (22)	118 (23.4)	
	>12	9 (28.1)	152 (32.2)	161 (31.9)	
	total	32 (100)	472 (100)	504 (100)	

Systemic diseases

51.4% of the patients had a systemic disease. The most common case was hypertension (44.8%), followed by gastrointestinal problems (28.6%), diabetes (27.4%), and heart disease (20.5%). The least common case was epilepsy (0.8%). The frequency distribution of the patients with systemic disease in different age groups differed significantly ($p < 0.001$), so that the incidence of systemic diseases was significantly higher in the age group 60 and over. The incidence of systemic diseases was higher in men than in women, although the difference was not statistically significant ($p = 0.077$).

Dysplastic changes

In this study, 4.6% had dysplasia on the second or later biopsies (subsequent biopsy), of which 3.2% and 1.4% were mild and moderate, respectively. It is noted that in the initial biopsy for OLP diagnosis no dysplasia was detected in all cases. Mild and moderate dysplasia was observed in both sexes, but the frequency distribution of patients with different types of dysplasia was significantly different between men and women ($p = 0.027$), so that mild dysplasia was 4 times higher in men than that in women. The highest incidence of dysplasia was in the non-erosive cases. In these cases, the most common dysplasia was detected in plaque-like lesions, followed by reticular and popular types.

The highest incidence of dysplasia occurred in patients who smoked tobacco. In patients who smoked, the incidence of mild dysplasia was twice that of those who did not smoke, although the incidence of moderate dysplasia was the same.

Out of 504 OLP cases studied, four patients later developed squamous cell carcinoma (SCC), whose clinical manifestation was erosive. Of these four malignant cases, two were in the age group 41-50 and two were over 60 years old (three women and one man); one developed SCC after seven years, another after eight years and the case of the other two was unknown. The tongue was involved in three patients and the buccal mucosa in one.

Location of lesions

The most common location of the lesions was the buccal mucosa (84.1%), followed by the tongue (41.1%), the gums (29.4%), and the vestibule (25.4%). The rarest location was the soft palate (1.6%) (Fig 2). In both sexes, the most commonly involved areas were the buccal mucosa and the tongue, respectively. There was no significant difference in the frequency distribution of the location of lesions in both sexes ($p = 0.985$) (Table 6). In all age groups, the most common locations of the lesions were the buccal mucosa and tongue, respectively. There was no significant difference in the frequency distribution of the location of lesions in the age groups ($p = 0.316$).

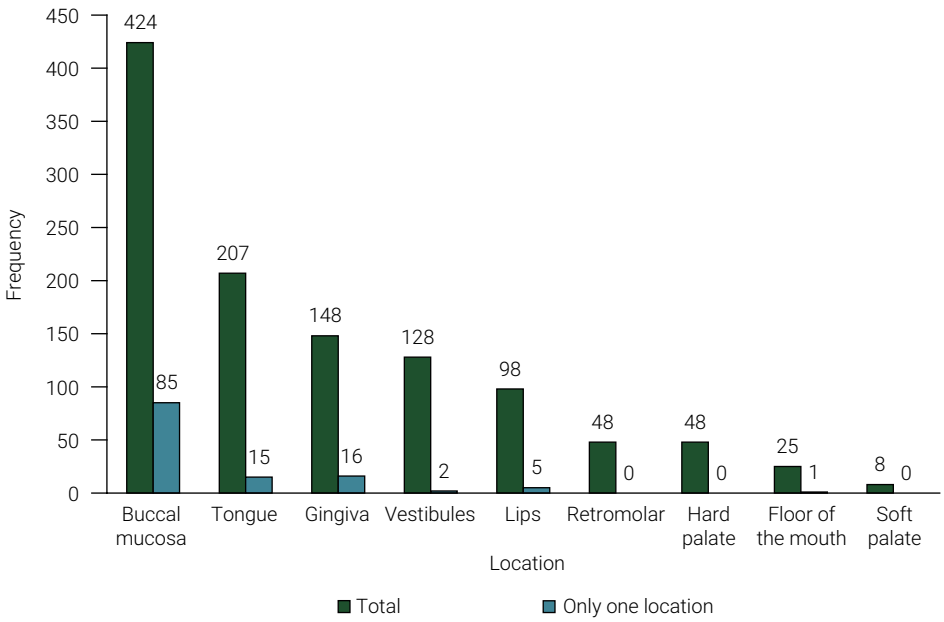

Figure 2. Frequency distribution of the location of lesion.

Table 6. Frequency distribution of the location of the lesions and patient complaints in both sexes.

Variable		Sex			Chi-squared test
		Male	female	total	
Location of the lesion	Retromolar	14 (3.8)	34 (4.4)	48 (4.2)	χ^2=1.88 P=0.985
	Cheek	136 (37.2)	288 (37.5)	424 (37.4)	
	Tongue	70 (19.1)	137 (17.8)	207 (18.3)	
	Lips	32 (8.7)	66 (8.6)	98 (8.6)	
	soft palate	4 (1.1)	4 (0.5)	8 (0.7)	
	hard palate	14 (3.8)	34 (4.4)	48 (4.2)	
	Vestibule	40 (10.9)	88 (11.5)	128 (11.3)	
	floor of mouth	8 (2.2)	17 (2.2)	25 (2.2)	
	Gingiva	48 (13.1)	100 (13)	148 (13.1)	
	Total	366 (100)	768 (100)	1134 (100)	

Discussion

Oral lichen planus is a disease of unknown etiology in which the immune system is believed to play an important role[6]. It is more common in women than men, and is more prevalent in the fifth and sixth decades of life. Common clinical manifestation of this condition are bilateral and symmetrical lesions that are more incident in the posterior oral cavity[7].

In the present study, the patients included 344 women (68.3%) and 160 men (31.7%) with a mean age of 50.10 ± 13.99 years. The ratio of female to male patients was approximately 2:1. In the study of Lauritano et al.[3], a male-to-female ratio of 1: 1 and

a mean age of 63.9 years were reported. Also, in Chen et al.[2], the female-to-male ratio was 1.9:1 and the mean age was 54.9 years. The female-to-male ratio in Kaomongkolgit et al.[8] study was 2.8: 1 and the mean age was 56.4 years. Such a ratio was 1.8:1 in Varghese et al.[1] and it was 2.11:1 in Raochová et al.[9], with a mean age of 55.2 years.

Gumru[4] reported a female-to-male ratio of 2.36:1 and a mean age of 49.84 years. In most of the studies, the female-to-male ratio and the mean age have been similar to the present study. The reason for the small inconsistencies could be the differences in sample size and races. In addition, in this study, and similar to others, the prevalence of OLP was higher in women, which may be due to the higher incidence of autoimmune diseases in women[3]. Also, stress has been reported to be more common in women, which may be another reason for the higher prevalence of OLP in women.

Most of the referrals were made by general dentists, specialist dentists, general practitioners, and specialists, respectively. According to Gumru[4] study, and in contrast to the present study, 77.3% of patients referred themselves and only 10.3% were referred by general dentists. In Tovaru et al.[10], and similar to ours, most referrals were made by general dentists, general practitioners, and the patients themselves, respectively. The reason for the differences can lie in different health care systems as well as in different levels of awareness and education in the populations.

In Kaomongkolgit et al.[8], study the most common systemic disease was hypertension (42.3%), followed by dyslipidemia (21.8%), diabetes (10.3%), heart diseases (3.8%), epilepsy (2.6%), and kidney diseases (1.3%). Lauritano et al.[3] reported the most common systemic disease to be hypertension (44.8%), followed by diabetes (24.1%), hepatitis C (18.4%), thyroid infection (15%), mental disorders (10.3%), as well as other systemic diseases such as heart disease, prostate infection and hyperchlorostroma (31%). According to Radochová et al.[9], the most common systemic diseases were hypertension (48.5%), thyroid disorder (14.6%), diabetes (14.6%), hypercholesterolemia (12.3%), cardiovascular diseases (11.1%), hypothyroidism (10.5%), mental disorders (9.4%), and rheumatism (5.2%), respectively.

In Gumru[4], the most common systemic diseases were hypertension (23.8%), gastrointestinal disorders (10.3%), mental disorders (9.7%), diabetes (9.7%), allergies (8.6%), cardiovascular diseases (7%) and autoimmune and thyroid diseases (4.7%), respectively.

Similar to other studies, the most common systemic disease in this study was hypertension. Hypertension usually occurs in middle age as well as in old age, and OLP is known to be more common in the sixth decade of life[3,11]. Furthermore the OLP lesions may be due to the side effects of antihypertensive drugs such as beta-blockers.

In the study of Varghese et al.[1], bilateral mucosal involvement was observed in 77% of the cases. Of the cases with bilateral involvement of the buccal mucosa, 37.2% had also involvement in other parts of the mouth (gums and tongue).

In Radochová et al.[9], the most common areas affected were the buccal mucosa (89.5%), the tongue (54.4%), the alveolar and gingival mucosa (25.7%), the lips (18.7%), the palate (4.7%), and the oral cavity (3.5%), respectively. In the Gumru's study[4], the

highest involvement was observed in the buccal mucosa with an incidence of 88.1%. The tongue (27.6%), gingiva (25.9%), the labial mucosa (8.1%), hard palate (7.8%), alveolar ridge (5.4%) and the floor of mouth (3%) were the next most common.

According to Tovaru et al.[10] study, the most common involved areas were the buccal mucosa, the tongue, the gums, the labial mucosa, and the floor of mouth. In the study of Kaomongkolgit et al.[8], the most common involved areas were the buccal mucosa (79.4%), the gums (64.7%), the labial mucosa (25.5%), the palate (6.9%), and the floor of mouth (2%), respectively. In our study, and similar to others, the most common involved area was the buccal mucosa.

In this study, the clinical manifestation in 77.8% of the lesions was erosive, while it was non-erosive in 22.2% of the cases. In the study of Boñar-Alvarez et al.[12], the erosive and ulcerative lesions were reported as red OLP, which had the highest incidence (49.2%). This was followed by reticular and mixed lesions with an incidence of 40.7% and 10.2%, respectively.

In the study by Palatescu et al.[13], the most common lesion type was keratotic (48.75%), followed by atrophic (31.25%), erosive (17.5%) and bullous (2.5%). In Lauritano et al.[3], the prevalence of white and red OLP was 58.5% and 39%, respectively. Radochová et al.[9] reported the most common manifestation to be reticular (93.5%), followed by erosive (46.5%), erythematosus (38.6%) and plaque-like (32.7%), respectively. In Gumru[4] study, the white and red OLPs were observed in 39.5% and 60.5% of the cases, respectively. Tovaru et al.[10] observed the most common type to be white OLP with an incidence of 48.9%, followed by ulcerative (35.86%) and atrophic (13.59%).

Kaomongkolgit et al.[8] reported the most common type of lesions to be atrophic (93.1%), followed by reticular (83.7%), erosive (44.1%), papular (5.8%), and plaque-like (5.8%). Unlike to our study, in some studies, erosive lesions were less common than non-erosive, which may be due to racial differences as well as differences in health care systems. This may also be due to frequent examinations and regular visits in other populations, which lead to earlier and better diagnosis of non-erosive lesions.

For erosive lesions, because of the more severe signs and symptoms, the patient is more likely to be referred and diagnosed than other clinical manifestations of OLP. In fact, erosive lesions are more aggressive and have a higher risk of malignancy, and the risk of recurrence has been reported to be higher for these lesions[9].

In the present study, the referral time was longer for most of the patients who had no complaints, and the difference was significant. Because pain, burning sensation, and other discomforts are usually the reason for the referral of patients, the absence of complaints resulted in a delay in the referral.

In the study by Varghese et al.[1], 50% of patients had burning sensation in their mouth and 15% had desquamative gingivitis. Radochová et al.[9], reported that 63.7% of patients had pain. In addition, severe pain was observed in 21.6% of patients and mild to moderate pain was observed in 42.1%. In Gumru[4] study, 83% of patients had complaints. The most common complaint was burning and discomfort in the mouth (53.8%), followed by oral lesions (17%), burning and bleeding gums (10.8%), and

roughness in the oral mucosa (6%). In the present study, the most common complaint was also burning sensation (59.5%).

Skin involvement was observed in 6.3% of the cases in the present study. Also, most of the patients with skin involvement were referred within 6 to 12 months after the occurrence of clinical manifestations (43.8%), which was significantly later than patients without skin involvement. Varghese et al.[1] observed skin involvement in 2.45% of cases, while 16.4% had skin involvement in the study by Radochová et al.[9]. In Lauritano et al.[3], skin involvement was reported in 2% of patients, and Tovaru et al.[10] observed skin involvement in 25% of cases.

The difference in referral time for patients with and without skin involvement was also noticeable; Patients with skin involvement may first refer to a dermatologist and then to a specialist dentist for oral involvement, which made the referral time even longer.

In our study, most of the patients who had oral lesions referred to general and specialist dentists, while patients with skin involvement were more likely to refer to dermatologists. It is also possible that later skin involvement will lead to referral to dental care centers.

In this study, 47% of the patients smoked tobacco and 2% used nonsmoking tobacco. In the study by Kaomongkolgit et al.[8], 98% of patients were nonsmokers and 86.3% were non-alcoholic. Varghese et al.[1] reported the consumption of chewing tobacco (8%), smoking tobacco (5%), and alcohol (5%) in patients. In fact, patients' habits in societies can vary depending on social, cultural, and economic situation.

We observed dysplasia in 4.6% of the cases in the second biopsy or later. Tovaru et al.[10], however, reported no case of dysplasia, while in Varghese et al.[1], dysplasia was reported in 5% of the cases, which is almost consistent with our study. As we have used WHO 1978 criteria for OLP diagnosis, the lesions with dysplasia are classified as oral lichenoid dysplastic. It is worth mentioning that all lesions with dysplasia in this study were detected after the first diagnostic biopsy (in a subsequent biopsy). The subsequent biopsy was conducted to evaluate the worsening of the clinical appearance

In our study, malignancy was observed in 4.6% of the cases, including only the referrals to our department's dental clinic. Hence, patients may have developed malignancy and dysplasia later, but they did not refer to us for whatever reason.

Therefore, the number of malignant transformations in this study appears to be fewer than the actual number. In Laurionto et al.[3], only one patient developed malignancy after 5 years. Tovaru et al.[10] reported malignancies in 0.95% of patients. The World Health Organization has announced OLP as a precancerous lesion. However, the prevalence of malignancy has been varying in studies[14]. The limitations of this study include incomplete records in some cases. Additionally, the failure to document malignant changes in some records was another notable limitation.

This cross-sectional study was conducted on the records of 504 patients with oral lichen planus referred to the Department of Oral and Maxillofacial Diseases at the Faculty of Dentistry, Mashhad University of Medical Sciences, Iran, from 2004 to 2017. The patients included 344 women (68.3%) and 160 men (31.7%) with a mean

age of 50.10 ± 13.99 years. The most common complaints were burning sensation, pain, and ulcers, respectively, and the most common clinical manifestation of the lesions was erosive type. Complaints of pain and ulcer were more common in patients with erosive lesions. Knowledge of the main complaints and clinical manifestations helps dentists and physicians diagnose the disease at an early stage and refer patients to specialists in a timely manner. Because of the risk of malignancy in patients with oral lichen planus, timely diagnosis and no delay in treatment is essential. Additional research is required to investigate the root causes of the high prevalence of disease in females and the possible genetic and environmental factors contributing to it.

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Data availability

Datasets related to this article will be available upon request to the corresponding author.

Conflict of interest

The authors declare no conflict of interests.

Author Contribution

Maryam Amirchaghmaghi: Conceptualization, Project administration, and Supervision of the manuscript. **Ala Ghazi:** Conceptualization, Project administration, and Supervision of the manuscript. All authors actively contributed to Data curation, Investigation, Methodology of the project, and Writing–review & editing of the manuscript. All authors actively participated in discussing the manuscript's findings and have revised and approved the final version of the manuscript.

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