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A retrospective comparative study on clinico-pathologic features of oral lichen planus and oral lichenoid lesions

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ABSTRACT

Introduction: Oral Lichen Planus (OLP) and Oral Lichenoid Lesions (OLLs) are clinically and histopathologically similar lesions but with different etiologies and treatment plan, thus differentiating these two has been the center of many researches. Studies in different populations have been performed on clinical and histopathologic features of OLP and OLLs. Thus aim of the present study was to evaluate and also compare the clinical and histopathologic features of these two diseases in a 10-year period in Esfahan.

Materials and Methods: This descriptive–analytic study was based on retrospective survey of 232 records with clinical and histopathologic diagnosis of OLP and OLLs available from archive of oral pathology, Esfahan dental school 2000-2010. Data was statistically analyzed by use of independent *t*-test, Fisher exact, and Chi-square.

Results: Involvement of lip was the only clinically significant difference between OLP and OLLs, most seen in OLLs. Band-like inflammatory infiltrate mainly composed of lymphocyte, saw toothed rete ridges, Max Joseph space, and atrophic epithelium was significantly seen in OLP. While hyperkeratosis, deep connective tissue infiltrate composed of eosinophil, neutrophil, and plasma cell were seen in OLLs.

Conclusion: Involvement of lip was the only clinically significant difference between OLP and OLLs. Histopathologically strict band like infiltration, atrophic epithelium, saw toothed rete ridges, and Max Joseph space are reliable criteria for differentiation of OLP as deep connective tissue infiltration and hyperparakeratosis are for diagnosis of OLLs.

Key Words: Clinical, oral lichen planus, oral lichenoid lesions, pathologic

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INTRODUCTION

Oral Lichen Planus (OLP) is a chronic mucocutaneous disease with a possible auto-immune-related etiology. In contrast, Oral Lichenoid Lesions (OLLs) comprise a group of lesions with different etiologies such as systemic medication, dental restorative materials, food, or flavoring agents.[1,2] Interestingly lesions of OLP and OLL have similar clinical and histopathologic features, although the treatment planning of the two is different. In cases of OLP, a chronic lifelong disease, a symptomatic treatment with corticosteroids is sufficient. In severe cases, systemic therapy is required. Surgical treatment or laser ablation are considered in persistent, painful lesions.[3-5] In OLLs, the main treatment is to recognize and remove the causative agent although it has been said that amalgam-related OLLs, because of more susceptibility to future malignancy, require more attention.[6]

Many studies have focused on differentiating these two categories but a definitive answer has not been made till today.[7-10] Recently mast cell count and

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morphology has been theorized for such differentiation but further studies on this field is required.[2]

Because of clinical and histopathological similarities between these two lesions, clinical and histopathological criteria for differentiating OLP from OLL has been proposed. It is advised to make the final diagnosis based on both clinical and histopathological findings as summarized in Tables 1 and 2.[2,11-15]

It is said that OLP and OLLs are seen more frequently in middle-aged woman and the reticular form is much more common than erosive, although in several studies the erosive form predominates. The most common place for these lesions would be posterior buccal mucosa when other mucosal surfaces such as tongue, gingiva, palate, and vermilion border may also show concurrent involvement.[1] Studies performed in different populations have been performed with similar and dissimilarities in and between clinical and histopathological features of OLP and OLLs.[16-18] Thus aim of the present study was on evaluating the clinical and histopathological features of these two diseases in a 10-year period in Esfahan and comparing the results to similar studies.

Table 1: Clinical criteria for differentiating OLP from OLLs

Clinical feature	Clinical diagnosis
Bilateral	
Lesions with no systemic medication	OLP
Lesions with systemic medication	OLL
Lesions not in contact with tooth restorations	OLP
Lesions in close contact with tooth restorations	OLL
Unilateral	
Lesions with no systemic medication	OLP
Lesions with systemic medication	OLL
Lesions in close contact with tooth restorations	OLL
Lesions not in close contact with tooth restorations	OLP

OLP: Oral lichen planus; OLL: Oral lichenoid lesions

Table 2: Proposed histopathological criteria for differentiating OLP from OLLs

OLP	OLL
Well defined band-like chronic inflammatory infiltrate composed predominantly of lymphocytes immediately subjacent to epithelium	Chronic inflammatory infiltrate with a poorly defined lower border in subepithelial zone and presence of acute inflammatory cells such as eosinophil and neutrophil
Hydropic degeneration of the basal cell layer	Presence of a substantial number of plasma cells in the inflammatory infiltrate
Absence of eosinophil and neutrophil	Perivascular inflammatory infiltrate

OLP: Oral lichen planus; OLL: Oral lichenoid lesions

MATERIALS AND METHODS

This descriptive–analytic study was based on retrospective survey of clinicopathological features of 232 records with clinical and histopathological diagnosis of OLP (n = 187) and OLLs (n = 45) available from oral pathology laboratory of Esfahan dental school from 2000 to 2010.

Available clinical data of each case was evaluated with respect to age, gender, and location of the lesion. Hematoxylin and eosine stained sections of all cases were reviewed with respect to presence of histopathologic features: hyperkeratosis, morphologic changes of rete ridges, hydropic degeneration of basal cell layer, band-like or diffuse inflammatory infiltrate, the composition of inflammatory infiltrate, melanin incontinence, and Max Joseph space. Mean age and frequency distribution of clinical and histopathological data were expressed in percentages. Data was analyzed by means of independent t-test and Chi-square statistical tests.

RESULTS

From the total number of 232 records available, 80.60% of the lesions were recorded as OLP and 19.39% were diagnosed as OLLs.

Clinical evaluation of OLPs

In demographic and clinical evaluation of OLPs [Table 3], 71.9% of lesions have occurred in women. Mean age of patients in this group was 46.19 years. According to location, 72.9% of lesions occurred on posterior buccal mucosa with a 1.03% concurrent occurrence of buccal mucosa and tongue. As well in 0.51% buccal mucosa and lip were involved synchronously. After buccal mucosa, the most common place of involvement were gingiva (11.5%), tongue (10.9%), and lip vermilion (6.3%), respectively. In 1.25%, a synchronous cutaneous lichen planus was observed.

Clinical evaluation of OLLs

In OLLs, women with 80.4% of involvement were the predominant sex. Mean age of patients in this group was 46.9 years. With respect to place of occurrence, 65.9% posterior buccal mucosa, 11.4% tongue, 18.2% lip, 6.8% gingiva, and 2.17% concurrent involvement of lip and gingiva was reported. In 33.75%,

Table 3: Demographic and clinical data of patients in both groups

Diagnosis (*n*)	Gender (%)		Age (± sd)	Site (%)
	Male	Female		
OLP (187)	27.97	72.02	46.19±13.5	Buccal mucosa (72.9)
				Lip (6.3)
				Tongue (10.9)
				Gingiva (11.5)
				Buccal mucosa and tongue (1.03)
				Buccal mucosa and lip (0.51)
				Bilateral buccal mucosa (8.29)
OLL (45)	19.56	80.43	46.9±13.3	Buccalmucosa (65.9)
				Lip (18.2)
				Tongue (11.4)
				Gingiva (6.8)
				Bilateral buccal mucosa (8.86)
				Lip and gingival (2.17)

OLP: Oral lichen planus; OLL: Oral lichenoid lesions

synchronous systemic disease and medication was reported. In only 13 cases of the 46 OLLs, close proximity of the lesion to amalgam tooth restoration was reported by the clinicians.

Histopathologic evaluation of OLPs

In microscopic evaluation of OLP lesions, 46.9%hyperkeratosis was seen while 26% had features of atrophic epithelium. Band-like inflammatory infiltration in the papillary connective tissue with a well demarcated border was seen in 91.7%, although a deeper infiltrate was observed in 0.5%. Hydropic degeneration of basal cell layer in 81.3%, saw toothed rete ridges in 53.1%, and Max Joseph space in 15.1% was seen. Frequency distribution of other microscopic criteria were as listed in Table 4.

Histopathologic evaluation of OLLs

Hyperkeratosis (para- and ortho-parakeratinization) was shown in 56.5%, 13% showed features of atrophic epithelium. Band-like infiltration was observed in 76.1%, although areas with deeper infiltrating inflammatory infiltrate was seen in 41.3% of cases. Hydropic degeneration in 71.7%, saw toothed rete ridge in 37%, and Max Joseph space in 6.5%. Frequency distribution of other microscopic criteria were as listed in Table 4.

Table 4: Distribution frequency of histopathologic data of patients in both groups in percentage

Histopathologic features	Diagnosis (%)		
	OLP	OLL	*P* value
Band-like infiltration	91.7	76.1	0.005
Deep connective tissue infiltration	0.5	41.3	0.001
Hydropic degeneration	81.3	71.7	0.11
Max-joseph space	15.1	6.5	0.093
hyperkeratosis	46.9	56.5	0.57
hyperparakeratosis	23.4	43.5	0.006
hyperorthokeratosis	7.8	0	0.03
Hyperpara-orthokeratosis	6.3	4.3	0.46
Atrophic epithelium	26	13	0.04
Saw toothed rete ridge	53.1	37	0.035
Neutrophil	1.6	2.2	0.57
Eosinophil	0	0.5	0.87
Plasmacell	2.1	4.3	0.32
Melanin incontinens	3.1	0	0.27

OLP: Oral lichen planus; OLL: Oral lichenoid lesion

DISCUSSION

OLP and OLLs have long been the center of debate for clinicians and pathologists. Regarding the different treatment planning for these two diseases and bewilderment of clinicians, pathologists and most importantly the patient, a definitive differential diagnosis between the two has always been a desire for researchers.

The aim of present study was to describe the most seen clinical and histopathological features of OLP and OLLs in Isfahan (Iran) as well as to do a comparison between the most seen of the two diseases in eager that it might one way or another help in differentiation of OLP from OLLs. In both groups lesions with no statistically significant difference were seen in women, mostly (P = 0.16), which is in accordance to studies performed in Brazil, China, and Iran (Mashhad).[18-20] Age of involvement shown in present study was also in accordance to studies in Brazil, Sweden, Italy, and Iran (Mashad).[19-21] Although results of present study and study of Pakfetrat[20] compared with other studies from different countries might show that the age of occurrence for OLP in Iran is lower than other countries. The mean age of occurrence in OLP and OLL did not show significant difference (P = 0.75).

Similar to other studies the most common place of occurrence in our study, for both groups, was posterior buccal mucosa. After posterior buccal mucosa the most seen places of involvement with OLP were tongue, gingiva, and vermilion border of lip. Concurrent involvement of different locations was seen in only 9.83% of OLPs including bilateral involvement of buccal mucosa (8.29%). This phenomenon was observed in 77.27% in Brazil, 90.9% in China, and 60% in Mashad (Iran).[18-20] Involvement of lip was

observed in 5.69% of cases in our study, almost close to 8.9% in China but isolated involvement of gingiva in present study was seen in10.88%, although it was just seen in 0.2% in the study on a Chinese population.[18] Involvement of lip in OLLs was seen more than OLP and the difference was statistically significant ($P = 0.017$). While other sites did not show a significant difference between groups ($P = 0.05$). A small subset of OLP patients with synchronous involvement of other mucosal sites (i.e., vaginal and esophageal mucosa) have been reported in the literature.[18,22] No similar relation was seen in our study. In the present study, cutaneous involvement was seen in only 1.25% in conjunction to OLP, which was lower than the15.5% reported in Iran and 11.4% in China.[18,20] Van der Waal believes that in the majority of patients with OLP, there is no associated cutaneous lichen planus and refers to it as an "isolated" OLP.[22,23]

A deep more diffuse distribution of a mix lymphocytic infiltrate within the lamina propria and focal parakeratosis would be indicative of OLL in contrast to a strict lymphohistocytic infiltrate that defines OLP, which as shown in Table 2 is in accordance to results of the present study.[23,24] We also observed statistically significant difference in presence of atrophic epithelium and saw tooth rete ridges in OLP compared to OLL ($P>0.05$).

Hydropic degeneration did not show significant difference between OLPs and OLLs. Presence of subepithelial Max Joseph space was near to significant ($P = 0.093$). Hyperkeratosis was seen in both groups with no significant difference, although as shown in Table 4 statistically significant difference was seen between types of hyperkeratosis.

CONCLUSION

Involvement of lip was the only clinically significant difference between OLP and OLLs, most seen in OLLs. Histopathologically strict band-like infiltration, atrophic epithelium, saw toothed rete ridges, and Max Joseph space are reliable criteria for differentiation of OLP as are deep connective tissue infiltration and hyperparakeratosis for diagnosis of OLLs.

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