



## Correlation of Clinical Severity of Oral Lichen Planus with Treatment Prognosis - A Retrospective Institution Based Study

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### ABSTRACT

Lichen planus is a chronic mucocutaneous immunologically mediated disease which is triggered by varied etiological agents. Lichen planus shows many clinical features affecting the skin, oral cavity, genital organ, nail and scalp. Lichen planus has well documented clinical findings and histological findings that aid in diagnosis. This retrospective study was done to assess the clinical severity of Oral Lichen Planus (OLP) and compare it to the treatment prognosis of the patients visiting our institution. A total of 60 clinically diagnosed OLP patients were included. Clinical and treatment details were recorded and tabulated using Excel. The collected data were then analyzed by appropriate statistics using SPSS software. The results revealed 60% of the cases to be females with 58.3% accounting for the erosive type of lichen planus. 60% had involvement of bilateral buccal mucosa. Erosive variant showed eight months duration of treatment using systemic steroids. Within the limitations of the study, we observed that OLP accounts for nearly 28.4% of the OPMD reporting to the institution and females were found to be more commonly affected than males. Erosive lichen planus was the most common variant which exhibited maximum treatment duration. Hence, it is necessary to follow up the OLP patients regularly and to provide a precise treatment which prevents the remission of the disease in these patients.



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### INTRODUCTION

Oral Lichen Planus (OLP) is defined as a chronic inflammatory disease of immune origin (Farhi and Dupin, 2010; Omal *et al.*, 2012) affecting the skin and mucosa. There are various factors which play

a role in the progression of the disease (Omal *et al.*, 2012; Sivaramakrishnan and Ramani, 2015). These factors include stress, anxiety, hormonal imbalance, menopause, drugs (Farhi and Dupin, 2010; Omal *et al.*, 2012). It is the most frequent type of mucocutaneous lesion, affecting about 2 to 5% of the general population (Farhi and Dupin, 2010; Omal *et al.*, 2012). Females are more commonly affected (Omal *et al.*, 2012). Its onset is in the 4th to 5th decade of life (Omal *et al.*, 2012). Intraorally it involves the buccal mucosa, tongue more commonly and other sites such as the floor of the mouth are rarely affected (Omal *et al.*, 2012). It presents clinically with a wide range of symptoms. The symptoms range from asymptomatic white keratotic lesion to painful erosions (Dissemond, 2004; Crincoli *et al.*, 2011). The common clinical variants include reticular, papular, plaque-like, erosive, atrophy and bullous (Dissemond, 2004; Shree *et al.*, 2019). The

most common variants are the erosive and reticular type of OLP (Dissemond, 2004). The epidemiological distribution of the various types of OLP varies in each geographical region depending on their lifestyle, habits and other associated immune-related factors (Jayaraj, 2015; Gonzalez-Moles *et al.*, 2020).

OLP is an autoimmune disease mediated by the T cells in which the cytotoxic CD8+ cells activates apoptosis of the cells in the basal layer of the oral epithelium (Rebora, 1991; Thangaraj, 2016). During the routine surveillance, the T cells migrate into the epithelium due to random encounter of antigen in the basal keratinocyte (Aravinda *et al.*, 2011; Gupta and Ramani, 2016). These migrated T cells directly bind to the MHC1 on keratinocyte or via the activated CD4 positive lymphocytes (Ismail *et al.*, 2007; Sridharan, 2019). This releases various factors such as IL2, IFN gamma, TNF alpha which in turn destroys the basal keratinocytes (Payeras, 2013).

Histopathological OLP is characterized by hydropic degeneration of the basal epithelial cells with intra epithelial and dense subepithelial lymphocytes infiltrate (Khopkar and Doshi, 2013; Slama, 2019). The WHO categorized OLP as a potentially malignant disorder and its malignant transformation rate was approximately 1.37% (Sridharan *et al.*, 2017; Slama, 2019).

Many studies have been done on the pathogenesis of OLP, risk factors, treatment, disease characteristics and malignant transformation rate. This is the first kind of study done at an institutional level to assess the clinical severity of OLP, mainly based on the symptoms and the type of OLP and also to correlate this with the treatment prognosis. Thereby it helps us to identify the association of clinical severity with the duration of treatment of OLP with steroid therapy. This study could serve as a basis to understand the pattern of disease with its treatment. Hence it could help the clinician in emphasizing the need for treatment to the patient and also to predict the duration of treatment of OLP.

## MATERIALS AND METHODS

A cross-sectional, observational retrospective study was conducted. This study was approved by the scientific review board of Saveetha Dental College and Hospital, Chennai. The sample consisted of patients with a diagnosis of OLP, which had been followed up from July 2019 to February 2020, consisting of 60 patients. The clinical data of the patients visiting the institution were retrieved from the DIAS online patient portal. The following data were obtained: age, gender, symptoms, clinical presenta-

tion, Habits, treatment is done and duration of treatment done with associated skin lesions was also evaluated.

The descriptive variables were depicted using bar graphs and frequency tables. Chi-square test was done to compare clinical presentation with the treatment done and duration of the treatment.  $P < 0.05$  was considered to be statistically significant.

## RESULTS AND DISCUSSION

Among 60 patients diagnosed during the period of June 2019 to February 2020, 60% of the affected individuals with females and 40% were males. 72% of the affected were not associated with any habit and 28% reported with a history of smoking and chewing. The common site was buccal mucosa (8.3%) followed by a tongue (8.3%) and Gingiva (3.3%). Most of the patients, 58.3% had an erosive type of lichen planus followed by reticular type which accounts for 35%. Pigmented lichen planus accounted for 6.7 % of the population. All these details are described in Table 1, Figures 1 and 2, respectively. Figure 1 shows that X axis showing the site of occurrence and Y axis indicating the frequency.

The burning sensation was the most common symptom seen in patients which accounts for nearly 60%. When the clinical variants of OLP were correlated with gender, it was not found to be statistically significant  $P = 0.769$  (Figure 3). However, the occurrence of the erosive type of oral lichen planus was more among females than males. When the duration of treatment was correlated with the type of OLP, it was found to be statistically insignificant ( $P = 0.134$ ) Figure 4 shows that the X-axis depicts the duration of treatment and the Y-axis depicting the clinical Variants.

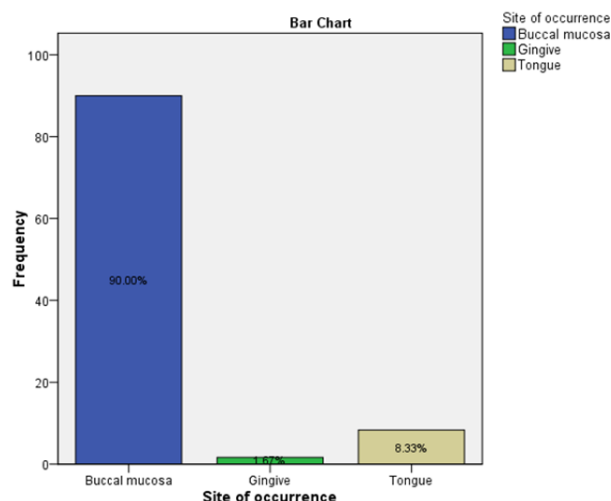
However, erosive lichen planus exhibits maximum treatment duration when compared to the reticular type. There was no evidence of malignant transformation in the OLP cases reported during the period of study.

The clinical characteristics of patients included in this study were similar to that of the previous studies, although few differences were noted. Since this is a retrospective study, it cannot be compared satisfactorily to prospective studies. However, this can be used in evaluating patient populations.

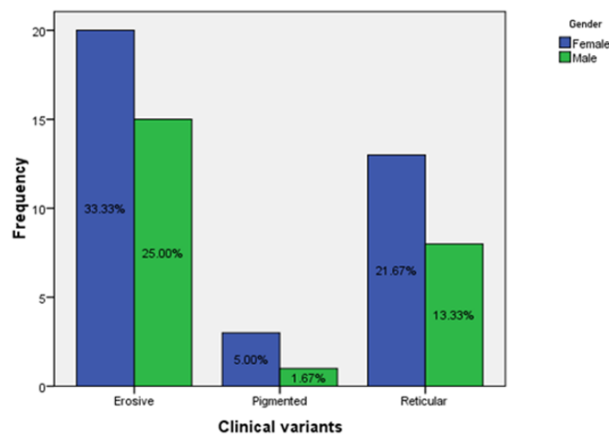
According to the criteria proposed by WHO based on the clinical and histopathological features, the results of the study revealed that OLP is seen in patients around 40 to 60 years with sex predilection for females. Buccal mucosa, gingiva and tongue

**Table 1: Demographic data of the population**

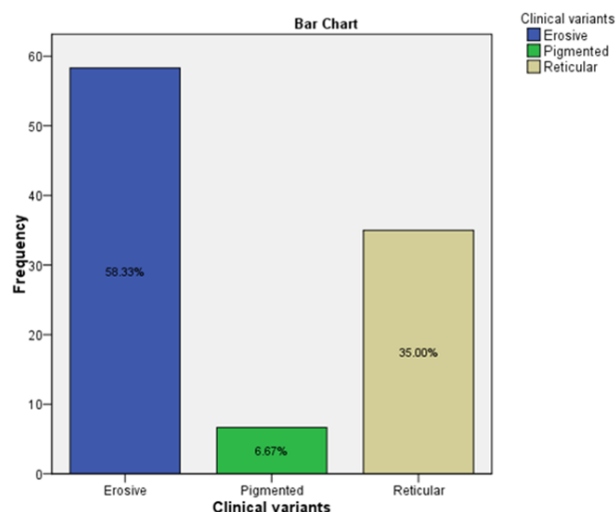
	Demographics	Percentage
Gender	Female	60%
	Male	40%
Age	20-40 years	34%
	40-60 years	66%
Type	Erosive	58.3%
	Reticular	35%
	Pigmented	6.7%



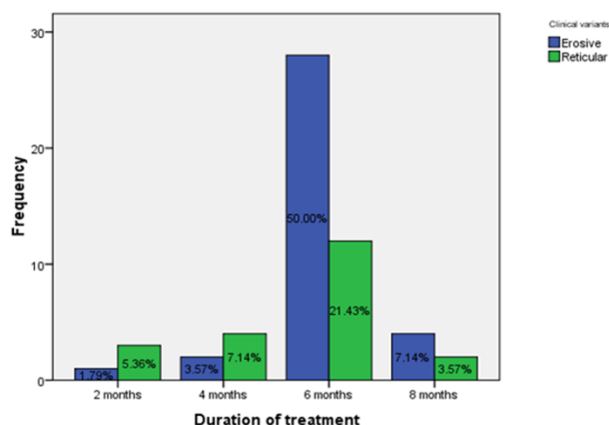
**Figure 1: Bar graph depicting the frequency of site of occurrence of oral lichen planus.**



**Figure 3: Correlation between gender and the different clinical variants of oral lichen planus with X-axis depicting the clinical variants and Y-axis depicting the frequency of occurrence in male and female.**



**Figure 2: Frequency of occurrence of various clinical variants of oral lichen planus with X-axis showing the clinical variants and Y-axis showing the frequency.**



**Figure 4: Correlation between the clinical variants of oral lichen planus and the duration of treatment.**

are the most commonly affected sites. The male to female ratio is 2:3 which is in agreement with the other studies. Various studies done in the other parts of the world had also a similar female predominance (Omal *et al.*, 2012; De Lima, 2019). This could be attributed to hormonal imbalance, frequent use of medications such as paracetamol for pain, allergy

to dentifrices (Hasan, 2020). OLP was mostly seen affecting the patients with 40 years of age in our study (mean age was 42.1 years) which is noted to be lower than the mean age group reported in central China (50.4 years), UK (52 years), Spain (56.4 years) and Italy (56.7 years) (Gonzalez-Moles *et al.*, 2020; Li *et al.*, 2020). This was probably due to the difference in the ethnicity of population and geographic differences in our study when compared to previous studies. It was observed that OLP was uncommon in the juveniles and in our study, there was no childhood form of OLP (Bakhtiari, 2017; Hasan, 2020). This can be because of the rarity of the associated autoimmune conditions, exposure to the drug and dental restorative materials, infective agents and other environmental triggers which are known to initiate lichen planus (Hannah *et al.*, 2018).

The lesions of OLP were observed to be bilateral, symmetrical with buccal mucosa being the most commonly affected site (Srivastava, 2020; Bakhtiari, 2017). Buccal mucosa and gingiva were the most common multiple oral sites (De Lima, 2019; Viveka, 2016). Isolated lesions on the floor of the mouth and palate were rare (Omal *et al.*, 2012). Erosive type of OLP was present in 58.3% of the patients which was predominant in females. This could be attributed to hormonal imbalance due to menopause as most of the women were between 45-60 years of age and use of allergic dentrifice and application of clove oil for relief of burning sensation (Srivastava, 2020). These findings were inconsistent with the previous studies in which the reticular type of OLP was most common among females (Omal *et al.*, 2012; De Lima, 2019).

Pigmentation of the oral mucosa was a prominent feature of the reticular form of OLP (Bakhtiari, 2017; Hasan, 2020). It was noted to be 6.7%. This could be attributed to various factors such as race, skin type and habits such as chewing tobacco, smoking (Hasan, 2020; National Cancer Institute, 2020). Diffuse or patches of pigmentation which ranged from brown to black in colour was more commonly seen in the buccal mucosa. This was similar to other Indian studies (Hartanto and Kallarakal, 2017).

The majority of the patients (60%) complained of oral discomfort either in the form of burning sensation or pain as reported in other studies (Bakhtiari, 2017). Nearly 75% of the erosive lichen planus was treated using systemic steroids like Prednisone for a maximum period of eight months (Alerraqi, 2016; Kurt *et al.*, 2019). During the later follow-up, it was noted that the patients responded well with systemic steroid therapy when compared to topical steroid therapy. This could be because of the recalcitrant nature of OLP to topical steroids therapy (Fer-

guson, 1977; Jayaraj *et al.*, 2015).

Even though there is no specific treatment for OLP, symptomatic treatment is indicated (Jayaraj *et al.*, 2015; Jangid, 2015). Corticosteroids provide relief and are the first drug of choice (Swathy *et al.*, 2015; Alerraqi, 2016). The reticular type has a better response to steroids when compared to erosive form (Bakhtiari, 2017; Hasan, 2020). This can be related to the chronicity and refractory course of erosive lichen planus. The Spontaneous remission is seen in 40% of oral lichen planus (Hasan, 2020).

To overcome this remission, use of ultraviolet A (PUVA) and laser can be used as an alternative therapy (Pavlic and Vujic-Aleksic, 2014). Small accessible lesions can be treated by the use of adherent paste in the form of a custom tray. This facilitates accurate control over the contact time and thus ensures that the entire regional surface is exposed to the drug (Gonzalez-Moles, 2003). Local drug therapy could provide targeted and effective drug delivery than systemic delivery for the disease of the oral mucosa (Gonzalez-Moles, 2003; Sherlin *et al.*, 2015). Novel drug delivery systems are not fully developed and further research on this is still recommended in order to improve the treatment outcomes (Gonzalez-Moles, 2003; Gheena and Ezhilarasan, 2019).

## CONCLUSION

Within the limitations of the study, we observed that OLP accounts for nearly 28.4% of the OPMD reporting to the institution and females were found to be more commonly affected than males. Erosive lichen planus was the most common variant which exhibited maximum treatment duration. Hence, it is necessary to follow up the OLP patients regularly and to provide a precise treatment which prevents the remission of the disease in these patients.

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## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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