



## Altered Hematological Profile of Oral Lichen Planus Patients in Bhuj, India

### KEYWORDS

Lichen Planus, Hematological Profile, Bhuj

### Dr. Devendra Parmar

Associate Professor, Department of Skin, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat.

### Dr. Jayesh Shah

Professor, Department of Skin, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat.

### ABSTRACT

*Lichen planus is a relatively common disorder, estimated to affect 0.5% to 2.0% of the general population. It is a chronic, inflammatory disease that affects mucosal and cutaneous tissues. Oral lichen planus (OLP) occurs more frequently than the cutaneous form and tends to be more persistent and more resistant to treatment. In view of the prevalence of OLP and the potential of this chronic disease to cause significant discomfort, it is important for clinicians to be aware of its clinical presentation and management. Total WBC count, neutrophil and lymphocyte counts are significantly greater in the OLP patients than in the corresponding sex and age matched normal population. The difference in the ESR values of the female OLP patients with the normal females is highly significant ( $p < 0.0001$ ). The increase in eosinophil count in the adult males aged 30-60 years is significantly high compared to such non-diseased males. The decrease in haemoglobin level in the OLP patients do not vary to a significant level though.*

### Introduction

Oral lichen planus (OLP) is a chronic inflammatory oral mucosal disease of unknown etiology. The aim of this communication is to provide an update of the clinical and histological features of OLP, process of OLP diagnosis, causes of OLP, management of OLP patients and medical treatment of OLP lesions.<sup>1</sup> The malignant potential of OLP is discussed and practical steps to reduce the risk of oral cancer in OLP patients are presented. The need for OLP patient education is highlighted. Although OLP may in many cases be diagnosed clinically, specialist referral is required for thorough patient investigation, management and review.<sup>2</sup>

OLP is classified morphologically as reticular (white, 23%), erythematous (atrophic, 40%), and erosive (bullous, ulcerated, 37%). Multiple morphologies may present simultaneously, and the predominant clinical morphology may change over time with more severe forms (erythematous/atrophic, erosive) occurring in older patients.<sup>3</sup> OLP characteristically presents with multiple lesions in a bilateral and roughly symmetric distribution, which assists in its distinction from OLCR. Unilateral presentation of OLP is atypical. OLP most commonly involves the buccal mucosa (up to 90%), gingiva, dorsum of the tongue, labial mucosa, and lower vermilion lip. Less common sites include the palate, upper lip, and floor of the mouth. Approximately 10% of patients have disease confined to the gingiva. OLP confined to a single site other than the gingiva (i.e., tongue, lip) is uncommon; patients who present with isolated lesions develop multiple sites of involvement over time.<sup>4</sup>

Concomitant involvement of extraoral sites (i.e., scalp, skin, nails, conjunctiva, esophagus, larynx, urethra, vulva and vagina, and perianal area) is common and results in severe morbidity reinforcing the importance of a multidisciplinary approach to care.<sup>3</sup> Cutaneous LP classically presents as pruritic, purple, polygonal, flat-topped papules and plaques with predilection for the flexural wrists, dorsal feet, and pretibia. Cutaneous lesions typically exhibit fine, lacy white striations (Wickham's striae) similar to reticular OLP. Papules and plaques may occur in linear or angulated configurations demonstrating the isomorphic response (koeb-

nerization). Generalized involvement may occur. Significant post-inflammatory mucocutaneous hyperpigmentation may result. Cutaneous LP was observed in 15% of an OLP population. Cutaneous LP lesions usually develop within several months of OLP lesions. There is no correlation between extent or severity of OLP and cutaneous LP. More than 50% of patients with cutaneous LP have concomitant OLP.<sup>5</sup>

The present study aims to assess the prevalence of oral lichen planus with its associated clinical features in Bhuj district, Gujarat population and to evaluate the chance of OLP with other diseases, and the associated haematological parameters which has hitherto not been looked into.

### Material & Methods

This cross-sectional and observational study was conducted on 500 OLP patients (450 adults and 50 children) who attended the out-patient department of the college from January 2010 to April 2010. The data collection was approved by the Institutional Ethical Committee and written consent for publication was obtained. The sample consisted of patients with initial diagnosis of OLP, aged 21 years to 70 years. Healthy subjects of different age groups, without any history of oral diseases were enrolled as control subjects. The patients having infectious diseases were excluded from this study. Information on habits and previous disease history of the study participants were acquired through interviewer-based questionnaire method. The diagnosis of OLP was made by clinical evaluation and confirmed by histological examination based on WHO defined clinical criteria.

The basic six forms of OLP were classified as reticular due to the presence of lace-like keratotic lesions on the oral mucosa; papular, plaque-like, atrophic/erythematous, erosive or bullous. Biopsy was performed only in atypical cases. Histopathological criteria were followed according to WHO criteria and eosin-haematoxylin staining was performed for the identification.

Routine blood tests were performed. Haemoglobin concentration was estimated by the Sahli's method, White blood cells (WBC) was counted manually in specially designed chambers (Neubauer) and differential count of WBC

was assessed by Romanofsky staining method and erythrocyte sedimentation rate (ESR) was measured by Westergreen method. Collected data were statistically analyzed using GraphPad Prism software.

The results were expressed as mean  $\pm$  SD. Chi-square test was performed to observe the association among the variables and unpaired t test to test the level of significance. P-values of 0.05 or less were considered significant.

### Results:

Table 1 shows the gender-wise distribution of OLP patients of different age groups. The definite preponderance of females towards this disease has been observed and is in concurrence with other observations. Incidentally, the population in this state has marginally high female to male ratio. Compared to other age groups, women in their fifth decade of life and men in their forties tend to be maximally affected by OLP. The gender ratio differs significantly. One tail t test shows that the prevalence of OLP in the females in the study population are significantly ( $p=4.5\%$ ), followed by the bullous form (55%) found only in the buccal mucosa and 25% patients initially report with tongue or gingival lesions. Less commonly seen are the combination forms as in the tongue (10.14%) or gingiva (5.89%) along with the buccal mucosa. Lips are a rare lesion site. The number of patients of the various forms significantly 15% of the OLP patients also suffer from diabetes mellitus, 10.80% of them have high blood pressure and more than 8% of them were afflicted by all three diseases. 9% patients have history of hyperthyroidism whereas  $< 1\%$  of them are afflicted by hypothyroidism. Peptic ulcer has also been reported to exist in 3.8% of the patient population.

**Table 1: Gender Wise Distribution of OLP**

Gender	Adult	Children
Male	122	14
Female	228	36
Total	450	50

**Table 2: Relation of Systemic Disease with Oral Lichen Planus**

Diabetes Mellitus	15%
High Blood Pressure	10.80%
Hyperthyroidism	9%
Hypothyroidism	$< 1\%$
Peptic Ulcer	3.8%

Upon comparison of the white blood cell (WBC) count, differential leukocyte count (DLC), neutrophil count and erythrocyte sedimentation rate (ESR) of the normal male and female with such oral lichen planus patients of corresponding age groups, higher values are reflected in the OLP patients, with different levels of significance. The WBC count of the female OLP patients is significantly ( $p<0.0001$ ) higher than such normal ones of the age group 31-40 years and 61-70 years. WBC count of male patients of 41-50 years is significantly ( $p<0.001$ ) more than that of the normal men. Such values of all the other groups of males and females are also significantly more ( $p<0.05$ ) than the count recorded from the control group under study. The percentage of lymphocytes has been observed to be significantly more in the patient group

as compared to their control population. This difference is highly significant ( $p<0.001$ ). In the rest of the patient groups the lymphocyte percentage is also significantly higher than the corresponding normal population ( $p<0.05$ )

The difference in the ESR of the female OLP patients with the normal females is highly significant ( $p<0.001$ ). The increase in eosinophil count in the adult males aged 30-60 years is significantly high compared to such non-diseased males. The increase in eosinophil count and decrease in hemoglobin level in the OLP patients do not vary to a significant level though.

### Discussion

There is a preponderance of females towards this disease as has been reviewed in almost all literature. Singh et al in 1976 and Munde et al in 2013 reported a higher frequency of OLP among men. In this study, the chi square test reveals that the difference between the genders is not significant.<sup>6</sup> The women in their fifties are most common reporters of the disease. This could probably be due to the accumulation of random mutations over the period of 50 years of time. The sparse availability of new patients beyond 60 years of age is possibly due to less readiness to avail treatment at that age. Distribution of patients according to the age group has been observed to be highly significant ( $p<0.0001$ )

The reticular form of OLP is the most widely prevalent form observed worldwide. The other forms have been grossly tabulated earlier. Here all probable 13 clinical forms have been assessed and tallied for epidemiological analysis. The inflammatory infiltrated, basal cell degenerated, parakeratotic and melanin incontinence form are found in majority of the OLP patients, whereas, the atrophic, hyperplastic, hyperkeratotic, hyperparakeratotic, orthokeratotic, saw-toothed rete ridged, mild dysplastic, Max-Joseph spaced and colloid bodied forms are less common as in the order of mention.<sup>7</sup>

The haematological profile of the patients significantly deviates from the age and sex matched normal subjects. The leukocyte count, neutrophil count and lymphocyte counts are significantly more than that of the normal subjects.<sup>8</sup> High WBC count is accounted for by the immune system disorder or acute stress, both involved in the etiogenesis of OLP. The ESR of the female OLP patients is significantly high compared to corresponding non-diseased population.<sup>9</sup> Such conditions prevail in autoimmune disorders and the deviation in women possibly indicates the severity of inflammation in female patients. The eosinophil count of the males aged 30-60 years is also significantly high indicative of the inflammation accompanying OLP.<sup>10</sup>

### Conclusion

The cross-sectional epidemiological study for four months, reveal interesting features in the haematological profile but have various limitations. Longitudinal study and recruitment of a large cohort of patients from wider background may substantiate the haematological profile as a prognostic feature of the disease.

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