

Assessment of Clinical Outcomes in Patients with Oral Lichen Planus and Oral Lichenoid Lesions Following Treatment with Topical Corticosteroids

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ABSTRACT

Objective: To assess the clinical outcomes in patients with oral lichen planus and oral lichenoid lesions (OLP & OLL) following treatment with topical corticosteroids.

Methodology: A total of 175 patients diagnosed with OLP and OLL were recruited from the outpatient department. This cross-sectional study was conducted at Institute of Dentistry (IOD) & CMH, Lahore from July 2023 to December 2023. Inclusion criteria included patients aged 18 years and above with clinically and histopathologically confirmed OLP or OLL lesions. All enrolled patients received topical corticosteroid therapy according to a standardized protocol. Patients were instructed on proper application techniques and advised to adhere to the prescribed treatment regimen. Clinical evaluation of the oral mucosal lesions was performed at baseline and at regular follow-up. Outcome measures included changes in lesion size, severity of symptoms (pain, burning sensation), and overall improvement in clinical appearance.

Results: The mean age of the patients was 52.4 years (SD: 10.3). In terms of gender distribution, among the included patients 25 patients (28.57%) were male and 25 patients (71.42%) were female. Among the symptoms observed, Pain was reported by 95 patients (54.28%), Burning Sensation by 110 patients (62.85%), Discomfort by 75 patients (42.85%), and other symptoms by 20 patients (11.42%). In the clinical outcomes observed with topical corticosteroids, reduction in lesion size was noted in 140 patients, accounting for 80.0%, complete resolution of lesions occurred in 60 patients, representing 34.3%, and reduction in symptoms was reported by 155 patients, constituting 88.6%. Oral candidiasis was noted in 7 patients (4.0%), Mucosal atrophy occurred in 13 patients (7.42%), whereas the majority.

Conclusion: In conclusion, our study underscores the efficacy of topical corticosteroid therapy in managing oral lichen planus (OLP) and oral lichenoid lesions (OLL). With 80.0% of patients experiencing a reduction in lesion size, 34.3% achieving complete resolution of lesions, and 88.6% reporting a reduction in symptoms, our findings highlight the significant therapeutic benefits of topical corticosteroids.

Keywords: Adverse effects, Clinical outcomes, Corticosteroids, Lesion response, Oral lichen planus (OLP), Oral lichenoid lesions (OLL)

Authors' Contribution:

^{1,2}Conception; Literature research; manuscript design and drafting; ^{3,4}Critical analysis and manuscript review; ^{5,6}Data analysis; Manuscript Editing.

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Introduction

Oral lichen planus (OLP) and oral lichenoid lesions (OLL) represent a spectrum of chronic inflammatory disorders affecting the oral mucosa, posing diagnostic challenges and therapeutic complexities in clinical practice. OLP, a common mucocutaneous disease, manifests as white, lace-like lesions with or without erosions, predominantly affecting middle-aged individuals.^{1,2} Its etiology remains elusive, with proposed autoimmune, genetic, and infectious factors contributing to its pathogenesis. Despite its benign nature, OLP presents a significant burden to patients due to its chronicity, discomfort, and potential for malignant transformation. In contrast, OLL encompasses a diverse group of oral mucosal lesions that clinically resemble OLP but arise from distinct etiologies, including exposure to various medications, dental materials, and chronic irritation.^{3,4}

The global prevalence of Oral Lichen Planus (OLP) and Oral Lichenoid Lesions (OLL) varies widely across populations and geographic regions. OLP is estimated to affect approximately 0.5% to 2.2% of the general population worldwide, with higher prevalence rates reported in certain ethnic groups and regions.⁵

Diagnosing Oral Lichen Planus (OLP) involves clinical examination for white, lace-like lesions, histopathological confirmation via biopsy revealing characteristic features, and sometimes immunological tests like direct immunofluorescence for further validation.⁶ Topical corticosteroids represent a cornerstone in the management of oral lichen planus (OLP) and oral lichenoid lesions (OLL) owing to their potent anti-inflammatory properties and localized action within the oral mucosa.⁷ These agents effectively suppress the immune-mediated inflammatory response underlying the pathogenesis of OLP and OLL, thereby alleviating symptoms and promoting lesion resolution. Topical corticosteroids exert their therapeutic effects by suppressing inflammatory responses within the oral mucosa.⁸

These agents inhibit pro-inflammatory cytokines, reduce immune cell infiltration, and downregulate the expression of adhesion molecules, thereby attenuating mucosal inflammation and alleviating symptoms.^{9,10}

This study aims to assess the efficacy of topical corticosteroids in treating Oral Lichen Planus (OLP) and Oral Lichenoid Lesions (OLL), shedding light on their comparative effectiveness and clinical outcomes. By filling gaps in existing literature, it will provide valuable insights into the spectrum of treatment responses and factors influencing outcomes in Pakistani patients. The research will address the scarcity of local evidence on OLP and OLL management, contributing to a deeper understanding of these conditions within the Pakistani context. Through rigorous evaluation, this study will offer guidance to clinicians and researchers, facilitating optimized therapeutic approaches for OLP and OLL patients in Pakistan and potentially informing practices globally. Ultimately, the study endeavors to enhance patient care and advance knowledge in the field of oral mucosal disorders.

Methodology

After approval from the hospital's ethical review board (ERB), this cross-sectional study was conducted at the Institute of Dentistry (IOD) & CMH, Lahore from July 2023 to December 2023. A total of 175 patients diagnosed with OLP and OLL were recruited from the outpatient department. Inclusion criteria included patients aged 18 years and above with clinically and histopathologically confirmed OLP or OLL lesions. Patients with contraindications to topical corticosteroid therapy, history of systemic corticosteroid use within the past (in last 3 months), or other concurrent oral mucosal diseases were excluded.

All enrolled patients received topical corticosteroid therapy according to a standardized protocol. We administered 0.05% Clobetasol propionate for

intense or moderate symptoms and 0.1% Triamcinolone acetonide for mild symptoms. Aqueous solutions were used for intense or moderate lesions, while Orabase preparations were applied to smaller, accessible lesions. Patients were instructed on proper application techniques and advised to adhere to the prescribed treatment regimen.

Clinical evaluation of the oral mucosal lesions was performed at baseline and at regular follow-up visits (bi-weekly) throughout the treatment period. Outcome measures included changes in lesion size, severity of symptoms (pain, burning sensation), and overall improvement in clinical appearance. Lesion characteristics were documented using standardized assessment tools, and digital photographs were captured to facilitate objective evaluation.

Frequencies and percentages were calculated for categorical variables, while means and standard deviations were computed for continuous variables. Additionally, inferential statistics, such as chi-square tests or t-tests, were employed to assess associations between variables and treatment outcomes. Statistical significance was set at $p < 0.05$.

Results

The mean age of the patients was 52.4 years (SD: 10.3). There were 35 patients (20.0%) aged between 18-40 years, 75 patients (42.85%) aged between 41-60 years, and 65 patients (37.14%) aged over 60 years. In terms of gender distribution, among the included patients 25 patients (28.57%) were male and 75 patients (71.42%) were female. The most common lesion site was the Buccal Mucosa, where 95 patients (54.3%) were affected, followed by the Tongue with 50 patients (28.6%) and the Gingiva with 30 patients (17.1%). The majority of lesions were Atrophic lesions, accounting for 113 patients (64.57%), while 62 patients (35.42%) had extensive lesions. Among the symptoms observed, Pain was reported by 95 patients (54.28%), Burning Sensation

by 110 patients (62.85%), Discomfort by 75 patients (42.85%), and other symptoms by 20 patients (11.42%) shown in table I.

Table I: Demographic Characteristics & Symptoms of included patients

Variables	Characteristics	No. of Patients	Percentage
Age	Mean Age	Mean ± SD	52.4±10.3
	18-40 years	35	20.0
	41-60 years	75	42.85
	> 60 years	65	37.14
Gender	Male	25	28.57
	Female	75	71.42
Lesion Site	Buccal Mucosa	95	54.3
	Tongue	50	28.6
	Gingiva	30	17.1
Lesions Type	Atrophic lesions	113	64.57
	Extensive	62	35.42
Symptoms	Pain	95	54.28
	Burning Sensation	110	62.85
	Discomfort	75	42.85
	Others	20	11.42

In the clinical outcomes observed with topical corticosteroids, reduction in lesion size was noted in 140 patients, accounting for 80.0%, complete resolution of lesions occurred in 60 patients, representing 34.3%, and reduction in symptoms was reported by 155 patients, constituting 88.6% shown in table II. In Table III, outcomes of patients based on the frequency of outbreaks were as follows: for patients experiencing highly frequent outbreaks, 110 (62.85%) were noted, while for those with less frequent outbreaks, there were 65 patients (37.14%).

In Table IV, the comparison of treatment outcomes between patients with highly frequent and less frequent outbreaks was conducted. There were 110

patients with highly frequent outbreaks and 65 patients with less frequent outbreaks. Complete remission was observed in 43 patients with highly frequent outbreaks (39.0%) and 31 patients with less frequent outbreaks (47.69%).

Table II: Clinical outcomes taking topical corticosteroids

Outcome	No. of Patients	Percentage
Reduction in lesion size	140	80.0%
Complete resolution of lesions	60	34.3%
Reduction in symptoms	155	88.6%

Table III: Outcomes of Patients Based on Frequency of Outbreaks

Variable	Type	N (%)
Outcomes of patients	Highly Frequent Outbreaks	110 (62.85)
	Less Frequent Outbreaks	65 (37.14)

Table IV: Comparison of Treatment Outcomes Between Patients with Highly Frequent and Less Frequent Outbreak

Treatment Outcome	Highly Frequent Outbreaks n=110	Less Frequent Outbreaks N=65	P-value
Complete Remission	43(39.0%)	31(47.69%)	0.003
Sporadic Outbreaks	18(16.36%)	9(13.84%)	0.012
Remission after Cessation	22(20.0%)	12(18.46%)	0.007
Non-Responders	27(24.54%)	13(20.0%)	0.042

The p-value for this comparison was 0.003. Sporadic outbreaks occurred in 18 patients with highly frequent outbreaks (16.36%) and 9 patients with less frequent outbreaks (13.84%). The p-value was 0.012. Remission after cessation of treatment was

noted in 22 patients with highly frequent outbreaks (20.0%) and 12 patients with less frequent outbreaks (18.46%). The p-value was 0.007. Non-responders comprised 27 patients with highly frequent outbreaks (24.54%) and 13 patients with less frequent outbreaks (20.0%). The p-value for this comparison was 0.042. In Table V, the adverse effects observed in patients taking topical corticosteroids were documented. Oral candidiasis was noted in 7 patients (4.0%), while the remaining 168 patients (96.0%) did not experience it. Mucosal atrophy occurred in 13 patients (7.42%), whereas the majority, 162 patients (92.57%), did not exhibit this adverse effect.

Table V: Adverse effect taking topical corticosteroids

Adverse effect	No. of Patients	n (%)
Oral candidiasis	Yes	7(4.0)
	No	168(96.0)
Mucosal atrophy	Yes	13(7.42)
	No	162(92.57)

Discussion

OLP and OLL are chronic inflammatory disorders that cause papules, plaques, white striations, and erosions on the oral mucosa. These conditions pose significant challenges in clinical management due to their chronic nature, potential for recurrence, and associated symptoms such as pain and discomfort. Topical corticosteroids have emerged as a cornerstone of therapy for OLP and OLL, owing to their anti-inflammatory and immunosuppressive properties. However, the assessment of clinical outcomes following topical corticosteroid treatment remains a subject of ongoing research and debate. The effectiveness of topical corticosteroids in managing OLP and OLL is influenced by various factors including lesion severity, patient demographics, and treatment adherence. In this study, we aimed to assess the clinical outcomes of topical corticosteroid treatment in patients with OLP

and OLL, with a focus on lesion response, symptom improvement, and adverse effects.^{10,11} In our study, we observed a mean age of 52.4±10.3 years among the patients, which is consistent with the findings of Gonzalez et al. (2018), who reported a mean age of 58±11 years. However, our study had a more balanced gender distribution, with 25 male patients (28.57%) and 25 female patients (71.42%), while Gonzalez et al. (2018) found a higher proportion of female patients (74.5%).¹³ Similar to Gonzalez et al. (2018), we found that the most common lesion site was the Buccal Mucosa, affecting 54.3% of our patients. However, our study observed a higher prevalence of atrophic lesions (64.57%) compared to Gonzalez et al. (2018), who reported atrophic lesions in 70.6% of their patients. Additionally, while we observed symptoms such as Pain, Burning Sensation, Discomfort, and other symptoms, Gonzalez et al. (2018) reported symptoms such as Difficulty in eating, with intense symptoms classified in 48.1% of patients.¹³ In comparison to Park et al. (2018), who also studied patients with similar conditions, our study had a lower mean age (52.4 years vs. 57.6 years) and a slightly higher proportion of female patients (71.42% vs. 69.9%). Overall, our study provides valuable insights into the demographic characteristics, lesion sites, lesion types, and symptoms observed in patients with similar conditions, contributing to the existing body of literature in this field.¹⁴ In our study, the clinical outcomes of topical corticosteroid therapy were evaluated, revealing notable reductions in lesion size and symptoms among patients with oral lichen planus (OLP) and oral lichenoid lesions (OLL). Specifically, we observed reduction in lesion size in 80.0% of patients and complete resolution of lesions in 34.3% of cases. Moreover, 88.6% of patients reported a reduction in symptoms, demonstrating the efficacy of topical corticosteroids in managing OLP and OLL symptoms. Our study findings align with those reported by Khan et al. (2019), as both studies highlight the significant reduction in symptoms observed following topical corticosteroid

(TC) treatment in patients with oral lichen planus (OLP) and oral lichenoid lesions (OLL). Khan et al. reported a symptom reduction rate of 44% in their study population, while in our study, 88.6% of patients experienced a reduction in symptoms.¹⁵ Our study findings align with those of previous research. For instance, a study by Kuo et al. (2019) demonstrated promising outcomes with topical corticosteroid treatment, showing complete response in a majority of patients with erosive or ulcerative lesions.¹⁶ Additionally, research by Chuanxia Liu et al. (2020) highlighted the effectiveness of intralesional betamethasone in reducing erosion area and preventing recurrence of erosions in patients with OLP. This supports our findings regarding the efficacy of corticosteroid therapy in managing lesion size and symptoms.¹⁷ Manjunatha et al. compared topical 0.1% tacrolimus (TAC) to 0.1% TA in a protective paste. TAC showed much better symptom relief and clinical resolution than TA. Our study similarly demonstrated significant reductions in lesion size and symptoms following topical corticosteroid treatment, corroborating the efficacy of this therapeutic approach.¹⁸ Lopez Jornet et al. discovered that chamomile medication improved pain from baseline after 4 weeks in OLP patients. Chamomile also completely cured symptoms in 19.23% (5 of 26) of individuals. Similar to our study, topical corticosteroid therapy reduced symptoms in individuals.¹⁹ The findings reported by Wu et al. complement our study results, offering insights into the efficacy and safety of alternative treatments for oral lichen planus (OLP) and oral lichenoid lesions (OLL).²⁰

Conclusion

In conclusion, our study underscores the efficacy of topical corticosteroid therapy in managing oral lichen planus (OLP) and oral lichenoid lesions (OLL). With 80.0% of patients experiencing a reduction in lesion size, 34.3% achieving complete resolution of

lesions, and 88.6% reporting a reduction in symptoms, our findings highlight the significant therapeutic benefits of topical corticosteroids.

Limitations: Generalizability of results to larger populations may be limited by the study's single-center approach and very small sample size.

Suggestions / Recommendations: Large-scale research should be done in future studies.

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