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Efficacy Of Triamcinolone Injection In Management Of Oral Lichen Planus

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Abstract

Objective: To study the efficacy of triamcinolone injection in the treatment of oral lichen planus patients presented to the department of oral and maxillofacial surgery at KRL General Hospital Islamabad.

Method: This study was conducted in the Department of Oral & Maxillofacial Surgery, Kahuta Research Laboratories Islamabad. 100 patients who fulfilled the inclusion-exclusion criteria were selected. All the enrolled patients were treated with intralesional TA injection once a week for 4 weeks. A 0.5ml TA (40mg/ml) dose was used. The subepithelial tissue just beneath the lesion and next to the normal mucosa was the exact location of the injection. The treatment was stopped earlier when all three of the symptoms of burning, pain and patch colour were removed. The patients were examined clinically on the 7th, 14th, and 21st day of treatment and based on the examination, the decision of the next dose was decided. The final examination of the patient was on the 28th day of treatment. To assess the oral pain and burning, we used the Visual Analogue Scale (VAS) having 10 grades (0-10).

Results: The mean age of the patients in the study was 35.47±13.459 ranging from 18 to 65 years. In frequency of gender of the patients, there were 57(57%) male and 43(43.0%) female patients. In frequency of distribution of patients, 38(38.0%) patients had unilateral while the remaining 62(62.0%) had bilateral disorders. In frequency of efficacy, 87(87.0%) patients found with improved symptoms and 13(13.0%) were not improved/inefficient.

Conclusion: This study concluded as much of previous literature concluded that the efficacy and safety of intralesional TA injection were found efficient after observation at 28th weeks of treatment.

Keywords: Triamcinolone injection, Oral lichen planus, Efficacy, Reticular, Plaque.

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1. Introduction

Oral lichen planus (OLP) is a type of lichen planus that consists of a persistent inflammatory lesion with no apparent cause, but the immune system plays a key role in the pathogenesis.[1] The aetiology of OLP involves both antigen-specific and nonspecific mechanisms. Basal keratinocytes and antigen-specific keratinocytes present antigen death by CD8 cytotoxic T cells are two antigen-specific methods. Mast cell degranulation and matrix metalloproteinase activation are nonspecific processes in OLP lesions.[2] OLP affects about 1–2% of the population,[3] mostly middle-aged individuals, and according to several researchers females are slightly more affected than males.[4] Lesions present bilaterally and can be in a variety of shapes and sizes, including reticular, plaque, papular, atrophic, and erosive, which can coexist.[5] The buccal mucosa is by far the most common site, followed by the gingiva and tongue.[6] Reticular and papular lesions are usually asymptomatic and are discovered through regular clinical examinations. Sensitivity, scorching, and uneasiness are common symptoms of atrophic and erosive variants of OLP.[7] The treatment's major goals are to relieve pain and distress by mending lesions, reducing recurrences, providing long-term remission periods, and preventing malignant transition from erosive OLP. Because this is an immune-mediated illness, the current therapy choices include steroids and other immunomodulatory medications, as well as pain relievers.[8] Topical steroids, which can be applied as an ointment, mouthwash, spray, or paste, are still the basis of treatment.[9,10] Some lesions, meanwhile, don't respond to topical steroids or respond gradually to them, causing patients to endure for a long period.[9] However, it is unclear which corticosteroid composition, dosage, or dose regimen represents the "gold standard." There is no indication that the different galenic formulations of topical corticosteroids are effective.[11] Oral prednisone and other systemic corticosteroids should only be used for chronic, extensive oral lichen planus and lichen planus including additional mucocutaneous locations.[12] It can still be challenging to give steroids to the injured

mucosal regions. Intralesional steroid is proposed as a simple and effective technique for achieving sufficient high drug concentration locally for increased immunosuppressive impact while minimizing systemic effects.[13] Intralesional triamcinolone acetonide (TA) has been reported in effective management of Oral submucous fibrosis,[14] temporomandibular joint osteoarthrosis,[15] central giant cell granuloma,[16] and cheilitis granulomatosa.[17] An aqueous TA suspension is appropriate for intralesional injection, to attain a suitably increased steroid concentration regionally and remain at the injection site for a prolonged duration.[13] The use of a local steroid injection to treat OLP has been suggested in recent research.[18] It has been demonstrated that 2 to 20 mg of TA at somewhat varying concentrations (20 to 40 mg/mL) is efficacious.[11,18] The Rationale of the study is to measure the efficacy of intralesional corticosteroid injection (triamcinolone) which is a nonsurgical treatment of oral lichen planus. We also stratify our results and highlight the factors that affect the therapeutic effect of treatment.

2. Materials & Methods

This study was conducted in the Department of Oral & Maxillofacial Surgery, Kahuta Research Laboratories Islamabad. It was an experimental study. The study was conducted from 1st May to 31st October 2021. A consecutive non-probability sampling technique was used. The sample size was 100. The sample size was calculated with the help of WHO sample size calculator 1.1 to estimate the population proportion with specified absolute precision

Population proportion of effectiveness of TA injection: 80.6% [6]

Absolute precision: 8% Level of confidence: 95%

Inclusion criteria:

• Diagnosed patients of OLP reporting to the Department of Oral and Maxillofacial Surgery.

• Both male & female patients

• Patients having aged between 18-65 years.

Exclusion criteria:

• Patients having systemic disorders such as haematological diseases or topical

• Patients having cardiovascular diseases

• Patients having been treated with topical treatment for OLP in the last two weeks or systemic treatment in the last 3 months

• Had a history of taking immunosuppressive medications

• Patients have platelet counts not greater than 150,000

• Patients who used non-steroidal anti-inflammatory medicines (NSAIDs) within the previous five days before giving a blood sample and were undergoing anticoagulant therapy

After receiving approval from KRL Hospital Islamabad's research committee and ethical board, the study was carried out. A hundred patients who fulfilled the inclusion-exclusion criteria were selected. All the enrolled patients were treated with intralesional TA injection once a week for 4 weeks. A 0.5ml TA (40mg/ml) dose was used. The subepithelial tissue just beneath the lesion and next to the normal mucosa was the exact location of the injection. The treatment was stopped earlier when all three of the symptoms of burning, pain and patch colour were removed. The patients were examined clinically on the 7th, 14th, and 21st day of treatment and based on the examination, the decision of the next dose was decided. The final examination of the patient was on the 28th day of treatment. The drug was injected by the same operator.

The colour of the patch was observed and noted at every examination by the same operator. The patch colour was compared with the normal pink colour of the mucosa. To assess the oral pain and burning, we used the Visual Analogue Scale (VAS) having 10 grades (0-10). The patients who responded 0 or 1 were considered pain/burning free. Whereas the responses were 2-3, 4-6 and 7-10 considered mild, moderate and severe respectively. The treatment was considered efficient when two out of three symptoms of burning, pain and patches were removed.

Data was entered into the computer using SPSS version 23.0 for analysis. Quantitative variables like age, Pain score, Burning score and lesion size were described in terms of Mean±SD. Frequency and percentage were used for qualitative variables like gender, distribution of patient, site of lesion, side of the lesion, type of lesion, Pain score category, Burning score category, patch colour and efficacy. We used a one-sample t-test to estimate the efficacy of the treatment (intra-lesional TA

injection) in our sample. Gender, distribution of patient, site of lesion, side of lesion and type of lesion were used for stratification. Post-stratification chi-square test was applied. P- value ≤0.05 will be considered significant.

3. Results

A total sample of 100 patients was included in the study at the Oral and Maxillofacial Surgical Unit of KRL General Hospital Islamabad to determine the efficacy of triamcinolone injection in the treatment of oral lichen planus. The participants in the research had an average age of 35.47±13.459 ranging from 18 to 65 years out of a total 100 patients. In frequency of age group of patients, 77(77.0%) were from the age group of below 18 to 40 years of age, 23(23.0%) were from 41 to 65 years of age group, from a total of 100 patients. In frequency of gender of the patients, there were 57(57%) male and 43(43.0%) female patients, out of a total 100 patients. In the frequency of distribution of patients, 38(38.0%) patients had unilateral while the remaining 62(62.0%) had bilateral disorders out of a total of 100 patients. In frequency of side of lesion, 74(74.0%) patients had right while the remaining 26(26.0%) had left side lesion, out of a total 100 patients. In frequency of site of lesion, 40(40.0%) patients had buccal mucosa 33(33.0%) had palate, 15(15.0%) had gingula, 5(5.0%) had tongue and 7(7.0%) had lip site of lesion, out of total 100 patients.

Table 1: Frequency distribution of gender with respect to type of lesion

		Type of Lesion						Total	p-value
		Reticular	Bullous	Linear	Atrophic	Popular	Erosive		
Gender	Male	2	34	5	7	8	1	57	
		2.0%	34.0%	5.0%	7.0%	8.0%	1.0%	57.0%	
	Female	10	21	2	3	2	5	43	
		10.0%	21.0%	2.0%	3.0%	2.0%	5.0%	43.0%	0.007
Total		12	55	7	10	10	6	100	
		12.0%	55.0%	7.0%	10.0%	10.0%	6.0%	100.0%	

In frequency of type of lesion, 12(12.0%) patients had reticular 55(55.0%) had bullous, 7(7.0%) had linear, 10(10.0%) had atrophic, 10(10.0%) had popular and 6(6.0%) had erosive type of lesion, out of total 100 patients. In frequency of burning category before treatment, 10(10.0%) patients had no pain 28(28.0%) had mild, 51(51.0%) had moderate, and 11(11.0%) had severe, out of total 100 patients.

Table 2: Frequency distribution of gender with respect to site of lesion:

		Site of lesion					Total	p-value
		Buccal mucosa	Palate	Gingula	Tongue	Lip		
Gender	Male	19	21	8	3	6	57	
		19.0%	21.0%	8.0%	3.0%	6.0%	57.0%	
	Female	21	12	7	2	1	43	
		21.0%	12.0%	7.0%	2.0%	1.0%	43.0%	
Total		40	33	15	5	7	100	0.340
		40.0%	33.0%	15.0%	5.0%	7.0%	100.0%	

In frequency of pain before treatment, 12(12.0%) patients had no pain 37(37.0%) had mild, 39(39.0%) had moderate, and 12(12.0%) had severe, out of total 100 patients. In the frequency of patches before treatment, 41(41.0%) patients had red patches and 59(59.0%) had white patches, out of a total of 100 patients. In the frequency of burning category after treatment, 75(75.0%) patients had no pain 15(15.0%) had mild and 10(10.0%) had moderate pain, out of a total of 100 patients. In the frequency of pain after the treatment, 79(79.0%) patients had no pain 11(11.0%) had mild and 10(10.0%) had moderate pain, out of a total of 100 patients. In the frequency of patches before treatment, 54(54.0%) patients had no patches 39(39.0%) had red patches and 59(59.0%) had white patches, out of a total of 100 patients. In frequency of efficacy, 87(87.0%) patients found with improved symptoms and 13(13.0%) were not improved/inefficient, out of a total 100 patients.

Male patients found with improved symptoms were 51(51.0%) and female patients were 36(36.0%). This result is statistically not significant at p=0.397, out of 100 participants.

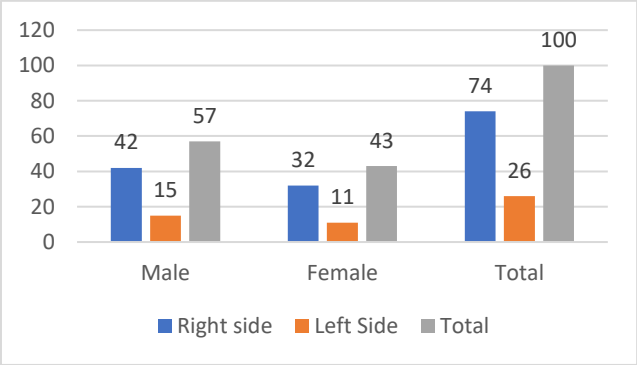

Figure 1: Frequency distribution of gender with respect to side of lesion

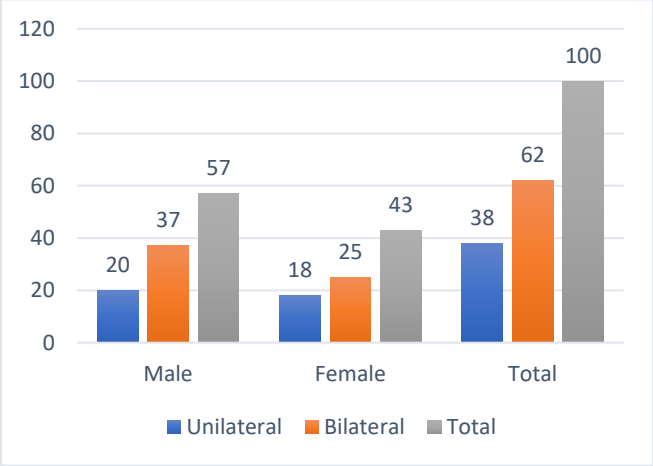

Figure 2: Frequency distribution of gender with respect to distribution of patients

4. Discussion

Although the cause of OLP is uncertain, it is known that it is caused by a cell-mediated immune response including a T lymphocyte with inflammatory infiltrating cell population.[19]

As stated earlier, OLP lesions were frequently bilateral and symmetrical, with the buccal mucosa, gingiva, and tongue being the most frequent site of occurrence.[26,27] Multiple oral sites were frequently involved. Multiple oral locations with buccal mucosa and gingiva were the most common. Isolated lesions on the gingiva, palate, and mouth floor were uncommon, but these sites were frequently afflicted in conjunction with the buccal mucosa or tongue in several oral sites. According to our study results, (12.0%) of patients had a reticular type, 6% had an erosive type and 10% had atrophic-type lesions. These results are contraindicated with the result of Munde et al's study in which the reticular kind of OLP was the most frequent, with (83.5%) of patients having it. Only (0.78 %) of patients had atrophic OLP, while (15.6%) had erosive OLP.[28] White lichen was found in 59% of our samples, while red lichen was found in 41%. According to Gandolfo et al.[21] and Carbone et al.[26], the frequency of white lichen in their study was 59.7% and 58.9%, respectively. The majority of the patients in this study complained of some degree of mouth discomfort in the form of burning (90%), and pain (88%). However, in Munde et al's study, 67% of patients felt burning sensations, pain and soreness.[28]

The ability to recover and the decrease in pain or discomfort are the most important factors to consider when managing OLP. Follow-up on disease progression and clinical examination of probable malignancy should also be part of the management plan.[29] An immune-mediated chronic inflammatory condition has been linked to OLP.[30] Various anti-inflammatory drugs, including corticosteroids, are used to treat OLP based on this concept.[31] Topical, intra-lesional, and systemic corticosteroids are available; topical application is the most common.[32] Topical medications, on the other hand, cannot stay on the oral mucosa for long periods and are thus poorly absorbed.[33] The restricted efficacy of topical treatments is improved by using an intralesional injection technique. Local injection permits a high concentration of steroids to be injected directly into a lesion, resulting in a stronger immunosuppressive effect with fewer systemic side effects.[34] Based on solubility, injectable corticosteroids are divided into five types.[35] An aqueous TA suspension is the favoured solution among these classes since it is a fluorinated chemical with improved anti-inflammatory effects, and its insoluble nature causes a more lasting impact.[36]

Oral pain was the most frequent complaint among OLP patients. Oral discomfort with a burning feeling in the oral cavity makes ingestion problematic, and this pain drives patients to the hospital to get relief. As a result, we concluded that using the total VAS values as an index might accurately depict patients' oral discomfort. According to our study, intralesional injection of TA was more efficient in alleviating the symptoms and indications of OLP. VAS was reduced in 79% of the patients. However, in another study, VAS was reduced to up to 85% of the patients.[36] According to another study Xiong et al,[37] revealed that the intralesional injection of TA that was used as a standard drug exhibited recovery in 88.0 % of patients. However, due to a lack of proof of its advantages over topical steroids and the pain associated with injections, some authors have questioned the efficacy of this method.[38] In 2013,

Lee et al. verified the safety and effectiveness of intralesional TA injection over TA mouth rinse in relieving symptoms and regulating inflammation.[39] Kuo et al. found that an amalgamation of steroid injection and oral administration hastened OLP healing.[40]

In our study, OLP is more common in the third decade of life (mean age 35.47 years), which is lower than the mean age observed in central China (50.4 years), United Kingdom (52.0 years), Spain (56.4 years), and Italy (56.7 years).[20,21,22,23] This was most likely due to the ethnic and geographic differences between our cohorts and past research. OLP in adolescents or children is unusual, and we found no evidence of it in our study. Although childhood OLP is uncommon, early detection is essential for proper treatment and relief of symptoms in young children.[24] The clinical characteristics of the individuals in our study include many similarities and some differences with those documented earlier. We found that men dominated women in this study (men= 57%, women= 43%), which contradicts earlier reports.[25,23] A female prevalence is recorded in the majority of research conducted in various regions of the globe.

5. Conclusion

This study concluded as much of previous literature concluded that the efficacy and safety of intralesional TA injection were found efficient after observation at 28th weeks of treatment.

CONFLICTS OF INTEREST- None

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Potential competing interests: None to report

Contributions:

H.I, K.Z, Z.R, M.Z.K - Conception of study
H.I, K.Z, Z.R, M.Z.K - Experimentation/Study Conduction
H.I, U.L, M.Z.K - Analysis/Interpretation/Discussion
H.I, U.L, K.Z, Z.R, M.Z.K - Manuscript Writing
U.L, K.Z, Z.R, M.Z.K - Critical Review
M.Z.K - Facilitation and Material analysis

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

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