ORIGINAL RESEARCH

A Comparative Study on use of Diode Laser and Topical Triamcinolone Acetonide 0.1% in the Management of Oral Lichen Planus

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ABSTRACT

Background & Objectives: Oral Lichen Planus is a chronic inflammatory disease refractory to treatment, there are multiple treatment options both topical & systemic are available. Low Level Laser Therapy is a painless, safe procedure & well tolerated by the patient. This study aimed to assess the role of LLLT and to compare the efficacy of Topical Triamcinolone Acetonide 0.1% with LLL in the management of LP of Buccal mucosa. **Methods:** 20 patients with symptomatic LP of bilateral buccal mucosa were selected based on selection criteria. After thorough clinical examination, patients with LP of the Left Buccal mucosa were treated with LLL (Group I) and Lesions on the Right side of the Buccal mucosa (Group II) were treated with topical triamcinolone acetonide 0.1% for 4 weeks and were evaluated periodically at the end of 1st, 2nd, 3rd & 4th week. **Results:** There was significant reduction in signs and symptoms of OLP in both groups and complications were insignificant with recurrence rate of 5% in LLL and 20% in topical corticosteroid treated group. **Conclusion:** Both LLL and topical Triamcinolone Acetonide 0.1% have shown significant results in reduction of signs and symptoms of OLP but the recurrence in case of LLL treated group is 5% and 20% in topical corticosteroid group was observed during the follow up period of 6 months.

KEYWORDS: Bilateral buccal mucosa, Low Level Laser Therapy, Oral Lichen Planus, Triamcinolone Acetonide 0.1%

INTRODUCTION

Oral Lichen Planus is a common chronic inflammatory disease of unknown etiology associated with cell mediated immunological dysfunction in which T-Lymphocytes accumulate beneath the epithelium of the oral mucosa and increase the rate of differentiation of the stratified squamous epithelium, resulting in hyperkeratosis and erythema with or without ulceration.[1, 2]

The etio-pathogenesis of OLP has been the focus of much research, several antigen-specific and non-specific inflammatory mechanisms have been put forward to explain the pathogenesis.[3]

The prevalence of OLP has been reported to be 1.27% in general adult population and in Indian population it is 1.5% and is more frequently seen in women aged between 30-60 years.[4-6]

OLP commonly occurs bilaterally on the buccal mucosa, and frequently appears in the tongue, gingiva, mucobuccal fold or multiple sites with malignant potential of 0.5% in Erosive OLP.[7] The common clinical manifestations are reticular, papular, plaque, atrophic and ulcerative (erosive) patterns.[8] Reticular OLP is often asymptomatic but the atrophic and ulcerative (erosive) forms of OLP can cause symptoms ranging from a burning sensation to severe pain, with remission being rare.[9] The clinical manifestations of OLP may be sufficient to make a correct diagnosis. However, biopsy with histopathological evaluation is recommended to confirm the clinical diagnosis and to exclude dysplasia and malignancy. A widely used definition for the diagnosis of OLP is the criteria introduced by World Health Organization (WHO).[10]

A large spectrum of treatment modalities including Topical and Systemic Corticosteroids, Topical Cyclosporine, Topical and Systemic Retinoids, Antimalarials, Azathioprine, Photochemotherapy and Surgery have been proposed for symptomatic Oral Lichen Planus.[11] Although many of these regimens, as claimed reduces the pain their benefits are modest and short in duration with known adverse effects on long term usage.

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Patients with symptomatic OLP often require intensive therapy to lessen the signs and symptoms.[12] Therefore, the search for new treatment modality capable of controlling the symptoms and signs of OLP with minimal side-effects remains an important challenge.

Recently, an emergence of laser therapy in dentistry has shown a satisfactory results in the management of oral soft tissue lesions.[13, 14] Low Level Laser Therapy is suggested to have bio-stimulating, anti-inflammatory and analgesic effects through direct irradiation without causing thermal response. Low Level Laser Therapy is widely known for its safe therapeutic modality due to its non-invasive, aseptic and painless nature.[15]

There are few studies on Laser in management of Oral Lichen Planus in literature but there are no studies in Indian population reported so far.

Hence, a sincere attempt has been made in this study to assess the feasibility and the role of diode laser and to compare the efficacy of Topical Triamcinolone Acetonide 0.1% with Low Level Laser Therapy in the management of Lichen Planus of Buccal mucosa.

MATERIALS AND METHODS

The present clinical study was conducted in the Department of Oral Medicine And Radiology, Government Dental College and Research Institute, Bangalore, India during the period of June 2012 to September 2013. Patients were selected according to the following set inclusion and exclusion criteria. The study was conducted in full accordance with ethical principles and was independently reviewed and approved by the ethical board of the institution.

Inclusion criteria

- Subjects in the age group of 20-60 years.
- Histopathologically diagnosed symptomatic Lichen Planus involving the
- bilateral buccal mucosa
- Oral Lichen Planus subjects not on any treatment.
- Subjects free from drug history.

Exclusion criteria

- Lichen planus involving the gingiva, tongue labial mucosa and palate but not involving the Buccal mucosa were excluded.
- Patients who had an OLP-like lesion induced by drugs or dental prosthetics.
- Patients who had OLP with history of tobacco chewing.
- Patients with history of diabetes, hypertension and circulatory or vascular disorders.
- Pregnant or breast feeding women.
- Known hypersensitivity to natural sunlight.

20 patients with Lichen Planus of the bilateral Buccal mucosa who satisfied the above inclusion and exclusion criteria and willing to participate were selected for the study. All the patients were explained the aims of the study, methodology, risks and benefits of participation in the study. A formal written informed consent was obtained from each patient before inclusion into the study.

A detailed case history, thorough clinical and oral examination was carried out and recorded in specially prepared case history proforma. Patients were subjected for routine blood investigation following which incisional biopsy was carried out. The diagnosis of Oral Lichen Planus was made clinically and histo-pathologically based on the WHO diagnostic criteria of Oral Lichen Planus.[10]

All the patients with lichen planus of the bilateral Buccal mucosa were treated with both Low Level Laser and topical triamcinolone acetonide 0.1%. For statistical accuracy lesions on the left side of the Buccal mucosa were selected for Low Level Laser Therapy (considered as Group I) whereas lesions on the right side were selected for the topical application of triamcinolone acetonide 0.1% (considered as Group II).

Patients who were taken for laser therapy first, are discouraged for application of any topical analgesic or anesthetics to avoid statistical error on the untreated side of the Buccal mucosa (Right Buccal mucosa).

Group I Lesions (Lichen planus of Left Buccal mucosa): Group I lesions on the left Buccal mucosa were treated with Low Level Laser Therapy using diode laser: Denlase - GaAlAs, 980nm (**Figure 1A**). The laser was guided with a bio-stimulating hand-piece connected to 600µm fiber-optic cable (**Figure 1B**). All the protective laser protocols were followed, that is the patient and all the assistants (auxillaries) were advised to wear special protective eyeglasses prior to laser therapy (**Figure 1C**). The Diode laser was calibrated and measured to the desired power settings of 0.8 to 0.9 W in a non-contact defocused mode for 4-5 minutes, delivering an energy of 500 J(6 J/cm^2). The irradiation was done 2 times a week for 5-6 sessions (**Figure 2**)…….

Fig 1 A: Laser equipment (GaAlAs Diode Laser)

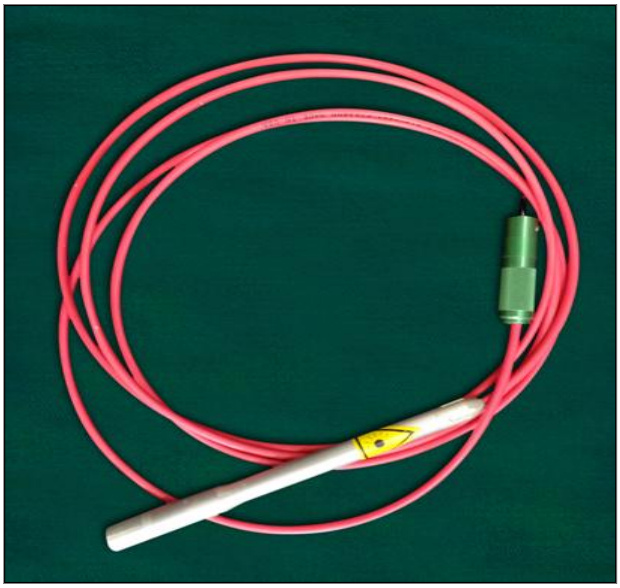


Fig 1 B: Bio-stimulating handpiece(600µm fiberoptic cable)

Fig 1 C: Protecive Eye wears (SD NO-4, Optical density 4+)

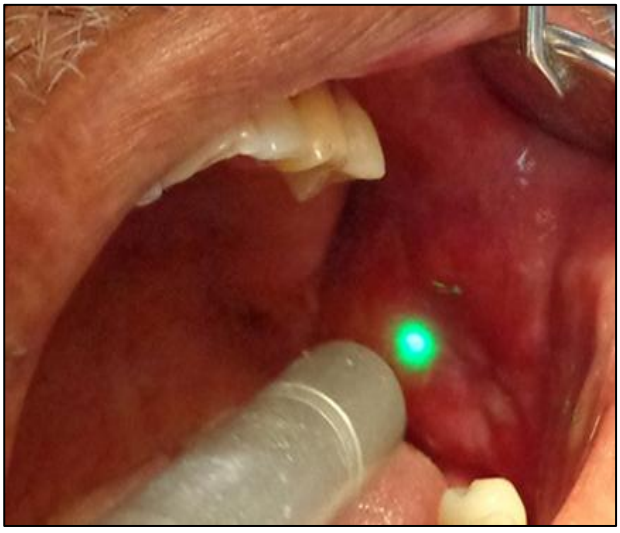


Fig 2: Showing Low Level Laser irradiation of the Lichen Planus of the Left Buccal mucosa

Group II Lesions (Lichen planus of the Right Buccal mucosa): Group II lesions on the right Buccal mucosa were advised to apply a dab of triamcinolone acetonide 0.1% ointment topically after meals 4 times daily by means of a swab (ear bud) for 4 weeks (**Figure 3**). Patients were given written instructions to apply the ointment after rinsing the mouth with plain water and drying the lesions and to avoid consuming any food or drink for 1 hour following application. The patients were instructed to report any adverse reactions immediately.

All the patients with both Group I and Group II lesions who were treated with low level laser therapy and topical Triamcinolone Acetonide 0.1% were evaluated for Signs and symptoms before starting therapy and at the end of every week using Visual Analogue Scale (**Figure 4A and B**). The symptoms were scored from 0 – 100 according to the criteria set by Tel Aviv-San Francisco scale and signs were scored from 0-5 according to the criteria set by Thongprasom et al.[16]

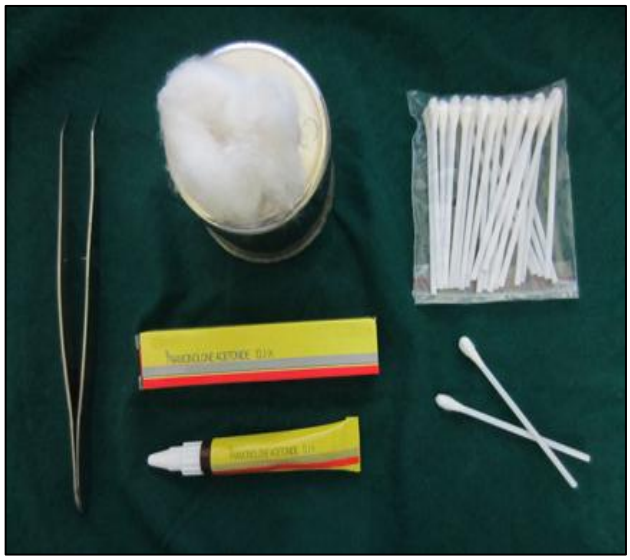


Fig 3: Showing Armamentarium for the application of Triamcinolone Acetonide 0.1% over the Lichen planus of Right Buccal mucosa

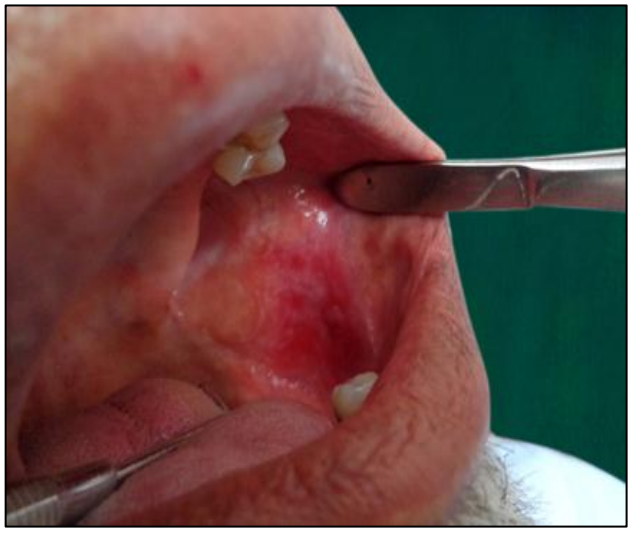


Fig 4A: Showing Erosive and reticular Lichen Planus of Left Buccal mucosa before Low level laser irradiation

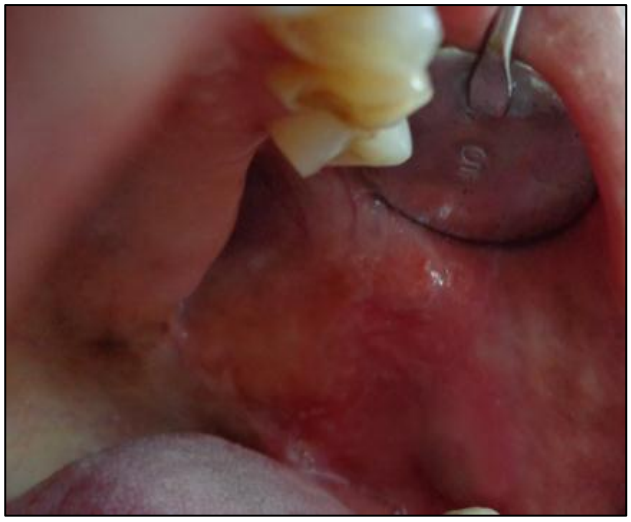


Fig 4B: Showing healing of Erosive and reticular Lichen Planus of Left Buccal mucosa after Low level laser irradiation

Postoperative complications such as pain, swelling and functional disturbance after Low Level Laser treatment and Triamcinolone Acetonide 0.1% topical application were graded from 0-10 according to the Warwick-Brown, Marks (1987) criteria using Visual Analogue Scale.[17] Subjective evaluation of the treatment was recorded with subjective evaluation scale according to Gorsky and Raviv 1992.[18]

Data were analyzed using SPSS version 15. Descriptive and inferential statistical analysis has been carried out in the present study. Whitney U test has been used to find the significance between two groups for parameters on non-interval scale, Wilcoxon Signed rank test has been used for Intra-group analysis. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

RESULTS

The overall mean age in the study sample was found to be 39.9 years for both Group I and Group II lesions for Lichen Planus of Buccal mucosa. In this study 4(20%) patients were between the age group of 26-30 years, 8 (40%) in age group of 31-40years, 7(35%) in age group between 41-50years and 1(5%) in the age group of 51-60 yrs. The maximum number of patients were between the age group of 31-40 years. Out of 20 patients 8(40%) were males and 12(60%) patients were females.

Evaluation of Symptom score in Group I and Group II OLP lesions using Standard criteria by Tel-Aviv San Francisco (Table 1): Maximum symptoms score value of 25 was found in 13 patients (i.e. Sore and painful; greatly interferes with regular daily activity) and the score value 50 (i.e symptoms interfere with regular daily activity) in 7 patients.

Evaluation of Sign score in Group I and Group II OLP lesions using Standard criteria by Thongprasom et.al (Table 2): In Group I, maximum sign score value of 3(i.e white striae with atrophic area more than $1cm^2$) was found in 7 (35%) OLP lesions, sign score value of 2 ((i.e white striae with atrophic area less than $1cm^2$) in 12 (60%) OLP lesions and the least sign score value 1(i.e mild white striae only) was observed in 1(5%) OLP lesion.

In Group II, maximum sign score value of 3(i.e white striae with atrophic area more than $1cm^2$) was found in 7 (35%) OLP lesions, sign score value of 2 (i.e white striae with atrophic area less than $1cm^2$) in 13 (60%) OLP lesions.

There was no significant difference in signs and symptoms scores between the two groups before treatment.

Comparison of Sign Score within Group 1 and Group II from before treatment: The change in mean sign score was found to be statistically significant between before treatment & 1 Week ($P<0.05$, $P<0.01$), before treatment & 2 Weeks ($P<0.01$), before treatment & 3 Weeks ($P<0.01$), before treatment & 4 Weeks ($P<0.001$). (Table 3 and Graph 1)

Comparison of Symptom Score within Group 1 and Group II from before treatment: The change in mean symptom score was found to be statistically significant between before treatment & 1 Week ($P<0.01$), before treatment & 2 Weeks ($P<0.001$), before treatment & 3 Weeks ($P<0.001$), before treatment & 4 Weeks ($P<0.001$). (Table 4 and Graph 2)

Comparison of mean Sign and Symptom score in two groups: No significant difference is observed between the groups with respect to the mean symptom and sign score at any of the time intervals ($P>0.05$). (Table 5, Graph 1 & 2)

Subjective evaluation of the treatment in Group I and Group II: 10-15% of OLP lesions in Group I & Group II showed 90-100% improvement of signs and symptoms, whereas 70-80% of improvement was observed in 75-80% of OLP lesions and rest 2-3% had only 50% improvement in Group I & Group II (Table 6). 90-100% remission of signs and symptoms of OLP was observed in the age group of 31-40 years in both the groups with male to female ratio of 2:1. Statistically there was no significant difference in subjective evaluation of treatment in two groups.

Post-treatment complications: Group I: Out of 20 patients only 3(15%) patients complained of moderate pain during the first 3 days following laser irradiation while rest of the patients had no complaints. Edema and functional disturbance occurred in same patients which was mild in two patients and moderate in one patients. Pain and edema disappeared and all the functions were returned to normal at the end of first week.

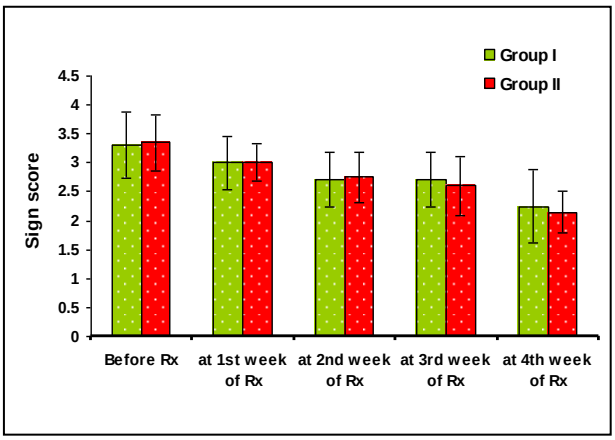
Group II: Out of 20 patients 4(20%) patients developed erythema and burning sensation with functional disturbances during third and fourth week of treatment which were mild in 1 patient and moderate in three patients.

Symptom score	Symptom score before treatment	Symptom score at 1st week of treatment	Symptom score at 2nd week of treatment	Symptom score at 3rd week of treatment	Symptom score at 4th week of treatment	% change
Group I						
Asymptomatic	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
Low level of symptoms, does not interfere with usual daily activity	0(0%)	0(0%)	0(0%)	0(0%)	3(15%)	15.0
Symptoms interfere with regular daily activity	0(0%)	0(0%)	7(35%)	12(60%)	14(70%)	70.0
Sore and painful; greatly interferes with regular daily activity	7(35%)	14(70%)	12(60%)	8(40%)	3(15%)	-20.0
Impossible to live with the severe symptoms	13(65%)	6(30%)	1(5%)	0(0%)	0(0%)	-65.0
Group II						
Asymptomatic	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
Low level of symptoms, does not interfere with usual daily activity	0(0%)	0(0%)	0(0%)	0(0%)	2(10%)	10.0
Symptoms interfere with regular daily activity	0(0%)	0(0%)	4(20%)	11(55%)	15(75%)	75.0
Sore and painful; greatly interferes with regular daily activity	7(35%)	15(75%)	15(75%)	9(45%)	3(15%)	-20.0
Impossible to live with the severe symptoms	13(65%)	5(25%)	1(5%)	0(0%)	0(0%)	-65.0
P value	1.000	1.000	0.731	1.000	1.000	-

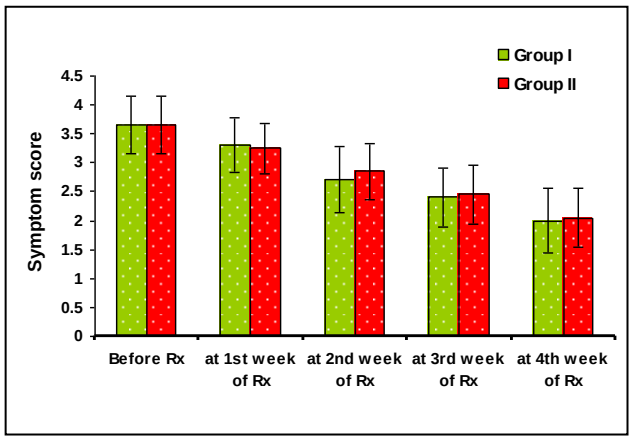
Table 1:Showing number of patients with different symptom scores before & after treatment with Low Level Laser Therapy & Topical Triamcinolone Acetonide 0.1%

Sign score	Sign score before treatment	sign score at 1st week of treatment	sign score at 2nd week of treatment	sign score at 3rd week of treatment	sign score at 4th week of treatment	% change
Group I						
No lesions, normal mucosa.	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
Mild white striae only	0(0%)	0(0%)	0(0%)	0(0%)	2(10%)	+10.0
White striae with atrophic area <1cm2	1(5%)	2(10%)	6(30%)	6(30%)	11(55%)	+50.0
White striae with atrophic area >1cm2	12(60%)	16(80%)	14(70%)	14(70%)	7(35%)	-25.0
White striae with erosive area <1cm2	7(35%)	2(10%)	0(0%)	0(0%)	0(0%)	-35.0
White striae with erosive area equal to 1cm2	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
Group II						
No lesions, normal mucosa.	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
Mild white striae only	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
White striae with atrophic area <1cm2	0(0%)	1(5%)	5(25%)	8(40%)	17(85%)	+85.0
White striae with atrophic area >1cm2	13(65%)	18(90%)	15(75%)	12(60%)	3(15%)	-50.0
White striae with erosive area <1cm2	7(35%)	1(5%)	0(0%)	0(0%)	0(0%)	-35.0
White striae with erosive area equal to 1cm2	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0
P value	1.000	0.695	1.000	0.741	0.102	-

Table 2: Showing number of patients with different sign scores before & after treatment with Low Level Laser Therapy & Topical Triamcinolone Acetonide 0.1%



Graph 1: Showing Comparison of mean Sign score in two groups



Graph 2: Showing Comparison of mean Symptom score in two groups

	Time interval	Mean	Std Dev	SE of Mean	Mean Difference	P-Value
GROUP I	Before treatment	3.30	0.57	0.13	0.300	0.014*
	1 Week	3.00	0.46	0.10		
	Before treatment	3.30	0.57	0.13	0.600	0.003*
	2 Weeks	2.70	0.47	0.11		
	Before treatment	3.30	0.57	0.13	0.600	0.003*
	3 Weeks	2.70	0.47	0.11		
	Before treatment	3.30	0.57	0.13	1.050	<0.001 *
	4 Weeks	2.25	0.64	0.14		
GROUP 2	Before treatment	3.35	0.49	0.11	0.350	0.008*
	1 Week	3.00	0.32	0.07		
	Before treatment	3.35	0.49	0.11	0.600	0.003*
	2 Weeks	2.75	0.44	0.10		
	Before treatment	3.35	0.49	0.11	0.750	0.004*
	3 Weeks	2.60	0.50	0.11		
	Before treatment	3.35	0.49	0.11	1.200	<0.001 *
	4 Weeks	2.15	0.37	0.08		

Table 3: Comparison of mean Sign Score within Group I and Group II *Denotes significance

	Time interval	Mean	Std Dev	SE of Mean	Mean Difference	P-Value
GROUP I	Before treatment	3.65	0.49	0.11	0.350	0.008 *
	1 Week	3.30	0.47	0.11		
	Before treatment	3.65	0.49	0.11	0.950	<0.00 1*
	2 Weeks	2.70	0.57	0.13		
	Before treatment	3.65	0.49	0.11	1.250	<0.00 1*
	3 Weeks	2.40	0.50	0.11		
	Before treatment	3.65	0.49	0.11	1.700	<0.00 1*
	4 Weeks	1.95	0.51	0.11		
GROUP II	Before treatment	3.65	0.49	0.11	0.400	0.005 *
	1 Week	3.25	0.44	0.10		
	Before treatment	3.65	0.49	0.11	0.800	<0.00 1*
	2 Weeks	2.85	0.49	0.11		
	Before treatment	3.65	0.49	0.11	1.200	<0.00 1*
	3 Weeks	2.45	0.51	0.11		
	Before treatment	3.65	0.49	0.11	1.600	<0.00 1*
	4 Weeks	2.05	0.51	0.11		

Table 4: Comparison of mean Symptom Score within Group I and Group II (Wilcoxon Signed Ranks test) *Denotes significance

Symptom score	Group I	Group II	P value
Before treatment	3.65±0.49	3.65±0.49	1.000
at 1st week of treatment	3.30±0.47	3.25±0.44	0.799
at 2nd week of treatment	2.70±0.57	2.85±0.49	0.445
at 3rd week of treatment	2.40±0.50	2.45±0.51	0.799
at 4th week of treatment	2.00±0.56	2.05±0.51	0.820
Sign score	Group I	Group II	P value
Before treatment	3.30±0.57	3.35±0.49	0.862
at 1st week of treatment	3.00±0.46	3.00±0.32	1.000
at 2nd week of treatment	2.70±0.47	2.75±0.44	0.799
at 3rd week of treatment	2.70±0.47	2.60±0.50	0.602
at 4th week of treatment	2.25±0.64	2.15±0.37	0.547

Table 5: Comparison of mean Symptom & Sign score in two groups

Subjective evaluation of treatment	Group I (n=20)	Group II (n=20)
Little improvement or no change	0	0
30-50% benefit	0	0
50% benefit	1(5.0%)	3(15.0%)
70-80% benefit	16(80.0%)	15(75.0%)
90-100% remission of signs & symptoms	3(15.0%)	2(10.0%)
Inference	No statistical difference in Subjective evaluation of treatment with P=0.564	

Table 6: Comparison of Subjective evaluation of treatment in two groups

Comparison of Recurrence in two groups: During the 6 months follow up out of the 20 patients treated with Low Level Laser, only 1 patient (5%) complained from recurrence that occurred at sixth month. And in Group II with Topical corticosteroid 4 (20%) patients reported with recurrence that occurred after 3 months in 3(15%) cases and 6 months in 1(05%) case.

DISCUSSION

Oral lichen planus (OLP) is a chronic inflammatory mucosal disease characterized by relapses and remissions. The disease is relatively common, affecting approximately 0.5 – 2% of the population and develops more commonly in the fifth to sixth decades of life.

There is no single satisfactory available treatment regimen for OLP, thus treatment is aimed primarily to reduce the length and severity of symptomatic outbreaks. Topical steroids are the first choice for the treatment of symptomatic, active OLP. Other topical agents that have been used in cases resistant to topical steroids include Retinoids, Azathioprine, Cyclosporine, Tacrolimus, and Mycophenolate mofeti. Non-steroidal anti-inflammatory drugs have been also used as an alternative to corticosteroids but with less beneficial results in addition to their known side effects. Surgical excision is also used in the treatment of some long standing cases of erosive lesions. However OLP is frequently resistant to the therapy.[4]

There are several lasers used in clinical practice such as Co_2, Excimer and Diode laser etc. Co2 and Excimer lasers have low penetrating beam that acts only superficially and the excimer laser is known to exhibit carcinogenic effects on prolonged application.[19, 20] Compared to these lasers Diode laser emits infrared light that has the property of extensive penetration (3-15mm) into the tissues which is an important factor that helps in destroying inflammatory component of the epithelium and the underlying connective tissue of the lesion OLP. So, by considering the beneficial effects and non-invasive nature, of diode laser of 980 nm as reported by Soliman et al. with satisfactory results a soft tissue laser Diode of 980 nm was selected for this study.[21]

Diode Laser of 980 nm when operated at the power setting of < 1Watt (Low Level Laser) has analgesic anti-

inflammatory and biostimulative effects.[22] So, the following parameters were considered for the study: Power settings of 0.8 to 0.9 Watt (8-9 mW) in a defocused, continuous wave mode for 4-5 minutes, delivering an energy of 500 Joules. The irradiation was done 2 times a week for a maximum of 5-6 sessions.

As Topical corticosteroids are considered as the first-line treatment for symptomatic, active OLP, we have compared Low Level Laser Therapy using Diode laser with Topical Triamcinolone Acetonide 0.1% ointment in the management of Lichen Planus of Buccal mucosa. Triamcinolone Acetonide 0.1% in the form of orabase has satisfactory shelf life and was well accepted by the OLP patients.[16]

The present study comprised of 20 subjects with Symptomatic Oral Lichen Planus of Bilateral Buccal mucosa in the age range of 26 – 56 years. In our study the average age of patients with Oral Lichen Planus was found to be 39.9 years and there was a female predominance similar to studies by Poul CE and McCartan BE.[2, 6] This female predominance could be explained because of increased stress and hormonal levels. To avoid statistical error symptomatic OLP with bilateral involvement were selected for the study.

The clinical and histo-pathological diagnosis of OLP was made based on the standard WHO diagnostic criteria of OLP.[10] There are several ways to clinically assess the signs and symptoms of OLP but the most comprehensive and accepted format is designed by Tel-Aviv San Francisco and Thongprasom et.al. Hence we have followed the same in our study because of its feasibility and easy to follow the scores.

The efficacy of LLLT is mainly due to its biostimulative, anti-inflammatoy and analgesic properties. The mechanism of action on inflammation is complex. It has been shown that LLLT causes vasodilation and increases local blood flow which brings in oxygen and makes a greater movement of immune cells into the tissue. Modulation of mast cell functions by LLLT is important in control of inflammation in the oral cavity. Increased proliferation, maturation and migration, as well as transformation to myofibroblasts, a decreased production of pro-inflammatory prostaglandin E2, and increased production of basic growth factors have also been noted in LLLT.

Corticosteroids the most accepted drug regimen when applied topically results in regression of symptoms by reducing the lymphocytic exudate and stabilizing the lysosomal membrane.[23] The rationale behind their usage is their ability to modulate inflammation and immune response. As OLP is known for its high recurrence rate all the patients were followed up at an interval of 1 month, 3 months and 6 months.

In the present study there was no significant difference in clinical signs and symptoms scores between the groups at baseline. But there was a significant difference in the signs and symptoms score at weekly intervals within Group I and Group II. The maximum efficacy of Low Level Laser Therapy and Topical Triamcinolone Acetonide 0.1% was observed after 4 weeks in Group I and Group II, but the best clinical outcome was seen during the first week. The age-group i.e responded well to the treatment is 31-40 years this could be because of younger age, good immune response and free from general systemic conditions.

In our study, side effects reported in the laser group were insignificant and only 15% patients had mild edema with moderate pain and functional disturbances immediately after laser irradiation. Similar results were reported by Soliman et al. & Jajaram et al. in their study.[21, 24] In contradiction to this, a study by Cafaro et al. have not reported any complications associated with Low Level Laser therapy.[25] This could be explained due to variation in parameters and therapy regimens considered in different studies.

Out of 20 patients, 4 (20%) patients in corticosteroid treated group developed mild to moderate burning sensation, erythema and functional disturbances during 3rd and 4th week of follow up. This could be substantiated by the fact that corticosteroids have a tendency to cause immunosuppression and delayed healing after a topical application for more than 2 weeks.

Similar results are shown in Group I and Group II in reducing signs and symptoms of Lichen Planus of Buccal mucosa and the complications related to the procedures are almost insignificant as reported by Jajaram et al. in his study with a sample of 30 OLP patients.

During follow up period of 6 months, the recurrence rate of 5% in Group I and 20% in Group II was observed, similar results were reported in a study by Soliman et.al.

CONCLUSION

This is a preliminary study which was aimed at assessing the role of Diode laser in the management of Lichen Planus of Buccal mucosa. The following observations were noted in the study:

- There was significant reduction in signs and symptoms of Lichen Planus of Buccal mucosa with Low Level Laser and Topical Triamcinolone Acetonide 0.1%.
- Group I and Group II have shown similar results in relieving the signs and symptoms of Lichen Planus of Buccal mucosa.
- The recurrence rate of 5% in Group I and 20% in Group II was observed during the follow up period of 6 months.

However this is only a baseline study hence further studies are required on large sample size and follow up for a long duration with post-treatment histo-pathological assessment.

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