Research Article

Effectiveness of low-level laser therapy and topical steroid therapy in the management of oral lichen planus

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Abstract: Background: Corticosteroids are the most common treatment for oral lichen planus, a long-term immune-related condition, which is considered the most effective treatment. Photobiomodulation is a viable alternative treatment that can successfully treat various pathological disorders by relieving pain, decreasing inflammation, and facilitating tissue healing. Unlike steroid medications, photobiomodulation does not have any associated disadvantages. This study aimed to assess and compare the effects of topical application of 0.1% triamcinolone acetonide and photobiomodulation on erosive oral lichen planus. Methods: A randomized controlled clinical trial was conducted in this investigation, which involved 20 patients who were suffering from erosive oral lichen planus. The control group (n= 10) was administered a 0.1% topical solution of triamcinolone acetonide 3 times daily and a miconazole oral gel once daily, for 4 weeks. The patients in the second group (n = 10) engaged in laser therapy twice a week for 8 sessions over 4 weeks, utilizing a 980 nm diode laser with an output power of 300 mw. Pain and clinical scores of patients were evaluated at the start and 4 weeks postoperatively. Results: Both groups were not significantly different from one another, and both had substantial improvements in pain and clinical scores. Conclusions: Low-Level Laser therapy showed potential as a therapeutic approach for treating erosive oral lichen planus, offering an alternative to steroid therapy without the associated adverse effects.

Keywords: Photobiomodulation, Oral Lichen Planus, Topical Steroid, Diode Laser.

Introduction

Oral lichen planus (OLP) is a persistent inflammatory illness affecting mucous membranes and skin. It mostly affects middle-aged individuals, with a higher incidence in females, and is found in around 1% to 2% of this population [1,2]. It commonly presents symmetrical, bilateral lesions, predominantly impacting the gingiva, buccal mucosa, dorsum, and borders of the tongue [3]. OLP identification mostly depends on the unique clinical appearance. Nevertheless, confirmation of the diagnosis is aided by histological observations, including basement membrane breakdown, basal keratinocyte mortality,

beside a lymphocyte band that shows significant inflammatory infiltration underneath the epithelium [4]. The clinical presentations of OLP encompass the following: plaque-like, reticular, atrophic, erosive/ulcerative, papular, and bullous. Each of these patterns might appear clinically either separately or together. However, reticular OLP is the most common. Aside from the presence of papules and hyperkeratotic plaques, Wickham's striae are a distinctive feature of this condition [5]. It is frequently asymptomatic. Conversely, ulcerated and erosive lesions manifest without warning and might cause patients to experience a range of discomfort and pain. Consequently, they may experience food intake impairment, which may have an adverse effect on their quality of life [6] Therefore, it is crucial to efficiently manage uncomfortable OLP lesions, including erosive, atrophic, and ulcerative lesions, by implementing appropriate treatment strategies to relieve discomfort and enhance the patient's overall state of health [7]. Therefore, there are many clinical investigations that have explored various therapeutic strategies to effectively address OLP. Furthermore, these treatment methods attempt to mitigate the adverse effects of corticosteroids, which are often regarded as the most effective therapy for OLP [8,9]

Photobiomodulation (PBM), a non-invasive and non-ablative technique, has emerged as osteoarthritis OLP therapy due to its potential to alleviate pain, eliminate inflammation, and stimulate tissue regeneration [10]. Among PBM's many effects on a molecular, cellular and tissue level. Solid evidence suggests it regulates cellular mitochondrial activities including adenosine triphosphate production, reactive oxygen species regulation, and protein synthesis transcription factors. It also changes levels of growth hormones and cytokines, decreases oxidative stress, and increases tissue oxygen delivery [11,12].

The PBM modulates cellular processes by targeting molecules that absorb light, including cytochrome carbon oxidase, as explained by Hamblin (2018), whose results in a redox reaction that disrupts the bond between carbon oxidase and nitric oxide, which in turn affects mitochondrial activity. Consequently, cytochrome carbon oxidase is activated, resulting in the increased production and release of adenosine triphosphate, reduced levels of reactive oxygen species, and the activation of RNA transcription and DNA synthesis. The repair and healing of cells are facilitated by these processes. The electron transport chain's operation results in the liberation of nitric oxide, which in turn enhances the permeability of cells, the presence of oxygen, and the expansion of adjacent blood vessels. In general, there is an increase in cell division and a modification in the process of cellular self-degradation [13, 14].

This interaction has the potential to reduce inflammation at the tissue level by reducing the levels of prostaglandin E2, prostaglandin-endoperoxide synthase 2, interleukin 1 beta, tumor necrosis factor-alpha, influx of neutrophil granulocytes into cells, oxidative stress, edema, and bleeding. The severity of these effects is contingent upon the dosage. Furthermore, it is hypothesized that the pain receptors are suppressed by PBM, which is the underlying mechanism for pain alleviation. By employing light wavelengths varying from 630 to 980 nm and emission levels ranging from 20 to 300 mw, PBM has been demonstrated to alleviate distress and promote the reduction of redness associated with OLP lesions. This clinical investigation was designed to assess the efficacy of PBM in the treatment of erosive OLP in comparison to conventional corticosteroid therapy. The PBM was implemented using a 980 nm diode laser [15-17].

The study's starting point was the assumption that the 2 groups would be statistically indistinguishable after receiving either standard corticosteroids or PBM combined with a 980 nm diode laser treatment for erosive OLP.

Materials and Methods

Study Design

Twenty patients with bilateral clinically and biopsy verified OLP lesions were selected from Outpatient clinics of the Oral Medicine and Periodontology Departments, Faculty of Dentistry in Assiut University and Assiut branch of Al-Azhar university. Observations and treatments of all patients performed at Faculty of Dentistry in Assiut University. Lesions were different sizes on both sides and had not been

treated for OLP for at least a month before the trial started. Using computer generated random number tables, patients were split into 2 groups for the treatment. Group A consists of 10 patients who will get topical corticosteroid treatment to alleviate OLP symptoms, whereas Group B consists of 10 patients who will have a single laser PBM session. Out of all the researchers, only one had knowledge of the patients' assigned groups. Neither the therapies nor their efficacy was evaluated by this unblinded researcher. There was a lack of treatment blinding for patients. The clinical charts were reviewed for the following information: age, sex, location of OLP lesion, Thongprasom score [18], side events related to treatment, and VAS pain score.

Ethical considerations

The Helsinki Declaration ethical specifications were followed in this trial as its registration was done in ClinicalTrials.gov Protocol Registration and Results System with ID: NCT06681090. It was approved by the ethics committee of the Faculty of Dentistry, Assiut University (approval number :17-2024-0001). The only adult contributors were partaken voluntarily within this trial. Prior to any clinical procedure, all participants were asked to sign a consent document.

Inclusion Criteria

The inclusion criteria were included patients who were monitored for OLP in the Oral Medicine and Periodontology Department, Faculty of Dentistry, and Dermatology Department, Faculty of Medicine, clinical and histopathological finding of OLP in accordance with van der Meij 2003 [19]; and investigated by the staff members of Oral and Maxillofacial Pathology Department, being over 18 years old; and finally the presence of symptomatic lesions (pain that exceeds zero on the visual analogue scale).

Exclusion Criteria:

Patients with systemic disorders, pregnancy, using drugs, smoking, lesions in contact with dental amalgams, and cutaneous or other mucosal involvement at the time of treatment were excluded. Comprehensive assessments were conducted for all systemic conditions. The patients were instructed to bring their most current medical records, and if needed, their physicians were contacted to obtain more information. Patients who have received prior treatment using alternative therapy. Concurrent or recent administration of corticosteroids, immunomodulatory or antifungal medications.

Interventions:

After the completion of the clinical assessment, medical history, and histology diagnostic confirmation, a random selection was made from the pool of twenty suitable patients to form the following groups before treatment: First group (Group A) obtained standard treatment for erosive OLP lesions. The patients were administered topical corticosteroids in the form of a 0.1% triamcinolone acetonide preparation (Kenacort TM 0.1% Abbott). The medication was to be used 3 times every day for 4 weeks or until the lesion has healed, whichever occurs first. After applying the gel, the patients were instructed not to consume any fluids or food for at least 1 hour. In addition, a topical antifungal treatment consisting of Miconazole oral gel at a concentration of 2% should be applied once a day for 4 weeks [20]. The second group (Group B) underwent PBM therapy using a 980 nm diode laser (elexxion nano dental laser with a flat top handpiece). The therapy included 8 sessions for 4 weeks, with 2 sessions conducted per week, all administered by the same operator. The energy was evenly distributed across all the mucosal lesions and the surrounding tissues within a 0.5 cm range using a spot-technique method with little overlap. The probe was oriented vertically using a non-contact process, approximately 2 mm away, during each session. It had a fiber optic tip with a diameter of 400 μm and an output power of 300 mW. The device's power was calibrated multiple times by the company's technical assistance over the whole study period. The continuous wave had a delivery period of approximately 4 seconds at every application point, resulting in an energy output of 1.2 Joules per point. The number of spots and energy

given to the overall lesion varied with its size. The parameters used are from the research done by Cafaro et al., 2014, with minor changes [21], Figure (1).

Measures to Prevent Candidiasis:

All patients were provided with prophylactic antifungal medicine 3 times a day. The medication was supplied in individual 5 ml dispensers. The patient regularly applied antifungal medicine during the full course of the treatment. Subsequently, the medication was stopped

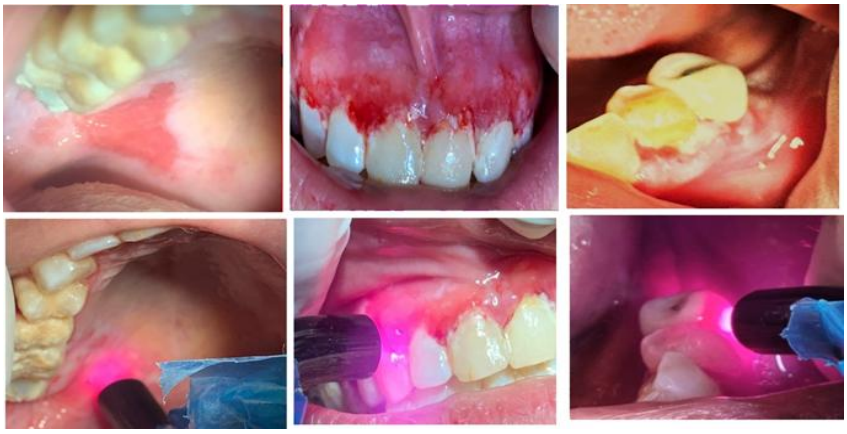

Figure 1: showing Photomicrograph of Clinical Pictures for Different Oral Lichen Planus Lesion Before and During Diode Laser Session Treatment.

Outcome Measures:

The following outcome measures were recorded at baseline and 4 weeks after surgery. The assignment of the participants to the various therapy groups was unknown to the one expert doing the evaluations. Records of symptoms, clinical indicators, functional scores, Beck anxiety inventory, and photos were taken during evaluations. Both groups of patients were instructed to report any unusual effects that may have been linked to the treatment regimen during each evaluation.

Clinical Scores:

The erosion size (mm^2) and pain level (numeric rating scale, NRS) [20] were measured on the first day and 4 weeks later. The maximal diameter (mm) and width (mm) were measured perpendicularly using a calibrated periodontal probe. The erosion area (mm^2) was estimated to multiply the maximum diameter and width. Patients were evaluated for lesion dimensions based on exposure location and rated using Piboonniyom et al. standards [22], A value of zero indicates no lesion, 1 suggests a lesion less than 1 cm^2, 2 indicates a lesion between 1 and 3 cm^2, and 3 indicates a lesion more than 3 cm^2. To measure lesions; the length and breadth were averaged in cm2 on both sides. The Visual Analogue Scale (VAS) pain ratings span from zero (indicating the absence of pain) to 10 (representing extremely intense pain) along a horizontal line [20]. Before taking a patient's pain level, they showed how to use the VAS and had them use a sterile swab to gently wipe the erosion. They were then asked to choose a number between zero and 10 to indicate their level of pain. Scoring was applied to the clinical data: The following scores are used in the keratotic lesion scoring system: zero for no lesions; 1 for hyperkeratotic lesions; 2 for atrophic area ≤1 cm^2; 3 for atrophic area >1 cm^2; 4 for erosive region ≤1 cm^2; and 5 for erosive area >1 cm^2 [20].

Functional Scores:

The Thai iteration of the OIDP was employed to assess the patients' Oral Health-Related Quality of Life (OHRQoL) [23]. A month following the initial appointment, participants were asked about the OLP that

had restricted their everyday activities. The 8 tasks included eating, talking, cleaning one's mouth, sleeping, smiling, laughing freely, maintaining emotional stability, performing strenuous physical labour, and interacting with others. The study kept track of how often and how severe any problems were when carrying out each task. Regular frequency scores were employed to account for the chronic character of OLP; a score of zero indicated never being afflicted, a score of 1 meant once a month, a score of 2 meant twice a month, scoring 3 indicated a frequency of once or twice weekly, 4 indicated 3 to 4 times weekly, and 5 signified daily or very daily occurrences. The severity method employed included a scale from zero (have never affected daily life) to 5 (very high effect), with 1 representing very low impact, 2 mild impact, 3 moderate, and 4 enormous impacts. Each activity's frequency and severity scores were added together to determine an individual's performance score, which ranged from zero to 25. The eight performance scores, which varied from zero to 200, were added up to get an OIDP percentage score that fell somewhere between zero and 100, by 2. There was a decline in OHRQoL as scores rose [15]. The disparities in each outcome were calculated during a month follow-up visit by subtracting the data acquired at the baseline from the data collected at the follow-up. Negative values and an improved effect by positive values indicated a worsening effect. The research demonstrated a discrepancy in the averages. In addition, throughout a month of therapy, patients with OLP were asked to evaluate the overall improvements in their quality of life. The criteria for measuring the Patient's Global Impression of Change (PGIC) evaluation were used [24]. On a 7-point scale, the PGIC was categorized as severely worsened, moderately worsened, minimally worsened, no change, minimally improved, moderately improved, and greatly improved.

Clinical Resolution:

On Day 30, the clinical resolution score was evaluated and categorized [25] as full resolution/absence of symptoms and remission of all atrophic/erosive lesions, irrespective of any lingering hyperkeratotic lesions. Atrophic/erosive areas and symptoms may be partially resolved or decreased, but not completely remitted. There is either no reaction or maintenance, or a decline in the initial condition.

Statistical Analysis:

The data was investigated using IBM SPSS 20.0. The underlying premise is that there is no discernible distinction between the 2 treatment techniques regarding pain and lesion clinical assessment scores. The qualitative data was represented using percentages as well as numbers. The median, standard deviation, mean, interquartile range (IQR), and range (minimum and maximum) were employed, however, to classify quantitative data. In addition, the data's significance was determined using the 5% level. The study compared the 2 groups using student t-tests and chi-square (×2) based on demographic information (gender, age). After checking the data with the Shapiro test, which discovered that it was not normally distributed. Therefore, the research was resorted to using non-parametric testing. The study compared the 2 groups with a Mann-Whitney test, VAS scores, salivary MDA levels, and clinical scores. The Friedman test examined the alterations in VAS, clinical score, and salivary MDA levels across all treatment groups. If significant differences were found. In addition, the Post Hoc test (specifically Dunn's test) employed for supplementary analysis.

Results

Twenty patients met the inclusion criteria and were chosen at random to participate in this clinical trial. The trial was successfully completed by all patients, with an average age of 53.5±13.5. The patients did not encounter any difficulties.

Effect of Treatment on Pain (VAS):

At the beginning of the study, neither group reported significantly different levels of pain; however, during the follow-up, this changed. Group A had a pain level of 8.9 on day zero of the intervention, while Group B had an 8.8 score. Category A patients reported 1.3 on the 30th day of intervention, but

category B patients reported 3.0 on the same day. At 30 days, it was found that the 2 groups were significantly different from one another; Group B reported more pain than Group A (p= 0.003). Laser therapy patients reported a higher reduction in pain score. The initial burning sensation score on day zero was 8.9 in Group A and 8.8 in Group B. In Group A, the burning sensation score was 1.1 during the follow-up phase on day 30 after the intervention, whereas in Group B, it was 3.4. The disparity in results was statistically significant (p = 0.002). Patients getting Laser therapy experienced a more significant decrease in burning sensation score. The initial lesion size at the start of the intervention (day 0) was 1.6 mm in Group A and Group B. The lesion size on day 30 of the intervention was 0.4 mm in Group A and 1 mm in Group B. The disparity in results was statistically significant. The p-value is 0.0084. In this study, patients who had Laser therapy experienced a more significant reduction in the size of the lesion. Group A exhibited a thorough clinical remission. All the above data were summarized in Table (1).

Table 1: Summarized the date of Pain Score, Burning Sensation, Lesion Size, and the Clinical Recovery between the Studied Groups.

Variable	Group A	Group B	t-test	P value
Assessment of Pain Score among the 2 Groups				
Day zero	8.9	8.8	1.12	0.3
Day 30	1.3	3	2.7	0.003
Comparison of Burning Sensation between the 2 Group				
Day zero	8.9	8.8	1.12	0.3
Day 30	1.5	3	4.2	0.002
Assessment of Lesion Size among the 2 Groups				
Day zero	1.6	1.6	0	0
Day 30	0.4	1	2.8	0.0084
Assessment of Clinical Recovery among the 2 Groups				
Day zero	0	0	0	0
Day 30	18	16	6	0.026

Effect of Different Treatments on Functional Scores:

The performance areas that were most affected were eating, cleaning the mouth cavity, and emotional stability. There was a decrease in the number of patients who experienced difficulties with social interaction, significant tasks, speaking, smiling, and laughing without embarrassment. There were no patients who reported experiencing any difficulties with relaxation because of OLP. In Group A: During the follow-up visit, the median performance scores of Eating showed a decrease from 14±10 to 1.5±93, Emotional stability 13.5±11.5 to 0.5±2.8, and cleaning the oral cavity 14±11 to 0 ± 1 were significantly decreased compared with those at baseline (P<0.05). Table (2). In Group B: During the follow-up visit, the median performance scores of Eating showed a decrease from 16±10 to 4±6, Emotional stability 13±11.5 to 2.5±2, and cleaning the oral cavity 13±1.5 to 2.5 ± 2 were significantly decreased compared with those at baseline (P<0.05). Table (2).

Discussion

The OLP is a long-lasting inflammatory condition that harms the lining of the mouth and palate [26]. The cytotoxic CD8+ T lymphocytes that characterize this autoimmune disease cause cell death in the oral mucosal basal layer. In the oral mucosa, lichen planus disorders usually last longer than in the skin. Lichen Planus has the potential to recur even after complete disappearance. Lichen Planus often results in the darkening of the oral mucosa as it heals [27]. The OLP, a common condition affecting the skin and mucous membranes, whose origin is unclear. It is possible for the oral mucosa and the epidermis to be

impacted simultaneously or separately. Of the oral mucosa, the buccal mucosa is the most prominent. The gingiva, tongue, and inner lining of the lips might also be affected [28].

Global statistics indicate that OLP is a regular occurrence for approximately 1.27% of people. 1.5% of the Indian population is affected by this condition, with the highest prevalence observed among females aged 30 to 60 years [29, 30]. The OLP can be triggered by several factors such as certain medications, oral traumas, infections, or allergic reactions to items like dental materials. Stress is a significant component that contributes to the reappearance or severity of the lesion.

Table 2: Performance Outcomes Comparison between Baseline and A Month Follow-up Visits (N= 10); Performance Score Median ± IQR (range).

Tasks	Group A (Laser group)				Group B (Topical Corticosteroid Group)			
	N	Baseline	Follow-up	Differences [a]	N	Baseline	Follow-up	Differences [a]
Eating	6	14 ± 10.0 (1–25)	1.5± 6 (0–20	11± 9.3 (-1–25)	6	16 ±10 (1–25)	4 ± 6 (0–20)	10.5± 9.3 (-1–25)
Speaking	1	8 ± 12.5 (0–20)	0 ± 2 (0–8)	± 12.5 (-8–16)	1	7 ± 12.5 (0–20)	1.5± 2 (0–8)	5.5 ± 12.5 (-8–16)
Cleaning	4	14 ± 11 (1–20)	0± 1 (0–16)	14 ± 9 (1–20)	4	13 ± 11 (1–20)	1.5± 1 (0–16)	12.5 ± 9 (1–20)
Relaxing	0	0	0	0	0	0	0	0
Smiling	1	14± 10.5 (1–20)	0± 2.0 (0–9)	13 ± 11 (1–20)	1	13 ± 10.5 (1–20)	2.5 ± 2 (0–9)	9.5 ± 11 (1–20)
Emotional Stability	7	13.5± 11.5 (2–25)	0.5 ± 4 (0–20)	11± 10.8 (-2–25)	7	13 ± 11.5 (2–25)	2.5 ± 4.0 (0–20)	7 ± 10.8 (-2– 25)
Working	1	6.5± 4.5 (2–16)	0.5 ± 2.5 (0–9)	5 ± 2.8 (0–8)	1	6 ± 4.5 (2–16)	1.5 ± 2.5 (0–9)	4.5± 2.8 (0–8)
Social contact	2	7.5 ± 6 (2–25)	1.5 ± 1 (0–6)	6 ± 7 (0–25)	2	5 ± 6.0 (2–25)	2.5 ± 1 (0–6)	2.5 ± 7 (0–25)

To effectively handle patients with OLP, the primary objective of this study was to assess the effectiveness of Laser biomodulation when used in conjunction with topical steroids. Current study aimed to evaluate the effectiveness of 4 sessions of laser PBM. By employing 4 laser treatments instead of a higher quantity, a more efficient and suitable therapy might be provided for a bigger population suffering from OLP. This study differs from the current scientific literature by using a flat top handpiece for controlling OLP. Relying on the existing research, it has been suggested that using a flat top handpiece for PBM would result in increased effectiveness, predictability, and reproducibility [31]. Using this handpiece in conjunction with the spot technique delivery method allows for accurate assessment of the energy delivered to the tissues and guarantees that the protocol is readily repeatable. The laser technique that we employed in this study produced a fluence of 10 J/cm2. The mucosal membranes can experience analgesic and anti-inflammatory effects at this fluence level, which is important for reducing OLP symptoms [32].

In this study, patients who received laser PBM and topical analgesics experienced a more substantial decrease in their pain scores. During the follow-up phase, the laser PBM achieved a more significant reduction in pain score than topical analgesics. Laxmi et al. [33], El Shenawy et al. [34], and Suman et al. [35] reported the results of this study. They discovered that patients who underwent experienced statistically significant enhancements in their pain and searing sensation scores, as well as a statistically significant decrease in the aggregate dimension of the lesion. Patients undergoing laser PBM experienced a more significant decrease in burning sensation score. The difference in results was statistically significant with a p-value of 0.002. The study found that patients who had Laser PBM experienced a greater lesion size reduction. The discrepancy within results was statistically significant (p= 0.0084). The quality of life of patients is adversely affected by OLP. However, the implementation of good therapy can enhance their

capacity to carry out routine tasks and activities. [36] The objective of OLP treatment is to restore patients' capacity to carry out fundamental everyday activities, like eating, drinking, and brushing teeth [37].

According to the current survey, the 3 most common behaviours were Emotional stability, followed by Eating and maintaining oral hygiene. Significant declines were also seen in the total OIDP% score. Furthermore, all performances, apart from relaxing which involves sleeping, showed an improvement of over 80% after a month, without any patients reporting difficulty prior to therapy. The results suggest that individuals with OLP saw a significant improvement in their quality of life across all critical areas following a month's treatment with topical corticosteroids. The findings of this study aligned with those of a prior investigation, which showed that patients with OLP experienced a notable detrimental effect on their overall oral health-related quality of life. This included functional limitations, physical handicap, pain, and psychological distress. All these unfavorable effects, nevertheless, were noted to get better with treatment [38]. After applying topical corticosteroids to treat their OLP, Hamblin et al. [13] discovered that their patients could eat spicy foods and felt more self-assured.

Based on current outcomes, PBM has the potential to alleviate pain for symptomatic OLP. The effectiveness of laser PBM in reducing clinical signs and symptoms in OLP has been demonstrated in multiple trials and systematic reviews [10- 15, 32, 38]. However, these protocols necessitated a high number of PBM sessions (8 to 12) spread out throughout the week. For example, in a study conducted by Dillenburg et al., 42 patients were administered a PBM regimen consisting of 12 sessions, 3 times weekly. The results showed that compared to topical clobetasol for OLP treatment, PBM improved symptoms, clinical signs, and the risk of post-treatment relapse [39]. In addition, a regimen with 10 PBM treatments, administered twice weekly, was determined to be just as effective in improving clinical signs and symptoms as dexamethasone rinses [11].

Notably, the patient is expected to visit the clinics numerous times for the laser therapy sessions, so there is a high level of patient compliance required for these operations. The findings confirm the evidence in the current research that shows no negative effects after laser PBM. This knowledge is especially important for the management of chronic disorders such as OLP [40]. Indeed, commonly employed medications containing corticosteroids can prolong exposure to this chemical might result in various adverse effects, such as mucosal atrophy, secondary candidiasis, adrenal insufficiency, gastrointestinal disorders, diabetes and hypertension [23]. Readers should be aware of the following restrictions of these studies: The small sample size suggests caution in interpreting the results, and the follow-up is only 30 days [17].

Conclusion

After a month of OLP therapy with topical corticosteroids and laser PBM, pain, total, and maximal Thongprasom scores decreased. The results suggest that PBM may relieve symptomatic OLP discomfort without adverse effects.

Conflict of interest

The authors have no conflicts of interest to declare.

Author contributions

OHS, NB, HRA&AMH; study conception and design. EMH, EMA&AMF; data collection. AMK and MAA; Methodology, statistical analysis and interpretation of results. EMA, AMF&RGM; Clinical manipulation and follow-up. OHS, AMH, MAA& AMK; Writing - review & editing. Supervision; OHS and AMH. All authors reviewed the results and approved the final version of the manuscript to be published.

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Informed consent

Informed consent was obtained from all participants.

List of Abbreviations

0LP; Oral Lichen Planus., PBM; Photobiomodulation., RNA; Ribonucleic acid., DNA; Deoxyribonucleic acid., VAS; Visual Analogue Scale., Laser; Light amplification by stimulated emission of radiation., NRS; Numeric Rating Scale., OIDP; Office of Infectious Disease and HIV/AIDS Policy., OHRQoL; patients' Oral Health-Related Quality of Life., PGIC; Patient's Global Impression of Change., IQR; interquartile range.

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فعالية العلاج بالليزر منخفض المستوى والعلاج بالستيرويدات الموضعية في علاج الحزاز المسطح الفموي

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الخلفية البحثية: الكورتيكوستيرويدات هي العلاج الأكثر شيوعًا للحزاز المسطح الفموي، وهي حالة طويلة الأمد مرتبطة بالمناعة، والتي تعتبر العلاج الأكثر فعالية. يعد التعديل الحيوي الضوئي علاجًا بديلًا قابلاً للتطبيق يمكنه علاج العديد من الاضطرابات المرضية بنجاح عن طريق تخفيف الألم وتقليل الالتهاب وتسهيل التئام الأنسجة. على عكس الأدوية الستيرويدية، لا يوجد للتعديل الحيوي الضوئي أي عيوب مرتبطة. تهدف هذه الدراسة إلى تقييم ومقارنة آثار التطبيق الموضعي لـ 0.1٪ أسيتونيد تريامسينولون والتعديل الحيوي الضوئي على الحزاز المسطح الفموي التآكلي. الطرق: أجريت تجربة سريرية عشوائية محكومة في هذا البحث، والتي شملت 20 مريضًا يعانون من الحزاز المسطح الفموي التآكلي. تم إعطاء المجموعة الضابطة (عشرة مرضى) محلول موضعي بنسبة 0.1٪ من أسيتونيد تريامسينولون 3 مرات يوميًا وهلام ميكونازول عن طريق الفم مرة واحدة يوميًا لمدة أربع أسابيع. خضع المرضى في المجموعة الثانية (عشرة مرضى) للعلاج بالليزر مرتين في الأسبوع لمدة ثماني جلسات على مدى أربع أسابيع، باستخدام ليزر ثنائي بطول موجي 980 نانومتر بقوة خرج 300 ميغاواط. تم تقييم الألم والنتائج السريرية للمرضى في البداية وبعد أربع أسابيع من الجراحة. النتائج: لم تختلف المجموعتان بشكل كبير عن بعضهما البعض، وكلاهما شهد تحسنًا كبيرًا في الألم والنتائج السريرية. الخلاصة: أظهر العلاج بالليزر منخفض المستوى إمكانات كنهج علاجي لعلاج الحزاز المسطح الفموي التآكلي، حيث يوفر بديلاً للعلاج بالستيرويد دون الآثار الضارة المرتبطة به.