

Low level laser Therapy in Management of Oral Lichen Planus (OLP)

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Abstract

Oral lichen planus (OLP) is a chronic state of inflammatory condition with immunological behavior of unknown etiology, Laser application on different lesions has been suggested as new treatment modalities without significant adverse effects. Eighteen females subjected from OLP with mean age (37.9) years; without signs and symptoms for any medical diseases, these patients treated with low level laser (Epic X 10 diode laser for soft tissues). The symptoms of oral lichen planus can be treated by 630-980 nm low level lasers to reducing both the pain and mouth soreness with no adverse effects. The action of laser in this field by; convert the pro-inflammatory state to anti-inflammatory condition and progression in collagen repair, cell proliferation and finally tissue regeneration.

Key words: *Laser Therapy, OLP*

Introduction

Lichen planus is a mucocutaneous, chronic with an autoimmune reaction disease which occurs in skin, oral mucosa, genital mucosa, and nails then scalp¹. Within oral cavity field; it is presented mostly on the buccal mucosa, tongue and finally gingival area. About 50% of the patients with oral lichen planus (OLP) have skin lesions. No possible etiology has been found; but different hypothesis that dealt with this disease like viral infection, stress and finally collagen disease². The OLP features associated with multiple drugs and agents like antihypertensive (e.g. ACE inhibitors) as captopril, non-steroidal anti-inflammatory drugs, and psychoactive drugs as tricyclic antidepressants³. The OLP clinically can be differentiated into multiple types: reticular associated with white keratosis striae surrounding by erythematous area, papular like plaque in shape, erythematous appears as redness superimposed with

desquamative gingivitis of mucous membrane pemphigoid in clinical diagnosis, then finally erosive kind⁴. The diagnosis of lichen planus through both the clinical features and histopathological examination, incidence of OLP mostly in women ranging from 25-45 years old; buccal mucosa area of oral cavity is the most clinical site of lichenoid phenomena⁵. Definitive etiology of lichen planus not well defined; but T-cell mediated immune reaction and can be considered under type-four allergic reaction. Treatment of this disease by corticosteroids and other drugs like non-steroidal anti-inflammatory drugs, long term use of steroidal agents lead to candida albicans appears as side effects⁶. Low level laser therapy or soft tissues laser; can be considered as treatment modalities for OLP, also (CO₂) type of laser; these types of laser are important and beneficial in relieving of symptoms and pain associated with clinical appearance of lichen planus. Diode laser with wavelength 810- 980 nm range is effective and absorbed by soft tissue rather than hard tissue like bone, with penetration depth about 2-3 mm; this depth can cover as well the sub-epithelial layer of tissue^{7,8}. The 980 nm diode lasers have showed acceptable in both coagulation and hemostasis features. Good healing of wound, lack bleeding and swelling, pain and formation of scar tissue after soft tissue surgical approaches are other benefits named for diode lasers (Moritz *et al.*, 1997).

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Materials and Method

18 females subjected from OLP with mean age (37.9) years; without signs and symptoms for any medical diseases, these patients treated with low level laser (Epic X 10 diode laser for soft tissues), Low level laser therapy LLLT or called diode laser with the following specifications: 1- Probes with 980 wavelengths. 2- Energy density with 10J / cm² in average. 3- One KHz diode laser frequency with 80% of a duty cycle of. The OLP patients already diagnosed by both clinical and histopathological findings as shown in figure (1), with lack of salivary flow due to long period of corticosteroids administration. The laser treatment begins from 3 session to 9 sessions for about 1-2 months assessment. The points of laser application by direct contact of head probe on OLP areas, these procedures shown in figure (2).

Results and Discussion

After end of laser treatment sessions, good improvement of pain and wound healing with good tissue contour; without discomfort and no bleeding. The mean age of patients with lichen planus was (37.9) years. The etiology of lichen planus till now not well defined; but different proposal explanation that deal with etiology as autoimmune, stress, smoking and finally viral etiological factors. Corticosteroid is considered as drug of choice in management and suppression of acute state of disease; but this drug associated with different side effects on human body ⁹. The LLLT is a modern evolution in physiotherapeutic approaches in medical, dental and biological fields regarding mucocutaneous diseases like oral lichen planus ¹⁰. Passeron *et al.*, 2004 found the pain and OLP lesion reduction due to LLLT application in 630 nm wavelengths by 12 sessions for about six weeks without side effects and discomfort to the patients and without relapse; these results agreed with the present study. Köllner *et al.*, 2003 showed that using low level laser therapy in treatment of oral lichen planus by 9 sessions for 3 months with one month later assessment after end of treatment these findings agreed with the current study. An about 630 nm and above wavelengths are considered multiple millimeters tissue penetration or mucosal surface interance then leads to better results of pain and lesions reduction without remission later. In conclusion, the symptoms of oral lichen planus can be treated by 630-980 nm low level lasers to reducing both the pain and mouth soreness with no adverse

effects. The action of laser in this field by; convert the pro-inflammatory state to anti-inflammatory condition and progression in collage repair, cell proliferation and finally tissue regeneration.



Figure (1): 40 years old female patients with reticular surrounding by erythematous lichen planus for two years ago.



Figure 2 A



Figure 3 B



Figure (3): A, B, C: Laser application on OLP lesions

Conclusion

Laser therapy is update evolution in medical treatment in different diseases like OLP with no pain and side effects and better non-invasive, no surgical procedure.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Oral Surgery and Oral Diagnosis /College of Dentistry/ Babylon University, Iraq and all experiments were carried out in accordance with approved guidelines.

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