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Diode Laser Treatment for Apthous Ulcers : A Case Report

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ABSTRACT

Recurrent aphthous ulcerations (RAU) are common oral lesions that affect approximately 10% to 20% of the population. The disease is characterized by recurrent and painful ulcerations of the oral non-keratinized mucosa. Several therapies have been advocated to manage these lesions such as triamcinolone acetonide, hydrocortisone acetate, clobetasol propionate, chlorhexidine gluconate etc. Laser Treatment is a new treatment used to reduce the frequency of occurrence of mouth ulcers, pain and also to reduce the severity of the condition. The great advantage of this treatment is that majority of the patients undergoing this treatment did not suffer the recurrent episodes of the chronic mouth ulcers for at least a year. The present case report explains about usage of diode laser ain the management ofapthous ulcer.

KEYWORDS Chronic mouth ulcer:: Diode laser:Recurrent apthous ulcer

Text:

Recurrent aphthous ulcerations (RAU) are common oral lesions that affect approximately 10% to 20% of the population. The disease is characterized by recurrent and painful ulcerations of the oral non-keratinized mucosa, which measure from 3 to 10 mm in diameter and heal without scarring in 7 to 14 day[1] Many times, mouth ulcers develop due to poor oral hygiene and oral thrush infection. Medical professionals have found that disorders in the immunological system, bad diet, lack of vitamins and certain nutrients, hormonal changes, genetics and mental stress are the causes of recurring mouth ulcers[2].

Several therapies have been advocated to manage these lesions such as triamcinolone acetonide, hydrocortisone acetate, clobetasol propionate, chlorhexidine gluconate, tetracycline oral rinses, thalidomide, fluocinonide, colchicines and the immune boosting agent levamosile, vitamin therapy and topical interferon α-2a[3].

Laser Treatment is a new treatment used to reduce the frequency of occurrence of mouth ulcers and also to reduce the severity of the condition. The patient will have immediate relief from the pain and discomfort and will get complete healing of lesions and sores in the oral cavity when treated with lasers. The great advantage of this treatment is that majority of the patients undergoing this treatment did not suffer the recurrent episodes of the chronic mouth ulcers for at least a year. Even when they got back ulcers, the severity of the pain and other symptoms were much diminished[4].

CASE REPORT

A 45 years old systemically healthy patient visited department of Periodontics Manipal College of dental sciences, Mangalore with the chief complaint of ulcers in his mouth. The patient gave the history of recurrence, three times in 1 month. Clinical examination revealed an ulcer on labial mucosa, whitish in colour, surrounded by erythematous halo, ovoid in shape, regular margins, and were tender on palpation



Fig 1- apthous ulcer on left lower lip mucosa

The patient suffered from burning sensation (visual analogue scale, 80%) and had difficulty in speaking and eating. The patient was advised a complete haemogram to rule out any systemic disease.The haemogram results, plasma glucose random were within normal limits.

TREATMENT

When considering using the diode laser for the treatment of oral lesions, the clinician must consider several factors. Diode lasers, when used for the treatment of oral lesions are used in NON-CONTACT mode. Before starting the therapy both the patient and the operator were made to wear protective eye glasses to protect their eyes from any inadvertent effect of laser therapy.In general when treating oral lesions it is best to treat these lesions in the early stages such as the first 48 hours.

After informed consent from the patient it was decided to use AMDPicsso 810 nm diode laser(Indianapolis USA)



Fig 2: diode laser AMD Picsso 810 nm

The laser was started in a defocussed mode 5-8 mm from the lesion and advanced slowly toward the area ending up 2-3 mm away from the lesion, moving continuously from the periphery of the lesion to the center, "painting" the entire area, and moving away from the lesion if the patient felt warmth The setting was initially put at 0.6 W CW for 30-45 seconds.



Fig 3: intra operative procedure using laser in non- contact mode

A refractory period of 15-20 seconds between laser "passes" was given to allow the tissue to cool down. The area was rubbed with a wet gloved finger to determine if a decrease in pain was felt by the patient. A second and third pass with the laser was further applied to decrease the pain of the area on palpation. A second pass was done with the setting of 0.7 W CW for 30-45 seconds, and a third and final pass was completed with 0.8 W CW for a similar period of time. After each pass, the area was checked with palpation, but a maximum time of 2 min of total laser energy was employed. Only a single sitting treatment was given.

Patient was given log diaries and instructed to record the details of ulcers (the number of ulcers, intensity of pain, the period of healing, and the frequency of recurrence).Pain was assessed using Visual Analogue Scale (VAS). The recordings were made just before the treatment, immediately after treatment and on the 4th and 7th day following treatment. The patients reported that ulcers started healing earlier than in previous attacks; there was also early reduction in pain. Healing was uneventful and all the patients experienced spontaneous reduction in pain as recorded on VAS immediately after treatment. The lesions healed completely within 3-4 days.



Fig 4: post operativehealing after 3 days

A follow-up for 1 year showed no recurrence in these patients.

DISCUSSION

RAS is one of the most painful oral mucosal inflammatory ulcerative conditions causing pain on eating, swallowing, and speaking. Various treatment modalities like steroids, mouthwashes, etc., have numerous side effects, require patient compliance, and are relatively expensive. On the contrary, Laser treatment not only provided instant pain relief but was also cost-effective and provided time benefit as single sitting was sufficient.

Anand et al (2013)[16] and Misra N etal (2013)[17] in two seperate case reports concluded that diode laser therapy can decrease the healing time, pain intensity, size, and recurrence of the lesion in patients with minor RAS, and hence can be considered the most appropriate treatment modality for minor RAS, with greatest clinical effectiveness.

Dhillon JK et al (2013)[18] reported two cases of painful apthous ulcers in a 13 year old child treated with soft tissue diode laser. Immediately after laser therapy the pain reduced significantly and healing occurred in 72 hrs.

De Souza TO et al (2010)[13] reported that diode laser can cause reduction in pain and a total regression of the lesion after 4 days. Khademi H et al (2009)[14] in a double blind clinical trial treated 12 patients with minor Recurrent Aphtous Stomatitis (RAS) using diode laser and found that low level laser can decrease the healing time, pain intensity in patients with aphtae

The mechanism by which diode laser therapy can reduce pain is not fully understood. Some of the explanations for the analgesic effect of laser therapy are as follows: there is blockage of action potential generation and conduction of nociceptive signals in primary afferent neuron, increase in amount of natural analgesics such as opioid peptides, decrease in the release of chemical substances such as histamine and blockage of acetyl choline, reduction in synthesis of bradykinin and prostaglandin E2, improvement in local microcirculation and supply of oxygen to hypoxic cells and mediation of synaptic gate transfer substance[19]

Diode lasers have an edge over their high-powered "hard" surgical laser counterparts, as they do not cause thermal injury to hard tissues, are compact, low-cost devices, and have very high electrical and optical efficiencies[20].

CONCLUSION

Diode laser therapy can be employed as a treatment modality for the management of minor recurrent apthous ulcers. In the current case report it not only provided instant pain relief with a rapid decrease in the size of the lesion but also no recurrence was seen even after 1 year of follow-up. Since no medications were required, their side effects and risk of overdosage could also be prevented. Hence, it can be concluded that laser therapy is a safe and clinically effective therapy for treating RAS, which also provides time and cost benefit to the patients

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