



PHOTOBIMODULATION OF A CASE OF RECURRENT APTHOUS MAJOR IN AN ELDERLY INDIVIDUAL – A CASE REPORT

Dental Science

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ABSTRACT

Oral ulcers represent a variable, impressive group of oral lesions. Recurrent Aphthous Stomatitis (RAS) is one of the most common oral lesion characterized by single or multiple, round to ovoid painful, recurring ulceration of the oral mucosa. Various etiologies and treatment modalities have been suggested with time by various researchers which leads to the perplexity of thoughts between etiologic, precipitating factors and its prognostic outcome. In our case report, we have treated a patient, who was diagnosed as Recurrent Aphthous Major and was admitted in the hospital for monitoring and better management. Patient was under various systemic medications to provide him relief from secondary infections. But to relief him from excruciating symptoms, photo-biomodulation (LLT) with Diode Laser (Dc Laser, 940 Nm) was given following the proper protocol. Patient was discharged from hospital on seventh day and was kept under follow up for 4 months to ensure any recurrence thereafter.

KEYWORDS

Stomatitis, Aphthous Ulcer, Laser Therapy, Photobiomodulation.

INTRODUCTION

Oral ulcers represent a variable and impressive group of oral lesions. Recurrent Aphthous Stomatitis (RAS) is one of the most common oral lesion characterized by single or multiple, round to ovoid painful, recurring ulceration of the oral mucosa. 80% of cases occur before the age of 30. The incidence of this disease ranges from 5-50% of the population depending upon socioeconomic status and ethnic group studied. Numerous possible etiologic factors have been suggested time to time by various researchers.¹ In the present past, various studies, have shown the perplexity between etiologic factors and precipitating factors. On the contrary, a series of intense studies of the past few years, it has been established conclusively that there is no etiologic relationship between Recurrent Aphthous Stomatitis and Herpes Simplex Infection (HSV), though they might bear some similarity in their clinical appearance.

RAS has been classified into three chief types depending upon their clinical manifestations²:-

- Recurrent Aphthous Minor which is in the most common form of the disease (85% of all RAS) and also known as Canker Sore.³
- Recurrent Aphthous Major, which is now thought to be a more severe form of Aphthous minor (approx 10-15 % of all RAS) characterized by of large painful ulcerations solitary/multiple in numbers, presented on labial, buccal, palatal (soft) mucosa, faucial pillars, unlike the typical ulcers of aphthous minor, these lesions may persist for up to 6 Wks and leave a scar upon healing in an immune-compromised individual (like patient suffering from AIDS, treated with chemotherapy, immune suppressive drugs/ long term steroids etc)³
- The recurrent herpetiform ulcers are characterized by corps of multiple small, shallow ulcers ulcers up to 100 in numbers which may involve/ appear any site of the oral cavity (5-10 % of all RAS)³ (Cooke pointed out the clinical similarity of the disease to the herpes simplex lesion though they are different in histopathological appearances.)

There is no specific treatment of recurrent aphthous stomatitis, although over the years many drugs or combination of drugs have been tried. Though there has been extensive clinical trials with many drugs like tetracycline, steroids in the local and systemic form, antihistaminics with montelukast sodium, levamisoles, prebiotics and probiotics which may reduce the duration, recurrence but pain relief is still a challenge for all the stomatologist who encounters the patients in their

clinical practices. However with the use of LLLT (Low Level Laser Therapy) and Ozone therapy there has been remarkable improvement in patient compliance not only in form of reduction/complete absence of pain and burning sensation but also in recurrence of the lesion.^{2,3}

Here, a case of severe recurrent aphthous major in buccal mucosa in an elderly individual, is presented where the case was diagnosed and treated successfully by Low Level Laser Therapy along-with systemic medications, which shows very fast healing without any scarring.

CASE REPORT

A 62 yrs old male patient reported to our hospital OPD duly referred by an Ophthalmologist and Medical specialist of the hospital with the complain of excruciating painful multiple large ulcers of the oral cavity from past four days. Patient also gave a history of recent admission to hospital for herpes zoster ophthalmicus of right eye, 15 days before that and he was treated by Tablet Acyclovir 4000 mg in divided doses. Patient did not give any history of fever, arthralgia, myalgia, malaise or blister/ vesicle in the oral and peri-oral region before actual onset of the lesions. A thorough extra-oral examination was carried out for the presence of any ulcers or vesicles in skin, scalp, eyes/ genitalia and other areas of the body. Peripheral (bilateral sub-mandibular) lymph-nodes were palpable and tender. Patient's vital signs were recorded and anemia, jaundice, cyanosis, clubbing were ruled out.

Intraoral examination revealed large ulcers (more than 10 mm in diameter) involving the right and left buccal mucosa surrounded by erythematous halo. There was desquamation of the epithelial layer with exposure of underlying connective tissue, on the left side (Figure 2) whereas the right side showed relatively shallow ulcers and was covered by inflammatory exudates (Figure1). Keratinized mucosa like gingiva, hard palate were not affected, suggesting a non-herpetic lesion. Patient gave the history of similar type of lesion in the right buccal mucosa (near buccal commissural area) 11 yrs back and which subsequently healed by scar formation (Figure 3). Oral hygiene was found to be moderater with presence of calculus in lingual aspect of lower anterior and molars with generalized mild bone loss, suggestive of periodontitis. The patient was non smoker and non alcoholic but was an habitual tobacco user in form of quid.

Following laboratory examinations were advised to rule out any systematic abnormality:-

- Complete blood picture with Hb%, TLC, DLC, ESR, Platelet Count, BT, CT, PT, INR, APTT, & hematocrit values.
- Blood for fasting and postprandial sugar level along-with glycosylated hemoglobin.
- Serum urea, creatinine, bilirubin, SGPT, SGOT, Alkaline phosphatase, vitamin B 12, vitamin D3.
- Anti Hbs Ag, Anti Hep A, Anti Hep C, ELISA for HIV
- Straight X Ray chest PA View
- Incisional biopsy was also performed from the left buccal mucosa which showed non-specific inflammatory reaction of sub epithelial connective tissue with ulceration/ denudation of epithelial layer.

Patient was diagnosed as Recurrent Aphthous Major with the help of history, absence of any clinical findings of herpes and also absence of any significant laboratory findings including the incisional biopsy. Patient was admitted in the hospital for monitoring and better management³. Patient was prescribed with Inj Hydrocortisone 100 mg twice a day for three days, Tablet Paracetamol 650mg, four times a day for five days, Tablet Levocetizine and montelukast combination one tab at evening for seven days, Tab Vitamin C 500 mg twice a day for ten days. Patient was infused IV fluids (NS, DNS) for next 24 hrs to improve severe dehydration as result of complete or near absence of oral intake. Patient was also prescribed with parenteral antibiotics (Inj Amoxicillin and potasium clavalunate 1.2 gm 8 hrly, Inj Metronidazole 500 mg 8 hourly and Inj Amikacin 500 mg 12 hourly) for secondary infections. But to relief the excruciating multiple, painful, large oral ulcers, the photo-biomodulation (LLLT) with DIODE LASER (DC LASER, 940 nm) was planned. The LLLT was started by using with the LASER Handpiece without any tip, in defocusing mode⁷ from a distance of 8mm from the lesion surface initially and gradually advancing towards the affected part from periphery to centre in a circular fashion, for 30 seconds at a time (Figure 4 and Figure 5). The cycle was repeated for 20-30 sec after allowing a cooling phase⁵ of 30-40 sec so as to allow the ablaze tissues to cool down and every time the pain was measured by running a cold & moist ball varnisher tip, as per VAS scale (visual analogue scale).⁵ The findings were recorded for every separate lesion of different sites before ablation, immediately after treatment and after every 24-48 hrs (Figure 6 and Figure 7) for a period of 10 days. The patient reported marked reduction of pain and burning sensation immediately after the completion of the three cycles of LLLT with 0.8 cw (CP)⁴ mode. Patient was discharged from hospital on seventh post laser day and followed up continued for complete epithelialisation for up to 10 days (Figure 8 and Figure 9) initially and thereafter weekly for one month. Patient was followed by for 04(four) months to see any recurrence of the ulcers thereafter.

DISCUSSION

Though no specific treatment of recurrent aphthous major has still been established, but to reduce the pain and durations, different modality^{2,3} or combination therapies such as, topical/parenteral corticosteroids, swiss and swallow method, Thalidomide/Colchicine, correction of malnutrition or deficiencies of vitamins like B 12 and Folic acids, immune-modulations with cyclosporine, etc. are being greatly practiced by the various specialist. With the availability of LLLT, the pain relief and wound healing⁴ in a case of aphthous ulceration, has become one of the most effective treatment modality.

Photo-biomodulation or effect of laser ablation in target tissue are basically by, thermal, biochemical, bioelectric and bio-energetic effects, which is enumerated below :-

- Thermal effect** :-Target tissue shows increase in capillary dilatation resulting increase micro-vascularity and also increase in neural conduction.
- Biochemical effect** :-There is energy absorption by mitochondria of target cells which results in increase generation /release of ATP, Nitrous oxide (NO) and Reactive oxygen species (ROS) thus helps in increase fibroblast migration, macrophage activity, keratinocyte activity, RNA/DNA Synthesis and oxygen production.
- Bio-Electric effect** Occurs by increase in electromotive action, acting on nerve membrane-bound ion channels, increase in intra and extra cellular ionic gradient changes.
- Bioenergetic activity** as postulated in various studies by

accupuncncture median point stimulator.

Researchers has shown increase fibroblast proliferation by increase in production of basic fibroblast growth factor^{4,6}, which actually helps in proliferation and differentiation of fibroblast, which in term aid in healing. LLLT also helps in contraction of wound by transforming fibroblast into myofibroblast.

CONCLUSION

Recurrent aphthous major remains an uncommon oral mucosal ulcers in most populations of the world among the various communities; its precise etiology remains unclear. The goal of the treatment/ combination of the treatments, is to decrease symptoms; reduce ulcer number and size; increase scar free healing. One should determine the treatment modality/approach ascertaining the disease severity (pain, numbers of ulcer, frequency of recurrence etc), patient's ability to tolerate the medications. Stomatologists have to consider drug therapy even after LLLT as an adjuvant to photo-biomodulation and should emphasis on the possible nutritional deficiencies or allergies causing the onset of the disease. Kozalk et ai.³ have advocated consumption of sufficient amounts of vitamin B12 and folic acids in dietary form or its chemical supplement, which may be a very useful strategy to reduce the numbers of ulcers and /or duration episodes. As the lesions arise out of immunologically mediated cytotoxicity³ of epithelial cells, there is no safe therapy to ensure no recurrence of disease. There have been few studies conclusively prove that any agent, apart from anti-inflammatory agents, can reduce the frequency or severity of RAS more than placebo.

With the recent advancement in medical science and with the availability of advanced technologies like, LLLT has indeed proven to be a key modality to provide immediate analgesia and aid in rapid healing compared to any other treatment modalities. In our case report , it has been seen, how effectively a photo-biomodulation can be used at sub-ablative laser⁴ treatment for recurrent aphthous major ulcers.



Fig no 1: Major aphthous ulcer of Rt. Labial mucosa showing a large deep crater like defect with peripheral red 'halo'.



Fig no 2: Major aphthous ulcer of left buccal mucosa showing desquamation of full thickness epithelium with exposure of underlying connective tissue.



Fig no 3: aphthous ulcer on Right Buccal mucosa adjacent to an old scar in the area.



Fig no 4 & 5: LASER therapy (defocusing mode) being done in aphthous ulcer



Figure 6 & Fig 7 showing lesions started healing(after 48 hrs).



Figure 8 & Figure 9 showing complete healing of ulcers (after 10 DAYS Laser therapy).

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