

Diod Laser Treatment in Aphthous Ulcer For Handicapped patients in Kuwait

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Abstract: **Aim:** To investigate effect of *Diod Laser on the control of pain and the repair of recurring aphthous stomatitis (RAS) among handicapped patients.* **Materials and Methods:** Patients in Medical Rehabilitation Center with minor and herpetiform aphthae were involved in this study .They were divided into three groups; the 1st group (42 patients) were treated by applying topical steroids past only (Kenalog) in oral base (triamcinolone acetonide) ,the 2nd group (63 patients) was treated by applying diod laser near to contact surface and repeated the following day. The 3th group (42 patients) was treated by using combined laser& steroid past treatment. **Results:** Showed that ulcers treated by steroid past was reduced in size after three days and healed completely within 5 to 7 days, whereas all patients in 2nd group showed pain relief in the same day, but the healing process varied according to the severity of the ulcer. Also pain relieved for all patients of the 3rd group immediately after first session of laser and the ulcer reduced in size within two to three days while kenalog past (triamcinolone acetonide) was applied to the ulcer. **Conclusion:** This study reports the successful use of diod laser in response to oral aphthosis ulcer as it can succeed in immediate pain relief and rapid recovery more than using corticosteroid therapy only.

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Key words: Oral aphthous Ulcer, Diod Laser,

1.Introduction:

Aphthous ulcers or recurrent aphthous stomatitis (RAS), are inflammatory lesions of the mucous lining of the mouth which may involve the cheeks, gums, tongue, lips and roof or floor of the mouth. It is usually painful and associated with redness, swelling, and occasional bleeding from the affected area ,Alik et al., (2003). They added that manifestation of the disease can range from mild to severe. Mild form is the most common and account for 80 - 95 % of all RAS lesions, lasting 7 to 14 days and then heal without scars, Jablonski (1992). lesions may be single or multiple and round or oval , Tillis and Dwell (2002); Scully and Felix(2005). It affects and estimated 15 – 20 % of the population worldwide, Scully and Felix(2005). It can also occur as widespread lesions in association with systemic diseases including Bechcet's syndrome, and gastrointestinal malabsorption disorders like Crohn's and Celiac disease, Rehberger et al., (1998); Alik et al., (2003); Scully and Felix (2005); Aphtous major accounts for 10 – 15% of RAS cases and is characterized by larger lesions with 1 – 2 lesions occurring at a time. These are more common in the immune deficient population, and are associated with severe pain, lasting for 6 or more weeks, Alik et al.,(2003). In extreme cases, thereby making the person susceptible to malnutrition.

Cause of RAS is unknown, suggestions that several factors are suspected including genetics,

stress, nutritional deficiencies, diet, hormonal changes and immunological disorders, Scully and Porter(1989); Alik et al.,(2003); Scully and Felix(2005).

Due to the undetermined etiology of the disease, it is difficult to find a definitive cure and current treatments aimed towards ameliorating the symptoms, Tillis and Dwell (2002); Scully C and Felix (2005).

Treatment for RAS is symptomatic, the goals being to decrease pain, healing time, number and size of the ulcer, and to increase disease free periods. Current treatment options include topical agents, systemic and topical steroids, corticosteroids, cauterization, and antibiotics, mouth rinses containing active enzymes, laser treatments and a combination therapy.

Therapeutic laser have been used for more than 30 years. The primary clinical effect of laser interaction on tissue result from absorption, once laser light absorbed by tissue and converted to energy which reduced pain and size of the lesion, as well as, faster epithalisation in therapy of ulcer.

Cellular photoreceptors (e.g. cytochromophors and antenna – pigments) can absorb laser light and pass it into mitochondria which promptly the cells fuel, ATP and accumulation of collagen fibrils and electron dense intra cytoplasmic vesicles within the laser stimulated fibroblast as compared with untreated area, also the measurement from incorporation of 3H

thymidine showed accelerated cell reproduction and increased microcirculation can observed with the increased redness around the wound area. During the initial treatment stage, the patient can feel the transient pain prickling sensation which is thought to be evidence of accelerated wound healing, Frentzenal (2002). The mechanism of action underlying the analgesic effects remain unclear, despite the implicit treatment benefits. There is evidence suggests that laser have significant neuro-pharmacological effect on the synthesis, release and metabolism of a neurochemicals including Serotonin and acetylcholine at central level, histamine and prostaglandin at the peripheral level. The pain influence has experienced by laser effect on enhanced synthesis of endorphin, decrease c-fibers activity, bradykinin and altered pain threshold, Christensen (2005)

Therefore our aim was To investigate effect of Diod Laser use in Treatment of Aphthous Ulcer among handicapped patients in different ages.

2. Materials and Methods:

2.1. Materials:

2.1.1. Samples:

Patients in Medical Rehabilitation Center with minor and herpetiform aphthae were involved in this study.

Their age range were from 10 to 70 years old.

Fig.1 showed the distribution of patients according to their age.

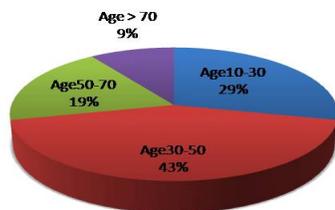


Fig.1: classification of patients according to age

2.1.2. Dugs:

Topical steroids past (Kenalog) in oral base (triamcinolone acetonide) used for treatment of ulcer.

2.2. Methods:

2.2.1. Scheme of the work:

Patients were divided into three groups:

***Group (1)**; 42 patients (30 male and 12 female) with different ages. They were treated by applying topical steroids past only (Kenalog) in oral base

(triamcinolone acetonide). The steroid past applied three times per day for five days directly on the ulcer site.

***Group (2)** 63 patients (18 female and 45 male). They were treated by applying diod laser near to contact surface and repeated the following day. The diod laser applied near to the AA using power 1.0 w, timer 60 second, mode continuous wave fiber 300.

***Group (3)** 42 patients. They were treated by using combined laser & steroid past treatment, first we applied laser near to the AA site in the first visit then we applied topical steroid past the following three days three times per day.

Fig (2) showed the application technique of laser Diod.



Fig 2: Application of diod laser on patients picture

3. Results:

The following figure (3) showed the Aphthous ulcers before and after treatment



before treatment after treatment

Fig 3 Aphthus ulcer before and after treatment

In the first group we found the ulcer treated by steroid past is reduced in size after three days and healed completely within 5 to 7 days. According to the size of the ulcer, fig (4).

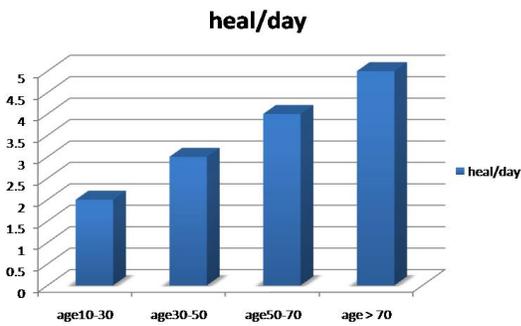


Fig4 : chart for group 1 showing rate of healing of related to their age

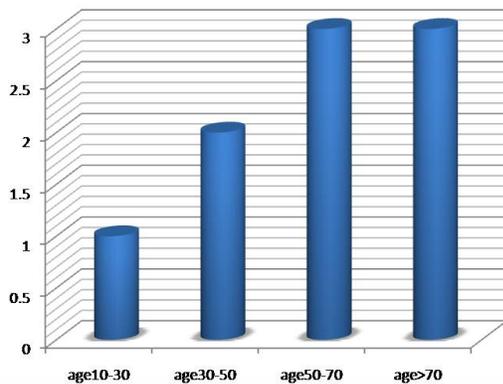


Fig5 : chart for group 2 showing rate of healing of related to their age

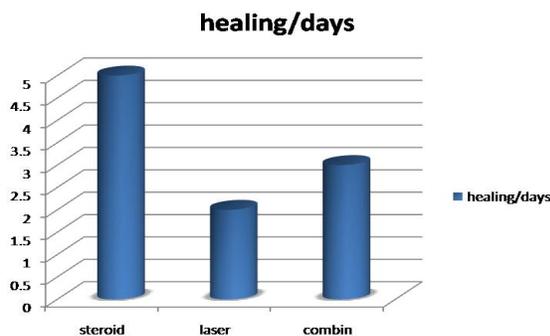


Fig6 : chart for group3 showing rate of healing of related to their age

In the 2nd group we found that AA healed within 2 days for patients 10 – 30, 30 – 50 years old, patients from 50 – 70 and above 70 years old start to heal after the third day of the last session of diod laser. The pain relieved the same day for 63 patients, but the healing process of the AA varied according to the severity of the ulcer, fig(5)

The cases presented illustrate the advantage of this treatment technique, pain relief is rapid. In our experience the recurrence rate of AA at the same site after laser treatment is negligible.

In the 3rd group the pain relieved for all patients immediately after first session of laser and the ulcer reduced in size within two days for patient aged 10 – 50 years old and patient aged from 50 – above 70 starts to heal after three days while kenalog past (triamcinolone acetonide) is applied to the ulcer, Fig (6).

4-Discussion:

This multifactor immunologic inflammatory lesion causes patient discomfort, and treatment is controversial because of its unknown etiology. De Souza et al.,(2010).Although several literatures suggested using other way of aphthous ulcer treatment, this will remain controversial, Rosen et al.,(2001).

It is suggested that diod laser treatment in oral aphthosis enhances soft tissue healing , Ben Sadous et al.,(1999) and is accompanied by growth factor release, Ciassis et al.,(1992); Matu moto et al.,(2002).

Laser irradiation inhibit prostaglandin E2, Interleukin 1B which are involved in induing inflammation and pain , Mizutani et al.,(2004).

In our study, laser irradiation provided immediate pain relief immediately almost in all cases , reduce healing period to two tothree days .In accordance to our results , De Souza et al.,(2010) results revealed that 75% of the patients reported a reduction in pain in the same session after laser treatment, and total regression of the lesion occurred after 4 days. Total regression in the corticoid group was from 5 to 7 days.

Scientists suggested different mechanisms to accelerate wound healing such as: cellular biostimulation, improvement of circulation, vasodilation, analgesic and anti-inflammatory effects, Hamblin and Demidova(2006). Khademi et al.,(2009) reported that laser can reduce pain and reduce recurrence at the same site again because laser has biostimulating effect can be used clinically for pain reduction, wound healing and increases cellular metabolism by increasing ATP production (adenosine triphosphate).

Persons with disabilities present with a range of conditions and levels of impairment. They need special dental care because they may require extra support to access dental services, partake in treatment, and derive full benefits from oral care, Hayes and Sonis (1992); Doris and Stiefel (2002).

Persons who have disabilities are at greater risk for oral diseases and, in turn, oral diseases. Recent studies suggest associations between oral infections, particularly periodontal disease, although causality remains to be determined, Wu et al., (2000); Department of Health and Human Services (2000).

Conclusion:

The cases presented illustrate the advantages of this treatment technique. Pain relief is rapid and long term, in our experience; the recurrence rate of aphthous ulcer at the same site after laser treatment is negligible.

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