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Effectiveness Of Low Level Diode Laser (1064) And Acyclovir in Treatment Of Recurrent Herpes Labialis. (Comparative Clinical Study)

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الخلاصة

الأهداف.تهدف الدراسة الى تقييم الفعالية السريرية لليزر (دايود ١٠٦٤ nm) مقارنة بالتأثير السريري للاسايكلوفير (كريم ٥%) للمرضى المصابين بالحلأ المتكرر الشفوى . المواد وطرائق العمل. شملت هذه الدراسة ثلاثون مريضا مصابين بالجروح النشطة . خمسة عشرمريضا عولجوا بالليزر بينما الخمسة عشر الاخرون عولجوا بكريم الاسايكلوفير ٥%.النتائج. وجد فارق معنوي في تقلص حجم الحلأ المتكرر الشفوي في مجموعة الليزر مقارنة بمجموعة الاسايكلوفير كما وجد فارق معنوي في نقصان مقياس الالم في مجموعة الليزر مقارنة بمجموعة الاسايكلوفير . الاستنتاجات. نستنتج من هذه الدراسة ان علاج الحلأ الشفوي المتكرر بالليزر اكثر فاعلية حيث اختفى التقرح والألم بعد ثلاثة ايام في حين اختفت هذه الأعراض بعد سبعة أيام عند المرضى الذين عولجوا بالاسايكلوفير

ABSTRACT

Aims: To evaluate the clinical effectiveness of low level diode laser (1064) compared with the effect of Acyclovir (ACV) cream 5% in patients with recurrent herpes labialis (RHL). **Materials and Methods:** Thirty patients with active lesions (intact vesicle and rupture lesions) were included in this clinical trial. Fifteen patients were treated with low level diode laser (1064) while the other fifteen patients were treated with Acyclovir cream 5%. **Results**: Complete disappearance of prodromal symptoms (itching, tingling or burning) and erythema were noticed in low level diode laser (1064) group after three days of treatment compared with ACV group. **Conclusions**: low level laser (1064) appeared to be more effective in healing time and pain relief than ACV cream 5%. Key words: Dental crowding; ClassII malocclusion; Dentoskeletal morphology.

Keywords: Recurrent herpes labialis, low level diode laser (1064) , Acyclovir cream 5%.

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INTRODUCTION

Approximately 30% of patients who have primary herpetic gingivostomatitis will subsequently suffer from lesions due to reactivation of latent virus in the tissues .[1] The primary infection ,which occurs on initial contact with the viruses, is acquired by inoculation of the mucosa, skin and eye with infected secretions. The virus then travels along the sensory nerve axons and establishes chronic, latent infection in sensory ganglion.[2] Recurrent herpes labials

results when HVS-1 reactivates at latent sites and travels centripetally to the mucosa or the skin , where it is directly cytopathic to epithelial cell .[3]Clinical changes follow a consistent course with prodromal parasthesia or burning sensation ,then erythema at the site of the attack. Vesicles form after an hour or two , usually spread in clusters along the mucocutaneous junction of the lips .[4] Fever, Ultraviolet radiation , trauma , stress, and menstruation are important triggers for reactivation of HVS.[5] RHL can often be suppressed by reducing trigger factor, such as by using sunscreen [6] The use of topical antiviral medications reduces shedding , infectivity, pain , size and duration of lesions.[5]

ACV is a synthetic purine nucleo-side analogue. It is active against herpes viruses especially HSV1. Many studies demonstrated that topical agents such as 5% ACV cream and 3% penciclovir cream are efficacious if applied 3-6 times daily. [7]

Laser are devices used to amplify light energy to an intense beam of energy of a very pure single color by stimulated emission of radiation. [8] Various types of tissue responses result from exposure to laser energy , when radiant energy is absorbed by tissue. [9] Two basic types of interaction or responses can occurs

1. Photo thermal interaction
2. Photochemical interaction
    a) Photodynamic therapy
    b) Biostimulation [10]

Biostimulation :It refers to the use of low intensity laser radiation on tissues to achieve a clinical effect . Biostimulation was used clinically for pain reduction & wound healing . The energy density is too low to produce a significant rise in temperature of the treated tissue. Biostimulation is also effective in increasing metabolism & cell replication in fibroblast and endothelial cells. [11] Low level laser therapy is the most efficient method of treating patient with a herpes virus type 1 if treated during the initial prodromal stage. [12]

MATERIALS AND METHODS

1-Diod 1064nm(AR Laser Germany) 2 watt 50 J,01/2007 Germany Figure (1)

Figure (1): Diode Laser (1064)

-Acyclovir cream 5% (Civar 5% Pharma International Co. Amman Jordan) Patients groups: Total of (30) patients with recurrent herpes labialis of recent onset less than (72) hours were included in this study and have been divided into two groups as shown in Table (1)

Table (1): sample distribution.

Groups	Sex		Age range
1st group	7 males	8 females	20-40 years
2ed group	7 males	8 females	20- 40 years

The first group was the patient group which consisted of 15 patients seven males and eight females .Their age ranged between (20-40)years. The mean size of the lesion before laser exposure was 4.24mm and the mean for pain analogue scale was (4.60==5). The second group was the control group which consisted of 15 patients seven males and eight females . Their age ranged between (20-40) years .The mean size of the lesion before treatment with acyclovir was 4.15mm and the mean for pain analogue scale was (4.8==5) . All patients were collected from the college of dentistry with no sign and symptom of systemic diseases and none smokers. Those patients re-examined after 24 hours ,48hours, 72 hours and one week respectively. Statistical computations were calculated using SPSS 11.5 for windows software Statistical significance assessed at the $P \leq 0.05$ level.

RESULTS

The results of the present study were divided into two main groups according to the type of treatment (laser, acyclovir) , and subdivided according to the size of lesion and pain . There are significant differences in the size of lesions treated by laser during the first(24hours, 48hours, 72hours and one week) when it compared with the size of the lesions before treatment $p \leq 0.05$.Also there are significant differences in the size of lesions treated by laser and those treated by acyclovir during the first(24 hours, 48 hours, 72 hours and one week) $P \leq 0.05$ (Tables 2-5).

Table (2):The means of the lesions size before and after one day treatment by two therapies.

group	Size of the lesion before treatment in mm	Size of the lesion after treatment in mm	t	df	*p*
	Mean+ SD	Mean+ SD			
Diode Laser(1064)	5.0333+.58146	3.8000+.56061	8.488	14	.000**
Acyclovir 5%	4.5000+.53452	4.5000+.53452			
t	2.615	-3.500			
df	28	28			
p	.014*	.002**			

**p≤0.01 *p≤0.05

Table (3):The means of the lesions size before and after two days treatment by two therapies.

group	Size of the lesion before treatment in mm	Size of the lesion after treatment in mm	t	df	*p*
	Mean+ SD	Mean+ SD			
Diode Laser(1064)	5.0333+.58146	1.9000+.66009	12.982	14	.000**
Acyclovir 5%	4.5000+.53452	3.9333+.45774	4.795	14	.000**
t	2.615	-9.804			
df	28	28			
p	.014*	.000**			

** p≤0.01 *p≤0.05

Table (4): The means of the lesions size before and after three days treatment by two therapies.

group	Size of the lesion before treatment in mm	Size of the lesion after treatment in mm	t	df	*p*
	Mean+ SD	Mean+ SD			
Diode Laser(1064)	5.0333+.58146	.4000+.50709	28.041	14	.000**
Acyclovir 5%	4.5000+.53452	3.1000+.71214	9.495	14	.000**
t	2.615	-11.961			
df	28	28			
p	.014*	.00**			

** p≤0.01 *p≤0.05

Table (5): The means of the lesions size before and after seven days treatment by two therapies.

group	Size of the lesion before treatment in mm Mean+ SD	Size of the lesion after treatment in mm Mean+ SD	t	df	*p*
Diode Laser(1064)	5.0333+.58146	.000+.000	33.526	14	.000**
Acyclovir 5%	4.5000+.53452	.4667+.51640	24.410	14	.000**
t	2.615	-3.500			
df	28	28			
p	.014*	.002*			

** p≤0.01 *p≤0.05

There were significant differences in the pain analogue scales of lesions treated by laser during the first (24hours , 48 hours ,72 hours and one week) when it compared with pain analogue scales before treatment $p \leq 0.05$.

There were significant difference in the pain analogue scales of lesion treated by laser and those treated by acyclovir during the(first 24 hours , 48 hours ,72 hours and one week) $p \leq 0.05$(Tables 6-9)**.**

Table (6): The means of pain analogue scales before and after one day treatment by two therapies.

group	Pain analog scale before treatment Mean+ SD	Pain analog scale after treatment Mean+ SD	t	df	*p*
Diode Laser(1064)	5.0000+.65465	3.1333+.74322	9.727	14	.000**
Acyclovir 5%	4.5333+.83381	4.5333+.83381			
t	1.705	-4.854			
df	28	28			
p	.099*	.000**			

** p≤0.01 *p≤0.05

Table (7):The means of pain analogue scales before and after two days treatment by two therapies.

group	Pain analog scale before treatment Mean+ SD	Pain analog scale after treatment Mean+ SD	t	df	*p*
Diode Laser(1064)	5.0000+.65465	.9333+.70373	15.250	14	.000**
Acyclovir 5%	4.5333+.83381	3.7333+ .59362	4.583	14	.000**
t	1.705	-11.779			
df	28	28			
p	.099*	.000**			

** p≤0.01 *p≤0.05

Table (8):The means of pain analogue scales before and after three days treatment by two therapies.

group	Pain analog scale before treatment Mean+ SD	Pain analog scale after treatment Mean+ SD	t	df	*p*
Diode Laser(1064)	5.0000+.65465	..000+.0000	29.580	14	.000**
Acyclovir 5%	4.5333+.83381	2.4667 +.63994	9.057	14	.000**
t	1.705	-14.929			
df	28	28			
p	.099*	.000**			

** p≤0.01 *p≤0.05

Table (9):The means of pain analogue scales before & after one week treatment by two therapies.

group	Pain analog scale before treatment Mean+ SD	Pain analog scale after treatment Mean+ SD	t	df	*p*
Diode Laser(1064)	5.0000+.65465	..000+.0000	29.580	14	.000**
Acyclovir 5%	4.5333+.83381	.2667 + .45774	20.687	14	.000**
t	1.705	-2.256			
df	28	28			
p	.099*	.032*			

** p≤0.01 *p≤0.05

DISCUSSION

Acyclovir is synthetic purine nucleoside analogue. Acyclovir in presence of herpes virus specific thymidine kinase is converted to acyclovir monophosphate which in presence of cellular kinase is converted to acyclovir triphosphate. This acyclovir triphosphate gets incorporated in viral DNA and stops lengthening of DNA strand and inhibits herpes virus DNA polymerase competitively.[13] Although potent agents against herpes virus infections have become available during the last decade , the increasing clinical use of acyclovir and famciclovir has been associated with the emergence of drug – resistant herpesvirus strains.[14]

Mechanism of low laser therapy

The advantage of therapeutic laser light is that it stimulates natural biological processes and mainly affect cell in a decreased oxidation –reduction (redox) reaction .Acell in low redox stage is acidic ,but after laser irradiation the cell become alkaline and able to perform optimally . Healthy cell cannot significantly increase their redox situation and thus will not react strongly to the laser energy , whereas cell in a low redox situation will be stimulated . The most essential effect may be increase of (ATP) produced in the mitochondria . Laser light will dissociated the binding between nitric oxide and cytochrome –c oxidase , allowing it to resume ATP production . Importantly , patients with recurrent HSV-1 attacks will experience longer intervals between the outbursts.[12]

In this study, the patient group which treated by diode laser (1064) , there is a complete healing of the lesion and relieve of the pain after three days . This coincide with the finding of other studies which emphasize that laser make the healing faster and decrease the recurrence. [15-17] While the patient group which treated by acyclovir 5% the complete healing and relieve of the pain occur after one week. This result is in agreement with other studies.[19- 20] From the result of this study we conclude that the laser may be considered as a beneficial alternate treatment regimen for recurring herpes simplex infections. Also we suggest the use of the laser with acyclovir in treatment of RHL.

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