Low-level laser therapy in the treatment of herpes labialis

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_The herpes simplex virus (HSV), both type 1 and type 2 has been identified as a pathogen in a number of infectious processes involving mucocutaneous tissues and the central nervous system.[1]

Recurrent herpes labialis is a significant problem, causing pain and physical discomfort as well as social embarrassment in a large proportion of the population. The clinical manifestation depends on the anatomic site of the infection, the immune status of the host and the antigenic type of the virus. HSV-1 generally affects the tissues of the orofacial region whilst HSV-2 is generally isolated from the genital region.[1]

Up to ninety per cent of adults have circulating neutralizing antibody and about one third of the population are subject to recurrences.

Many factors have been implicated in the reactivation of herpes labialis and these include exposure to sunlight, minor trauma (e.g. dental procedures) and severe systemic disturbances, particularly a fever.[2] It is most common amongst adolescents and adults and symptoms can range from mild discomfort to severe pain.[16]

Fig. 1_A typical HSV-1 lesion on the lip of a patient which has been present for about two days and the vesicles have not yet burst.
Fig. 2_The same lesion as reviewed on the day following treatment. The lesion is dry and the patient reports no discomfort. If left to its natural course this stage would have been reached in about ten days.


Fig. 1


Fig. 2

The typical clinical manifestations are an initial swelling and soreness of the lip, followed by a crop of vesicles on the lip adjacent to the mucocutaneous junction. These vesicles break down to weep, serum and crust, with final healing occurring in ten to fourteen days.[2]

During the prodromal stage many patients experience an itching, tingling or discomfort in the area of the lesion.[1]

Treatment has been haphazard and ad hoc, with a variety of over-the-counter and home remedies being used by both physicians and patients. These have included chemical agents such as alcohol, phenol, tannic acid and camphor but no well controlled clinical studies support the belief that these agents promote healing.[1]

Wright three reported that the use of lysine was an effective prophylactic and a moderately effective treatment. Lysine is a naturally occurring amino acid which is required for the human diet and is essential for the synthesis of certain enzymes, hormones and proteins and it is postulated that it inhibits replication of HSV (herpes simplex virus) by limiting the availability of cellular arginine which is required in the replication of HSV.[3]

Wright found that lysine treatment limited the size of the lesion, and decreased the normal duration of HSV by 25 to 50 per cent.[3] Low energy laser therapy has been advocated as a successful form of treatment for herpes labialis and recurrent aphthous ulcers.[4, 8]

Polioxidonium was reported to be effective when used in combination with HeNe laser for treatment of recurrent herpetic stomatitis in children with allergic

diseases and also increased the efficacy of the treatment of the allergic diseases themselves.[13] Low energy laser therapy takes place at intensities so low that any biological effects that occur are due to direct effects of radiation and not as a result of heating.[5] The resulting effect is referred to as biostimulation which assumes that the energy of laser light can be incorporated into the natural process in much the same way that photons are incorporated into the chain of photosynthetic reactions of plants.

Velz-Gonzalez et al.[17] found that low-level lasers had an effect similar to Ayclovir on labial and facial areas as well as on genital areas.

Schindl and Neumann[18] in a randomized double blind study found that patients in the laser group had a median recurrence free interval of 37.5 weeks as compared with three weeks for the placebo group which was exposed to sham irradiation.

Low-level laser therapy or biostimulation has aroused considerable controversy in the literature but many clinicians report positive clinical responses albeit of an anecdotal nature.

Anne Coulter[6] sums up current thinking in the following passage. "The biological reasons for the laser's effectiveness have not been made clear, the information is conflicting and the research has not been well standardized. Much of the earlier work was published without parameters making it impossible to reproduce."

Walsh[7], writing in 1997 states that it is clear that LLLT can influence the behavior of many cell types, and that multiple effects can occur simultaneously. He then goes on to list a variety of conditions for which treatment benefits have been established and others for which there is no benefit. He lists HSV under the no benefit column.

Researchers are currently striving to reveal the biological process behind the observed successes, including the effect of laser irradiation on the oxidation metabolism of cells.[9]

Webb[10] and her co-authors found that LLLT had a significant effect on cell counts of two human fibroblast lines in the first few days.[1-4] Sroka et al.[11] in examining the effects on the mitosis of normal and tumor cells induced by light treatment using different wavelengths concluded that low level laser irradiation by means of coherent and non-coherent light results in a biostimulation of cellular activities in a wavelength dependent manner and that the photo-induced processes are just one aspect of the more general phenomenon of photo-signaling, which is getting more and more acknowledgment. Sommer et al.[12] concluded that the threshold parameters of energy density and intensity were biologically independent from each other and that this independence was of practical significance for the medical application of photobiological effects achieved at the low energy density levels. This work supports the author's clinical observation that effectiveness of treatment in herpes labialis is dose dependent.


Fig. 3


Fig. 4


Fig. 5

Fig. 3_Patient at presentation showing swelling. The patient was in considerable discomfort.
Fig. 4_The patient on the following day showing reduction in swelling. The patient reported a significant improvement in discomfort.
Fig. 5_The patient on day four by which time most of the swelling and symptoms had subsided.

Reports can be found in the literature pointing out that if applied in the prodromal stage, the blister is likely to disappear in two to three days. It also reduces the frequency, recurrence rate, and according to these authors, post herpetic neuralgia and zosters may also be treated.[14, 15]

The author has been using LLT successfully for treatment of HSV-1, and has found that treatment appears to be dose dependent and also appears to increase the time interval between recurrent attacks. Treatment is significantly more effective if the lesion is irradiated before the vesicles burst, i.e. on about the second day of its appearance. Under such circumstances, most lesions will progress to the dry stage overnight, thus eliminating the discomfort associated with its normal progression of 10–14 days, and in at least one case, the lesion disappeared within six hours.

Figures one and two below, show typical results obtained by the author in approximately 80 per cent of cases treated, as long as they are treated before the vesicles burst, usually within the first two days of their appearance.

Figures three, four and five show a more aggressive case which required more than one treatment. Figure three shows the patient at presentation, Figure four shows considerable improvement by the following day when additional irradiation was carried out, and Figure five shows the patient at day four by which time all discomfort and most of the swelling had subsided.

Editorial note: The literature list can be requested from the editorial office.

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