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Research Article

TREATMENT OF RECURRENT HERPES SIMPLEX INFECTION IN THE SKIN OF THE FACE WITH FOTOSAN 630: A NEW TYPE OF PHOTODYNAMIC THERAPY

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A B S T R A C T

Herpes simplex virus type 1 (HSV-1) is a member of the Alphaherpesviridae subfamily. The treatment of HSV infections is overall a topic therapy. Photodynamic therapy (PDT) is described in the literature for the treatment of HSV infections.There are no data on the treatment of the skin of face affected by HSV. The aim of this work is to document a case of HSV infection on the skin of cheek treated with a particular type of PDT. A device that emits diode light at a wavelength of 630 nm has been used, FotoSan 630 (CMS Dental, Copenhagen, Denmark), used in combination with a photosensitive reagent Toluidine blue. This was applied over the lesion and was made 10 cycles of 30 seconds of LED light with long tip, remaining at about 0.5 cm from it. At 2 days the lesion was almost healed. At 6 months follow up the patient did not show herpes simplex infection, either labial or cutaneous. The use of this device has documented also in periodontal and endodontic treatment. In our study PDT performed by Fotosan 630 nm is a successfull treatment to improve healing of HSV infection in the skin, and to prevent recurrence of it.

INTRODUCTION

Herpes simplex virus type 1 (HSV-1) is a member of the Alphaherpesviridae subfamily and it is responsible for establishing primary and recurrent vesicular eruptions (1). HSV-1 infection has many types of presentations, including orolabial herpes, herpetic sycosis (HSV folliculitis), herpes gladiatorum, herpetic whitlow, ocular HSV infection, herpes encephalitis, Kaposi varicelliform eruption (eczema herpeticum), and severe or chronic HSV infection (1). The treatment of HSV infections is overall a topic therapy . Topical therapies for oral HSV infections can be divided into palliative, preventive and antiviral categories (2). The most documented in the literature are lidocaine 2% , penciclovir 1%, aciclovir 5%, dosoconal 10% (2). Sometimes to avoid recurrence, systemic treatment are prescribed such as aciclovir 200 mg five times per day for 10 days (1,2).

Photodynamic therapy (PDT) is described in the literature for the treatment of herpes simplex infections. Several in vitro studies demonstreted its effectiveness (3,4,5). There are also case reports and case series of patients with recurrent oral and perioral HSV infections treated successfully with PDT (6,7,8). There are no data on the treatment of the skin of face affected by HSV.

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The aim of this work is to document a case of HSV infection on the skin of cheek treated with a particular type of PDT: diode lamp with a light of 630 nm in combination with Toluidine Blue.

MATERIALS AND METHODS

A 60-year-old female patient went at our private practice for an evaluation of a perioral esthetic treatment. In the anamnesis, the patient reported good general health, sometimes she used benzodiazepines for anxiety, and she reported recurrent HSV infection on the lips (5-6 episodes in the year). Clinical observation showed the presence of multiple vesicular lesions in the left cheek accompanied by a sensation of altered sensitivity. Herpes simplex cutaneous infection was diagnosed. Before performing an aesthetic treatment with local oxygen therapy, it was decided to perform photodynamic therapy in the site affected by herpetic infection. A device that emits diode light at a wavelength of 630 nm has been used, FotoSan 630 (CMS Dental, Copenhagen, Denmark). Fotosan 630 nm is a device that emits a LED light used in combination with a photosensitive reagent (Toluidine blue in syringes with a concentration of 0.1mg / ml). The basic principle of this therapy is represented by the photochemical reaction between a photosensitive substance and a light source that emits a specific light spectrum. Specifically, the photosensitizer binds to the surface of microorganisms and absorbs light of a specific wavelength taking energy. The received energy reacts with oxygen to form ROS (Reactive Oxygen Specimen) that is highly reactive and kills the microbial cell walls and internal

structures. The principle LAD is effective not only against bacteria but also against microorganisms such as viruses, fungi and protozoa. The light-sensitive substances applied have very mild affinity with mammalian cells. For this there are no adverse effects during the treatments. The intensity of the light emitted diodes is between 2000 and 4000MW / cm2. There are 3 programs for its operation: with the green mode, we decide the seconds of application; the orange active mode cycles from 20 seconds, the red mode active cycles of 10 seconds. The fluid with Toluidine was applied over the lesion and was made 10 cycles of 30 seconds of LED light with long tip, remaining at about 0.5 cm from it.

RESULTS

A curious phenomenon occurred after a few minutes from the removal of the dye: the vesicles poured the infectious liquid on the outside and after one hour the lesion was completely asymptomatic (fig. 2). At 2 days the lesion was almost healed (fig 3), while the 1 week control showed the total healing of the injured skin. At 6 months follow up the patient did not show herpes simplex infection, either labial or cutaneous.

Fig 1 Clinical presentation of HSV infection

Fig 2 The lesion few minutes after treatment

DISCUSSION

In a review of the Cocraine Library, the authors concluded that current evidence demonstrates that long-term use of oral antiviral agents like topical and systemic acyclovir, can prevent HSV, but the clinical beneft is small, and topical antiviral agents showed no effcacy or could not confirm their effcacy in preventing HSV (9). In a study monocaprin with low-dose doxycycline (MCD) offers an effective treatment for herpes labialis, but there is no comparation with other topycal and systemic drugs like acyclovir, penciclovir, valaciclovir. The authors concluded that although full enrolment to the trial was not achieved positive results for MCD, prodromal activity was statistically signifcant and MCD vescicle group showed also very good reduction in time to heal, but needed more subjects to support the results (10).

Fig 3 Lesion almost healed after 2 days.

PDT for treatment of oral herpes simplex infections is documented in the literature (6,7,8). Marotti *et al*. proposed a therapy performed by a diode laser with 660 nm of wavelength and Methylene Blue (6,7). Also Ramalho *et al*. used a diode laser of 660 nm (8).

Several works are written on the effectiveness of FotoSan 630. In a randomized clinical trial, 30 patients divided in 2 groups, with oral lichen planus were included.The first group was treated with 5% methylene blue mediated photodynamic therapy using Fotosan device for 30 seconds for 4 sessions in the days 1,4,7,14. In the another group, the treatment was done by 0.5mg dexamethasone 4 times in a day for 2 weeks. The authors concluded that Photodynamic therapy was as effective as the dexamethasone mouthwash in the treatment of oral lichen planus and it could be used as a safe modality in the treatment of oral lichen planus lesions without side effects (11).

The use of this device has documented in the literature also in periodontal (12) and endodontic treatment (13) and is effective especially for its antibacterial effect.

In our study PDT performed by Fotosan 630 nm is a successfull treatment to improve healing of HSV infection in the skin, and to prevent recurrence of it. It is the first case described in the literature for the use of PDT in skin HSV therapy. Advantages of photodynamic therapy include immediate effects, access to complex areas, selectivity, decreasing the possibility of bacteremia in immuno-compromised systemic patients and decreasing patient discomfort, pain, and edema after surgery. Other 2 important points are time saving and avoidance of interfering with normal flora of adjacent tissues. Ora pathologist is more exposed to contamination of oral HSV than the general population, and a local and safe treatment of herpes simplex that you could perform in dental offce, avoiding contamination, decreasing discomfort of patient, improving healing is very interesting.(14)

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