

Lysine hydrochloride use in the prophylaxis of herpes simplex in facial technology-aided procedures

Uso do cloridrato de lisina na profilaxia do herpes simples nos procedimentos faciais com tecnologias

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ABSTRACT

Introduction: Lysine is one of the essential amino acids, with a role in the prophylaxis of recurrent orolabial herpes simplex that has been demonstrated in scientific studies. Facial *resurfacing* procedures with laser and other technologies can reactivate herpes simplex.

Objective: To evaluate the incidence of cases of orolabial herpes in patients submitted to treatments with fractional ablative and non-ablative lasers and robotic microneedling, under prophylactic L-lysine.

Methods: A sample of 100 patients was selected to have prophylactic L-lysine for herpes simplex. A re-evaluation of all patients was conducted seven days after laser treatment. If herpes infection was detected, doses of oral antiviral similar to those used for herpes-zoster treatment would be prescribed, guided by the literature.

Results: Only 2% of the sample demonstrated herpes simplex after the procedure with prophylactic L-lysine. Both patients underwent ablative fractional laser treatment and had past history of herpes simplex infection.

Conclusions: Besides the low cost, L-lysine is a natural product that proved to be safe and effective for the prophylaxis of herpes simplex in *resurfacing* procedures, with a similar or lower rate of viral activation to the use of antivirals.

Keywords: Herpes Simplex; Herpes Labialis; Lysine; Laser Therapy; Lasers

RESUMO

Introdução: A lisina é um dos aminoácidos essenciais, cuja ação na profilaxia do herpes simples recorrente orolabial tem sido demonstrada em estudos científicos. Procedimentos de *resurfacing* facial com laser e outras tecnologias podem reativar quadros de herpes simples.

Objetivo: Avaliar a incidência de casos de herpes orolabial em pacientes submetidos a tratamentos com lasers fracionados, ablativo e não ablativo, e microagulhamento robótico, em uso profilático de L-lisina.

Métodos: Seleccionada amostra de 100 pacientes a ser submetidos a profilaxia para herpes simples com L-lisina, todos reavaliados sete dias após a sessão de laser. Caso fosse verificada infecção herpética, doses de antivirais orais equivalentes às utilizadas para o tratamento do herpes-zóster seriam prescritas, conforme orienta a literatura.

Resultados: Apenas 2% da amostra apresentou herpes simples após o procedimento com o uso da profilaxia com L-lisina; ambos os pacientes realizaram sessões de laser fracionado ablativo e apresentavam história prévia de infecção pelo herpes simples.

Conclusões: Além do baixo custo, a L-lisina é produto natural que se mostrou seguro e eficaz na profilaxia do herpes simples em procedimentos de *resurfacing*, apresentando taxa de reativação viral similar ou inferior às obtidas com o uso de antivirais.

Palavras-chave: Herpes Labial; Herpes Simples; Lasers; Lisina; Terapia a Laser

Original Articles

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INTRODUCTION

A L-lysine is one of the eight essential amino acids, and its activity in the prophylaxis of recurrent orolabial herpes simplex and shortening of the course of this infection has been demonstrated in scientific studies.¹ The mechanism of action involved is a result from the interaction of lysine with arginine, an essential amino acid for the replication of the herpes virus. Lysine increases renal and intestinal clearance of arginine and competes with its cell transport, besides inducing the activation of the enzyme arginase.¹

The cycle of viral replication of herpes simplex ranges from four to 12 hours and usually results in cell death. However, the virus remains latent in neuronal cells, until the moment of its reactivation, such as in treatments of laser resurfacing.²

Griffith *et al* demonstrated reduction of the recurrences and of the recovery time in cases of herpes simplex when they submitted 45 patients with recurrent orolabial herpes to treatment with daily doses of lysine, 312-1200mg.³

Patients submitted to procedures of facial laser resurfacing are susceptible of HSV reactivation. One study with 907 patients undergoing this procedure with CO₂ laser reported an incidence of acute HSV infection of 3%, which dropped to 1% after prophylaxis with aciclovir. Data published in 2001 regarding rates of herpes simplex before the use of antivirals in these procedures are from a retrospective analysis and clinical trial with historical control. In the first, six (50%) out of 12 patients with history of orofacial herpes simplex submitted to dermabrasion or phenol chemical peel developed lesions after the procedure. In the clinical trial, prophylaxis with famciclovir was conducted in 121 patients submitted to facial CO₂ laser, using historical control of 127 patients with the same procedure, without prophylaxis, that showed a reactivation rate of 9.4%.^{4,5}

The exact dose and time of treatment with L-lysine necessary to reduce episodes of orolabial herpes simplex have not been established. We must take into consideration in prophylactic treatment the time needed for reepithelization, which, after ablative fractional treatments, usually lasts from 5.5 days (Erbium-Yag) to 8.5 days (CO₂ laser).⁶

Griffith RS *et al*, in a multicentric, double-blind, case-control study, demonstrated that a daily dose of 3000 mg of L-lysine for 6 months was capable of reducing the number of episodes of orolabial herpes and the recovery time, besides reducing the severity of the symptoms.⁷ In their study, Mc Cune MA *et al* saw a similar result in patients on a daily dose of 1248mg of L-lysine, even though they have not noticed reduced recovery time.⁸

The objective of this study is to evaluate the incidence of cases of orolabial herpes in patients submitted to treatments with fractional, ablative and non-ablative laser and robotic microneedling and the prophylactic use of L-lysine.

METHODS

Patients older than 18 years, who would be electively submitted to resurfacing with fractional ablative and non-ablative laser or robotic microneedling (with or without radiofrequency), that had a previous history of infection by herpes

simplex virus or not, performed prophylaxis with one capsule of L-lysine 500mg three times daily with meals, starting seven days before and continuing for seven days after the procedure. A reevaluation of patients was performed seven days after the laser session. In cases where herpetic infection was detected, doses of oral antivirals equivalent to those used for the treatment of herpes-zoster were prescribed, as advised in the literature.

Exclusion criteria: Pregnancy or breastfeeding, current prophylaxis for herpes simplex with other medications, hypersensitivity to any of the components of the L-lysine formulation, those with kidney and/or liver diseases.

Local: Sector of Laser, Instituto de Dermatologia Prof. Rubem David Azulay, Santa Casa de Misericórdia do Rio de Janeiro. The research was approved by the Committee of Ethics in Research, with a sample of 100 patients.

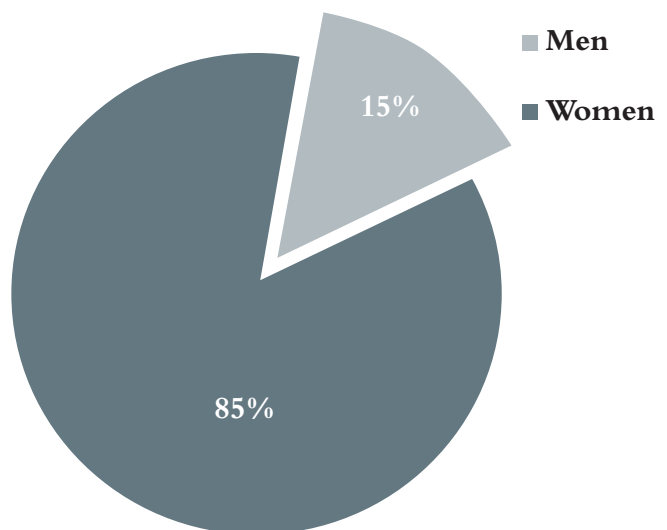
Description of the methods used to evaluate results: The evaluation of results was conducted through the clinical analysis of the cases of orolabial herpes activation, comparing them according to the procedure performed and previous history of herpes simplex.

RESULTS

One hundred patients were submitted to procedures with technologies on the face and instructed to have prophylactic L-lysine. Most of the sample was composed by females (Graph 1).

The procedure most often performed was fractional ablative laser, followed by microneedle radiofrequency and fractional non-ablative laser (Graph2).

A previous history of labial herpes simplex was reported by 21% of patients.



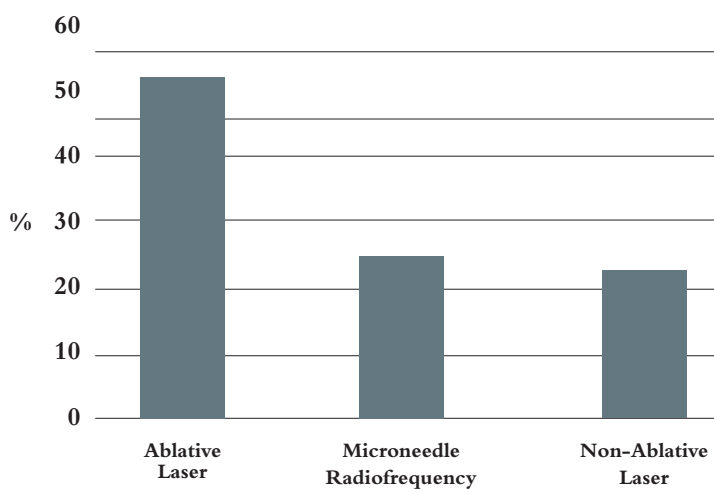
GRAPH 1: Sex of the patients submitted to treatment

Only 2% of the sample developed herpes simplex after the procedure with the use of prophylactic lysine hydrochloride. These patients underwent treatment with fractional ablative laser and reported previous infection by herpes simplex (Graph 3).

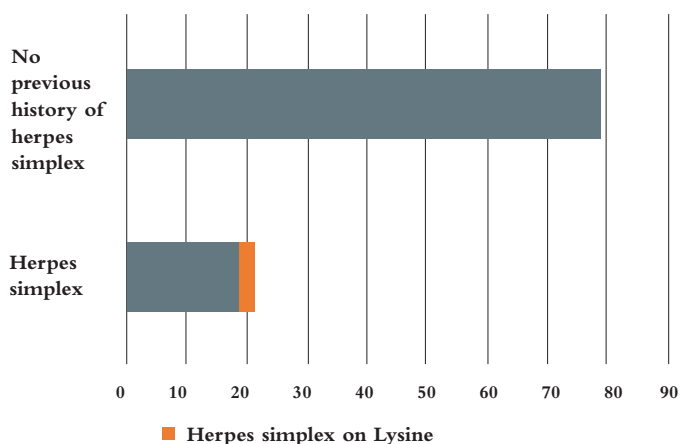
DISCUSSION

Griffith *et al*, as well as Pedrazini *et al*, showed positive results in the reduction of incidence and recurrence of herpes simplex with the administration of L-lysine for 6 months and 1 month, respectively.^{7,9}

Despite the common occurrence of reactivation of herpes simplex virus after procedures of facial resurfacings, there still are no protocols in the literature for the use of L-lysine as a prophylactic agent.



GRAPH 2: Number of procedures performed



GRAPH 3: Number of patients with and without previous history of herpes simplex and percentage of patients who had herpes simplex after the procedure

In this study, with the use of prophylactic L-lysine, we demonstrated that 2% of the patients had lesions of labial herpes simplex after procedures with technologies. These cases were mild, treated with antiviral, progressing with no unsightly scars or other complications.

Our study is in accordance with the results by Wall *et al*, where 1.1% of the patient sample that underwent sessions of CO₂ fractional ablative laser had lesions of herpes simplex even while using prophylactic famciclovir 250mg/day, started two days before and maintained for five days after the procedure. These patients had no previous history of orofacial infection by herpes simplex.⁵

The studies by Alster & Nanni and Naouri *et al*, show higher rates of complications with the appearance of herpetic lesions after fractional ablative laser. In the first, 10.1% of patients had clinical lesions consistent with herpes simplex during prophylactic famciclovir for 11 days. The second demonstrated incidence of herpes in 10.6% of patients using valaciclovir during seven days.^{10,11}

In an analysis involving 730 patients submitted to sessions of fractional ablative and non-ablative lasers with prophylactic valaciclovir 500mg/day initiated 48 hours before the procedure, Cohen *et al* demonstrated the occurrence of only five cases of viral reactivation, that progressed with no formation of scars or unaesthetic outcomes.¹²

In the studies by Gilbert & McBurney, as opposed to most studies found in the literature, there were no reports of the occurrence of herpetic lesions after the procedure. However, it is worth highlighting that in this case, only laboratory criteria were used to detect the viral infection, even if there had been clinical lesions consistent with the condition. Of 84 patients analyzed by Gilbert & McBurney, 16 showed pustules/vesicles, erosions, pruritus or burning sensation after the procedure. Four of these cases grew *Staphylococcus* in culture, four had the presence of gram-negative organisms and one individual grew *Candida albicans* in culture. The other eight cases had negative viral, fungal and bacterial cultures.¹³

Most authors argument that clinically suspicious cases should be considered herpes simplex, since characteristic signs and symptoms of herpetic lesions are not found in the damaged epithelium. Moreover, traditional laboratory methods used to detect HSV (Tzanck smear, culture) might be less accurate in this scenario.¹⁰

No adverse events were reported associated to the use of lysine hydrochloride in our cases. On the other hand, the occurrence of nausea and headaches associated to the prophylactic use of valaciclovir and famciclovir is relatively frequent.⁵

CONCLUSION

Besides the low cost, lysine used in this study is a natural product that proved to be safe for the use as pre-procedure prophylaxis, with lower or similar rates of herpetic lesions found in the literature. Our study is pioneer, and randomized controlled clinical trials are needed to confirm the efficacy of this drug for

this purpose. However, we can conclude that L-lysine showed positive results, being a new option in the therapeutic arsenal of the dermatologist. ●

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