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A New Treatment Method for Herpes Simplex Virus Type 1-related Skin Lesions

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Abstract **Introduction:** Herpetic infections of the skin are widely seen throughout the world. In this study, we aimed to reduce the treatment duration of herpes simplex virus type 1-related skin lesions. **Method:** 45 patients were included to the study. Twenty three (23) patients with herpes labialis used topical antiviral treatment and 22 patients used Polymyxin B hydrochloride and Oxytetracycline pomade. We compared the treatment duration and recurrence between the groups. **Results:** The results showed that the treatment duration and recurrence decreased statistically and clinically in patients who used Polymyxin B hydrochloride and Oxytetracycline pomade. **Conclusion:** The mixture of Polymyxin B sulfate and Oxytetracycline HCl may use to reduce the risk of secondary bacterial infection and recurrence in the herpes simplex virus-related skin infections.

Keywords Herpes, Infection, Antivirals, Polymyxin B hydrochloride and Oxytetracycline

1. Introduction

Herpetic infections on face are commonly known around the world. [1] Recurrent herpes is seen in 20 - 40% of the adult population. Fifty percent (50%) of herpetic lesions occur with prodromal symptoms such as itching, tingling or burning. Then, papules, vesicles, ulcers, and crust develop, respectively. The first symptoms are pain and itching [2]. The occurrence of herpetic infection may be triggered by internal or external factors such as stress, immunosuppression, high fever, trauma and ultraviolet rays [3]. Lesions usually resolve within 7 to 10 days, but this may extend up to 12-14 days. [4]

Herpetic infections often occur on the lip, oral mucosa, eye and genital areas. Although recurrent herpes is a self-limiting infection, the use of topical antiviral agents reduces the infectivity. These agents also reduce pain level, lesion size and symptom duration [2]. If initiated at the onset of the lesions, antiviral treatments such as 5% acyclovir cream may be beneficial. In spite of this, the treatment usually cannot be started at early stage and anti-viral treatments may be inefficient. On the other hand, these agents should be used several times a day. [2]

The aim of this study was to reduce the frequency of recurrence of herpes simplex virus type 1-related skin lesions and to reduce the duration and cost of treatment.

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2. Patients and Method

From January 2017 to January 2018, the patients with herpes labialis who were admitted to our clinic included to the study. This study was conducted prospectively. An independent ethics committee approved the study design.

Forty five (45) randomized patients were included to the study. Topical antiviral treatment was performed to 23 patients (Group II), Polymyxin B hydrochloride and Oxytetracycline pomade was given to 22 patients (Group I). Both treatments were applied topically twice a day. The drugs used during the procedure were applied by mild traumatization on the herpetic lesion. Later, the patients' lesions were monitored daily. The duration of the complaints of the patients and the duration of regression of the lesions were noted. Pain reduction, crust formation and erythema resolution were accepted as healing signs and clinical response. Patients were also monitored for one month and examined for recurrence. Then, the obtained data were compared statistically.

Five patients, who did not come to follow-up and who did not accept the treatment were excluded from the study.

Statistical method: Mean, standard deviation, median lowest, highest, frequency and ratio values were used in descriptive statistics of the data. The distribution of the

variables was measured with the kolmogorov simirnov test. Independent samples t-test, mann-whitney u test were used for the analysis of quantitative independent data. Chi-square test was used for the analysis of qualitative independent data. SPSS 22.0 program was used in the analysis.

3. Results

The ages of the patients in group I and group II were not significant (p> 0.05). The gender distribution was not significant in group I and group II (p> 0.05). The duration of treatment in Group II was significantly higher than group I (p <0.05). The recurrence rate in Group II was significantly higher than group I (p <0.05). (Table 1)

Table 1. Demographic variables, treatment duration, and recurrence between the groups

		Grup I			Grup II			p
		Average±s.s./n-%		Medyan	Average±s.s./n-%		Medyan	
Age		49,6 ± 21,3		56,0	48,5 ± 16,1		50,5	0,848 [t]
Gender	Female	12	60,0%		14	70,0%		0,507 [x²]
	Male	8	40,0%		6	30,0%		
Treatment time		2,4 ± 0,5		2,0	8,1 ± 2,0		7,5	***0,000*** [m]
Recurrence	(-)	19	95,0%		9	45,0%		***0,001*** [x²]
	(+)	1	5,0%		11	55,0%		

[t] t test / [m] Mann-whitney u test / [x²] Ki-kare test

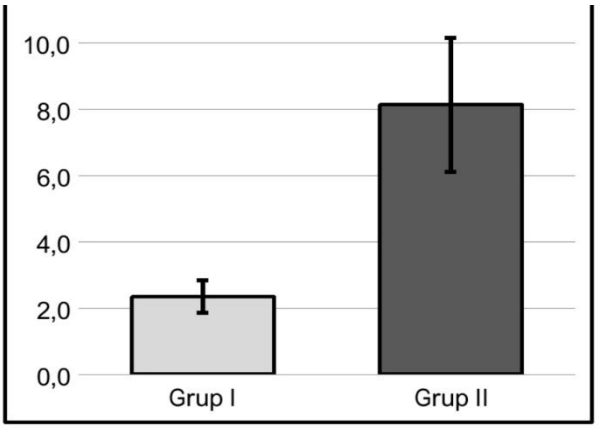

Figure 1. Treatment duration

4. Discussion

Herpes simplex virus can cause infectious lesions in various parts of the body, mostly, keratitis in the eye, lesions on the lip, and vesicular lesions on the genital regions. [2] Repeated form of oral herpes virus is named as recurrent intraoral herpes or recurrent herpes labialis.

The recurrent herpes labialis is known commonly. [2] This infection occurs in more than 1/5 of the adult population. The transmission of the virus occurs with a contact with an infected person. The virus is latent in the neural tissues and may trigger an infection with internal or external factors such as stress, suppression of the immune system, high fever, trauma and exposure to ultraviolet rays [4].

Herpes simplex virus-related skin infections can usually resolve within 7-14 days, which may affect the quality of life of the infected person. Therefore, we have decided to investigate an agent that affects the treatment process in a much shorter time. Secondary bacterial infections may also be seen after herpes labialis. To eliminate this, topical antiviral-bacterial agents should be used. This is a difficult situation for the patient and increases the cost of treatment. In this context, our treatment method may be superior to antiviral agents.

In the study of Woo et al., which investigated the treatment of herpetic infections, antiviral creams were used such as Acyclovir 5%, Penciclovir 1%, and OTC docosanol 1% [6]. However, they reported that these treatments may be effective in the first 3 days after the lesion started. [7]

Herpes simplex is an enveloped virus and the envelope contains lipoprotein. We thought that hydrochloric acid could break down the structure of envelop and stop the infection in a very short time. As a result of this study, we found that the infection in patients who used Polymyxin B sulfate and Oxytetracycline HCl resolved within 2 days and this finding supported our hypothesis.

The recurrence is also an important problem in herpes simplex virus infections. In this study, it was observed that the recurrence rate was significantly decreased in patients using Polymyxin B sulfate and Oxytetracycline HCl. This was another important finding of our study.

In conclusion, this study showed that the mixture of Polymyxin B sulfate and Oxytetracycline HCl significantly reduced the treatment period, the risk of secondary infections, and the recurrence of the herpes simplex virus-related skin infections.

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