

# Efficacy of Treatment of Acute Herpetic Stomatitis. Clinical and Immunological Parameters of Oral Cavity in Children

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**Abstract** Currently, one of the most frequent diseases in children is a herpetic infection, which is explained not only by the prevalence of herpes simplex virus (HSV), but also by the peculiarities of the development of the immune system in a developing child's body. Questions of the general status of herpetic stomatitis in children is important. The purpose of the study was to study the immunological parameters of the oral cavity in children with acute herpetic stomatitis in the dynamics before and after treatment with Kyzyl May. In 62 children with acute herpetic stomatitis who applied to the department of pediatric therapeutic dentistry at TSDI, clinical and immunological studies were conducted. Based on the obtained clinical and immunological data, the high efficacy of Kyzyl May is effective in the treatment of acute herpetic stomatitis.

**Keywords** AHS, Immunology, Lysozyme, Secretory immunoglobulin A, Phagocytic activity of neutrophils

A third of the world's population is affected by a herpetic infection, over half of these patients suffer several attacks of infection over the course of a year, often with manifestations in the oral cavity. It has been established that the infection of children with the herpes simplex virus aged from 6 months to 5 years is 60%, and by the age of 15 it is already 90% [1,2]. Every year, the incidence of children with acute (primary) herpetic stomatitis increases.

Acute herpetic stomatitis in children is an infectious viral disease caused by primary contact with the herpes simplex virus, characterized by inflammation of the oral mucosa with the manifestation of vesicular rash, fever and decreased immunity [3,4].

The structure of the oral mucosa in children in early childhood and the activity of local tissue immunity are of great importance in the development of herpes infection.

## 1. Objective

To study the immunological studies of the oral cavity in children with acute herpetic stomatitis to identify indicators of local oral immunity before and after treatment.

## 2. Materials and Methods

We examined 62 children from 8 months to 3 years with acute herpetic stomatitis of moderate severity, who applied to the department Pediatric Therapeutic Dentistry, Tashkent State Dental Institute.

All children were divided into 2 groups:

1<sup>st</sup> group: 30 - children with acute herpetic stomatitis of moderate severity with 0.25% oksolin ointment against the background of general treatment.

2<sup>nd</sup> group: 32 - children with acute herpetic stomatitis of moderate severity who, against the background of general treatment, used the drug "Kyzyl May" (polyphitic oil).

Polyphitic oil "Kyzyl May" is an oily extract of medicinal plants, which has antiviral, anti-inflammatory, pain-relieving and anti-bacterial action.

AHS proceeds with hyperemia, edema on the mucous membrane of the oral cavity appear erosion and ulcers, which are covered with white fur. Lesions are from 2-3 to 7-8 mm. Favorite localization of aft on the mucous tongue, lips and transitional folds. The mucous membranes that are free from erosion are edematous and hyperemic, the tongue is coated with a white-gray bloom, a putrid odor from the mouth, an increase in salivation is noted. Submandibular, mental and cervical lymph nodes are enlarged.

The complex treatment included general and local treatment. General treatment used the drug "Acyclovir" tablets in an age dosage. In the 1st group: local treatment was

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started with antiseptic treatment of the oral cavity with Furacilin solution 1: 5000 and application of OXOLIN 0.25% ointment.

2nd group: antiseptic treatment of the oral cavity with Furacillin 1: 5000 and application with Kyzyl May.

### 3. Research Results

Immunological studies were performed in all patients: quantitative determination of local oral protection factors such as the level of secretory immunoglobulin A, phagocytic activity of neutrophils and the level of lysozyme in the oral fluid. To determine the phagocytic activity of neutrophils in the oral fluid, the collection and processing of saliva was carried out in a modification Antonov A.V. (1996). To do this, the selected oral fluid was cleaned, washed, buffered solution and centrifuged at 1000 rpm for 10 minutes: the non-settling liquid was drained, and 0.5 ml of physiological saline was added to the sediment.

To 0.2 ml of the obtained suspension in a test tube, 0.1 ml of latex suspension ( $5 \times 10^8$  in 1 ml) with a diameter of 0.8 mm was added. The mixture was incubated in a humid chamber for 30 minutes at 37 °C. Subsequently from this mixture smears were prepared by the type of blood smear stained according to Romanovsky Giemsa. Not less than 100 neutrophils were counted with and without latex in each preparation, the phagocytosis index was determined, i.e. % of phagocytic leukocytes was counted.

The activity of lysozyme in the oral fluid was determined by us using the method proposed by Aliev Sh.R. (2016), which included the use of sterile paper discs. For this purpose, oral fluid was collected on an empty stomach into sterile tubes, then paper discs were taken with tweezers (similar to antibiotic) and thoroughly soaked in oral fluid. After that, these discs were placed on the surface of nutrient agar (Mueller Hinton medium) in Petri dishes planted with a lawn daily culture) were incubated in a thermostat at 37 °C, the lysozyme activity in the oral liquid was determined by the diffusion method in agar.

Determination of class A immunoglobulin titer of secretory fraction (s IgA). The method is based on the Mancini method, which is based on measuring the diameter of the precipitation ring formed when oral fluid is introduced into the wells cut in an agar layer in which monospecific antisera are pre-dispersed. Under standard experimental conditions, the diameter of the precipitation ring is directly proportional to the concentration of immunoglobulin.

The first group of patients on the 4th-5th day showed a decrease in bleeding of the gums, epithelialization occurred on the 4th day after treatment. Aphthae epithelialized more slowly, lymph nodes decreased, hyperemia, edema disappeared, epithelialization of the affected areas began, gingival papillae took the correct configuration for 5-6 days. Full recovery occurred on the 7-8th day. Patients of the 2nd group who used the drug "Kyzyl May" on the 2nd day freely opened their mouth and took food, as the oil contains licorice

root, which has analgesic properties. On the 3rd day after treatment, epithelialization began, the gingival margin became pink, the amount of saliva released decreased, the duration of treatment was shorter by 2 days. It should be noted that there were no allergic reactions to the drug.

**Table 1.** Immunological indicators during the height of the disease and after treatment

Immunological indicators	Norm	Before treatment N=62	After treatment	
			1 <sup>st</sup> group N=30	2 <sup>nd</sup> group N=32
Secretory immunoglobulin A, g/l	2,0	1,45±0,15	1,65±0,1	1,90±0,1
Phagocytic activity of neutrophils, %	55,3	48,5±2,1	51,58±1,5*	53,5±2,1*
the level of lysozyme, mg/ml	18,0	16,5±0,3	15,4±0,4	19,2±0,5*

Note: \* - significant difference of the indicator in relation to "Before treatment" by the Student's criterion at the level of  $p < 0.05$ .

### 4. Conclusions

Thus, in our studies, it can be concluded that in children with acute herpetic stomatitis in the oral cavity, an immunodeficiency state develops, which further aggravates the clinical course of the disease. On the basis of the obtained clinical and immunological data, it is possible to conclude that Kyzyl May is highly effective in treating acute herpetic stomatitis. The data obtained allow us to recommend this drug not only in the treatment of acute herpetic stomatitis, but also in the development of various pathological changes in the oral mucosa, in which there are inflammatory changes.

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