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Treatment of Patients with Erythema Multiforme

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Abstract This study aimed to optimize the treatment of patients with exudative erythema multiforme (EM) by comparing traditional therapy with the addition of laser irradiation using photodynamic therapy (PDT). A total of 64 patients with EM participated in the study, and their clinical courses and risk factors for oral mucosa lesions were analyzed. The main group received local and general treatments, including lidocaine gel, chlorhexidine solution, and PDT, while the comparison group received traditional treatment. The effectiveness of therapy was assessed using a 3-point system based on subjective sensations and clinical symptoms. No side effects or complications were identified during the treatments. The results showed that patients in the main group experienced a significant reduction in clinical manifestations of EM compared to those in the comparison group. The average intensity of symptoms decreased by nearly 2 times on the 5th day and more than 11 times on the 15th day in the main group, whereas the reduction was 4 times and 8 times, respectively, in the comparison group. These findings suggest that the addition of laser irradiation using PDT to the treatment regimen may improve the outcomes for patients with exudative erythema multiforme. Further research is warranted to validate these results and explore the long-term effects of this approach.

Keywords Erythema multiforme, Local therapy, Optimization, Comparative study, Photodynamic therapy, Oral mucosa

1. Introduction

Erythema multiforme (EM) is an acute hypersensitivity reaction characterized by characteristic skin lesions. Although it is generally a self-limiting disease, its spectrum can extend to Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN). Its pathophysiology is not fully understood, but it is defined as damage to keratinocytes caused by a cell-mediated immune response to an antigenic stimulus [2,5,7] While infections play the most important role in the etiology of erythema mutiformis, drugs play an important role in SJS and TEN. Other rare causes of EM include: factors such as vaccination, leukemia, lymphoma, radiation, sun exposure and cold. [1,9,11] The prevalence of oral EM lesions varies from 35% to 65% among patients with skin lesions. Mortality rates from EM are not well documented. However, the literature suggests that between 5% of SJS and 30% of TEN can be fatal [3,4,6].

Despite the variety of locally acting drugs used in the treatment of MEE, there is no single, effective, clinically and laboratory-based method (scheme) of local therapy. [8,10,12] Therefore, scientific research on the issue of local therapy for patients with MEE continues.

2. Object of Research

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Optimization of treatment of patients with erythema multiforme exudative.

3. Material and Methods of Research

40 people, aged 18-55 years old, with a diagnosis of exudative erythema multiforme, who applied and were under outpatient observation, took part in the study. The anamnesis of the course of MEE and the clinical course of the present relapse were studied. The frequency of occurrence of erythema multiforme exudative was determined and the causal relationships of lesions of the oral mucosa in this pathology were analyzed, including risk factors in the development of pathological conditions of the oral mucosa.

The local and general treatment we use in the comparison group is considered traditional. For patients in the main group, in addition to traditional treatment, we added laser irradiation using a photodynamic therapy (PDT) device (wavelength 620-650 nm). PDT is prescribed in all periods of the disease; the method has an analgesic, epithelializing, desensitizing, and anti-relapse effect.

We treated patients in the main group with local and general treatments. In local treatment the following was used:

1. Lidocaine gel for anesthesia of lesions in the form of an application to the lesions (7-10 days);
2. Chlorhexidine _ bigluconate 0.05% solution (1:1 dilution with distilled water) to prevent secondary infection in the form of irrigation 4-5 times a day for 5-7 days;
3. Laser diode radiation was applied locally at the location on the red borders of the lips, at the border with the

skin, as well as in the oral cavity (cheeks, tongue, traumatic areas of the oral mucosa). Irradiation time is 15-20 minutes. Depending on the area of the wound surface, the frequency of the procedure was 3-6 sessions.

For general treatment, patients of the main group were recommended:

1. Diet (the patients were recommended a hypoallergenic non-irritating diet).
2. Strong AG 1amp+100.0 0.9% sodium chloride solution intravenously No. 5.
3. Cycloferon IM according to the scheme.

Treatment of patients in the comparison group with MEE was carried out both local and general. In local treatment, traditional treatment was recommended:

1. Lidocaine gel for anesthesia of lesions in the form of an application to the lesions (7-10 days);
2. Chlorhexidine _ bigluconate 0.05% solution (1:1 distilled water) to prevent secondary infection in the form of rinsing 4-5 times a day for 5-7 days (5-7 days);
3. Hollisal gel application for 5-7 days.
4. Vitanim A application (retinol acetate).

For the general treatment of patients in the comparison group, it was recommended:

4. Diet (the patients were recommended a hypoallergenic non-irritating diet).
5. Strong AG 1amp+100.0 0.9% sodium chloride solution intravenously No. 5.
6. Cycloferon IM according to the scheme.

The local and general treatment we use in the comparison group is considered traditional. For patients in the main group, in addition to traditional treatment, we added laser irradiation using a PDT device.

4. The Results of the Study

During the treatment of patients with exudative erythema multiforme using various techniques, no side effects or complications were identified.

To make the data more objective, the effectiveness of therapy for patients with exudative erythema multiforme who received various types of treatment was assessed using a 3-point system, taking into account the dynamics of subjective sensations and clinical symptoms of the disease. The three-point system included (Table 1):

1. Subjective sensations:
   - mild itching, burning, pain - 1 point each.
   - constant itching, burning, pain - 2 points each.
   - intense itching, burning, pain - 3 points each.
2. Symptoms of intoxication:
   - not pronounced weakness (adynamia) -1 point;
   - constant weakness for several days (adynamia) - 2 points;
   - marked weakness (adynamia) - 3 points.
   - increase in body temperature to subfebrile levels - 1 point; -increase in body temperature to 38℃ - 2 points;
   - increase in body temperature over 38℃ - 3 points.
3. Clinical symptoms:
   - number of lesions (1-5 lesions - 1 point, 5-10 - 2 points, over 10 lesions -3 points).
   - area of affected skin and mucous membranes (up to 10 cm - 1 point, 10-20 cm - 2 points, over 20 cm - 3 points).

   Hyperemia:
   - weak -1 point,
   - distinct -2 points,
   - acute inflammatory erythema - 3 points.

Table 1. Dynamics of complaints and symptoms in patients with MEE under traditional treatment (group 1, n =64)

Complaints and symptoms	Points			
	1st Examination	2nd examination	3rd examination	4th examination
burning	30	10	5	0
itching	20	10	5	0
pain	25	15	5	0
weakness adynamia	21	10	6	0
quantity outbreaks	300	200	70	0
square defeats	314	238	80	0
hyperemia	30	20	11	0
vesicles	21	16	2	0
bubbles	18	10	3	0
erosion	22	13	2	0
ulcers	17	12	1	0
crusts	24	11	5	0
sum points:	842	565	195	0
M±m	40.1± 2.1	36.2±1.9	15.9± 1.3	0

Table 2. Dynamics of complaints and symptoms in patients with MEE in the main group (group 2, n =64)

Complaints and symptoms	Points			
	1st examination	2nd examination	3rd Examination	4th examination
burning	50	8	1	0
itching	31	24	0	0
pain	49	16	2	0
weakness adynamia	42	18	3	0
quantity outbreaks	375	89	10	0
square defeats	383	78	15	0
hyperemia	49	16	6	0
vesicles	49	15	0	0
bubbles	60	9	0	0
erosion	thirty	10	1	0
ulcers	20	8	1	0
crusts	38	14	2	0
sum points:	1176	305	41	0
M±m	48.7±2.6	28.4±1.5	2.9±0.5	0

Vesicles (single - 1 point, 10-20 elements - 2 points, more than 20 - 3 points).

Bubbles (single - 1 point, 10-20 elements - 2 points, more than 20 - 3 points).

Erosion (single - 1 point, 10-20 elements - 2 points, more than 20 - 3 points).

Ulcers (one - 1 point, two - 2 points, more than 2 - 3 points).

Crusts (single - 1 point, 10-20 elements - 2 points, more than 20 - 3 points). According to the summary data for the groups, analysis and mathematical processing of the data obtained was carried out.

During dynamic observation of patients, the most favorable results were achieved in group 2. Thus, according to the scoring system, the average intensity of clinical manifestations of erythema multiforme in patients receiving complex treatment decreased by almost 2 times on the 5th day of therapy, and by more than 11 times on the 15th day of treatment. While in patients treated traditionally, the same indicator on the 5th day was 4 times, on the 15th day of therapy it decreased only 8 times.

Figure 1. Patient M., 22 years old, before treatment

Figure 2. Patient M., 22 years old, after treatment

Analysis of data from immediate and long-term follow-up of patients with erythema multiforme exudative who received various types of therapy showed that the most favorable results were observed in group 2 of patients (Fig. 1, 2).

After treatment, it was found that with MEE, the duration of treatment in the main group averaged 3.76-5.31 days, in the comparison group – 6.41-8.47 days; for moderate-severe cases, 5.63-7.75 and 7.51-13.46 days in the comparison group, respectively; in severe cases 7.61-12.02 days, in the comparison group 12.68-21.51 days.

5. Conclusions

Thus, based on the studies conducted, we can come to the conclusion that complex treatment contributed to the rapid regression of clinical manifestations of erythema multiforme and a marked reduction in the frequency and duration of relapses of the disease. Complex, pathogenetically based treatment, including the use of PDT, led to rapid relief of clinical signs of MEE (within 3-6 days) and a significant

reduction in the frequency (up to 1-2 times a year) and duration of ME relapses.

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