



Evaluation Of Indicators Of Neutrophilic Link Of Phagocytosis In Patients With Chronic Forms Of Rhinosinusitis After Endoscopic Operations

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ABSTRACT

In recent years, there has been a significant increase in chronic rhinosinusitis (CRS) in the structure of diseases of the ENT organs. Chronic forms of rhinosinusitis are one of the most common and often recurrent diseases of the nose and paranasal sinuses, the nature and mechanism of which have not been fully understood. The aim of this work is to study the main indicators of the neutrophilic link in phagocytosis in patients with chronic forms of rhinosinusitis. After the operative period, all patients underwent endonasal low-intensity laser therapy and recovery was observed in all patients. In conclusion, it should be noted that the use of endonasal low-intensity laser therapy after surgical treatment has shown some effective results compared with traditional treatment.

Keywords:

Endoscopy, rhinosinusitis, low-intensity laser therapy, neutrophil indicator

Relevance. In recent years, there has been a significant increase in the rate of chronic rhinosinusitis (SR) among ENT diseases.

Chronic forms of rhinosinusitis are one of the most common and frequently recurring diseases of the nose and paranasal sinuses, and their nature and mechanism of development have not yet been fully studied. The causes leading to the development of a chronic inflammatory process in the paranasal sinuses are, in most cases, the following: infection, allergy, local damage to the mucous membrane, as well as local anatomical reasons.

In the pathogenesis of the development of chronic rhinosinusitis, the size and functional state of the natural openings of the paranasal sinuses, disorders of arachidonic acid metabolism and inability to tolerate nonsteroidal anti-inflammatory drugs, as well as disorders of the immunological mechanism, play an important role.

Chronic rhinosinusitis significantly reduces the quality of life of patients. In recent

years, in the surgical treatment of chronic rhinosinusitis, a conservative approach to surgery using the principles of functional endoscopic and microscopic surgery has been formed, the goal of which is to restore normal ventilation and drainage of the cavities.

Taking into account the prevalence of chronic rhinosinusitis, frequent exacerbations, recurrence after surgical treatment, as well as significant impact on the quality of life of patients, it can be said that the development of effective methods of functional endoscopic rhinosinus surgery is one of the most urgent problems of otolaryngology.

Positive results are being achieved in the field of otorhinolaryngology using a laser in providing surgical and therapeutic assistance to patients. In the further development of laser medicine, especially in otorhinolaryngology, it was necessary to search for new methods of treatment using modern laser devices. Therefore, low-intensity laser therapy in tissues and mucous membranes compared to

other methods is considered one of the methods of preventive approach.

Among the factors predisposing to the development of chronic rhinosinusitis, there are external factors consisting of microbes, viruses and fungal agents that cause an unbalanced immune response, and internal factors implying individual reactivity of the organism and genetic predisposition. The state of the immune system plays an important role not only in the pathogenesis of acute inflammation, but also in relapses and prolongation of the process. It has been proven that the first stage of pathogen invasion of epithelial cells occurs only when the functional status of peripheral adaptive systems decreases. One of these systems is the neutrophil link of the body's immune defense, and only after that, the activation of systemic adaptive immunity occurs with the participation of cytotoxic T-lymphocytes and specific antibodies, as well as secretory IgA, and the next stage of this process is considered. Therefore, the first line of defense with the participation of neutrophils plays a key role in the development and completion of antigen elimination.

The purpose of scientific research. The study of the main indicators of neutrophil phagocytosis in patients with chronic forms of rhinosinusitis is considered.

Inspection methods and sources. 20 with chronic rhinosinusitis 52 patients aged 55 years were examined. Patients, from 2018 to 2020, were treated in the ENT department of the SamMI clinic and the "Saodat medical" medical center. Average age of patients It was 31.5 ± 15.4 . 30 healthy people were taken as a control group. 10 patients (23.8%) - Chronic sinusitis, cystic form; 12 patients (28.6%) - polyposis hemisinusitis; 1 patient (2.3%) - chronic frontitis, cystic form; 1 patient (2.3%) was treated with the diagnosis of chronic frontitis, purulent form. In 18 patients (42.8%) - bilateral lesions of cavities were found. Endonasal low-intensity laser therapy was used in the last period after surgery in all patients. The patients received the following medical treatments in the postoperative period: antibacterial therapy (ceftriaxone), topical glucocorticosteroids (mometasone furoate), nasal irrigation with

isotonic saline solutions. Before the start of treatment, the absolute indicators of leukocytes and neutrophils in peripheral blood were evaluated. Spontaneous chemiluminescence (XL) analysis of targeted heparinized blood was used to assess oxygen-dependent metabolism before treatment and during inpatient response.

5.0 ml of venous blood is drawn into a plastic tube with heparin (calculated at 100 ED/ml). Luminol solution is prepared in dimethyl sulfoxide (DMSO) - 10 ml of dimethyl sulfoxide corresponds to 17.7 mg of luminol. Before the examination, a working solution of luminol consisting of 10 ml of sterile physiological solution and 0.01 ml of luminol is prepared; before use, the solution is heated in a thermostat at a temperature of 37°C. Then 100 µl of heparinized blood is added to 2 ml of working solution. Spontaneous XLized blood light collection measurement is carried out after taking the blood into the XLM-003 chemiluminometer in the following order: the test time is 10 minutes, the thermostatic cuvette is 37°C. Further blood storage temperature should be 18-25°C. After 4 hours, resuspension was mixed by resuspension, after which the spontaneous XL beam summation was measured.

According to the literature, changes in the kinetics of spontaneous XL occur due to the interaction of humoral endogenous biologically active substances, the reserve pool of neutrophils, the interaction of para-autocrine cells, the activation of the blood coagulation system.

Statistical processing of data was performed using Statistica 6.0 software on a personal computer. Parametric and non-parametric methods of statistics were used to process the results of the investigation. The method of statistical processing was determined according to the type of sample under analysis. Mann-Whitney and Kolmogorov-Smirnov tests were used to compare two unrelated samples. The Wilcoxon test was used to compare two related samples (before and after treatment). Correlation analysis was used to assess the relationship between indicators using Spearman's method.

Results and their analysis. According to the clinical results of the treatment, the patients were divided into the 2nd group: complete clinical recovery in 45 people; In 7 people -

during the 12 weeks of treatment, symptoms of the disease did not completely disappear, that is, the process was prolonged. The test results are presented in Table 1.

Table 1.

Functional indicators of neutrophil phagocytosis in patients with chronic forms of rhinosinusitis

Indicator	Control group (n=30) (Me[LQ-UQ])	Group I (Me[LQ-UQ]) (n=45)		Group II (Me[LQ-UQ]) (n=7)	
		until treatment	after treatment	until treatment	after treatment
Spontaneous chemiluminescence, sh.b.	2,185 (1.43-3.59)	4.27 (1.86-11.17)	2.51 (1.53-7.8)	1.55 (0.73-3.82)	3.8 (1.86-5.04)
Leukocytes	5.5 (4.7-6.8)	7.9 (6.95-10.0)		5.95 (4.5-9.15)	
Neutrophils	3.05 (2.8-3.95)	5.3 (4.46-7.22)		3.73 (2.5-5.49)	

The evaluation of the leukocyte count at the time of admission to the hospital in patients of group 1 confirmed slightly higher statistical indicators of leukocytes and neutrophils compared to the control group (r was 0.00001 in both cases), as well as the results of the spontaneous blood XL index (r=0.007) (Fig. . 1). A statistically significant decrease in spontaneous XL parameters was observed in patients after treatment (r=0.037). Data on the amount of leukocytes and neutrophils also demonstrate an adequate response of the neutrophilic part of phagocytosis to the development of pyogenic infection in the body, as well as the adequacy of the ongoing therapy (decrease in spontaneous XL indicators).

In the group of patients with chronic rhinosinusitis (n=7), the indicators of the quantitative and functional composition (XL) of leukocytes and neutrophils at the time of hospitalization did not differ from the indicators in the control group. The aforementioned indicators showed that compared to the first group, total leukocytes and neutrophils in the blood (r=0.01 when compared by the Wald-Wolfovitz criterion) and spontaneous XL (r=0.034 when compared by the Manna-Whitney criterion) had slightly lower statistical

significance. . The obtained data indicate that although the exacerbation of chronic rhinosinusitis is detected in this category of patients, the neutrophilic part of phagocytosis remains inactive. This condition can be evaluated as deactivation of neutrophils caused by functional disorders of phagocytic cells themselves, as well as deficiency of humoral activity in blood serum or excess of suppressor factors.

In the patients of the second group, the phagocytosis criteria after the treatment were compared with the previous indicators, without any statistical significance.

Summary. Thus, when comparing the indicators describing the neutrophilic part of phagocytosis in patients with good quality and chronic disease, different reactions of neutrophils to purulent infection were revealed. This disease is characterized by an adequate reaction of phagocytic cells in the group of patients with a good quality outcome. When referring to the hospital, this condition, which was noted in almost half of the patients in the first group, recurred even without any immunocorrective therapy, when we used endonasal low-intensity laser therapy after operative treatment.

In the second group of patients who received traditional treatment, the negative consequences of the disease and adequate phagocytic reaction did not occur.

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