



A. Kanybekov, S.A. Malenkona, Yu.Ya. Rahmatullin, **U.S. Sadykov**, A. Bisen
Asfendiyarov Kazakh National medical university
Department of General Surgery

CORRECTION OF THE REPARATIVE AND IMMUNE PROCESS OF NON-SPECIFIC ULCERATIVE COLITIS IN THE POSTSURGICAL PERIOD

The article is devoted to one actual problem of medicine-correction of the reparative and immune process of non-specific ulcerative colitis in the postoperative period. 24 patients were treated postoperatively with HBL GNL. It has been proven that the use of the above therapies contributes to an increase in the immune and reparative process in the body of patients.

Keywords: ulcer, patient, therapy, process

The relevance of the problem. Worldwide there is a trend towards an increase in gastroenterological diseases, which by the year 2000 will be comparable with cardiac diseases (1). Due to the fact that according to a number of scientists, it is possible to expect the growth of diseases based on dyskinetic, pathomorphological, immunological and metabolic mechanisms, it seems reasonable to study various aspects of non-specific ulcerative colitis, to conduct research identifying separate components of pathogenesis, methods of rational therapy for this disease. According to various authors, non-specific ulcerative colitis occurs in 3.9% -30% of cases (2). Among chronic non-specific intestinal diseases the weight of ulcerative colitis is more than 40% and along with this 1/3 of patients with this pathology lose the ability to work (3). Given the available literature data, the study of immune reactivity of patients with non-specific ulcerative colitis (NUC) is a promising direction considering the regulatory effect of the immune system on the regeneration of epithelium differentiation of mucosa, and the possibility of the use of medical correction of immune system. At present, in most countries of the world there is an intensive adoption of laser radiation for biological research and for practical medicine. Unique properties of the laser beam have opened wide possibilities of its application in various fields: surgery, therapy and diagnostics. Clinical observations showed the effectiveness of the laser for ultraviolet, visible and infrared spectra for topical use to the pathological spot and for the effect on the entire organism. Over the past 15 years, the mechanisms of action have been largely uncovered and clarified. The effect of low-intensity lasers leads to rapid decrease of acute inflammatory processes, stimulates reparative (recovery) processes, improves microcirculation of tissues, normalizes the immunity in general, and increases resistance (stability) of the organism (4).

Purpose of the study. The purpose of study is to improve the therapy of patients with non-specific ulcerative colitis who underwent hemicolectomy and subtotal colectomy and to develop methods for pathogenic therapy using intra-vascular blood irradiation (ILBI) with helium-neon laser (HNL).

Materials and methods of research. To solve the set tasks, we examined 24 patients, which were admitted to the surgical department of Unitary Enterprise based on the Right of Economic Management "Almaty Multi-field hospital", which had a surgery of hemicolectomy and subtotal colectomy with non-specific ulcerative colitis (NUC) from 1996 to 2016. All patients in hospital along with conventional clinical studies went through laboratory, instrumental, histomorphologic studies of biopsy samples of mucosa of the apparently undamaged part of the colon and 24 patients went through immunological studies. Distribution of patients with NUC: Men-11, Women-13. Age of patients is from 18 to 68. With duration of the disease to 1 year there are 2 patients, from 1 to 5 years there are 18 patients, more than 5 years there are 5 patients. Patients with NUC say that the development of the disease began from complete well-doing. Some patients associate it with inaccuracies in nutrition, mental trauma or infectious diseases. Almost all patients with NUC had a decrease in body weight by 6-20%. A significant amount of blood and mucus in the feces was observed, with a stool frequency of 6 to 1-2 times a day. Patients complained of pain along the intestine, weakness. All patients had a subfebrile temperature from 37 to 38 degrees, tachycardia up to 96 beats per minute, a

decrease in hemoglobin to 100 g / l, and blood sedimentation rate of up to 30 mm / h and total protein up to 60 g / l.

According to the endoscopic examination, the patients with NUC were had edema and swelling of the mucosa, smoothing of the vascular pattern, superficial ulcers, fibrin coating, erosion, and pus in the lumen of the intestine. Some patients with NUC have coexisting diseases: 2 patients with chronic cholecystitis, 5 patients with chronic persistent hepatitis, 4 patients with chronic pancreatitis, 3 patients with ulcer disease of duodenum, 1 patient with CHD.

Microscopic examination of the segments of the apparently unchanged mucous membrane of the colon of NUC patients revealed the presence of marked structural changes in them. Most often in the intestinal wall there was a different combination of inflammatory and dysregenerative processes. In most studies, the surface of the epithelium is covered with mucus, desquamated cells with an admixture of erythrocytes and microflora. In addition, uneven flattening and a dystrophic change in the prismatic epithelium, which covers the folds and crypts, is noted. The majority of patients have an increased number of goblet cells, especially crypts in epithelium. The number of intraepithelial lymphocytes in patients with NUC is uneven in different fields of vision: from their absence to the presence of mostly single specimens, rarely there were 2 to 3 in the field of vision. There was a focal and diffuse infiltration in the own layer of mucosa. The infiltrates have mostly plasma cells and lymphocytes. In a smaller amount, there are macrophages, eosinophils, neutrophilic granulocytes. Plasmatic cells are characterized by a high content of cytoplasmic RNA, which is revealed during Brachet's reaction by clear pyroninophilia of the cytoplasm. Microvascular bed of the mucosa and submucosa had enlarged lumens with shaped elements of blood. In some areas, different sizes of hemorrhage are determined. The development of endovascular and sclerotic changes in the walls of micro vessels with a sharp narrowing of their lumens is characteristic. An important microscopic sign, which was found in the majority of observations, is the uneven sclerosis of the mucosa and the submucosa with a marked overgrowth of fibrous tissue. The result of fibrosis is the deformation of the intestinal wall. In such areas, the crypts are usually represented as shortened with enlarged lumens. Some patients have an increased number of neutrophilic granulocytes in infiltrates, edema of the vessel walls and perivascular connective tissue, more extensive and frequent hemorrhages, increased desquamation of the epithelium. In some areas, there are crypt abscesses with the expansion of crypt lumens and the accumulation of leukocytes. Sometimes there is a proliferation of granulation tissue with a large number of capillaries. The muscular membrane of the intestine of different patients is changed ambiguously: from minimal changes to marked edema, focal and diffuse circular cell infiltration.

Patients were divided into 2 groups: to the first group of 12 patients (control) was assigned conventional therapy of NUC (mesalazine 0.5-1 grams 3-4 times a day, prednisolone according to the scheme) infusion and vitamin therapy, the second group of 12 patients in addition to conventional therapy had the ILBI for 10 days for 10 minutes. All patients suffering NUC after the end of the course of treatment had clinical, laboratory, histomorphologic and immunological study of biopsy samples of the mucosa of the colon.



Results of studies:

Table 1

Type of therapy	Active reparation absolute. %	Moderate reparation absolute. %	Inactive reparation, absolute %	Clinical condition	Total absolute. %
Conventional therapy	2	2	-	improvement	4 33.3
	1	2	3	nochange	6 50
	-	-	2	deterioration	2 16.7
	3 25	4 33.3	5 41.6		
Conventional therapy + ILBI HNL	6	2	1	improvement	9 75
	-	1	1	nochange	2 6.7
	-	-	1	deterioration	1 8.35
	6 50	3 25	3 25		

The table Number 1 presents data about clinical condition and reparation activity in mucosa of the remaining part of the colon of NUC patients after surgery, which had conventional therapy (group 1) and conventional therapy including ILBI helium-neon laser (group 2) on 10th day after surgery.

NUC patients, which had a surgery and conventional therapy with ILBI had clinical improvement, 9 patients in 75% of cases and active reparation of 6 patients in 50% of cases. So pathological examination of biopsy samples from mucosa of the remaining part of the colon of NUC patients after surgery after a course of conventional treatment including ILBI showed a positive effect on the clinical course of reparative processes. In 10 days after surgery, mucosa of 10 (83.3%) patients was epithelized over a large area. The coating epithelium was cylindrical or somewhat flattened with a high content of cytoplasmic RNA. Number of inter-epithelial lymphocytes in whole was somewhat increased as compared with their contents

before the ILBI treatment. Lamina propria of the mucosa and submucosa has moderate blood fillings as a rule focal, and in some areas diffusely infiltrated. Lymphocytes prevailed as part of cellular infiltrates. The number of plasma cells in most cases was decreased. The percentage of active repair in the group 2 is by 50% higher (that is 2 times more) than in the NUC groups after surgery, which received only conventional therapy. Moderate activity repair in the group 2 was only in 25% of patients, which is 8.3% less than in the group 1. In the group 2 of patients with NUC the percentage of inactive reparation in mucosa of the remaining part of the colon was 25% in 3 patients, which is 41.67% (8 patients) less than in the group 1. The percentage of deterioration in the clinical condition of patients in the group 2 was also lower than in the group 1.

Indicators of T-cell immunity component in NUC patients of groups 1, 2 on 10th day of surgical treatment are shown in Table Number 2.

Table 2

Indicators	NUC patient safter surgery	
	Group 1: 12 patients	2nd group: 12 patients
Lymphocytes x10 / 9l	1.16: 0.19	1.33: 0.21
E-rosette-forming cell-%	32.0: 5.06	36.04: 2.35
E-Rosette-forming cell 10/9 L.	0.34: 0.11	0.39: 0.13
TGF-rosette-forming cell %	13.04: 1.78	20.8: 3.27
TGF-rosette-forming cell x 10 / 9L	0.17: 0.03	0.27: 0.06
FPF-rosette-forming cell%	20.8: 2.54	14.03: 2.87
FPF-rosette-forming cell x10 / 9l.	0.3: 0.01	0.16: 0.04
Blast-transformation reaction with PHA %	66.7: 8.4	76.33: 4.3
Blast-transformation reaction with PHA, x 10 / 9L.	0.72: 0.06	0.94: 0.31

The Table №2 shows that NUC patients of group 2, which had conventional therapy after surgery and additionally ILBI HNL, had an increase in the absolute number of lymphocytes, as well as relative and absolute content of TGF-rosette-forming cell. At the same time significantly the content of FPF rosette-forming cell was truly decreased, which leads to a significant increase in

the immune regulatory index. Functional activity of lymphocytes of group 2 of patients compared to group 1 is not changed.

The Table Number 3 presents data on the effect of conventional therapy and additional ILBI HNL on B-component of immunity component in NUC patients of group 1 and 2.

Table 3

Indicators	NUC patient safter surgery	
	1 group, 12 patients	2-group, 12 patients
EAC-rosette-forming cell%	26.4: 6.5	42.9: 2.4
EAC-rosette-forming cell, x 10 / 9L.	0.31: 0.06	0.40: 0.07
0-lymphocytes, %	44.7: 7.9	22.9: 5.7
0-lymphocytes, x 10 / 9L.	0.62: 0.22	0.26: 0.07
IgA / l	3.67: 0.2	1.9: 0.18
IgM	1.23: 0.5	1.36: 0.26
IgG	16.1: 2.8	17.4: 1.3

The Table 3 shows that in the postsurgical period NUC patients of group 2 compared to group 1 have a significant increase in the relative and absolute number of EAC rosette-forming cell and functional activity of B-lymphocytes does not change substantially. The content of immunoglobulin A is reduced, levels of immunoglobulin M and G do not differ between the group 1 and 2. The number of 0-lymphocytes is decreasing in the group 2 of NUC patients compared with group 1, both relatively and absolutely.

Conclusions:

1. The use of conventional therapy and ILBI HNL in operated NUC patients improves the reparative processes of colon in the postsurgical period by 25% to 50% compared to the conventional therapy and the clinical condition improved from 33.3% to 75% of cases.

2. Together with conditional therapy, the usage of ILBI HNL in operated NUC patients of group 2 improves the absolute number of lymphocytes, which leads to an increase in immune regulatory index, which leads to increased reparation activity in the mucosa of the remaining part of the colon.



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А. Қаныбеков, С.А. Маленкова, Ю.Я. Рахматуллин, Ә.С. Садықов, А. Бейсен
С.Ж. Асфендияров атындағы Қазақ Ұлттық медицина университеті
Жалпы хирургия кафедрасы

ОТАДАН КЕЙІНГІ КЕЗЕҢДЕ СПЕЦИФИКАЛЫҚ ЕМЕС ОЙЫҚ ЖАРАЛЫ КОЛИТТІҢ РЕПАРАТИВТІ ЖӘНЕ ИММУНДЫҚ ҮРДІСТЕРІН ТҮЗЕТУ

Түйін: мақала бейспецификалық ойық-жараның операциядан кейінгі кезеңде иммунды және репаративті үдеріске коррекция жүргізуіне арналған. Алға қойылған мақсатты орындау үшін 24 науқасқа ем жүргізілген. ГНЛ сәулені қанға енгізу арқылы ем жүргізу нәтижесінде науқастардың иммунитеті мен репаративті үдерістің жоғарылағаны дәлелденген.

Түйінді сөздер: ойық жара, науқас, ем, үрдіс

А. Қаныбеков, С.А. Маленкова, Ю.Я. Рахматуллин, Ә.С. Садықов, А. Бейсен
Казахский Национальный медицинский университет имени С.Д. Асфендиярова
Кафедра общей хирургии

КОРРЕКЦИЯ РЕПАРАТИВНОГО И ИММУННОГО ПРОЦЕССА НЕСПЕЦИФИЧЕСКОГО ЯЗВЕННОГО КОЛИТА В ПОСЛЕОПЕРАЦИОННОМ ПЕРИОДЕ

Резюме: Статья посвящена одной актуальной проблеме медицины-коррекцию репаративного и иммунного процесса неспецифического язвенного колита в послеоперационном периоде. Проведено лечение 24 больным послеоперационном периоде применением ВЛОК ГНЛ. Доказано, применение вышеуказанной терапий способствует повышению иммунного и репаративного процесса в организме больных.

Ключевые слова: язва, пациент, терапия, процесс

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Y. Menchisheva, U. Mirzakulova

Asfendiyarov Kazakh National medical university, Almaty, Kazakhstan

**IS PRP EFFECTIVE IN ACUTE AND POSTSURGICAL WOUNDS HEALING?
(REVIEW)**

Platelet-rich plasma (PRP) is a blood product with a high platelet level that is widely applicable in different branches of medicine nowadays [1, 2]. The purpose of this study was to answer the question: "Would the application of PRP be effective in acute and postsurgical wounds healing?" based on the results of studies.

Material and methods: *The literature search was conducted through MEDLINE, EBSCO, Cochrane Database for the terms PRP, Platelet Rich Plasma, Platelet therapy, Wound Healing, Acute wounds. Articles relating to the use of platelet rich plasma in surgery and wound healing after 2006 were included.*

Results: *Among 141 studies 37 were devoted to studies of the use of PRP in animals and 44 in humans. Controlled studies have shown a significant positive effect of PRP on the healing of acute and postoperative wounds. Nevertheless, two controlled studies did not show differences between two study groups.*

Conclusion: *In most studies, the effectiveness of PRP in acute and postoperative wounds healing was proven. The positive effect of PRP on the rate of epithelialization and the reduction of complications in the postoperative period was noted.*

Keywords: *platelet-rich plasma, wounds healing.*

Introduction.

Autologous platelet-rich plasma (PRP) is a blood product that is widely applicable in different domains of medicine such as traumatology, sports medicine, general surgery, gynecology, dermatology, ophthalmology, dentistry and plastic surgery. Published studies indicate that administration of PRP directly into the wound or its application on the wound surface is recognized as successful choice of the treatment method in

various cases of wounds' etiology [1-4]. It is evidenced that PRP plays an important role in physiological regeneration [5]. Despite the fact that a wide range of clinical studies confirm the considerable impact of PRP on wounds' healing, there are studies, showing absence or limited efficiency of plasma treatment. Inconsistency of results about efficient usage of PRP shows necessity for further analyzes of collected data.